

California Energy Storage Permitting Guidebook

Improving Energy Storage Permitting Together

California Energy Commission Grant EPC-19-026

March 2026



Center for
Sustainable
Energy®

Agenda

1. Introductions
2. Project Summary
3. Review of Guidebook Sections
4. Discussion



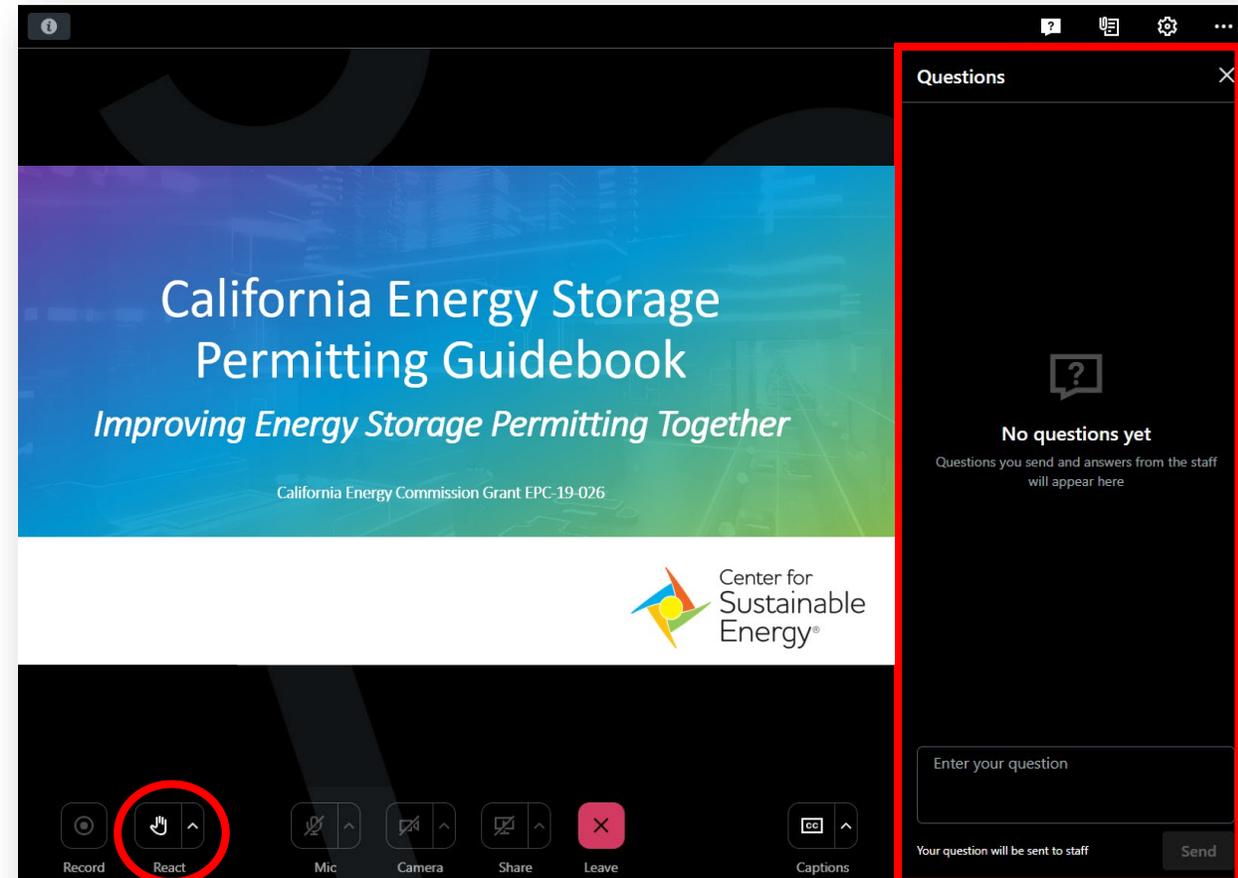
Two Ways to Participate

1. Questions:

- Click the **question-mark icon** in the upper-right corner to open the chat and type your question.

2. Hand Raising:

- If you have a question, click the **hand icon** on the lower-left side of your screen.
- You will be prompted to unmute yourself to ask your question live.



Introductions

About CSE

Mission-driven national nonprofit

Center for Sustainable Energy® (CSE) is a national nonprofit that accelerates adoption of clean transportation and distributed energy through effective and equitable program design and administration.

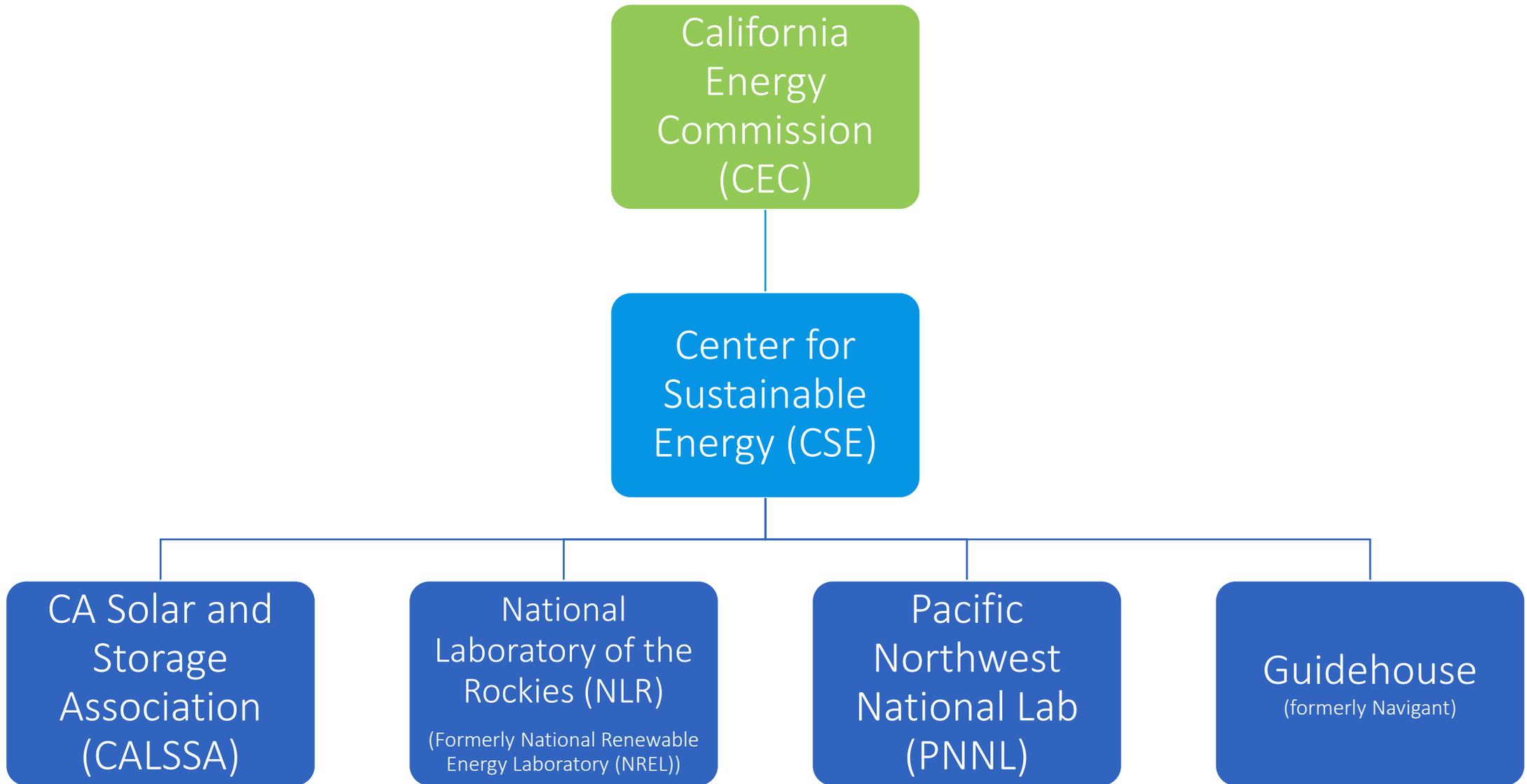
- Headquartered in San Diego with more than 200 employees across the nation
- Administers cutting-edge programs valued at over \$4 billion for governments, utilities and the private sector across the U.S.
- Leader in data-driven incentive program design and administration for:
 - Electric vehicle and EV charging incentive programs
 - Renewable energy incentive programs (solar and storage)

One mission —

DECARBONIZE.®

Our vision is a future with sustainable, equitable and resilient transportation, buildings and communities.





Guidebook Project Background

Project Summary

Identify key permitting issues that act as barriers to success for cost-effective installation of energy storage on the customer side of the meter and **provide a comprehensive set of guidelines in an electronic format to address those key permitting issues for storage systems** less than 1MW in capacity.

Project Goals



Greater reliability

Increased deployment of BTM energy storage reduces system peak.



Lower costs

Simplified permitting procedures can reduce soft costs & schedule delays.



Environmental benefits

Increased adoption of energy storage reduces dependence on peaker plants and reduces GHG emissions.

Senate Bill No. 379 and the Guidebook

- *Senate Bill 379 (Wiener, 9/2022): Requires cities and counties in the state to adopt an “**automated permitting platform**”, for solar and storage systems of less than 38.5 kW in nameplate capacity.*
- *Required for cities with populations of more than 5,000 and counties with more than 150,000 by **September 30, 2023***
- *A city with a population of fewer than 5,000 and a county with a population of fewer than 150,000 are required to comply by **September 30, 2024***
- The Guidebook provides limited guidance on how to adopt electronic permitting software such as Symbium and SolarApp+

Review of Guidebook Sections

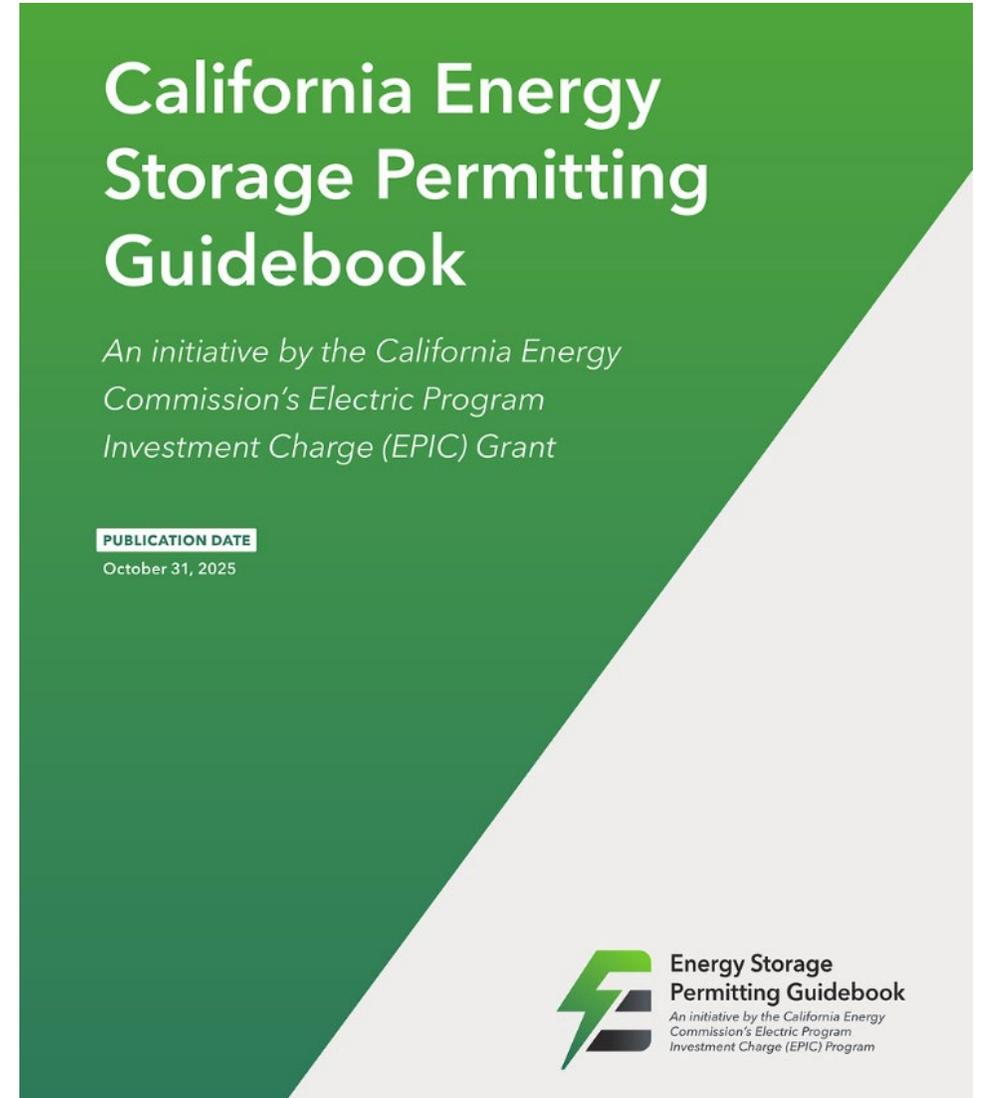
Guidebook Overview



Energy Storage Permitting Guidebook is hosted on the [project website](https://www.energystorageca.com/), available at <https://www.energystorageca.com/>

Energy Storage Guidebook Content

- Section 1: Introduction
- Section 2: Codes and Standards
- Section 3: Energy Storage Permit Process
- Section 4: Electronic and Automated Permitting
- Section 5: Permitting Resources



Section 1: Purpose and Use of this Guide

Full screen 9 Energy Storage Guidebook

Background

California is making a historic effort to achieve carbon neutrality by 2045 while ensuring its electricity system is reliable and efficient. Driven by a series of targeted bills and executive orders, California is working to integrate energy storage into the power system to improve resiliency to extreme weather events (like wildfires and heat waves), reduce greenhouse gas emissions, and lower energy costs for ratepayers.

The Energy Storage Permitting Guidebook focuses on permitting behind-the-meter (BTM) systems that are customer-sited, meaning they are located at homes, businesses, nonprofits, schools, and other locations to provide energy on-site (and, typically, to the grid as well), as shown in Figure 1. The permit process plays a critical role in protecting properties and building occupants by ensuring the design and installation of energy storage systems meet relevant safety codes and standards.

FIGURE 1
Behind-the-Meter Electrical Equipment

The diagram illustrates the flow of electricity between customer-sited and utility-scale equipment. On the left, under 'Behind the Meter (BTM) Customer-Sited', are icons for Solar, Storage, and Microgrid. On the right, under 'Front of the Meter (FTM)', are icons for Utility-scale Generation and Transmission & Distribution. A central meter icon has arrows pointing from the BTM side and to the FTM side, indicating bidirectional energy flow.

Figure shows behind-the-meter versus front-of-the-meter electrical equipment. Behind the meter, technologies are customer-sited and can include solar, storage, and microgrid systems. Front-of-the-meter technologies include utility-scale generation, transmission, and distribution technologies.
Source: [Center for Sustainable Energy](https://energyscenter.org/) (<https://energyscenter.org/>)

In September 2017, **Assembly Bill 546** (Chiu, Chapter 380, Statutes of 2017) authorized “the Governor’s Office of Planning and Research to provide guidance on energy storage permitting, including streamlining [and] best practices.” Following, in September 2022, **Senate Bill 379** (Wiener, Chapter 356, Statutes of 2022) provided an additional impetus for cities and counties to automate the permitting of residential, small-scale, stand-alone and paired solar systems. SB379 requires cities and counties in the state to adopt an “automated permitting platform” for solar less than 38.4 kilowatts (kW) in nameplate capacity that may also have an attached energy storage system. To support jurisdictions through the transition, the 2021 California state budget included a \$20 million appropriation to the Energy Commission to fund grants for jurisdictions adopting SolarAPP+ or a similar program aimed at expediting permitting. According to legislative findings in SB 379, such jurisdictions “can and should be required to adopt SolarAPP+ or a similar program for automated permitting in order to promote the development of solar and storage to help meet the state’s clean energy needs.” Since then, as of June 2025, 329 authorities having jurisdiction (AHJs) have adopted automated permitting systems as self-reported to the CEC.

The Center for Sustainable Energy (CSE) created this guidebook as part of a California Energy Commission (CEC) Electric Program Investment Charge (EPIC) grant-awarded project (EPC-19-026). The EPIC program

Purpose and Use of this Guide

SECTION 01

Scope

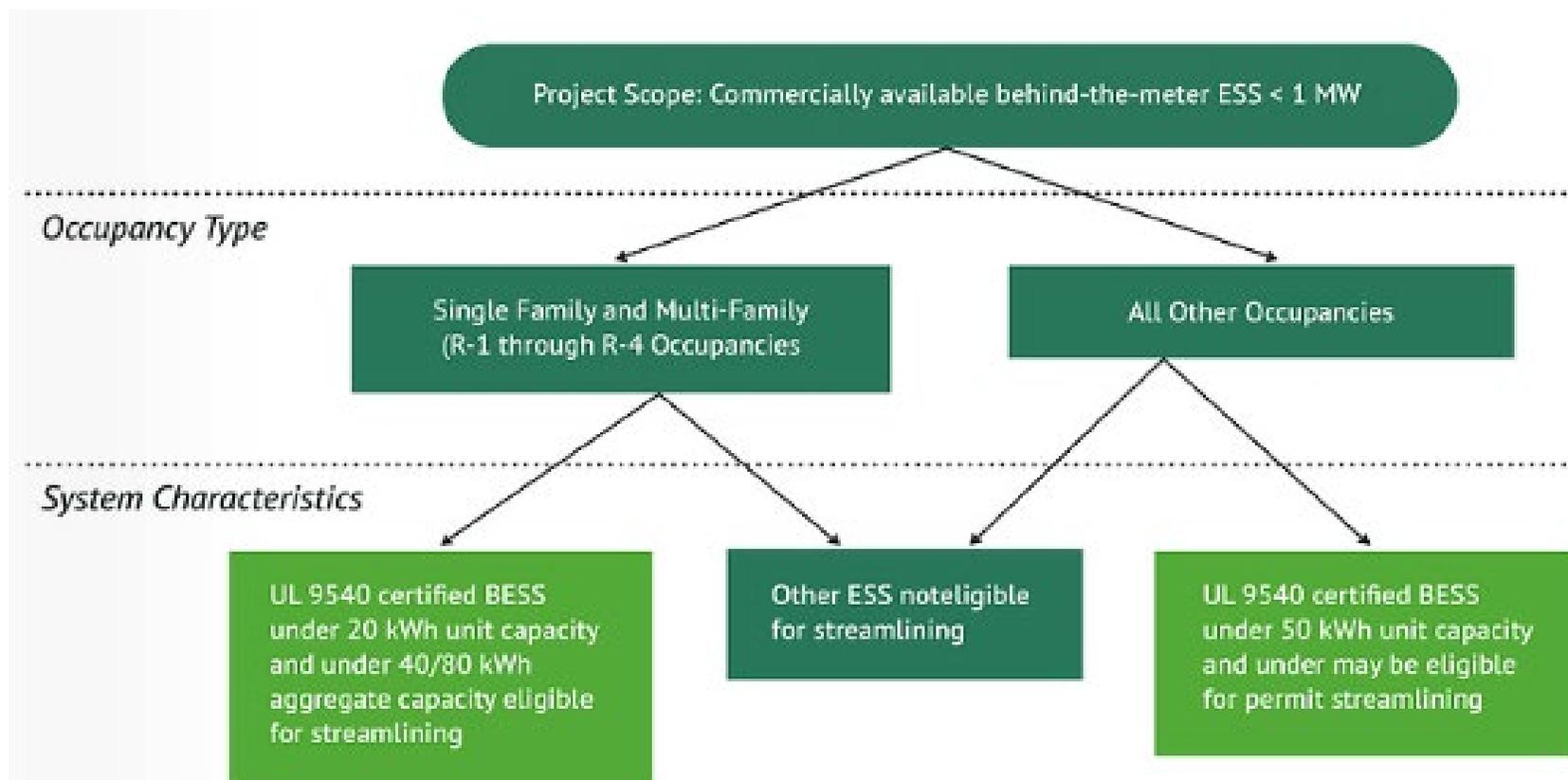


Figure shows the segmentation approach used to identify which energy storage technologies would be covered by the contents of the guidebook. The guidebook focuses on commercially available, behind-the-meter, electrochemical energy storage systems.

Source: [Center for Sustainable Energy](https://energycenter.org/) (https://energycenter.org/)

Section 2: Codes and Standards

Full screen 13 Energy Storage Guidebook

California Building Code

Energy storage systems (ESS) in California must be designed to meet provisions in the [California Building Standards Code \(CBSC\)](#), which is Title 24 of the California Code of Regulations (CCR).

Title 24 is reserved for state regulations that cover the design and construction of buildings, associated facilities, and equipment, and it applies to all building occupancies throughout the state. It contains requirements for structural, mechanical, electrical, and plumbing systems. Title 24 is an essential mechanism for ensuring safe construction practices. This guidebook focuses on the 2025 CBSC, published July 1, 2025, which will be effective in practice starting January 1, 2026.

TABLE 1
Parts of CBSC That Apply to ESS by Building Type

Building Type	Part 2.5 CA Residential Code	Part 3 CA Electrical Code	Part 6 CA Energy Code ¹	Part 9 CA Fire Code
One- & Two-Family Residential	⚡	⚡	⚡	
Multifamily Residential		⚡	⚡	⚡
Commercial		⚡	⚡	⚡

Source: [Center for Sustainable Energy](https://energycenter.org/) (<https://energycenter.org/>)

The intent of this guidebook is to provide consistent interpretation of these Title 24 requirements throughout the state. This guidebook is not intended to create, explicitly or implicitly, any new requirements. Updated information regarding new code requirements, as well as the code updating process, is available on the California Building Standards website at www.bsc.ca.gov.

Note that cities and counties in California may adopt local laws ("ordinances") to modify the state building standards mandated under Title 24. There are limitations to the types of modifications that can be made, but this variation from jurisdiction to jurisdiction adds to the variability of ESS permitting across California.

One- and Two-Family Residential

California Residential Code

The California Residential Code (CRC) includes building provisions for construction of detached one- and two-family dwellings as well as townhomes that are three stories or less, and it is based on the International Residential Code. The CRC, Part 2.5 of Title 24, governs the installation of ESS for these properties.

¹ Applies to ESS in new construction.

Codes and Standards Impacting Energy Storage Permitting

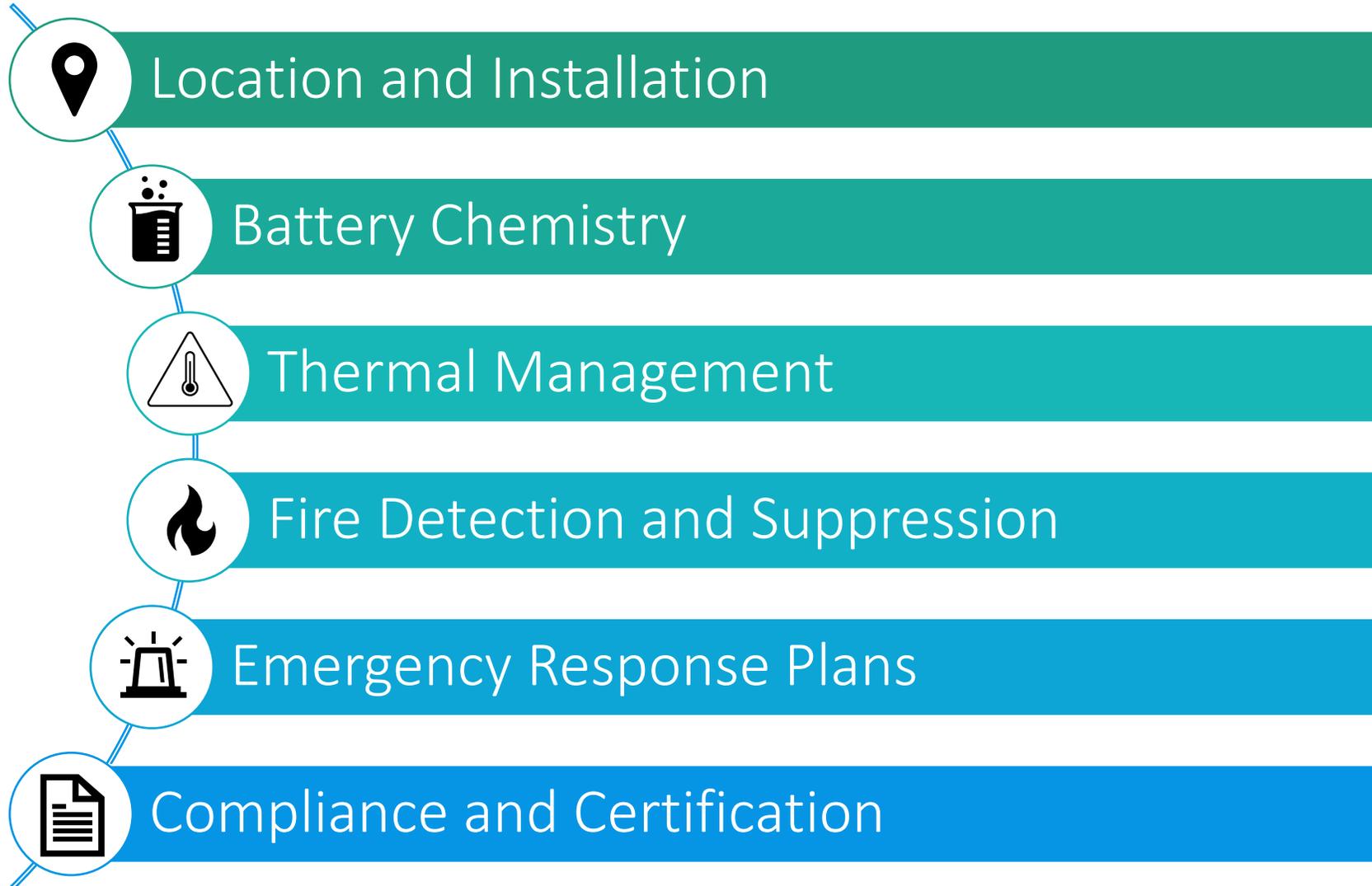
SECTION 02

Relevant Building Codes

Parts of CBSC That Apply to ESS by Building Type

Building Type	Part 2.5 CA Residential Code	Part 3 CA Electrical Code	Part 6 CA Energy Code ¹	Part 9 CA Fire Code
One- & Two-Family Residential	⚡	⚡	⚡	
Multifamily Residential		⚡	⚡	⚡
Commercial		⚡	⚡	⚡

Key Considerations for Fire Safety



Section 3: Energy Storage Permit Process

20 Energy Storage Guidebook

Typical Permit Review

The building permit process exists to protect public health, safety, and welfare. The process ensures that buildings, and certain kinds of installed equipment, such as ESS, meet the standards set out in California's Building Standards Code.

More details on the building codes and standards that impact ESS are included in the previous section, Section 2: Codes and Standards Impacting Energy Storage Permitting.

A wide range of permitting agencies exist in California. These range from AHJs affiliated with municipalities (i.e., city and county governments) to AHJs located within special districts (e.g., independent fire districts that provide permitting to state and federal agencies). Along with AHJs, other permitting agencies in the state include:

- **The Division of the State Architect**, which provides oversight for primary and secondary schools, community colleges, and other state facilities.
- **CAL FIRE Office of the State Fire Marshal Plan Review Section**, which provides construction plan review for buildings used by certain state agencies.
- **The California Department of Health Care Access and Information** (which was formerly known as the Office of Statewide Health Planning and Development), which provides permitting for hospitals and certain kinds of healthcare facilities.
- **California Department of Housing & Community Development**, which provides registration for mobile homes and inspections of mobile home parks.
- **Water districts**, which provide self-permitting for infrastructure related to water delivery.
- **Federal agencies for federally managed properties**, such as military bases, which typically follow their own federal building code.

Building permits must be reviewed following the state's requirements, but AHJs structure the permitting process for their areas of oversight. They have significant influence over the codes that govern construction and how projects are reviewed against these codes and standards. A standard process follows a flow as shown in Figure 3. AHJs seeking to expedite their permitting process may be able to automate the plan review for typical residential solar plus storage installations using an online automated permitting software.

21 Energy Storage Guidebook

FIGURE 3
Energy Storage Permit Review Process

```

graph TD
    subgraph Applicant
        A1[Requirements research and project design] --> A2[Submit plans]
        A2 --> A3[Revise and resubmit plans]
        A3 --> A4[Issue corrections]
        A4 --> A2
        A5[Construction begins]
        A6[Additional work to correct noncompliant installation issues]
        A6 --> A5
    end

    subgraph AHJ
        B1[Permit request received] --> B2[Review submitted plan designs]
        B2 --> B3[Review plans against codes]
        B3 --> B4[Review UL listings and project specification sheets against list of acceptable equipment]
        B4 --> B5{Plan meets AHJ requirements?}
        B5 -- No --> A4
        B5 -- Yes --> B6[Accept payment for permit]
        B6 --> B7[Permit is granted]
        B7 --> A5
        B7 --> B8{Site inspection: Project conforms to plans and codes?}
        B8 -- No --> A6
        B8 -- Yes --> B9[Final approval granted*]
    end

    A2 --> B1
    A3 --> B2
    A4 --> B2
    A5 --> B8
    
```

*Some AHJs and utilities require permit applicants to secure interconnection agreement prior to submitting permit application.

Flow chart illustrating the typical permit application and review process from submission to final approval post inspection.
Source: [Center for Sustainable Energy](https://energycenter.org/) [https://energycenter.org/]

Best Practices Across California



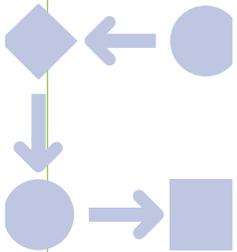
Develop Public Data Dashboards

- Improve transparency with a live dashboard illustrating current volumes of building inspections and a daily list of planned inspections



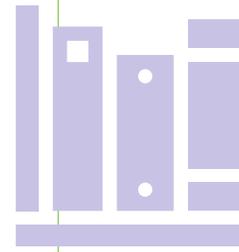
Streamline Communication Channels

- Provide a single point of contact from each party involved in the permitting process (e.g., AHJ and ESS installer) to facilitate effective and efficient communication



Clearly Publish Processes and Requirements

- Post comprehensive guidance on accessible public websites regarding permitting requirements that is vetted by all relevant departments (e.g., building and fire departments, etc.).
- Develop an eligibility checklist to reduce incomplete permit applications



Leverage Educational Resources

- AHJs can engage with code and standard organizations to leverage guidance materials and provide resources to help their own staff and the installers in their jurisdictions navigate the relevant codes and standards.

Section 4: Electronic and Automated Permitting

24 Energy Storage Guidebook Full screen

- The ESS designer or installer personnel may not be a "Qualified Person" and may not understand what is required. (Per NEC and NFPA, a Qualified Person is one who has demonstrated skills and knowledge related to the construction and operation of electrical equipment and installations and has received safety training to identify the hazards and reduce the associated risk.)
- Inconsistencies in how codes and standards are interpreted by different AHJs across California can make the permitting process difficult.
- Errors, missing information, or failure to meet AHJ requirements on permit applications submitted by ESS installers cause delays in the review process.
- Outdated plan review processes that require manual submissions create long delays in receiving permits.
- The system approved on paper during the permit application process is not what is installed in the field.

To help improve ESS permitting processes across California and taking into account that no single approach will work for every jurisdiction, this guidebook has compiled a variety of best practices and processes successfully implemented across the state. Understanding what has worked well in one jurisdiction can potentially help other jurisdictions identify opportunities for improvement in their processes.



- **Develop public data and dashboards** – In San Joaquin County, they improved transparency and communication in their permitting process with a live dashboard on the Community Development Department website that shows current building inspections and a daily list of the planned inspections.
- **Streamline communication channels** – A mid-sized city in the Central Region of California recommends ensuring that each party (both the AHJ and the ESS installer) has a single point of contact to facilitate efficient and effective communications between parties.
- **Clearly publish processes and requirements** – AHJs should clearly publish their processes and requirements online and provide an example plan set. The City of Signal Hill, in Southern California, has comprehensive guidance on its website regarding solar permitting requirements (from the building department and fire department) and a Solar Eligibility Checklist to determine if a system is eligible for an expedited review. Such resources can be developed for ESS to make the process clear and easy to follow.
- **Leverage educational resources** – One best practice suggested by an AHJ in the Bay Area is to engage with UL to ensure clarity in interpreting UL 9540 certification and UL 9540A test results. Getting additional guidance directly from the source of the standards can help AHJs properly interpret the results and reduce delays caused by internal debates over the meaning of fire tests.

Electronic and Automated Permitting Systems

SECTION 04

Section 5: Resources

28 Energy Storage Guidebook

Energy Code Ace: California Energy Code Guidance

Energy Code Ace™ offers no-cost tools, training, resources, and technical support to help industry professionals comply with the California Energy Code and Appliance Standards (Title 20). Some of Energy Code Ace's offerings include:

- **Technical Support:** Use "Submit a Question" on the Energy Code Ace website to connect with code experts or scroll through Q&A to find answers to commonly asked questions.
- **Tools:** Use the [Virtual Compliance Assistant](#) to create Certificates of Compliance and Certificates of Installation for nonresidential, hotel/motel, high-rise multifamily (NRCC, NRCI), and low-rise multifamily (LMCC, LMCI) projects.

Projects submitting for building permits through December 31, 2025, are subject to the 2022 Building Code:

Training Opportunities

- [2022 Nonresidential & High-rise Multifamily Standards: Solar and Battery Storage](#)
- [2022 Single-family & Low-rise Multifamily Standards: Solar and Battery Storage](#)

Available Resources

- [2022 Single-family & Low-rise Multifamily Solar and Battery Storage Fact Sheet](#)
- [2022 Nonresidential & High-rise Multifamily Solar and Battery Storage Fact Sheet](#)

Projects submitting for building permits as of January 1, 2026, are subject to the 2025 Building Code:

Training Opportunities

- [2025 Nonresidential Standards: What's New](#)
- [2025 Residential Standards: What's New](#)

Available Resources

- [2025 Single-family & Low-rise Multifamily Solar and Battery Storage Fact Sheet \(coming soon\)](#)
- [2025 Nonresidential & High-rise Multifamily Solar and Battery Storage Fact Sheet \(coming soon\)](#)

Fire Safety Standards

UL 9540A Test Method for Battery Energy Storage Systems (BESS): [UL 9540A Test Method for Battery Energy Storage Systems \(BESS\) | UL Solutions](#)

Energy Storage System Testing and Certification: [Energy Storage System Testing and Certification | UL Solutions](#)

Full screen

29 Energy Storage Guidebook

Permitting Tool Kit – One- and Two-Family Residential ESS

The following documents form an optional tool kit that AHJs can use to ensure a predictable and efficient process for permit applicants. The templates can be adopted with minor administrative adjustments by a jurisdiction, as needed. Building officials should review the template documents and their assumptions and make further modifications as necessary to meet the needs of their jurisdiction.

Permit Application Requirements Template

This template is intended to guide applicants through the necessary components for a streamlined permitting process for one- and two-family residential ESS projects.

- Approval Requirements**
 - **[LIST STEPS REQUIRED TO OBTAIN PERMIT APPROVAL]**
 - Steps should include criteria for streamlined permitting and instructions for projects that do not fall within those criteria. For example, "Projects located in the historical district require planning review" or "ESS units over 20 kWh are required to follow the California Fire Code and require fire review."
 - The following permits are required to install a residential ESS:
 - **[LIST TYPE(S) OF PERMIT REQUIRED BY LOCAL JURISDICTION]**
 - Planning review [IS/IS NOT] required for ESS installations of this size.
 - Fire department approval [IS/IS NOT] required for ESS installations of this size.
- Submittal Requirements**
 - Completed permit application form (available at [WEB ADDRESS]).
 - Demonstrate compliance with the eligibility checklist for expedited permitting.
 - A completed Standard Electrical Plan that includes the following:
 - Site diagram showing the arrangement of the ESS and the distance from property lines and adjacent buildings/structures (existing and proposed).
 - Location of main service or utility disconnect.
 - Make and model of ESS.
 - Total number of battery modules.
 - One-line diagram of system.
 - Specify grounding/bonding, conductor type and size, conduit type and size, and number of conductors in each section.
 - If paired with solar PV, include the solar PV in the diagram and show their locations.
 - Equipment cut sheets.
 - Labeling of equipment as required by CEC.
- Fees**
 - **[PROVIDE CLEAR FEE SCHEDULE]**
- Inspection Requirements**
 - **[PROVIDE INSPECTION CHECKLIST]**

[Informational Bulletin on the UL 9540 Safety Standard and the UL 9540A Test Method](#)

Discussion Questions

- Is any information inaccurate, outdated, or redundant that should be removed or updated?
- Is there any content that is clearly missing from the Guidebook that would make it more useful to your work?
- Are there any specific areas that could benefit from additional visuals (e.g., flowcharts, tables, checklists)?
- Does the Guidebook appropriately balance technical depth with accessibility for a non-technical audience (e.g., smaller AHJs, new installers)?
- Are there state or local regulatory gaps that the Guidebook could help clarify?
- Have you found particular code sections (e.g., UL 9540A, NFPA 855, Title 24) difficult to interpret or apply?

Demetra Tzamaras

Demetra.Tzamaras@energycenter.org

EnergyCenter.org



HEADQUARTERS

3980 Sherman Street
Suite 170
San Diego, CA 92110



PROGRAM EMAIL

Storage.Guidebook@energycenter.org



TELEPHONE

858-244-1177