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**JOINT AGENCIES AND CALIFORNIA ISO STAFF DRAFT REPORT**

# Electrical Transmission Infrastructure Development Guidebook

## In Response to Senate Bill 319

**Gavin Newsom, Governor**

**December 2025 | CEC-700-2025-008-SD**

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# ABSTRACT

Senate Bill 319 (McGuire, Chapter 399, Statutes of 2023) directs the California Energy Commission (CEC), California Public Utilities Commission (CPUC), and California Independent System Operator (California ISO) to jointly prepare an electrical transmission infrastructure development guidebook that describes the state's electrical transmission infrastructure planning and permitting processes they conduct. The guidebook describes the different stages of transmission infrastructure development and analysis of average time frames for planning and permitting.

The guidebook also clearly describes the roles, responsibilities, and decision making authority of federal and state agencies, including interfaces with federal and state agencies and the timing, sequence, and coordination with federal agencies for reviews required under the California Environmental Quality Act and the National Environmental Policy Act. Consistent with SB 319, the joint agencies and California ISO made a reasonable and good faith effort to consult with relevant local, state, tribal, and federal agencies and provide an opportunity for stakeholder input in developing the guidebook and an opportunity for public comment on the draft guidebook.

**Keywords:** Transmission planning, transmission permitting, infrastructure planning, renewable energy, clean energy, decarbonization, reliability, corridors, rights-of-way, integrated resource planning, electricity demand, resource portfolio

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# TABLE OF CONTENTS

# LIST OF FIGURES

Page

# LIST OF TABLES

Page

# EXECUTIVE SUMMARY

California is part of a larger integrated electricity system in the western United States called the Western Interconnection, which includes all or parts of 14 western states as well as Alberta, British Columbia, and Baja California. All of the electric utilities in the Western Interconnection are electrically tied together and operate at a synchronized frequency. However, California has its own transmission planning and permitting processes to develop least-cost transmission projects needed for reliability, economic efficiency and state policies.

Timely development of transmission infrastructure is critical to California's efforts to dramatically scale up renewable and zero-carbon electricity sources to meet ambitious climate goals. Beginning with passage of its landmark climate law, Assembly Bill 32, the California Global Warming Solutions Act of 2006 (Nunez, Chapter 488, Statutes of 2006) (AB 32), the state has accelerated efforts to reduce the pace, magnitude, and costs of climate change impacts, in part, by improving the resilience of electricity infrastructure and reducing greenhouse gas emissions from electricity supply. The clean energy transition envisioned by AB 32 also entails widespread electrification of transportation, buildings, and industry, which will increase electricity demand in the state.

## Introduction

The state has made major progress in developing clean energy resources. However, to achieve the clean energy transition, California will need to accelerate the pace of clean energy development. This acceleration, in turn, will necessitate upgrades of existing transmission and the development of new high-voltage transmission projects. The guidebook is intended to inform decision makers, stakeholders, and the public about the development of transmission.

Senate Bill 319 (McGuire, Chapter 390, Statutes of 2023) requires the California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and California Independent System Operator (California ISO or CAISO), referred to in this report as the *joint agencies and California ISO*, to develop a guidebook that explains the electrical transmission infrastructure planning and permitting processes for the California ISO balancing area (or footprint) by July 1, 2025.

The guidebook is intended to describe the different stages of transmission infrastructure development, analyze average time frames for planning and permitting, and clearly delineate the roles, responsibilities, and decision-making authority of federal and state agencies. It also describes the interfaces between federal and state agencies, including timing, sequence, and coordination of reviews under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

In addition, SB 319 directs the joint agencies and California ISO to make a reasonable and good faith effort to consult with relevant local, state, tribal, and federal agencies.

The statute also requires the CEC, CPUC, and California ISO to provide an opportunity for stakeholder input and public comment on the draft guidebook.

## Overview of Transmission Planning and Permitting

Transmission development is a long lead-time activity that is critical to enable timely delivery of reliable, diverse, secure, and affordable clean energy to meet the needs of a future electricity system that operates with 100 percent renewable and zero-carbon resources. The planning and permitting of transmission are essential to the state's broader electricity infrastructure planning and development.

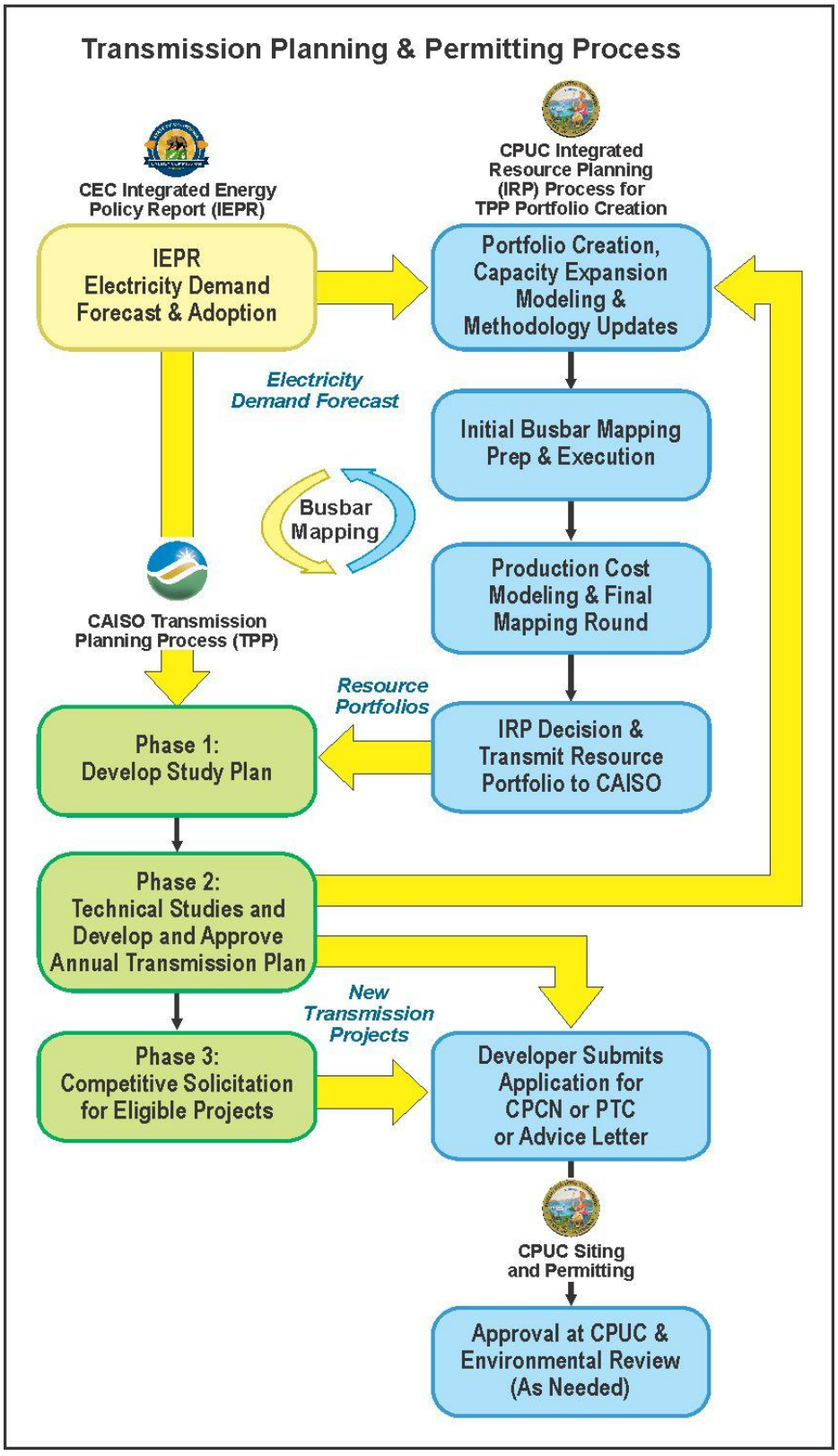
California already has a robust transmission planning process for the transmission system operated by the California ISO, which covers the load of roughly 80 percent of the state, including investor-owned utilities and other load-serving entities. Publicly owned utilities, except for those that are a part of the California ISO, independently plan the transmission systems they own and operate. The bulk transmission lines operated by the California ISO are typically high-voltage lines 200 kilovolts (kV) or greater and are subject to regulation by the Federal Energy Regulatory Commission (FERC).

As a FERC-regulated entity, the California ISO facilitates open access to transmission at just and reasonable rates and is responsible for transmission expansion planning based on reliability, economic, and policy-driven needs. The California ISO's transmission planning processes adhere to reliability standards set by the Western Electricity Coordinating Council and the North American Electric Reliability Corporation.

The California ISO conducts an annual Transmission Planning Process (TPP) to identify transmission needs over a 10-year horizon. The California ISO may identify and seek approval for projects beyond the 10-year horizon if it determines that projects will take longer than 10 years to develop. A major input into this process is the electricity demand forecast from the CEC's Integrated Energy Policy Report (IEPR). Another key input is the CPUC's optimal resource portfolio that meets California's clean energy goals in a reliable and cost-effective manner, which is developed as part of the CPUC's multiyear Integrated Resource Planning (IRP) process.

The California ISO Board of Governors must approve each annual transmission plan, which often identifies the need for new transmission infrastructure. Some transmission projects approved by the California ISO Board of Governors may be eligible for a competitive solicitation in which utilities or independent transmission providers can bid to develop the project. The transmission planning and permitting processes, and agency roles and products, are shown in **Figure ES-1**.

**Figure ES-1: Transmission Planning and Permitting Processes**




Source: CEC/Aspen, 2025

The California ISO Board-approved projects can then move forward to the CPUC's permitting and CEQA environmental review processes, where efforts are already underway to accelerate transmission development. Utility transmission projects that do not go through the California ISO's TPP may also require permitting. If there is federal involvement in the project — it is proposed on federal lands, requires federal permits, or receives federal funding — the federal agency acting on the project must assess the project under NEPA. The transmission project must also acquire several additional permits from federal agencies before the project can move forward to construction.

In addition to state transmission planning, transmission planning is conducted across regions. For example, the Western Electricity Coordinating Council develops reliability studies for the Western interconnected grid coordinated with regional reliability organizations, transmission owners, utilities, and stakeholders. Other advisory entities include the Western Interstate Energy Board, the Western Interconnection Regional Advisory Body, and the Committee on Regional Electric Power Cooperation. The California ISO also works with neighboring regional planning entities on interregional transmission planning. While these planning activities may influence regional development of transmission projects, these processes are primarily advisory and do not culminate in the direct approval of any specific project for the California ISO balancing area.

# CHAPTER 1:
# Introduction and Background

The bulk transmission system is an interconnected network of independently owned and operated power plants and transmission lines. High-voltage connections between utilities allow for the transfer of electrical energy from one part of the network to another. Because transmission lines are long linear facilities that can span tens to hundreds of miles, the process of planning and permitting these facilities is inherently complex, is difficult, and can be time-consuming. Because transmission lines involve multiple agencies and processes to develop, a primary goal of this guidebook is to make those processes more understandable and accessible for policy makers, stakeholders, and interested parties.

## Senate Bill 319

Senate Bill 319 (McGuire, Chapter 390, Statutes of 2023) (SB 319) requires *the joint agencies and California ISO* to prepare an electrical transmission infrastructure development guidebook by July 1, 2025. The guidebook is intended to describe the different stages of transmission infrastructure development; delineate the roles, responsibilities, and decision-making authority of state and federal agencies; and analyze average time frames for the planning and permitting of transmission infrastructure.

SB 319 also requires the guidebook to describe the interfaces between federal and state agencies, including the timing, sequence, and coordination of reviews under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). SB 319 further directs the joint agencies and California ISO to make a reasonable and good faith effort to consult with relevant local, state, tribal, and federal agencies. Finally, the CEC, CPUC, and California ISO must provide an opportunity for stakeholder input and public comment during development of the guidebook.

## Overview of Transmission Planning and Permitting

California has a robust electric system planning process. This process includes a transmission planning process for the system operated by the California ISO, which covers the load of roughly 80 percent of the state, including investor-owned utilities (IOUs) and other load-serving entities (LSEs). The CEC, CPUC, and the California ISO jointly plan the electric system, with the California ISO leading transmission planning for its footprint.

In the most basic form, transmission planning requires three primary inputs:

- Projections of the amount and location of future electricity demand (or demand forecast)
- Estimates of the types, amounts, and locations of future generation and storage resources needed to meet projected demand, informed by state policy goals
- Technical studies that identify the need for transmission upgrades and additions necessary to meet reliability, economic, and policy requirements

In California, the joint agencies and California ISO are responsible for these different elements of transmission planning:

- The CEC produces the energy demand forecast in its Integrated Energy Policy Report (IEPR) process.
- The CPUC develops resource portfolios in its Integrated Resource Planning (IRP) process.
- California ISO identifies transmission projects for approval by its Board of Governors through its Transmission Planning Process (TPP).

Over the last 15 years, the CEC, CPUC, and California ISO, referred to in this report as the *joint agencies and California ISO*, have aligned their individual processes and developed a memorandum of understanding (MOU or agreement) that establishes the framework for transmission planning and outlines how the three entities' responsibilities are coordinated.[1]

Annually, the California ISO's TPP identifies transmission projects needed for a 10-year planning horizon, which the California ISO then takes to its Board of Governors for approval. The California ISO's TPP is not limited to a 10-year planning horizon. The California ISO may identify and seek approval for projects beyond the 10-year horizon if it determines that projects will take longer than 10 years to develop. Senate Bill 887 (Becker, Chapter 358, Statutes of 2022) requires the CPUC and CEC to provide 15-year projections of loads, resources, and other planning inputs for use by the California ISO in its transmission planning process.

The California ISO also develops a 20-Year Transmission Outlook, coordinated with the CEC and CPUC, to examine longer-term needs for transmission. However, the California ISO does not approve transmission projects identified in the 20-Year Outlook. In

1 "Memorandum of Understanding Between The California Public Utilities Commission (CPUC) And The California Energy Commission (CEC) And The California Independent System Operator (ISO) Regarding Transmission and Resource Planning and Implementation," December 2022. https://www.energy.ca.gov/sites/default/files/2023-01/MOU_Dec_2022_CPUC_CEC_ISO_signed_ada.pdf.

addition to state transmission planning processes, the California ISO coordinates with neighboring regional planning entities that conduct transmission planning activities in inter-regional transmission planning processes. There are also federal and regional entities that engage in transmission planning activities to guide regional transmission development.

California law specifically directs that the CPUC is responsible for approving construction of jurisdictional utility facilities, including transmission lines, and the publicly owned utilities (POUs) permit transmission facilities they own. The CPUC regulates investor-owned utilities (IOUs) and participating transmission owners (PTOs) in California,[2] including evaluating the need for transmission projects; issuing Certificates of Public Convenience and Necessity (CPCN) and Permits to Construct (PTC); and performing the environmental reviews required to be conducted under CEQA before issuing any new permits. When a private company develops new transmission in California, they apply for a CPCN or PTC at the CPUC. Once the transmission is operational, the private utility becomes a PTO at the California ISO.[3]

The publicly owned utilities (POUs), including those that participate in the California ISO and those that do not, are responsible for approval of their own transmission facilities, including environmental review under CEQA.

The PTOs' bulk transmission lines, which are generally high-voltage lines (200 kilovolts [kV] or greater)[4] are operated by the California ISO under the rate regulation of the Federal Energy Regulatory Commission (FERC). As a FERC-regulated entity, the California ISO is responsible for planning transmission expansion based on reliability, economic, and policy-driven needs under FERC tariffs. The California ISO conducts competitive solicitations for some projects, usually larger, and higher-voltage transmission, allowing independent transmission owners an opportunity to bid to develop those projects. Other projects are developed by the incumbent utility, also referred to as the three large IOUs — Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric.

In the planning and permitting processes, there are multiple opportunities for public engagement, as shown in **Table 1-1**.

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2 A participating transmission owner is a transmission owner that has elected to turn operational control of its facilities over to the California ISO and collect access charges from users.

3 A list of Participating Transmission Owners at the California ISO is available at https://www.caiso.com/Documents/ListParticipatingTransmissionOwners.pdf

4 The CPUC defines a transmission line in General Order 131-E as a line designed to operate at or above 200 kilovolts (kV). A *power line* is defined as a line that operates between 50 and 200 kV. A distribution line defined as a line designed to operate under 50 kV and does not require a CPCN or PTC, but investments in distribution lines are included in rate cases.

**Table 1-1: Public Input to Planning and Permitting Processes**

| Transmission Planning Process | Transmission Developer Outreach by Utility | CPUC CEQA (if applicable) |
|---|---|---|
| • CEC conducts public outreach in developing the demand forecast in the IEPR process<br>• CPUC gathers public comments during development of the recommended electricity resource portfolios in the IRP process, prior to transmitting to CAISO<br>• CAISO's annual Transmission Planning Process allows for public engagement and comment | Within 10 days of filing a permit application at the CPUC, GO 131-E requires that the utility prepare and distribute a notice as follows:<br>• Publish notice in newspaper and post notices along the ROW<br>• Mail notice to property owners within 300 feet<br>• Describes process and timeline for Protest | • Public comment during CEQA scoping regarding proposed project impacts, alternatives, and mitigation options (EIR only)<br>• Public comment on Draft CEQA document<br>• Public comment on Final CEQA document may be considered before CPUC approval (at CPUC meeting) |

Source: CEC, 2025

## Organization of the Report

This guidebook includes the following chapters:

**Chapter 2** discusses California's transmission planning process, including the roles and responsibilities of the California ISO, CPUC, and CEC, as well as the MOU that guides their collaborative planning.

**Chapter 3** discusses federal and regional transmission planning activities, including reliability planning by the Western Electricity Coordinating Council (WECC), several regional planning entities, and FERC.

**Chapter 4** discusses the state and federal permitting processes and environmental reviews for transmission projects under CEQA and NEPA.

# CHAPTER 2:
# State Transmission Planning

There is increased recognition that the state will need to add large amounts of new and upgraded transmission so that renewable and clean electricity resources can be shared and efficiently used as load and generation production fluctuate with increasingly variable weather patterns and customer needs. Adding significant transmission requires careful and comprehensive transmission planning — in the near term (10 to 15 years) and long term (20 years and beyond) — to maintain reliability, meet climate goals, and promote affordability. This chapter discusses the California ISO-led transmission planning process that is guided by an MOU between the California ISO, the CEC, and CPUC, as well as the authorities of each agency, their roles and responsibilities, and the elements and phases of their respective agency processes.

## Planning Memorandum of Understanding

The Transmission Planning Process (TPP) for the California ISO balancing area (or footprint) is coordinated among state agencies and the California ISO, which is under federal jurisdiction. Given the interdependency of each agency's responsibility within transmission planning, the CPUC, the CEC, and the California ISO entered into an MOU in 2010 to enhance coordination of load forecasting, resource planning, and transmission planning.

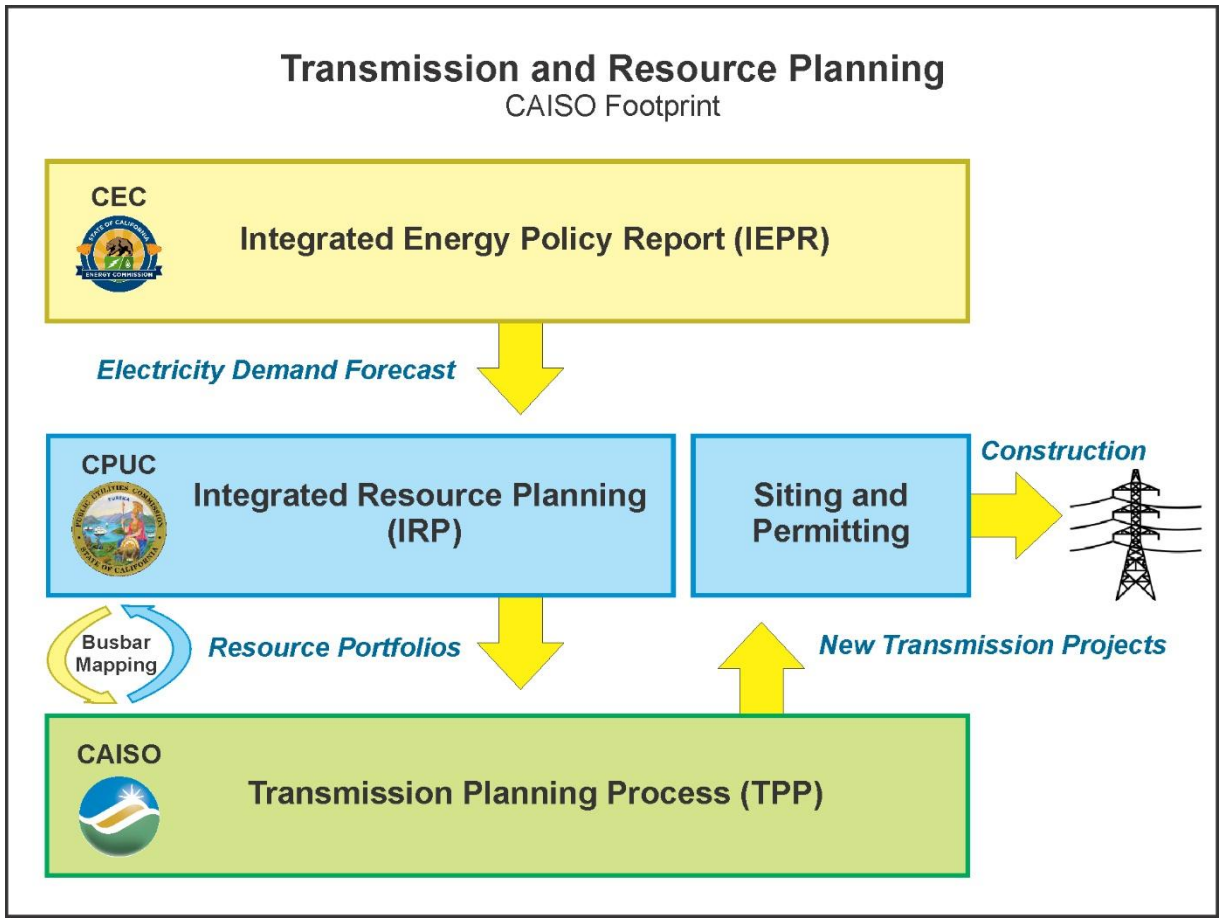
The CEC, CPUC, and California ISO renewed their commitment to enhanced coordinated electric system planning for resources and transmission in the December 2022 updated MOU. The MOU tightens the linkages between the CEC's load forecasts, the CPUC's resource planning, and the California ISO's transmission planning. The California ISO identifies and approves near-term transmission projects in the annual TPP and examines future transmission needs in the *20-Year Transmission Outlook*.[5] **Figure 2-1** shows the MOU process for transmission and resource planning in the California ISO's footprint.

## Planning for Near-Term Transmission Projects

The following sections describe each agency's respective planning processes, products, and interactions. These include the CEC's IEPR process, the CPUC's IRP process, and the California ISO's TPP.

5 Only the California ISO TPP can authorize new transmission. The 20-Year Outlook examines potential future needs. California ISO. May 2022. *20-Year Transmission Outlook*, https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/20-Year-transmission-outlook.

**Figure 2-1: MOU for Transmission and Resource Planning**




Source: CEC/Aspen, 2025

## CEC Integrated Energy Policy Report

The Legislature established the CEC in 1974, noting the policy of the state and the intent of the Legislature to establish and consolidate the state's responsibility for energy resources.[6] In 2002, following restructuring of the electricity market and the Energy Crisis of 2000–2001, the Legislature passed Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) that established the CEC's IEPR process. The legislation requires the CEC to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity and other energy sectors. The report provides policy recommendations to conserve resources, protect the environment, ensure reliable, secure, and diverse energy supplies, enhance the state's economy, and protect public health and safety.[7]

6 Public Resources Code Section 25006.

7 Public Resources Code Section 25301(a).

The CEC prepares updates to these assessments and associated policy recommendations in alternate years.[8] Preparation of the IEPR involves close collaboration with federal, state, and local agencies and a wide variety of stakeholders in an extensive public process to identify critical energy issues and develop strategies to address them.

## The Role of the Energy Demand Forecast

A cornerstone of California's energy planning is the California Energy Demand Forecast, developed by the CEC. This forecast provides critical information that guides energy planning proceedings across the state. Updated annually as part of the IEPR process, the forecast incorporates the latest data and continuous improvements in methods and models to project future energy demand.

The forecast assesses energy demand trends in the near- and long- term, considering a range of factors, including:

- Economic and demographic projections.
- Projected changes in utility rates and costs.
- The impacts of energy efficiency and electrification.
- Historical and projected climate and weather data.

The forecast also serves as an important input into the state's comprehensive energy planning process. The joint agencies and California ISO have agreed in the MOU that specific elements of this forecast will be used for planning and procurement in the California ISO's TPP and the CPUC's integrated resource planning, resource adequacy, distribution system planning, and other planning processes. The details of this MOU, as described previously, are adapted over time as the needs of planning and procurement evolve. This multistep approach ensures that clean energy resources are developed in a timely manner and align with the state's long-term climate goals.

The accelerating climate crisis has increased the importance of the energy demand forecast. Climate change is increasing uncertainty in long-term planning, with extreme weather events significantly influencing energy demand. Because extreme weather events are occurring more frequently, historical weather data are no longer sufficient for projections of future weather patterns. For this reason, the CEC has shifted from using historical weather data to using newly available climate simulation data in its forecasts.

The CEC makes continual improvements to forecasting methods and develops new products that best serve the planning process. The 2024 demand forecast:

8 Public Resources Code Section 25302(d).

- Improved the behind-the-meter photovoltaic and storage historical data and forecast.
- Improved characterization of the expected growth of data centers.
- Updated the transportation forecast to reflect growing electrification.
- Updated the building electrification forecast based on the latest information about zero-emission appliance regulations.
- Improved the hourly forecast method to enhance model performance.

## CPUC Integrated Resource Planning Process

The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. In 1911, the CPUC was established by Constitutional Amendment as the Railroad Commission. In 1946, the Railroad Commission was renamed the California Public Utilities Commission, and Constitutional Amendments adopted in 1974 clarified the CPUC's independent authority to regulate public utilities. The CPUC develops rules and adjudicates issues regarding the utilities' obligation to provide safe and reliable utility service at just and reasonable rates.

After the California energy crisis in 2001-2002, the CPUC undertook several significant steps to oversee the long-term resource planning for CPUC-jurisdictional entities. These processes were consolidated in the CPUC's rulemaking related to Long-Term Procurement Planning, as well as the Renewables Portfolio Standard and Resource Adequacy programs.[9] In 2015, SB 350 (de León, Chapter 547, Statutes of 2015) directed the CPUC to evolve existing long-term resource planning into an Integrated Resource Planning (IRP) process.

The CPUC's IRP process is designed to ensure that load-serving entities (LSEs) in the CPUC's jurisdiction meet targets that allow the electricity sector to contribute to California's economy-wide greenhouse gas (GHG) emissions reductions at least cost while maintaining electric service reliability and meeting other state policy goals.[10] Accordingly, in addition to developing resource portfolios that result in electrical transmission upgrades through the California ISO's TPP, the IRP process is crucial to meeting the electric sector's clean energy goals established in SB 100 and SB 1020

9 The Renewable Portfolio Standard (RPS) program was established by Senate Bill 1078 (Sher, Chapter 516, Statutes of 2002). The RPS program was subsequently modified by Senate Bill 107 (Simitian, Chapter 464, Statutes of 2006); Senate Bill 1036 (Perata, Chapter 685, Statutes of 2007); Senate Bill 2 (1X) (Simitian, Chapter 1, Statutes of 2011, First Extraordinary Session); Senate Bill 350 (de León, Chapter 547, Statutes of 2015); and Senate Bill 100 (de Leon, Chapter 312, Statutes of 2018).

10 *Load-serving entity* means an electrical corporation, electric service provider, or community choice aggregator.

(Laird, Chapter 361, Statutes of 2022).[11] The resource portfolios also meet statewide emissions reductions goals established in Assembly Bill 1279 (Muratsuchi, Chapter 337, Statutes of 2022).[12]

A complete IRP cycle at the CPUC takes 2 to 3 years to complete and is anchored by the following steps:

- Setting resource planning, GHG reduction, and reliability targets and filing requirements for LSEs to use in the individual integrated resource plans they are required to submit each cycle.
- Reviewing IRP plans filed by each LSE under the CPUC's IRP purview. The CPUC then aggregates the IRPs and analyzes them to construct a preferred electric resource portfolio for the entirety of the electrical grid under the CPUC's purview, referred to as the Preferred System Plan (PSP) portfolio.
- Transmitting annually a recommended electricity resource portfolio or portfolios to the California ISO for analysis in its annual TPP.
- Considering the need for procurement by LSEs of electricity resources for electric grid reliability, environmental performance, and greenhouse gas reduction.[13]

The IRP process is an iterative multiyear process. Throughout an IRP cycle, the CPUC refines its modeling inputs and assumptions, and it engages with stakeholders on finalizing the inputs and assumptions that will underlie the cycle's main modeling efforts, including the filing requirements that it issues for each LSE to use in the individual integrated resource plans they develop and submit to the CPUC. The CPUC conducts capacity expansion modeling, a tool that identifies an optimal combination of resources to meet the electricity sector's share of GHG emissions reductions established by the California Air Resources Board (CARB) under SB 350 at least cost. The capacity expansion modeling must also meet forecasted demand from the CEC's IEPR and maintain electric system reliability.[14] The modeling incorporates metrics for reliability and GHG reduction and determines the scenarios that LSEs will need to plan for in their IRP filings.

Second, LSEs use the CPUC's issued filing requirement guidance to create their own resource portfolio(s), which are submitted to the CPUC in IRP filings. In these filings, LSEs submit resource portfolios that meet state goals and satisfy CPUC filing

11 California Code, Public Utilities Code Section 454.53.

12 California Code, Health and Safety Code Section 38562.2(c)(2).

13 CPUC. April 2024. "R.20-05-003 Assigned Commissioners' Amended Scoping Memo and Ruling Extending Statutory Deadline," https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M529/K525/529525977.PDF.

14 The CPUC uses RESOLVE, an electricity resource planning model, to conduct capacity expansion modeling.

requirements. Each LSE's plan reflects its proportion of the total electricity system load and must demonstrate compliance with CPUC-required scenario(s).

Third, the CPUC reviews each LSE's portfolio for policy compliance, aggregates all LSEs' portfolios, and evaluates LSEs' aggregated plans against overall electric system needs. In this step, the CPUC conducts additional capacity expansion modeling that identifies least-cost portfolios to meet GHG and reliability constraints, and also sensitivity analyses to support decision-making. The CPUC also conducts production cost modeling to validate system reliability, operational performance, emissions, and other operational characteristics of a projected future resource mix and load for the portfolios that the CPUC considers for adoption.[15] The final systemwide portfolio must reliably meet the stated policy goals and is referred to as the Preferred System Plan (*PSP) portfolio*.

While the CPUC adopts the PSP at the end of each multiyear IRP cycle, it also adopts and transmits to the California ISO a resource portfolio every year for consideration in the California ISO's annual TPP. In some years, the TPP portfolio can be the same as the CPUC-adopted PSP, and in other or intervening years, the TPP portfolio can be an update of a previously adopted PSP portfolio. The TPP portfolio is used in the busbar mapping process discussed in a later section, which maps the resource portfolios to plausible transmission network modeling locations (specifically, busbars) for transmission analysis in the TPP.[16]

The CPUC typically transmits several distinct portfolios to the California ISO: a reliability- and policy-driven base case portfolio and policy-driven sensitivity portfolios. The base case resource portfolio adopted by the CPUC allows the California ISO to evaluate and approve the electrical transmission projects and upgrades needed to deliver the resource amounts identified in the CPUC-adopted base case portfolio. Base case portfolios are least-cost portfolios that meet CPUC policy guidance, including reliability and GHG reduction targets; provide regulatory certainty for transmission planning; and lead to identified transmission solutions or projects for approval by the California ISO Board of Governors.

Along with the base case analysis that generally leads directly to transmission project approval, in each TPP cycle the California ISO typically analyzes one or more sensitivity portfolios. The sensitivity portfolio analysis assists in future planning by identifying relevant transmission needs and potential costs. Policy-driven sensitivity portfolios can provide additional transmission information to support future portfolio development and explore incremental optionality or risk. The identified transmission solutions in policy-driven sensitivities can help inform future base case solutions but are not designed to move forward for approval by the California ISO Board of Governors. Finally, the PSP

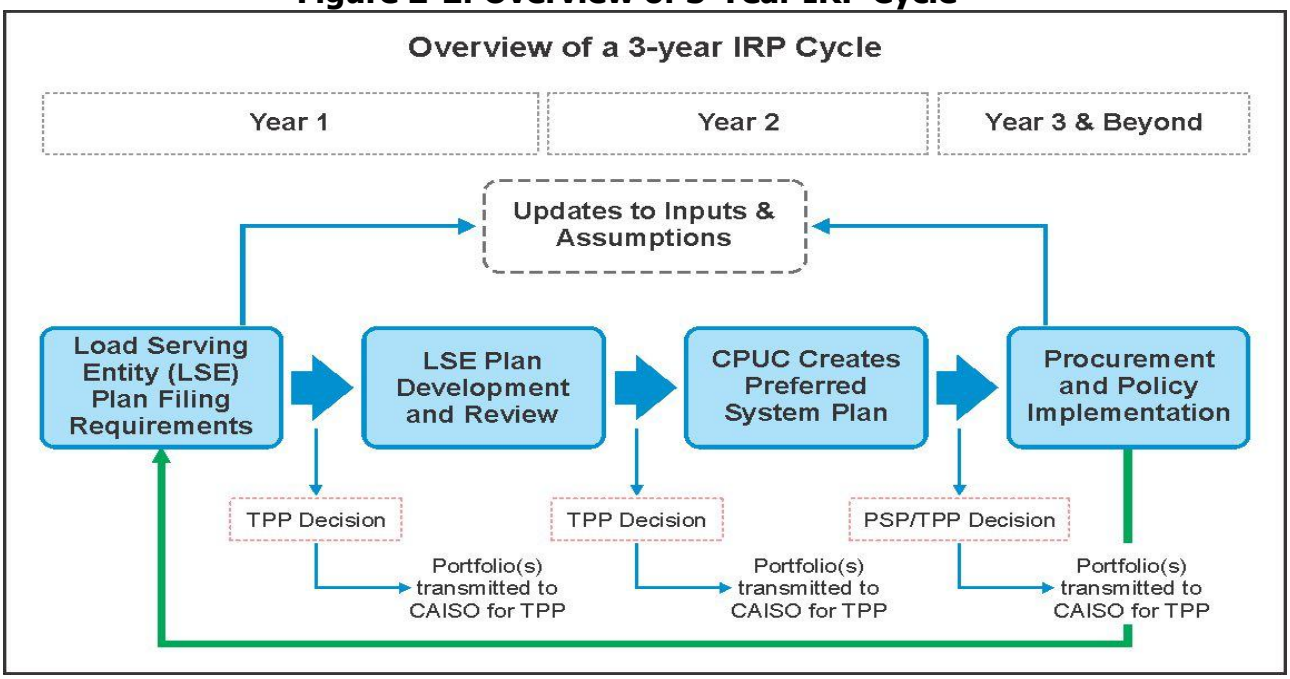
15 The Strategic Energy Risk Valuation Model (SERVM) is used to conduct production cost modeling.

16 A *busbar* is a metallic strip or bar typically housed inside switchgear and panel boards for high-current power distribution and is used to connect high-voltage equipment at electrical switchyards and low-voltage equipment in battery banks.

provides procurement and policy guidance to LSEs and drives procurement and program activity across several supply- and demand-side resources.

The IRP process is shown in **Figure 2-2** below.

**Figure 2-2: Overview of 3-Year IRP Cycle**




Source: CEC/Aspen, 2025

The CPUC may order procurement of resources to meet system reliability needs and achieve GHG emissions reductions based on the PSP. To date, the CPUC has ordered 18,800 megawatts (MW) of procurement of net qualifying capacity (NQC) through three decisions:

- On November 13, 2019, the CPUC ordered the first requirements for all CPUC-jurisdictional LSEs, following D.19-11-016, requiring 3,300 MW of procurement by August 1, 2023.[17]
- On June 30, 2021, the CPUC, under D.21-06-035, ordered procurement of an additional 11,500 MW NQC by all CPUC jurisdictional LSEs.[18]

17 CPUC. November 2019. "D.19-11-016 Decision Requiring Electric System Reliability Procurement for 2021-2023," https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M319/K825/319825388.PDF.

18 CPUC. June 2021. "D.21-06-035 Decision Requiring Procurement to Address Mid-Term Reliability (2023-2026)," https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M389/K603/389603637.PDF.

- On February 28, 2023, the CPUC ordered, in D.23-02-040, supplemental mid-term reliability procurement totaling 4,000 MW of NQC, in addition to the 11,500 MW ordered previously in D.21-06-035.[19]

LSEs procure these resources, which the CPUC monitors for progress and compliance, taking appropriate regulatory actions, such as enforcement, if needed.

## Busbar Mapping

A busbar is a metallic strip or bar, typically housed inside switchgear and panel boards for high-current power distribution and is also used to connect high-voltage equipment at electrical switchyards and low-voltage equipment in battery banks. Busbars work as an electrical connection point where electrical currents move in and out, helping to distribute power to meet electricity demand.

Resource-to-busbar mapping ("busbar mapping") is a joint process among the CEC, CPUC, and California ISO that refines the geographically coarse portfolios produced in the CPUC's IRP process into plausible network modeling locations for transmission analysis by the California ISO in its annual TPP.

In the busbar mapping process, the CPUC identifies resource areas and substation locations for future resource needs, while the California ISO provides relevant and updated transmission information. The CEC provides land-use and environmental assessments of the areas that contain technical resource potential, including utility-scale solar, onshore wind, geothermal, and pumped storage hydroelectric resources located near busbars (interconnection points or substations).[20] These assessments estimate the total acreage of high biological resources, cropland value, natural intact lands, and other important environmental and land-use factors.[21]

The CPUC then applies criteria to determine the allocation of resources to busbars, including criteria related to environmental and land-use factors and transmission system capacity, and identifies any issues with the resource allocation or environmental and land-use criteria.

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19 CPUC. February 2023. "D.23-02-040 Decision Ordering Supplemental Mid-Term Reliability Procurement (2026-2027) and Transmitting Electric Resource Portfolios to California Independent System Operator for 2023-2024 Transmission Planning Process," https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M502/K956/502956567.PDF.

20 In this context, *resource technical potential areas* refer to areas that could contain utility-scale new generating resources, given technoeconomic, topographic, environmental, and land-use constraints.

21 Hossainzadeh, Saffia, Erica Brand, Travis David, and Gabriel Blossom. September 2023. *Land-Use Screens for Electric System Planning: Using Geographic Information Systems to Model Opportunities and Constraints for Renewable Resource Technical Potential in California.* California Energy Commission. Publication Number: CEC-700-2022-006-F-REV, https://www.energy.ca.gov/data-reports/california-energy-planning-library/land-use-screens.

The busbar mapping effort follows the sequence of steps and information transfers among the CEC, CPUC, and California ISO described below:[22]

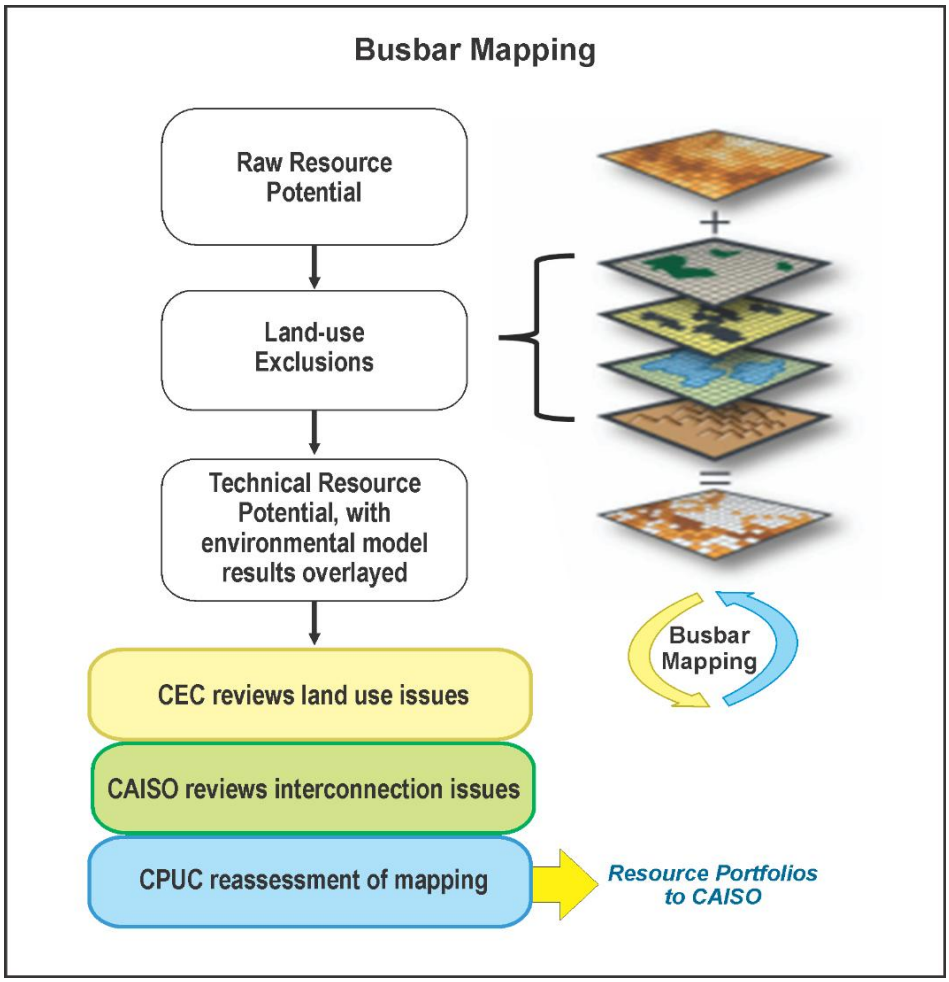
- Step 1 — The CPUC generates draft resource portfolio(s) and shares them with the CEC and California ISO.
- Step 2 — The CPUC leads the pre-mapping effort, identifying potential substations and potential transmission upgrades for mapping analysis based on capacity expansion modeling results.
- Step 3 — The CEC and California ISO provide analysis and information necessary for mapping and criteria analysis.
    - Step 3a — Detailed transmission and substation interconnection information is analyzed and provided by the California ISO and the PTOs for transmission and interconnection related criteria.
    - Step 3b — Land-use and other environmental screens are analyzed and provided by the CEC for use in land-use and environmental-related criteria.
- Step 4 — Using the criteria information provided by the California ISO (Step 3a) and CEC (Step 3b), the CPUC maps the portfolio resources to busbars and conducts criteria alignment analysis.
- Step 5 — California ISO and CEC staff review, provide guidance, and make recommendations on potential improvements or mapping adjustments.
    - Step 5a — California ISO reviews the mapping results and provides specific guidance and recommendations on transmission and interconnection related concerns.
    - Step 5b — The CEC reviews the mapping results and provides specific guidance and recommendations on land-use related concerns.
- Step 6 — The CPUC reviews California ISO and CEC feedback and the mapped resources criteria alignment to determine if additional adjustments are necessary. If changes are needed to improve criteria alignment, the CPUC begins a new round of mapping at Step 4 or, if additional information is required, Step 2.
- Step 7 — CPUC formally transmits mapped IRP portfolio(s) to the California ISO.

22 CPUC Energy Division. September 2024. *Methodology for Resource-to-Busbar Mapping for the Annual TPP*. The most recent CPUC busbar mapping methodology is available at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2024-2026-irp-cycle-events-and-materials/assumptions-for-the-2025-2026-tpp/mapping_methodology_vruling_2024-09-06.pdf.

Throughout the above steps, stakeholders are provided multiple opportunities to provide input into the busbar mapping process, as detailed in the CPUC's busbar mapping methodology.[23]

The busbar mapping approach is shown in **Figure 2-3.**

**Figure 2-3: Busbar Mapping**




Source: CEC, 2024

The land-use screening is updated regularly to better understand implications of mapped areas with resource potential by incorporating additional statewide environmental information. Since 2018, the CEC and CPUC have enhanced the methods and data used in this process, including expanding the area and number of candidate substations analyzed and broadening the resource types evaluated.

23 Ibid.

## California Independent System Operator's Transmission Planning Process

The California ISO, which is regulated by FERC, manages the flow of electricity across high-voltage, long-distance power lines for the grid serving 80 percent of California and a small portion of Nevada. It also operates a wholesale power market that matches buyers and sellers of a diverse set of electricity resources in an open, nondiscriminatory setting. The California ISO is also responsible for transmission infrastructure planning for its region.

The California ISO's TPP is set out in Section 24 of the California ISO's FERC-approved tariff, which requires the California ISO to develop a comprehensive transmission plan.[24] The core product of the TPP is an annual transmission plan adopted by the California ISO Board of Governors. The plan is designed to maintain system reliability in a manner consistent with state and federal policy directives. The California ISO's transmission planning process adheres to reliability standards set by the Western Electricity Coordinating Council (WECC)[25] and the North American Electric Reliability Corporation (NERC).[26]

The California ISO supports transmission development by identifying investments in new transmission lines and system upgrades through the TPP. The California ISO's annual TPP develops a comprehensive plan designed to assess the need for new transmission based on reliability, economic, and policy considerations. The TPP aims to reduce congestion costs, production supply costs, transmission losses, or other electric supply costs through improved access to cost-effective resources. The TPP considers non-transmission alternatives such as energy storage resources and the use of grid-enhancing technologies.

The annual transmission plan identifies the transmission facilities needed to strengthen and build out the transmission system, including new transmission lines, upgrades to existing lines, and new substations. The California ISO Board of Governors approves the California ISO's annual transmission plan.

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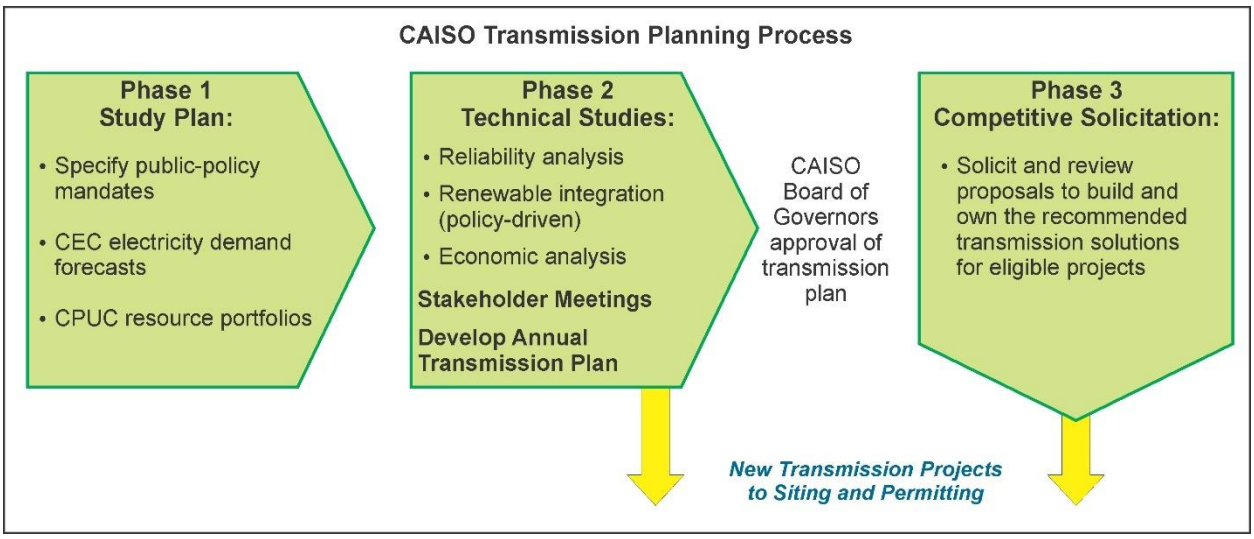
24 California ISO. "Conformed fifth replacement California ISO Tariff - Section 24," https://www.caiso.com/library/conformed-fifth-replacement-california-iso-tariff-section-24.

25 The *Western Electricity Coordinating Council (WECC)* is the regional entity responsible for ensuring a reliable bulk power system in the geographic area known as the Western Interconnection. The WECC region contains 14 western U.S. states; the provinces of Alberta and British Columbia, Canada; and the northern portion of Baja California, Mexico. More information is available at https://www.wecc.org/Pages/home.aspx.

26 NERC is a nonprofit organization designated as the Electric Reliability Organization (ERO) for North America that develops and enforces reliability standards for the bulk transmission system.

The annual planning process is structured in three consecutive phases, as follows and as shown in **Figure 2-4.**

**Figure 2-4: California ISO Transmission Planning Process**




Source: CEC/Aspen, 2025

**Phase 1** includes establishing the assumptions and models for use in the planning studies, developing and finalizing a study plan, and specifying the public policy mandates that California ISO will adopt as objectives in the current cycle.

**Phase 2** involves the California ISO performing studies to identify solutions to meet the various needs that culminate in the annual comprehensive transmission plan. This phase takes about 12 months and ends with California ISO Board approval of the transmission plan.

- **Reliability-driven needs:** The California ISO identifies needed reliability solutions to ensure transmission system performance complies with all NERC standards and WECC regional reliability criteria, as well as the California ISO's own transmission planning standards.
- **Policy-driven needs:** Public policy-driven transmission solutions are those needed to enable the grid infrastructure to support local, state, and federal directives. In recent transmission planning cycles, the focus of public policy analysis has been predominantly on planning to ensure achievement of California's clean energy goals.
- **Economic-driven needs:** Economic-driven solutions are those that provide net economic benefits to consumers as determined by California ISO studies, which include a production simulation analysis. Typical economic benefits include reductions in congestion costs and transmission line losses, and access to lower-cost resources for supplying energy and capacity.

- **Consideration of Interregional Transmission Solutions:** A final step in developing recommendations in each year's transmission plan is the consideration of potential interregional transmission solutions through a biennial process in place with the California ISO's neighboring planning regions, WestConnect and Northern Grid, following each entity's coordinated processes established under FERC Order Number 1000.[27]

**Phase 3** includes the competitive solicitation for prospective developers to build and own new regional transmission facilities identified in the Board-approved plan. In any given planning cycle, Phase 3 may not be needed, depending on whether the final plan includes regional transmission facilities that are open to competitive solicitation in accordance with criteria specified in the California ISO tariff.

The activities in the coordinated transmission planning process are shown in **Table 2-1**.

**Table 2-1: Transmission Planning Process**

| Agency | Process |
|---|---|
| | **CEC Integrated Energy Policy Report (IEPR)** |
| **CEC** | IEPR Electricity Demand Forecast & Adoption |
| | **CPUC Integrated Resource Planning (IRP) Process** |
| **CPUC** | Portfolio Creation, Capacity Expansion Modeling & Busbar Mapping Methodology Updates |
| **CPUC, CEC and CAISO** | Initial and Final Busbar Mapping Prep & Execution |
| **CPUC** | Production Cost Modeling |
| **CPUC** | IRP Decision & Transmit Resource Portfolio to CAISO |
| | **CAISO Transmission Planning Process (TPP)** |
| **CAISO** | Phase 1: Develop Study Plan |
| **CAISO** | Phase 2: Technical Studies and Develop and Approve Annual Transmission Plan |
| **CAISO** | Phase 3: Competitive Solicitation for Eligible Projects |

Source: CEC/Aspen, 2025

The most recent California ISO transmission plans demonstrate the need for transmission project development to support California's clean energy transition:

27 FERC Order 1000 establishes regional transmission planning and cost allocation requirements.

- The 2022–2023 TPP resource portfolio transmitted by the CPUC to the California ISO included 40 GW of new resource development in the next 10 years, which resulted in the identified need and approval of 45 transmission projects.[28]
- The 2023–2024 TPP resource portfolio transmitted by the CPUC to the California ISO included an additional 85 GW of installed capacity, beyond its baseline of resources and those contracted for and under development by 2035. This additional installed capacity resulted in the identified need for 26 transmission projects, of which 19 were reliability projects and seven were policy projects.[29]

### Interregional Coordination

The California ISO has relied on FERC policy supporting negotiated transmission arrangements to develop transmission solutions where the interregional transmission planning process established by FERC Order 1000 may not be a viable path forward. For example, the California ISO engaged in a project development agreement with Great Basin Transmission to develop the Southwest Intertie Project – North project, supporting delivery of Idaho wind to California.

The California ISO also developed a novel subscriber participating transmission owner model supporting the SunZia and TransWest Express transmission projects for delivery of wind to California from New Mexico and Wyoming. The subscriber participating transmission owner model enables new transmission lines outside the California ISO balancing area to connect generation to the California grid, placing the transmission facilities under California ISO operational control.

## Long-Term Transmission Planning

The California ISO 20-Year Transmission Outlook provides a long-term conceptual plan of the transmission grid to reliably serve the load and interconnect resources, consistent with the CEC and CPUC inputs, to meet the state's GHG emissions reduction and clean energy policies. The 20-Year Transmission Outlook establishes a longer-term direction and strategy for grid infrastructure, providing a blueprint of infrastructure that may be needed to support state policy goals. The 20-Year Transmission Outlook also provides context for nearer-term decisions and helps to inform resource planning decisions going

28 California ISO. May 2023. "CAISO 2022-2023 Transmission Plan approved." News release, https://www.caiso.com/Documents/caiso-2022-2023-transmission-plan-approved.pdf.

29 California ISO. May 2024. *2023-2024 Transmission Plan*, https://www.caiso.com/documents/iso-board-approved-2023-2024-transmission-plan.pdf.

forward. The California ISO released its first 20-Year Transmission Outlook in May 2022 and an updated 20-Year Transmission Outlook in July 2024.[30]

The CEC, CPUC, and California ISO work closely to develop long-term demand forecasts (or scenarios) and resource portfolios used in the 20-Year Transmission Outlook. Unlike the TPP, the CPUC's role in the 20-Year Transmission Outlook is not established by statute, and the CPUC does not conduct a formal proceeding. Developing the long-term resource portfolios is less formal and more open-structured compared to the CPUC's IRP process and the annual development of resource portfolios for use in the California ISO's TPP.

The *2022 20-Year Transmission Outlook* identified a resource portfolio of 120 GW of new resources by 2040, while the *2024 20-Year Transmission Outlook Update* included a resource portfolio of 165 GW of new resources by 2045. The resources in the portfolios are composed mostly of a combination of utility-scale and distributed solar, battery and long-duration energy storage, in-state and out-of-state land-based wind, offshore wind, and geothermal. Compared to the 2022 outlook, the 2024 update assumed that transmission would be needed to accommodate relatively modest in-state requirements for on-land resources, relatively consistent requirements for transmission to access out-of-state resources, and substantial new requirements to access North Coast offshore wind.

SB 100 provides an informational policy context for long-term transmission and resource planning in California. The CEC, CPUC, and California Air Resources Board (CARB) issue a joint policy report on achieving SB 100 goals every four years. The first *2021 Joint Agency SB 100 Report* was released in March 2021 and assessed various hypothetical future scenarios to assess ways to achieve SB 100 clean energy goals reliably, affordably, and equitably, including an initial assessment of costs and benefits of these scenarios.[31] The report included results from capacity expansion modeling. Effectively integrating 100 percent renewable and zero-carbon technologies by 2045 requires developing informational studies, conducting rigorous analysis, and coordinating planning across the agencies.

## CEC Long-Term Transmission Corridor Assessments

The intent of corridor planning is to provide a bridge between transmission planning and permitting by assessing transmission corridors earlier in transmission development.

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30 California ISO. May 2022. *2022 California ISO 20-Year Transmission Outlook*, https://stakeholdercenter.caiso.com/InitiativeDocuments/20-YearTransmissionOutlook-May2022.pdf.

California ISO. July 2024. *2024 California ISO 20-Year Transmission Outlook*, https://www.caiso.com/documents/2024-20-year-transmission-outlook-jul-31-2024.pdf.

31 CEC, CPUC, and CARB. 2021. "2021 SB 100 Joint Agency Report Achieving 100 Percent Clean Electricity in California: An Initial Assessment." Publication Number: CEC-200-2021-001. https://www.energy.ca.gov/sb100.

Corridor planning also potentially creates a smoother path from planning and project identification to permitting, environmental review, and construction. Senate Bill 2431 (Garamendi, Chapter 1457, Statutes of 1988) enacted state transmission siting policies, known as the Garamendi Principles, that encourage the efficient use of the transmission system and rights-of-way (ROW).[32] The CEC has implemented the Garamendi Principles in landscape-level transmission corridor planning efforts over the years, including the first and second Renewable Energy Transmission Initiative (RETI) processes,[33] the Imperial Valley Study Group,[34] the Desert Renewable Energy Conservation Plan (DRECP),[35] and the stakeholder-led San Joaquin Valley Identification of Least-Conflict Lands study.[36]

The primary goal of the CEC's transmission corridor assessments is to evaluate environmental and permitting issues associated with transmission corridors, routes, or ROWs to support the efficient and timely development of needed transmission infrastructure. Corridor assessments help identify important locations that are more suitable for transmission development, avoid and mitigate potential environmental impacts, and protect sensitive resources, habitats, and lands. Corridor evaluations also promote early and transparent stakeholder and tribal engagement, so interested parties can have more meaningful input and help shape appropriate transmission corridors. The CEC has two important tools to support its corridor planning responsibilities — the strategic transmission investment plan and transmission corridor designation authority.

## CEC Strategic Transmission Investment Plan

Senate Bill 1565 (Bowen, Chapter 692, Statutes of 2004) directs the CEC, in consultation with the CPUC, the California ISO, transmission owners, users, and consumers, to adopt a Strategic Transmission Investment Plan for the state's electric

32 The Garamendi Principles include upgrading existing transmission facilities within current rights-of-way when technically and economically feasible; expanding existing rights-of-way for new lines when feasible; creating new rights-of-way when justified by environmental, technical, or economic factors as determined by the licensing agency; coordinating among utilities to efficiently use new transmission capacity, emphasizing system efficiency and environmental performance.

33 California Natural Resources Agency (CNRA), CEC, CPUC, Bureau of Land Management (BLM), and California ISO. February 2017. *Renewable Energy Transmission Initiative 2.0 Final Report.* TN 216198, https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://efiling.energy.ca.gov/getdocument.aspx%3Ftn%3D216198&ved=2ahUKEwia9Na5lJSMAxXbGzQIHQUxNaMQFnoECBgQAQ&usg=AOvVaw0yCp37A7k2jEULZzZmZa3g.

34 More information on the Imperial Valley Study Group is available at https://ceert.org/wp-content/uploads/PDFs/reports/2005-09-30_IVSG_REPORT.pdf.

35 CEC. "Desert Renewable Energy Conservation Plan," https://www.energy.ca.gov/programs-and-topics/programs/desert-renewable-energy-conservation-plan.

36 More information on the San Joaquin Valley Identification of Least Conflict Lands Study is available at https://sjvp.databasin.org/pages/least-conflict.

transmission grid as part of the IEPR.[37] The strategic plan identifies and recommends actions to promote transmission infrastructure investments needed to ensure reliability, relieve congestion, and meet future growth in load and generation, including renewable resources, energy efficiency, and other demand-reduction measures.

## CEC Corridor Designation Authority

Senate Bill 1059 (Escutia and Morrow, Chapter 638, Statutes of 2006) authorizes the CEC to designate suitable transmission corridor zones for high-voltage electric transmission lines to ensure reliable and efficient electricity delivery.[38] It requires the CEC, as lead agency under CEQA, to prepare environmental documents to ensure that the use of a corridor for a transmission line would not result in significant unmitigated environmental impacts. The CEC must work with cities, counties, state and federal agencies, and California Native American tribes to identify and designate transmission corridor zones on its own motion or by application of a transmission developer.

The designation of a transmission corridor zone identifies a feasible corridor where one or more electric transmission lines can be built, consistent with the state's needs and objectives as set forth in the CEC's Strategic Transmission Investment Plan. It also requires cities and counties to consider designated corridor zones when making land-use decisions that could affect corridor viability. An entity planning to construct a high-voltage electric transmission line may submit an application to designate a proposed transmission corridor zone.

## Transmission Corridor Planning

Landscape-scale planning efforts in California have proven successful in guiding responsible energy infrastructure development and will continue to be an important tool to help meet the state's climate reduction goals and renewable energy mandates. A landscape-scale approach considers a wide range of potential constraints and conflicts, including but not limited to environmental sensitivities, habitats, existing land uses, tribal cultural resources, agricultural areas, transmission corridors, and military operating areas. By locating renewable projects in preferred areas near existing transmission infrastructure, potential environmental impacts, permitting costs, and timelines can be reduced, resulting in better and more timely projects.

Over the past several years, the CEC has worked with local, state, and federal agencies, Native American tribes, and many other interested parties in a variety of landscape-level planning efforts. Landscape-scale planning uses environmental and land-use spatial data to identify and prioritize suitable locations for renewable energy development and new or expanded transmission lines throughout the state.

37 Public Resources Code Section 25324.

38 Public Resources Code Section 25331.

In May 2014, the CEC developed a high-level assessment of the environmental feasibility of a number of onshore and offshore transmission corridor alternatives under consideration by the California ISO in response to the premature closure of the San Onofre Nuclear Generating Station in June 2013.[39] At the time, the CEC evaluated the likely siting constraints that could be encountered during the environmental permitting process for each potential alternative.

In 2023–2024, the CEC conducted extensive planning for offshore wind transmission as part of the *Assembly Bill 525 Offshore Wind Energy Strategic Plan.*[40] This planning included a high-level corridor assessment to provide preliminary information and rankings of land-use and environmental constraints associated with alternative transmission corridors to access offshore wind resources from the Humboldt area.[41] This high-level evaluation provided supplemental information for the California ISO, potential project developers, and interested parties on permitting challenges that may be faced in developing transmission infrastructure identified in the TPP.

39 *Transmission Options and Potential Corridor Designations in Southern California in Response to Closure of San Onofre Nuclear Generating Station (SONGS).* May 2014. CEC 700-2014-002. Available at https://ia.cpuc.ca.gov/environment/info/ene/mesa/Docs/A1503003%20ED-SCE-03%20Q.01.a%20Attachment-CEC-700-2014-002%20(Part%201).pdf.

40 Jones, Melissa, Jim Bartridge, and Lorelei Walker. 2024. *Assembly Bill 525 Offshore Wind Energy Strategic Plan.* California Energy Commission. Publication Number: CEC-700-2023- 009-V2-CMF, https://efiling.energy.ca.gov/GetDocument.aspx?tn=257700&DocumentContentId=93596.

41 CEC. May 2024. *Transmission Corridor Evaluation: Humboldt Wind Energy Area.* Prepared by Aspen Environmental Group, https://efiling.energy.ca.gov/GetDocument.aspx?tn=256193.

# CHAPTER 3:
# Federal and Regional Transmission Planning

California is part of a larger integrated electricity system in the western United States called the Western Interconnection, which includes all or parts of 14 western states as well as Alberta, British Columbia, and Baja California.[42] Electric utilities in the Western Interconnection are electrically tied together and operate at a synchronized frequency. This chapter describes federal agencies and regional entities engaged in transmission planning activities in the West. Most of these planning activities primarily inform federal and Western regional decision-makers, utilities, and stakeholders and do not directly lead to the approval of any particular transmission project. These planning activities are described in the following chapter.

## Federal Energy Regulatory Commission

As noted in the previous chapter, several state transmission projects are approved through the FERC-authorized transmission planning process conducted by the California ISO, in coordination with the CEC and CPUC. The FERC is an independent agency of the U.S. government that regulates various aspects of the energy sector, including interstate transmission and wholesale electricity markets under the Natural Gas Act, the Federal Power Act (FPA), and the Interstate Commerce Act. Under the FPA, FERC regulates the transmission of electric energy in interstate commerce and the sale of electric energy at wholesale in interstate commerce. The California ISO is regulated by FERC and operates under the terms and conditions of a FERC-approved tariff. The FERC, along with the NERC, have responsibilities to approve and enforce reliability standards to ensure reliability of the bulk transmission system. NERC is the FERC-certified electric reliability organization responsible for the reliability of the bulk power system.

### FERC Order 1920 – Long-term Transmission Planning

On May 24, 2024, FERC issued Order 1920, which directs transmission providers to adopt reforms to improve long-term assessments of transmission needs and adequately prepare for the future of the electric grid.[43] FERC Order 1920 builds upon FERC's existing regional transmission planning and cost-allocation requirements set forth in

42 The Western Interconnection is the geographic area containing the synchronously operated electric grid in the western part of North America, which includes parts of Montana, Nebraska, New Mexico, South Dakota, Texas, Wyoming and Mexico and all of Arizona, California, Colorado, Idaho, Nevada, Oregon, Utah, Washington and the Canadian provinces of British Columbia and Alberta.

43 FERC. "Building for the Future Through Electric Regional Transmission Planning and Cost Allocation." Fact sheet, https://www.ferc.gov/news-events/news/fact-sheet-building-future-through-electric-regional-transmission-planning-and.

Order 888, Order 890, and Order 1000. FERC Order 1920 adopts specific requirements for how transmission providers must conduct long-term planning for regional transmission facilities and allocate costs of transmission in regional footprints. Notably, FERC Order 1920 requires transmission providers in each transmission planning region to conduct and periodically update long-term transmission planning over a 20-year planning horizon to anticipate future needs.

On November 21, 2024, FERC issued Order 1920-A, which builds upon Order 1920 by enhancing the role of state regulators in long-term regional transmission planning, particularly their role in shaping scenario development and regional cost-allocation rules.

## Department of Energy Grid Deployment Office

The U.S. Department of Energy's Grid Deployment Office (GDO) was founded in 2022 to catalyze the development of new and upgraded electric infrastructure across the country. It maintains and invests in critical generation facilities, develops and upgrades high-capacity electric transmission lines nationwide, and deploys transmission and distribution technologies. GDO acts as a partner with states, tribes, territories, industry, communities, and other energy sector stakeholders to deploy solutions to lower energy costs and improve grid reliability and resilience. GDO oversees more than $22 billion in funding, including investments from the Infrastructure Investment and Jobs Act (IIJA)[44] and the Inflation Reduction Act of 2022 (IRA).[45]

### National Interest Energy Transmission Corridors

To expedite and streamline processes for building and expanding electric transmission, which can often take several years, especially if a project extends through multiple states and regions, the FPA authorized the establishment of National Interest Electric Transmission Corridors (NIETC). The Federal Power Act authorizes the secretary of the U.S. Department of Energy (DOE) to designate any geographic area as a NIETC under certain findings. For example, the Secretary of Energy may find that consumers are harmed by a lack of transmission in the area or that the development of new transmission would advance important national interests, such as increased reliability and reduced consumer costs. There are no NIETC designations in California.

NIETC designations are based on findings from a DOE National Transmission Needs Study, which also serves as DOE's triennial state-of-the-grid report and fulfills a Congressional requirement to conduct assessments of national electric transmission capacity constraints and congestion at least once every three years. In designating a

44 Government Finance Officers Association of the United States and Canada. "Infrastructure Investment and Jobs Act (IIJA) Implementation Resources," https://www.gfoa.org/the-infrastructure-investment-and-jobs-act-iija-was.

45 U.S. Department of Energy (DOE). "Inflation Reduction Act of 2022," https://www.energy.gov/lpo/inflation-reduction-act-2022.

NIETC, the DOE also uses critical public input, from early collaboration with affected states, tribes, local communities, industry, and stakeholders. The DOE uses relevant information and recommendations on transmission capacity constraints or congestion that can harm consumers, currently or in the future. In addition, DOE uses information regarding ongoing permitting, siting, or regulatory roadblocks to transmission development in affected areas, as well as whether one or more transmission projects are under development.

Once a NIETC is designated, transmission developers can access federal financing tools for NIETC projects. These financing tools include access to public-private partnerships through the Transmission Facilitation Program under the IIJA and the Transmission Facility Financing Program under the IRA. Transmission developers in NIETCs may also access federal siting tools, discussed in **Chapter 4** on transmission permitting.[46]

## National Transmission Needs Study

On October 30, 2023, the DOE released its National Transmission Needs Study, which fulfills a Congressional requirement to conduct assessments of national electric transmission capacity constraints and congestion at least once every three years.[47] This study assesses existing data and current and near-term future transmission needs through 2040. It relies on publicly available information and recently published reports that consider historical and potential future transmission needs given a range of electricity demand, public policy, and market conditions. This study does not displace existing planning processes, such as the California ISO TPP, and does not identify specific transmission solutions to address identified needs. Instead, it identifies key national needs that can inform broader investments and planning decisions.

## National Transmission Planning Study

On October 3, 2024, the DOE released its National Transmission Planning Study, developed in partnership with the National Renewable Energy Laboratory (NREL) and the Pacific Northwest National Laboratory (PNNL).[48] This study evaluates the scope of interregional transmission needed to ensure the nation's electric transmission system continues to reliably serve electric customers as the power sector continues to evolve and transition to cleaner resources. The study evaluates several scenarios with varying electricity demand, carbon emissions targets, and transmission technologies and

46 However, a NIETC designation does not constitute selection of, or preference for, a specific transmission project for financing purposes.

47 DOE. October 2023. *National Transmission Needs Study*, https://www.energy.gov/sites/default/files/2023-12/National%20Transmission%20Needs%20Study%20-%20Final_2023.12.1.pdf.

48 DOE, NREL, and PNNL. October 2024. *National Transmission Planning Study*, https://www.nrel.gov/grid/national-transmission-planning-study.html.

identifies potentially beneficial opportunities for transmission capacity expansion between regions that provide benefits across many scenarios.

### Other Special DOE Transmission Studies

The DOE periodically conducts special studies on transmission needs and issues. For example, DOE contracted with PNNL, in collaboration with NREL, to conduct the *West Coast Offshore Wind Transmission Study*.[49] This study developed and coordinated an integrated plan for West Coast offshore wind transmission planning and development. One of the key inputs was the CEC-contracted Schatz Center Study on transmission in Northern California and Southern Oregon.[50] The study identified pathways that enable onshore and offshore transmission access to offshore wind development from 2035 to 2050. The study developed an approach for the Western Interconnection that integrated long-term offshore wind deployment along the West Coast with further deployment of clean energy resources, while considering near-term needs. This study was released January 16, 2025.

## Bureau of Land Management Corridor and Rights-of-Way Planning

The United States Department of the Interior (DOI), Bureau of Land Management (BLM), conducts transmission corridor planning for more than 245 million acres of public lands that it manages nationwide. The BLM's management is based on the principles of multiple use and sustained yield, mandated by the Federal Land Policy and Management Act of 1976 (FLPMA). FLPMA requires the BLM to manage those lands through land-use plans that establish goals and objectives for resource management in a given planning area, and identify where appropriate uses are allowable, restricted, or prohibited.

Given the importance of future energy resources and infrastructure on public lands, Section 368 of the Energy Policy Act of 2005 (EPAct, 42 U.S.C. Section 15926) directed five federal agencies (the Departments of Agriculture, Interior, Defense, Energy, and Commerce) to:[51]

- Designate energy corridors on federal lands in 11 western states.[52]

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49 PNNL and NREL. January 2025. *West Coast Offshore Wind Transmission Study*, https://www.osti.gov/servlets/purl/2500279/.

50 Aspen Environmental Group. May 2024. *Transmission Corridor Evaluation*, https://efiling.energy.ca.gov/GetDocument.aspx?tn=257784.

51 Section 368 energy corridors are intended for long-distance movement of oil, gas, and hydrogen by pipeline, and transmission and distribution of high-voltage electric power.

52 The 11 western states are Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

- Establish procedures to ensure that additional corridors are identified and designated as necessary.
- Expedite applications to construct or modify oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities.

To designate Section 368 corridors, federal agencies completed a Programmatic Environmental Impact Statement (PEIS) in 2008 to:[53]

- Examine the energy infrastructure status and issues in the western United States.
- Identify westwide corridors for the preferred location of future oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on federal lands.
- Programmatically assess the potential positive and negative environmental, social, and economic effects of designating and developing the identified energy corridors.
- Incorporate the designated corridors into federal land-use and resource management plans.

The Section 368 corridors are considered preferred locations for electric transmission and other energy transport projects. A default corridor width of 3,500 feet is typically selected to accommodate the construction and operation of multiple projects and provide flexibility within a corridor to avoid important resources that could be identified during project-specific analyses.[54] However, there are corridors and corridor segments that are wider or narrower than 3,500 ft, and Section 368 corridors are frequently designated over existing utility corridors that contain existing infrastructure.

In December 2005, the BLM designated the CEC as a cooperating agency. Thereafter, in coordination with DOE, BLM, and the U.S. Forest Service (USFS), the CEC established and coordinated the efforts of an interagency team of federal and state agencies to review proposals to designate new or expand existing energy corridors and examine alternatives on California's federal lands.

The federal agencies published a Final PEIS in November 2008. The BLM issued a Record of Decision in January 2009 to amend 92 land-use plans in 11 western states to designate about 5,000 miles of Section 368 corridors on land managed by the BLM. The

53 The DOE and BLM were the lead agencies in preparation of the PEIS. The U.S. Forest Service (USFS), U.S. Department of Defense (DOD), and U.S. Fish and Wildlife Service (USFWS) were cooperating federal agencies in preparation of the document.

54 BLM. *West-Wide Energy Corridor Guidebook*, https://www.blm.gov/sites/default/files/docs/2020-12/BLM_WestWideEnergyCorridor_Guidebook.pdf.

USFS also issued a Record of Decision in 2009 that designated about 1,000 miles of Section 368 corridors on lands managed by that agency.

In 2009, following legal challenges in federal court, a settlement agreement was reached. The BLM, together with the USFS and the DOE, established a regional review of the Section 368 energy corridors using new information and public input. A Section 368 Energy Corridors Regional Review Final Report was published in 2022 that identified potential revisions, deletions, and additions to the corridors, and provided recommendations for consideration in future land-use planning.[55]

The CEC provided comments to BLM in response to a Notice of Intent initiating public scoping for the Section 368 Energy Corridor Revisions and Preparation of Resource Management Plan Amendments and Associated Environmental Impact Statements that was released December 1, 2023.[56] In 2024, BLM initiated a NEPA analysis and proposed amendments to 19 BLM Resource Management Plans in seven states, including California.[57] This effort prioritizes recommendations for multistate corridors, rather than all the corridor recommendations identified in the Regional Review Final Report. The proposed amendments could modify existing allocations, designations, objectives, and management direction for the corridors. Proposed modifications to corridors in California (corridor 18-23, following U.S. Route 395, and corridor 27-41, following Interstate 40) continue to avoid potential impacts to historical resources and national scenic areas and preserves.

## Western Regional Reliability Planning

The FERC and the NERC oversee the planning and development of the bulk transmission system to ensure that it remains reliable and resilient. FERC is responsible for regulating the transmission of electricity across state lines and sets policy. NERC is a FERC-certified nonprofit organization designated as the Electric Reliability Organization (ERO) for North America that develops and enforces reliability standards for the bulk transmission system.[58] These standards include working with industry to develop technical standards for power system operation, monitoring and enforcing compliance with those standards, assessing resource adequacy, and providing educational and

55 BLM, USFS, and DOE. April 2022. *Regional Review Final Report,* https://corridoreis.anl.gov/regional-reviews/report/.

56 BLM. December 2023. "Notice of Intent To Amend Resource Management Plans for Section 368 Energy Corridor Revisions and Prepare an Associated Environmental Impact Statement," https://www.federalregister.gov/documents/2023/12/01/2023-26493/notice-of-intent-to-amend-resource-management-plans-for-section-368-energy-corridor-revisions-and.

57 Other states include Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming.

58 Established under the Energy Policy Act of 2005, an ERO is an organization that has been certified by the FERC to establish and enforce reliability standards for the U.S. bulk power system.

training resources.[59] NERC delegated some of its authority to create, monitor, and enforce reliability standards to the Western Electricity Coordinating Council (WECC).[60] WECC planning activities are discussed below.

## The Western Electricity Coordinating Council

The WECC is a regional entity authorized by a delegation agreement between NERC and WECC under Section 215 of the Federal Power Act (FPA).[61] NERC delegates designated powers, rights, and responsibilities to WECC regarding the administration of reliability standards, adopted or approved by NERC and FERC, within the Western Interconnection. WECC covers more than 1.8 million square miles, with members representing all segments of the electric industry within the Western Interconnection. The Western Interconnection provides electricity to 71 million people in 14 western states, two Canadian provinces, and portions of one Mexican state.

The WECC's mission is to maintain a reliable bulk electric power system in the Western Interconnection and ensure open and nondiscriminatory transmission access among its members. It also provides a forum for resolving transmission access disputes between members, consistent with FERC's policies. WECC collects data to carry out its mission and perform the following roles:

- Monitors and enforces compliance with reliability standards by users, owners, and operators of the bulk power system, as required by FERC.
- Acts as a credible source of interconnection-wide information and provides training, education, and information on key functions related to mandatory standards and compliance.
    - Provides data, data exchanges, analysis and studies relating to transmission system planning and renewable integration.
- Provides planning functions for transmission and integration of resources, and policy-related functions requested by members.
- Identifies reliability issues, creates an opportunity to discuss issues, and represents region wide issues and policies at the state and federal levels.

### Anchor Data Set

The WECC develops the Anchor Data Set (ADS) that is intended to be a compilation of load, resource, and transmission topology information used in regional transmission

59 NERC oversees six regional reliability entities and encompasses all the interconnection power systems of Canada and the United States, as well as a portion of Mexico and Baja California.

60 WECC has been approved by FERC as the Regional Entity for the Western Interconnection.

61 WECC was formed in 2002 by the merger of the Western Systems Coordinating Council (WSCC) and two regional transmission associations.

planning in the Western Interconnection. Data and assumptions included in the ADS are intended to be a common starting point compatible with production cost and power flow models. The data are expected to reflect applicable state and federal public policy requirements, such as renewable portfolio standards, Regional Haze Programs, and Mercury and Air Toxic Standards. The ADS reflects the western and international planning view of loads, resources and transmission topology for a 10-year planning horizon.[62]

WECC also established the Long-term Transmission Planning Task Force to make recommendations concerning aspects of long-term transmission planning for 20 years or more. The recommendations include defining a modeling approach, datasets, tools, and scenario development.

## The North American Electric Reliability Interregional Transfer Capability Study

The NERC has a long history of highlighting the need for more infrastructure, including transmission and pipelines, in its reliability assessments. NERC is conducting the Interregional Transfer Capability Study, in consultation with the six Regional Entities and neighboring transmitting utilities, to analyze the amount of power that can be moved or transferred reliably between interconnected transmission systems.[63] Transfer capability is a critical measure of the ability to address energy deficiencies by relying on distant resources and is a key component of a reliable and resilient bulk power system. Recent and continuing resource mix changes require greater access and deliverability of resources to maintain reliability — particularly during extreme weather and environmental conditions.

The study, which was directed in the Fiscal Responsibility Act of 2023, was filed with FERC on November 19, 2024.[64] A public comment period will take place when FERC publishes the study in the Federal Register. FERC must provide a report to Congress within 12 months of closure of the public comment period with recommendations for statutory changes.

62 The ADS consists of data developed by data submitters, defined as NERC registered entities (balancing authorities, transmission planners, and planning coordinators) in the United States and by other entities in Canada and Mexico.

63 NERC. November 2024. "North American Electric Reliability Corporation Interregional Transfer Capability Study as Directed in the Fiscal Responsibility Act of 2023," https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/ITCS_Filing_Fall2024_signed.pdf.

64 NERC. November 2024. *Interregional Transfer Capability Study (ITCS)*, https://www.nerc.com/pa/RAPA/Documents/ITCS_Final_Report.pdf.

## Other Regional Planning Activities

There are several regional planning entities, organizations, advisory bodies, and committees that include state regulators, utilities, planners, and stakeholders working together to enhance transmission planning processes and coordination across the broader west. The West is facing unprecedented load growth, more extreme weather events, aging infrastructure, wildfire risk, and a changing resource mix. Addressing these risks requires careful planning for additional transmission development, and in response, several organizations have initiated transmission studies and plans. These organizations coordinate planning activities but do not directly regulate the bulk transmission system or identify or approve specific transmission projects. The CEC, CPUC, and California ISO are members of, or work with, many of these organizations, which are discussed below.

### Western Interconnection Regional Advisory Body

The Western Interconnection Regional Advisory Body (WIRAB) serves as a regional advisory body with the authority to advise FERC, NERC, and WECC on matters pertaining to electric grid reliability in the Western Interconnection.[65] In 2006, ten western governors petitioned FERC, in accordance with Section 215(j) of the Federal Power Act (FPA), to create WIRAB. WIRAB advises FERC, NERC, and WECC on whether reliability standards proposed to apply within the region are just, reasonable, not unduly discriminatory or preferential, and in the public interest. WIRAB also reviews and advises on WECC governance and budgets.

WIRAB's membership is composed of all states and provinces with load served in the Western Interconnection. The FPA provides that, as a body organized on an interconnection wide basis, FERC may give deference to the advice of WIRAB. The organization attempts to achieve consensus of its members and speak with a single voice on reliability matters.

### Western Interstate Energy Board

The Western Interstate Energy Board (WIEB) is an organization of 11 Western States and two western Canadian Provinces that addresses numerous energy matters in the West, including transmission and reliability.[66] The legal basis of WIEB is in the Western Interstate Nuclear Compact (Public Law 91-461).[67] The governor of each state and the premier of each province appoints a member to the Board. The Compact provides for the President of the United States to appoint an ex-officio member to the Board. The Compact states that the Board is to provide the instruments and framework for

65 More information on the WIRAB is available at https://www.westernenergyboard.org/western-interconnection-regional-advisory-body/.

66 More information on the WIEB is available at https://www.westernenergyboard.org/.

67 More information on the Western Interstate Nuclear Compact is available at https://compacts.csg.org/compact/western-interstate-nuclear-compact/.

cooperative state efforts to enhance the economy of the West and contribute to the well-being of the region's people.

The WIEB seeks to achieve this purpose by promoting energy policy that is developed cooperatively among member states and provinces and with the federal government. Much of WIEB's work is conducted through two committees, the High-Level Radioactive Waste Committee that addresses nuclear waste transportation issues, and the Committee on Regional Electric Power Cooperation (CREPC), which addresses western electricity policy issues.[68]

The CREPC is a joint committee of WIEB and the Western Conference of Public Service Commissioners.[69] CREPC is composed of an energy office official and a regulatory utility commissioner from each of the Western states and Canadian provinces and focuses on electric power system policy issues that require regional cooperation. All state and provincial agency personnel, not just designated CREPC members, are invited and encouraged to participate in meetings and discussions.

## Committee on Regional Electric Power Cooperation Transmission Collaborative

The CREPC Transmission Collaborative (CREPC TC) is an informal working group that focuses on regional transmission issues.[70] The CREPC TC provides a forum for collaboration on transmission coordination and development by sharing viewpoints and information of Western states and provinces. As CREPC TC evolves and undertakes various projects, there are periodic open meetings and opportunities to receive input and feedback on the efforts underway. Initial work of the CREPC TC is focused on promoting state and provincial input into westwide transmission plans and exploring transmission cost-allocation frameworks.

In January 2024, the CREPC TC began leading region wide discussions on state requirements for FERC Order 1920. NorthernGrid and WestConnect members, as well as the California ISO, have initiated the State Engagement Processes to comply with this FERC order. The CREPC TC will help ensure that the states' perspectives are appropriately considered and that state engagement is substantive and collaborative.

68 The High-Level Radioactive Waste Committee, which consists of nuclear waste transportation experts from state energy, public safety, and environmental agencies, has been working with the U.S. Department of Energy to develop a safe and publicly acceptable system for transporting spent nuclear fuel and high-level radioactive waste under the Nuclear Waste Policy Act.

69 The Western Conference of Public Service Commissioners is a regional association within the National Association of Regulatory Utility Commissioners.

70 More information on the CREPC Transmission Collaborative is available at https://www.westernenergyboard.org/crepc-transmission-collaborative/.

### Western Power Pool

The Western Power Pool (WPP) is a group of utilities and other entities that coordinate and share resources in the Western Interconnection, including transmission planning and tariff administration. The WPP does not provide transmission services and is not a regional transmission operator. However, the WPP promotes coordinated electric operations across the Western Interconnection and helps regional utilities ensure adequate supply of electrical power for consumers. The WPP also collaborates with other regional entities, such as the WECC and the California ISO, to enhance the reliability and efficiency of the Western Interconnection.

In October 2023, the WPP launched the Western Transmission Expansion Coalition (WestTEC). WestTEC is a west wide effort to develop an actionable transmission study that supports the needs of the future energy grid and identifies benefits such as enhanced reliability and improved economic efficiency. The WPP includes regional partners representing a broad swath of industry sectors, states, and tribes. The final WestTEC deliverable will be a west wide transmission needs study looking out over 10- and 20-year periods. The 10-year planning study is expected in 2025, and the 20-year planning study is expected in 2027.

## Local Government Transmission Planning

Local governments do not have formal transmission planning processes. However, public utilities must obtain ministerial permits, such as building and encroachment permits, from local agencies; and several counties and cities have participated in various landscape-level land-use and transmission planning efforts, such as RETI and the DRECP, to help California identify potentially suitable areas for renewable project and transmission development.

# CHAPTER 4:
# Transmission Permitting

The CPUC has permit jurisdiction over the construction of electrical transmission lines (at or above 200 kilovolts [kV]), power lines (between 50 and 200 kV), distribution lines (under 50 kV), substations, and certain electric generation facilities. Issuance of permits by the CPUC for these projects is a discretionary action subject to the California Environmental Quality Act (CEQA). Projects that affect federal lands or receive federal funding are subject to the National Environmental Policy Act (NEPA). Projects affecting resources protected by other state and federal laws and regulations must also obtain permits from a variety of other state and federal agencies. The state and federal environmental review and permitting processes are discussed in this chapter.

## State Environmental Review and Permitting Process

California law specifically directs that the CPUC is responsible for approving construction of utility facilities, including transmission lines. California law also directs how the CPUC is to review and approve construction of utility facilities, including transmission lines. Public Utilities Code Section 1001 states (among other things) that no electric utility shall begin the construction of a line without having first obtained from the commission a certificate that the present or future public convenience and necessity require or will require such construction.

The Legislature further specifically instructed, in Public Utilities Code Section 1002, that the CPUC shall give consideration of the following factors, as a basis for granting any certificate under Section 1001:

- Community values
- Recreational and park areas
- Historical and aesthetic values
- Influence on the environment

Proposed transmission projects under the CPUC's jurisdiction apply to the CPUC for approval and environmental review.[71] The filing of an application for a Certificate of Public Convenience and Necessity (CPCN) or a Permit to Construct (PTC) begins two concurrent and parallel processes. A CPCN application is required for new transmission and certain upgrades to existing transmission facilities at 200 kilovolts (kV) and above

71 The CPUC does not have land-use authority over projects constructed by publicly owned utilities. Therefore, as local governments, they can act as CEQA lead agencies for transmission permitting purposes.

before construction may commence. A PTC application is required for new transmission and certain upgrades to existing transmission facilities between 50 kV and 200 kV before construction may commence. Certain projects involving transmission lines at greater than 200 kV may qualify for PTCs based upon details of the project.

The CPUC is the permitting lead agency and prepares an assessment of the environmental impacts of the project under CEQA. The assessment includes input from several state agencies, plus any cities, counties, or tribes that a proposed transmission project might impact. This process includes the preparation of an environmental impact report (EIR), Negative Declaration (ND), or Mitigated Negative Declaration (MND), which is relied upon by the CPUC in reviewing the project through a general proceeding. The process also includes coordination with federal agency counterparts, such as the BLM, as part of federal NEPA review.

A general proceeding for transmission project approval is the formal review process that considers how a project could potentially benefit or harm the public, including the potential effects on utility ratepayers. The CPUC's Rules of Practice and Procedure govern various aspects of the administrative processes and establish requirements for utility applications, including those related to electrical transmission infrastructure.[72] An assigned CPUC commissioner is responsible for the general proceeding, which may occur while the environmental review is underway. The environmental review of the project under CEQA informs the CPUC's decision whether to approve the project application.[73] Before or concurrent with issuing a decision granting a permit, the CPUC is required to certify the environmental review of a document under CEQA.

## California Environmental Quality Act

CEQA generally requires California state and local agencies (public agencies) to inform decision makers and the public about potential environmental impacts attributed to proposed projects and reduce those impacts to the extent feasible. Under CEQA, public agencies must not approve a project as proposed if there are feasible alternatives or available mitigation measures that are not part of the project proposal that would substantially lessen any significant environmental effects of a project. However, the CPUC can approve a project even with significant environmental impacts, usually after adopting a statement of overriding considerations that deems that project to be in the public interest.

Public Resources Code Section 21065 defines a *project* as the *whole of an action* subject to a public agency's discretionary funding or approval that has the potential to either cause a direct physical change in the environment or cause a reasonably

72 California Code of Regulations, Title 20, Division 1, Chapter 1. More information on CPUC Rules of Practice and Procedure is available at: https://www.cpuc.ca.gov/proceedings-and-rulemaking/rules-of-practice-and-procedure.

73 Public Resources Code Sections 21000 et seq.

foreseeable indirect physical change in the environment. Projects include a discretionary activity by a public agency, a private activity that receives any public funding, or activities that involve the public agency's issuance of a discretionary approval for projects that are not statutorily or categorically exempt from CEQA.

Projects can qualify for statutory exemptions under CEQA, or categorical exemptions under CEQA Guidelines. Statutory exemptions are created by the Legislature and include *ministerial projects* that involve government decisions involving little or no personal judgment by public agency officials and are determined by each public agency as part of its implementing regulations, or on a case-by-case basis. Categorical exemptions include a list of classes of projects that have been determined not to have a significant effect on the environment.

When an EIR is required for a project, the lead agency, in consultation with the project applicant, other agencies, and the public, must determine the scope of the EIR.[74] Subsequently, the lead agency prepares a draft EIR to evaluate environmental impacts and consider mitigation measures. A draft EIR must be released for public comment for at least 45 days but no more than 60 days, unless there are unusual circumstances. The final EIR reflects public comments and includes the lead agency's responses to comments regarding potentially significant environmental issues.

## CPUC Environmental Review

The CPUC's environmental review process under CEQA is completed in the following general steps:

- **Prefiling Consultation:** Prefiling consultation is a process for applicants to engage with the CPUC about upcoming projects that will require environmental review. During prefiling, applicants meet with the CPUC to discuss the upcoming application, including technical study requirements and required agency coordination. Preliminary project site visits may also occur, and draft application materials may be reviewed for feedback.
- **Application Submittal:** Applicants must submit detailed information in their CPCN and PTC applications regarding the proposed project description, as well as potential environmental impacts associated with the project.
- **Completeness Review:** The CPUC reviews the filed application for completeness to determine if it contains sufficient detail to understand what the project would entail and determine the level of CEQA documentation needed for the project.[75] Within 30 days of the filing date, the application must be deemed complete, or the utility must be notified of any deficiencies. Once deficiencies are

74 Other environmental documents including mitigated negative declarations and negative declarations can also be prepared, depending on the level of environmental impact of the proposed project.

75 Following Sections 15060 and 15101 of the CEQA Guidelines.

corrected, the CPUC sends a letter to the applicant deeming the application complete.

- **Selection of the Level of CEQA Documentation:** Once an application is deemed complete, the CPUC determines what level of CEQA documentation is required. An Initial Study (IS)-Negative Declaration (ND) could be prepared if there is no substantial evidence that the project may have a significant effect on the environment. A project may qualify for an Initial Study-Mitigated Negative Declaration (IS-MND) if revisions to the project can mitigate or reduce all significant impacts to less-than-significant levels. Otherwise, preparation of an EIR is required. When it is not clear whether CEQA requires an EIR or an MND, an IS may be prepared to determine which is appropriate. Alternatively, a lead agency may elect to proceed with the preparation of an EIR if the criteria for an MND are not met.
- **Negative Declaration (NDs) or Mitigated Negative Declarations (MNDs):** If preparation of an ND or MND is feasible, a draft document is circulated to the public for at least 20 days but typically for 30 days.[76] After the public comment period, the Administrative Final ND is entered into the record of the general proceeding. When the CPUC votes on the project overall, it also makes CEQA findings regarding whether to adopt the ND or MND.
- **Notice of Preparation (NOP) and Scoping Period for EIRs:** If it is determined that an EIR is required, the CPUC issues an NOP to request agency and public comment on the scope and content of the EIR and to notice the time and location of a scoping meeting for public participation. CPUC staff meets with other agencies and the public to gather input on the proposed project route and facility sites, as well as any alternatives to the proposed project. In addition, input is sought on issues, impacts, and mitigation measures. Public scoping meetings are typically held within 30 days of the issuance of the NOP, with scoping comments due 30 days after issuance of the NOP.
- **Draft EIR:** The CPUC prepares and issues the Draft EIR, which assesses the environmental impacts of the proposed project and alternatives, identifies mitigation measures for each significant impact, and identifies the environmentally superior alternative.
- **Comments on Draft EIR:** Interested persons may submit written comments on the Draft EIR within the public comment period.
- **Final EIR:** The Final EIR, which includes the Draft EIR and responses to public comments on the Draft EIR, is prepared and submitted into the formal record of the general proceeding. The Administrative Final EIR is entered into the record of

76 For an ND or MND, 30 days is required for projects of statewide significance.

the general proceeding. When the CPUC votes on the project overall, it also makes CEQA findings regarding whether to certify the EIR.

- **Native American Tribal Consultation:** Assembly Bill 52 (Gato, Chapter 532, Statutes of 2014) created a new class of resources — tribal cultural resources — for consideration under CEQA. Tribal cultural resources may include sites, features, places, cultural landscapes, sacred places, or objects with cultural value to California Native American tribes that are listed or determined to be eligible for listing in the California Register of Historical Resources. These resources can also include those listed in a local register of historical resources, or that are determined by the lead CEQA agency to be significant and eligible for listing on the California Register of Historical Resources. AB 52 requires that the lead CEQA agency consult with California Native American tribes that have requested consultation for projects that may affect tribal cultural resources.[77]

The CEQA process is typically done concurrently in a parallel process with the CPUC's general proceeding to permit transmission projects, as shown in **Figure 4-1**. The general proceeding is discussed in the following section.

## CPUC GO 131-E Transmission Review Process

The CPUC permits transmission projects in the California ISO balancing authority before construction can begin.[78] These projects include those approved by California ISO as part of its annual TPP, as well as projects proposed by a transmission owner to upgrade and maintain existing infrastructure, such as projects to ensure the reliability of electrical service provided to its customers.[79] The CPUC's General Order 131-E (GO 131-E) outlines rules for the permitting and construction of electrical transmission lines, power lines, distribution lines, substations, and electric generation facilities in California.

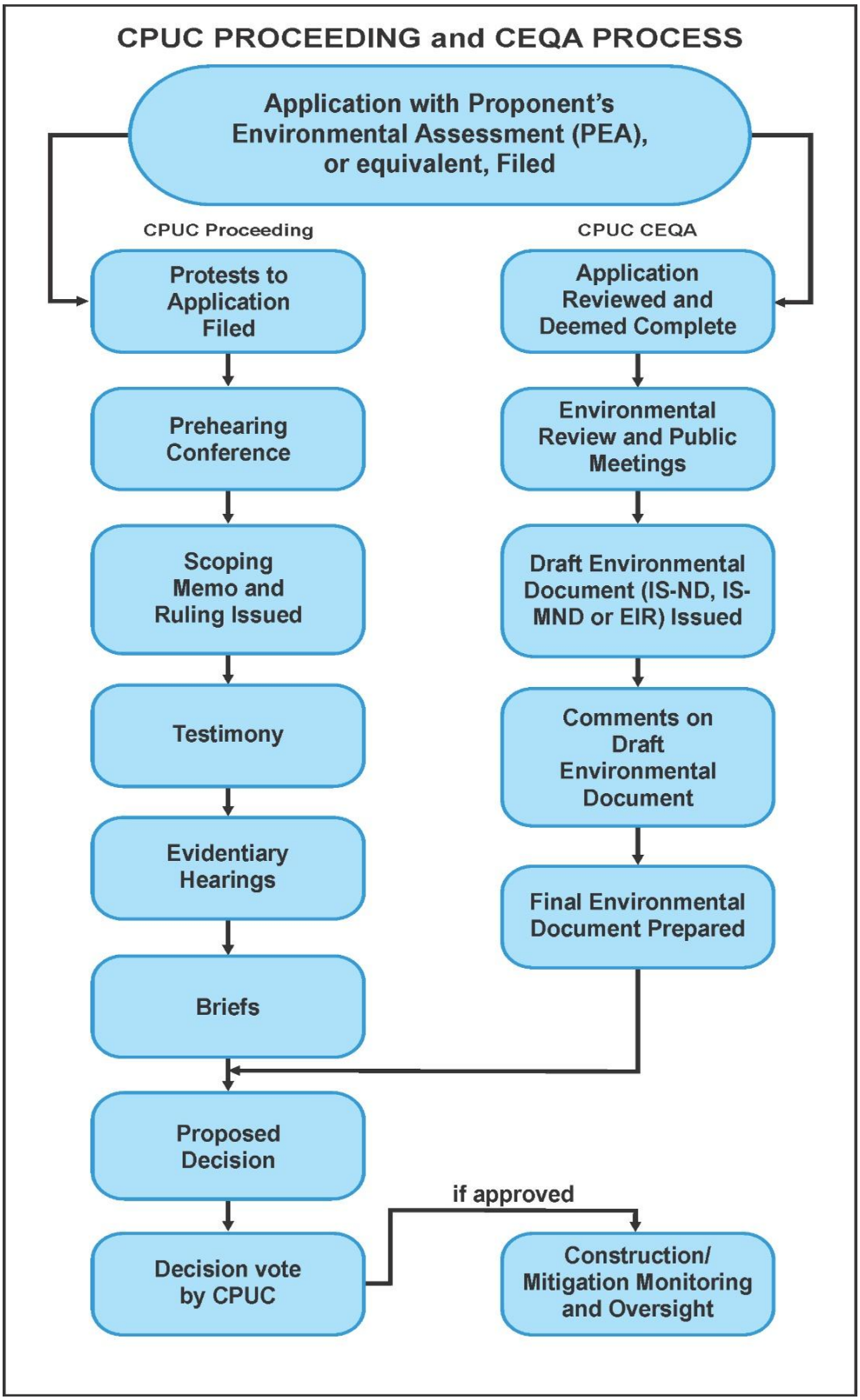
GO 131-E defines a *transmission line* as a line designed to operate at or above 200 kilovolts (kV) and a *power line* as a line designed to operate between 50 and 200 kV. A *distribution line* is defined as a line designed to operate under 50 kV and does not require a CPCN or PTC. GO 131-E also identifies several project types that are exempt from CPUC permits, including distribution lines.

77 The lead CEQA agency must begin consultation with participating Native American tribes before the release of a public draft negative declaration, mitigated negative declaration, or environmental impact report.

78 California Public Utilities Code Section 1001 prohibits construction without the electric utility obtaining a certificate from the CPUC certifying that "… present or future public convenience and necessity require or will require such construction."

79 Competitively solicited projects are not the only types of projects that go through the CPUC's permitting process. Utility transmission projects that may not go through the California ISO's TPP may also require permitting.

**Figure 4-1: CPUC Proceeding and CEQA Process**




Source: CEC/Aspen, 2025

GO 131-E contains detailed criteria for determining which permit is required based upon the details of the project. The CPUC reviews project cost for CPCN applications but does not review project cost for PTC applications. Typically, the environmental analysis and the review of the application for a CPCN or PTC are done concurrently.[80]

The CPUC's general proceeding process is completed in the following general steps following the CPUC's Rules of Practice and Procedure, the Public Utilities Code, and CPUC's General Orders:

- **Prehearing Conference:** The prehearing conference, the first open forum in the general proceeding, determines the potentially affected parties, ascertains specific project issues, and develops a preliminary filing and hearing schedule.
- **Scoping Memo:** After the conference, the assigned commissioner issues a scoping memo that lists the issues raised during the prehearing conference and a schedule for addressing these issues in the general proceeding.
- **Evidentiary Hearing (if needed):** An evidentiary hearing may be held if determined to be necessary. The evidentiary hearing is similar to a formal courtroom proceeding. Participants may present their case through testimony and evidence and may be subject to questioning from other participants. By registering as a formal participant to the proceeding, a party will receive copies of all filings, legal briefs, formal testimonies, and other documents related to the general proceeding.

When the general proceeding and the environmental review are complete, a proposed decision will be issued for a comment period of at least 30 days and placed on the agenda for consideration by the five CPUC commissioners. Decisions of the CPUC must be based on the evidence presented during the general proceeding and the environmental study findings. The CPUC also receives public comments during the proceeding. A decision regarding whether to permit a transmission project is only final after a formal action taken by the Commission at a voting meeting of the CPUC.

A decision granting a CPCN or PTC means the transmission project may move forward with construction pending CPUC issuance of a notice to proceed. The CPUC conducts compliance monitoring of construction and post construction activities, such as restoration activities that are required as a result of the CEQA environmental review.

In the CPCN process, a transmission project is generally determined to be needed if it meets at least one of the following three criteria:

- The project is required to ensure that electricity is reliably transmitted to customers.

80 CPUC. *Electric Transmission Siting at the CPUC*, https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/t/5073-transmission-siting-flow-chart.pdf.

- The project reduces the cost of providing electricity to customers.
- The project allows the state to meet mandated legislative or policy requirements.

## GO 131-E Exemptions

GO 131-E outlines various exemptions to the CPCN and PTC permitting requirements. Utilities must provide notice of the proposed construction of any projects that are deemed to be exempt from the PTC requirement through an advice letter, which is an informal request by a utility for CPUC approval, authorization, or other relief.[81] The advice letter process is not a formal proceeding, but advice letters are subject to disposition by CPUC staff, as well as a 20-day protest period whereby a member of the public may protest the application. Once an advice letter is approved, project construction may proceed. Projects that are statutorily or categorically exempt from CEQA do not require permitting or notification through the advice letter process.

## Average Timelines for CPUC Permitting

As one way to monitor the timely development of transmission projects, the CPUC tracks planned projects through its Transmission Project Review (TPR) process. The TPR process includes projects approved through the California ISO's annual TPP, as well as repair and replacement projects initiated by utilities. The TPR process provides detailed, public biannual reporting by IOUs on transmission projects under development. The TPR reports provide detailed information, including project descriptions, permitting status, construction progress, and costs of each transmission project. The TPR process requires each of the three large IOUs to convene biannual public meetings where stakeholders can ask questions and receive clarification on these reports.[82]

There are multiple steps that permitted transmission projects go through from inception through the end of construction. **Figure 4-2** shows average time frames for the key stages of the permitting process, including CPCN and PTC transmission projects in the 2013–2023 time frame. These typically include new transmission lines spanning many miles or new substations. For projects that are still under construction, the current estimated in-service date is used. The information is presented separately for California ISO-approved projects and repair and replacement projects initiated by transmission owners (such as projects necessary to ensure reliability of electricity service to an area).

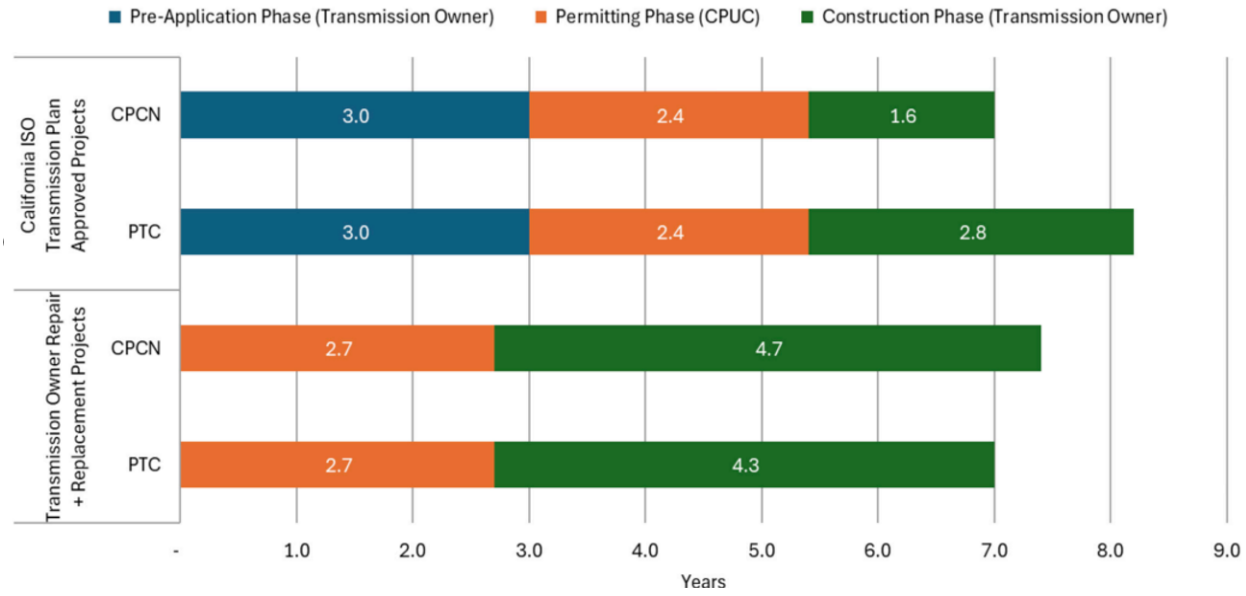
The stages shown below are defined as follows and note the entity responsible:

81 An *advice letter* includes an informal request for approval to furnish service under rates, charges, terms or conditions other than those contained in the utility's tariffs then in effect, and a compliance submittal by a load-serving entity.

82 The three large IOUs are Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company.

- **Preapplication phase (transmission owner):** The average time from which a project is approved in a California ISO TPP to when the project application is filed with the CPUC for a CPCN or PTC. Transmission Owner Repair and Replacement projects do not have this phase since these projects do not go through the California ISO TPP process.
- **Permitting phase (CPUC):** The average time from when a CPCN or PTC application is submitted to the CPUC until the time a CPUC decision is issued on that application.
- **Construction phase (transmission owner):** The average time between a CPUC decision on a transmission application to the completion of project construction (or projected completion based on estimated in-service dates).

**Figure 4-2: Average Project Time Frames for CPCN and PTC Applications (2013–2023)**




Source: CPUC, 2025

The analysis of average time frames included 12 projects approved through the California ISO TPP and 15 transmission owner repair and replacement projects from 2013 to 2023. On average, the pre application, permitting, and construction phases for all transmission projects take about seven to eight years. Within this time frame, for the California ISO TPP projects, the CPCN and PTC pre application phases both take 3.0 years on average to complete, the permitting phase for both take 2.4 years, and the construction phase for a CPCN is 1.6 years and 2.8 years for the PTC. For repair and replacement projects, the CPCN and PTC permitting phase takes 2.7 years on average

to complete, and the construction phase for a CPCN takes 4.7 years, while the PTC takes 4.3 years.

In addition, before the pre application process, the CPUC develops resource portfolios that inform the California ISO's annual TPP, as discussed in **Chapter 2**. The development of these resource portfolios may take up to one year before transmittal of the portfolios from the CPUC to the California ISO. In total, the timeline for state planning, permitting, and construction of electrical transmission projects averages eight to nine years.

### Revisions to GO 131-D

In the Rulemaking (R.) 23-05-018 proceeding, the CPUC adopted GO 131-E in January 2025 via D.25-01-055 which replaces GO 131-D and sets forth updated rules for permitting, approving, and building electric transmission lines, substations, and generation facilities.[83] The newly adopted GO 131-E streamlines and clarifies permitting requirements for electrical transmission infrastructure and allows for existing electrical transmission facilities to be modified via a PTC instead of a CPCN.[84]

## Additional State Permits and Approvals

Once an applicant receives approval to construct a transmission project from the CPUC, there may be additional state permits and approvals that must be obtained. The following sections identify the relevant agencies and discuss their roles, responsibilities, and decision-making authorities as required by SB 319. The two primary state permits required after CPUC approval are listed and discussed in more detail below.

- **State Water Resources Control Board:** A Water Quality Certification under Section 401 of the Clean Water Act is needed if there are potential impacts to waters of the state. Regional Water Quality Control Boards are delegated authority to issue Section 401 Water Quality Certifications, which are typically issued within 60 days once an application has been deemed complete. However, issuance of a Section 401 Water Quality Certification is required to be timed with the issuance of any other permits and authorizations and adoption or certification of a CEQA document for the project. Obtaining these approvals can contribute to the timeline necessary to deem an application complete.
- **California Department of Fish and Wildlife:** A Streambed Alteration Agreement under Section 1602 of the Fish and Game Code is needed if project

83 CPUC. January 2025. "General Order 131-E, Rules Relating to the Planning and Construction of Electric Generation, Transmission/Power/Distribution Line Facilities, and Substations Located in California," https://www.cpuc.ca.gov/-/media/cpuc-website/proceedings-and-rulemaking/documents/general-orders/go-131-e.pdf.

84 CPUC. "General Order 131-D Update," https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/permitting-and-environmental-review/general-order-131-d-update.

activities are within 100 feet of a water body or have the potential to affect the water body.

A Consistency Determination is required under Fish and Game Code 2080.1 if the project may result in take of species that are both federally and state-listed. An Incidental Take Permit is required if the project has the potential to result in take of a state-listed endangered or threatened species, or candidate species for listing.[85]

For Consistency Determinations, CDFW has 30 days from receipt of the request to review a Biological Opinion issued by USFWS or National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and issue a determination. Authorization is received from CDFW in about 30 to 90 days, depending upon the species involved and complexity of the project.

## California State Water Resources Control Board

In California, a Clean Water Act Section 401 water quality certification (401 certification) and associated water discharge requirements are needed for all projects or activities, including transmission infrastructure. Certification is required for projects that entail dredge and fill activities that may affect wetlands or the bed, banks, shore or sea bottom of any waters of the state. All aspects of a project, including energy production devices and any cables in, on, or under state waters, including wetlands, are considered in the review.

The State Water Resources Control Board (SWRCB) works in coordination with its nine regional water boards to preserve, protect, enhance, and restore water quality in the state's marine and inland waters. The regional water boards have jurisdiction over their designated regions out to 3 nautical miles. For projects that overlap more than one regional jurisdiction, the SWRCB will review the project.

State law requires that a final environmental document developed under CEQA must be certified by a lead agency before a 401 certification may be issued. If the project is exempt from CEQA, the application should explain why and provide appropriate documentation. Such documentation should be in the form of a statement from an agency qualified to act as the lead agency certifying the exemption. Applicants should consult with the appropriate regional water board or division of the State Water Board during planning to ensure that the project CEQA analysis and application for a 401 certification address all impacts that may be regulated through 401 certifications.

## California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) will identify concerns and provide comments and recommendations on terrestrial and marine related transmission

85 Take is defined by the Endangered Species Act as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting any threatened or endangered species.

projects regarding potential impacts to the state's fish, plant, and wildlife and their habitats. Potential impacts include those to water quality and pollution, as well as impacts to recreational and commercial fisheries and sensitive habitats.

As the trustee for the state's fish and wildlife resources, the CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, and habitat necessary for biologically sustainable populations of those species. In this capacity, the department administers the California Endangered Species Act (CESA), the Native Plant Protection Act, and other provisions of the California Fish and Game Code that afford protection to the state's fish, wildlife, and plant resources.[86] The CDFW is also recognized as a trustee agency under CEQA.[87]

State agencies are required to consult with CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat. If the project will result in the take of any species designated by the California Fish and Game Commission as an endangered, threatened, or candidate species under CESA, or the take of plant species under the California Native Plant Protection Act, an incidental take permit is required to avoid criminal and civil prosecution for an unlawful take. The CDFW can authorize take and issue an incidental take permit if it finds that:[88]

- The take is incident to an otherwise lawful activity.
- Impacts of the authorized take will be minimized and fully mitigated.
- Adequate funding is provided for adopted minimization and mitigation measures.
- The take associated with the project will not jeopardize the continued existence of the species.

If a project would substantially impact any river, stream, or lake, a project must comply with CDFW's Lake and Streambed Alteration Program, which requires avoidance, minimization, and mitigation measures to protect fish and wildlife and their habitat.[89]

The CDFW enforces Section 3503 of the California Fish and Game Code protecting nesting birds, including migratory birds. The CDFW can also approve Natural Community Conservation Plans (NCCP) that are often prepared with Habitat

86 CDFW. "Threatened and Endangered Species," https://wildlife.ca.gov/Conservation/CESA.

87 CDFW acts as a trustee or responsible agency and provides biological expertise to review and comment on CEQA environmental documents prepared by another lead agency.

88 An incidental take permit allows a permittee to take a CESA listed species if such taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity. These permits are commonly issued for construction, utility, transportation, and other infrastructure-related projects.

89 CDFW. "Lake and Streambed Alteration Program," https://wildlife.ca.gov/Conservation/Environmental-Review/LSA.

Conservation Plans approved by the U.S. Fish and Wildlife Service (USFWS) to ensure regional protection of sensitive species and habitat within the state.

## Other State Agencies with Potential Jurisdiction

There are several other state agencies that may have jurisdiction over a transmission project depending on the project location and related potential impacts. These agencies are discussed below.

### California State Lands Commission

Any transmission or renewable energy project (and ancillary facilities) proposed for California's state sovereign lands or waters is required to obtain a lease from the California State Lands Commission (CSLC). The CSLC is the primary land manager for 4 million acres of tide and submerged lands and the beds of natural navigable rivers, streams, lakes, bays, estuaries, inlets, and straits. The CSLC also has jurisdiction and management authority for state lands legislatively granted in trust to local jurisdictions.[90]

The CSLC has the authority to lease these sovereign or public trust lands for uses consistent with public trust protections of the Public Trust Doctrine.[91] The overarching principle of the Public Trust Doctrine is that trust lands and trust assets belong to the statewide public and are to be used to benefit the statewide public rather than for local community or municipal purposes. Courts have recognized that the Public Trust Doctrine is flexible and includes water-related public-serving and recreational uses, as well as environmental protection, open space, and preservation of scenic areas.

After deciding on a specific location for a transmission project, project proponents seek a determination from the CSLC of whether the project would occupy state sovereign lands under the jurisdiction of the CSLC or granted lands under the management of a legislative grantee. After a determination of jurisdiction, CSLC will identify the type of lease or approval required. The CSLC then either approves or denies a proposed lease or permit by determining whether the proposed use or activity is in the state's best interest, consistent with the Public Trust Doctrine, and meets regulatory, tribal consultation, and CSLC environmental justice policy requirements.

### California Coastal Commission

The California Coastal Commission (CCC) has authority to issue Coastal Development Permits (CDPs) for transmission projects located in, or that affect, the Coastal Zone, and conducts consistency reviews under the federal Coastal Zone Management Act

90 Pub. Resources Code, Sections 6301, 6306.

91 The Public Trust Doctrine has roots in English common law and is a fundamental concept in environmental law that ensures certain natural resources are preserved for public use and enjoyment, rather than being subject to private ownership or exploitation.

(CZMA). The Coastal Zone is a legislatively defined geographic region that establishes the area regulated under the Coastal Act, encompassing land and water areas along the length of the California coastline from the Oregon border to the Mexico border. Activities in the San Francisco Bay require a permit from the Bay Conservation and Development Commission (BCDC), as discussed below.

Many local jurisdictions have the authority to issue CDPs within their jurisdiction, in accordance with their certified local coastal program. In many circumstances, these permits may be appealed to the CCC for review. Where the CCC and a local agency have permit authority under the California Coastal Act, the CCC can prepare a Consolidated CDP and take jurisdiction over the entire project if agreed upon by the local agency.

Section 307 of the federal CZMA requires that federally licensed or permitted activities be consistent with state coastal management policies.[92] The CCC conducts federal consistency review for federal activities or for projects that affect the coastal zone that need federal permits and licenses.[93] The effects of a proposed project, rather than the location, will determine whether a federal consistency review is required. Regardless of the location of a project, whether it is located within or outside California's Coastal Zone, it can trigger a federal consistency review by the CCC if it will cause foreseeable effects on California's coastal resources.[94]

The review process used to implement this requirement is called a *consistency determination* for federal agency activities and development projects and a *consistency certification* for federal permits and licenses, or federal support (such as funding) to state and local agencies. A coastal consistency determination can be completed within 60 and 75 days. A coastal consistency certification can take up to six months to issue. The CCC must ensure the project is fully consistent with the policies of the Coastal Act and must approve of CDPs issued by CCC or CDPs heard upon appeal at a Coastal Commission meeting.

## San Francisco Bay Conservation and Development Commission

The California Legislature created the San Francisco Bay Conservation and Development Commission (BCDC) in 1965 to protect and regulate the land and water in the San Francisco Bay Area. BCDC's permitting jurisdictions are found in section 66610 of the McAteer-Petris Act and sections 29101 through 29103 of the Suisun Marsh Preservation Act. As noted above, BCDC is also responsible for administering the federal CZMA within

92 The U.S. Congress recognized the importance of meeting the challenge of continued growth in the coastal zone by passing the Coastal Zone Management Act (CZMA) in 1972. This act, administered by NOAA, provides for the management of the nation's coastal resources, with a goal to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

93 CCC is a designated coastal zone management agency under California's Coastal Management Program.

94 CCC. "Federal Consistency," https://www.coastal.ca.gov/fedcd/fedcndx.html.

the San Francisco Bay segment of the California Coastal Zone to ensure that federal activities reflect BCDC policies. The BCDC, rather than the CCC, either concurs or objects to certification of federal coastal zone consistency.

A BCDC permit is required for any project in the San Francisco Bay Area (land and in-water bay) that includes:

- Placing solid material, building or repairing docks, having pile-supported or cantilevered structures, disposing of material, or mooring a vessel for a long period in San Francisco Bay or in certain tributaries that flow into the bay.
- Dredging or extracting material from the bay bottom.
- Substantially changing the use of any bay structure or area.
- Constructing, remodeling, or repairing a bay-located structure.

## California Air Resources Board

The California Air Resources Board (CARB) has established several mandates related to construction and vehicles associated with transmission line development. CARB, under the California Clean Air Act, has broad authority to regulate emissions from mobile sources and requires regions to develop and enforce strategies to attain California Ambient Air Quality Standards. Depending on the location of a transmission project, the local (regional) air district is responsible for demonstrating how these standards are met, as discussed below.

- **CARB Off-Road Mobile Sources Emission Reduction Program:** The California Clean Air Act mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources to attain the state ambient air quality standards. CARB established standards for off-road mobile sources, including construction equipment.[95] These standards and standards applicable to fleets that are already in-use address emissions of nitrogen oxides (NOx) and toxic particulate matter from diesel combustion.
- **CARB In-Use Off-Road Diesel-Fueled Fleets Regulation:** The regulations for in-use off-road diesel equipment are designed to reduce NOx and toxic diesel particulate matter from existing fleets of equipment. Depending on the size of

95 The earliest (Tier 1) standards for large compression-ignition engines used in off-road mobile sources became effective in California in 1996. Since then, the Tier 3 standards for large compression-ignition engines used in off-road mobile sources went into effect in California for most engine classes in 2006. In a 2004 rulemaking, the U.S. EPA established a phase-in of Tier 4 standards for certain "nonroad" engines beginning in 2008, and the Tier 4 or Tier 4 Interim (4i) standards apply to all off-road diesel engines Model Year 2012 or newer.

the fleet, the owner would need to ensure that the average emissions performance of the fleet meets certain statewide standards.[96]

- **CARB Portable Equipment Registration Program:** This program allows owners or operators of portable engines and associated equipment commonly used for construction or farming to register their units under a statewide portable program that allows them to operate their equipment throughout California without having to obtain separate permits from local air districts.

## California Department of Transportation

The California Department of Transportation (Caltrans) is responsible for ensuring the safety of state highway ROW and issues encroachment permits for construction or modification of transmission projects that cross state highways. Generally, Caltrans requires safety nets or guard structures to prevent transmission conductors from falling onto roadways during construction. This activity also requires traffic control by the California Highway Patrol so transmission conductors can be installed during traffic breaks. In addition, encroachment permits are required for carrying loads above certain weight (for example, substation transformers) and for underground crossings of highways.[97]

The California Vehicle Code includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways, safe operation of vehicles, and the transportation of hazardous materials. These regulations apply to numerous construction-related large multi-axle truck trips associated with transmission project construction.

## Department of Toxic Substances Control

Transmission projects that are located in areas with hazardous waste facilities and sites are under the jurisdiction of the Department of Toxic Substances Control (DTSC). DTSC is the primary agency in California that regulates hazardous waste, cleans up existing contamination, and looks for ways to reduce the hazardous waste produced in the state. DTSC regulates hazardous waste primarily under the authority of the federal Resource Conservation and Recovery Act of 1976 and the California Health and Safety

96 Presently, all equipment owners are subject to a five-minute idling restriction in the rule (13 California Code of Regulations, Chapter 10, Section 2449). In lieu of improving the emissions performance of the fleet, electric systems can be installed to replace diesel equipment in the fleet average calculations.

97 Encroachment Permit information is presented in Section 603.6A-5 of Caltrans Encroachment Permits Manual, Chapter 600. Available at https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/encroachment-permits/chapter-6-ada-a11y.pdf.

Code.[98] There are other laws that affect hazardous waste specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

Government Code Section 65962.5 (commonly referred to as the Cortese List) includes DTSC-listed hazardous waste facilities and sites and California Department of Public Health lists of contaminated drinking water wells. It also includes sites listed by the SWRCB as having underground storage tank leaks and that have had a discharge of hazardous wastes or materials into the water or groundwater. DTSC also oversees lists from local regulatory agencies of sites that have had a known migration of hazardous waste or material.

# Local Government, Utility, and Railroad Permitting Processes

## Local Encroachment Permits

Transmission project crossings of city or county roads, flood control canals, irrigation, or drainage facilities, and railroads, require encroachment permits. These permits are ministerial and not discretionary, and must be obtained before the start of construction.[99]

## Air Quality Management or Air Pollution Control District Requirements

Air quality management districts (AQMDs) or air pollution control districts (APCDs) develop Air Quality Management Plans, which regulate emissions of ozone and dust or particulate matter (PM10) associated with the construction of transmission projects. AQMDs and APCDs are responsible for regional air quality planning, monitoring, and stationary source and facility permitting. They administer air quality improvement grant programs and act as partners with the CARB. In addition, AQMDs and APCDs may have other rules and regulations specific to control of fugitive dust or visible emissions, nuisance air contaminants or emissions, particulate emissions, or asbestos.

# Federal Environmental Review and Permitting Processes

Transmission projects that cross federally owned lands (for example, U.S. Forest Service, Bureau of Land Management) require environmental review under NEPA and federal permits or approval from several agencies. Review by federal agencies is not uncommon given that approximately 45 percent of the land in California is federally managed. The federal Endangered Species Act regulates incidental take of federally

98 California Health and Safety Code, Division 20, Chapters 6.5 through 10.6, and Title 22 (Social Security), Division 4.5.

99 A "discretionary permit" requires a decision-maker to exercise judgment and deliberation when approving a project, often involving public hearings, while a "ministerial permit" is granted based on a set of established standards, with little to no discretion needed by the approving official, typically following a checklist and not requiring public hearings; essentially, a discretionary permit allows for more flexibility in decision-making compared to a ministerial permit which is more straightforward and automatic based on compliance with rules.

listed threatened or endangered species in all areas. Federal agencies that are responsible for issuing permits or authorizations ensure they comply with NEPA.

## National Environmental Policy Act

The National Environmental Policy Act (NEPA) establishes the national framework for protecting the environment.[100] NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions. The range of actions covered by NEPA is broad and includes:

- Making decisions on permit applications (such as an application for a grant of ROW for a proposed transmission line crossing federal lands, or requiring federal permits, including compliance with the Endangered Species Act).
- Adopting federal land management actions.
- Constructing highways and other publicly owned facilities.

Using the NEPA process, agencies evaluate the environmental and related social and economic effects of their proposed actions. Agencies also provide opportunities for public review and comment on those evaluations.

All federal agencies are to prepare detailed statements assessing the environmental impact of and alternatives to major federal actions significantly affecting the environment. These statements are commonly referred to as Environmental Impact Statements (EIS), which are similar to CEQA EIRs, and Environmental Assessments (EA), similar to CEQA Mitigated Negative Declarations.

Title II of NEPA established the President's Council on Environmental Quality (CEQ) to oversee NEPA implementation. CEQ issued regulations (40 CFR Parts 1500-1508) to implement NEPA. The regulations address the procedural provisions of NEPA and the administration of the NEPA process, including the preparation of EISs. In addition to the CEQ NEPA regulations, CEQ has issued a variety of guidance documents on the implementation of NEPA.

Many federal agencies have also developed their own NEPA procedures that supplement the CEQ NEPA regulations. These NEPA procedures vary from agency to agency since they are tailored for the specific mission and activities of the agency. As part of their own procedures, federal agencies identify which projects could qualify for Categorical Exclusions under NEPA, which is similar to Categorical Exemptions under CEQA described above.

## Additional Federal Permits and Approvals

In addition to environmental reviews, there are additional federal permits and approvals that must be obtained from federal agencies. Two primary federal permits from the U.S

100 U.S. Environmental Protection Agency (EPA). 42 U.S.C. Section 4321 et seq. (1969) "National Environmental Policy Act," https://www.epa.gov/nepa.

Army Corps of Engineers and the U.S Fish and Wildlife Service or National Oceanic and Atmospheric Administration Fisheries, along with other potential federal agency reviews, are discussed in more detail below. .

## U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) issues the Clean Water Act (CWA) Section 404 permits as needed for transmission projects if there is discharge of fill or dredged material into all waters of the U.S., including wetlands. The CWA Section 404 Permit takes approximately 9 to 15 months from when the application is submitted, depending on whether a nationwide or individual permit is required. The CWA Section 404 ensures that no fill or dredging will occur as part of a project if a practical alternative exists that is less damaging to aquatic environments and will not degrade national waters. A permit must be issued by the USACE before any dredging or constriction activities within U.S. navigable waters, unless the activity is exempt from Section 404 regulation.[101]

The USACE also authorizes activities under Section 10 of the Rivers and Harbors Act, which regulates the construction of any structure in or over any navigable water of the U.S. A permit must be issued by the USACE before any activities can begin.[102] USACE permits are also necessary for any work, including construction and dredging, in the Nation's navigable waters.[103] They balance the reasonably foreseeable benefits and detriments of proposed projects, and makes permit decisions that recognize the essential values of the Nation's aquatic ecosystems to the general public, as well as the property rights of private citizens who want to use their land.

During the permit process, the USACE considers the views of other federal, state and local agencies, interest groups, and the general public. Adverse impacts to the aquatic environment are offset by mitigation requirements, which may include restoring, enhancing, creating and preserving aquatic functions and values.

## U.S. Fish and Wildlife Service

The U.S Fish and Wildlife Service (USFWS) is one of two lead federal agencies for implementing the Endangered Species Act (ESA). The other lead federal agency is the NOAA Fisheries, as discussed below. An ESA Section 7 consultation is needed if a project may affect federally listed species or adversely modify designated critical habitat. At the conclusion of consultation, the USFWS or NOAA Fisheries issue a Biological Opinion that would authorize incidental take of federally listed species or

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101 U.S. EPA. "Policy and Guidance Documents Under CWA Section 404," https://www.epa.gov/cwa-404/policy-and-guidance-documents-under-cwa-section-404.

102 USACE. "Regulatory Request System," https://www.spn.usace.army.mil/Missions/Regulatory/Permitting/

103 USACE. "Regulatory Program and Permits," https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/.

modify designated critical habitat. This must occur within 135 days of acceptance of a Biological Assessment. Conferences under ESA Section 7, rather than consultations, are also required for projects that may affect proposed listed species or adversely modify proposed designated critical habitat. In these instances, a Conference Opinion is issued by the USFWS.

ESA provides a program for the conservation of threatened and endangered plants and animals and habitats in which they are found. As discussed above, for federal action, ESA law requires consultation with the USFWS to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. Conferences, rather than consultations, are required for projects that may affect proposed listed species or adversely modify proposed designated critical habitat.

For private actions, incidental take of federally listed or proposed listed species can be authorized through the issuance of a Habitat Conservation Plan under Section 10 of the ESA. Private actions are not subject to the ESA regarding protection of designated critical habitat, but impacts on habitat are considered during the evaluation and issuance of a Habitat Conservation Plan.

The ESA also prohibits any action that causes a taking of any listed species of endangered fish or wildlife and allows for incidental take permits.[104] In addition, the USFWS enforces the federal Migratory Bird Treaty Act that prohibits the take — including killing, capturing, selling, trading, and transport — of protected migratory bird species.

## National Oceanic and Atmospheric Administration Fisheries

Similar to the USFWS, NOAA Fisheries shares the responsibility for implementing the Endangered Species Act. In addition, NOAA Fisheries has the responsibility of implementing the Marine Mammal Protection Act (MMPA). The MMPA established a national policy to prevent marine mammal species and population stocks from declining beyond the point where they cease to be significant functioning elements of the ecosystems of which they are a part. The MMPA specifically prohibits the taking of marine mammals. However, NOAA Fisheries allows, upon request, the incidental take of small numbers of marine mammals through issuance of Incidental Harassment Authorizations (IHAs) or Letters of Authorization (LOAs). IHAs are for activities lasting up to a year, whereas LOAs are for activities that could occur for multiple years. Incidental take may be authorized if the activity meets the following criteria:

- Would be of small numbers

104 The ESA allows for permits for activities that take protected species incidental to otherwise lawful activities. In these cases, the person or agency is not trying to take the protected species, but they may do unintentionally during their operations.

- Have no more than a negligible impact on those marine mammal species or stocks
- Have no unmitigable adverse impact on the availability of the species or stock for subsistence uses.

A consultation with NOAA Fisheries is also required when a federal action may adversely affect essential fish habitat pursuant to the Magnuson-Stevensen Fisheries Conservation and Management Act. An adverse effect includes direct or indirect physical, chemical, or biological alterations. It includes adverse changes to:

- Waters or substrate
- Species and their habitat
- Other ecosystem components
- Quality or quantity of essential fish habitat.

## Bureau of Land Management

The Bureau of Land Management issues ROW for transmission lines crossing BLM-administered public lands. The BLM manages approximately 15 million acres of public lands in California, which is roughly 15 percent of the state's total land mass. Many of California's major transmission corridors cross these public lands.[105] BLM is governed by the Federal Land Management Policy Act (FLPMA) and BLM's land management plans, which define areas that are appropriate for transmission and areas where transmission lines are prohibited.

The BLM process for considering new or modified transmission project begins with an applicant filing an Application for Transportation, Utility Systems, Telecommunications and Facilities on Federal Properties - SF-299.[106] Costs associated with transmission application include filing fees, cost recovery (for BLM staff time), rent payments, and bonding requirements for post-project restoration.[107] The applicant is required to prepare a plan of development (POD), which defines the proposed project and presents

105 Additional information on rights-of-way is available at https://www.blm.gov/programs/lands-and-realty/rights-way. Additional information on transmission lines is available at https://www.blm.gov/electric-power-lines.

106 U.S. General Services Administration. "Application for Transportation, Utility Systems, Telecommunications and Facilities on Federal Lands and Property," https://www.gsa.gov/system/files/2024-05/SF299-23.pdf.

107 BLM. "Right-of-Way Costs," https://www.blm.gov/programs/lands-and-realty/rights-way/obtaining-right-of-way/row-fees.

detailed environmental information, including results of surveys for biological and cultural resources.

After BLM review of the SF-299 and initial POD, the BLM decides on the level of NEPA review required. If appropriate and based on the project and its potential effects, the BLM would initiate tribal consultation under Section 106 of the National Historic Preservation Act (NHPA), and consultation with the State Historic Preservation Officer. Consultation would also be initiated with the USFWS under Section 7 of the ESA. After completing the NEPA process and required consultation, the BLM may prepare a ROW Authorization for the applicant, which would include rental payments, environmental monitoring requirements, and bonding requirements.

Most transmission on BLM-administered public lands is within the BLM California Desert Conservation Area, which was established by the California Desert Conservation Area (CDCA) Act.[108] The CDCA Plan was prepared to implement the CDCA Act, which defines specific utility corridors across the desert ranging from two to five miles wide where transmission lines are generally required to be located.[109]

The CDCA Plan was amended in 2016 to incorporate the requirements defined in the Desert Renewable Energy Conservation Plan (DRECP), which covers 10.8 million acres of public lands in the desert regions of seven California counties – Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego.[110] The CDCA Plan, as amended by the DRECP, incorporates specific resource protection and design requirements for transmission line siting and construction, including several Conservation and Management Actions specific to transmission.

The BLM is also responsible for designation of Section 368 corridors as discussed in **Chapter 3**.

## U.S. Forest Service

The United States Forest Service (USFS) issues permits for transmission facilities located on National Forest System lands with an operating plan or agreement that complies with section 512 of the FLPMA. The USFS manages about 20 million acres of National Forest System land within California. The USFS is required to assess the environmental effects of proposed major federal actions before making land management decisions to comply with NEPA and other applicable laws.

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108 "California Desert Protection Act of 1994." 1994. https://www.congress.gov/bill/103rd-congress/senate-bill/21.

109 BLM. "California Desert Conservation Area Plan," https://eplanning.blm.gov/eplanning-ui/project/66949/510.

110 BLM. "Desert Renewable Energy Conservation Plan," https://www.blm.gov/programs/planning-and-nepa/plans-in-development/california/desert-renewable-energy-conservation-plan.

Most management actions are site-specific and guided by a land management plan, which provides direction of uses within each national forest, prairie, and grassland.[111] Environmental analysis can occur at any level of the Forest Service, such as region, forest, or a district. The areas within each national forest where a transmission line could be constructed are defined in the land management plan for each forest. These plans designate where particular uses may occur and identify areas intended for specific uses such as timber harvest, primitive recreation, or rare plant protection.

## National Park Service

The National Park Service (NPS) issues ROW permits for transmission projects, as well as telephone lines, canals, and sewer lines.[112] Broadband equipment, such as telecommunication sites, microwave, and fiber optic, also requires a ROW permit. A ROW permit issued by the NPS allows a utility to pass over, under, or through NPS property. The permit may be issued only under specific statutory authority and generally is issued only if there is no practicable alternative to the use of NPS lands, regardless of whether the equipment is serving the NPS and its visitors or crossing the park to reach other communities.

## U.S. Department of Defense

If a proposed transmission project is known to be inside a military training route, military airspace, or in a radar surveillance line-of-sight that the Department of Defense (DOD) owns or operates in, then the project must be filed with DOD at least one year before construction.[113] The DOD Mission Compatibility Evaluation process analyzes potential impacts to military operations.[114] If impacts are identified, the DOD Siting Clearinghouse works to identify mitigation strategies to minimize those impacts.[115] Transmission project applicants are encouraged to seek informal reviews as early as possible to identify potential compatibility issues before submitting applications to the DOD Siting Clearinghouse for the formal review.

Transmission projects that must cross land administered by DOD require a lease with the base's real property office, and environmental clearance following DOD's processes and procedures. These approvals often require approval at the DOD Headquarter level of organization.

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111 USFS. "Land Management Plans," https://www.fs.usda.gov/managing-land/planning/land-management-plans.

112 National Park Service. "Right-of-Way Permit," https://www.nps.gov/aboutus/right-of-way-permit.htm.

113 10 U.S. Code Section 183a (c)(6).

114 Part 211 of Title 32 of the Code of Federal Regulations.

115 The Clearinghouse acts as a single point of contact for federal agencies; state, Native American tribal, and local governments; developers; and landowners and provides a central forum for internal staffing. More information on the Clearinghouse is available at https://www.dodclearinghouse.osd.mil/.

## Federal Aviation Administration

Transmission developers are required to submit a Notice of Proposed Construction or Alteration (Form 7460-1) to the Federal Aviation Administration (FAA) for an obstruction evaluation. The FAA is required to conduct the evaluation for any objects to ensure the safety of air navigation and efficient use of navigable airspace by aircraft.[116] This requirement applies to a transmission project with components (individual tower or structures, or conductor spans that are greater than 200 feet above the ground) that may affect commercial airports, the national airspace, air navigation facilities, or airport capacity.[117]

## National Historic Preservation Act Section 106 Consultation

If a transmission project has the potential to impact historical properties and the project involves a federal undertaking (such as federal approval or funding), the federal agency involved must conduct consultation with the State Historic Preservation Officer following Section 106 of the National Historic Preservation Act. While the California State Historic Preservation Officer is housed within the California Department of Parks and Recreation, its role is to review the Section 106 process for federal projects.[118] The federal agency also must initiate consultation with interested federally recognized Native American tribes as part of this process, which can include Tribal Historic Preservation Officers.

The public, including historical preservation organizations and others with an interest in the preservation outcomes of a project or those with a legal or economic interest may also be invited to comment on the consultation process. Public comment on the Section 106 consultation process often occurs concurrently with NEPA review of a project. The Advisory Council on Historic Preservation is invited to also comment on the Section 106 consultation process. Before initiating Section 106 consultation, the federal agency identifies the historical properties that could be affected and gathers information to decide if any properties are listed, or are eligible for listing, in the National Register of Historic Places.

## Bureau of Ocean Energy Management

The Bureau of Ocean Energy Management (BOEM) has primary authority over permitting of offshore wind projects, including transmission located on the Outer Continental Shelf (OCS).[119] BOEM manages development of the nation's offshore energy and mineral resources and has exclusive authority to grant leases and approve facility

116 Code of Federal Regulations, Title 14, Part 77.

117 Federal Aviation Administration. "Obstruction Evaluation," https://www.faa.gov/air_traffic/obstruction_evaluation/.

118 California Office of Historic Preservation. "State Historic Preservation Officer (SHPO)," https://ohp.parks.ca.gov/?page_id=21755.

119 BOEM has authority over inter-array cables and long-distance subsea cables associated with offshore wind development.

construction and operations plans for renewable energy development and associated transmission in federal waters.[120] Each state bordering the Atlantic Ocean or Pacific Ocean has jurisdiction over submerged lands out to three nautical miles offshore following the Submerged Lands Act. The Pacific OCS encompasses the area between state jurisdiction over the seafloor and waters — from 3 nautical miles to 200 nautical miles.

As the lead federal agency for offshore lease processes, BOEM would consult with other federal agencies with relevant jurisdiction. BOEM may establish formal cooperating agency agreements with other agencies to facilitate the required environmental review under NEPA for all required permits. BOEM consults with federally recognized tribes on a government-to-government basis. As described below, the Bureau of Safety and Environmental Enforcement (BSEE) shares some responsibilities with BOEM.

## Bureau of Safety and Environmental Enforcement

BSEE has authority for renewable energy development, including transmission, on the OCS, primarily for safety and environmental compliance. As noted above, BOEM reviews construction and operation plans, followed by BSEE reviewing facility design reports, fabrication and installation reports, and all things involving operations, including decommissioning.[121]

## Fixing Americas Surface Transportation Act, Title 41

A transmission project that requires authorization or environmental review by a federal agency involving construction of infrastructure, including transmission, can apply for coverage under the Fixing America's Surface Transportation Act (FAST-41).[122] FAST-41 was designed to improve the timeliness, predictability, and transparency of the Federal environmental review and authorization process for covered infrastructure projects.[123]

FAST-41 established the Permitting Council, an independent federal agency, that promotes deliberate, coordinated, and transparent federal environmental review and

120 The Energy Policy Act of 2005 authorized BOEM to issues leases, easements, and rights of way to allow for renewable energy development on the Outer Continental Shelf of the United States. More information is available at https://www.boem.gov/sites/default/files/renewable-energy-program/Regulatory-Information/hr6_textconfrept.pdf.

121 BSEE and BOEM. "Reorganization of Title 30-Renewable Energy and Alternate Uses of Existing Facilities on the Outer Continental Shelf," https://www.federalregister.gov/documents/2023/01/31/2023-00871/reorganization-of-title-30-renewable-energy-and-alternate-uses-of-existing-facilities-on-the-outer.

122 Federal Permitting Improvement Steering Council. "Federal Infrastructure Projects Permitting Dashboard," https://www.permits.performance.gov/projects?title=&term_node_tid_depth=All&term_node_tid_depth_1=2286&field_permitting_project_adpoint_administrative_area=All&field_project_status_target_id=All&field_project_category_target_id=All.

123 "Public Law 114-94 Dec. 4, 2015, Fixing America's Surface Transportation Act," https://www.govinfo.gov/content/pkg/PLAW-114publ94/pdf/PLAW-114publ94.pdf.

permitting for certain infrastructure projects.[124] FAST-41 projects use a Permitting Dashboard that provides information about the project, including project sponsor or developer, the lead agency, the relevant federal agencies, points of contact, and the status of the environmental review and federal permits. An important part of the Permitting Dashboard is the development of a permitting timetable for each project. FAST-41 funds are also available to federal, state, tribal, and local governments to support and promote timely and efficient permitting activities.

## FERC Backstop Transmission Permitting

Historically, states have authorized and issued permits for the siting of transmission facilities. However, the Energy Policy Act of 2005 established a limited federal role for the permitting of transmission facilities by adding Section 216 to the Federal Power Act (FPA). The federal siting authority for transmission facilities is shared between the DOE and FERC as part of the DOE's identification of NIETCs, as discussed in **Chapter 3.** FERC may issue a permit to construct or modify transmission facilities within a NIETC in response to an application when one of the following conditions are met:

- A state does not have the authority to either approve the siting of the facilities or to consider the interstate or interregional benefits.
- The applicant is a transmitting utility that does not qualify to apply in a state because the applicant does not serve end-use customers in the state.
- A state has not made a determination on an application within one year of the application filing or the designation of the relevant NIETC, whichever is later.
- A state has conditioned its approval such that the proposed project will not significantly reduce capacity constraints or is not economically feasible.
- A state has denied an application.[125]

As discussed in **Chapter 3**, DOE is required by Section 216(a)(1) of the FPA to conduct assessments of national electric transmission capacity constraints and congestion at least once every three years. A NIETC designation unlocks key federal financing tools for transmission projects located within a NIETC.[126]

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124 The Federal Permitting Improvement Steering Council is composed of representatives from the DOE, FERC, Nuclear Regulatory Commission, Department of Agriculture, Department of Commerce, DOD, USACE, Department of Homeland Security, Department of Housing and Urban Development, Department of Interior, Department of Transportation, EPA, Advisory Council on Historic Preservation, Council of Environmental Quality, Office of Management and Budget, and General Services Administration.

125 The 2021 IIJA recently modified Section 216 of the FPA to allow FERC to issue permits for transmission lines within NIETCs in the event that a state has denied an application.

126 Developers of transmission projects within NIETCs may be eligible to apply for funding via public-private partnerships under the Transmission Facilitation Program and may be eligible to apply for direct loans via the Transmission Facility Financing Program.

## Interfaces Between State and Federal Permitting

The CEQA and NEPA processes were discussed in **Chapter 2** and **Chapter 3**. Most permitting actions by other state or federal agencies must rely on the CEQA and NEPA documents prepared by the lead agency. As noted above, transmission projects must also obtain other federal and state permits and approvals, which require extensive interagency coordination.

NEPA and CEQA differ in a number of respects. For example, the requirements for evaluating cumulative impacts and indirect impacts differ. The federal Council on Environmental Quality regulations have strict page limits for completing NEPA review as opposed to CEQA, and the required timelines for completing CEQA versus NEPA documents differ. The criteria for selecting the appropriate level of NEPA review differ from criteria for determining the appropriate level of CEQA review. For example, projects may qualify for a Categorical Exclusion under NEPA but may require review in an ND, MND, or EIR under CEQA.

Where a project does not qualify for a Categorical Exclusion under NEPA and an EA or EIS is required, typically, the lead state and federal agencies coordinate the completion of technical studies to support environmental review under CEQA and NEPA. Agencies must also select and analyze alternatives to the proposed project and develop appropriate mitigation measures following each of their respective processes. For example, NDs or MNDs prepared under CEQA do not require an alternatives analysis, but EAs under NEPA often do.

In addition, for NEPA projects, other federal approvals and authorizations must typically be complete before the NEPA document is approved, whereas, under CEQA these authorizations can occur, and often must occur, after the CEQA document is adopted or certified. State and federal agency coordination occurs early in the process, including before the submittal of applications, to ensure that the requirements of each agency are met.

Federal and state agencies can undertake joint CEQA and NEPA documents, as the laws are intended to promote coordination, improve public understanding, and lead to more informed decisions.[127] In addition, both statutes encourage a joint federal and state review in cases where a project requires both federal and state approvals. However, significant differences in the procedures can make the preparation of joint documents difficult and, as a result, they are not often pursued. More often, agencies hold regular interagency meetings to coordinate their respective processes. Agencies may also comment formally on CEQA and NEPA documents for a project, and at times, federal agencies may become parties to CPUC permitting proceedings. Close coordination is

127 Council on Environmental Quality and Office of Planning and Research. February 2014. "Handbook on NEPA and CEQA: Integrating Federal and State Environmental Reviews," https://ceq.doe.gov/docs/ceq-publications/NEPA_CEQA_Handbook_Letter_Feb_2014.pdf.

critical to ensure efficient completion of projects subject to multiple agencies' permitting and approval processes.

# APPENDIX A:
# List of Acronyms

AB – Assembly Bill

AC – alternating current

ADS – Anchor Data Set

ALJ – administrative law judge

APCD – air pollution control district

AQMD – air quality management district

BA – balancing authority

BCDC – Bay Conservation and Development Commission

BLM – Bureau of Land Management

BOEM – Bureau of Ocean Management

BSEE – Bureau of Safety and Environmental Enforcement

CARB – California Air Resources Board

California ISO or CAISO – California Independent System Operator

CCC – California Coastal Commission

CCR – California Code of Regulations

CDCA – California Desert Conservation Area

CDFW – California Department of Fish and Wildlife

CDP – Coastal Development Permit

CEC – California Energy Commission

CESA – California Endangered Species Act

CEQA – California Environmental Quality Act

CHRIS – California Historical Resources Information System

CNRA – California Natural Resources Agency

CPCN – Certificate of Public Convenience and Necessity

CPUC – California Public Utilities Commission

CREPC – Committee on Regional Electric Power Cooperation

CSLC – California State Lands Commission

CWA – Clean Water Act

CZMA – Coastal Zone Management Act

DC – direct current

DOD – U.S. Department of Defense

DOE – U.S. Department of Energy

DOI – U.S. Department of Interior

DRECP – Desert Renewable Energy Conservation Plan

DTSC – Department of Toxic Substances Control

EA – Environmental Assessment

EIR – Environmental Impact Report

EIS – Environmental Impact Study

EPAct – Energy Policy Act of 2005

ESA – Endangered Species Act

FAA – Federal Aviation Administration

FAST 41 – Fixing America's Surface Transportation Act, Title 41

FAST Act – Fixing America's Surface Transportation Act

FERC – Federal Energy Regulatory Commission

FLPMA – Federal Land Policy and Management Act of 1976

GHG – greenhouse gas emissions

GO – General Order

GW – gigawatt

HSC – Health and Safety Code

HVAC – High-Voltage Alternating Current

HVDC – High-Voltage Direct Current

IEPR – Integrated Energy Policy Report

IHA – Incidental Harassment Authorization

IIJA – Infrastructure Investment and Jobs Act

IOU – investor-owned utility

IRA – Inflation Reduction Act

IRP – Integrated Resource Plan

ITCS – Interregional Transfer Capability Study

ISO – Independent System Operator

km – kilometers

kV – kilovolts

LCOE – levelized cost of energy

LSE – load serving entity

LTPTF – Long-Term Transmission Planning Task Force

MCE – Mission Compatibility Evaluation

MOU – Memorandum of Understanding

MMPA – Marine Mammal Protection Act

MND – Mitigated Negative Declaration

MW – megawatt

NAHC – Native American Heritage Commission

NCCP – Natural Community Conservation Plan

NEPA – National Environmental Policy Act

NERC – North American Electric Reliability Corporation

ND – Negative Declaration

NHPA – National Historic Preservation Act

NIETC – National Interest Energy Transmission Corridor

NMFS – National Marine Fisheries Service

NOAA – National Oceanic and Atmospheric Administration

NOP – Notice of Preparation

NOx – nitrogen oxides

NPS – National Park Service

NQC – net qualifying capacity

NREL – National Renewable Energy Laboratory

OCS – Outer Continental Shelf

PEIR – Programmatic Environmental Impact Report

PEIS – Programmatic Environmental Impact Statement

PF – power flow

PNNL – Pacific Northwest National Laboratory

POU – publicly owned utility

PSP – Preferred System Plan

PTC – Permit to Construct

RAC – Reliability Assessment Committee

RETI – Renewable Energy Transmission Initiative

ROD – Record of Decision

ROW – right-of-way

RPG – Regional Planning Group

SB – Senate Bill

SWRCB – State Water Resources Control Board

TPP – Transmission Planning Process

USACE – U.S. Army Corps of Engineers

USFS – U.S. Forest Service

USFWS – U.S. Fish and Wildlife Service

WAPA – Western Area Power Authority

WCPSC – Western Conference of Public Service Commissioners

WECC – Western Electricity Coordinating Council

WestTEC – Western Transmission Expansion Coalition

WIEB – Western Interstate Energy Board

WIRAB – Western Interconnection Regional Advisory Body

WOWT Study – West Coast Offshore Wind Transmission Study

WPP – Western Power Pool

WPR – Western Planning Regions

# APPENDIX B:
# Glossary of Terms

**Alternating current:** An electric current that reverses direction (at 60 Hz per second) and changes magnitude.

**Ancillary:** A type of service necessary to support the reliable operation of the power grid, such as frequency regulation, voltage support, and reserves.

**Bulk power system:** The high-voltage transmission network that delivers electricity from generation sources to local distribution systems, including transmission lines and substations.

**Busbar:** A metallic strip or bar typically housed inside switchgear and panel boards for high-current power distribution. Busbars are also used to connect high-voltage equipment at electrical switchyards and low-voltage equipment in battery banks.

**Behind-the-meter:** A type of energy activity that occurs on the consumer's side of the grid.

**Categorical exemptions:** Classes of projects which have been determined not to have a significant effect on the environment.

**Certificate of Public Convenience and Necessity (CPCN):** A type of permit required by the CPUC for new transmission and certain upgrades to existing transmission facilities at 200 kilovolts (kV) and above before construction may commence.

**Coastal Zone:** A legislatively defined geographic region that establishes the area regulated under the Coastal Act, encompassing both land and water areas along the length of the California coastline from the Oregon border to the Mexico border.

**Cooperating agency:** An agency that collaborates with a lead agency to help prepare environmental documents or assist in evaluating and permitting electric facilities.

**Competitive solicitation:** A process where an entity requests proposals or bids for projects or services, often involving a selection process based on cost-effectiveness or technical merit.

**Congestion:** A situation where demand for electricity exceeds transmission capacity, causing limitations in power flow and potentially resulting in higher costs and/or reduced reliability.

**Corridor:** A defined path or area through which electric infrastructure is constructed, subject to specific regulatory and/or environmental constraints.

**Decommissioning:** The process of shutting down and dismantling a facility, including the removal of equipment, remediation of the site, and ensuring environmental safety.

**Direct current:** An electric current that flows only in one direction.

**Discretionary permit:** A permit that requires a decision-maker to exercise judgment and deliberation when approving a project, often involving public hearings.

**Easement:** A legal right that allows one party to use or access another party's property for a specific purpose, such as constructing and maintaining transmission lines, while the property owner retains ownership of the land.

**Environmental documents:** Reports required by NEPA and CEQA that contain analyses of a project's environmental impacts that require discretionary approval by a government agency. Examples of environmental documents include EISs, EIRs, EAs, initial studies, MNDs and NDs.

**Federal Energy Regulatory Commission (FERC):** An independent federal agency that regulates the interstate transmission of electricity, natural gas, and oil.

**Gigawatt (GW):** A unit of power equivalent to one thousand megawatts (1,000 MW), or one million kilowatts (1,000,000 kW), or one billion watts (1,000,000,000 watts) of electricity. One GW is enough to supply the electric demand of about one million average California homes.

**Greenhouse gas (GHG) emissions:** The release of gases that trap heat and contribute to climate change, such as carbon dioxide, methane, and nitrous oxide, into the atmosphere.

**Grid enhancing technology:** A technology designed to improve the performance, efficiency, or capacity of the electric grid, such as advanced sensors, power flow control devices, and dynamic line ratings.

**Integrated Energy Policy Report (IEPR):** The CEC produces a biennial report that contains an integrated assessment of major energy trends and issues and policy recommendations for California's electricity, natural gas, and transportation fuel sectors.

**Interconnection:** The process of linking a power generation facility or energy resource to the transmission grid to allow the flow of electricity.

**Investor owned utility (IOU):** A privately-owned utility company that provides electricity and/or gas services to the public and is regulated by government agencies.

**Levelized cost of energy (LCOE):** The average total cost of an energy generation project per unit of total electricity generated. Also referred to as the levelized cost of electricity, LCOE is a measurement to assess and compare alternative methods of energy production.

**Load-serving entity (LSE):** A company that sells or provides electricity to end users located in California, or that generates electricity at one site and consumes electricity at another site that is in California and that is owned or controlled by the company.

**Long-duration energy storage:** Energy storage systems that can store and discharge electricity over extended periods (longer than the more common 4-hour lithium-ion batteries).

**Kilometer (km):** A unit of length equivalent to 1,000 meters or 0.62 miles.

**Kilovolt (kV):** A unit of electric potential equal to one thousand volts.

**Megawatt (MW):** A unit of power equivalent to one thousand kilowatts (1,000 kW) or 1 million (1,000,000) watts. One MW is enough electrical capacity to power 1,000 average California homes (assuming a loading factor of 0.5 and an average California home having a 2-kilowatt peak capacity).

**Ministerial permit:** A permit that is granted based on a set of established standards, with little to no discretion needed by the approving official, typically following a checklist and not requiring public hearings.

**Mitigation measure:** An action taken to reduce or avoid adverse environmental impacts from a project.

**Net qualifying capacity (NQC):** The maximum amount of capacity from a power resource that is deemed available and reliable for contributing to system reliability during peak demand periods.

**North American Electric Reliability Corporation (NERC):** A not-for-profit international regulatory authority that ensures reliability and security of the electric grid spanning the continental United States, Canada, and the northern portion of Baja California, Mexico.

**Particulate matter 10 (PM10):** Particles with diameters that are generally 10 micrometers and smaller. These particles are inhalable into the lungs and can induce adverse health effects.

**Permit to Construct (PTC):** A type of permit required by the CPUC for new transmission and certain upgrades to existing transmission facilities between 50 kV and 200 kV before construction may commence. Certain projects involving transmission lines at greater than 200 kV may qualify for PTCs based upon the details of the project.

**Power flow:** The movement of electricity through transmission lines from generation sources to customers.

**Publicly owned utility (POU):** A not-for-profit public agency that supplies and delivers electricity to its communities and is governed by locally elected officials, such as city council members or, for some agencies, regionally-elected directors.

**Production cost modeling:** A process used to estimate the costs and reliability of projected future resource mix and load.

**Right-of-way:** A legal right granted to an entity to access and use land for construction and maintenance of infrastructure.

**Substation:** A facility that may either step down high-voltage electricity from transmission lines to lower voltages suitable for distribution to consumers or step up electricity from power plants for transmission over long distances.

**Transmission operator:** An entity responsible for monitoring and controlling the operation of a transmission network, ensuring the reliable movement of electricity over long distances.

**Transmission owner:** An entity that owns and maintains the infrastructure required for electricity transmission, including transmission lines and substations.