California Energy Commission

FINAL COMMISSION REPORT

California Building Energy Performance Strategy Report

Senate Bill 48 Implementation Report

Gavin Newsom, Governor

November 2026 | CEC-400-2026-007-F

California Energy Commission

David Hochschild
Chair

Siva Gunda
Vice Chair

Commissioners
J. Andrew McAllister, Ph.D.
Noemí Otilia Osuna Gallardo, J.D.
Nancy Skinner

Mei Chang	Kristina Duloglo	Vanessa Durant	Jeremiah Ellis
Cathy Harwin	JoAnna Saunders	Gabriel D. Taylor	Elicia Yoffee

Primary Authors

Kristina Duloglo
Project Manager

Ram Narayanamurthy
Branch Manager
EXISTING BUILDINGS BRANCH

Michael J. Sokol
Director
EFFICIENCY DIVISION

Drew Bohan
Executive Director

DISCLAIMER

Staff members of the California Energy Commission (CEC) prepared this report. As such, it does not necessarily represent the views of the CEC, its employees, or the State of California. The CEC, the State of California, its employees, contractors, and subcontractors make no warrant, express or implied, and assume no legal liability for the information in this report; nor does any party represent that the uses of this information will not infringe upon privately owned rights. This report has not been approved or disapproved by the CEC nor has the Commission passed upon the accuracy or adequacy of the information in this report.

ACKNOWLEDGEMENTS

California Energy Commission staff acknowledges and thanks the many jurisdictions and experts who have contributed to this topic and these recommendations. This document is based on the work of many, including:

- City of Boston Environment Department
- City of Berkeley Department of Planning and Development, Office of Energy and Sustainable Development
- Beverly Hills Community Development Department
- City of Cambridge Community Development Department
- City of Chula Vista Department of Sustainability
- City of Davis Building Division
- City of Los Angeles Department of Building and Safety (LADBS)
- City of San Diego Sustainability and Mobility Department
- San Francisco Environment Department
- Santa Monica Office of Sustainability and the Environment
- City of West Hollywood Community Development Department
- Colorado Energy Office
- Denver's Office of Climate Action, Sustainability and Resiliency (CASR)
- Institute for Market Transformation (IMT)
- Los Angeles County Chief Sustainability Office
- Maryland Department of the Environment
- Montgomery County Department of Environmental Protection
- City of Newton Climate and Sustainability Team
- New York City Department of Buildings
- Oregon Department of Energy
- Seattle Office of Sustainability and Environment
- City of St. Louis Office of Building Performance
- United Kingdom Department of Business, Energy, & Industrial Strategy
- U.S. Department of Energy
- U.S. Environmental Protection Agency
- U.S. Green Building Council, California (USGBC-CA)
- Washington, D.C. Department of Energy and Environment
- Washington State Department of Commerce, Energy Division

PREFACE

Senate Bill 48 (Becker, Chapter 378, Statutes of 2023) added California Public Resources Code Section 25402.16, which requires the California Energy Commission, in consultation with the California Air Resources Board, the California Public Utilities Commission, and the California Department of Housing and Community Development, to "[…]*develop a strategy for using benchmarking data to track and manage the energy usage and emissions of greenhouse gases of covered buildings in order to achieve the state's goals, targets, and standards* […]". This document is the final proposed strategy and recommendations for transmittal to the Legislature.

ABSTRACT

In 2023, the California Legislature required the California Energy Commission (CEC), in collaboration with other specified state agencies, to develop a strategy for using statewide building benchmarking data to track and manage the energy use and greenhouse gas emissions of large buildings to achieve the state's goals, targets, and standards. This document contains the CEC's final recommendations for transmittal to the Legislature.

Residential and commercial buildings in California consume more than 70 percent of the total electricity and more than 50 percent of the total gas used in the state, generating roughly 25 percent of the state's greenhouse gas emissions. California cannot achieve midcentury climate and social goals without addressing building performance. By promoting clear and achievable building performance targets, California could encourage proactive investments in energy efficiency, building electrification, and load flexibility to support state goals.

Keywords: Energy efficiency, existing buildings, building decarbonization, electrification, equity, greenhouse gas, GHG, Senate Bill 48, benchmarking, multifamily buildings, commercial buildings, tenant protections, workforce, benchmarking, building performance standards, heat pump, compliance, statutes, regulations, standards, load flexibility, data, refrigerant use

Please use the following citation for this report:

Chang, Mei, Kristina Duloglo, Vanessa Durant, Jeremiah Ellis, Cathy Harwin, JoAnna Saunders, Gabriel D. Taylor, and Elicia Yoffee. 2026. *California Building Energy Performance Strategy Report*. California Energy Commission. Publication Number: CEC-400-2026-007-CMF.

TABLE OF CONTENTS

California Building Energy Performance Strategy Report i
Acknowledgements i
Preface ii
Abstract iii
Table of Contents iv
List of Figures ix
List of Tables xi
Executive Summary 1
Background 1
Conclusions 1
Recommendations 1
CHAPTER 1: A Building Performance Strategy to Achieve California's Goals 3
Building Performance Standards 3
BPS and California Energy Code 4
Building Energy Benchmarking 4
California's Building Energy Benchmarking Program 5
Benchmarking Data Collection 7
Public Disclosure of Benchmarking Data 8
Compliance With California's Benchmarking Requirement 10
Verification of Benchmarking Data 10
Local Jurisdictions With Data Verification Requirements 11
Using Utility Billing Data as Verification 14
Delegation of Authority for a BPS 15
Setting a BPS Building Size Threshold 15
Metric Objectives 19
Metric Objectives for Energy 19
Energy Use Intensity 20
ENERGY STAR Score 21
Load Flexibility and Coincident Peak Demand 21
Metric Objectives for Environmental Impact 22
Greenhouse Gas Emissions Intensity 22
Metric Objectives for Occupant Impacts 23
Thermal Comfort and Safety 24
Indoor Air Quality 24
Metric Selection Criteria 25
Metric Simplicity 26
Within the Building Owner's Control 27
Metric Advantages and Disadvantages 28

Policy Approaches 30
Establishing BPS Baselines 32
Setting Final Performance Targets 35
Evaluation, Monitoring, and Verification of a BPS 36
Application of Evaluation to Equity Outcomes 37
CHAPTER 2: Achieving an Equitable Building Performance Standard 39
Equity Requirements and Guidance 39
Ensuring Equity During Development and Implementation of a BPS 40
Community Engagement Fatigue 43
Compensation 43
CHAPTER 3: Compliance and Enforcement 45
Compliance Pathways 45
Standard Compliance Pathway 45
Alternative Compliance Pathways 46
Qualifying Circumstances for ACPs 52
Compliance Pathway Implementation 53
Standards Versus Tiered Implementation 54
Responsible Parties 55
Owner of a Disclosable Building 55
Commercial Tenant in a Building Subject to a BPS 56
Other Parties to Consider Responsible for Compliance and Liable for Penalties 57
Violations for Noncompliance 58
Reporting Violations 58
Performance Standards Violations 58
Community Accountability Board 59
Considerations for a Community Accountability Board 59
Challenges to Consider 60
Administrative Enforcement Authority 60
The California Energy Commission 61
California Jurisdictions With Building Performance Standards 61
California Jurisdictions Without Building Performance Standards 62
Other State Agencies 63
Administrative Orders 63
Enforcement Mechanisms 63
Monetary Penalties 63
Penalty Payment Inflow 71
CHAPTER 4: Economics of Building Performance 72
Costs for Regulated Parties 72
Administrative Costs for Regulators 77
Technical Assistance and Help Desk 77

Educational Materials and Resource Management 77
Data Management and Review 77
Outreach and Enforcement 77
BPS Workforce Needs 77
Equitable Access to Economic Opportunities 78
Decarbonization Programs in California 79
Identifying and Avoiding Negative Impacts of BPS on Tenants 81
Residential Tenants 81
Residential Tenant Protections in California 82
Tenant and Other Stakeholder Concerns 83
Strategies to Avoid Causing Evictions, Harassment, or Displacement of Residential Tenants 88
Strategies to Avoid Increasing Utility and Rental Costs for Residential Tenants 89
Small Commercial Tenants 90
Monetary Incentives 92
Financing and Loan Programs 93
Energy Service Agreements 96
Other Incentives 97
Income Tax Credit and Deductions 98
Property Tax Reductions 98
Tax Abatements 98
Nonmonetary Incentives 99
Fast-Track Permitting 99
Resource Hub 99
Recognition Programs 99
Reporting Flexibility 99
CHAPTER 5: Recommendations 101
Building Performance Standards 101
BPS Structure and Metrics 101
Responsible Parties 102
Data Management 103
Data Verification 103
Alternative Compliance Pathways 103
Implementation Costs and Benefits 103
Administrative Enforcement Authority 103
Enforcement Mechanisms 104
Penalty Payment Inflow Options 104
BPS Workforce Needs 104
Evaluation, Monitoring, and Verification 104
Equity Best Practices 105
Stakeholder Engagement 105

Tenant Protections 105
Technical Assistance 105
Monetary Incentives 106
Nonmonetary Incentives 106
Glossary 107
Acronyms 113
APPENDIX A: State Goals A-1
Energy Efficiency and Greenhouse Gas Emissions A-1
Renewables Portfolio Standard A-3
Equity A-4
Building Performance and State Goals A-4
Strategic Approaches to Achieving State Goals A-5
Technological Approaches to Achieving These Goals A-6
APPENDIX B: Equitable Stakeholder Analysis and Engagement B-1
Equity Requirements and Guidance B-2
Requirements From SB 48 ..... B-2
California Natural Resources Agency and CEC Requirements for Tribal Engagement B-4
California Energy Commission's Justice, Access, Equity, Diversity and Inclusion Framework B-4
California Disadvantaged Communities Advisory Group Equity Framework B-5
Ensuring Equity During the Development of This Report B-5
Tribal Engagement B-6
Stakeholder Analysis and Engagement Process B-6
APPENDIX C: Programs That Provide Financial Incentives for Community Engagement C-1
APPENDIX D: Administrative Enforcement Processes D-1
Inform Responsible Party of Violation D-1
Identify the Responsible Party D-1
Notification of Noncompliance D-1
Notification of Violation D-2
Select the Appropriate Enforcement Mechanisms D-3
Apply an Enforcement Mechanism Based on Violation Type D-3
Use Other Factors to Choose an Enforcement Mechanism D-3
Assess Penalties D-3
Consider Mitigating Factors D-4
APPENDIX E: Energy Workforce Growth E-1
APPENDIX F: Identifying and Avoiding Negative Impacts of Building Performance Standards on Tenants F-1
Strategies to Avoid Evictions, Harassment, or Displacement of Tenants F-2
Strategies to Avoid Increasing Utility or Rent Burden of Residential Tenants F-5

Defining Small Commercial Tenants F-9
Strategies to Avoid Evictions, Harassment, and Displacement of Small Commercial Tenants F-10
APPENDIX G: Financing G-1
Interest Rate Buydown Implementation Considerations G-1
Buydown Amount G-1
Maximum and Minimum Project Sizes G-1
Stacking Incentives G-1
Maximum and Minimum Loan Terms G-1
Borrower Type G-2
IRBD Timeline G-2
Deployment and Infrastructure G-2
Commercial Building Rebate Programs G-3
Income Tax Credits and Deductions G-7
Other Incentives Provided by Other States and Jurisdictions G-10
Commercial Property Assessed Clean Energy (C-PACE) G-11
C-PACE Implementation Considerations G-12
APPENDIX H: Senate Bill 48 Requirements H-1
APPENDIX I: Equity Metrics I-1
Potential Equity Metrics for a Building Performance Strategy I-2
Table of contents I-6
Executive Summary I-7
Introduction I-9
Methodology I-11
Proposed Metrics I-12
Affordability I-12
Health I-15
Displacement Risk I-16
Workforce Development I-17
Program Compliance of Buildings I-18
Resiliency I-19
Procedural Equity I-19
Data Collection I-21
Conclusion I-22
APPENDIX J: Summary of Comments from Advisory Organizations and CEC Responses J-1
Adopted Recommendations J-1
Alternative Compliance Pathways J-1
Tenant Protection J-2
Tenant Landlord Interaction J-3
Recommendations Considered J-4

Building Energy Benchmarking Program J-4
Data J-4
Enforcement and Fines J-4
Equity J-5
Metrics J-5
Program Administration J-5
Engagement of Interested Parties J-5
Tenant Landlord Interaction J-6
Tenant Protection J-6
Workforce J-10
APPENDIX K: Summary of Public Comments K-1
Building Performance Standard (BPS) With a Trajectory Approach K-1
Flexibility and Compliance Pathways K-1
Alignment With Other Codes and Regulations K-2
Alignment with Local BPS Policies K-2
Metrics K-2
Baselines and Targets K-3
Data Verification K-3
Evaluation, Monitoring, and Verification K-4
Responsible Parties and Penalties K-4
Equity and Engagement of Interested Parties K-4
Tenant Protections K-5
Support for Building Owners K-6
Workforce K-6

LIST OF FIGURES

Page

Figure 1: Number of Disclosable Buildings by Property Type 6
Figure 2: Number of Disclosable Buildings by County 6
Figure 3: Washington, D.C. Public Data Disclosure 9
Figure 4: City of Denver Public Data Disclosure 9
Figure 5: Buildings in California Greater Than 50,000 Square Feet 17
Figure 6: Buildings in California Greater Than 25,000 Square Feet 18

Figure 7: Site and Source Energy 21
Figure 8: Montgomery County, Maryland, Baseline and Performance Standard Disclosure 34
Figure 9: Standard Trajectory Compliance Pathway Example 46
Figure 10: Oregon BPS Compliance Deadlines 54
Figure 11: Total Costs and Energy Savings for DCSEU Projects 74
Figure 12: Costs and Savings Summary of Lighting Efficiency Measures 75
Figure B-1: Stakeholder Analysis Matrix B-8
Figure B-2: Stakeholder Engagement Opportunities B-10
Figure B-3: The Spectrum of Community Engagement to Ownership B-13
Figure E-1: Number of Energy Efficiency Jobs by Industry in California in 2023 ..... E-1
Figure G-1: Simplified Overview of a C-PACE Process Model G-12

LIST OF TABLES

Page

Table 1: Jurisdictions With Data Verification Requirements 12
Table 2: Benchmarking Requirements for Seven Cities in California 19
Table 3: Evaluation of Building Performance Metrics Based on Selection Criteria 26
Table 4: Metric Advantages and Disadvantages 28
Table 5: Baseline Selections for Jurisdictions With Trajectory-Based BPS 33
Table 6: BPS Outcomes and Impacts 36
Table 7: Equity Issues Covered in This Report 40
Table 8: Advantages and Disadvantages of Prescriptive Pathway 47
Table 9: Advantages and Disadvantages of Standard Target Adjustments 48
Table 10: Advantages and Disadvantages of BPAP 50
Table 11: Advantages and Disadvantages of Portfolio Compliance 51
Table 12: Advantages and Disadvantages of Alternative Compliance Fee 52
Table 13: Simplified Penalty Formulae From Other Jurisdictions 64
Table 14: Compliance Costs and Penalties for Building Performance Standards in Four Jurisdictions 66
Table 15: Penalties for Compliance Pathways for DOEE BEPS 69
Table 16: Average Capital Costs for BPS in Major Cities, in U.S. Dollars 72
Table 17: Aggregated Building-Level Implementation Costs for DCSEU Projects ($ per Site kBtu Saved) 73
Table 18: Building-Level Simple Payback Period for DCSEU Projects (Years) 74
Table 19: Communities LEAP Household Energy Efficiency Analysis in San José, California: Average Annual Savings per Household From Enhanced Enclosure Retrofit and Whole-Home Electrification 87
Table 20: Advantages and Disadvantages of IRBD 93
Table 21: Advantages and Disadvantages of C-PACE 94
Table 22: Advantages and Disadvantages of an ESA 96
Table B-1: Stakeholder Engagement Opportunities B-11
Table C-1: Equity and Access Grant Program Funding C-3
Table C-2: Stakeholder Compensation Mechanisms C-3

Table E-1: Employment Impacts by Industry, Low and High Estimates (Average Annual) 2020–2045 ..... E-2
Table F-1: Commercial Tenant Definitions F-9
Table G-1: Example IRBD Programs G-2
Table G-2: Commercial Building Rebate Programs G-4
Table G-3: Income Tax Credits and Deductions Available as of April 2025 ..... G-8
Table G-4: Other Jurisdictions With Incentives for BPS G-10
Table H-1: Legislative Requirements H-1
Table I-1: Metrics to Assess Rent Affordability* I-13
Table I-2: Metrics to Assess Energy Affordability* I-14
Table I-4: Metrics to Assess Building Health* I-16
Table I-5: Metrics to Assess Risk of Displacement* I-17
Table I-6: Metrics to Assess the Impact of a Strategy on the Workforce* I-18
Table I-7: Metrics to Measure Program Compliance by Building Type* I-18
Table I-8: Metrics to Assess Resiliency* I-19
Table I-9: Metrics to Assess Procedural Equity* I-20

EXECUTIVE SUMMARY

Background

Under current state law, the CEC implements the existing benchmarking requirement for the owners of large buildings to submit annual energy use data. Assembly Bill 802 (Williams, Chapter 590, Statutes of 2015) established the statewide building energy benchmarking and disclosure program in 2016. The law applies to buildings greater than 50,000 square feet, which represent more than 60 percent of total building area in the state. *Benchmarking* refers to the process of building owners collecting direct measurements of their building operations and energy use. Benchmarking allows current and future building owners to analyze how the performance of their building changes over time and identify opportunities to reduce building energy consumption and costs.

Senate Bill 48 (Becker, Chapter 378, Statutes of 2023) requires the CEC to consider several issues related to affordability and equity in developing a statewide building performance strategy. The CEC has engaged with stakeholders through public comments, technical advisory working groups, equity working groups, feedback from contracted community-based organizations, and one-on-one discussions to develop the recommendations below.

Conclusions

Based on the benchmarking data available and California's climate, energy, economic, and social goals, the strategy that the CEC recommends is to implement a statewide building performance standard (BPS) policy that aligns with affordability goals, existing programs for energy efficiency, and equitable tenant protections. By promoting clear and achievable performance targets, a BPS would encourage proactive and cost-effective investments in energy efficiency, building electrification, building decarbonization, and load flexibility for the state's largest buildings. More than a dozen jurisdictions across the country, including four states, have successfully deployed BPS policies as the primary mechanism to drive energy efficiency and GHG emissions reductions in existing buildings. The CEC is best positioned to implement a statewide BPS policy because it is California's primary energy policy and planning agency and oversees the statewide energy benchmarking program.

Recommendations

SB 48 directed the CEC to develop a performance-based strategy for buildings, but it did not grant the CEC the authority to execute the strategy. Implementing a statewide BPS will likely require future legislation. Chapter 5 presents detailed recommendations on how the Legislature could structure a BPS policy. In summary, an effective BPS would:

- Apply to commercial and multifamily buildings greater than 50,000 square feet that are subject to California's existing Building Energy Benchmarking Program. Aligning a BPS with the benchmarking program makes engagement with building owners simpler and allows building owners to submit the necessary data to track compliance.
- Encourage, or authorize, local jurisdictions to implement their own BPS policies if those programs apply to buildings not covered by the state program, but apply a single statewide standard to all large buildings.

- Consider cost-effectiveness during the development of a BPS, supported by a comprehensive analysis of the costs and benefits of compliance, to guide decisions on performance targets, implementation timelines, compliance pathways, and penalties for noncompliance.
- Follow a trajectory policy structure that sets final performance targets for every building based on property type, and interim performance targets based on the starting level of performance of each building. A trajectory approach combines long- and short-term performance requirements, providing building owners with both regulatory certainty and maximum compliance flexibility.
- Include mandatory compliance periods of five years and establish final performance targets in 2045 for each property type. All buildings subject to the BPS should have the same compliance deadlines, except for buildings with unique considerations that may be approved for alternate deadlines.
- Include two primary building performance metrics: the energy used by the building and the greenhouse gas emissions emitted directly from the building.
- Explore, through the regulatory process, demand management metrics, such as coincident peak demand, which signal to building owners when they should reduce electric demand to reduce strain on the electric grid.
- Include performance baselines for each building based on several years of benchmarking data. Availability of benchmarking data can inform how baseline years are set for buildings subject to the BPS.
- Require new energy benchmarking data verification to support fair implementation of a statewide BPS. Data verification could be performed by a licensed professional at a cadence that aligns with key BPS evaluation years, such as the interim and final performance years.
- Provide building owners with compliance pathways that allow flexibility to account for financial constraints, capital planning cycles, building life cycles, and leasing cycles, which will be different for each building.
- Include penalties for noncompliance.
    - Penalties collected should be reinvested to improve building performance, focusing on low-income and inefficient buildings.
    - The owners of regulated buildings should be prohibited from passing penalties on to residential and small commercial tenants.
- Complement and align with incentive programs to support necessary energy upgrades to reduce the costs for building owners and improve energy affordability.
- Include a resource hub that serves as a centralized location where all stakeholders can access BPS information, guidance, technical assistance, and available incentives.

CHAPTER 1:
A Building Performance Strategy to Achieve California's Goals

This chapter analyzes the benchmarking data the California Energy Commission (CEC) collects and the ways it could be used to track and manage progress toward the state's goals, targets, and standards. This chapter also analyzes strategies to validate and improve benchmarking data to support a building performance policy and considers various building performance metrics. Policy recommendations for analysis completed in Chapters 1 through 4 are outlined in Chapter 5.

Building performance strategies are public policies designed to improve the maintenance and operations of buildings to align with existing climate, energy, economic, and social goals. Such policies complement new construction building codes by ensuring building owners maintain a minimum level of building performance over the life of their buildings.

Building energy benchmarking means tracking and reporting building energy use and using a standard metric to compare the performance of a building against the past performance and to other buildings. California Public Resources Code (PRC) Section 25402.10 requires the owners of commercial buildings greater than 50,000 square feet and the owners of multifamily buildings greater than 50,000 square feet with 17 or more utility accounts to report energy use information to the state annually.

Building Performance Standards

This report finds that the clearest and least costly way to implement a strategy would be for the CEC to create and enforce a statewide building performance standard (BPS) policy based on the benchmarking data available, aligned with California's climate and energy goals. BPS policies are aimed at improving existing building performance by using energy use data to ensure existing buildings meet standards such as energy efficiency, sustainability, load flexibility, and occupant benefits. BPS policies require building owners to maintain and improve their buildings to meet performance standards and may include flexible compliance options, long-term performance targets, and enforceable penalties. BPS policies protect consumers by requiring the owner of a building to maintain and improve it to a minimum level sufficient to prevent harm to occupants, neighbors, and society.

By promoting clear, achievable performance targets, BPS policies encourage proactive investments in energy efficiency, electrification, and load flexibility, helping building owners reduce climate and regulatory risks to their properties and giving building owners clear expectations for their contributions to state decarbonization and sustainability goals. A BPS would complement the existing building energy benchmarking requirement, as benchmarking gives building owners the data to analyze the performance of their building and the opportunity to reduce building energy costs. More than a dozen jurisdictions across the country, including four states, have deployed BPS policies successfully as the primary

mechanism to drive energy efficiency and greenhouse gas (GHG) reductions in existing buildings.

BPS and California Energy Code

While the California Energy Code uses energy models to set energy efficiency standards for new construction, and additions and alterations to existing buildings, a BPS would track and enforce actual building performance over the life of a building.[1] When a new building goes into service, owners will be required to benchmark the annual energy use of the building, which would then inform future BPS requirements. Updates to the Energy Code may need to consider how a building would comply with a BPS and could investigate cost-effective options to ensure buildings can meet BPS targets. When designing a new building, owners should consider long-term BPS requirements to help reduce the future cost of compliance.

Building Energy Benchmarking

Benchmarking allows current and future building owners to analyze how the performance of their building changes over time and identify opportunities to reduce building energy consumption and costs. Energy benchmarking can also drive energy efficiency upgrades, lower building GHG emissions, increase occupancy rates and property values, and enhance occupant health and comfort.[2]

Buildings are responsible for more than a quarter of California's total statewide GHG emissions and are critical to achieving the state's long-term energy and climate goals.[3] Energy benchmarking does not require improved energy efficiency, but it is foundational to designing an effective building performance policy that will drive energy savings. Building owners and the state benefit from energy benchmarking as it provides insights into the statewide building stock, as well as detailed information about individual building performance. Building owners can use this information to make decisions on building energy management, track performance over time, and identify unusual changes in energy use that may be caused by equipment malfunction.

---

1 California Code of Regulations. Title 24, Part 6, https://codes.iccsafe.org/content/CAEC2025P1.

2 Hart, Zachary. 2015. *The Benefits of Benchmarking Building Performance*. Institute for Market Transformation, https://imt.org/wp-content/uploads/2018/02/PCC_Benefits_of_Benchmarking.pdf.

3 California Energy Commission staff analysis of "California GHG Emission Inventory Data and Energy Consumption Data," California Air Resources Board. Accessed February 2025. "Current California GHG Emission Inventory Data," web page, https://ww2.arb.ca.gov/ghg-inventory-data.

CEC calculated emissions from buildings using direct and indirect emissions. For more detailed analysis of how emissions were calculated, see Appendix B of the *California Building Decarbonization Assessment*, Publication Number: CEC-400-2021-006, https://www.energy.ca.gov/publications/2021/california-building-decarbonization-assessment.

California Energy Commission. Energy Consumption Data Files, 2023 data for electricity. https://www.energy.ca.gov/files/energy-consumption-data-files.

California's Building Energy Benchmarking Program

Assembly Bill 802 (Williams, Chapter 590, Statutes of 2015) established the statewide building energy benchmarking and disclosure program in 2016.[4] PRC Section 25402.10, subdivision (d), requires buildings larger than 50,000 square feet and either no residential units or 17 or more residential utility accounts, collectively referred to as *disclosable buildings*, to submit reports to the CEC annually.[5] AB 802 further requires utility companies to provide monthly building-level data to owners or their representatives upon request to ensure complete, whole-building reporting.

The benchmarking program requires owners of disclosable buildings to report the energy usage and characteristics of their building every year by June 1.[6] While the exact number of disclosable buildings changes year over year as new buildings are built or demolished, the benchmarking law consistently applies to nearly 50,000 commercial and multifamily buildings across the state. This group of disclosable buildings represents roughly 60 percent of the total building floor area in the state.[7]

Figure 1 shows a breakdown of disclosable buildings by primary property type. Seventy percent of disclosable buildings fall into one of six property types (multifamily housing, office, warehouse, retail, industrial, and K-12 schools),[8] with multifamily housing being the most common property type.

4 Assembly Bill 802. Accessed February 2025, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB802.

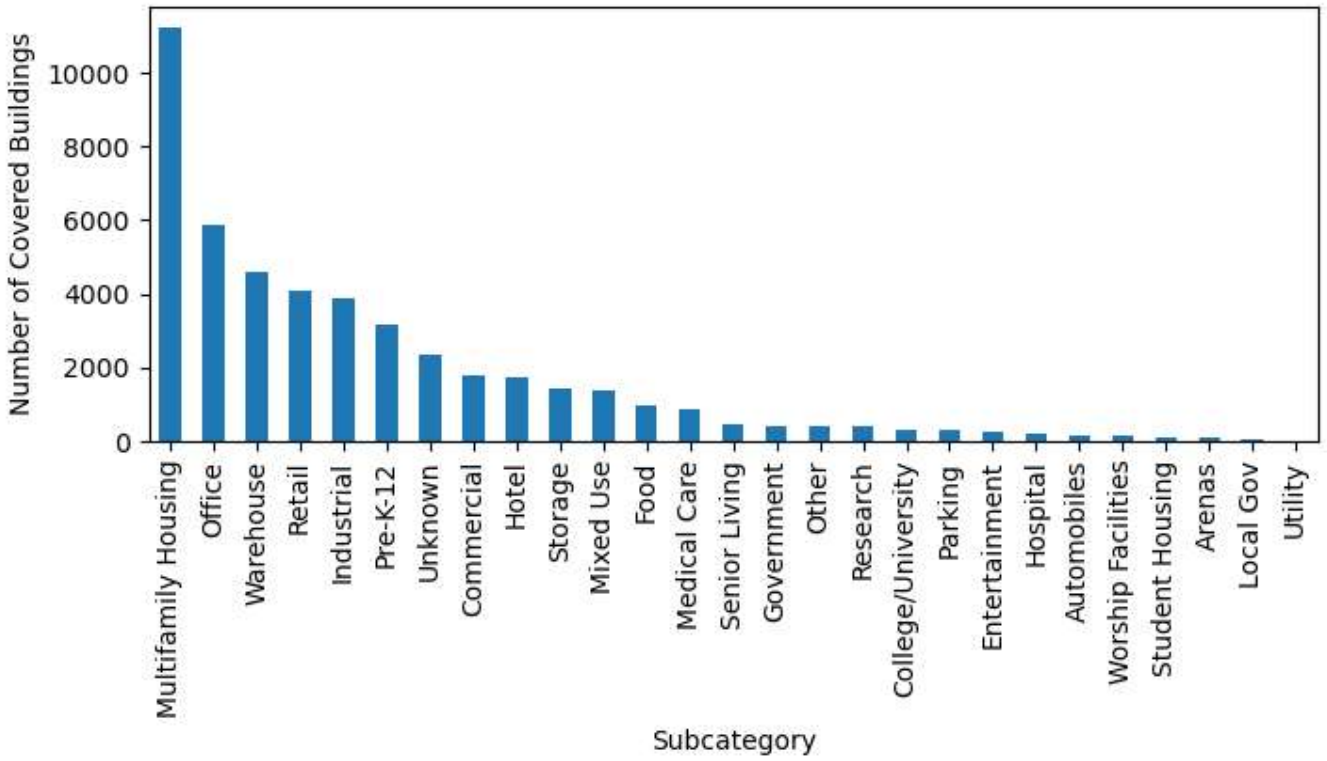
5 California Code of Regulations. Title 20 Section 1681(d), https://govt.westlaw.com/calregs/Document/I4E4CB780FD1011F0B50E9B34368FB311?bhcp=1&transitionType=Default&contextData=%28sc.Default%29.

6 California Code of Regulations. Title 20, Section 1683, https://govt.westlaw.com/calregs/Document/ID7CF53F35CCE11EC9220000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default).

7 Personal communication. Policy Studio analysis of City and County Commercial Building Inventory data from National Laboratory of the Rockies.

8 ENERGY STAR®. Accessed May 2025. "Property Types in Portfolio Manager," web page, https://www.energystar.gov/buildings/benchmark/understand-metrics/property-types.

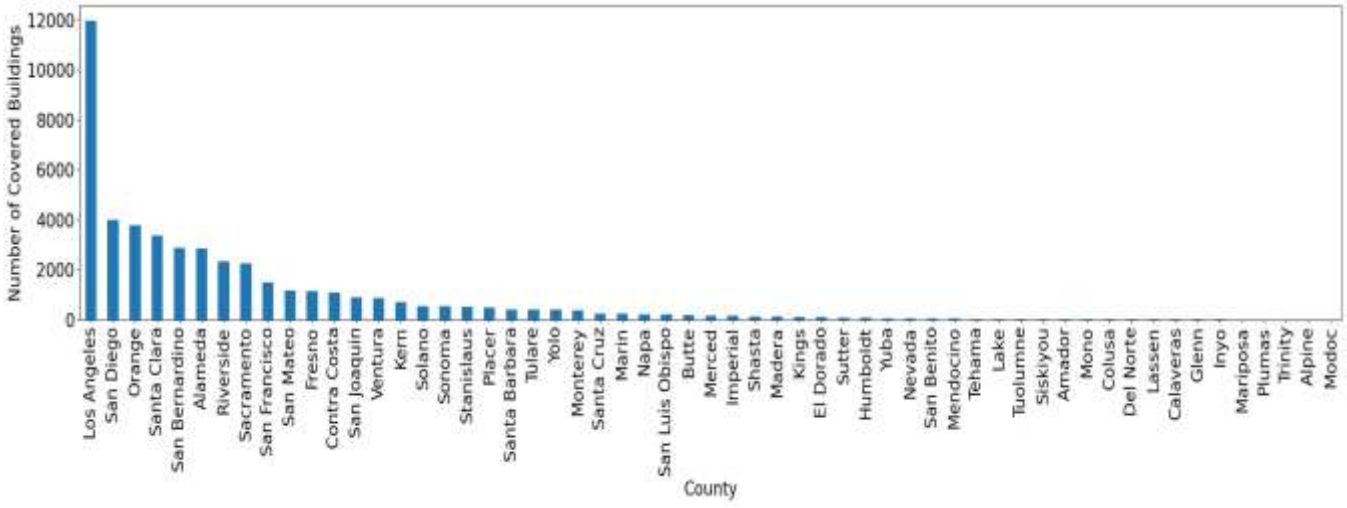
Figure 1: Number of Disclosable Buildings by Property Type



Source: Analysis of CEC Covered Building List

Buildings subject to AB 802 also span the entire state, with disclosable buildings in 57 of 58 counties in California. Figure 2 shows a breakdown of disclosable buildings by county. Los Angeles County has the most disclosable buildings compared to any county, roughly three times that of the next highest county, and represents almost 25 percent of total disclosable buildings in the state.

Figure 2: Number of Disclosable Buildings by County



Source: CEC staff analysis of Covered Building List

AB 802 and California Code of Regulations (CCR), Title 20, Sections 1680–1685, cover most large commercial and multifamily buildings in California that have a *gross floor area*[9] (GFA) of more than 50,000 square feet, however, there are several exemptions to the reporting requirement. These exemptions include:

- Condominiums as described in Section 4125 or 6542 of the California Civil Code.
- Buildings with more than half of the GFA used for scientific experiments requiring a controlled environment or for manufacturing or industrial purposes.
- Buildings with between 1 and 16 residential utility accounts.
- Buildings without a certificate of occupancy or temporary certificate of occupancy for more than half of the calendar year for which reporting to the CEC is required.
- Buildings scheduled to be demolished one year or less from the reporting date.

AB 802 and CCR, Title 20, Section 1684 also exempt buildings that report under a local benchmarking program from reporting to the state. The following seven city programs have an exemption from reporting to the state:[10]

- Berkeley
- Brisbane
- Chula Vista
- Los Angeles
- San Francisco
- San José
- San Diego

Building owners in these jurisdictions follow local rules for reporting and compliance. The local programs may go beyond the requirements of the statewide program. For example, some include lower square footage thresholds or building use types that AB 802 exempts. However, if a local jurisdiction ordinance exempts a building that is covered under AB 802, a building owner must submit annual benchmarking data directly to the CEC.

Benchmarking Data Collection

Building owners complete annual energy benchmarking reporting through the industry-standard ENERGY STAR® Portfolio Manager (Portfolio Manager) tool developed and maintained by the federal government. Portfolio Manager is a free, secure, web-based benchmarking tool.

---

9 *Gross floor area* is the total building square footage, measured between the principal exterior surfaces of the enclosing fixed walls of the building(s). This includes all areas inside the building, including lobbies, tenant areas, common areas, meeting rooms, break rooms, atriums (count the base level only), restrooms, elevator shafts, stairwells, mechanical equipment areas, basements, and storage rooms.

10 California Energy Commission. Accessed February 2025. "Exempted Local Benchmarking Ordinances," web page, https://www.energy.ca.gov/programs-and-topics/programs/building-energy-benchmarking-program/exempted-local-benchmarking.

Under AB 802, the CEC requires building owners to report all basic property information, including, but not limited to:

- Address(es).
- GFA (both building and parking, if applicable).
- Occupancy.
- Year built.
- Property-type specific use details.
- 12 months of energy data from all fuel sources.

Portfolio Manager calculates key energy performance metrics based on the characteristics and energy use of a building, including the 1-100 ENERGY STAR score,[11] site energy use intensity and source energy use intensity, and onsite GHG emissions. Portfolio Manager also enables easy data exchange from utilities throughout the state by allowing utilities to upload energy data directly into a building owner's account.

Portfolio Manager, or a similar energy reporting tool that records building data and calculates building performance metrics, can be used to establish initial performance baselines and targets. Additional reporting tools may be needed to implement a statewide building performance strategy and can be explored in later phases of regulatory development.

Once building owners enter data into Portfolio Manager, they submit the data to the CEC via a unique reporting link. The benchmarking program uses third-party software to manage customer data and communicate directly with building owners. While the CEC is using the software only to manage energy benchmarking data submissions, other jurisdictions use similar software to manage their building performance programs including Boston, Massachusetts; Denver, Colorado; Montgomery County, Maryland; and the state of Colorado.[12]

Public Disclosure of Benchmarking Data

After building owners enter benchmarking data into Portfolio Manager, submit the data to the CEC, and the CEC reviews the submission, the CEC makes a portion of the building data available to the public. While the CEC collects hundreds of fields of data, it makes a limited amount of that data public, including, but not limited to, floor area, energy use, and GHG emissions. Users can access these data through the CEC website on a public-facing Tableau dashboard and in downloadable spreadsheets by data year.[13]

---

11 The 1-100 ENERGY STAR score is a measure of how well a building is performing relative to similar buildings, normalized for climate and operational characteristics.

12 Touchstone IQ. Accessed September 2025. "Our Government Clients," web page, https://touchstoneiq.com/governments/our-clients.

13 California Energy Commission. Accessed March 2025. "California Building Energy Benchmarking Program," web page, https://tableau.cnra.ca.gov/t/CNRA_CEC_PUBLIC/views/EnergyEfficiencyBenchmarkingDashboard/BenchmarkingDashboard.

The agency the Legislature authorizes to implement a building performance policy, or *authorized agency*, may need to add building performance fields to the dataset, such as building energy baseline data, performance targets, progress toward compliance, key milestones met, and required reports or forms submitted. For example, in Washington, D.C., all benchmarking data are publicly available on the disclosure website buildingperformancedc.org. After the adoption of the Building Energy Performance Standards (BEPS) regulations, Washington, D.C., added fields to the disclosure website to capture information specific to BEPS, including building compliance status and selected method of compliance, shown in Figure 3.

Figure 3: Washington, D.C. Public Data Disclosure

Property Type:	**Multifamily Housing**
Benchmarking Status:	**In Compliance**
Benchmarking Enforcement:	**N/A**
BEPS Status:	**Does Not Meet BEPS**
Compliance Pathway:	**Standard Target Pathway**
Property Size (ft²):	**453,380**

Source: buildingperformancedc.org

The City of Denver makes building performance data, including building-specific baselines and interim and final targets, publicly available online, along with benchmarking compliance status and basic building information. An example of the publicly available building data from the City of Denver is shown in Figure 4.

Figure 4: City of Denver Public Data Disclosure

Benchmarking Requirements

Current Status: Not Submitted
Current Site EUI: N/A

Performance Requirements

Current Status: Not Applicable
Compliance Year Type[2]: Pre Evaluation
Electrification Credit Approved : No
Target Adjustment Approved : Yes
Timeline Adjustment Approved : No

	Target EUI[3]	Target Year[4]	Performance Period[5]	Reporting Year[6]
Baseline	72	2021	-	2022
1st Target	67	2025	Jan 1 - Dec 31, 2025	2026
2nd Target	64.1	2027	Jan 1 - Dec 31, 2027	2028
Final Target	61.1	2030	Jan 1 - Dec 31, 2030	2031

Source: Energize Denver[14]

14 Energize Denver. Accessed March 2025 "Performance Requirements Lookup Tool," https://lookup.energizedenver.org/.

These examples show that the authorized agency can easily add building performance data fields into existing disclosure platforms and datasets without needing additional tools. Disclosure of benchmarking and building performance data allows building owners and tenants to track compliance and get early notice of failure to make progress. Public disclosure also provides transparency when a building is sold or when parties are drawing up or renegotiating new lease agreements.

Compliance With California's Benchmarking Requirement

California has one of the largest energy benchmarking programs in the country and requires about 50,000 buildings to report data every year. The CEC has required buildings to submit data since 2018. Compliance with AB 802 has increased year over year and is more than 73 percent by total covered gross floor area. Underreporting significantly limits the CEC's ability to analyze the entire building stock and accurately understand how buildings are performing today and how they need to perform by 2045 to align with the state's climate and energy goals. To address this gap in data, one of the CEC's top priorities is to conduct additional outreach and assist building owners of disclosable buildings with compliance to increase compliance rates with AB 802.

In addition to increasing outreach and engagement, CEC program staff plans to increase enforcement of the benchmarking requirements. Currently, the CEC is authorized to seek penalties up to $2,000 per day for each category of missing data that building owners did not submit.[15] The CEC is considering various enforcement activities to increase compliance, including warning notices, notices of violation, notices of infraction, and fines. The CEC expects to use all engagement, outreach, and compliance assistance options to increase compliance, but enforcement will be an important tool to ensure building owners understand their reporting responsibility.

Given the expected overlap between buildings covered by AB 802 and any future building performance policy, engaging with building owners and providing compliance assistance now will help ensure building owners are aware of their current and future requirements. Higher rates of compliance with energy benchmarking will likely translate to higher rates of compliance with a building performance policy. Washington, D.C., demonstrated this correlation, as it had more than 95 percent compliance with benchmarking leading up to the first BEPS reporting requirement and saw an 80 percent submission rate within 30 days of the first BEPS deadline.[16]

Verification of Benchmarking Data

A statewide building performance policy, as outlined by Senate Bill 48 (Becker, Chapter 378, Statute of 2023), would create a need to expand the existing review of submitted benchmarking data. Building owners submit data to the CEC, and program staff review it for

---

15 Public Resources Code Section 25402.10(e), https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25402.10.&lawCode=PRC.

16 District of Columbia Department of Energy and Environment. May 9, 2023. "BEPSDC Task Force." Presentation, pg. 6, https://s3.us-east-2.amazonaws.com/dc.beam-portal.org-public-media/media/helpdesk/attachments/kb/District%20of%20Columbia%20Department%20of%20Energy%20and%20Environment%3A%20BEPS%20(1)/15/BEPS_TaskForceMeetingSlides_2023-05-09_FINAL.pdf.

completeness, ensuring the submission includes 12 months of energy data for the requisite data year, a unique benchmarking reference number, and all relevant property-use details for all use types within the building.

While the benchmarking regulations require complete and accurate accounting of building energy use and operations, building owners may submit incomplete or false information about their building, whether intentionally or unintentionally. For example, multifamily building owners may pay for only common area (for example, hallways and lobbies) energy use in their building, while tenants pay for their individual unit energy use. These building owners may assume they are not responsible for reporting individual tenant usage because they do not have access to that data. However, utilities are required to provide building owners aggregate energy use data for the whole building upon request. If a building owner fails to accurately account for whole-building energy use, their building could falsely show high performance.

Another datum the CEC cannot consistently check or verify is building size. Building GFA is required for reporting and has a specific definition per benchmarking regulations.[17] Unfortunately, there is not one industry-standard way to measure GFA. For example, building owners may report only rentable square footage, excluding spaces that they should include per Portfolio Manager definitions. This lack of an industry-standard way to measure GFA has serious implications for a future building performance policy, as most building performance metrics rely on accurate GFA, such as site energy use intensity and GHG emissions intensity.

Local Jurisdictions With Data Verification Requirements

As jurisdictions across the country adopt building performance policies, many are adopting or expanding data verification requirements at the same time. Table 1 outlines the data verification requirements in five jurisdictions across the country.

17 California Code of Regulations. Title 20, Section 1681(g), https://govt.westlaw.com/calregs/Document/I4E4CB780FD1011F0B50E9B34368FB311?bhcp=1&transitionType=Default&contextData=%28sc.Default%29.

Table 1: Jurisdictions With Data Verification Requirements

Jurisdiction	Washington, D.C.	Montgomery County, Maryland	Boston, Massachusetts	Chicago, Illinois	Denver, Colorado
Years Verified	Every 6 years	Every 3 years	Every 5 years	Every 3 years	Building Performance Target Year(s)
Data Verified	• All building characteristics • Energy use	• All building characteristics • Energy use	• All building characteristics • Energy use • Other metrics*	• All building characteristics • Energy use	• All building characteristics • Energy use • Other metrics*
Verifier Credentials Accepted	• Professional Engineer • Registered Architect • Certified Energy Manager • Building Energy Assessment Professional	Multiple**	Multiple**	Multiple**	• Professional Engineer • Registered Architect • Certified Energy Manager • Building Energy Assessment Professional
ENERGY STAR Certification Allowed	Yes***	Yes***	No	Yes***	Yes***
Third-Party Needed	Yes	Yes	Yes	No	Yes****

*** Renewable Energy Credit eligibility, Power Purchase Agreement verification, Electric Vehicle charging**
**** For full list of accepted licenses and credentials view each jurisdiction's website**
***** If ENERGY STAR Certification includes at least 6 months of the calendar year needing verification.**
****** Must be third-party verifier unless verifier is a Professional Engineer or Registered Architect.**
Source: CEC staff analysis of program requirements[18]

Under most existing building performance policies, data verification requires a third party to evaluate the submitted benchmarking data. *Third party* often means an entity with no

18 District of Columbia Department of Energy and Environment. Accessed April 2025. "Third-Party Verification for Benchmarking FAQs," web page, https://dc.beam-portal.org/helpdesk/kb/benchmarking/44/.

Montgomery County, Maryland Department of Environmental Protection. Accessed April 2025. "Montgomery County Building Energy Benchmarking," web page, https://www.montgomerycountymd.gov/DEP/Resources/Files/energy/commercial/Montgomery_County_Benchmarking_Verification.pdf.

City of Boston Environment Department. Accessed April 2025. "Building Emissions Reduction and Disclosure," web page, https://www.boston.gov/departments/environment/berdo.

relationship to the building owner, property manager, or representative who prepares or submits benchmarking data on behalf of the building owner.[19] Requiring a third party to evaluate data helps ensure all building owners are held to the same standard of data quality. This requirement gives building owners and the CEC greater confidence in the data used for setting baselines and evaluating progress and eventual compliance with a building performance policy.

Requiring data verification early and often can also prevent additional administrative burden on building owners and the authorized agency as baselines and targets set on verified data are less likely to change over time. For example, in the first year data verification was required in Washington, D.C., roughly 20 percent of building owners requested a change to historically reported data because of discrepancies found during the verification.[20]

Each benchmarking data correction request submitted to the Washington, D.C. Department of Energy and Environment (DOEE) requires building owners, or their representatives, to compile supplementary documents to support the requested change, and each request is reviewed by DOEE staff before approving the change.[21] These changes to historical benchmarking data could lead to changes in the BEPS compliance pathway a building owner selects, which again requires administrative time for the building owner and DOEE and can delay or change the plan for energy efficiency upgrades of a building.

Similarly, the City of Denver received more than 700 target adjustment requests in the last two years, representing nearly a quarter of its covered buildings.[22] The main drivers of these target adjustments were changes in reported GFA and building energy use. Every target adjustment requires third-party verification of the benchmarking data and a separate target adjustment application that staff in the City of Denver must review and approve or reject.[23]

Chicago Office of the Mayor. Accessed April 2025. "Chicago Energy Benchmarking Instructions & Guidance Materials," web page, https://www.chicago.gov/city/en/depts/mayor/supp_info/chicago-energy-benchmarking/Chicago_Energy_Benchmarking_Guidance_Matls.html#DataVerifReqt.

Denver, Colorado Office of Climate Action, Sustainability, and Resiliency. Accessed April 2025. "Rules and Technical Guidance," web page, https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-and-Resiliency/Cutting-Denvers-Carbon-Pollution/Efficient-Commercial-Buildings/Denver-Building-Regulations/Energize-Denver-Building-Performance-Policy/Buildings-25000-sq-ft-or-Larger/Technical-Guidance-25k-or-more.

19 District of Columbia Department of Energy and Environment. Accessed March 2025. "Third-Party Verification for Benchmarking FAQs."

20 District of Columbia Department of Energy and Environment. September 10, 2024. "BEPSDC Task Force." Presentation, page 11, https://s3.us-east-2.amazonaws.com/dc.beam-portal.org-public-media/media/helpdesk/attachments/kb/District%20of%20Columbia%20Department%20of%20Energy%20and%20Environment%3A%20BEPS%20(1)/15/BEPS_TaskForceMeeting_Slides_2024-09-10_PMPxe9G.pdf.

21 District of Columbia Department of Energy and Environment. Accessed March 2025, "Submit a Benchmarking Data Correction," web page, https://dc.beam-portal.org/helpdesk/tickets/submit/12/.

22 Personal Communication. Sharon Jaye, Building Performance Policy Manager. City of Denver Energize Denver.

23 Denver, Colorado Office of Climate Action, Sustainability, and Resiliency. Accessed March 2025. "Energize Denver: Target Adjustment Application," web page, https://fs12.formsite.com/EnergizeDenver/dl84coih9j/index.

Using Utility Billing Data as Verification

One way to verify benchmarking data would be to compare benchmarking data to utility billing data, to which the CEC has access. Under Section 1353 in CCR Title 20, major utilities in California submit disaggregated billing and demand data for gas and electric customers to the CEC in regular intervals.[24] Six utilities are required to report electric or gas data to the CEC:

- Pacific Gas and Electric
- Southern California Edison
- San Diego Gas & Electric
- Sacramento Municipal Utility District
- Los Angeles Department of Water and Power
- Southern California Gas Company

The owners of buildings subject to benchmarking report monthly energy consumption to the CEC by entering the data into Portfolio Manager or by requesting the data from their utility or utilities that upload monthly data into Portfolio Manager. While building owners and utilities are required to report whole-building aggregate energy consumption, there is no mechanism to ensure all meters associated with a building are included in a submitted benchmarking report.

Buildings within the six utility service territories that submit energy data to the CEC account for more than 85 percent of statewide building electric usage and more than 95 percent of statewide building gas usage.[25] Access to this information creates an opportunity for the CEC to validate most of the energy data submitted via benchmarking reports. While this validation would require additional staff and resources, it would likely be a one-time effort as the service and meter data format should not significantly change year by year and the comparison with benchmarking data could then be automated.

If the CEC can compare actual building energy use with the billing data from benchmarking reports, program staff could flag unusual or inconsistent data without the need for a third-party professional. Discrepancies in the data could trigger an investigation by the CEC and help resolve issues in reporting with fewer overhead costs. This effort could also help support local jurisdictions with their own benchmarking ordinances. Title 20 CCR Section 1353 requires utilities only to provide data to the CEC, giving the CEC access to data not available to smaller jurisdictions in California.

Being able to map and compare electric and gas data for all buildings subject to AB 802, known as *meter verification*, could reduce CEC staff time used to check the completeness and accuracy of data. Meter verification would allow staff to spend more time and effort on outreach, communications, and compliance assistance. Building owners would still be

---

24 California Code of Regulations. Title 20, Section 1353, https://govt.westlaw.com/calregs/Document/ICD0E56535CCE11EC9220000D3A7C4BC3.

25 California Energy Commission. Accessed March 2025. "Energy Consumption Data Files," web page, https://www.energy.ca.gov/files/energy-consumption-data-files.

responsible for reporting and checking all building-use characteristics (GFA, occupancy, use details) and other fuel consumption (diesel, fuel oil, propane). CEC staff, local jurisdiction staff, or third-party verifiers should still review all other building-specific data for completeness and accuracy.

Delegation of Authority for a BPS

A successful BPS program would require additional regulatory authority to implement and enforce program requirements. The CEC is California's primary energy and policy planning agency.[26] The CEC also serves as the state's energy data repository, storing hourly and monthly electricity- and gas-use data for most buildings in the state, which would be important for setting baselines, establishing performance targets, and determining compliance with a BPS.[27]

In addition, the CEC is the authorized agency overseeing the statewide energy benchmarking program, which is foundational to a BPS as discussed earlier in this chapter. Therefore, if the Legislature establishes a statewide BPS, the CEC would be the logical agency to oversee implementation. An increase in the CEC's statutory authority would need to be accompanied by adequate resources to fulfill new program requirements. For the remainder of this report, the CEC will be the assumed authorized agency for the potential statewide BPS.

Setting a BPS Building Size Threshold

The first consideration for a statewide BPS is to determine the minimum size threshold of covered buildings. Lowering the size threshold for buildings covered by a BPS would require lowering the threshold for energy benchmarking, as a BPS requires benchmarking data for buildings to establish baselines, set performance targets, and measure progress. The state's existing building energy benchmarking law does not require owners of buildings less than 50,000 square feet to collect or deliver energy-use information to the CEC.[28]

The number of buildings in California covered by a BPS would be the same as the number of disclosable buildings subject to the existing benchmarking law, totaling roughly 50,000 buildings. Buildings more than 50,000 square feet represent 60 percent of the total building square footage in the state and cover more than 7.3 billion square feet, as seen in Figure 5. The CEC has six full-time staff and five part-time staff to support the energy benchmarking program and manage the 50,000 buildings that AB 802 covers. This work includes communications and outreach, compliance assistance, data quality review, exemption processing, and enforcement.

---

26 California Energy Commission. Accessed April 17, 2025. "About," web page, https://www.energy.ca.gov/about.

Warren-Alquist State Energy Resources Conservation and Development Act (Warren, Assembly Bill 1575, Chapter 276, Statutes of 1974), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=15.&title=&part=&chapter=1.&article=.

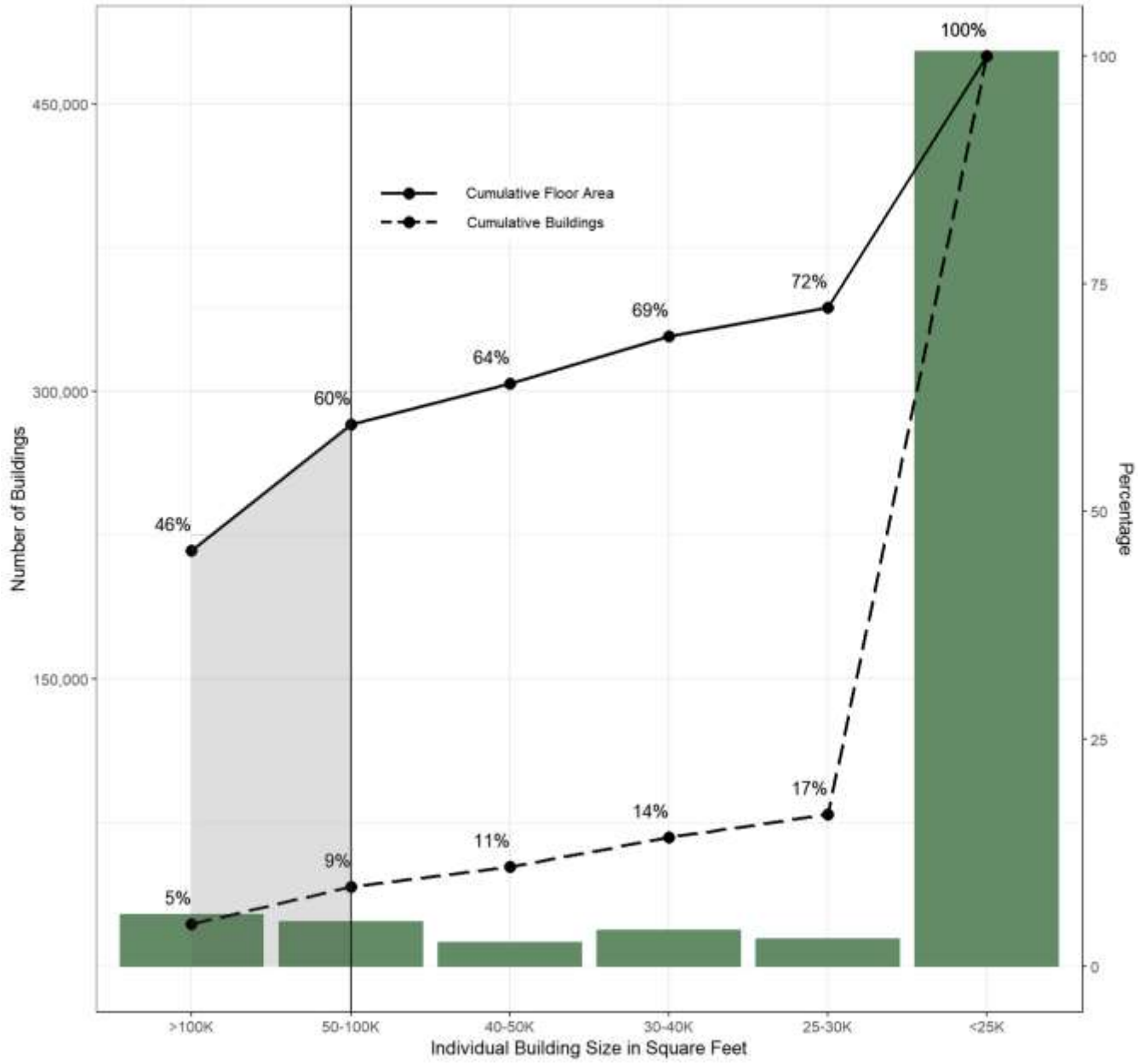
27 California Energy Commission. Accessed April 2025. "Data Exploration Tools," web page, https://www.energy.ca.gov/data-reports/data-exploration-tools.

28 California Code of Regulations. Title 20 Section 1681(d).

If the Legislature lowered the benchmarking size threshold of disclosable buildings to 25,000 square feet, the number of buildings would double from 50,000 to nearly 100,000, but the total building square footage covered would increase only 20 percent, from 7.37 billion to 8.96 billion square feet, as seen in Figure 6. Local jurisdictions in California and across the country report that smaller buildings (10,000 square feet to 50,000 square feet) need more personalized support and more administrative time from the implementing agency to complete energy benchmarking.[29] Based on these reports, lowering the benchmarking size threshold to 25,000 square feet would more than double administrative needs. Making these smaller buildings also subject to a BPS would add even more administrative costs.

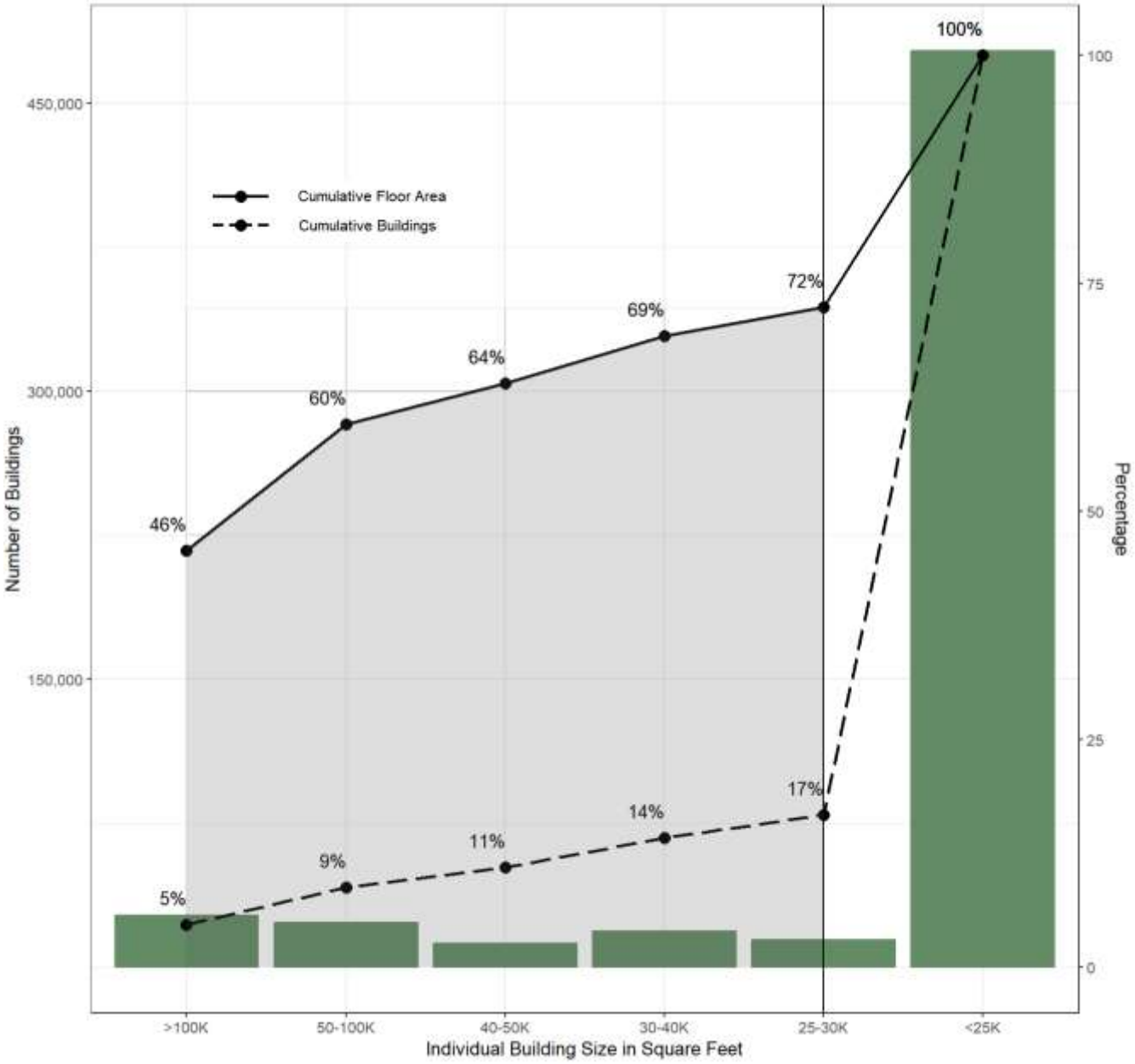
29 Personal communication. Various jurisdictions in the United States. 2025.

Figure 5: Buildings in California Greater Than 50,000 Square Feet



Source: Personal communication with Policy Studio, based on City and County Commercial Building Inventory data from the National Laboratory of the Rockies.

Figure 6: Buildings in California Greater Than 25,000 Square Feet



Source: Personal communication with Policy Studio, based on City and County Commercial Building Inventory data from the National Laboratory of the Rockies.

While the CEC only requires benchmarking for buildings greater than 50,000 square feet, nearly every local California jurisdiction with a benchmarking ordinance has a size threshold lower than 50,000 square feet. Local jurisdictions are well-positioned to build on a statewide BPS and include smaller buildings in an ordinance to maximize the energy and emissions savings expected from BPS policies. Table 2 outlines the benchmarking size thresholds for each of the seven cities in California that have benchmarking requirements.

Table 2: Benchmarking Requirements for Seven Cities in California

City	Size Threshold (Privately Owned Buildings) in Square Feet	Estimated Number of Covered Buildings
Berkeley	≥15,000	330
Brisbane	≥10,000	100
Chula Vista	≥20,000	700
Los Angeles	≥20,000	11,000
San Diego	>50,000	2,500
San Francisco	≥10,000	2,800
San Jose	≥20,000	1,800

Source: Personal communication with local jurisdiction program staff

In addition to having benchmarking requirements, the cities of Berkeley, Los Angeles, San Diego, and San Francisco participate in the National BPS Coalition and have committed to developing a BPS by 2026.[30] Chula Vista and West Hollywood have passed their own BPS ordinances, and Brisbane and San José have "beyond benchmarking" ordinances that require an additional level of energy performance. Other California jurisdictions that are developing a BPS include Los Angeles County and the cities of Sacramento and Santa Monica. Given that most local California jurisdictions with existing benchmarking requirements are already covering buildings less than 50,000 square feet and intend to cover those buildings by their own BPS policies, a statewide BPS should focus on buildings greater than 50,000 square feet.

Metric Objectives

Metrics are the quantitative elements of building operations that allow tracking of building performance and comparison of building performance to goals. The first step in selecting metrics for a BPS is to identify the objectives of the relevant policy goals. For example, the contribution of a building toward a decarbonization goal could be measured by a building GHG emissions metric. Building energy efficiency, environmental impact, energy costs, and energy system resiliency are examples of underlying policies that a BPS could support. California's goals can be supported by building performance metrics in three general impact categories:

- Energy impact
- Environmental impact
- Building occupant impacts

Metric Objectives for Energy

Cost-effective energy efficiency is the first and most important step toward reducing the cost and environmental impact of energy services. Energy efficiency is increasingly important

30 National BPS Coalition. Accessed March 2025. "Participating Jurisdictions," web page, https://nationalbpscoalition.org/#cities.

because efficient buildings and appliances reduce utility bills and help reduce stress on the electric grid. For decades, California policy makers have acknowledged that energy efficiency is often less expensive than building new power plants and power lines.[31] A building performance strategy, such as a BPS, that rewards investment in basic efficiency supports state policy goals including reducing utility costs and environmental impacts, improving building and energy system reliability, and maintaining occupant comfort.

Energy Use Intensity

The most common way to measure energy efficiency of a building is by calculating energy use intensity (EUI), which expresses building energy use as a function of size.[32] EUI is calculated by dividing the total energy consumption of a building by the total floor area over a specified period, typically a year. There are two primary methods for measuring EUI, site EUI and source EUI, which are described below.

Site EUI

Site EUI measures the total amount of energy consumed by a building onsite, or the site energy, divided by floor area. Site energy use includes energy purchased from the grid and renewable energy generated and consumed onsite but does not include energy lost during generation, transmission, or distribution, or excess renewable energy exported back to the grid.[33] Site energy is what a building owner sees on their utility bills and can be used to understand how building energy use has changed over time.[34] As long as the building size does not change, increases in energy use will increase site EUI, while reductions in energy use will lower site EUI.

Source EUI

Source EUI measures the amount of energy consumed by a building onsite plus any losses during the generation, transmission, and distribution of the energy, or the source energy, divided by floor area.[35] Similar to site EUI, as long as the building size does not change, increases in energy use will result in increased source EUI, and reductions in energy use result in a lower source EUI. Source EUI can also change based on the type of fuel delivered to and used by the building. The difference between site and source EUI is shown in Figure 7.

---

31 Lawrence Berkeley National Laboratory. July 22, 2021. "Still the One: New Study Finds Efficiency Remains a Cost-Effective Electricity Resource," web page, https://emp.lbl.gov/news/still-one-new-study-finds-efficiency.

32 ENERGY STAR. Accessed March 2025. "What Is Energy Use Intensity (EUI)," web page, https://www.energystar.gov/buildings/benchmark/understand-metrics/what-eui.

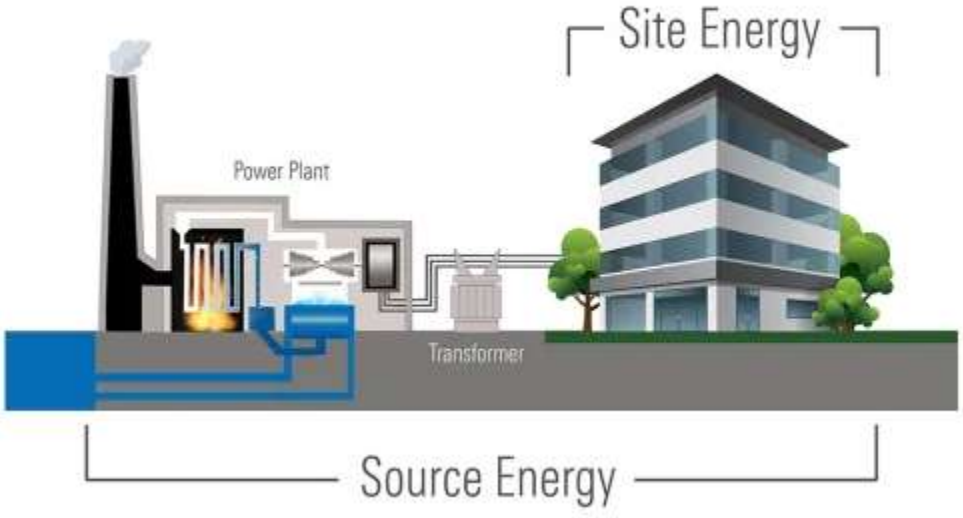
United States Environmental Protection Agency. July 2022. *Understanding and Choosing Metrics for Building Performance Standards*, https://www.energystar.gov/sites/default/files/tools/BPS-White_paper_final.pdf.

33 ENERGY STAR. Accessed March 2025. "Glossary," web page, https://portfoliomanager.energystar.gov/pm/glossary.

34 Ibid.

35 Ibid.

Figure 7: Site and Source Energy



Credit: United States Environmental Protection Agency ENERGY STAR®

ENERGY STAR Score

The ENERGY STAR score is an external benchmark used to assess the performance of buildings on a 1–100 scale. The ENERGY STAR score measures how a building is performing relative to similar buildings when normalized for climate and operations characteristics.[36] The 1–100 scale rates building performance based on percentile. Buildings with a score of 50 perform better than 50 percent of their peers, while buildings with a score of 75 or higher are in the top quartile of energy performance.[37] The ENERGY STAR score is calculated primarily using source EUI.[38]

Load Flexibility and Coincident Peak Demand

The California electricity grid has adapted to the growth of renewable energy by providing price signals and utility programs that help customers respond to grid needs. Strategies and technologies that enable curtailed energy use in response to energy price or an emergency signal from the electric grid are known as *demand response*.

Support for load flexibility and demand response have been part of California energy policy for more than 50 years. Both support grid reliability, may reduce the cost of energy services, and will be increasingly important when the least-cost electric generation resources are intermittent renewables. Encouraging load flexibility offers significant advantages for building

36 ENERGY STAR. Accessed March 2025. "Glossary."

37 ENERGY STAR. April 2021. *ENERGY STAR Score Technical Reference*, https://portfoliomanager.energystar.gov/pdf/reference/ENERGY%20STAR%20Score.pdf.

38 ENERGY STAR. Accessed April 2025. "How Is the ENERGY STAR Score Calculated?," web page, https://portfoliomanagerhelp.zendesk.com/hc/en-us/articles/30185782964123-How-is-the-ENERGY-STAR-score-calculated.

owners as well, including lower energy costs, decreased carbon emissions, and enhanced resilience.

One mechanism to measure and manage demand on the grid is through coincident peak demand. *Coincident peak demand* refers to building electric demand when total demand on a utility system is highest, causing the greatest strain on that system.[39] The highest demand on the utility system may occur at different times of the day at different locations in the system. Peak demand is an available metric that is used to calculate electric bills for large buildings. A coincident peak demand metric signals to building owners when they should reduce their electric demand, which relieves the grid and can help prevent blackouts.

Metric Objectives for Environmental Impact

Environmental impact metrics could address building GHGs, criteria pollutants,[40] or toxic emissions. In recent decades, the environmental impact of electricity from the grid in California has fallen significantly compared to the impact of burning fossil fuels within a building.[41] While an energy metric will drive more efficient building energy use, emissions from onsite fossil fuel equipment will make up a larger portion of statewide emissions as California moves toward a 100 percent clean electric grid. For this reason, the state has adopted goals to reduce emissions from buildings, standards to minimize emissions from new buildings, and policies to shift building space and water heating to efficient electrical heat pumps.[42]

Greenhouse Gas Emissions Intensity

Greenhouse gas emissions intensity (GHGI) is a measure of annual GHG emissions of a building relative to its size. The GHG emissions of a building are calculated by adding the carbon dioxide equivalent (CO_2e) of the GHG emissions of all the energy and fuel used in the building (for example, electricity, gas, steam). The GHG emissions are divided by the building floor area to determine the normalized GHG emissions, or GHGI, of the building, which is expressed as kilograms of CO_2e per square foot per year ($kgCO_2e/ft^2/yr$).[43]

Commercial and residential buildings in California are responsible for 25 percent of GHG emissions in the state because of the energy needed to make buildings livable, including space

---

39 Institute for Market Transformation. November 2022. *Putting Policy in Action: Building Performance Standard Implementation Guide*. https://imt.org/wp-content/uploads/2022/11/BPS-Implementation-Guide-Nov-2022.pdf.

40 *Criteria pollutants* are six common air pollutants regulated by the U.S. EPA due to the widespread presence of these pollutants and adverse health and environmental effects. These pollutants are carbon monoxide (CO), lead (Pb), oxides of nitrogen (NO_x), ozone (O_3), particulate matter (PM), and oxides of sulfur (SO_x).

41 California Energy Commission. Accessed June 2025. "Clean Energy Serving California," web page, https://www.energy.ca.gov/data-reports/clean-energy-serving-california.

42 Kenney, Michael, Jacob Wahlgren, Kristina Duloglo, Tiffany Mateo, Danuta Drozdowicz, and Stephanie Bailey. February 2022. *Final 2021 Integrated Energy Policy Report, Volume I: Building Decarbonization*. California Energy Commission. Publication Number: CEC-100-2021-001-V1, https://www.energy.ca.gov/publications/2021/2021-integrated-energy-policy-report.

43 Seattle Office of Sustainability and Environment. Accessed April 2025. "Building Emissions Performance Standard FAQ," web page, https://www.seattle.gov/environment/climate-change/buildings-and-energy/building-emissions-performance-standard/faqs.

and water heating, cooling, ventilating, and lighting.[44] The state monitors and regulates seven GHGs:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Sulfur hexafluoride (SF_6)
- Hydrofluorocarbons (HFC)
- Perfluorocarbons (PFC)
- Nitrogen trifluoride (NF_3)[45]

GHGI can be measured as site emissions intensity or source emissions intensity. Site GHGI includes the emissions associated directly with energy consumed in the building, for example the emissions from fuel combustion of a gas-powered boiler. Source GHGI includes energy consumed onsite and associated emissions from the generation, transmission, and distribution of electricity.

Metric Objectives for Occupant Impacts

Occupant impact metrics are metrics that measure the socioeconomic, occupant health, and public safety aspects of buildings. Occupant impact metrics measure how buildings affect the safety and comfort of occupants. The Cities of Los Angeles, Santa Monica, and West Hollywood note that "[l]ow-income communities and communities of color are heavily burdened by air pollution and energy bills. Any building decarbonization policy should take a holistic approach to tackling those burdens while not exacerbating them."[46] The following are examples of occupant impacts that could be included in a BPS:

- Cooling services
- Indoor air quality
- Energy service resiliency (how likely is the building to lose critical energy services[47])

---

44 California Energy Commission staff analysis of "California GHG Emission Inventory Data and Energy Consumption Data," California Air Resources Board. Accessed February 2025. "Current California GHG Emission Inventory Data," web page, https://ww2.arb.ca.gov/ghg-inventory-data.

The CEC calculated emissions from buildings using direct and indirect emissions. For more detailed analysis of how emissions were calculated, see Appendix B of the *California Building Decarbonization Assessment*.

45 California Air Resources Board. Accessed February 2025. "GHGs Descriptions & Sources in California," web page, https://ww2.arb.ca.gov/ghg-descriptions-sources.

46 City of Los Angeles, City of Santa Monica, and City of West Hollywood. March 11, 2025. LA County Chief Sustainability Office Comments — LA County Building Decarbonization Stakeholder Feedback. California Energy Commission, Docket Number: 24-BPS-01, TN#262142, https://efiling.energy.ca.gov/GetDocument.aspx?tn=262142.

47 *Energy services* are tasks performed to benefit people using energy. These tasks include, but are not limited to, space and water heating, cooking food, transportation, and plug loads. Energy services could also include utility services that rely on energy such as sewer, water, and other municipal services.

- Water heating performance (do occupants have sufficient hot water)
- Wildfire hardening (how resistant the building is to wildfire damage)
- Energy costs

A BPS can address occupant well-being directly or indirectly. A direct occupant impact metric would be a quantifiable measure as a separate compliance criterion, such as a limit on the concentration of indoor air pollutants. An indirect metric expresses and, where possible, quantifies the cobenefits of an energy or environmental metric. For example, an energy use intensity metric encourages energy efficiency, which also reduces energy costs to occupants.

Some energy and environmental metrics could have unintended negative impacts on building occupants, so it is important to consider occupant impacts. For example, if a building that lacks air conditioning is retrofitted to include air conditioning, the total energy use of the building will increase. Although providing cooling services by installing air conditioning would be an improvement for occupant comfort and habitability, it would also increase energy consumption, conflicting with an energy use intensity metric. An energy metric for a BPS could consider the benefits of cooling services and offset the increased energy use with a baseline or target adjustment.

Thermal Comfort and Safety

Thermal comfort and safety metrics measure whether building occupants and tenants experience stable and comfortable indoor air temperatures throughout the year, with protections to prevent exposure to extreme heat and cold. Potential metrics for this category include:

- Minimum heating temperature during winter.
- Maximum temperature thresholds during summer.
- Temperature consistency throughout the building (or unit if residential).
- Minimum cooling capacity requirements during peak summer heat.

Indoor Air Quality

Indoor air quality is a critical health concern, particularly for communities that have been overburdened with pollution, poor outdoor air quality, and deferred building maintenance. SB 48 requires the CEC to develop a strategy that will "prioritize efficiency and decarbonization measures that will benefit tenants, including measures that […] remove indoor environmental hazards."[48] An indoor air quality metric would focus on the presence of pollutants and the quality of ventilation inside a building to ensure building occupants and tenants breathe clean and healthy air that supports long-term health. Potential metrics for this category include:

- Ventilation standards (requirements for minimum building ventilation).

48 Senate Bill 48. Section 3. 25402.16(c)(6), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB48.

- Carbon dioxide monitoring and management (maximum indoor CO_2 limits).
- Particulate matter thresholds (maximum indoor particulate limits).[49]
- Volatile organic compounds[50] (VOC) concentration limits (maximum indoor VOC limits).
- Moisture and mold prevention requirements.

Indoor pollution caused by combusted and uncombusted gas, primarily from cooking, have recently proven to be more common and harmful than previously understood, resulting in an increased policy focus on safe indoor air quality.[51] Carbon dioxide concentration could be used as the sole performance metric for indoor air quality because the technology to measure carbon dioxide is widely available and relatively inexpensive. Carbon dioxide level is also a good indicator of how much outside air reaches occupants.[52]

Metric Selection Criteria

For a BPS to be successful in practice, the building performance metrics used must be fair, clear, rigorous, repeatable, and objective.[53] These selection criteria can be described in three topic categories:

- Metrics that are simple and understandable by most building owners
- Metrics based on building operations that are within the building owner's control
- Metrics based on data that can be physically measured and verified

---

49 *Particulate matter* (also called particle pollution) refers to microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. U.S. Environmental Protection Agency. "Particulate Matter (PM) Basics," https://www.epa.gov/pm-pollution/particulate-matter-pm-basics.

50 *Volatile organic compounds* mean any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate that participates in atmospheric photochemical reactions, except those designated by the United States Environmental Protection Agency as having negligible photochemical reactivity. VOC can cause direct harm, may be carcinogenic, and can react in the atmosphere to generate ozone (smog).

51 Logue, Jennifer M., Neil E. Klepeis, Agnes B. Lobscheid, and Brett C. Singer. November 2013. "Pollutant Exposures From Natural Gas Cooking Burners: A Simulation-Based Assessment for Southern California." *Environmental Health Perspectives*, https://ehp.niehs.nih.gov/doi/10.1289/ehp.1306673.

American Lung Association. November 25, 2024. "Is Cooking Making Your Indoor Air Unsafe?," Blog, https://www.lung.org/blog/cooking-air-pollution.

Garg, Anchal, Yannai Kashtan, Metta Nicholson, Colin J. Finnegan, Eric D. Lebel, Drew R. Michanowicz, Seth B.C. Shonkoff, Kari C. Nadeau, and Robert B. Jackson. March 2025. "Exposure and Health Risks of Benzene From Combustion by Gas Stoves: A Modelling Approach in U.S. Homes." *Journal of Hazardous Materials,* https://doi.org/10.1016/j.jhazmat.2025.137986.

52 Cliff Majersik. June 6, 2024. IMT, USGBC CA, RMI RFI Comments. California Energy Commission. Docket: 24-BPS-01, TN #257443, https://efiling.energy.ca.gov/GetDocument.aspx?tn=257443.

53 Institute for Market Transformation. November 2022. *Putting Policy in Action: Building Performance Standard Implementation Guide*.

The selection criteria are compared to various metric objectives in Table 3 and described below.

Table 3: Evaluation of Building Performance Metrics Based on Selection Criteria

Metric	Simple	Within Owner Control	Measurable and Quantifiable	Type of Metric	Jurisdictional Examples
Site EUI	Yes	Yes	Yes	Energy	• State of Colorado • Montgomery County, Maryland
Source EUI	No	No	Yes	Energy	Washington, D.C.
ENERGY STAR Score	Yes	No	Yes	Energy	• Washington, D.C. • Chula Vista, California
Coincident Peak Demand	No	Yes	Yes	Energy	None
Site GHGI	Yes	Yes	Yes	Environmental	State of Maryland
Source GHGI	No	No	Yes	Environmental	• Boston, Massachusetts • New York, New York
Occupant Impact	No	Yes	Maybe	Occupant Impact	None

Source: CEC staff analysis

Metric Simplicity

The most cited criterion for metric design is "simplicity."[54] Simplicity means metrics must convey information in an easily understandable format and terminology so building owners understand the policy objectives and can successfully comply with the desired regulatory outcomes. For example, EUI is a common BPS metric because it normalizes energy

54 Desiderio, Duane J. October 2024. *Lessons Learned to Shape Fair and Reasonable Building Performance Standards (BPS) 20-Point Policy Guide*. The Real Estate Roundtable, https://www.rer.org/wp-content/uploads/RER-BPS-POLICY-GUIDE-OCT-2024.pdf.

ENERGY STAR. July 2022. *Understanding and Choosing Metrics for Building Performance Standards*. United States Environmental Protection Agency, https://www.energystar.gov/buildings/tools-and-resources/white-paper-understanding-and-choosing-metrics-building-performance.

consumption to building size, can be easily calculated by the building owner, represents a clear numerical target, and is therefore straightforward for building owners to interpret and respond to.

Metrics should not rely on factors outside the building that change unpredictably over time, which could complicate long-term planning. For instance, metrics that are influenced by factors such as the weather or grid pollution emissions may not be simple if they are not clearly defined. An established normalization methodology should be used if external factors are unavoidable, such as the influence of the weather on building energy consumption.[55]

Predictable, long-term BPS targets benefit building owners by connecting long-term state policy goals to fixed and quantifiable building performance targets that owners can use to plan investments. Predictable performance targets allow building owners to plan maintenance and upgrade investments to align with equipment useful lifetimes and their individual business cycles, ensuring that equipment does not need to be replaced early and maximizing investment flexibility.

Simplified compliance pathways ensure that energy use is tracked consistently, which improves building owner awareness of building operations and fosters adoption of the best building operations practices across the market. Moreover, uniform metrics across jurisdictions benefit the owners of multiple properties by allowing them to coordinate upgrades between their properties and reduce administrative overhead for regulators and building owners.[56]

Within the Building Owner's Control

Building owners are the regulated party of a BPS. Metrics for BPS policies should be based on aspects of a building that a building owner can control. Metrics must be understandable and actionable and motivate building owners to support the desired policy outcome. Examples of factors within a building owner's control include:

- Building envelope (walls, windows, and doors).
- Mechanical equipment (space heating, space cooling, or water heating equipment).
- Operational controls (thermostats, lighting controls, and other automatic systems).
- Energy supply in an open market (where the building owner has the option to purchase low- or zero-pollution electricity).

Metrics that lead to building owners making improvements on their buildings, such as energy efficiency upgrades, will result in better compliance rates, less administrative burden, and faster progress toward California's policy goals.

Flexibility is a foundational design principle of a BPS because it ensures that building owners have room to adapt their compliance plans to the needs of their buildings and businesses. By

---

55 A *normalization methodology* adjusts data to account for the impact of periodic variations, allowing for comparisons of data across different periods or locations. An example is adjusting annual building energy consumption based on annual weather variations, allowing a fair comparison of year-over-year energy use. Another example is dividing building energy use by the building area, allowing buildings of similar type but different sizes to be compared to each other.

56 The Real Estate Roundtable. October 2024. *Lessons Learned to Shape Fair and Reasonable Building Performance Standards (BPS) 20-Point Policy Guide*.

requiring building owners to maintain or upgrade their buildings to meet a performance-based metric tied to a policy goal, a BPS creates an actionable path to achieve the policy goal. The flexibility allowed to a building owner by a long-term performance standard should result in lower compliance costs because they allow building owners to plan maintenance and upgrade investments to align with equipment useful lifetimes and their individual business cycles. Policies that provide flexible compliance plans, such as delayed upgrades for major retrofits or alternative pathways for cases of financial hardship, ensure that building owners have practical options for compliance that are within their control.

Metric Advantages and Disadvantages

By identifying appropriate BPS metrics for each state policy priority and then applying the above metric selection criteria, CEC staff has identified advantages and disadvantages for each approach. Given California's size, simplicity is paramount to avoid unacceptable administrative costs. The state is making strong progress toward 100 percent of electricity retail sales and state loads coming from renewable and zero-carbon resources per Senate Bill 100 (De León, Chapter 312, Statutes of 2018), so including source GHG as a BPS metric would likely be less impactful than in jurisdictions with higher electricity carbon emissions. Table 4 summarizes the advantages and disadvantages of the major metric options.

Table 4: Metric Advantages and Disadvantages

Metric	Advantages	Disadvantages
Site EUI	• Simple to calculate • Aligns with utility bills • Easy to understand • Focus on building efficiency that is within building owner control • Lower reporting complexity (does not require regional or utility-specific grid factors) • Favors electrification	• Ignores upstream energy losses from generation, transmission, and distribution • Does not account for grid efficiency • Does not account for green electricity procurement
Source EUI	• Accounts for upstream energy losses from generation, transmission, and distribution of electricity • Incentivizes buildings to procure clean electricity	• Difficult to calculate and understand • May not favor electrification • Varies greatly due to the region or utility grid fuel mix • Difficult to verify • Some input factors are out of building owner's control

Metric	Advantages	Disadvantages
ENERGY STAR Score	• Nationally recognized standard • Simple to understand (1–100 scale and the higher the score the better) • Well documented methodology for correcting for variations between buildings of the same type (such as hours of operation, number of workers, and annual climate variations)	• Does not clearly identify why a building is high/low performing • Uses national source energy factors and does not account for regional or utility specific grid fuel mix • Compares to buildings nationwide that may not be representative of California building performance • Does not always favor electrification • Not all building types are eligible for ENERGY STAR score
Coincident Peak Demand	• Encourages reduction of energy use during peak periods • Directly related to utility bills and may drive greater utility bill savings	• Difficult to understand • Not in ENERGY STAR Portfolio Manager
Site GHGI	• Simple to calculate and understand • Not impacted by variations in grid fuel mix • Favors electrification • Reduces health and safety impacts from fossil fuel combustion onsite • Does not penalize buildings without current access to 100 percent clean electricity procurement options, which is outside building owner control	• Does not account for emissions from fossil fuels used to generate electricity used in the building • Does not give credit to buildings that optionally procure 100 percent clean electricity

Metric	Advantages	Disadvantages
Source GHGI	• Incentivizes procurement of 100 percent clean electricity	• Dependent on the electric grid fuel mix, which is not within the building owner's control • Difficult to calculate and verify • May discourage electrification in short term
Occupant Impact	• Direct occupant benefits such as improved indoor air quality, reduced energy costs, and improved health and safety	• No current direct measurement in benchmarking • Difficult to measure and verify

Source: CEC staff analysis

The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), in collaboration with the American National Standards Institute (ANSI) and Illuminating Engineering Society (IES), maintains *Standard 100 Energy and Emissions Building Performance Standard for Existing Buildings*,[57] which recommends a GHG and an energy consumption performance metric. The Institute for Market Transformation (IMT) *Model Law for Building Performance Standards* offers a menu of potential metrics including site EUI, site GHGI, and coincident peak electricity demand. U.S. EPA recommends a combination of a site EUI and site GHGI.[58] IMT maintains a detailed table of all known approaches by other jurisdictions.[59]

Policy Approaches

The policy structure of a BPS refers to the framework used to measure building performance improvements over time. The most common BPS policy structures are "cycle-based," "fixed limits," and "trajectory," defined below:

- **"Cycle-based"** policy structures establish a performance standard for a set period, or "cycle," which jurisdictions recalculate every few years based on changes to the overall performance of the covered building stock over time. This policy approach evaluates building performance at the end of each cycle and then develops new standards based on the efficiency gains or emissions reductions from the previous

57 American Society of Heating, Refrigerating, and Air-Conditioning Engineers. 2024. *ANSI/ASHRAE/IES Standard 100: Energy and Emissions Building Performance Standard for Existing Buildings*, https://www.ashrae.org/technical-resources/bookstore/standard-100.

Institute for Market Transformation. 2021. *Model Law for Building Performance Standards*, https://imt.org/resources/model-ordinance-for-building-performance-standards/.

58 United States Environmental Protection Agency. May 2022. *EPA Recommended Metrics and Normalization Methods for Use in State and Local Building Performance Standards*, https://www.energystar.gov/sites/default/files/tools/BPS-Metrics_Recommendations_v7.pdf.

59 Institute for Market Transformation. January 2026. *Comparison of U.S. Building Performance Standards*, https://imt.org/resources/comparison-of-u-s-building-performance-standards/.

cycle. Jurisdictions using this approach include Washington, D.C., and the State of Washington.

- **"Fixed limits"** policy structures set a cap on the chosen performance metric for each covered building that become more stringent over time to require increasingly deeper energy or emissions savings. Typically, this approach requires buildings to stay below the set limit for the entire compliance period rather than just during a single evaluation year, like in the cycle-based and trajectory structures. Jurisdictions using this approach include New York, New York, and Boston, Massachusetts.
- **"Trajectory"** policy structures identify end-point performance targets for every building based on the primary property type and then assign interim performance targets based on the starting level of performance for the building, or baseline. This approach requires buildings to "step down" over time by realizing efficiency gains or emissions reductions in the short and long terms. Jurisdictions using this approach include Denver, Colorado, and Montgomery County, Maryland.

Building owners are increasingly seeking nationwide uniformity and consistency in future BPS policies.[60] The trajectory policy approach has been the most widely adopted policy structure in jurisdictions that have recently passed a BPS. This widespread acceptance could be in part because IMT developed a model law for jurisdictions to adopt, which recommends the trajectory approach.[61]

Jurisdictions that developed trajectory-based BPS policies received public support for this approach. Montgomery County, Maryland, solicited stakeholder feedback during development of its local BPS and found that stakeholders favored a policy model that sets a long-term performance standard with five-year interim performance targets to make sure buildings are on track to meet the final standard.[62] The City of Denver Energize Denver Task Force also recommended a trajectory policy structure with final and interim BPS targets.[63] Washington, D.C.'s Building Energy Performance Task Force ranked simplicity and maximizing certainty as the top two priorities when designing a BPS program.[64] Based on this feedback and an evaluation of the GHG savings potential of various policy approaches, in 2022, the

60 The Real Estate Roundtable. October 2024. *Lessons Learned to Shape Fair and Reasonable Building Performance Standards (BPS) 20-Point Policy Guide*.

61 Institute for Market Transformation. 2021. *Model Law for Building Performance Standards*.

62 Montgomery County, Maryland Department of Environmental Protection. September 2020. *Stakeholder Recommendation Report*, https://assets.montgomerycountymd.gov/files/MC-BEPS-Stakeholder-Report.pdf.

63 Energize Denver Task Force. August 31, 2021. *Energize Denver Task Force Recommendations*, https://www.denvergov.org/files/assets/public/v/1/climate-action/documents/cpf/climate-action-task-force/edtf-recommendations-8-31-final.pdf.

64 District of Columbia Department of Energy and Environment. 2022. *BEPS Greenhouse Gas Study*, https://s3.us-east-2.amazonaws.com/dc.beam-portal.org-public-media/media/helpdesk/attachments/kb/BEPS%20(1)/85/DOEE_BEPS_Greenhouse_Gas_Metric_Study_FINAL.pdf.

Washington, D.C., DOEE formally recommended changing its current cycle-based BPS approach to a trajectory approach.[65]

The CEC recommends a trajectory policy structure for a statewide BPS. The trajectory policy structure is favorable as it can align with California's long-term climate commitments and ensure consistent performance improvements through the interim target "check points." A trajectory structure can easily build in flexibility for building owners to account for capital planning cycles, building life cycles, and leasing cycles, which will be different for each building.

Establishing BPS Baselines

Baseline data mark the starting level of performance for a covered building and become the benchmark for evaluating compliance with a BPS. Establishing fair and representative baselines for all covered buildings is especially important when implementing a trajectory-based BPS. While most buildings of the same property type will work toward the same end performance target, each building owner will have their own path to compliance based on how their building is performing at the start of the program. Because every building will have a unique trajectory, setting a fair and representative baseline period of performance is critical to building success and the success of the overall BPS program.

Several factors should be considered when selecting the baseline year or years used for a BPS — most importantly, the availability of high-quality benchmarking data. IMT recommends that jurisdictions should wait until they have collected at least two, preferably three, years of benchmarking data from building owners before determining baseline performance.[66] Similarly, the Real Estate Roundtable recommends that "jurisdictions should possess at least 3–5 years of high-quality benchmarking data as the basis for realistic and attainable performance levels on buildings."[67]

The chosen baseline year, or years, will have the highest level of compliance, ideally. The appropriate year or years will likely be between Calendar Years 2025 and 2028, as the CEC is increasing engagement with, and enforcement on, owners of buildings subject to AB 802 and expects to see higher rates of compliance in the next few years.

Building baseline performance could be a single year or an average of multiple years. The benefit of a single-year baseline is that it is simple to calculate and communicate to building owners. The drawbacks are that a single year does not account for changes in weather or changes in building operations year over year. The benefit of using an average of two or three years is the ability to normalize building performance metrics for changes in weather and building operations to provide a more realistic average starting point of performance. The drawbacks of a baseline using an average of multiple years are the need for multiple years in a row of high-quality data and the need to calculate the average performance of each building

65 Ibid.

66 Institute for Market Transformation. 2022. *Putting Policy in Action: Building Performance Standard Implementation Guide*.

67 The Real Estate Roundtable. October 2024. *Lessons Learned to Shape Fair and Reasonable Building Performance Standards (BPS) 20-Point Policy Guide*.

over the baseline period. IMT recommends that jurisdictions set the baseline performance according to the average performance over two to three years.[68]

Jurisdictions across the country that have a trajectory-based BPS have taken a variety of approaches when establishing baselines, outlined in Table 5.

Table 5: Baseline Selections for Jurisdictions With Trajectory-Based BPS

Jurisdiction	Baseline Year or Years	Additional Notes
State of Maryland	Calendar Year 2025 data or first year of reported benchmarking data for new construction	Buildings can receive an exemption from establishing their baseline if building was less than 50 percent occupied during baseline year with max three-year possible exemption
State of Colorado	Calendar Year 2021 data or first year of reported benchmarking data for new construction	N/A
Denver, Colorado	Calendar Year 2019 data or choice of 2018 or 2020 if no 2019 data is available	Buildings with no benchmarking data on file are assigned a baseline that is the 2019 local median EUI for that building type
Montgomery County, Maryland	Average of 2 years with highest normalized EUI over 3- to 4-year baseline period	Buildings with no benchmarking data over baseline period will have baseline assigned based on building type

Source: CEC staff review of program regulations and websites

Figure 8 shows how Montgomery County, Maryland, discloses each building baseline and interim and final standards of performance. All building owners subject to the Montgomery County BPS can use a lookup tool to look up their baseline period, typically a four-year period, and baseline performance, which is the average of the two years with the highest normalized average EUI. This lookup tool also provides the most recent level of building performance, the interim target year and standard, the final target year and standard, and a determination whether the building is meeting those targets based on the latest performance.

68 Institute for Market Transformation. 2022. *Putting Policy in Action: Building Performance Standard Implementation Guide*.

Figure 8: Montgomery County, Maryland, Baseline and Performance Standard Disclosure

Baseline

Each building's performance baseline is the average of the 2 complete years with the highest normalized net site EUI (NN site EUI) over that building's baseline period. NN site EUI is the building's annual site energy use intensity, normalized for weather, minus the renewable energy allowance (all electricity generated from onsite renewable energy systems). Reports that are "pending revisions" are not included in the baseline. The baseline below is calculated based on available data but will not be final until the end of the baseline period. Reporting year is the year during which the benchmarking report was submitted, e.g., reporting year 2024 represents calendar year 2023 data.

Baseline Period (reporting year): 2019 - 2023
Baseline (NN site EUI): 93.1

Montgomery County Performance Standard

The targets displayed below are preliminary based on the EUI standards proposed in regulations and will not be final until the regulations are approved by County Council. Compliance with interim and final standards is projected based on latest benchmarking data. Actual compliance will be based on building performance during the interim and final period.

STANDARD	REPORTING YEAR	NN SITE EUI	MEETING EUI STANDARD?
Baseline	2019 - 2023	93.1	
Latest Performance	2024	87.4	
Interim Standard	2029	76.6	No
Final Standard	2034	60	No

Source: https://target-finder.mcbeps.org/

Baselines will need to be assigned to buildings that have not submitted benchmarking data for the baseline years selected. If a building owner has not submitted their required benchmarking data, a baseline cannot be established based on the performance of their building and may need to be set based on the performance of similar buildings. The City of Denver's BPS policy uses a trajectory approach, and in cases where a building did not have necessary baseline data, the program used the 2019 local median EUI for that building type.[69] Montgomery County, Maryland, also has a provision in its regulations allowing the Department of Environment to assign a baseline based on property type.[70]

Using local median or modeled data may disadvantage building owners who need to meet targets that conflict with operations and performance of their building. Utility billing data, such as the data the six major utilities send to the CEC under 20 CCR Section 1353 and GFA data compiled from parcel information, could be used to estimate performance over the established baseline period. However, utility data collected under 20 CCR Section 1353 would consider only electricity and gas usage in the six utility territories outlined earlier and could show falsely high or low levels of performance. The GFA from parcel information could also be

69 City of Denver. Code of Ordinances Sec. 10-404. — Existing Building Performance for Covered Buildings With a Gross Floor Area Equal to or Greater Than 25,000 Square Feet, https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIIREMUCO_CH10BUBURE_ARTXIVHIRFEXBUPR_S10-404EXBUPECOBUGRFLAREQGR25000SQFE.

70 Personal communication. Emily Curley. Montgomery County, Maryland Department of Environmental Protection.

misrepresentative and show inaccurate performance. Because insufficient data can lead to setting inaccurate baselines, the best way to set building owners up for success with a BPS is to focus first on collecting complete and accurate benchmarking data as outlined earlier in this chapter.

Setting Final Performance Targets

A BPS with a trajectory approach requires final performance targets to be set at the start of the program, which enables the authorized agency to assign interim performance targets for every covered building. Final performance targets are often set at a level necessary to achieve a jurisdiction's emissions or energy reduction goals. For example, the City of Denver set final EUI targets such that a BPS would achieve 30 percent total site energy savings across all covered buildings.[71] The City of Boston and State of Maryland established a zero-GHG-emission metric for all buildings subject to their BPS policies to align with each jurisdiction's carbon neutrality goal.[72] In California, existing legislation such as Senate Bill 350 (De León, Chapter 547, Statutes of 2015), which calls for the doubling of statewide energy efficiency by 2030, and Assembly Bill 1279 (Muratsuchi, Chapter 337, Statutes of 2022), which sets a goal for statewide net-zero carbon by 2045, could guide how final performance targets are determined.

Under a trajectory approach BPS, final performance targets are unique to each property type or property type group, while interim performance targets are unique to each covered building. Portfolio Manager offers building owners more than 80 property types to choose from when benchmarking their properties.[73] Jurisdictions with BPS policies have taken varied approaches to establishing performance targets by property type. Montgomery County, Maryland, created unique performance targets for every Portfolio Manager property type, while Washington, D.C., grouped together similar property types and assigned the same performance target for every property type in that group.[74] The State of Washington built on the existing ASHRAE Standard 100 BPS framework and established 113 unique property type

---

71 Denver, Colorado Office of Climate Action, Sustainability, and Resiliency. August 27, 2026. *Energize Denver Rules and Regulations*, https://www.denvergov.org/files/assets/public/v/4/climate-action/documents/buildings-and-homes/energize-denver/rules-and-tg/energize-denver-rules-and-regulations.pdf

72 City of Boston Environment Department. Accessed September 2026. "Building Emissions Reduction And Disclosure," web page, https://www.boston.gov/departments/environment/berdo.

Maryland Energy Administration. Accessed September 2026. "Building Energy Performance Standards," web page, https://energy.maryland.gov/Pages/BuildingEnergyPerformance.aspx

73 United States Environmental Protection Agency. Accessed September 2026. "Property Types in Portfolio Manager," web page, https://www.energystar.gov/buildings/benchmark/understand-metrics/property-types.

Building owners must select the property use type in Portfolio Manager that best describes the use for most of the building being benchmarked.

74 Montgomery County, Maryland Department of Environmental Protection. Accessed September 2026. "Final Performance Standards," web page, https://www.montgomerycountymd.gov/department-environmental-protection/energy/energy-commercial-multifamily/final-performance-standards

District of Columbia Department of Energy and Environment. June 29, 2021. *Guide to the 2021 Building Energy Performance Standards*, https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/1_Guide%20to%20the%202021%20BEPS%20v1%203-30-21.pdf

performance targets normalized by climate zone and building operations.[75] Given California's size, building diversity, and variety in climate, final performance targets may need to be normalized to ensure fair application of a BPS across the state. Normalization factors such climate zone and building operations could be considered during the development of final performance targets.

Evaluation, Monitoring, and Verification of a BPS

In California, it is common for third-party evaluation, measurement, and verification (EM&V) contractors to conduct energy program impacts and outcomes evaluations. Evaluators aim to "ensure that good decisions are made regarding the investment of energy program resources by providing rigorous, independent evaluation studies and study results."[76] SB 48 does not require CEC staff to develop a comprehensive EM&V strategy, but it does require staff to develop metrics that could be used in an EM&V assessment.[77]

Impact evaluations focus on "estimating the gross and net effects from the implementation of one or more energy efficiency programs." Impact evaluations are generally conducted after a program is complete and estimate energy savings, demand savings, and cost-effectiveness. The California Public Utilities Commission (CPUC) California Evaluation Framework discusses five evaluation topics, shown in Table 6.[78] These five types of evaluations provide feedback during the program, after the conclusion of the program or program phase, or a mix of both.

Table 6: BPS Outcomes and Impacts

Evaluation Objective	Tracked Outcomes	Tracked Impacts
Impact Evaluation	Equipment reliability, installation quality, workforce development, number of installation contractors	Customer satisfaction, workforce makeup, GHG impacts
Process Evaluation	Training effectiveness, effectiveness in reaching program goals, best practices	Number of stakeholders engaged, number of stakeholders trained, stakeholder satisfaction with program

75 Washington State Department of Commerce. July 2026. *Washington State Clean Buildings Performance Standard*, https://www.commerce.wa.gov/cbps/

76 California Public Utilities Commission. January 26, 2006. *The California Evaluation Framework*, https://www.cpuc.ca.gov/-/media/cpuc-website/files/uploadedfiles/cpuc_public_website/content/utilities_and_industries/energy/energy_programs/demand_side_management/ee_and_energy_savings_assist/caevaluationframework.pdf.

77 Senate Bill 48. Section 3. 25402.16(e)(3), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB48.

78 California Public Utilities Commission. January 26, 2006. *The California Evaluation Framework*.

Evaluation Objective	Tracked Outcomes	Tracked Impacts
Information and Education Program Evaluation	Workshops held, working groups held, trainings held, technical assistance line calls	Community capacity
Market Transformation Program Evaluation	Technology adopted, technology satisfaction, heat pumps adopted	Technology adoption, technology affordability improvement, customer satisfaction
Non-Energy Effects Evaluation	Evictions, rent burden, energy burden, harassment, indoor air quality, thermal comfort	Displacement, gentrification, asthma rates

Source: CEC staff

All evaluation topics, outcomes, and impacts in Table 6 are relevant to a BPS, and the CEC should consider them all in any evaluation design. The evaluation process should also include a feedback loop designed to improve the BPS program overall.

Developmental evaluations, as opposed to traditional forms of evaluation, focus primarily on creating long-term relationships between evaluators and program staff.[79] For example, the Technology and Equipment for Clean Heating (TECH) Clean California program,[80] overseen by the CPUC, conducted a developmental evaluation to ensure that program staff could implement the lessons learned as quickly as possible. Developmental evaluations are especially useful for programs that are complex, are open to innovation, and require collaboration among diverse stakeholders. For traditional evaluations, evaluators present recommendations at the end of an evaluation. In contrast, evaluators conducting developmental evaluations "take a more active role in shaping the course of the program" through ongoing advice and recommendations, sometimes "taking part in management decision-making."[81]

Application of Evaluation to Equity Outcomes

SB 48 requires the CEC, in collaboration with advisory organizations and other stakeholders, to develop metrics "to measure how the strategy is impacting under-resourced communities, low-income residential tenants, and small commercial tenants, and assess whether the strategy is achieving just and equitable outcomes."[82] The CEC used existing contract funds to work with community-based organizations (CBOs) to develop potential metrics for measuring the impacts of a BPS which are detailed in Appendix I. These metrics include, but are not limited to:

- Rent increases (especially when associated with required building improvements).

79 Simister, Nigel. 2017. *Developmental Evaluation*. Intrac, https://www.intrac.org/app/uploads/2017/01/Developmental-evaluation.pdf.

80 "TECH Clean California," web page, Accessed April 2025, https://techcleanca.com/.

81 Simister, Nigel. 2017. *Developmental Evaluation*. Intrac.

82 Public Resources Code Section 25402.16(e)(3), https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25402.16.&lawCode=PRC.

- Tenant displacement (no-fault evictions or long-term relocation due to building upgrades).
- Energy burden (energy bills as a percentage of tenant income).
- Utility costs.
- Tenant harassment.[83]
- Construction-as-harassment (rate of situations where landlords conduct illegal, invasive, and dangerous construction to make living conditions so unbearable and harmful to health that tenants feel pressured to leave).[84]
- Adherence to indoor air quality requirements.

To evaluate the equitability of a BPS, the evaluator should incorporate analysis of the support services delivered to building owners and tenants. Examples of support services include energy efficiency incentives, rebates, and other financial and technical support provided by governments, utilities, or others.

Although support structures are designed mostly with low-resourced building owners in mind, those owners often lack the time and capacity to navigate the complex process of applying for and securing support. Evaluation of support can identify obstacles and provide opportunities to redirect or redesign services to better serve building owners and tenants with the greatest need.[85]

While building owners already report energy and emissions data through benchmarking, other data, such as eviction rates, technology adoption, and many of the occupant impact measures discussed earlier in this chapter are not currently measured or reported. If the state wishes to quantify energy burden or displacement rates of low-income and small commercial tenants, then those outcomes would need to be measured.

---

83 *Tenant harassment* is a landlord's bad faith conduct directed at a specific tenant or tenants that causes the latter detriment or harm, including but not limited to verbal or physical threats, coercion, and withholding of critical services.

84 Strategic Actions for a Just Economy, Public Health Law Center, Natural Resources Defense Council, Strategic Concepts in Organizing and Policy Education, Los Angeles Alliance for a New Economy, Institute for Market Transformation, Local Clean Energy Alliance. SAJE Response to Building Energy Performance Strategy Report. California Energy Commission, Docket Number: 24-BPS-01, TN#: 257451, https://efiling.energy.ca.gov/GetDocument.aspx?tn=257451&DocumentContentId=93322.

85 The City Energy Project. 2021. *Incorporating Equity Into Energy Benchmarking Requirements*, pg. 37, https://imt.org/wp-content/uploads/2025/01/CEP_Incorporating_Equity_Into_Energy_Benchmarking_Requirements.pdf.

CHAPTER 2:
Achieving an Equitable Building Performance Standard

This chapter captures the equity implications of BPS policies, identified through research and engagement with *justice communities*.[86] This chapter responds to the equity guidance and requirements in SB 48, summarizes CEC staff's approach to meet those requirements, discusses issues raised through engagement with those most historically burdened by the energy system, and explains the resulting staff recommendations. Chapter 4 addresses the possible costs of compliance for building owners, and the importance of their involvement in formal regulatory processes in the future. While equity considerations are integrated into all chapters of this report, this chapter focuses on the equitable inclusion of representatives from these communities in the public policy design, implementation, and monitoring and evaluation processes.

Equity Requirements and Guidance

Appendix B details the relevant equity requirements and guidance the CEC considered to develop this report. This information includes California Natural Resources Agency (CNRA) and CEC tribal consultation policies and SB 48 requirements, as well as guidance from the CEC Justice, Access, Equity, Diversity, and Inclusion (JAEDI) Framework[87] and the *Disadvantaged Communities Advisory Group* (DACAG) Equity Framework.[88]

Appendix B discusses how the CEC has engaged, and will continue to engage, with interested members of the public. This includes how the CEC will engage with tribes, as well as the stakeholder analysis and engagement process (stakeholder process) that was created to meet the equity and engagement requirements to develop this report. The stakeholder process is guided by the DACAG Equity Framework and state guidance referenced in Appendix B, as well as input from justice communities and previous engagement processes. Table 7 also indicates where equity implications are discussed throughout the report.

86 *Justice communities* include disadvantaged communities, as defined by Senate Bill 535 (De León, Chapter 830, Statutes of 2012); low-income communities and households, as defined by Assembly Bill 1550 (Gomez, Chapter 369, Statutes of 2016); underserved communities, as defined by Assembly Bill 841 (Ting, Chapter 372, 2020); and people living with disabilities, as defined by the American Disabilities Act.

87 California Energy Commission. February 2023. *Justice Access Equity Diversity Inclusion (JAEDI) Framework*. Publication Number: CEC-100-2022-001-CMF-APA, https://www.energy.ca.gov/sites/default/files/2023-11/CEC-JAEDI-Framework_ada.pdf.

88 Disadvantaged Communities Advisory Group. September 12, 2024. *2024 DACAG Equity Framework Update*. California Energy Commission, Docket Number:16-OIR-06, TN# 259133. https://efiling.energy.ca.gov/GetDocument.aspx?tn=259133.

Table 7: Equity Issues Covered in This Report

Equity Issue	Chapter	Summary of Issue
Evaluation, monitoring, and verification	1	Best practices, types of evaluation
Equity Metrics	1	Potential effect of building upgrades on occupants and tenants
Nonenergy Impacts/Benefit Metrics	1, 4	Indoor air quality, thermal comfort and safety, economic and tenant protection, health and safety
Equity requirements and approaches to meeting them	2, Appendix B	Requirements and guidance set by legislation, regulation, CEC tribal consultation policy, and the Disadvantaged Communities Advisory Group Equity Framework, tribal engagement, stakeholder analysis and engagement process, procedural equity, contracting with advisory organization
Policy design and decision-making	2	Barriers and best practices related to accessibility, compensation, and equitable engagement
Compliance & Enforcement	3	Alternative compliance pathways, nonenergy benefit standards, community accountability board
Workforce Development	4	Training necessary to build the nongovernmental workforce, equitable access to jobs and other economic opportunities
Financing	4	Economic tools that make financial capital more available to underresourced communities
Tenant Protections	4, Appendix F	Strategies to avoid increasing tenant utility and rental cost burdens. Preventing tenant evictions, harassment, or displacement

Source: CEC staff

Ensuring Equity During Development and Implementation of a BPS

The following sections discuss how to ensure equitable engagement in developing a BPS if the Legislature chooses to establish one. The practices below are compiled from subject matter experts, studies, and stakeholder input.

Barriers

Key barriers to equitable engagement include:

- Compensation: Lack of compensation for time spent by individuals or groups, for travel costs, for childcare or eldercare, and absence of food at community meetings or events, limit engagement in developing policies and making decisions.[89]
- Community engagement fatigue: Community engagement fatigue occurs when communities and organizations representing them are repeatedly asked to participate in numerous community engagement efforts but do not see their input incorporated.[90]
- Accessibility: Research shows that trust in decision makers, access (geographically or technologically), language and literacy, knowledge, and competing life priorities are common barriers to participating in energy programs for many hard-to-reach customers.[91]

Person-Centered Approach

One key best practice for engagement is a *person-centered approach,* which includes active listening, engagement in dialogue, and a welcoming attitude from staff members who understand the effects of climate injustice on communities. A person-centered approach is a participatory approach that ensures communities can speak for themselves and openly express opinions and ideas without fear of dismissal.[92] This person-centered approach results in the centering of *frontline communities*[93] in making decisions, supporting solutions that address the needs of frontline communities, and creating opportunities to identify gaps in services, information, or community access.[94]

Accessibility

A report by the National Laboratory of the Rockies (NLR) about best practices and lessons learned from its engagement with communities includes several recommendations related to accessibility. Most notably, one best practice is to "meet communities where they are."[95] This practice includes presenting information accessibly that addresses community members'

---

89 California Air Resources Board. December 2024. *Community Engagement Model*, pg. 42, https://ww2.arb.ca.gov/sites/default/files/2025-01/CARB_Community_Engagement_Model_December2024.pdf.

90 Ibid, pg. 63.

91 Ashby, Kira, Jennifer Smith, Sea Rotmann, Luis Mundaca, Joseph Reyes, Aimee Ambrose, Sheri Borrelli, and Mansi Talwar. 2020. *Who Are Hard-to-Reach Energy Users? Segments, Barriers and Approaches to Engage Them*, pg. 6. American Council for an Energy-Efficient Economy, https://userstcp.org/wp-content/uploads/2020/10/Ashby-et-al-2020_ACEEE-summer-study.pdf.

92 Rideout, Precious, Giulianna Di Lauro, and Esmeralda Hic. May 2023. *Community Engagement Framework*, Institute for Market Transformation, https://imt.org/wp-content/uploads/2023/05/FINAL-CE-Framework-.pdf.

93 Ibid.

The Institute for Market Transformation defines *frontline communities* as those affected first and worst by climate change.

94 Ibid.

95 Ross, Liz and Megan Day. 2022. *Community Energy Planning, Best Practices and Lessons Learned in NREL's Work with Communities*, pg. 9. National Laboratory of the Rockies, https://docs.nlr.gov/docs/fy22osti/82937.pdf.

different needs and levels of understanding of technical aspects. It requires attention to multiple dimensions of engagement:[96]

- Provide the time and resources to allow stakeholders to make well-informed decisions and tailor message delivery to stakeholder needs.
- Ensure in-person meeting locations are in spaces central to and comfortable for community members and that communities are asked what they need to participate (for example, food and childcare, meetings after traditional work hours, and compensation).
- Be transparent and straightforward about what community members can expect from program design or implementation processes.

The California Energy Efficiency Coordinating Committee conducted a pilot to provide compensation for CBOs and community members. In addition to findings about compensation, the pilot evaluation suggested hosting "regular informational sessions about the regulatory process, technical topic, historic context, impact, and engagement pathways." These activities make engagement more accessible by allowing sufficient time to explain the expectations, rules, and parameters of a program.[97]

Another accessibility best practice is to address language access. In California, about 7 million people, or 19 percent of the state's population, speak English less than very well and may be more vulnerable to fraudulent and predatory practices.[98] Limited English proficiency can lead to linguistic isolation,[99] which may prevent community members from communicating with government officials, contractors, the criminal legal system, and building owners.[100] It may be beneficial to provide tenants with messaging, education, and outreach in their native language about tenant protections and the purposes and benefits of changes their landlords make to

---

96 Ibid.

97 Sikand, Suhaila, Katie Wu, and Michelle Vigen Ralston. 2024. *Final Evaluation Report for the Compensation Pilot*, pg. 37. California Energy Efficiency Coordinating Committee, https://www.caeecc.org/_files/ugd/849f65_d96b2fb5eba94ee494006ae9a8d2ee7f.pdf.

98 State of California Department of Justice. Accessed April 2025. "Limited English Proficient Consumers," web page, https://oag.ca.gov/consumers/limited-english.

Jang, Chuquin. October 5, 2022. "Chinatown SRO Tenants Win Years Long Fight With Valstock," *Mission Local*, https://missionlocal.org/2022/10/chinatown-sro-tenants-win-a-years-long-fight/.

Smith, Doug. October 2, 2018. "Koreatown Apartment Owner Agrees to Pay $2.5 Million in Settlement of Tenants' Discrimination Lawsuit,"*Los Angeles Times*, https://www.latimes.com/local/lanow/la-me-ln-optimus-settlement-20181022-story.html.

Levin, Sam. November 18, 2016. "'Learn English': LA Landlords Allegedly Harassed Latinos to Get Richer Tenants,"*The Guardian*, https://www.theguardian.com/us-news/2016/nov/18/latino-evictions-california-housing-discrimination.

99 *Linguistic isolation* is defined in CalEnviroScreen 4.0 as households where no one over age 14 speaks English well.

100 Siegel, Paul, Elizabeth A. Martin and Rosalind Bruno. April 2001. *Language Use and Linguistic Isolation: Historical Data and Methodological Issues*, pg. 2. United States Bureau of Census, https://www.census.gov/content/dam/Census/library/working-papers/2007/adrm/ssm2007-02.pdf.

comply with building performance requirements. Any new BPS policies will need to consider the existing requirements in the Dymally-Alatorre Act, which requires government agencies to provide bilingual services if 5 percent or more of the population the agency serves speaks a language other than English or has limited English proficiency.[101]

Community Engagement Fatigue

The DACAG Equity Framework emphasizes that to ensure meaningful engagement and mitigate the limited bandwidth of justice communities, staff must "look to engage with communities early and often, while building community capacity and expertise if needed." Similarly, the CEC JAEDI Framework recommends "talking with peer agencies who are working on similar topics to determine if engagement can be done together to avoid overwhelming, overburdening or confusing justice communities."[102] The CARB Community Engagement Model recommends collecting recent feedback gathered at related public events or meetings and presenting that as a strategy to reduce community fatigue.[103]

Using a tool like the Spectrum of Community Engagement to Ownership[104] to obtain an understanding of a community's engagement needs and resources can help reduce engagement fatigue by providing structure to guide a discussion of expectations regarding engagement goals and capacity.

Compensation

The CEC, as well as sister agencies CARB and CPUC, have compensation mechanisms for stakeholders. The details of these compensation mechanisms are outlined in Appendix C.

The Solar on Multifamily Affordable Housing (SOMAH) Program Advisory Council,[105] the Public Experts to Support Development of Clean Space and Water Heater Standards initiative,[106] and the Equitable Building Decarbonization (EBD) Direct Install Program advisory group[107] all represent compensation mechanisms for specific purposes. These programs provide funding for ongoing engagement in policy development and advising programs during implementation.

---

101 California Government Code Section 7290, et. seq., https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=7.&title=1.&chapter=17.5.

102 California Energy Commission. February 2023. *Justice Access Equity Diversity Inclusion (JAEDI) Framework*, pg. A-8. Publication Number: CEC-100-2022-001-CMF-APA, https://www.energy.ca.gov/sites/default/files/2023-11/CEC-JAEDI-Framework_ada.pdf.

103 California Air Resources Board. December 2024. *Community Engagement Model*, pg. 64.

104 The Spectrum of Community Engagement to Ownership is discussed in depth in the "Stakeholder Analysis and Engagement Process" section in Appendix B.

105 Solar on Multifamily Affordable Housing. Accessed April 2025. "Advisory Council," web page, https://calsomah.org/advisory-council.

106 California Air Resources Board. Accessed April 2025. "Clean Space and Water Heater Standards," web page, https://ww2.arb.ca.gov/our-work/programs/building-decarbonization/clean-space-and-water-heater-standards/public-engagement.

107 California Energy Commission. Accessed April 2025. "Equitable Building Decarbonization Program," web page, https://www.energy.ca.gov/programs-and-topics/programs/equitable-building-decarbonization-program.

The aforementioned programs contrast with the Equity and Access Grant Program, a CPUC program that offers grants to California Native American tribes and CBOs for participating in CPUC decision-making processes at an agencywide level.[108]

108 California Public Utilities Commission. April 3, 2025. Resolution M-4875, pg. 2, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M561/K311/561311425.pdf.

CHAPTER 3:
Compliance and Enforcement

A BPS can play a critical role in reducing energy use and GHG emissions from existing buildings to meet California's energy and climate goals. An effective BPS program would require the CEC to have the authority to develop and implement:

- Compliance pathways.
- Strategies to implement compliance pathways.
- Enforcement mechanisms for noncompliance.

This chapter examines existing BPS programs and proposes innovative approaches tailored to California's unique building stock and statewide climate goals. This chapter also presents standard and alternative compliance pathway options, pathway implementation strategies, and elements of enforcement programs that help maintain ongoing compliance with a BPS. Specific recommendations on compliance pathways are outlined in Chapter 5.

Compliance Pathways

Compliance pathways outline how a building owner will bring their building into compliance with a BPS and include key elements such as baseline building performance, interim and final targets, and reporting or verification requirements. Other jurisdictions that have implemented BPS programs will typically provide at least one "standard" compliance pathway and one or more "alternative" compliance pathways that can help account for unique opportunities or challenges complying with a BPS.

Standard Compliance Pathway

As outlined in Chapter 1, the CEC recommends a trajectory policy approach for a statewide BPS because of the simplicity, flexibility, and ability to provide long-term certainty to building owners. The standard compliance pathway under a trajectory BPS policy is performance-based, as it identifies long-term performance standards for each property type and sets interim standards by plotting a line from the baseline performance of the building to the final performance standard. Jurisdictions determine the time between the baseline year or years and final deadline, with most jurisdictions setting a final year of performance that aligns with their climate and energy goals.

In California, a potential final performance year of 2045 would align with the state's economywide, net-zero-carbon goal.[109] The interim standards would be unique to each building based on the slope of the trajectory between the baseline and final performance standard. However, all buildings of the same property type would eventually achieve the same level of performance by the established end date. The time between interim standards would

109 California Health and Safety Code Section 38562.2, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=38562.2.&lawCode=HSC.

be equal, representing various compliance cycles. Figure 9 shows what the standard trajectory compliance pathway (standard pathway) would look like for three buildings of the same property type working toward the same final performance standard.

Figure 9: Standard Trajectory Compliance Pathway Example



Source: Institute for Market Transformation

The standard pathway requires a building to achieve the same energy and emissions reductions every cycle until it meets the goal. For example, if the performance metric is site EUI and a building starts with an EUI of 70 kilo-British thermal units (kBtu) per square foot and a final performance standard of 40 kBtu per square foot in three cycles, it must reduce the associated EUI by 10 kBtu per square foot in each of the three cycles.

The standard pathway provides building owners regulatory certainty and maximum flexibility to achieve the required energy and emissions savings while still encouraging owners to improve their properties at the earliest opportunity. This pathway can also easily build in additional flexibility for building owners to account for capital planning cycles, building life cycles, and leasing cycles, which will be different for each building.

Alternative Compliance Pathways

While the intent of the standard pathway is to maximize flexibility, some building owners may face unique challenges, such as significant capital improvement costs, that make compliance under the standard pathway difficult. Alternative compliance pathways (ACP) recognize that buildings have unique characteristics, structural limitations, and operational or financial constraints. ACPs account for these challenges while requiring building owners to achieve levels of energy and emissions reductions comparable to a standard pathway. Possible ACPs the CEC could pursue are described below.

Prescriptive Pathways

Prescriptive pathways are action-based and allow building owners to comply with a BPS by implementing specific preapproved energy efficiency measures that should yield comparable building performance to the standard pathway. This ACP works to reduce the risk of noncompliance. Instead of a performance evaluation at the end of a compliance cycle, building owners demonstrate compliance by identifying and implementing the required energy efficiency measures even if the resulting savings are lower than projected. This pathway is

useful for buildings that face challenges in complying with a BPS because of building constraints such as the presence of asbestos, historical status, or high retrofit costs.

BPS jurisdictions that have adopted the prescriptive pathway include Washington, D.C.;[110] New York, New York; Chula Vista, California; Denver, Colorado; and Seattle, Washington. Table 8 lists advantages and disadvantages of pursuing a prescriptive pathway as part of BPS policies.

Table 8: Advantages and Disadvantages of Prescriptive Pathway

Advantages	Disadvantages
• Simplicity of options for building owners to adopt • Guarantees compliance with BPS • Predictable implementation costs	• Actual savings may vary building to building • Prescriptive options may not account for the unique circumstances of individual buildings • Does not guarantee comparable energy reductions to the standard pathway • Administratively burdensome on program staff to review and verify prescriptive measures implemented

Source: CEC staff

Local Law 97, Article 320, in the New York City Administrative Code describes a package of energy conservation measures building owners must install to meet the prescriptive requirement of their BPS.[111] Below is a sampling of measures the city of New York requires as part of the prescriptive pathway:

- Adjusting temperature set points for heat and hot water to reflect appropriate space occupancy and facility requirements
- Repairing all heating system leaks
- Installing individual temperature controls or insulated radiator enclosures with temperature controls on all radiators
- Insulating all pipes for heating or hot water or both

While prescriptive pathways can offer certainty of compliance, they do not guarantee comparable levels of energy and emissions reductions required under a standard compliance pathway. Predefined energy efficiency measures may not be suitable for all building owners

110 District of Columbia Department of Energy and Environment. Accessed March 2025. "What Pathways Are Available for Compliance," web page, https://dc.beam-portal.org/helpdesk/kb/BEPS/35/.

111 New York City Department of Buildings. Accessed March 2025. "Article 320 Building Energy and Emissions Limits," web page, https://www.nyc.gov/assets/buildings/apps/pdf_viewer/viewer.html?file=2022GAP_Chapter3_MaintenanceWBwm.pdf&section=conscode_2022#page=31.

who are seeking an alternative way to comply, and it could be administratively burdensome for the CEC to verify all measures are properly identified and installed. Washington, D.C., initially offered a prescriptive pathway that required an energy audit and implementation of approved energy efficiency measures but, in a recent regulatory update, removed it as a compliance pathway option in favor of a trajectory pathway option.[112]

Standard Target Adjustments

Standard target adjustments modify interim or final building performance standards to account for unique building circumstances or characteristics that make the original performance standards infeasible. A standard target adjustment differs from other ACPs because it modifies the performance standard rather than providing an alternative way to achieve it. The CEC would need to determine qualifying circumstances for building owners seeking standard target adjustments and establish documentation requirements for the adjustment request.

Other jurisdictions with a BPS standard target adjustment allow for a wide range of qualifying circumstances. These include financial infeasibility, the presence of energy-intensive building spaces (such as data centers or restaurants), property type changes midcycle, and the addition or removal of building GFA during a renovation. BPS jurisdictions that have adopted standard target adjustments include Denver, Colorado, and New York, New York. Table 9 lists the advantages and disadvantages of pursuing standard target adjustments as part of BPS policies.

Table 9: Advantages and Disadvantages of Standard Target Adjustments

Advantages	Disadvantages
• Same performance deadlines as standard compliance pathway • Accounts for building specific challenges and offers flexibility • Still requires energy and emissions reductions	• Creates additional administrative burden for implementing agency • Could delay California's decarbonization goals if buildings meet less stringent targets

Source: CEC staff

Timeline Adjustments

Timeline adjustments provide an extension to the performance compliance deadline if a building meets an established qualifying circumstance. In Washington, D.C., building owners can request a "delay of compliance" of up to three years if they demonstrate a qualifying circumstance such as financial distress, sale of the building, major renovation, or an innovative

112 District of Columbia Department of Energy and Environment. 2022. *BEPS Greenhouse Gas Study*.

approach to energy efficiency.[113] Qualifying affordable housing can request a delay of compliance up to six years.[114]

The State of Colorado also offers a timeline adjustment for qualifying building circumstances including affordable housing, financial hardship, major renovations, and if end-of-life heating or cooling system replacement is misaligned with compliance deadlines.[115] Both jurisdictions require building owners to submit comprehensive documentation demonstrating why a building cannot meet the original compliance deadline and must receive approval from the implementing agency.

Baseline Adjustments

Baseline adjustments allow building owners to adjust either the starting level of building performance or the year or years selected for their baseline performance. Adjusting a baseline will adjust the slope of the trajectory to the final performance standard, which would alter building interim performance standards. Baseline adjustments may be appropriate for buildings without benchmarking data for one or more baseline years, buildings with unusually high or low occupancy in a baseline year, or buildings that implement innovative decarbonization strategies that increase overall usage, such as onsite battery storage. Jurisdictions that offer baseline adjustments include Washington, D.C., and Denver with a set of qualifying circumstances.

Building Performance Action Plan

A *building performance action plan* (BPAP) is an ACP that enables customized, phased compliance strategies, accommodates extenuating circumstances, and establishes a binding agreement between the building owner and the jurisdiction to achieve BPS compliance. Required elements of a BPAP typically include an energy audit report, proposed energy conservation measures, or capital improvements with a detailed implementation timeline. Flexibility is provided in two ways:

- Extending the deadline for an interim or final performance standard (timeline adjustment)
- Adjusting performance requirements for a building (baseline adjustment)

Table 10 lists advantages and disadvantages of pursuing BPAPs as part of BPS policies.

113 District of Columbia Department of Energy and Environment. 2023. *Building Energy Performance Standards Compliance and Enforcement Guidebook for Compliance Cycle 1*, https://s3.us-east-2.amazonaws.com/dc.beam-portal.org-public-media/media/helpdesk/attachments/kb/Guidebook%20(9)/78/BEPS_Guidebook_V1.1_Final.pdf.

114 Ibid.

115 State of Colorado Energy Office. 2024. *Building Performance Colorado: Technical Resource Guide*, https://drive.google.com/file/d/1qMA8936XohwGMbEq3OlOpnupU8Ay6ILz/view.

Table 10: Advantages and Disadvantages of BPAP

Advantages	Disadvantages
• Accounts for building-specific challenges and offers flexibility • Still requires energy and emissions reductions	• Creates significant additional administrative burden for implementing agency • Requires case-by-case consideration of comparable compliance targets and timeline • Could delay California's decarbonization goals if buildings meet less stringent targets

Source: CEC staff

While a BPAP offers flexibility to building owners, managing and verifying building compliance on a case-by-case basis creates a heavy administrative burden.

Portfolio Compliance

Portfolio compliance allows building owners to meet BPS requirements by achieving a weighted average performance target across their entire building portfolio, rather than requiring each of their buildings to comply individually. This ACP gives the owners of multiple buildings additional flexibility while maintaining overall progress toward goals. For example, building owners can schedule building improvements to align with capital planning cycles, prioritize efficiency upgrades in buildings that will have the greatest impact and least cost, or plan around the useful life of major equipment.

Buildings do not need to be co-located or served by a central system to be on this ACP. However, a portfolio-based approach does not guarantee that building owners will invest in all buildings within the portfolio and could cause equity concerns if buildings in disadvantaged communities are deprioritized for investments and efficiency upgrades. The CEC would need to develop guardrails to prevent these equity concerns, such as Washington, D.C.'s, provision in the custom ACP option that requires building owners to state how the ACP will "maintain or improve equity in the built environment for [DC] residents and building occupants."[116] Table 11 lists the advantages and disadvantages of pursuing portfolio compliance as part of a BPS.

116 District of Columbia Department of Energy and Environment. Accessed April 2025. "Chapter 4.6 — Custom Alternative Compliance Pathway Option," web page, https://dc.beam-portal.org/helpdesk/kb/BEPS_Guidebook/73/.

Table 11: Advantages and Disadvantages of Portfolio Compliance

Advantages	Disadvantages
• Provides flexibility for building owners who own multiple buildings • Allows building owners to prioritize upgrades that are cost-effective and most effective for a portfolio	• Not all buildings in a portfolio would be able to reduce energy or emissions • There are equity concerns over whether buildings located in disadvantaged communities would be deprioritized • Allows for further delays on some buildings that may need upgrades • Large administrative burden for the implementing agency to track and manage compliance if buildings are bought and sold during a compliance cycle

Source: CEC staff

Percentage Reduction

A percentage reduction ACP allows building owners to comply with a BPS by reducing the energy use or greenhouse gas emissions of their building by a set percentage relative to the baseline of the building rather than meeting a fixed performance target. This ACP provides flexibility to building owners who may be unable to meet a more stringent interim or final performance target due to technological or financial constraints while still requiring steady improvement towards the jurisdiction's energy and climate goals. The State of Colorado offers a percentage reduction option for building owners to reduce the EUI or GHGI of their building by 29 percent by the final 2030 performance deadline in lieu of meeting a property-type specific final target.[117]

While this ACP offers additional flexibility, it may not yield comparable energy or emissions reductions compared to the standard compliance pathway. Capping the use of a percentage reduction option to one compliance cycle or requiring building owners to still meet their final performance targets could help ensure a BPS achieves its intended outcomes.

Alternative Compliance Fee

An alternative compliance fee allows building owners to comply with a BPS by paying a certain dollar amount per unit of energy or emissions in excess of the performance standard. This ACP could allow building owners to offset up to 100 percent of the required energy or emissions savings through payment. An alternative compliance fee is not the same as a fine or penalty for noncompliance but is a different method of compliance. Jurisdictions with BPS policies that have adopted alternative compliance fees include the State of Maryland; New York, New

117 State of Colorado. Regulation Number 28 Building Benchmarking and Performance Standards, https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=12565&fileName=5%20CCR%201001-32.

York;[118] and Boston, Massachusetts.[119] Alternative compliance fees may offer additional flexibility but do not guarantee that building owners will achieve any energy or emissions reductions in their buildings. Table 12 lists the advantages and disadvantages of alternative compliance fees.

Table 12: Advantages and Disadvantages of Alternative Compliance Fee

Advantages	Disadvantages
• Generates funding that could be used for other decarbonization efforts • Offers additional flexibility for building owners who cannot meet BPS targets fully, but are able to make some improvements to their buildings	• Undermines the energy or emission reduction goals of a BPS if many building owners pay a fee instead of improving buildings • Causes inconsistencies throughout the state with some buildings being improved while other buildings maintain status quo • Difficult to set an appropriate fee

Source: CEC staff

Qualifying Circumstances for ACPs

The CEC anticipates most buildings could achieve compliance through the standard pathway, given its inherent flexibility. However, the ACPs outlined above could resolve some barriers to compliance a building owner may face. The CEC would need to consider what, if any, eligibility criteria to apply to ACPs offered under a BPS program. Below are some of the possible qualifying circumstances and eligibility criteria.

Historical and Landmark Buildings

Historical and landmark buildings recognized for cultural, architectural, or historical significance may be eligible for an ACP because of unique preservation requirements. These buildings are typically designated by the local, state, or national government based on specific criteria and often have existing conditions that make retrofits difficult and expensive because of contaminants or structural and space limitations.

Financial Hardship

Building owners who face financial hardship such as foreclosure, bankruptcy, or operating cost constraints could qualify for ACPs that provide greater flexibility or more time to meet performance targets. Financial hardship must be defined and verified by the CEC. The CEC

118 New York Local Law 97. Rule 1 RCNY §103-14, https://www.nyc.gov/assets/buildings/rules/1_RCNY_103-14.pdf.

119 Ordinance Amending City of Boston Code. Ordinances, Chapter VII, Sections 7-2.1 and 7-2.2. Building Energy Reporting and Disclosure (BERDO), https://www.boston.gov/sites/default/files/file/2023/12/BERDO%202.0%20Final%20Amended%20Docket%200775_1.pdf.

performs financial hardship analyses to reduce penalties for companies in violation of the Appliance Efficiency Standards, which could serve as a template for a BPS.[120]

Technical Feasibility or Building Age

Certain building types and vintages may have structural, mechanical, or operational constraints that make compliance with BPS policies technically difficult, including:

- Structural limitations, such as old roofs that cannot hold more equipment.
- Mechanical constraints, such as outdated plumbing or electrical systems that cannot be replaced or changed without disrupting building operations.
- Space restrictions, such as limited space that cannot fit upgrades.
- Site limitations, such as urban high-rise buildings or buildings located in areas with grid capacity limits.

Building owners that demonstrate technical infeasibility to meet performance standards could qualify for an ACP that allows innovative approaches to energy or emissions reductions, for example. An evaluation to determine the technical feasibility of upgrading an older building should be based on building-specific conditions rather than assumptions based on the building age alone.

Affordable Housing

Owners and managers of *subsidized affordable housing*[121] usually have limited money and long timelines for getting new funding that can make it difficult to implement major upgrades necessary to comply with a BPS.[122] Moreover, affordable housing properties may operate with restrictions on how much rent the owner can charge, making it difficult for building owners to fund major retrofits outside of set funding schedules. *Unsubsidized affordable housing*[123] may face similar constraints and lack the access to capital necessary to comply with a BPS. To help ensure compliance with a BPS while preventing unintended tenant displacement or housing instability, subsidized and unsubsidized affordable housing properties could qualify for ACPs.

Compliance Pathway Implementation

Implementing a BPS requires considering administrative processes, target building sizes, eligibility criteria, methods to verify compliance, enforcement, outreach and education, incentives, coordination between stakeholders, and clear requirements for documentation. The

120 Public Resources Code Section 25402.11, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25402.11.&lawCode=PRC.

121 *Subsidized affordable housing* is housing that is deed-restricted to individuals or households that qualify as low-income, typically for a period of at least 35 years, and subsidized through government funding.

122 Silverman, Benjamin, Jessica Miller, and Quinn Biever. May 2022. *Building Performance Standard Module: Housing Affordability*, Institute for Market Transformation, https://imt.org/wp-content/uploads/2022/05/IMT-Housing-Affordability-CW5.pdf.

123 *Unsubsidized affordable housing*, or non-deed-restricted affordable housing, is defined as apartment buildings with five or more units where at least half of the apartments have rents affordable to households earning 80 percent of the median income for that zip code.

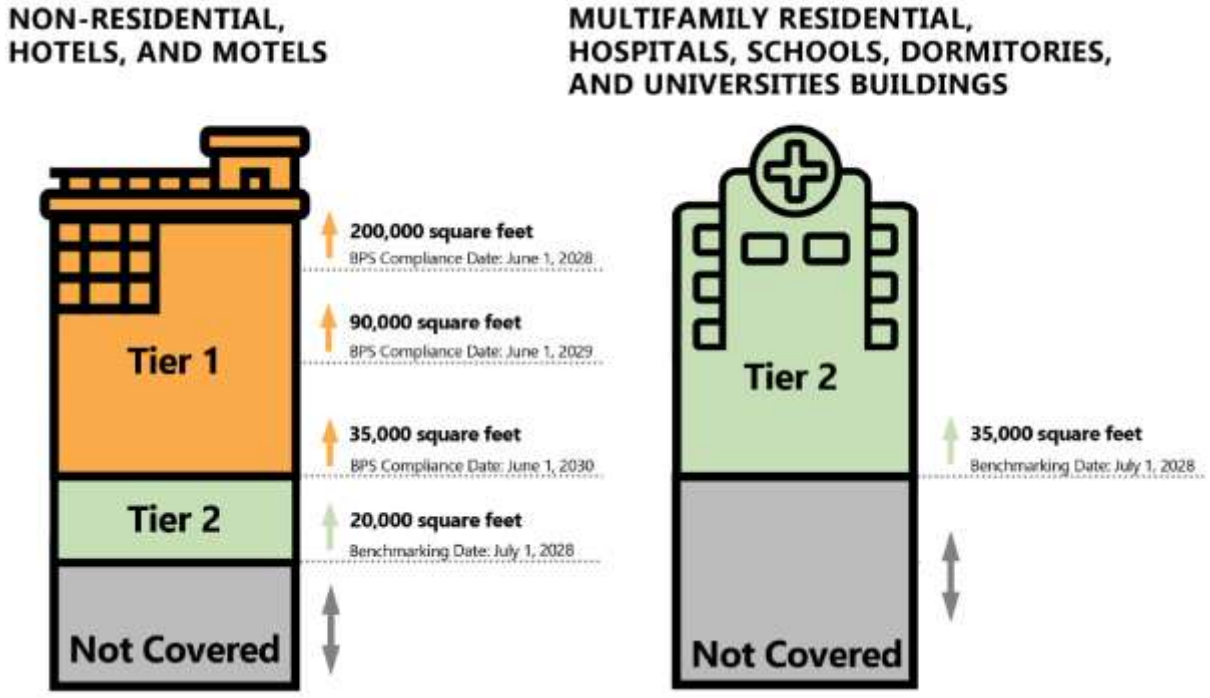
CEC would need to develop standardized forms, guidelines, timelines, and tracking systems to monitor progress across multiple pathway types for a statewide BPS. Implementation should include technical assistance for building owners, an appeals process when building owners are denied using certain pathway types, and ongoing evaluation of the effectiveness of a pathway. A well-structured approach to implementation will help building owners transition to more energy-efficient buildings.

Standards Versus Tiered Implementation

Standard compliance implementation assumes all buildings subject to a BPS have the same compliance start and end dates and are all working toward the same final performance year. Tiered compliance implementation first categorizes buildings into groups, or tiers, based on one or more building characteristics, such as building size or type, then sets different compliance requirements or deadlines for each tier.

The State of Oregon uses a tiered compliance approach that phases in buildings subject to the BPS over time based on building size and type, as shown in Figure 10.[124] Tier 1 includes hotels, motels, and other nonresidential buildings 35,000 square feet or larger. Tier 2 includes multifamily, hospital, school, dormitory, or university buildings 35,000 square feet or larger and hotels, motels, and other nonresidential buildings between 20,000 and 34,999 square feet. Currently, only Tier 1 buildings have performance requirements, and the deadlines vary based on the size of the Tier 1 buildings.

Figure 10: Oregon BPS Compliance Deadlines



Source: Oregon Building Energy Performance Standards, https://www.oregon.gov/energy/save-energy/Pages/BPS.aspx.

124 Oregon Department of Energy. Accessed March 2025. "Building Energy Performance Standards," web page, https://www.oregon.gov/energy/save-energy/Pages/BPS.aspx.

While tiered compliance implementation gives some building owners more time to comply with a BPS, if implemented in California, it could delay achieving the state's energy and emissions reductions goals. Tiered compliance may also confuse building owners who own buildings in different tiers and are unsure of each compliance deadline. Tiered compliance could make implementation easier because it does not require monitoring and enforcement for all 50,000 covered buildings in California at once. Alternatively, tiered compliance could create more administrative burden as program staff would need to keep track of more reporting or performance evaluation deadlines for many tiers of buildings.

Responsible Parties

Jurisdictions with a BPS must identify a specific party responsible for fulfilling requirements and meeting standards. Those parties must select a compliance pathway, submit reports, and take any other actions required by the BPS to comply. The parties that must comply with standards are also subject to penalties for noncompliance. Defining the party that is responsible for compliance and liable for violations is a key element in administrating the BPS.

Owner of a Disclosable Building

AB 802 established the Statewide Building Energy Benchmarking Program, which requires owners of disclosable buildings, a category of covered buildings, to submit building benchmarking data annually to the CEC.[125] *Disclosable buildings* are buildings that are more than 50,000 square feet and have no active residential utility accounts or 17 or more residential utility accounts.[126] SB 48 directs the CEC to consider a strategy for buildings subject to the state's benchmarking requirements.[127]

The owners of disclosable buildings would be the logical party responsible for complying with a statewide BPS because they are responsible for collecting and reporting energy benchmarking data that would be used for measuring compliance with the BPS. In addition, building owners are typically responsible for installing and maintaining energy consuming equipment. Most jurisdictions with BPS policies identify building owners as responsible for compliance and liable for penalties for violations.[128]

---

125 Assembly Bill 802. Accessed February 2025, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB802.

California Code of Regulations. Title 20, Section 1681. https://govt.westlaw.com/calregs/Document/I4E4CB780FD1011F0B50E9B34368FB311?transitionType=Default&contextData=%28sc.Default%29.

126 California Code of Regulations, Title 20 Section 1681(d).

127 Senate Bill 48, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB48.

Senate Bill 48. Section 3. 25402.16(b), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB48.

128 City of Boston. 7-2.2 Building Emissions Reduction and Disclosure, https://codelibrary.amlegal.com/codes/boston/latest/boston_ma/0-0-0-4075.

Air Quality Control Commission. Building Benchmarking and Performance Standards, page 1 and 3.

Commercial Tenant in a Building Subject to a BPS

While building owners are responsible for collecting and reporting benchmarking data under AB 802, some owners may choose to lease their buildings or spaces within their buildings to tenants for commercial or retail uses.[129] Under the existing benchmarking statute and regulations, utilities must provide building owners with aggregated monthly energy use data upon request when a building has three or more utility accounts.[130] For buildings with fewer than three utility accounts, building owners have no mechanism to access building energy use when tenants hold the utility accounts and do not provide consent for the sharing of data, leading to potential gaps in data reported to the CEC.[131] To drive more complete and accurate reporting, updates to the benchmarking statute may be necessary to require commercial tenants to provide energy use data to building owners upon request.

Data sharing is particularly important when commercial tenants have some or total control over building energy use and, therefore, control whether a building meets the performance standards established by a BPS.[132] For example, commercial tenants may have limited control over heating, ventilation, and air-conditioning and lighting systems but may have total control over appliances such as computers, stoves, and refrigerators.

ASHRAE suggests that jurisdictions consider BPS policies that encourage building owners to work with tenants on complying with standards.[133] IMT recommends implementing penalty schemes that encourage building owners and commercial tenants to work together to meet performance standards.[134] According to IMT, "[m]any commercial lease agreements do not

---

Denver. High-Performance Existing Buildings Program,

https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIIREMUCO_CH10BUBURE_ARTXIVHIRFEXBUPR_S10-403BERE.

New York City Department of Buildings. Accessed April 11, 2025. "LL97 GHG Emissions Violations," web page, https://www.nyc.gov/site/buildings/codes/greenhouse-gas-emissions-reductions-violations.page.

Oregon Legislative Assembly. Designated State Agency Programs for Energy Efficiency in Buildings, page 6, https://olis.oregonlegislature.gov/liz/2023R1/Downloads/MeasureDocument/HB3409/Enrolled.

Washington State Legislature. WAC 194-50-150, https://app.leg.wa.gov/WAC/default.aspx?cite=194-50-150.

WAC 194-50-160. https://app.leg.wa.gov/WAC/default.aspx?cite=194-50-160.

129 American Society of Heating, Refrigerating, and Air-Conditioning Engineers. 2024. *Energy and Emissions Building Performance Standard for Existing Buildings*, page 7.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers. 2024. *Energy and Emissions Building Performance Standard for Existing Buildings*, page 19.

130 Public Resources Code Section 25402.10(c), https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25402.10.&lawCode=PRC.

131 Ibid.

132 American Society of Heating, Refrigerating, and Air-Conditioning Engineers. May 19, 2023. *Building Performance Standards: A Technical Resource Guide*, page 32, https://www.ashrae.org/about/cebd-technical-resources.

133 Ibid.

134 Institute for Market Transformation. November 2022. *Putting Policy in Action: Building Performance Standard Implementation Guide*.

allow building owners to pass 'fines' or 'penalties' on to commercial tenants."[135] Allowing penalty payments to be passed through from the building owner to commercial tenants can align interests for both parties in complying with a BPS.

The DOEE in Washington, D.C., has the authority to allow building owners to pass penalties through to nonresidential tenants and require nonresidential tenants to submit benchmarking information to building owners for reporting.[136]

Other Parties to Consider Responsible for Compliance and Liable for Penalties

As building owners pursue compliance with a BPS, they might contract with companies that perform building efficiency improvements, including:

- Professional engineering companies.
- Manufacturers, distributors, and retailers of energy efficiency equipment.
- Energy service companies that provide turnkey energy upgrades, retrocommissioning,[137] or similar services.
- Contractors and builders.

These contracts may have liability or indemnity clauses[138] that require the company and building owner to settle any issues related to penalties for failure to comply with applicable codes, laws, or standards. For example, the ASHRAE *Energy and Emissions Building Performance Standard for Existing Buildings* states that building owners may designate other parties to fulfill the owner's responsibility for complying with the BPS.[139] An agency responsible for enforcement of the standards, referred to as an *enforcing body*, should not interfere with private contractual arrangements generally but could enforce statutes or regulations against the parties identified as liable. The parties listed above are not typically liable for building performance under existing BPS regulations in other jurisdictions. A building owner is responsible for compliance with BPS regulations typically.

Majersik, Cliff. June 26, 2024, *Institute for Market Transformation — CEC Building Energy Performance Strategy Report,* page 32. California Energy Commission, Docket Number: 24-BPS-01, TN# 257443, https://efiling.energy.ca.gov/GetDocument.aspx?tn=257443&DocumentContentId=93318.

135 Institute for Market Transformation. November 2022. *Putting Policy in Action: Building Performance Standard Implementation Guide*.

136 District of Columbia. Establishment of a Building Energy Performance Standard Program, https://code.dccouncil.gov/us/dc/council/code/sections/8-1772.21.

137 *Retrocommissioning* is a process that is used to identify weaknesses in a building to improve performance.

138 An *indemnity clause* is a provision in a contract where one party agrees to compensate another for damages or losses.

139 American Society of Heating, Refrigerating, and Air-Conditioning Engineers. 2024. *Energy and Emissions Building Performance Standard for Existing Buildings,* page 86.

Violations for Noncompliance

Violations under a BPS program can fall into two categories — failure to comply with reporting requirements and failure to meet performance targets. Each violation category may have associated penalty amounts and enforcement mechanisms. Building owners could be subject to reporting violations, performance violations, or both.

Reporting Violations

A statewide BPS will require building owners and responsible parties to submit various reports throughout the lifetime of the policy. These reports may include energy benchmarking reports, compliance pathway selection, and verification of actions taken to meet performance standards. The number of reporting requirements may vary based on whether a building owner pursues a standard compliance pathway or an alternative compliance pathway. At a minimum, building owners, and any other responsible parties identified, will be required to continue submitting energy benchmarking reports per AB 802 to demonstrate compliance with a BPS.

Typically, a BPS program requires building owners to submit reports by set due dates. Failure to submit a report by the specified due date could be a violation liable for penalties. Moreover, submitting incomplete or inaccurate benchmarking data could be a violation subject to penalties. Incomplete or inaccurate reports may allow noncompliant buildings to continue operations without achieving the necessary energy or emissions reductions and are inconsistent with the purpose and goals of a BPS.

Under the existing benchmarking program, PRC Sections 25402.10, subdivision (e), and 25321 authorize the CEC to seek penalties for up to $2,000 per day for each category of missing data for noncompliance with the data submission requirements for benchmarking data until the violation is corrected.[140]

Performance Standards Violations

A performance standard violation occurs when a building owner fails to meet the energy or emissions targets for their building by the set compliance deadline. The CEC recommends a site EUI and site GHGI standard for buildings subject to a BPS, meaning all building owners would have to meet two performance targets every compliance cycle. If a building owner fails to reduce their building energy use and emissions by the established compliance deadline and exceeds their performance target, they could be liable for penalties.

Some jurisdictions that have BPS policies issue higher penalties for performance standard violations than reporting violations because performance standards are critical to lowering building energy use and achieving decarbonization goals.

---

140 Public Resources Code 25402.10, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25402.10.&lawCode=PRC.

Public Resources Code 25321, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25321.&lawCode=PRC.

Community Accountability Board

A community accountability board (CAB) is a community-led advisory board that can have the authority to make recommendations for BPS program design and implementation, oversee BPS compliance and enforcement, and administer penalties or funds. Boston, Massachusetts, established a CAB to oversee the BPS called the Building Emissions Reduction and Disclosure Ordinance (BERDO).[141] This CAB manages all stages of compliance, including reviewing required applications, and has the authority to enforce the regulations.

CABs can advise on compliance pathways, evaluate whether the pathways consider regional needs, and monitor progress on pathway implementation. CABs help ensure that BPS policies do not disadvantage certain building types, compliance options are practical, and local community interests are protected. Ideally, CABs reflect the demographics and interests of underrepresented local or regional communities; avoid conflicts of interest to ensure transparency, equity, and inclusivity; and hold building owners accountable for noncompliance with the BPS. CABs can identify opportunities to align BPS policies with existing programs and resources to ease the burden of compliance on building owners. CABs can be a stand-alone board or used as part of an alternative compliance pathway.

The level of authority granted to CABs can vary widely. The structure and responsibilities of a CAB should meet the needs of the state and individual jurisdictions within the state. A CAB should also balance community representation and California's stated energy and emissions reductions goals.

Considerations for a Community Accountability Board

California's geographic size and diverse communities make it difficult to have a single CAB oversee BPS compliance and enforcement. Different regions of the state have unique climate conditions and economic factors that require localized expertise. The following considerations should be addressed to develop a robust framework for CABs:

- **Community representation**: CABs should reflect the unique needs of various geographic areas and diversity of impacted community members.
- **Local climate and energy considerations**: CABs should account for regional climate differences and utility territories with differing energy costs and services.
- **Membership**: CAB members should include a diverse range of community members, local government officials, and experts in relevant fields, such as policy, legal, cultural competency, and more.[142]
- **Scope and mandate**: CABs need an articulated scope of work and regulatory authority.
- **Support**: CABs require resources such as funding, staff time, and training to ensure effective operations.

141 City of Boston Environment Department. Accessed March 2025. "BERDO Review Board," web page, https://www.boston.gov/departments/environment/berdo-review-board.

142 Ibid.

- **Adaptability and flexibility**: CABs should be designed with the ability to adapt to changing community needs and circumstances over time.
- **Ethical considerations**: CAB members should follow clear guidelines and ethics to honor and agree upon the core mission and values of the BPS program, CAB members, and the communities represented. CABs should operate with a high level of transparency and accountability and be free from conflicts of interest.[143]
- **Evaluation and revision**: CABs' effectiveness should be evaluated with provisions for necessary adjustments and updates in their definition and operations.[144]

Challenges to Consider

There are scenarios where setting up a CAB is either infeasible or counterproductive. Challenges that come with creating a CAB include:

- **Power dynamics and representation:** Selecting CAB members and defining their roles and responsibilities can be challenging and lead to an imbalance of power.
- **Lack of expertise and experience:** CAB members may not always possess the technical expertise or deep understanding of complex issues related to governance, policymaking, or the industry they are overseeing.
- **Resource constraints:** Funding for staffing, training, research, and community engagement initiatives may be limited.
- **Managing conflicts of interest:** Conflicts of interest may arise and inhibit the CAB's ability to operate effectively.
- **Time and deliberation challenges:** Deliberations within the CAB, community consultations, and the need to reach consensus on important matters can be time-consuming.
- **Political interference and influence:** Entities may attempt to sway the decisions or actions of the CAB either overtly or covertly to protect their own interests.
- **Enforcement and decision-making authority:** If the CAB's decisions or recommendations lack legal enforceability, entities may choose to ignore or contest them, rendering the board ineffective.

Administrative Enforcement Authority

A successful BPS requires effective enforcement of violations. Institutions around the state use administrative enforcement authority, granted by the state Legislature, to enforce against violations of existing regulations. Administrative enforcement authority allows agencies to carry out enforcement actions, including assessing and collecting penalties, without using the court system. This section discusses agencies that could be granted administrative enforcement authority to serve as an enforcing body for a BPS. The administrative enforcement process involves identifying when a violation has happened, contacting the party

143 Ibid.

144 Ibid.

responsible, and determining and applying the appropriate enforcement mechanism. Appendix D describes the administrative enforcement process.

The California Energy Commission

The CEC has adoption and enforcement authority over parts of the Building Standards Code, including 24 CCR Parts 1, 6, and 11, as well as over sections of 20 CCR including the Appliance Efficiency Standards, Flexible Demand Appliance Standards, and benchmarking data requirements.[145] The CEC also works with municipalities to implement local building standards and supports enforcement of statewide and local building codes.

PRC Section 25402.10, subdivision (e), authorizes the CEC to use enforcement measures identified in PRC Section 25321 to "ensure timely and accurate compliance with the data submission requirements" to benchmark energy use.[146] The state may be able to build on the existing enforcement and penalty authority for building benchmarking data to support enforcement of a BPS.

The Office of Compliance Assistance and Enforcement (OCAE) within the CEC oversees enforcement for violations of California's Appliance Efficiency Standards. The CEC received authority in 2015 to penalize violations of Sections 1601–1608 of 20 CCR and created the enforcement program managed by OCAE. Since the enforcement program started in 2015, the CEC has seen steady success in penalizing violators and keeping consumer appliances in the California market efficient and in compliance.[147] The CEC has assessed more than $22 million in penalties for 257 settled cases from 2015 to 2025. Having this existing office gives the CEC the capacity to enforce a BPS, as the office can be expanded to take on additional duties. An increase in the CEC's statutory authority would need to be accompanied by adequate resources to fulfill new program requirements.

California Jurisdictions With Building Performance Standards

SB 48 requires the commission to "consider authorizing a local jurisdiction to implement its own program" if it can:[148]

---

145 Building Standards Code, Title 24, Building Standards Code, https://www.dgs.ca.gov/BSC/Codes.

California Code of Regulations. Title 20, Chapter 4, Article 4, https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=ID0318F505CCE11EC9220000D3A7C4BC3.

California Code of Regulations. Title 20, Division 2, Chapter 4.1, https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I05FD01A0D23911EEB13EC5FE823ECF03.

California Code of Regulations. Title 20, Division 2, Chapter 4, Article 9, https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=ID795F4705CCE11EC9220000D3A7C4BC3.

146 Public Resources Code 25402.10, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25402.10.&lawCode=PRC.

147 California Energy Commission. Accessed February 2024, "Case Settlements," web page, https://www.energy.ca.gov/programs-and-topics/programs/enforcement-case-settlements/case-settlements.

148 Senate Bill 48.

- Achieve the same or better energy efficiency increases and GHG emissions reductions.
- Guarantee the same or better tenant protections than the state's program.

Local jurisdictions that have existing BPS programs are well-positioned to enforce their own policies for buildings not covered by a statewide BPS. California's Building Energy Efficiency Standards, which include the Energy Code and CALGreen (Title 24, Part 11), are enforced at the local level. Some jurisdictions may already have experience with enforcing on building owners for noncompliance with the Building Standards Code. Existing language in the Warren-Alquist Act allows local jurisdictions to adopt more stringent building codes, known as *reach codes.*[149] Local jurisdictions could choose to regulate buildings smaller than 50,000 square feet or include additional property types that would not be covered under a statewide BPS.

California Jurisdictions Without Building Performance Standards

Local jurisdictions that do not adopt their own BPS policies could still be required by the Legislature to carry out enforcement actions of a statewide BPS through the Warren-Alquist Act. Spreading the duties of enforcement across the state could increase compliance rates and visibility of the standards. However, some local governments may be too small and lack the capacity and resources for effective enforcement and would likely need funding to carry out enforcement actions. According to guides by The Real Estate Roundtable and United States Department of Energy (U.S. DOE), enforcement and implementation of a BPS may present technical and staffing challenges for local agencies.[150]

Some smaller local governments may find it difficult to allocate staff time to a BPS or may not have dedicated enforcement staff. Other jurisdictions in California that are planning to adopt a BPS are considering staffing capacity for developing and implementing an enforcement program. Spreading the authority and responsibilities for enforcement of a BPS can maximize resources from government agencies. Capacity and resources are important considerations when determining whether enforcement of a BPS should be managed by a single state agency or by individual local jurisdictions.

---

149 *Reach codes* are codes adopted by local governments that exceed the minimum requirements adopted by the state.

Public Resources Code Section 25402, https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=15.&title=&part=&chapter=5.&article=.

150 Becker, Rebecca. March 24, 2025. Rebecca Becker Comments on CA BEPS process, California Energy Commission, Docket Number: 24-BPS-01. TN# 262300, https://efiling.energy.ca.gov/GetDocument.aspx?DocumentContentId=98822&tn=262300&utm_medium=email&utm_source=govdelivery.

The Real Estate Roundtable. October 2024. *Lessons Learned to Shape Fair and Reasonable Building Performance Standards (BPS)*, page 50.

Engelman, Billierae, Isabel Langlois-Romero, Molly Retig, Shanti Pless, and Alex Chapin. United States Department of Energy. November 2023. *Implementing a Building Performance Standard (BPS): A Guide to Mitigating Risks in Your Jurisdiction*, page 4, 8–9, https://www.energycodes.gov/sites/default/files/bps/2024-03/Risk_Guide_BPS.pdf.

Other State Agencies

Other state agencies may have the capacity, resources, and authority to enforce a BPS. One approach is to assign enforcement of a BPS to the agencies that currently enforce the California Building Standards Code (Title 24). State agencies that oversee building energy codes — and that already have programs, processes, staffing capacity, and expertise in place — may be well-suited to take on authority for enforcing a BPS. Some state agencies that implement and enforce other codes related to buildings and building use include the:

- Department of Health Care Access and Information.[151]
- California Department of Housing and Community Development.[152]
- Division of the State Architect in the Department of General Services.

Administrative Orders

The agency granted administrative enforcement authority over a statewide BPS can use administrative orders to enforce against violations. An administrative order could be used to try to force a responsible party to come into compliance with the BPS. Administrative hearings can also be used to try to force compliance through an administrative law judge or a hearing officer, depending on the capacity and resources of the enforcing body. The CEC has expertise with administrative enforcement since it is authorized to issue administrative orders for enforcement of the Appliance Efficiency Standards and has a hearing office, employs hearing officers, and oversees hearings.

Enforcement Mechanisms

Enforcement mechanisms are intended to ensure ongoing compliance with a requirement. The enforcing body must use the most appropriate enforcement mechanisms and ensure enforcement is not overly punitive. The goal of enforcement is not to be unduly punitive, but to make compliance attractive and deter violations. Each enforcement mechanism can be used alone or in combination with other mechanisms. Potential enforcement mechanisms for a BPS are outlined in detail below.

Monetary Penalties

Monetary penalties, also called administrative penalties, civil penalties, or financial penalties, are common enforcement mechanisms used in jurisdictions with a BPS. Some jurisdictions use a formula to calculate penalties, while others state a maximum amount per violation. Some jurisdictions have a cap on penalties, while others allow penalties to accrue.

---

151 Department of Health Care Access and Information. Accessed April 2025. "Hospital Building Data," web page, https://data.chhs.ca.gov/dataset/hospital-building-data#:~:text=Provides%20basic%20information%20for%20general%20acute%20care%20hospital,Structural%20Performance%20Categories%20%28SPC%20ratings%29%20are%20also%20provided.

152 California Department of Housing and Community Development. Accessed April 2025. "Building Standards," web page, https://www.hcd.ca.gov/building-standards-hcd#:~:text=HCD%20protects%20Californians%20by%20enforcing%20standards%20for%20housing,construction%2C%20maintenance%20of%20farmworker%20housing%20and%20manufactured%2Ffactory-built%20homes.

Fixed Penalties

Some jurisdictions set fixed penalty amounts that do not use a formula for assessment. Fixed penalties may be easier to understand, calculate, and pay and do not need as much staff time or agency resources to calculate or validate as formulaic penalties. However, fixed penalties may be incongruous with the severity of the violation if they are set too low or overly punitive if they are set too high.

Formulae Used to Calculate Penalties

Formulae may be used to assess penalties for violations of a BPS. Some of the variables that jurisdictions use in formulae to calculate penalties include:

- Building GFA (ft^2).
- Excess GHG emissions (tCO_2e).
- Excess energy use (kBtu).
- Number of days or other time range past the due date for a certain requirement.

Penalty formulae can be complex and require time from the building owner and enforcing body staff to calculate, verify, and validate. The State of Washington created a calculator to make it easier for building owners to calculate penalties.[153] Tools like this make it easier for building owners to understand the consequences of noncompliance and encourage them to plan for success. Table 13 displays simplified parts of the formulae some jurisdictions use to assess penalties for violations of a BPS or reporting requirements.

Table 13: Simplified Penalty Formulae From Other Jurisdictions

Jurisdiction	Penalty Formula
Denver, Colorado	Up to \$0.70/kBtu/year
England and Wales	• Violations less than 3 months: Property value*0.10 • Violations more than 3 months: Property value*0.20
New York, New York	• Emissions standards: \$268/tCO_2e • Reporting violation: \$0.50/ft^2/month
State of Oregon	Up to \$5,000 + \$1/year/ft^2
Seattle, Washington	• Nonresidential buildings: \$10/ft^2 • Multifamily buildings: \$7.50/ft^2 • Low-income or low-rent housing: \$2.50/ft^2
Washington, D.C.	\$10/ft^2 up to \$7.5 million

Source: CEC staff analysis of regulations and IMT data[154]

153 Washington State Department of Commerce. Accessed November 2024. "Penalties Calculator," web page, https://deptofcommerce.app.box.com/s/idnmqszp43htx42v0xphl3ax2xpn7weo.

154 Institute for Market Transformation. November 2022. *Putting Policy in Action: Building Performance Standard Implementation Guide*.

Minimum and Maximum Penalty Amounts

The enforcing body may consider establishing minimum or maximum penalty amounts or both for violations of the BPS. Some jurisdictions have a minimum penalty amount that demonstrates violations are always subject to monetary penalties. In some jurisdictions, penalty amounts accrue without limit, while others have total maximum penalty amounts.

The enforcing body may choose to establish a minimum fine, fee, or infraction that all violators are required to pay for each violation. A minimum penalty that is too low could communicate a message to building owners that violations simply need to be paid off with a small fine. The minimum penalty should be set at an amount that encourages building owners to bring a building into compliance and maintain compliance.

Some jurisdictions set a maximum amount for penalty assessments, for example, up to $5,000 for failing to meet emissions targets or fulfill reporting requirements. In jurisdictions where penalties accrue daily or over another range of time, there may be a total amount for the penalty that cannot be exceeded once reached. PRC Section 25321 authorizes the CEC to penalize a maximum of $2,000 for benchmarking data reporting violations each day the violation continues, allowing penalties to accrue without limit.[155] Title 20 CCR and the PRC do not establish a total maximum penalty amount for violations of the Appliance Efficiency Standards. The CEC is authorized to penalize up to $2,500 per violation type per unit of appliance in violation and the total penalty amount is limited only by the number of units in violation and types of violations that were committed.[156]

Cost of Compliance and Noncompliance

To meet the state's energy and GHG reduction goals, violating parties should not be encouraged to use fines, fees, or penalties as an option to avoid or not meet building performance standards. According to IMT, "[I]n some jurisdictions, fines and fees are legally limited to the owners' cost of compliance, meaning they do not offer a positive motivation to comply."[157] Setting monetary penalties higher than the cost of compliance discourages

---

City of Denver. Accessed April 18, 2025. Code of Ordinances.

The National Archives. The Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015, https://www.legislation.gov.uk/uksi/2015/962/contents/made.

New York City Department of Buildings. Requirements for Reporting Annual Greenhouse Gas (GHG) Emissions for Covered Buildings, https://www.nyc.gov/assets/buildings/rules/1_RCNY_103-14.pdf.

Oregon Legislative Assembly. Designated State Agency Programs for Energy Efficiency in Buildings. page 12.

City of Seattle. Municipal Code, Title 22. https://library.municode.com/wa/seattle/codes/municipal_code?nodeId=TIT22BUCOCO_SUBTITLE_XMIRURE_CH22.925BUEMPEST_22.925.180PE.

District of Columbia Department of Energy and Environment. Accessed January 2025. *Compliance and Enforcement Guidebook for Compliance Cycle 1*.

155 Public Resources Code 25321, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25321.&lawCode=PRC

156 California Code of Regulations, Title 20, Section 1609(b), https://govt.westlaw.com/calregs/Document/I665819804DAF11EF95B9D70E7ED1A79F.

157 Institute for Market Transformation. November 2022. *Putting Policy in Action: Building Performance Standard Implementation Guide*.

noncompliance by making it cheaper to bring a building into compliance than to violate the standards.

Table 14 compares the average cost of compliance and energy reduction estimated by various jurisdictions, and cost of penalties for some jurisdictions with a BPS. The cost of compliance is represented in dollars ($) per square foot ($ft^2$) of GFA, the cost of energy reduction is represented in dollars per kBtu of site energy, and the cost of emissions reduction is represented in dollars per metric ton of carbon dioxide equivalent (tCO_2e).

Table 14: Compliance Costs and Penalties for Building Performance Standards in Four Jurisdictions

Jurisdiction	Average Upfront Costs to Come Into Compliance	Cost to Reduce Energy or Emissions	Penalty
Denver, Colorado	$\$11/ft^2$–$\$17/ft^2$	• $0.63/kBtu of annual energy savings • $\$168/tCO_2e$–$\$497/tCO_2e$ lifetime cost	Up to $0.70/kBtu/year
New York, New York (Article 320)	$\$2/ft^2$–$\$22/ft^2$	Not published	$\$268/tCO_2e$
Vancouver, British Columbia, Canada	$\$15/ft^2$–$\$55/ft^2$	$\$213/tCO_2e$ life-cycle cost	$\$256/tCO_2e$/year
Washington, D.C.	$\$9/ft^2$	• $0.46/kBtu of annual energy savings • $\$264/tCO_2e$ — $\$323/tCO_2e$ lifetime cost	$\$10/ft^2$

Source: American Council for an Energy-Efficient Economy[158]

Publication Penalty

A *publication penalty* is a notice that informs the public when a building owner fails to bring their building into compliance with a BPS. Business risks and negative consequences for a building owner caused by a publication penalty can include failing to meet corporate environmental, social, governance goals,[159] rejection from programs or loans, and reduced interest from potential tenants to rent or lease the building.

Publication penalties are posted to a publicly available resource such as the enforcing body's website or a database that stores records of buildings that are subject to a BPS. The publication can include building energy performance (EUI, GHGI), violations committed (reporting violation, compliance target violation), and actions taken to remedy the violation or violations.

158 Duer-Balkind, Marshall, et al. *Lessons From the Ground: Implementing Building Performance Standards*, American Council for an Energy-Efficient Economy, page 11.

159 *Environmental, social,* and *governance goals* measure environmental and social impact of an organization's investments.

In England and Wales, the enforcement authority publishes some details of the building owner's violation on a publicly available website for at least 12 months.[160] The State of Colorado and City of Denver require a building owner to disclose the compliance status of a building to a buyer and provide records of the compliance and performance of a building at closing, including compliance with performance targets.[161]

The OCAE at the CEC publishes settlement agreements related to the Appliance Efficiency Standards on the CEC website on the Case Settlements web page.[162] Although the Case Settlements web page is not necessarily an enforcement mechanism, it informs the public of a company's past noncompliance with the regulations and the efforts made to come back into compliance.

Liens

Liens provide an agency the legal right to possess a property until the owner repays a debt or meets certain requirements. Under a BPS, the enforcing body may have the legal right to possess a building if the building owner fails to pay noncompliance penalties. Liens can be a strong enforcement mechanism to ensure compliance with a BPS and may act as a strong deterrent to violations. However, placing a lien on a property in response to violations of a BPS could have unintended consequences on owners and tenants, including temporary or permanent displacement or difficulty selling or leasing a property. Boston, Massachusetts, and Denver, Colorado, have authority to place a lien on a property for failure to comply with their building performance requirements.[163]

Prohibition of Building Sale and Use

Another possible enforcement mechanism is to prevent the sale or use of a building if a building owner fails to meet reporting or performance requirements under a BPS. This enforcement mechanism could also be used to prohibit lease and license renewals. England, Wales, and Davis, California, prohibit the use or sale of a home if it does not meet energy or

---

160 Department for Business, Energy & Industrial Strategy. February 2017. *The Non-Domestic Private Rented Property Minimum Standard*, page 48, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1148676/non-dom-private-rented-property-minimum-standard-landlord-guidance.pdf.

161 Air Quality Control Commission. Colorado Code of Regulations, page 28.

City of Denver. Accessed April 18, 2025. Code of Ordinances.

162 California Energy Commission. Accessed February 27, 2025. "Case Settlements," web page, https://www.energy.ca.gov/programs-and-topics/programs/enforcement-case-settlements/case-settlements.

163 Boston Air Pollution Control Commission. Building Emissions Reduction and Disclosure Ordinance, page 55, https://www.boston.gov/sites/default/files/file/2024/04/Updated%20Regulations%20-%204.18.24.pdf.

Denver, Colorado Office of Climate Action, Sustainability, and Resiliency. Accessed March 2025. "Performance Requirements," web page, https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-and-Resiliency/Cutting-Denvers-Carbon-Pollution/Efficient-Commercial-Buildings/Denver-Building-Regulations/Energize-Denver-Building-Performance-Policy/Buildings-25000-sq-ft-or-Larger/Performance-Requirements.

health and safety standards.[164] Washington, D.C., and Boston, Massachusetts, deny individuals licenses, permits, grants, or other city goods and services if they owe penalties, fines, fees, interest, or other debts to the jurisdiction.[165]

Prohibiting sale or use of the building may discourage building owners from violating the BPS, but it could have unintended consequences, such as tenant displacement, reduction in housing availability, or loss of businesses serving the community. Similarly, denying building owners new, or renewal of, existing business licenses may deter violations but could further prevent a building owner from complying with a BPS because of operational and financial constraints. SB 48 states the CEC shall "[a]void increasing utility and rental cost burdens for, or causing evictions, harassment, or displacement of, tenants of covered buildings."[166] Prohibiting new leases or lease renewals in multifamily buildings could displace tenants temporarily or permanently if a building owner fails to comply with a BPS.

Judicial Enforcement

Judicial enforcement could be used to support a BPS instead of administrative enforcement or if the administrative enforcement process does not result in compliance. Judicial enforcement means filing a lawsuit against a violator to enforce statute, code, or regulations. Judicial enforcement could be used to force compliance, through injunctive relief, but can also be used to collect penalties. An administrative enforcement process may also include an appeals process, which allows a violator, or defendant, to challenge an administrative decision in California Superior Court. The following jurisdictions have authority to use administrative orders, administrative hearings, judicial enforcement, injunctive relief, or an appeals process for violations of the BPS policies:

- Boston, Massachusetts[167]

---

164 The National Archives. Accessed November 2024. *The Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015*.

GOV.UK. Accessed November 2024. "Domestic Private Rented Property: Minimum Energy Efficiency Standard — Landlord Guidance," web page, https://www.gov.uk/guidance/domestic-private-rented-property-minimum-energy-efficiency-standard-landlord-guidance.

Department for Business, Energy, & Industrial Strategy. February 2017. *The Domestic Private Rented Property Minimum Standard*.

City of Davis. Accessed April 3, 2025. "Resale Program," web page, https://www.cityofdavis.org/city-hall/community-development-and-sustainability/building/resale-program.

165 City of Boston. Accessed April 7, 2025. 16-A1 License and Permit Denial, Revocation or Suspension, https://codelibrary.amlegal.com/codes/boston/latest/boston_ma/0-0-0-10657#JD_16-A1.

Council of the District of Columbia. Prohibition Against Issuance of License or Permit, https://code.dccouncil.gov/us/dc/council/code/sections/47-2862.

District of Columbia Office of Tax and Revenue. Accessed March 2025. "Certificate of Clean Hands," web page, https://otr.cfo.dc.gov/page/certificate-clean-hands.

166 Senate Bill 48. Section 24502.16(c)(1), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB48.

167 Boston Air Pollution Control Commission. Building Emissions Reduction and Disclosure Ordinance, page 56.

- State of Colorado[168]
- Denver, Colorado[169]
- Washington, D.C.[170]

Penalties for Alternative Compliance Pathways

Building owners on an ACP could be liable for the same penalties as standard compliance pathways. ACPs may have different reporting due dates or performance targets, but building owners must still comply with the agreed-upon reporting and performance requirements. Some jurisdictions have penalties tailored to alternative compliance pathways.

The BEPS in Washington, D.C., apply penalties for violations of specific pathway requirements. The DOEE in Washington, D.C., has the authority to issue civil infraction fines for specific pathway requirements, as seen in Table 15.

Table 15: Penalties for Compliance Pathways for DOEE BEPS

Infraction	First Offense	Pathway
Failure to submit selection of a Compliance Pathway	$1,000	All
Failure to submit a report on completed actions	$500	Performance and Standard Target
Failure to submit an energy audit	$500	Prescriptive
Failure to submit an action plan	$500	Prescriptive
Failure to submit an implementation report	$500	Prescriptive
Failure to submit an evaluation, monitoring, and verification report	$500	Prescriptive
Failure to submit additional documentation	$500	Prescriptive
Failure to submit documentation	$500	Alternative Compliance
Failure to submit supporting documentation	$500	All
Failure to submit a complete and accurate plan or report or complete and accurate documentation	$500	All

168 State of Colorado Air Quality Control Commission. Building Benchmarking and Performance Standards, page 28.

169 Denver, Colorado Office of Climate Action, Sustainability, and Resiliency. "Performance Requirements."

170 District of Columbia Department of Energy and Environment. Accessed January 2025. *Compliance and Enforcement Guidebook for Compliance Cycle 1*.

Infraction	First Offense	Pathway
Failure to provide the buyer of a building with information prior to a transfer or sale	$500	All

Source: DOEE BEPS Compliance and Enforcement Guidebook for Compliance Cycle 1[171]

Equity Implications of Enforcement

The enforcing body should also consider how the cost of compliance could increase rental costs and evictions of residential tenants. Building owners would have to pay for the capital and installation cost of measures to bring a building into compliance with a BPS, although those measures may result in reduced maintenance costs in the future. Some multifamily building owners might try to pass those costs onto tenants by increasing rent. SB 48 directs the CEC to consider requirements "to limit the increase in rent to the long-term energy savings to a tenant resulting from the renovation."[172] Some localities may have ordinances to limit rent increases.

West Hollywood has an ordinance to prevent cost pass-throughs, including increased rent or related fees, for seismic retrofits.[173] Beverly Hills provides protection to tenants through the Seismic Retrofit Program[174] by requiring building owners or landlords to submit documentation that explains how tenants will be protected during construction.[175]

SB 48 states, "[I]mprovements in building energy efficiency […] should not be achieved at an undue cost to tenants […] if state and local strategies to achieve those energy efficiency improvements are not properly designed."[176] Tenants may be forced to move out if property

---

171 District of Columbia Department of Energy and Environment. Accessed January 2025. *Compliance and Enforcement Guidebook for Compliance Cycle 1*.

172 Senate Bill 48. Section 3. 24502.16(c)(1)(B).

173 Majersik, Cliff. June 26, 2024, *Institute for Market Transformation — CEC Building Energy Performance Strategy Report*, page 32. California Energy Commission, Docket Number: 24-BPS-01, TN# 257443, https://efiling.energy.ca.gov/GetDocument.aspx?tn=257443&DocumentContentId=93318.

Kirk, Chelsea. October 2023. *Decarbonizing California Equitably: A Guide to Tenant Protections in Building Upgrades/Retrofits*: *Strategic Actions for a Just Economy,* pages 12 and 22, https://www.saje.net/wp-content/uploads/2023/09/Decarbonizing-California-Equitably-Report-1.pdf.

City of West Hollywood. Accessed April 2025. Municipal Code Section 17.52.090 Prohibition of Tenant Harassment, https://ecode360.com/43912378#43912378.

174 City of Beverly Hills. Accessed April 2025. "Seismic Retrofit Program," web page, https://www.beverlyhills.org/491/Seismic-Retrofit-Program.

City of Beverly Hills. Ordinance No. 18-O-2767, https://www.beverlyhills.org/DocumentCenter/View/2543/Ordinance-N-umber-18-O-2767-PDF.

175 City of Beverly Hills. "Road Map to Compliance With Ordinance No. 18-O-2767," https://www.beverlyhills.org/DocumentCenter/View/2545/Road-Map-to-Compliance-with-Ordinance-Number-18-O-2767-PDF.

City of Beverly Hills. "Means and Methods Plan Frequently Asked Questions," https://www.beverlyhills.org/DocumentCenter/View/5586/Means-and-Method-Plan-PDF.

176 Senate Bill 48. Section 1.(b)(5). https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB48.

values or rents have increased because of building improvements made to meet a BPS.[177] Chapter 1 in this report discusses the potential impacts of BPS policies on underresourced communities, low-income renters, and small commercial tenants, and Chapter 5 presents recommendations to avoid displacement, eviction, and rent increases.

Penalty Payment Inflow

Payments for violations under a BPS could be structured to encourage compliance, not to generate program revenue. For example, penalties could be deposited in a fund to help building owners comply with the BPS rather than a general revenue fund. The Real Estate Roundtable suggests jurisdictions establish budget accounts for BPS compliance and "help owners avoid infractions altogether."[178] Boston, Massachusetts, the State of Oregon, and the State of Washington established funds that are replenished with penalty payments for violations of the BPS to support building owners with BPS compliance.[179]

This structure has also been modeled within California. The CEC created the Appliance Efficiency Enforcement Subaccount for outreach and education of appliance energy efficiency and enforcement of the Appliance Efficiency Standards, funded by penalty payments for violations of the Appliance Efficiency Standards.[180] The enforcing body could build on the success of this fund to create a fund for assistance and education of a statewide BPS.

---

177 United States Department of Energy. November 2023. *Implementing a Building Performance Standard (BPS): A Guide to Mitigating Risks in Your Jurisdiction*, page 11. https://www.energycodes.gov/sites/default/files/bps/2024-03/Risk_Guide_BPS.pdf.

178 Becker, Rebecca. March 24, 2025. Rebecca Becker Comments on CA BEPS process.

The Real Estate Roundtable. October 2024. *Lessons Learned to Shape Fair and Reasonable Building Performance Standards (BPS)*, page 41.

179 City of Boston Environment Department. Building Emissions Reductions and Disclosure Ordinance Regulations, page 48. https://www.boston.gov/sites/default/files/file/2024/04/Regulations_1.pdf.

Oregon Legislative Assembly. Designated State Agency Programs for Energy Efficiency in Buildings, page 12.

State of Washington. Substitute Senate Bill 5722, https://lawfilesext.leg.wa.gov/biennium/2021-22/Pdf/Bills/Senate%20Passed%20Legislature/5722-S.PL.pdf?q=20220329121607.

180 Public Resources Code Section 25402.11, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25402.11.&nodeTreePath=35.8&lawCode=PRC.

CHAPTER 4:
Economics of Building Performance

Implementing a BPS involves direct costs for building owners and administrative costs for regulators. While costs vary depending on factors such as building type and program requirements, the evaluation of BPS programs throughout the United States provides a strong foundation for assessing the costs and benefits of a statewide BPS. This chapter outlines the range of potential costs and personnel needs to support a California BPS, including capital costs and program administration, as well as associated benefits.

Costs for Regulated Parties

A BPS will require building owners to invest in maintenance and upgrades to their buildings. Potential costs to building owners could include materials, labor, design fees, construction management, permits, testing, tenant relocation assistance, and utility service upgrades. These costs can vary based on building location, size, use, and starting level of energy performance.

The American Council for an Energy-Efficient Economy (ACEEE) reviewed the cost of BPS compliance in the United States and Canada.[181] ACEEE reviewed cost-benefit and life-cycle cost analysis studies from three cities and found capital costs for BPS compliance ranged from $2 to $22 per square foot, as seen in Table 16.

Table 16: Average Capital Costs for BPS in Major Cities, in U.S. Dollars

Location	Average Capital Costs
Washington, D.C.	$9/ft^2
New York, New York	$2—$22/ft^2
Denver, Colorado	$11/ft^2
Vancouver, British Columbia, Canada	$15—$55/ft^2

Source: 2024 ACEEE Summer Study on Energy Efficiency in Buildings

The cities used in the ACEEE study represent a sample of the environmental and building factors that can influence the cost to comply with a BPS, such as climate, city density, building use, and building size. The results of this study can be used to estimate the average capital costs from a California statewide BPS. The study estimates are based on citywide BPS programs, but California's diverse building stock and climate zones may affect how these estimates are applied statewide. For example, buildings in temperate climate zones like San Francisco or Los Angeles may have lower costs because the energy reduction can come from

181 Duer-Balkind, Marshall, Amy Boyce, Rajiv Ravulapati, Louise Sharrow, Sharon Jaye, Patti Boyd. 2024. *Lessons From the Ground: Implementing Building Performance Standards*. American Council for an Energy-Efficient Economy. https://www.aceee.org/sites/default/files/proceedings/ssb24/assets/attachments/20240722163111500_cb7d963c-92ff-4502-b5bd-853fa15a8e53.pdf.

improving systems already in place, such as switching to more energy-efficient lighting. Buildings in more extreme climate zones, such as the Central Valley, will likely face higher costs since more expensive retrofits may be necessary to comply, such as adding insulation or replacing windows and doors. The higher retrofit costs may be partially offset by California's higher-than-average electricity rates since each unit of energy saved will provide greater utility bill savings compared to the cities in the study.

Lawrence Berkeley National Laboratory (LBNL) and DOEE evaluated the energy and cost impacts of the BEPS in Washington, D.C.[182] LBNL's study analyzed benchmarking data and data from the U.S. DOE Building Performance Database to estimate potential energy savings and GHG reductions from a BPS policy with varied energy performance targets by building type and size.

LBNL and DOEE used data from the DC Sustainable Energy Utility's (DCSEU) operations and found a range of costs per unit of site energy savings and simple payback periods based on property type. Table 17 shows that projects in the 50th percentile, or median, had implementation costs ranging from $0.06 to $0.12 per site kBtu saved, and that 90 percent of projects cost less than $0.49 per site kBtu saved.

Table 17: Aggregated Building-Level Implementation Costs for DCSEU Projects ($ per Site kBtu Saved)

Building Type	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
Education	0.02	0.04	0.12	0.19	0.36
Multifamily	0.04	0.06	0.10	0.21	0.29
Office	0.01	0.05	0.10	0.18	0.49
Other	0.01	0.02	0.06	0.12	0.21

Source: Lawrence Berkeley National Laboratory 2020 Summer Study on Energy Efficiency in Buildings

Based on the implementation costs shown in Table 17, a median project had a simple payback period of three years or less and 90 percent of projects had a payback period of less than 15 years, as shown in Table 18. The LBNL and DOEE analysis assumed utility rates of $0.04 per kBtu for electricity and $0.01 per kBtu for gas. In California, where average utility rates are higher at about $0.09 per kBtu for electricity and $0.02 per kBtu for gas, these same projects would have shorter payback periods, making investments in energy efficiency more cost-effective.

182 Bergfeld, Katie, Paul Mathew, Mashall Duer-Balkind, James Perakis, Pegah Noori khah, Travis Walter, and Andrew Held. 2020. *Making Data-Driven Policy Decisions for the Nation's First Building Energy Performance Standards*. Lawrence Berkeley National Laboratory, https://eta-publications.lbl.gov/sites/default/files/making_data-driven_policy_decisions_for_the_nations_first_building_energy_k_bergfeld_0.pdf.

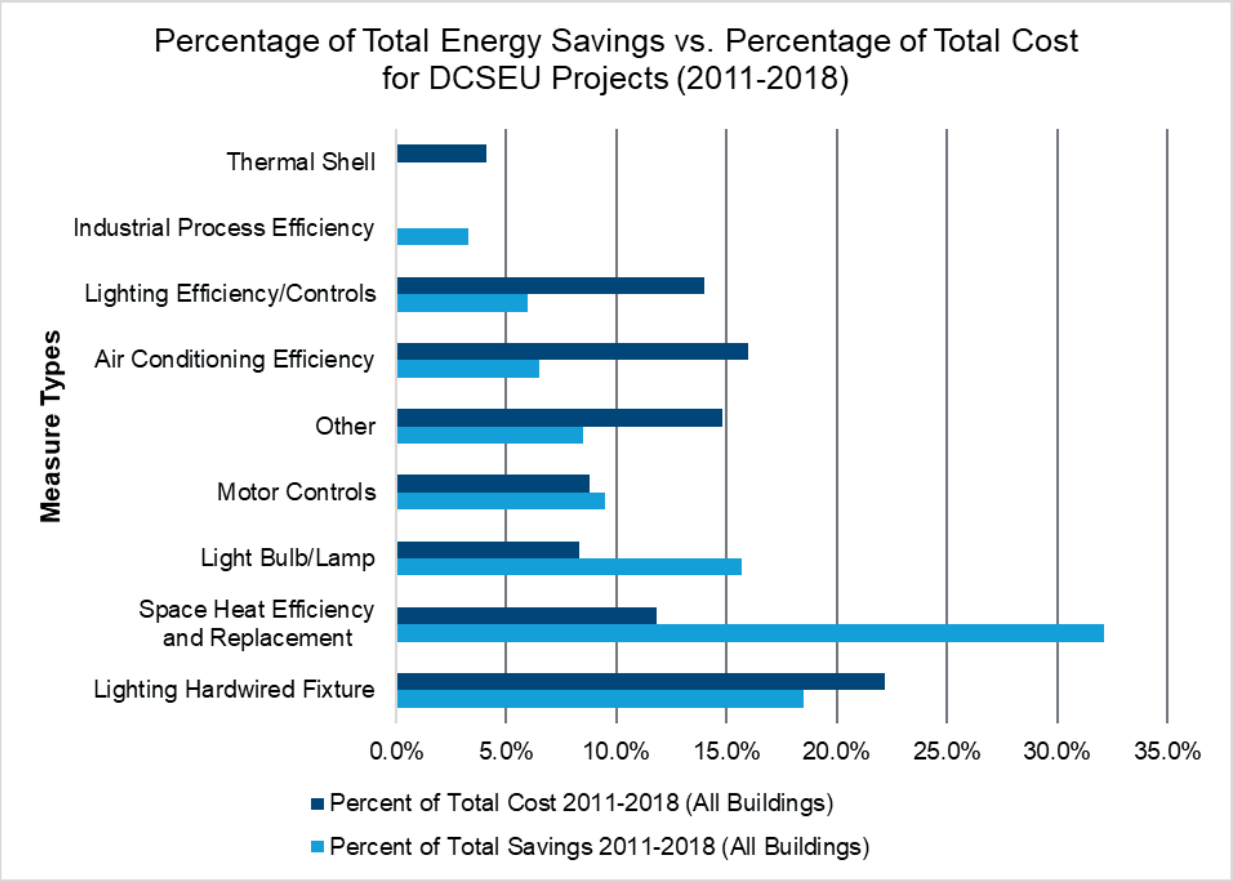
Table 18: Building-Level Simple Payback Period for DCSEU Projects (Years)

Building Type	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
Education	0.37	1.38	2.99	4.89	8.80
Multi-family	1.26	1.83	3.01	6.88	13.58
Office	1.09	1.44	2.59	4.83	14.39
Other	0.34	0.51	1.54	3.17	5.46

Source: Lawrence Berkeley National Laboratory 2020 Summer Study on Energy Efficiency in Buildings

This study noted that some areas of energy investment were more cost-effective than others. Figure 11 shows that lighting controls and air-conditioning efficiency resulted in less energy savings compared to the cost of installation, while space heating and light bulb and lamp upgrades resulted in higher energy savings compared to the cost of installation.

Figure 11: Total Costs and Energy Savings for DCSEU Projects



Source: Lawrence Berkeley National Laboratory 2020 Summer Study on Energy Efficiency in Buildings

The City of New York Office of Sustainability released a report in 2016 outlining plans to reduce GHGs from the building sector.[183] The report concluded that buildings could apply

183 Buildings Technical Working Group. 2016. *One City Built to Last*, https://www.nyc.gov/assets/sustainability/downloads/pdf/publications/TWGreport_04212016.pdf.

energy efficiency improvements like lighting upgrades in 96 percent of the total building area across all measured building types in the city, as shown in Figure 12.[184] On average, these lighting upgrades cost about $0.11 per square foot but save $0.04 per square foot annually, meaning the owner of a 50,000-square-foot building could spend $5,500 dollars on energy efficiency and save $2,000 of energy per year, less than a three-year simple payback.

Because nearly all buildings in New York City can implement these lighting upgrades, there is the potential to achieve significant and cost-effective efficiency improvements. In addition, building owners would see a good return on investment and have greater confidence in future energy-efficient upgrades.

Figure 12: Costs and Savings Summary of Lighting Efficiency Measures

ECM name	Cost per SF of building ($/SF)	Reduction in building citywide GHG (%)	Annual cost savings per SF of building ($/SF)	Total GHG reduction (MtCO2e)	Cost per lb. of CO2e abated ($/lb. CO2e)	Average reduction in GHG for applicable buildings (%)	Percent of citywide building area applicable (%)**	Applicable typologies
Reduce LPD and improve lighting controls	$ 0.11	2.08%	$ 0.04	0.74	$0.35	2.1%	96%	F, M, C, ID, IS
Install bi-level lighting*	$ 0.03	0.19%	$ 0.01	0.07	$0.66	0.3%	60%	M, C, ID, IS
Improve tenant lighting controls/zoning	$ 0.40	0.44%	$ 0.07	0.16	$0.68	2.0%	11%	C
Upgrade common area lighting in residential buildings	$ 0.37	0.01%	$ 0.00	0.00	$28.99	0.1%	13%	M
Upgrade exterior lighting	$ 0.04	0.92%	$ 0.02	0.33	$0.20	1.4%	67%	F, M, C, ID, IS
Place LPD requirements on dwelling units	$ 0.11	0.10%	$ 0.01	0.04	$1.43	0.7%	20%	M
Replace most used bulbs with LEDs	$ 0.02	0.06%	$ 0.00	0.02	$0.81	0.2%	33%	F, M

*Indicates Incremental Measures
**Applicable area includes the whole building floor area of all buildings in which the measures can be implemented
F = 1-4 Family, M = Multifamily, C = Commercial, ID = Industrial, IS = Institutional

Note: Because of overlap between ECMs, reductions in building-based GHG emissions from individual measures cannot be added together.

Source: *One City Built to Last*

The costs of implementing energy-efficient upgrades to meet a BPS can be challenging for building owners. Commercial building owners and operators often face lengthy budget timelines that make it difficult to secure funding quickly. In addition, long-term investments and day-to-day business costs of a commercial building are often handled by separate teams. Teams that manage long-term investments may not see the day-to-day costs these investments create in a building, making it harder for building owners to see the full financial benefits of energy-related investments. Moreover, actual energy savings vary from building to building, and budgets may not always reflect the expected energy and cost savings. With

184 Building types included 1–4 family homes, multifamily homes, commercial, industrial, and institutional, with further subcategory breakdown in each type category.

these financial challenges in mind, it is critical that the costs of energy-efficient upgrades do not come at the expense of a building owner's financial stability.

The BPS of the State of Washington includes a cost-effective metric to make energy-efficient measures affordable for building owners while balancing environmental impacts. Building owners in Washington can comply with the BPS by meeting an EUI target or investing in energy-efficient measures. These measures must provide the most energy savings while ensuring building owners are not investing more money into upgrades than they are receiving in energy savings.[185]

If building owners cannot meet either compliance measure, the BPS provides alternative compliance pathways. By providing flexible compliance options that consider financial feasibility and encourage cost-effective upgrades, building owners can more effectively meet BPS performance targets and state climate goals while staying within budget. Chapter 3 of this report outlines ACPs that can help building owners comply with a BPS. These ACPs account for the unique financial and operational needs of a building while still aligning with the state's decarbonization goals.

Another issue to consider when analyzing the costs of decarbonizing multifamily and commercial buildings is the split incentive problem. Typical leases between tenants and building owners create a "split incentive" between parties where "the cost of investing in energy and water efficiency improvements is borne by one party while the other experiences the benefits of reduced utility costs resulting from those improvements."[186] One tool that could address this split incentive is a green lease, or a performance-based lease, that is designed to "equitably align the cost and benefits of utility efficiency investments for both parties."[187] The Institute for Market Transformation developed a model performance-based lease in 2021 as a starting point for integrating tested and new green lease clauses to "align landlord and tenant goals and meet new mandates set by [New York City's] Local Law 97."[188]

Although some studies offer valuable insight into potential BPS implementation costs, they do not fully capture the complexity and diversity of California. The state's wide-ranging climates, building stock, and regional economic conditions create variability that a statewide BPS must address. Detailed cost-benefit analyses based on California's existing buildings can help develop a better understanding of implementation costs. Localized studies can help ensure that a policy reflects the state's unique challenges and opportunities and support more equitable and effective outcomes.

---

185 Washington State Department of Commerce. 2024. Clean Buildings Performance Standard (CBPS), https://www.commerce.wa.gov/cbps/.

186 White, Andrew, Allison Kirby, Hannah Debelius, Jake Duncan, and Rory Gahagan. *New Leasing Languages and How Green Leasing Programs Can Help Overcome the Split Incentive*, pg. 1. ACEEE Summer Study 2020, https://imt.org/wp-content/uploads/2020/08/ACEEE-Summer-Study-2020-Final-Paper.pdf.

187 Ibid.

188 Banny, Audi. July 2021. *Model Performance Based Lease Template*, pg. 2. Institute for Market Transformation, https://imt.org/wp-content/uploads/2021/07/IMT-Model-Performance-Based-Lease-Template-July-2021.pdf.

Administrative Costs for Regulators

Many administrative costs of a BPS program could be estimated using the existing statewide benchmarking program as a guide.

Technical Assistance and Help Desk

The CEC's building energy benchmarking help desk provides program information and technical support to building owners and managers. The help desk answers questions about program requirements, ownership claim requests, and building exemption requests. A BPS will require a similar help desk that answers questions about performance standards, timelines, and compliance pathway requirements.

Educational Materials and Resource Management

New educational materials will be needed to inform the regulated community about upcoming requirements and provide compliance assistance for a BPS. These materials may include how-to guides, demonstration videos, checklists, frequently asked questions (FAQs), and websites and web pages, which will require dedicated staff time.

Data Management and Review

A BPS will also require data management and review as building owners submit benchmarking data, select compliance pathways, and submit ACP requests. The number and types of compliance pathways available to building owners and the number of building owners who pursue ACPs will dictate the administrative burden on the CEC.

Outreach and Enforcement

While many building owners may know about new BPS requirements, educating the regulated community will require new outreach materials and intentional outreach and engagement campaigns. The CEC can contact building owners and managers by mail, email, and phone, where possible. Finding accurate contact information for building owners will require dedicated staff time. In addition to direct mail and email campaigns, the CEC could also engage with building owners by attending community meetings, hosting briefings, and placing notices in newsletters.

The CEC could also leverage relationships with stakeholders who engage directly with building owners, which could include property management firms, vendors, consultants, design professionals, contractors, professional associations, and CBOs. Outreach will be continuous throughout the life of the program with the largest administrative lift expected in the first few years of program implementation.

BPS Workforce Needs

SB 48 requires the CEC to "encourage equitable access to jobs and other economic opportunities that may result from increased investment in covered building upgrades."[189] California needs a robust and skilled workforce to decarbonize buildings and achieve the state's GHG reduction goals. Appendix E captures recent and projected growth of the clean

189 Senate Bill 48, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB48.

energy workforce in California. The term "workforce" focuses on the training and employment conditions necessary to build the nongovernmental workforce, including:

- California community colleges.[190]
- *California Division of Apprenticeship Standards Registered Apprenticeship Programs*.[191]
- Prevailing wages.[192]
- Skilled and trained workforce requirements.[193]
- Multicraft and single-craft apprenticeship readiness programs.[194]
- *High-road jobs*.[195]

Equitable Access to Economic Opportunities

Aligning the state's climate and workforce actions can encourage equitable access to economic opportunities resulting from policies such as a BPS. The CEC entered into a partnership agreement with the California Workforce Development Board in 2024,[196] enabling a shared effort to develop high-quality jobs, careers, and workforce education and training. The agreement also aims to increase access to opportunities in the energy sector for people of color, women, low-income households, disconnected youth, disabled veterans, people with disabilities, disadvantaged communities, and low-income communities.

---

190 California Community College Chancellor's Office. Accessed September 2026. "Workforce and Economic Development," web page, https://www.cccco.edu/about-us/chancellors-office/divisions/workforce-and-economic-development/.

191 *California Division of Apprenticeship Standards Registered Apprenticeship Programs* are apprenticeship programs that are industry-vetted and approved and validated by the California Division of Apprenticeship Standards within the Department of Industrial Relations, https://www.dir.ca.gov/das/.

192 Department of Industrial Relations. Accessed September 2026. "Prevailing Wage Requirements," web page, https://www.dir.ca.gov/public-works/prevailing-wage.html.

193 Department of Industrial Relations. 2019. "Summary of Selected Skilled and Trained Workforce (STW) Statutes," web page, https://www.dir.ca.gov/Public-Works/ADA-Compliant-STW-Chart-without-New-PRC-Provision.pdf.

194 Apprenticeship readiness and preapprenticeship programs are designed to support candidates to enter into and succeed in state-registered apprenticeship programs. These programs are formally affiliated with state-registered apprenticeship programs and may be offered as single craft or multicraft.

Single-craft refers to programs that prepare participants for an apprenticeship in a specific trade, such as Nor Cal Carpenters Pre-Apprenticeship Training (PAT), https://www.ctcnc.org/pre-apprenticeship.html.

Multicraft refers to programs that expose participants to multiple apprenticeship pathways, such as the State Building and Construction Trades Council of California's MC3 program, https://cabuildingtrades.org/issue/#apprenticeship-and-pre-apprenticeship-mc3.

195 *High-road jobs* are those that pay a living wage, provide comprehensive benefits and job security, are connected to career advancement opportunities, guarantee healthy and safe working conditions, and may offer other benefits.

196 California Energy Commission. 2024. "California Energy Commission and California Workforce Development Board Collaboration," https://www.energy.ca.gov/filebrowser/download/5936?fid=5936.

Prevailing wages, a long-standing public works requirement in California,[197] reduce income inequality within the construction industry, eliminating nearly half of the gap between the highest and lowest earners.[198] A study modeling wages for residential decarbonization workers in the San Francisco Bay Area found that a prevailing wage and minimum-wage-based labor standards would eliminate most of the wage gap between Latinx and White non-Hispanic workers.[199]

Studies show that minimum wages result in lower turnover rates and therefore less recruiting, onboarding, and training costs.[200] This reduction in costs offsets the costs of minimum wage increases by between 15 and 20 percent.[201] Higher compensation also leads to higher average years in the construction industry, higher levels of training and former education in the workforce, and increased worker productivity.[202]

Decarbonization Programs in California

California has several building decarbonization programs that will drive decarbonization job opportunities as buildings comply with a BPS. Four notable programs are the Building Initiative for Low-Emissions Development (BUILD) Program, the TECH program, the EBD Program, and the California Training for Residential Energy Contractors (CA-TREC) program.

---

197 Labor Code Section 1720 (1937), https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=LAB&sectionNum=1720.

198 Manzo IV, Frank, and Robert Bruno. 2014. *Which Labor Market Institutions Reduce Income Inequality?: Labor Unions, Prevailing Wage Laws, and Right-to-Work Laws in the Construction Industry*, pg. 20. Illinois Economic Policy Institute and the School of Labor and Employment Relations Labor Education Program, University of Illinois at Urbana-Champaign, https://faircontracting.org/wp-content/uploads/2014/02/ILEPI-LEP-Research-Report_Institutions-Income-Inequality_ManzoBruno1.pdf.

199 Thomason, Sarah, Sharon Jan, Chelsey Bryant, Kelly Haines, and Kuochih Huang. 2024. *Economic Impacts of a Wage and Benefit Labor Standard for the Bay Area Residential Decarbonization Industry,* pg. 14. Residential Decarbonization Industry, Industry Paper Series, https://risingsunopp.org/wp-content/uploads/HRTP-Economic-Impact-Assessment-Aug-13-2024.pdf.

200 Reich, Michael, Claire Montialoux, Sylvia Allegretto, Ken Jacobs, Annette Bernhardt, and Sarah Thomason. 2016. *The Effects of a $15 Minimum Wage by 2019 in San Jose and Santa Clara County*, pg. 37–38. Institute for Research on Labor and Employment, University of California, Berkeley, https://research.ebsco.com/linkprocessor/plink?id=bb912973-bad2-3f00-b8a6-1f3103a13b8c.

201 Reich, Michael, Claire Montialoux, Sylvia Allegretto, Ken Jacobs, Annette Bernhardt, and Sarah Thomason. 2016. *The Effects of a $15 Minimum Wage by 2019 in San Jose and Santa Clara County*, pg. 37. Institute for Research on Labor and Employment, University of California, Berkeley.

202 Bilginsoy, Cihan. 2003. *Wage Regulation and Training: The Impact of State Prevailing Wage Laws on Apprenticeship*, pg. 19. Working Paper Series, Department of Economics, University of Utah, https://www.researchgate.net/publication/23696701_Wage_Regulation_and_Training_The_Impact_of_State_Prevailing_Wage_Laws_on_Apprenticeship.

Quesada, Alison Dickson, Frank Manzo IV, Dale Belman, and Robert Bruno. October 7, 2013. *A Weakened State: The Economic and Social Impacts of Repeal of the Prevailing Wage Law in Illinois.* School of Labor and Employment Relations, Labor Education Program, University of Illinois at Urbana-Champaign. https://lep.illinois.edu/publications/a-weakened-state-the-economic-and-social-impacts-of -repeal-of-the-prevailing-wage-law-in-illinois-full-report/.

Phillips, Peter. 2014. *Kentucky's Prevailing Wage Law: An Economic Impact Analysis*, pg. 2. University of Utah, https://faircontracting.org/wp-content/uploads/2014/02/Kentucky-Report-2014-Philips.pdf.

The BUILD Program, authorized by Senate Bill 1477 (Stern, Chapter 378, Statutes of 2018) and framework established by the CPUC,[203] is designed to decarbonize housing through electrification. The program focuses primarily on new construction, but low-income single-family homes, multifamily buildings, nonresidential buildings repurposed for housing, and certain building additions or renovations are eligible for technical assistance and incentives. Programs like BUILD, and the program implementers, could form partnerships with local entities that support workforce development to enhance job opportunities in construction, the largest share of the energy workforce.

SB 1477 also created the TECH program. The TECH program, overseen by the CPUC, offers incentives for low-emission space- and water-heating equipment in new and existing homes. The program provides consumer, contractor, and vendor training to support these technologies and help meet the need for a skilled and trained workforce locally.

The EBD Program, established by Assembly Bill 209 (Ting, Chapter 251, Statutes of 2022), is made up of the Statewide Direct Install Program, the Tribal Direct Install Program, and the Statewide Incentive Program. The Statewide Direct Install program serves low-income households in underresourced communities, including single-family, multifamily, and manufactured or mobile homes. The Tribal Direct Install Program will serve housing owned or managed by California Native American tribes, tribal organizations, and tribal members. These programs will install electric equipment and energy efficiency measures at no cost to the occupants.

The Statewide Incentive Program is being implemented in partnership with the GoGreen Home Financing Program to help California households access affordable financing for decarbonization retrofits. The program will focus on underresourced communities.[204] The EBD Statewide Direct Install Program Guidelines require program administrators to "propose, implement, and measure results of a workforce plan with the goal of ensuring high-quality installations and creating local, high-quality jobs in the communities served." The EBD Guidelines require administrators to provide preference for local contractors and contractors that source workers from underresourced, tribal, and low-income communities, among other criteria.[205]

California also received a $10 million allocation to administer the TREC program, which will provide training and education to support contractors installing energy improvements as part

203 California Public Utilities Commission. CPUC Decision Establishing Building Decarbonization Pilot Programs, D. 20-03-027. April 2020, https://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=331772660.

204 Public Resources Code Section 71130 defines underresourced community as "…a community identified pursuant to Section 39711 of the Health and Safety Code, subdivision (d) of Section 39713 of the Health and Safety Code, or subdivision (g) of Section 75005."

205 Maneta, Diana. 2023. *Equitable Building Decarbonization Direct Install Program Guidelines*. California Energy Commission. Publication Number: CEC-400-2023-003-CMF.

of the EBD Direct Install Program and other programs funded by the Inflation Reduction Act.[206]

Identifying and Avoiding Negative Impacts of BPS on Tenants

SB 48 requires the CEC to "avoid increasing utility and rental cost burdens for, or causing evictions, harassment, or *displacement*[207] of, tenants of covered buildings"[208] and consider including requirements in a building performance strategy to prohibit:

- Mandated renovations to a covered building from being the basis for terminating a tenancy and ensure that any temporary relocation costs resulting from the renovation is paid for by the covered building owner.
- An increase in rent for a tenant due to a renovation to a covered building or to limit the increase in rent to the long-term energy savings to a tenant resulting from the renovation.[209]

These requirements apply to tenants of multifamily and commercial buildings.

Residential Tenants

Out of 13 million households in California, roughly 46 percent live in rental housing. Nearly half of renter households are lower-income,[210] defined as having an income at or below 80 percent of the area median income.[211] About 21 percent of renters in the Pacific region of the United States (Alaska, California, Hawaii, Oregon, and Washington) have high energy burden, defined as spending 6 percent of income or more on energy.[212]

A study of 169,000 rental listings across 10 U.S. cities showed that rental properties advertising energy efficiency measures generally demand a rental premium over those that do

206 The Inflation Reduction Act is a federal bill that was signed into law by former President Joseph Biden Jr. on August 16, 2022, https://www.congress.gov/bill/117th-congress/house-bill/5376/text.

California Energy Commission. Accessed April 2025. "Inflation Reduction Act Residential Energy Rebate Programs," web page, https://www.energy.ca.gov/programs-and-topics/programs/inflation-reduction-act-residential-energy-rebate-programs.

207 *Displacement* occurs when residents are forced to move due to rent increases or building renovations or because housing choices for low-income residents are limited.

208 Senate Bill 48. Section 3 25402.16(c)(7).

209 Senate Bill 48. Accessed August 2024.

210 *Lower income* is defined as having an income at or below 80 percent of the area median income.

211 California Housing Partnership. March 2022. *California Affordable Housing Needs Report 2022*, https://chpc.net/wp-content/uploads/2022/03/California-Affordable-Housing-Needs-Report-2022.pdf.

212 Samarripas, Stefen and Alexander Jarrah. August 2021. *A New Lease on Energy: Guidance for Improving Rental Housing Efficiency at the Local Level*. American Council for an Energy-Efficient Economy, https://www.aceee.org/sites/default/files/pdfs/u2102.pdf.

not.[213] However, the rate of this premium varies by city, ranging from 6 to 14.1 percent.[214] Research from Germany[215] and Ireland[216] shows that properties with higher energy efficiency features command higher rents and sales prices than those without these upgrades. The Urban Displacement Project, a research initiative of the University of California, Berkeley, and the University of Toronto, conducted a literature review and found that investments to reduce GHG emissions and improve climate resilience could accelerate *gentrification*[217] and displacement of low-income residents by increasing property values.[218]

Previous annual affordability reports by the CPUC have also found areas with relatively low incomes tend to have the highest costs of services (electricity, gas, water, and communications) relative to household income.[219]

Residential Tenant Protections in California

The California Tenant Protection Act of 2019, Assembly Bill 1482 (Chiu, Chapter 597, Statutes of 2019), applies to most residential rental properties older than 15 years that are not protected by local *rent stabilization ordinances*.[220] AB 1482 limits annual rent increases to 5 percent of the current rent plus the Consumer Price Index,[221] up to a maximum of 10 percent. Evictions under AB 1482 require *just cause*[222] for tenants who have resided at the property for

---

213 Im, Jongho, Youngme Seo, Kristin S. Cetin, and Jasmeet Singh. 2017. "Energy Efficiency in U.S. Residential Rental Housing: Adoption Rates and Impact on Rent," pg. 1031. *Applied Energy,* https://www.sciencedirect.com/science/article/pii/S0306261917310632.

214 Ibid.

215 Cajias, Marcelo and Daniel Piazolo. 2013. "Green Performs Better: Energy Efficiency and Financial Return on Buildings," pg. 9. *Journal of Corporate Real Estate*, https://ssrn.com/abstract=2362914.

216 Hyland, Marie, Ronan C. Lyons, Seán Lyons. 2013. "The Value of Domestic Building Energy Efficiency — Evidence From Ireland," pg. 950. *Energy Economics*, https://doi.org/10.1016/j.eneco.2013.07.020.

217 *Gentrification* is a process of neighborhood change that includes economic change in a historically disinvested neighborhood — by means of real estate investment and new higher-income residents moving in — as well as demographic change — not only in terms of income level, but also in terms of changes in the education level or racial make-up of residents.

218 Cash, Anna, Karen Chapple, Nicholas Depsky, Renee Roy Elias, Melisa Krnjaic, Shazia Manji, and Honora Montano. April 2020. *Climate Change and Displacement in the U.S. – A Review of the Literature*. The Urban Displacement Project, https://www.urbandisplacement.org/wp-content/uploads/2021/08/climate_and_displacement_-_lit_review_6.19.2020.pdf.

219 Jain, Ankit, Bridget Sieren-Smith, Jefferson Hancock, Jeremy Ho, and Wylen Lai. 2021. *2019 Annual Affordability Report*. California Public Utilities Commission, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/reports/2019-annual-affordability-report.pdf.

220 A *rent stabilization ordinance* is a regulation that limits the amount and frequency landlords can increase rents on residential properties.

221 Assembly Bill 1482. Section 3 1947.12(g)(2). https://leginfo.legislature.ca.gov/faces/billHistoryClient.xhtml?bill_id=201920200AB1482.

The *Consumer Price Index* is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services.

222 *Just cause* means certain specified situations, listed in Civil Code Section 1946.2, where the tenant is at fault, such as when the tenant did not pay rent or violated a material term of their lease. Just cause also includes *no-fault just cause* evictions, defined below.

at least 12 months, with the caveat that evictions[223] are permitted in the cases of owner move-in, withdrawal from the rental market, and substantial remodels.[224] Many local jurisdictions apply additional protections beyond those specified in the act, as "rent stabilization ordinances," which differ from jurisdiction to jurisdiction.

The Ellis Act of 1985 (Ellis Act) prohibits local jurisdictions from forcing "the owner of a residential property to offer, or continue to offer, rental units in the property for rent or lease."[225] The Ellis Act does not apply if a property is a residential, or extended stay, hotel with a permit of occupancy issued before January 1, 1990, and in a jurisdiction with more than 1 million people.[226] The Ellis Act allows landlords to evict tenants to convert the units to condominiums or demolish them.[227]

The Costa-Hawkins Rental Housing Act of 1995 (Costa-Hawkins) places limits on municipal *rent control* ordinances,[228] exempting certain kinds of residential units, including newly constructed apartments, from local rent control ordinances.[229] The law also codifies vacancy decontrol,[230] which protects a landlord's right to raise the rent to market rate once a tenant moves out.[231]

Tenant and Other Stakeholder Concerns

Residential tenants and other stakeholders identified evictions, increased rent burden and displacement, increased energy burden, and harassment as main concerns, discussed below.

---

223 Assembly Bill 1482. Section 2. 1946.2.(a), https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB1482.

No-fault just cause includes eviction due to:

- The property owner withdrawing the unit from the rental market.
- The property owner or certain family members are moving into the unit.
- The property owner's plans to demolish or substantially remodel the unit.
- Requirement to comply with a law, or a court or government order.

224 Assembly Bill 1482. Section 2. 1946.2.(b)(2)(D)(i).

225 California Government Code. Section 7060, https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=7.&title=1.&part=&chapter=12.75.&article=.

226 Ibid.

227 Kirk, Chelsea. 2021. *Los Angeles Building Decarbonization: Tenant Impact and Recommendations*, pg. 19. Strategic Actions for a Just Economy, https://www.saje.net/wp-content/uploads/2021/12/LA-Building-Decarb_Tenant-Impact-and-Recommendations_SAJE_December-2021-1.pdf.

228 *Rent control* is a stricter form of rent stabilization.

229 California Government Code. Section 1954.50. https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=CIV&division=3.&title=5.&part=4.&chapter=2.7.&article=.

230 Ibid.

231 California Civil Code. Section 1947.15(i). https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=CIV&division=3.&title=5.&part=4.&chapter=2.&article=.

Evictions

Many stakeholders, including organizations that represent tenants, expressed concern about evictions that occur when landlords force tenants from their homes to carry out "substantial remodels" allowed by the Tenant Protection Act[232] and that renovations might be used as a means of unfair evictions.[233]

Stakeholders also expressed concern that a statewide decarbonization requirement could lead landlords to invoke the Ellis Act and take their properties off the rental market or redevelop them as hotels or condominiums, legally evicting tenants. Property owners might also use renovations "as a pretense to invoke the Ellis Act illegally, falsely promising to take rental units off the market when renovations are complete."[234] Between 2001 and 2019, landlords in Los Angeles invoked the Ellis Act to remove 26,251 rent-controlled units from the market, roughly 4 percent of the rent-controlled housing stock in Los Angeles.[235]

Increased Rent Burden and Displacement

Under Costa-Hawkins, cities are restricted from implementing *vacancy control*[236] on residential units.[237] Strategic Actions for a Just Economy (SAJE), a tenant rights advocacy organization based in Los Angeles, refers to vacancy control as the "strongest form of rent control."[238] The prohibition of vacancy control "allows the landlord to reset the rent to market rate once a tenant has vacated their rent-stabilized unit."[239] This prohibition encourages landlords to displace tenants, sometimes illegally, to raise rents.[240] SAJE also states, "Many local rent stabilization ordinances include exemptions for rent increases for capital improvements. These

---

232 Los Angeles County Chief Sustainability Office. LA County Building Decarbonization Stakeholder Feedback. California Energy Commission. Docket Number: 24-BPS-01, TN#: 26212, https://efiling.energy.ca.gov/GetDocument.aspx?tn=262142&DocumentContentId=98659.

Institute for Market Transformation, U.S. Green Building Council California, and Rocky Mountain Institute. *CEC Building Energy Performance Strategy Report*. California Energy Commission. Docket Number: 24-BPS-01, TN#: 257443, https://efiling.energy.ca.gov/GetDocument.aspx?tn=257443&DocumentContentId=93318.

233 Institute for Market Transformation, U.S. Green Building Council California, and Rocky Mountain Institute. *CEC Building Energy Performance Strategy Report*. California Energy Commission. Docket Number: 24-BPS-01, TN#: 257443.

234 Kirk, Chelsea. 2023. *Decarbonizing California Equitably: A Guide to Tenant Protections in Building Upgrades/Retrofits Throughout the State*, pg. 10. Strategic Actions for a Just Economy, https://www.saje.net/wp-content/uploads/2023/09/Decarbonizing-California-Equitably-Report-1.pdf.

235 Coalition for Economic Survival and Anti-Eviction Mapping Project. 2020."Ellis Act Evictions," web page, Accessed April 8, 2025, https://la-ellis.antievictionmap.com.

236 *Vacancy control* is a form of rent control that limits rent increases even when a new tenant moves in.

237 California Civil Code. Section 1954.53. https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=1954.53.&lawCode=CIV.

238 Kirk, Chelsea. 2023. *Decarbonizing California Equitably: A Guide to Tenant Protections in Building Upgrades/Retrofits Throughout the State*, pg. 4. Strategic Action for a Just Economy.

239 Ibid., pg. 8.

240 Ibid.

exemptions allow landlords to recoup the costs of building upgrades by raising rents beyond the amount usually permitted."[241]

Other stakeholders in Los Angeles County expressed concern that current regulations do not do enough to prevent landlords from passing on expensive decarbonization upgrades to tenants.[242] Low-income tenants in unsubsidized affordable housing may struggle to afford increased rent or relocation costs and lack special protection from rent increases or eviction.[243]

According to IMT, owners of subsidized affordable housing face several potential challenges in complying with BPS policies, including low cash flow and limited staff capacity. For government-funded, or subsidized, buildings where rents are capped, the *utility allowances*[244] allow building owners to recover some of the cost of the investment to comply with BPS policies if tenant utility bills are calculated to fall due to the renovation. However, owners of unsubsidized affordable housing do not have to maintain affordability and are most likely to raise rents upon installing energy efficiency improvements. Building owners also face the challenge of retrofitting without disturbing tenants, which can increase costs and potentially make a project not cost-effective.[245]

Increased Energy Burden

Previous annual affordability reports have found areas with relatively low incomes tend to have the highest costs of services (electricity, gas, water, and communications) compared to household income.[246]

A paper presented at the ACEEE 2024 Summer Study modeled customer bill impacts of building electrification investments and found that in regions with higher costs of electricity compared to natural gas, energy bills may increase despite energy efficiency improvements, if the fuel source switches from natural gas to electricity. Utilities with lower electricity rates see

---

241 Strategic Actions for a Just Economy, Public Health Law Center, Natural Resources Defense Council, Strategic Concepts in Organizing and Policy Education, Los Angeles Alliance for a New Economy, Institute for Market Transformation, Local Clean Energy Alliance. SAJE Response to Building Energy Performance Strategy Report. California Energy Commission, Docket Number: 24-BPS-01, TN#: 257451.

242 Los Angeles County Chief Sustainability Office. LA County Building Decarbonization Stakeholder Feedback. California Energy Commission. Docket Number: 24-BPS-01, TN#: 26212.

243 Cash, Anna, Karen Chapple, Nicholas Depsky, Renee Roy Elias, Melisa Krnjaic Shazia Manji, and Honora Montano. April 2020. *Climate Change and Displacement in the U.S. – A Review of the Literature*. The Urban Displacement Project.

244 *Utility allowances* are the allowance for tenant-paid utilities included as part of the housing subsidy paid to the building owner by the government. These allowances are estimated through utility allowance schedules or calculators such as the California Utility Allowance Calculator, discussed further in Appendix F.

245 Hart, Zachary, Rory Gahagan, Cliff Majersik, Jessica Miller, and Bridgett Neely. Summer 2020. *Understanding the Housing Affordability Risk Posed by Building Performance Policies.*. Institute for Market Transformation, https://imt.org/wp-content/uploads/2020/08/IMT_BPS_AffordabilityRisk_SummerStudy_2020.pdf

246 Jain, Ankit, Bridget Sieren-Smith, Jefferson Hancock, Jeremy Ho, and Wylen Lai. 2021. *2019 Annual Affordability Report*. California Public Utilities Commission, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/reports/2019-annual-affordability-report.pdf.

larger customer bill reductions. In areas with "relatively low electricity prices," customers see efficiency related bill savings regardless of fuel switching.[247]

Customers who do not have space cooling before a retrofit are more likely to experience increases in energy bills compared to customers who had space cooling before the retrofit. This difference is more pronounced in climates with higher cooling demand.[248]

A 2024 NLR study modeled the energy bill impacts of switching to air-source heat pumps in the United States. This study found that for the 48 million homes that heat primarily with electricity, fuel oil, or propane and have central or window or room air conditioning, almost all would see bill savings. Of the 6 million homes using the same fuels for heating but without central or room air conditioning, only 73 to 86 percent would see positive bill savings.[249] However, these increased bills come with benefits to health and comfort and avoided morbidity and mortality due to extreme heat.[250]

ResStock Communities Local Energy Action Program (Communities LEAP) Pilot Residential Housing Analysis includes an analysis of the bill impacts of energy efficiency improvements on housing in San José. Housing with 5 or more units makes up 28 percent of San Jose's housing stock. "An estimated 70%–94% of the homes and apartments analyzed in San José have below average building envelopes, meaning inadequate insulation and sealing allows air in and out of homes. Inadequate building envelopes increase the cost of heating and cooling homes, which requires residents to spend a higher share of their income on energy." As shown in Table 19, updating the building envelope and installing high-efficiency appliances could help lower the amount of income residents spend on energy and provide a more comfortable and safer indoor environment.[251]

247 Miller, Cesca, Andrew Satchwell, and Jenya Kahn-Lang. *The Customer Bill Impacts of Efficient Electrification*, ACEEE 2024 Summer Study, https://www.aceee.org/sites/default/files/proceedings/ssb24/pdfs/The%20Customer%20Bill%20Impacts%20of%20Efficient%20Building%20Electrification.pdf.

248 Ibid., pg. 8.

249 Wilson, Eric J.H., Prateek Munankarmi, Brennen D. Less, Renya Janet L., and Stacey Rothgeb. "Heat Pumps for All? Distributions of the Costs and Benefits of Residential Air-Source Heat Pumps in the United States," pg. 1007. *Joule*, https://doi.org/10.1016/j.joule.2024.01.022.

250 Connolly, Kate, Edgar Barraza, Antonio Diaz, et.al. December 2023. *Healthy, Climate-Resilient Homes for All: Centering Housing Justice and Health Equity in Building Decarbonization*, pg. 20–21. Natural Resources Defense Council, https://www.nrdc.org/sites/default/files/2023-12/housing-justice-health-equity-building-decarbonization-ib.pdf.

251 United States Department of Energy. March 2024. *Household Energy Efficiency Analysis in San José, California*, https://docs.nlr.gov/docs/fy24osti/88528.pdf.

Table 19: Communities LEAP Household Energy Efficiency Analysis in San José, California: Average Annual Savings per Household From Enhanced Enclosure Retrofit and Whole-Home Electrification

Housing Type	Area Median Income	Average Site Energy Use Reduction (%)	Estimated Average Energy Bill Reductions ($)	Impact of Energy Bill Reduction on Energy Burden (pre → post) (%)
Multifamily building with 5+ units built between 1940 and 1979	All	41	308	4.1 - 3.2
Multifamily building with 5+ units built between 1940 and 1979	0-80%	42	300	5.2 - 3.7
Multifamily building with 5+ units built 1980 or after	All	38	312	9.0 - 6.6
Multifamily building with 5+ units built 1980 or after	0-80%	36	310	5.2 - 3.7

Enhanced enclosure and whole home electrification includes adding insulation to exterior walls, the attic, and sealing openings around vents, doors, windows, and crawlspaces, and all high-efficiency appliances.
Source: https://docs.nlr.gov/docs/fy24osti/88528.pdf

Harassment

According to SAJE, harassment is a prevalent issue in areas with rent stabilization ordinances.[252] Landlords use a variety of tactics to illegally evict tenants, including intimidation, threats of eviction, withholding necessary repairs, utility shutoffs, intrusive inspections, and "construction-as-harassment" allegedly. Construction-as-harassment occurs when landlords undertake construction projects to make tenants uncomfortable so they will voluntarily leave.

252 Strategic Actions for a Just Economy, Public Health Law Center, Natural Resources Defense Council, Strategic Concepts in Organizing and Policy Education, Los Angeles Alliance for a New Economy, Institute for Market Transformation, Local Clean Energy Alliance. SAJE Response to Building Energy Performance Strategy Report. California Energy Commission, Docket Number: 24-BPS-01, TN#: 257451.

Tenant advocates are concerned decarbonization policies and programs that initiate renovation work will result in more cases of construction-as-harassment.[253]

Strategies to Avoid Causing Evictions, Harassment, or Displacement of Residential Tenants

SB 48 requires the CEC to avoid causing evictions, harassment, or displacement of tenants. Based on CEC staff analysis of stakeholder[254] feedback and review of published best practices, strategies to achieve this requirement could include, but are not limited to:

- Establishing regulatory authority for the state to prevent abuse of the Ellis Act to force evictions and additional authority to enforce the requirements of the Tenant Protection Act.
- Amending the Tenant Protection Act to include buildings less than 15 years old in statewide rent stabilization.
- Aligning rent stabilization ordinances between state and local jurisdictions.
- Establishing shared rent stabilization enforcement methods and resources between state and local jurisdictions.
- Providing temporary relocation assistance during substantial remodels.
- Providing incentives for decarbonization strategies that do not require relocation or have shorter relocation times, such as water- and space-heating electrification, insulation that does not require sheetrock removal, and appliance upgrades.
- Establishing BPS-specific tenant protections linked to noncompliance with BPS requirements.
- Tying decarbonization incentives and other state housing subsidies to tenant protections.
- Conducting equitable tenant outreach and education.

Appendix F details these strategies. Multiple stakeholders and contracted CBOs also submitted public comments in response to the draft version of this report with strategies and recommendations to avoid tenant evictions, harassment, or displacement because of a BPS. Appendix J and Appendix K outline these recommendations.

253 Kirk, Chelsea. 2023. *Decarbonizing California Equitably: A Guide to Tenant Protections in Building Upgrades/Retrofits Throughout the State*, pg. 10. Strategic Action for a Just Economy.

254 The following organizations recommended one or more of the strategies listed: Strategic Actions for a Just Economy, Public Health Law Center, Natural Resources Defense Council, U.S. Green Building Council California, Strategic Concepts in Organizing and Policy Education, Los Angeles Alliance for a New Economy, Institute for Market Transformation, Local Clean Energy Alliance, Rocky Mountain Institute, Southern California Edison, TRC.

Strategies to Avoid Increasing Utility and Rental Costs for Residential Tenants

SB 48 also requires staff to consider strategies to "avoid increasing utility and rental cost burdens."[255] Based on CEC staff analysis of stakeholder feedback and review of published best practices, these strategies include those listed below and are detailed in Appendix F.

- Consider amendments to the Tenant Protection, Costa-Hawkins, and Ellis Acts.
- Encourage local jurisdictions to enact rent stabilization ordinances.
- Update electric rate structures to promote electrification while avoiding bill increases.
- Establish BPS-specific rent increase limits, linked to noncompliance with BPS requirements.
- Encourage local jurisdictions to adopt ordinances that require landlords to justify proposed rent increases because of substantial renovations.
- Require recipients of housing subsidies to limit rent increases or evictions.

To avoid negative impacts on tenants, a BPS program could incorporate limitations, or caps, on annual rent increases, as done by the San Joaquin Valley (SJV) pilots and the EBD Direct Install Program guidelines. The SJV pilots required landlords to sign an agreement limiting rent increases to 3.6 percent for 5 years unless they were caused by increased property tax, operating, or maintenance costs.[256] The EBD Program requires program administrators to use program participation agreements to contract with program participants. These program participation agreements take one or more of the following forms — lease addendum, deed recording, or other documents. The agreements include guidelines that property owners of market-rate housing cannot increase rent by more than 3 percent per year for 5 to 10 years, depending on the property size.[257]

Unlike the SJV pilots, the EBD Program specifies that the increase includes property taxes, operation, and maintenance costs, as well as the amortization of other improvements made to the property.[258] Because the SJV pilots and EBD Program are voluntary, incentive-based initiatives, the associated rent increase limitations may be easier to implement than similar limitations imposed through a BPS program.

Subsidizing low-income rented housing could protect tenants. For housing subject to the Los Angeles Rent-Stabilization Ordinance, subsidies prevent rent increases directly because

---

255 Senate Bill 48. Section 3 25402.16(c)(7).

256 California Public Utilities Commission. April 2020. Resolution E-5043, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M333/K595/333595009.PDF.

257 Maneta, Diana. 2023. *Equitable Building Decarbonization Direct Install Program Guidelines*.

258 Ibid.

Amortization means spreading out the value or cost of an asset or a long-term liability gradually or allocating it over a specific period.

subsidized work cannot be the basis of a rent pass-through.[259] Subsidies could also protect tenants directly by requiring landlords to agree to not raise rents or evict their tenants as a condition of receiving the subsidy. California's implementation of the Weatherization Assistance Program (WAP) requires landlords to "not use the work funding by WAP as a basis for a rent increase for two years."[260]

Small Commercial Tenants

SB 48 requires the CEC to consider small commercial tenant protections. California law does not have an agreed-upon definition of "small commercial tenants." For this report, staff considered two definitions from California Civil Code — qualified commercial tenant[261] and eligible small business financing partner.[262] For this report, the CEC is using the definition for *qualified commercial tenant* because this definition reflects the most vulnerable population of commercial tenants, and potential solutions for this group may likely benefit larger commercial tenants. The decision to use this definition was made with the input of small commercial tenant advocates.

Current State of Small Commercial Tenant Protections

The Costa-Keene-Seymour Act of 1987 (Costa, Chapter 824, Statutes of 1987) states that "no public entity shall enact any measure constituting commercial rent control, nor shall any public entity enforce any commercial rental control" after January 1, 1988.[263] This act prevents any form of local or statewide commercial rent control, regardless of tenant business type or size. There are no commercial rent regulation (including rent control and rent stabilization) measures in effect in the United States.[264]

As of April 2025, the only statewide commercial tenant protections in effect are included in Senate Bill 1103 (Menjivar, Chapter 1015, Statutes of 2024), also known as the Commercial Tenant Protection Act, which went into effect January 1, 2025. The act requires:

- Commercial leases negotiated primarily in Spanish, Korean, Chinese, Vietnamese, or Tagalog be provided in writing in those languages.

---

259 Los Angeles County Department of Consumer and Business Affairs. Accessed April 2025. "Housing and Tenant Protections: Rent Stabilization Program," web page, https://dcba.lacounty.gov/rentstabilizationprogram/.

260 Carpenter-Gold, Daniel. 2023. *Tenant-Friendly Building Decarbonization in Los Angeles: Maximizing the Benefits and Minimizing the Harms*, pg. 16, https://law.ucla.edu/sites/default/files/PDFs/Publications/Emmett%20Institute/Tenant-Friendly%20Building%20Decarb%20in%20LA%20-%20Final%20Digital%206-14.pdf.

261 California Civil Code Section 827(b)(7)(d), https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=CIV&sectionNum=827.

262 California Code of Regulations, 4 CCR 10092.1(bb), https://govt.westlaw.com/calregs/Document/I4BE11DD0093011F0B4898F46FC620EF9?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default).

263 California Civil Code Section 1954.27(a), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=CIV&division=3.&title=5.&part=4.&chapter=2.6.&article=.

264 Small Business Anti-Displacement Network. Accessed March 2025. "Commercial Rent Regulations," web page, https://antidisplacement.org/tool/commercial-rent-regulations/.

- Longer written notice for rent increases and termination of tenancies.
- Standards and supporting documentation for building operating costs charged to qualified commercial tenants.[265]

These protections apply to qualified commercial tenants. It is not yet clear how the commercial tenant protections introduced in SB 1103 will be enforced.

The County of Los Angeles Commercial Tenant Protections ordinance provides protections to commercial tenants that operate a nonprofit organization or an independently owned and operated business with fewer than nine employees.[266] This ordinance includes protection from breach of rental agreement, failure to perform and complete required maintenance, failure to follow appropriate remediation protocols, construction-as-harassment, and discrimination.[267] The County of Los Angeles Commercial Tenant Protection ordinance also provides a pathway for tenants to take legal action when subjected to harassment.[268]

Small Commercial Tenant and Other Stakeholder Concerns

The impacts on commercial tenants of a BPS are different than the impacts on residential tenants. Commercial tenants have no eviction or rent control protection. Research shows that rent is higher in commercial buildings that have had energy efficiency improvements.[269] However, representatives of small commercial tenants expressed concern that small commercial tenants are already subject to eviction and rent increases at the landlords' discretion and that a BPS that requires energy efficiency improvements would increase those concerns.[270]

---

265 Public Counsel, Bet Tzedek, Cameo Network and Lawyers Committee for Civil Rights of the San Francisco Bay Area. November 14, 2024. Accessed April 8, 2025. *What to Know About SB 1103 — The Commercial Tenant Protection Act*, https://lalegalhelp.org/wp-content/uploads/2025/04/SB-1103-Legal-Alert-English.pdf.

266 Los Angeles County Code of Ordinances. Section 8.45.030(K), https://library.municode.com/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT8COPRBUWARE_DIV2BURE_CH8.45COTEPR_8.45.030DE.

Los Angeles Code of Ordinances. Section 8.45.050, https://library.municode.com/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT8COPRBUWARE_DIV2BURE_CH8.45COTEPR_8.45.050ANRARE.

267 Ibid.

268 Los Angeles Code of Ordinances. Section 8.45.070, https://library.municode.com/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT8COPRBUWARE_DIV2BURE_CH8.45COTEPR_8.45.030DE.

269 Das, Prashant, Alan Tidwell, and Alan Ziobrowski. 2011. *Dynamics of Green Rentals Over Market Cycles: Evidence From Commercial Office Properties in San Francisco and Washington DC*, pg. 1–2, 9, https://www.tandfonline.com/doi/epdf/10.1080/10835547.2011.12091814.

Ankamah-Yeboah, Isaac and Katrin Rehdanz. 2014. *Explaining the Variation in the Value of Building Energy Efficiency Certificates: A Quantitative Meta-Analysis*. Kiel Working Paper, No. 1949, Kiel Institute for the World Economy, https://www.econstor.eu/handle/10419/100700.

270 Personal Communication. Nadia Segura. April 1, 2025. California Energy Commission.

Stakeholder organizations expressed concern regarding pass-through of BPS related costs to small commercial tenants that cannot afford an increase in rents.[271] The pass-through of BPS-related costs could result in evictions for nonpayment of rent or self-evictions because of an inability to afford increased rents.

Strategies to Avoid Increased Utility and Rental Burden

Appendix F discusses strategies for potential solutions to avoid evictions, harassment, and increased utility and rental burden on small commercial tenants. Based on staff analysis of stakeholder[272] feedback and published best practices, some of these strategies include:

- Implementing statewide rent stabilization.
- Implementing a right-to-return policy for tenants evicted because of repairs or development.
- Providing temporary relocation assistance during substantial remodels.
- Implementing just-cause eviction protections.
- Establishing BPS-specific tenant protections linked to noncompliance with BPS requirements.
- Encouraging partial decarbonization of commercial buildings.
- Offering free compliance assistance to owners of *Equity Priority Buildings.*[273]
- Encouraging local governments to implement community benefits ordinances.[274]
- Conducting equitable tenant outreach and education.
- Establishing shared rent stabilization enforcement methods and resources between state and local jurisdictions.
- Encouraging landlords to implement green leases, or performance-based leases.

Monetary Incentives

A BPS may require building owners to make large investments in energy efficiency upgrades to come into compliance, which can pose financial challenges. Multiple stakeholders submitted public comments in response to the draft version of this report highlighting the need for funding to support building owners. Appendix J and Appendix K outline these comments. Incentive programs can lower costs for building owners, which drive long-term cost savings, improve building resilience, and allow building owners to reserve capital for other investments.

---

271 Ibid.

272 The following organizations recommended one or more of the strategies listed: Strategic Actions for a Just Economy, Public Health Law Center, Natural Resources Defense Council, U.S. Green Building Council California, Strategic Concepts in Organizing and Policy Education, Los Angeles Alliance for a New Economy, Institute for Market Transformation, Local Clean Energy Alliance, Rocky Mountain Institute, Southern California Edison, TRC, Public Counsel.

273 *Equity priority buildings* are buildings that serve frontline communities, groups that are more vulnerable to the deleterious effects of climate change. Appendix F discusses equity priority buildings.

274 *Community benefits agreements* are contracts between local governments, community groups, and developers that "require developers to provide specific amenities tailored to local needs. Appendix F discusses community benefit agreements and ordinances.

Incentives fall into two categories — monetary and nonmonetary. Appendix G presents detailed examples of monetary incentives.

Financing and Loan Programs

In a traditional loan arrangement, a borrower receives a lump sum of money from a lender, such as a bank, credit union, or green lender, which is repaid over time with interest. Enhancing loan terms for buildings in the BPS program can be an effective incentive program where funds are used to pay for costs associated with a BPS, including energy efficiency, replacement of fossil fuel equipment, and related services.

While traditional loans can be a reliable source of capital for borrowers, there are still barriers for building owners, such as high interest rates and credit requirements. These barriers can make traditional loans inaccessible to nonprofits, affordable housing providers, and building owners with limited financial resources.

Interest Rate Buydown

An interest rate buydown (IRBD) is a financing tool that can lower loan interest rates for energy efficiency upgrades. This financing technique can make energy efficiency upgrades more affordable as high upfront costs frequently reduce or delay investment in deep energy retrofits, even when the investments are cost-effective. The IRBD payment amount is usually based on the difference between the market interest rate and the lower interest rate that the customer will pay.[275] By reducing the interest rates on loans used for purchasing and installing efficiency measures, an IRBD can remove barriers to compliance and help building owners realize savings even sooner. Table 20 lists the advantages and disadvantages of an IRBD.

Table 20: Advantages and Disadvantages of IRBD

Advantages	Disadvantages
• Reduced loan costs for building owners or borrowers • Appeal to contractors and lenders to participate in the financing program, leading to more options for building owners • Streamlines loan processing and project timelines	• High, nonrevolving loan costs due to limited capital • Not sufficient on its own as an incentive for deep energy retrofits • Complex administration

Source: CEC staff

Commercial Property Assessed Clean Energy Financing

Commercial property assessed clean energy (C-PACE) is a financing mechanism that enables low-cost, long-term funding for energy efficiency, renewable energy, and water conservation projects via a voluntary property tax assessment. C-PACE uses borrowed capital to pay for the upfront costs, which the borrower repays over time via a voluntary tax assessment, allowing

275 Delaney, Kelly. March 2023. *White Paper: How Interest Rate Buy-Downs Can Be Used to Complement Private Capital Financing for Energy Efficiency Projects*. California Alternative Energy and Advanced Transportation Financing Authority, https://www.treasurer.ca.gov/caeatfa/cheef/IRBD-white-paper-3-6-2023.pdf.

longer-term financing and transferability of the repayment obligations to the next property owner.[276] The size of the commercial market for C-PACE nationwide is around $9.7 billion for 3,581 projects, with $2.34 billion in California.[277]

C-PACE loans are secured by a lien on the property that functions similarly to a lien for property taxes or assessments. Building owners pay the C-PACE loans by paying assessments on their property tax bill, and any payment obligation transfers to the new building owner during a sale.[278] Table 21 lists the advantages and disadvantages of C-PACE financing.

Table 21: Advantages and Disadvantages of C-PACE

Advantages	Disadvantages
• Long repayment terms • 100 percent upfront financing that eliminates the initial out-of-pocket expenses • Transferability because the lien is tied to the property, not the building owner • Energy-efficient upgrades can lead to a potential increase in property value	• Lender consent requirements have slowed the adoption of C-PACE programs • Additional liens may deter potential buyers during a sale • Given the commonality of partnering with third-party administrators, setting up C-PACE for BPS requires a clear understanding of existing legislation and law that authorizes what third-party administrators can do

Source: CEC staff

Loan Loss Reserves

Loan loss reserve (LLR) funds are a credit enhancement tool to encourage lenders to offer loans by reducing their financial risks. Under an LLR, a pool of public funds is set aside to cover potential losses for the lenders if borrowers are unable or unwilling to make payments on their loans. LLRs act as a financial safety net that help expand access to financing for building owners who might otherwise struggle to qualify for conventional loans.

Revolving Loan Funds

A *revolving loan fund* (RLF) is a pool of funding that provides low- to no-interest loans for energy efficiency upgrade projects. Unlike a traditional one-time loan, RLFs are self-sustaining. As borrowers repay their loans, the repaid funds and interest are returned to the pool of funding and loaned to new borrowers. Because the loans are typically long-term and low-

276 United States Department of Energy. October 2017. *Commercial Property Assessed Clean Energy (C-PACE): A Fact Sheet for State and Local Governments*, https://www.energy.gov/sites/prod/files/2017/10/f39/FL1710_WIP_CPACEv2.PDF.

277 PACENation. Accessed March 2025. "PACE Market Data," web page, https://www.pacenation.org/pace-market-data/.

278 Buchanan. October 24, 2023. "C-PACE Financing: Alternative Financing in a Challenging Market," Blog, https://www.bipc.com/c-pace-financing-alternative-financing-in-a-challenging-market.

interest, RLFs are effective financing tools for energy efficiency improvements that require high upfront capital.[279] Public or private entities, such as a green bank, can operate RLFs to expand capital in a specific marketplace. A *green bank* is a "focused institution, created to maximize clean energy adoption" that can make direct loans, provide credit support to local lenders, and make equity investments.[280]

The California State Treasurer's Office serves informally as "California's Green Bank"[281] and finances projects that support the state's climate and sustainability goals. In addition, the California Infrastructure and Economic Development Bank (IBank) has the authority to issue tax-exempt and taxable revenue bonds, provide financing to public agencies, provide credit enhancements, and leverage state and federal funds.[282]

On-Bill Financing

On-bill financing is a financing mechanism where a utility provides capital to a customer to fund energy efficiency, clean energy, or other decarbonization projects and the customer repays the utility through regular payments on their utility bill.[283] On-bill financing encourages customers to invest in energy efficiency and clean energy measures by eliminating the upfront cost barrier and making repayment convenient. Since 2007, the CPUC has required California's investor-owned utilities (IOUs) to provide zero-interest on-bill financing programs to nonresidential customers for eligible energy efficiency projects. These on-bill financing programs provide loans ranging from $5,000 to $250,000 to qualified nonresidential customers for energy efficiency upgrades paid through a fixed monthly payment on a customer's utility bill with no interest, finance charges, or prepayment penalties.[284]

Between program inception and 2015, IOUs issued customers more than $158 million in loans with the average loan amount per customer being $38,379.[285] In 2023, the CPUC expanded the existing on-bill financing programs to include eligible clean energy technologies that help reduce greenhouse gas emissions and promote building decarbonization, transportation electrification, resiliency, and distributed energy.[286]

---

279 United States Environmental Protection Agency. Accessed April 2025. "Revolving Loan Funds," web page, https://www.epa.gov/statelocalenergy/revolving-loan-funds.

280 National Laboratory of the Rockies. Accessed April 2025. "Energy Financing Institutions," web page, https://www.nlr.gov/state-local-tribal/energy-financing-institutions.

281 California Infrastructure and Economic Development Bank. Accessed April 2025. "About IBank," web page, https://www.ibank.ca.gov/about/about-ibank/.

282 Ibid.

283 United States Department of Energy. Accessed September 2026. "Financing Navigator," web page, https://betterbuildingssolutioncenter.energy.gov/financing-navigator/option/bill-financingrepayment

284 California Public Utilities Commission. August 18, 2023. Decision on Clean Energy Financing Proposals. D-23-08-026, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M517/K717/517717993.PDF.

285 California Public Utilities Commission. May 2018. *Energy Efficiency Portfolio Report*, https://www.cpuc.ca.gov/-/media/cpuc-website/files/uploadedfiles/cpucwebsite/content/about_us/organization/divisions/office_of_governmental_affairs/legislation/2018/13-15-energy-efficiency-report-final.pdf

286 California Public Utilities Commission. August 18, 2023. *Decision on Clean Energy Financing Proposals*, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M517/K717/517717993.PDF.

Energy Service Agreements

Energy service agreements (ESA) are a "pay-for-performance" model[287] that uses a third-party provider to implement energy efficiency measures.[288] The building owner pays the provider based on the energy savings achieved over a multiyear contract. Under an ESA, an energy service company or ESA provider finances, installs, and maintains energy-saving equipment in a building. This arrangement removes the upfront capital requirement for building owners while passing the risk of system performance to the service provider.

Before installing equipment, the ESA provider will calculate the baseline of the customer's energy consumption and calculate an upfront estimation of savings. An EM&V analysis is performed after project installation to determine actual savings compared to baseline energy use. The building owner then pays lower utility bills throughout the contract term, while the ESA provider retains ownership of equipment for the duration of the contract term and pays for maintenance to ensure reliability and performance. At the end of the contract term, building owners can choose to purchase the equipment at fair market value, extend the ESA contract term, or return the equipment.[289] Table 22 depicts the advantages and disadvantages of an ESA.

Table 22: Advantages and Disadvantages of an ESA

Advantages	Disadvantages
• Eliminates the need for upfront investment and lowers the barrier to entry for retrofit projects • ESA payments redirect building owner's utility spending to pay for efficiency improvements[290] • Reduces operating costs since ESA payments are typically set below the current utility price • Enhanced reliability of operations since ESA providers pay for maintenance services • Flexible and scalable financing	• ESA providers prefer larger project sizes that are typically more than $1 million • Contract terms are long, ranging from 5 years to more than 15 years

Source: CEC staff

287 Institute for Market Transformation. Accessed March 2025. *Energy Service Agreements (ESAs)*. https://betterbuildingssolutioncenter.energy.gov/sites/default/files/news/attachments/RILA%20ESA%20Primer.pdf.

288 Gregu, Natalie. June 30, 2022. "What is an Energy Service Agreement (ESA)?," Blog. Energy Link, https://goenergylink.com/blog/what-is-an-energy-service-agreement-esa/.

289 United States Department of Energy. Accessed March 2025. "Efficiency-As-A-Service," web page, https://www.energy.gov/eere/buildings/efficiency-service.

290 Institute for Market Transformation. Accessed March 2025. *Energy Service Agreements (ESAs)*.

An ESA can support BPS compliance by offering a practical solution to finance major upgrades for building owners with limited capital funds. By covering upfront costs and tying the repayment to the actual amount of energy saved after a project has been completed, an ESA reduces financial risk for building owners while guaranteeing energy savings. Because ESA providers are motivated to maximize actual savings, an ESA supports accurate measurement, reporting, and long-term compliance with a BPS.

Other Incentives

Incentives can lower the upfront investment costs for building owners by providing funding for energy-related goods and services. These types of incentive programs can be direct relief, such as cash payments, or indirect, such as tax breaks. Utilities and government agencies often offer rebates and direct upfront financial incentives to reduce the cost of purchasing and installing energy-efficient equipment. See Appendix G for examples of existing rebate programs applicable to commercial buildings within California and other BPS jurisdictions.

Energy Audit Subsidies

Energy audits are detailed examinations of building energy-use that identify building systems that are operating inefficiently. Energy audits also include a financial analysis to identify cost-effective measures for a building.[291] Energy service companies, energy consultants, and engineering firms offer energy audits as a first step to reduce energy use and improve the performance of building systems. The audit typically begins with a review of utility data followed by an onsite inspection of the building. The main outcome of an energy audit is a list of recommended energy efficiency measures and associated energy savings potential, and an assessment of whether energy efficiency measures installation costs are a good financial investment.[292]

ASHRAE defines three levels of audits, where each level builds on the previous level. As the complexity of an audit increases, so does the thoroughness of the site assessment, the amount of data collected, and the details provided in the final audit report, which can lead to more energy savings.[293] Energy audits can be expensive, and subsidies can help reduce or eliminate the cost of these comprehensive building assessments.

Direct Equipment Rebates

Direct equipment rebates are a type of financial incentive that help provide immediate financial relief through cost reductions for building owners to purchase and install energy-efficient equipment. Rebate programs are typically designed to target specific technologies with established energy-performance ratings.

---

291 California Energy Commission. Accessed April 2025. "Building Energy Efficiency Resources for Commercial Buildings," web page, https://www.energy.ca.gov/programs-and-topics/programs/building-energy-benchmarking-program/benchmarking-building-owner-0.

292 United States Department of Energy. September 25, 2011. *Building Technologies Program: A Guide to Energy Audits*, https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-20956.pdf.

293 Ibid.

Performance-Based Rebates

Performance-based rebates are financial incentives awarded based on measured energy savings or emission reductions rather than specific equipment purchases and installations. Unlike direct equipment rebates, which lower the cost of purchasing specific equipment, performance-based rebates allow building owners to choose the most effective combination of upgrades to meet the needs of buildings.

Tax-Based Incentives

Tax-based incentives are financial benefits provided through tax laws to encourage investment in specific activities. Tax-based incentives include tax credits, deductions, and reduced property tax assessments, all of which can serve as a powerful tool by reducing a building owner's tax liability while making BPS compliance more financially feasible.

Income Tax Credit and Deductions

Income tax credits reduce the income tax a building owner owes to the Internal Revenue Service or the state government. Building owners can claim tax credits when filing their tax returns to lower their tax liability or increase their refund.[294] For a statewide BPS, this incentive option would fall under state income taxes.

Income tax deductions lower a building owner's taxable income and lower tax liability. Appendix G provides more information on current credits and deductions available to building owners.

Property Tax Reductions

Property tax reductions lower the assessed value or tax rate applied to a property, thereby reducing a building owner's annual property tax bill. The reductions can vary from a one-time property tax reduction to reducing the property tax for a few years. Property tax reductions can also apply to buildings that fit within an established scope, such as buildings serving disadvantaged community members or located in disadvantaged communities. This type of incentive can offset the financial burdens of complying with a BPS and help encourage earlier BPS compliance for buildings in jurisdictions with high tax rates.

Tax Abatements

Tax abatements are temporary reductions or exemptions on the level of taxation of a building owner. There are different types of abatement, including a tax decrease, reduction in penalties, and rebates. Abatements are offered by governmental agencies during construction or renovation typically to encourage specific activities,[295] which could include supporting BPS compliance. Tax abatements can help reduce costs for building owners as they enter the implementation phase.

---

294 Internal Revenue Service. Accessed March 2025. "Credits and Deductions for Individuals," web page, https://www.irs.gov/credits-and-deductions-for-individuals.

295 Kenton, Will. September 4, 2021. "What is Abatement? How It Works With Taxation, and Examples," Blog. Investopedia, https://www.investopedia.com/terms/a/abatement.asp.

Nonmonetary Incentives

Nonmonetary incentives play a critical role in supporting and encouraging building owners to comply with a BPS. Nonmonetary incentives are usually designed to address informational, administrative, or procedural barriers that may hinder BPS compliance.

Fast-Track Permitting

Fast-track permitting prioritizes the review and approval processes for building and renovation permits. By accelerating the permitting process for construction or retrofit activities, fast-track permitting can lower the cost and time delays that often hinder building upgrades. In addition, waiving the building permit fees, offering permit design assistance, and relaxing restrictions would complement an accelerated permit timeline.

Resource Hub

BPS program requirements and the building upgrades necessary to comply may be complex and require long-term planning. To address this, an informational resource hub serving as a centralized location where all stakeholders can access BPS information, guidance, technical assistance, available incentives, and relevant tools can help reduce building owners' confusion and administrative burden.

An informational hub seeks to remove obstacles that prevent implementation of high-performance building strategies by spotlighting the good practices of local market leaders and aiding those who may not have the necessary resources — be it information, expertise, or finances — to act and improve the performance of their buildings. In addition to a general resource hub, offering personalized or semipersonalized support for building owners can improve understanding of the BPS requirements and accelerate the necessary steps to compliance.

Recognition Programs

Recognition is an incentive that publicly acknowledges building owners who demonstrate leadership in energy efficiency or decarbonization. Awarding building owners with a recognition program can help enhance the building and building owner’s reputation and attract and retain more tenants or investors. While recognition can serve as its own reward, the value of recognition can be enhanced by tying recognition to benefits such as exclusive access to certain incentives, grants, funding, expedited permitting, and more. In addition, award ceremonies, networking events, media coverage, and other types of publicity can be considered to further support building owners in reaching BPS goals.

Reporting Flexibility

Allowing building owners to fulfill BPS reporting requirements through various report formats and on flexible schedules can reduce costs and improve compliance rates. For example, Washington, D.C.’s, BEPS offers an accelerated savings recognition alternative compliance pathway option. This option is designed for building owners who achieve the long-term goals

of the BEPS program in the first compliance cycle.[296] By supporting building owners who take early action through deep energy retrofits, the program reduces reporting burdens and the building owners' compliance burden with performance targets that become more stringent over time.

296 District of Columbia Department of Energy and Environment. Accessed March 2025. "Building Energy Performance Standards Chapter 4.2 – ACP Options for Deep Energy Retrofits, 4.2.1 – Accelerated Savings Recognition ACP Option," web page, https://dc.beam-portal.org/helpdesk/kb/BEPS_Guidebook/70/.

CHAPTER 5: Recommendations

If the Legislature establishes a statewide building performance standard (BPS) program, the CEC recommends that the BPS:

- Uses benchmarking data to track and manage the energy usage and emissions of GHGs of covered buildings to achieve the state's goals, targets, and standards, meeting the requirements of California PRC Section 25402.16.
- Implements best practices for equitable public policy development and transparency.
- Ensures flexibility for building owners to accommodate capital investment cycles, equipment useful life, and tenant needs.

Building Performance Standards

If the Legislature chooses to implement a strategy to achieve state goals within large existing buildings, a uniform statewide BPS would be the least-cost solution, allow maximum flexibility for building owners to comply, and prevent the complexity of a patchwork of local policies. A BPS protects consumers by requiring the owner of a building to maintain and improve it to a minimum level sufficient to prevent harm to occupants, neighbors, and society.

A BPS also complements the existing energy benchmarking requirement, as benchmarking gives building owners the data and insights to analyze how the performance of their building changes over time and to identify opportunities to reduce building energy expenditures and costs. By promoting clear, achievable performance targets and milestones, a BPS encourages investments in energy efficiency, electrification, and load flexibility. The Legislature should encourage local jurisdictions to implement their own BPS policies, if those programs apply to buildings not covered by the state program, but apply a single statewide standard to all large buildings.

The buildings covered by a BPS should mirror those already covered by the existing benchmarking law, as benchmarking data will be necessary to establish the performance standards. Multiple jurisdictions across the country with energy benchmarking and BPS policies structured requirements to cover the same buildings. Aligning the energy benchmarking and BPS-covered building lists simplifies engagement with building owners and streamlines compliance.

BPS Structure and Metrics

The CEC recommends using a trajectory policy structure for a statewide BPS. This structure combines long- and short-term performance requirements, providing building owners with regulatory certainty and flexibility to accommodate typical capital planning cycles while encouraging owners to improve their properties at the earliest opportunity to ensure they meet interim targets. The trajectory policy structure is favorable as it can easily align with California's long-term climate commitments while ensuring consistent performance

improvements through the interim target "check points." A trajectory structure can easily build in flexibility for building owners to account for capital planning cycles, building life cycles, and leasing cycles, which will be different for each building. The CEC recommends using a trajectory BPS policy structure with five-year cycles and final performance targets in 2045 for each property type. All buildings would be subject to a BPS at the same time with the same compliance deadlines, except for buildings approved for alternate deadlines.

The CEC recommends using an average of several years of benchmarking data to establish baseline performance for all buildings covered by a BPS. Using an average will help normalize unusual or unexpected variations in energy use caused by uncontrollable factors, like weather, and give building owners a fair and representative starting point of performance. A licensed professional should verify at least one of these baseline years to ensure accurate interim targets for building owners. Interim targets should be calculated based on the trajectory from the baseline performance of a building to a final performance standard.

A combination of ASHRAE Standard 100 and the IMT *Model Law for Building Performance Standards* can serve as a strong starting point for a formal regulatory proceeding to enact a statewide BPS. The details of the BPS, such as final performance targets, should be refined as part of a formal regulatory process that includes all stakeholders. CEC staff has begun this work through a structured stakeholder engagement process described in Appendix B.

The CEC recommends a combination of two normalized metrics to meet the objectives of SB 48 to support state building policy goals — site energy use intensity (EUI) and site GHG emissions intensity (GHGI). Both metrics should focus on site performance because California has strong policies to reduce the criteria pollutants and climate pollution emissions from electric generation. This approach would create two actionable targets that buildings must achieve to support California's environmental, economic, and equity goals — energy efficiency and electrification.

Site EUI accomplishes energy and occupant impact metric objectives by encouraging the use of efficient building equipment and building operations. Energy efficiency reduces the cost of energy services, reduces the environmental impact of energy generation and use, and improves the resiliency of buildings by minimizing the demand on the grid.

Site GHGI accomplishes the environmental metric objective of reducing environmental pollution and the occupant impact metrics surrounding combustion pollution within and near buildings. A site GHGI targets onsite combustion, reducing the associated climate, criteria, and toxic pollutants. Eliminating onsite combustion also addresses the health and safety hazards of using toxic and combustible chemicals within habitable spaces.

The CEC recommends exploring demand management and cost-effectiveness performance metrics to encourage load flexibility and energy affordability, such as coincident peak demand.

Responsible Parties

Owners of disclosable buildings, as defined by AB 802, should be the primary party responsible for compliance and should be liable for penalties for noncompliance with a BPS.

Data Management

Given the existing use of Portfolio Manager for the statewide energy benchmarking program, the CEC recommends Portfolio Manager as the main data reporting tool for a BPS program. However, the ability to shift to another online data management software to support a BPS may be critical for long-term success. Expanded tools or databases will allow for more comprehensive BPS compliance tracking and BPS-related form submissions, but additional reporting tools are not, at the time of writing this report, necessary to implement a statewide BPS.

The existing benchmarking public disclosure dataset could be expanded to include additional building performance fields, such as the energy baseline performance and years of a building, performance targets and time frames, progress toward compliance, key milestones met, and reports submitted. Disclosure of benchmarking and building performance data allows building owners and tenants to track compliance and get early notice of failure to make progress. Expanding the existing Tableau benchmarking disclosure dashboard or creating additional visualizations would require dedicated staff time and some additional funding.

Data Verification

The CEC recommends establishing a new energy benchmarking data verification requirement to support a statewide BPS. Data verification should be performed by a licensed professional with an existing recognized credential (for example, professional engineer or licensed architect) at a cadence that aligns with key BPS evaluation years, such as the interim and final performance years. While on-site verification of building data and indoor environmental standards is preferable, it is not feasible to require on-site visits for all 50,000 covered buildings with the current licensed California workforce.

Alternative Compliance Pathways

The CEC recommends offering multiple alternative compliance pathways to building owners who demonstrate an inability to comply under the standard trajectory compliance pathway. The alternative compliance pathways and qualifying criteria should be determined during a formal rulemaking.

Implementation Costs and Benefits

Comprehensive analyses of the costs and benefits of complying with the BPS would help guide decisions on performance targets, implementation timelines, compliance pathways, and penalties for noncompliance. Localized studies can help ensure that a BPS policy reflects California's unique challenges and opportunities and supports more equitable and effective outcomes. In addition, a cost-benefit analysis could show the potential impacts of the proposed BPS on utility bills and rental costs and support setting penalties for failure to comply with the performance requirements.

Administrative Enforcement Authority

If designated by the Legislature, the CEC would need additional authority to enforce a statewide BPS. The CEC can build on the existing capacity, knowledge, and resources of the

Office of Compliance Assistance and Enforcement to implement a successful enforcement program.

Enforcement Mechanisms

A successful BPS must have financial incentives to encourage compliance. Penalties should be considered when a building owner, or other identified responsible party, fails to fulfill a reporting requirement or fails to meet energy and emissions performance standards under a BPS. Penalties for performance metrics violations should be larger than for reporting violations. The same violations, enforcement mechanisms, and penalties should apply regardless of the compliance pathway chosen. Alternative compliance pathways should not have additional or separate violation types or enforcement. Monetary penalties are the primary enforcement mechanism for violations of a BPS. The owners of regulated buildings should be prohibited from passing penalties onto residential and small commercial tenants.

The CEC does not recommend the use of publication penalties, liens, or prohibition of use or sale of a property as enforcement mechanisms, as they could cause unintended consequences such as tenant displacement or operational or financial constraints on the building owner. The structure and formulae for penalties should be clearly explained to ensure building owners understand the consequences of noncompliance.

Penalty Payment Inflow Options

A BPS should use funds to assist building owners with complying with the performance standards, with a portion dedicated to underresourced communities, low-income tenants, and small commercial tenants. Penalty payments from violations of the statewide BPS could be used for compliance assistance.

BPS Workforce Needs

The authorized agency should coordinate with the California Workforce Development Board and other relevant stakeholders throughout the implementation of a BPS to increase equitable access to high-road jobs. Any incentive funding supporting BPS compliance should promote high-road jobs, training, and sustainable economic development when possible.

Evaluation, Monitoring, and Verification

A BPS program should undergo a developmental evaluation, which may require reporting at regular intervals to guide program oversight and evaluation. Per SB 48, the CEC used existing contract funds to collaborate with CBOs to develop equity metrics that could be used to monitor the impacts of a BPS. These potential equity metrics are detailed in Appendix I and are based on recommendations from stakeholders and contracted organizations representing underresourced, low-income, residential tenants and small commercial tenants.

Metrics should be tracked and evaluated as part of an internal continuous improvement process supported by developmental evaluation and stakeholder engagement. When possible, CBOs should be compensated to assist with evaluation of impacts of a BPS on underserved communities, low-income tenants, and small commercial tenants. Input from an advisory body that includes representatives from underserved communities, low-income tenants, and small

commercial tenants should be used to determine program adjustments and course corrections on an ongoing basis.

Equity Best Practices

Equity best practices should be implemented during BPS program development and implementation. Equity best practices include but are not limited to:

- Codesigning processes for program design and decision-making with underserved communities, low-income tenants, and small commercial tenants.
- Coordinating with other agencies and stakeholders on an engagement process when CBOs are asked to engage in several policy or regulatory proceedings.
- Making information available in the languages of the communities and individuals affected by a building performance program to ensure program accessibility.
- Collaborating with CBOs to ensure the program approach meets equity best practices, including at a minimum a person-centered approach, accessibility, sensitivity to community engagement fatigue, and compensation for participation.

Stakeholder Engagement

Implementing a BPS could include creating an advisory body of impacted stakeholders who advise on program design and implementation of a BPS. A BPS advisory body should be engaged in program development from design initiation and throughout the life of the program, including evaluation cycles. The advisory body should include representatives of underresourced communities, low-income tenants, and small commercial tenants and could include building owners and operators of commercial buildings and affordable housing from regions around the state. When possible, equity stakeholders should receive compensation for their participation.

Tenant Protections

To meet simultaneous climate and affordability goals, a BPS could incorporate best practices to avoid increasing rental and utility costs for residential and small commercial tenants and use existing programs with tenant protections for guidance. These best practices could include restricting landlords from increasing rent by more than a specified amount for several years after building upgrades, similar to the CEC EBD Direct Install Program and CPUC San Joaquin Valley Pilots proceeding.

The state should work with local jurisdictions, building owners, and community stakeholders to explore consistent approaches and best practices that protect tenants from displacement and promote housing stability in buildings that benefit from public investments or incentive programs.

Technical Assistance

A BPS may require the development of a resource hub that serves as a centralized location where all stakeholders can access BPS information, guidance, technical assistance, and available incentives.

The state could engage with California Native American tribes and offer support and technical assistance if tribes wish to explore a similar building performance program.

Monetary Incentives

A successful BPS will require monetary incentives tailored to statewide and local market conditions, building types, and policy goals. Financing programs, such as interest rate buydowns, should be designed to reduce the upfront cost of compliance for building owners, support energy affordability, and protect tenants. The BPS should consider market conditions and emerging energy data to determine the most effective and widely used incentives best positioned to support a BPS. Incentive structures should be evaluated and adjusted throughout the lifetime of a BPS policy based on market feedback.

Nonmonetary Incentives

Nonmonetary incentives are essential complements with monetary incentives to support successful BPS implementation. Implementing a BPS could include developing nonmonetary support to meet building owner needs as the BPS program progresses toward targets.

GLOSSARY

Amortization means spreading out the value or cost of an asset or a long-term liability gradually or allocate it over a specific period.

Anthropogenic black carbon is commonly known as soot and comes from the incomplete combustion of wood and fossil fuels.

Anthropogenic greenhouse gas emissions refer to emissions caused by human activity.

An **authorized agency** is the executive branch agency authorized by the Legislature or the local jurisdiction authorized by the appropriate state agency to implement and enforce a building performance standard and associated policies.

Building energy benchmarking means tracking and reporting building energy use and using a standard metric to compare the performance of a building against the past performance and to other buildings.

A **binding agreement** is a contract that is enforceable by law.

Biomethane, also known as renewable natural gas, is a renewable fuel made from biogas that has been upgraded to a quality similar to fossil natural gas and has a methane concentration of 90 percent or greater.

A **British thermal unit** is a measure of heat, which is a form of energy. A British thermal unit represents the amount of heat needed to raise one pound of water at maximum density through 1 degree Fahrenheit, equivalent to 1.055 × 10 joules.

Building decarbonization refers to activities that reduce or eliminate greenhouse gas emissions in buildings, including replacing fossil fuel-burning appliances with efficient electric appliances, improving energy efficiency, incorporating load flexibility, and reducing refrigerants or switching to climate-friendly refrigerants.

Building electrification is the replacement of fossil fuel equipment with electric equipment. An example is the replacement of gas heating equipment with electric heating equipment.

Building performance standards are outcome-driven policies that specified buildings must meet over time.

The **built environment** refers to the man-made or modified structures that provide people with living, working, and recreational spaces and encompasses housing, distribution systems for water and electricity, and roads, bridges, and transportation systems.

California Climate Investments is an umbrella term and associated logo developed for communicating with funding recipients and the public to identify programs or projects funded in whole or in part by the GGRF.

CalEnviroScreen is an independent metric composed of 21 indicators used to identify disadvantaged communities based on negative environmental impacts.

California Division of Apprenticeship Standards Registered Apprenticeship Programs are apprenticeship programs that are industry-vetted and approved and validated

by the California Division of Apprenticeship Standards within the Department of Industrial Relations.

Carbon neutrality means that all greenhouse gas (GHG) emissions emitted into the atmosphere are balanced in equal measure by GHGs that are removed from the atmosphere, either through carbon sinks or carbon capture and storage.

Coincident peak demand refers to building electricity demand when total demand on a utility system is highest, causing the greatest strain on that system.

Community-based organizations are organizations run by the majority of local residents in the communities they serve. Their priorities and proposed solutions are identified by residents, who are involved in the design, implementation, and evaluation of services offered.

Community benefits agreements are contracts between local governments, community groups, and developers that "require developers to provide specific amenities tailored to local needs.

The **Consumer Price Index** is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services.

A **cost-benefit analysis** compares the projected costs and benefits of a decision or project to determine its feasibility and value.

A **covered building** is any building, other than a condominium development, that receives energy from a utility, has no residential accounts, or has five or more active utility accounts of any one energy type, at least one of which is residential, or a combination thereof.

Criteria air pollutants are air pollutants for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Examples include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM10 and PM2.5

Disadvantaged Communities Advisory Group (DACAG) is an advisory group created by Senate Bill 350 (De León, Chapter 547, Statues of 2015) that advises the CEC (California Energy Commission) and the California Public Utilities Commission (CPUC) on how to design and implement policies and programs to be more effective on behalf of disadvantaged communities.

Demand flexibility refers to building technologies and policies that enable and provide incentives to reduce, shift, and shed energy consumption.

Demand response refers to changes in electric use by the end user in response to price signals or incentive programs.

Direct installation is a type of energy efficiency program that involves an installer coming to the customer to provide the energy upgrade as opposed to a utility providing only a rebate.

Disadvantaged community refers to an area identified as disadvantaged by the California Environmental Protection Agency per Senate Bill 535 (De León, Chapter 830, Statutes of 2012) based on geographic, socioeconomic, public health, and environmental hazard criteria. View a map of disadvantaged communities at https://calepa.ca.gov/EnvJustice/GHGInvest/.

Disaggregated means meter-level data that is not aggregated, or gathered, geographically or by building type.

Displacement occurs when residents are forced to move due to rent increases or building renovations or because housing choices for low-income residents are limited.

End user refers to the person or entity that purchases and consumes energy. An end user differs from a user or consumer in that the end user is both the purchaser and final user of the product or service.

Energy equity recognizes the historical and cumulative burdens of the energy system borne by tribes and justice communities and by Black, Brown, and Native people, in particular.

Energy burden refers to poor air quality and increased health hazards due to proximity to polluting facilities (such as fossil fuel power plants), disproportionately high energy bills as compared to income, and difficulty accessing clean energy technologies due to financial and other barriers.

Energy services are tasks performed to benefit people using energy. These tasks include, but are not limited to, space and water heating, cooking food, transportation, and plug loads. Energy services could also include utility services that rely on energy such as sewer, water, and other municipal services.

Energy use intensity (EUI) is the energy use per square foot at a property (energy divided by square feet). EUI enables comparison of the energy used by different-sized buildings.

An **enforcing body** is a government agency or delegated party responsible for enforcement of standards or laws.

Equity Priority Buildings are buildings that serve frontline communities, groups that are more vulnerable to the deleterious effects of climate change.

Fixed charge means any fixed customer charge, basic service fee, demand differentiated basic service fee, demand charge, or other charge not based on the volume of electricity used.

Gentrification is a process of neighborhood change that includes economic change in a historically disinvested neighborhood — by means of real estate investment and new higher-income residents moving in — as well as demographic change — not only in terms of income level, but also in terms of changes in the education level or racial make-up of residents.

Greenhouse gas emissions intensity is a measure of the annual greenhouse gas emissions of a building relative to its size.

A **green lender** is generally a financial institution that provides loans and financing designed for projects with positive environmental impacts.

Gross floor area (GFA) is the total building square footage, measured between the principal exterior surfaces of the enclosing fixed walls of the building(s). This includes all areas inside the building, including lobbies, tenant areas, common areas, meeting rooms, break rooms, atriums (count the base level only), restrooms, elevator shafts, stairwells, mechanical equipment areas, basements, and storage rooms.

High-road jobs are those that pay a living wage, provide comprehensive benefits and job security, are connected to career advancement opportunities, guarantee healthy and safe working conditions, and may offer other benefits.

Impact evaluations are evaluations conducted after completion of energy efficiency programs to estimate energy savings, demand savings, and cost-effectiveness.

An **indemnity clause** is a provision in a contract where one party agrees to compensate another for damages or losses.

Initial community focus areas are underresourced communities that will be served in the first phase of the EBD Direct Install Program.

Just cause means certain specified situations, listed in Civil Code Section 1946.2, where the tenant is at fault, such as when the tenant did not pay rent or violated a material term of their lease. Just cause also includes *no-fault just cause* evictions.

Justice communities include disadvantaged communities, under Senate Bill 535 (De León, Chapter 830, Statutes of 2012); low-income communities and households, under Assembly Bill 1550 (Gomez, Chapter 369, Statutes of 2016); underserved communities, under Assembly Bill 841 (Ting, Chapter 372, 2020); and people living with disabilities, as defined by American Disabilities Act (42 U.S.C. Section 12101 et seq.).

Linguistic isolation is defined in CalEnviroScreen 4.0 as households where no one over age 14 speaks English well.

Load flexibility, also known as load management and demand flexibility, is the capability to shift electric load or demand away from times when electricity is expensive, polluting, and scarce to times when it is inexpensive, clean, and plentiful.

Loan loss reserves are a pool of funds from which financial institutions can recover a portion of their losses in the event of borrower defaults. Interest rate buydowns are a form of a payment provided by financing program administrators directly to the private capital provider to reduce the interest rate a customer pays for a financial product.

Lower income is defined as having an income at or below 80 percent of the area median income.

A **low-income community** is a census tract with a median household income at or below 80 percent of the statewide median income, or a census tract with a median household income at or below the threshold designated as low-income by the California Department of Housing and Community Development.

A **low-income household** is a household at or below 80 percent area median income, per income limits for the California Department of Housing and Community Development Section 8 Housing Choice Voucher Program. For projects funded by the federal program, Home Efficiency Rebates, low-income household is defined as a household below 80 percent area median income. View the income limits for the Section 8 Housing Choice Voucher Program at https://www.hcd.ca.gov/grants-and-funding/income-limits.

Low-income residential tenants include the lessees, subtenants, or sublessees in low-income households.

A **microenterprise** is a sole proprietorship, partnership, limited liability company, or corporation that has five or fewer employees, including the owner, who may be part-time or full-time and generally lacks sufficient access to loans, equity, or other financial capital.

A **multifamily building** means housing with multiple units for many families. Multifamily buildings include apartment complexes and duplexes.

A **metric ton** is a unit of measure equivalent to 1,000 kilograms, or 2,204.62 pounds.

$MTCO_2e$ or metric tons of carbon dioxide equivalent is a metric measure used to compare the emissions from different greenhouse gases based upon the associated global warming potential.

No-fault just cause includes eviction due to the property owner withdrawing the unit from the rental market; the property owner or certain family members are moving into the unit; the property owner's plans to demolish or substantially remodel the unit; or a requirement to comply with a law, or a court or government order.

Nonenergy benefits represent the array of diverse impacts of energy programs and projects beyond the generation, conservation, and transportation of energy.

Nonprofit organization means any private, nonprofit organization that qualifies under Section 501(c)(3) of the United States Internal Revenue Code of 1986.

A **normalization methodology** is a process that adjusts data to account for the impact of periodic variations, allowing for comparisons of data across different periods or locations.

Particulate matter (also called particle pollution) refers to microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems.

The **peak load** is the estimated maximum combined instantaneous electricity draw.

A **qualified commercial tenant** is a tenant of a commercial building that is a microenterprise, a restaurant with fewer than 10 employees, or a nonprofit organization with fewer than 20 employees and provided annual verification to their landlord that they are a qualified commercial tenant, unless the tenancy is for a period of one month or less.

Reach codes are codes adopted by local governments that exceed the minimum requirements adopted by the state.

Rent control is a stricter form of rent stabilization.

Rent regulation includes rent control and rent stabilization ordinances.

A **rent stabilization ordinance** is a regulation that limits the amount and frequency landlords can increase rents on residential properties.

For this report, a **small commercial tenant** has the same definition as a qualified commercial tenant.

Retrocommissioning is a process that is used to identify weaknesses in a building to improve performance.

A **revolving loan fund** (RLF) is a pool of funding that provides low- to no-interest loans for energy efficiency upgrade projects. Unlike a traditional one-time loan, RLFs are self-sustaining.

As borrowers repay their loans, the repaid funds and interest are returned to the pool of funding and loaned to new borrowers.

A **split incentive** occurs when the party paying for the upgrades and the party benefitting from utility bill savings are different. In this scenario, the property owner pays the upgrade costs but does not reap the energy savings, whereas the tenant pays nothing toward the improvements but sees a reduction in their utility bills.

Subsidized affordable housing is housing that is deed-restricted to individuals or households that qualify as low-income, typically for a period of at least 35 years, and subsidized through government funding.

Tenant harassment is a landlord's bad faith conduct directed at a specific tenant or tenants that causes the latter detriment or harm, including but not limited to verbal or physical threats, coercion, and withholding of critical services.

An **underresourced community** is a disadvantaged community or a low-income community.

Unsubsidized affordable housing is defined as apartment buildings with five or more units where at least half of the apartments have rents affordable to households earning 80 percent of the median income for that zip code.

Utility allowances are the allowance for tenant-paid utilities included as part of the housing subsidy paid to the landlord by the government.

Vacancy control is a form of rent control that limits rent increases even when a new tenant moves in.

Volatile organic compounds are any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate, which participate in atmospheric photochemical reactions, except those designated by U.S. EPA as having negligible photochemical reactivity.

ACRONYMS

AB	Assembly Bill
ACEEE	American Council for an Energy-Efficient Economy
ACP	alternative compliance pathway
ANSI	American National Standards Institute
ASH	anti-sweat heater
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
BEPS	Building Energy Performance Standards
BERDO	Building Emissions Reporting and Disclosure Ordinance
BPAP	Building Performance Action Plan
BPS	Building Performance Standard
Btu	British thermal unit
BUILD	Building Initiative for Low-Emissions Development
CAB	community accountability board
CALGreen	California Green Building Standards Code, Title 24, Part 11
CARB	California Air Resources Board
CBA	Community benefits agreement
CBO	Community benefit organization
CCR	California Code of Regulations
CEC	California Energy Commission
CH_4	methane
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
LEAP	Communities Local Energy Action Program
C-PACE	commercial property assessed clean energy
CPUC	California Public Utilities Commission
CUAC	California Utility Allowance Calculator
DACAG	Disadvantaged Communities Advisory Group
DCSEU	DC Sustainable Energy Utility
DOEE	Washington, D.C. Department of Energy and Environment
E&A	energy and access
EBD	Equitable Building Decarbonization Program
EEBRP	energy-efficient commercial building retrofit property
EECBP	energy-efficient commercial building property
EM&V	evaluation, monitoring, and verification
ESA	energy service agreement
ESG	environmental, social, and governance
EUI	energy use intensity
FAQs	frequently asked questions
ft^2	square feet
GFA	gross floor area
GHG	greenhouse gas
GHGI	greenhouse gas emissions intensity

GWP	global warming potential
HFC	hydrofluorocarbons
HVAC	heating, ventilation, and air-conditioning
IBank	Infrastructure and Economic Development Bank
IES	Illuminating Engineering Society
IMT	Institute for Market Transformation
IOU	investor-owned utility
IRBD	interest rate buydown
JAEDI	Justice Access Equity Diversity Inclusion
k	thousands
K–12	kindergarten through 12th grade
kBtu	Thousand British thermal unit
kg	kilograms
LBNL	Lawrence Berkeley National Laboratory
lbs	pounds
LLR	loan loss reserve
LMS	Load Management Standards
MBtuh	thousand British thermal unit-hour
N_2O	nitrous oxide
NF_3	nitrogen trifluoride
NLR	National Laboratory of the Rockies
NO_2	nitrogen dioxide
NOx	oxides of nitrogen
NYC	New York City
O_3	ozone
OCAE	Office of Compliance Assistance and Enforcement
PAO+	Office of the Public Advisor, Energy Equity, and Tribal Affairs
PACE	property assessed clean energy
Pb	lead
PFC	perfluorocarbons
PM	particulate matter
PM10	particulate matter less than 10 microns in diameter
PM2.5	fine particulate matter less than 2.5 microns in diameter
PRC	Public Resources Code
RLF	revolving loan fund
RMI	Rocky Mountain Institute
RPS	Renewables Portfolio Standard
RSO	rent stabilization ordinance
SAJE	Strategic Actions for a Just Economy
SB	Senate Bill
SCE	Southern California Edison
SEBP	Supporting Equitable Building Performance
SF_6	sulfur hexafluoride
SJV	San Joaquin Valley
SO_x	oxides of sulfur
SoCalGas	Southern California Gas Company
SOMAH	Solar on Multifamily Affordable Housing Program

tCO_2e	metric tons of carbon dioxide equivalent
TECH	Technology and Equipment for Clean Heating
TREC	Training for Residential Energy Contractors
UCLA	University of California, Los Angeles
ULT	ultra-low temperature
U.S. DOE	United States Department of Energy
U.S. EPA	United States Environmental Protection Agency
USGBC CA	United States Green Building Council California
Washington, D.C.	Washington, District of Columbia
WAP	Weatherization Assistance Program
yr	year

APPENDIX A:
State Goals

In 1974, facing a forecast of rapid energy demand growth from the state's utilities and the 1973 oil crisis, the California Legislature passed the Warren-Alquist Act.[297] The Warren-Alquist Act established the Energy Resources Conservation and Development Commission (now commonly known as the California Energy Commission) and mandated the establishment of Building Energy Efficiency Standards for new buildings. Before these standards were implemented in 1978, there were no standards to regulate building efficiency, comfort, and energy affordability for newly constructed buildings. The standards, found in Title 24, Part 6, of the California Code of Regulations (CCR), are updated periodically and have increased energy efficiency, reduced current and future energy demand, and improved the comfort and affordability of new buildings.

Energy Efficiency and Greenhouse Gas Emissions

California's landmark greenhouse gas (GHG) emission legislation, Assembly Bill 32 (Núñez, Chapter 488, Statutes of 2006), was enacted into law in 2006 and has been updated several times,[298] most recently in 2022 with the California Climate Crisis Act (Assembly Bill 1279, Muratsuchi, Chapter 337, Statutes of 2022).[299] The California Climate Crisis Act declares the state's goal to:

- Achieve net-zero GHG emissions as soon as possible, but no later than 2045.
- Achieve net-negative GHG emissions by 2045 and maintain those levels.

297 California Energy Commission. Accessed June 2026. "50 Years of Energy Leadership" https://www.energy.ca.gov/about/50-years-energy-leadership.

298 Executive Order S-3-05. Accessed September 2024, https://www.library.ca.gov/wp-content/uploads/GovernmentPublications/executive-order-proclamation/5129-5130.pdf.

Assembly Bill 32. Accessed September 2024, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200520060AB32.

Executive Order B-30-15. Accessed September 2024. https://www.library.ca.gov/wp-content/uploads/GovernmentPublications/executive-order-proclamation/39-B-30-15.pdf.

Senate Bill 32. Accessed September 2024, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32.

299 Assembly Bill 1279. Accessed August 2024. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB1279.

- Ensure that by 2045, statewide anthropogenic GHG emissions are reduced to at least 85 percent below 1990 levels.[300]

California has also passed legislation that addresses specific types of GHG emissions. In 2016, the Legislature passed legislation addressing emissions from short-lived climate pollutants[301] including methane, hydrofluorocarbon (HFC) gases, and anthropogenic black carbon. The legislation requires California to reduce HFC emissions to 40 percent below 2013 levels by 2030.[302]

In addition to the state's goals of achieving net-zero GHG emissions, California expanded the focus on energy efficiency in 2009 by requiring the development of a program to "achieve greater energy efficiency in existing residential and nonresidential structures that fall significantly below the current standards."[303] This legislation resulted in the California Energy Commission (CEC) Existing Buildings program and the *Existing Buildings Energy Efficiency Action Plan*, which is now incorporated into the *California Energy Efficiency Action Plan*.[304]

In 2015, the Legislature passed the Clean Energy and Pollution Act of 2015 (Senate Bill 350, De León, Chapter 547, Statutes of 2015), which calls upon the CEC to establish targets to achieve a cumulative doubling of statewide energy efficiency by 2030.[305] In 2018, Assembly Bill 3232 (Friedman, Chapter 323, Statutes of 2018) directed the CEC to assess the potential for GHG reductions in buildings in California.[306] The result of this

---

300 Assembly Bill 1279. Accessed August 2024, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB1279.

Anthropogenic GHG emissions refer to emissions caused by human activity.

Anthropogenic black carbon is commonly known as soot and comes from the incomplete combustion of wood and fossil fuels.

301 *Short-lived climate pollutants* are greenhouse gases and other climate pollutants that, compared to carbon dioxide, remain in the atmosphere for less time before natural processes remove them. Short-lived climate pollutants have stronger warming effects than carbon dioxide and can be harmful to human health.

302 Senate Bill 1383. Accessed August 2024, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383.

303 Assembly Bill 758. Accessed August 2024, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200920100AB758.

304 California Energy Commission. "Energy Efficiency in Existing Buildings," web page, https://www.energy.ca.gov/programs-and-topics/programs/energy-efficiency-existing-buildings.

305 Senate Bill 350. Accessed August 2024, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350.

306 Assembly Bill 3232. Accessed August 2024, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB3232.

legislation was the *California Building Decarbonization Assessment*,[307] published in 2021. This assessment outlined a path to decarbonize existing buildings in California with an emphasis on using efficient electric heat pumps to electrify gas appliances.

In July 2022, Governor Newsom's letter to the California Air Resources Board (CARB) set a "goal of 3 million climate-ready and climate-friendly homes by 2030 and 7 million homes by 2035, which shall be supplemented through the deployment of 6 million heat pumps statewide by 2030. At least 50 percent of the funding to achieve these goals shall be directed toward disadvantaged communities."[308]

Governor Newsom's 2022–2023 budget focused on equitable building decarbonization by investing $962.4 million from the general fund for two years into critical investments. These investments included $622.4 million in the general fund for a statewide low-income direct-install building retrofit program, $300 million for consumer rebates for building upgrades, and $40 million in the general fund to "accelerate the adoption of ultra-low-global warming potential refrigerants."[309]

The Building Energy Savings Act (Senate Bill 48, Becker, Chapter 378, Statutes of 2024) requires the CEC to "develop a strategy for using benchmarking data to track and manage the energy usage and emissions of greenhouse gases of covered buildings." In developing this building performance strategy, the CEC must consult with CARB, the California Public Utilities Commission (CPUC), and the Department of Housing and Community Development. As mentioned above, the state's goals for energy usage and GHG emissions include doubling statewide energy efficiency savings of retail utility customers by 2030[310] and reducing GHG emissions to achieve net-zero emissions by 2045. The goals also include ensuring statewide anthropogenic GHG emissions are reduced to at least 85 percent below 1990 levels by 2045.[311]

Renewables Portfolio Standard

The Legislature established the Renewables Portfolio Standard (RPS) Program in 2002 with an initial requirement that 20 percent of electricity retail sales must be served by

---

307 Kenney, Michael, Nicholas Janusch, Ingrid Neumann, and Mike Jaske. August 2021. *California Building Decarbonization Assessment*. California Energy Commission. Publication Number: CEC-400-2021-006, https://www.energy.ca.gov/publications/2021/california-building-decarbonization-assessment.

308 Newsom, Gavin. July 22, 2022. "Governor's Letter to CARB," https://www.gov.ca.gov/wp-content/uploads/2022/07/07.22.2022-Governors-Letter-to-CARB.pdf.

309 Newsom, Gavin. *Governor's Budget Summary: Climate Change*, pg. 86. State of California, https://ebudget.ca.gov/2022-23/pdf/BudgetSummary/ClimateChange.pdf.

310 Public Resources Code. Section 25310, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25310.&lawCode=PRC.

311 Assembly Bill 1279. Accessed August 2024.

Senate Bill 48. Accessed August 2024.

renewable resources by 2017.[312] In 2015, this requirement was increased to 50 percent of retail electricity sales by 2030. The 2015 legislation also included interim annual RPS targets with three-year compliance periods and required 65 percent of RPS procurement to come from long-term contracts of 10 or more years.[313]

In 2018, the Legislature updated the RPS to increase the 2030 RPS target to 60 percent and require all the state's electricity to come from carbon-free sources by 2045.[314] The RPS goals are essential to decarbonizing the electricity system and buildings through electrification.

Equity

In 2022, Governor Newsom released an executive order requiring state agencies to update strategic plans to "reflect the use of data analysis and inclusive practices" and change the organization's mission, vision, goals, and other policies and practices "to more effectively advance equity."[315] The executive order also requires the agency or department to gather input and engage with "historically disadvantaged and underserved [communities] within the scope of policies or programs administered or implemented by the agency or department, and [to] make the plans publicly available."[316] This guidance encourages state agencies, including the CEC, to consider input from stakeholders representing underresourced communities in developing policy recommendations, with the goal of achieving a more equitable system.

The directives of this executive order align with requirements in recent legislative actions, like the formation of the Disadvantaged Community Advisory Group by Senate Bill 350 (De León, Chapter 567, Statutes of 2018) in 2015. SB 48, the Building Energy Savings Act, requires engagement with "members of under-resourced communities and community-based organizations representing tenant advocacy, equity, and environmental justice concerns of under-resourced communities."[317]

Building Performance and State Goals

All building carbon emissions from commercial and residential buildings need to be removed or offset to reach the state's 2045 economywide carbon neutrality goal set in

---

312 Senate Bill 1078. Accessed August 2024, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200120020SB1078.

313 Senate Bill 350. Accessed August 2024.

314 Senate Bill 100. Accessed August 2024, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100.

315 Executive Order N-16-22. Accessed August 2024, https://www.gov.ca.gov/wp-content/uploads/2022/09/9.13.22-EO-N-16-22-Equity.pdf.

316 Ibid.

317 Senate Bill 48. Section 3. 254012.1(d)(1), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB48.

the California Climate Crisis Act of 2022.[318] Residential and commercial buildings in California account for about 25 percent of total statewide direct and indirect GHG emissions and 10 percent of statewide total direct emissions. The RPS has led the electricity system to be on track to decarbonize by 2045, leaving the task of reaching net-zero emissions in the building sector focused on direct emissions from equipment that burns fossil fuels on site.[319]

Strategic Approaches to Achieving State Goals

The Building Energy Efficiency Standards reduce building carbon emissions, which plays a key role in decarbonizing the built environment. The standards cover new construction and, to a limited extent, alterations to existing buildings. Title 24 CCR Part 6, also known as the California Energy Code, is amended every three years by the CEC[320] "in order to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy, including the energy associated with the use of water, and to manage energy loads to help maintain electrical grid reliability."[321] The 2025 Energy Code includes a penalty for increased refrigerant use and leakage that is "estimated to reduce statewide annual electricity consumption by a net 177,000 Metric tons of CO_2e annually."[322]

While standards development and enforcement processes ensure that new buildings meet a high standard of performance, there is no such program to address the emissions of the existing buildings in California.

The CARB *2022 Scoping Plan for Achieving Carbon Neutrality* analysis recommended actions to achieve the state's objectives, including carbon neutrality, across multiple GHG inventory sectors. These recommendations include, and are aligned with, the Governor's recommendations for building end use from his 2022 letter to CARB.[323]

---

318 Assembly Bill 1279. Accessed August 2024.

319 Kenney, Michael, Nicholas Janusch, Ingrid Neumann, and Mike Jaske. August 2021. *California Building Decarbonization Assessment*. California Energy Commission. Publication Number: CEC-400-2021-006, https://www.energy.ca.gov/publications/2021/california-building-decarbonization-assessment.

320 Effective October 1, 2025, to June 1, 2031, new building standards affecting residential units cannot be considered, approved, or adopted unless certain conditions are met. Assembly Bill 130, Chapter 22, Statutes of 2025. https://legiscan.com/CA/text/AB130/id/3260236.

321 Public Resources Code Section 25402, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25402.&lawCode=PRC.

322 NORESCO, California Energy Commission Building Standards Branch, and California Energy Commission Chief Counsel's Office. March 2024. *Initial Study and Proposed Negative Declaration for the 2025 Building Energy Efficiency Standards*. California Energy Commission. Docket Number: 24-BTSD-01, TN# 255315-7, https://efiling.energy.ca.gov/GetDocument.aspx?tn=255315-7&DocumentContentId=91001.

323 California Air Resources Board. 2022. *Final Environmental Analysis for the 2022 Scoping Plan for Achieving Carbon Neutrality*, pg. 17, https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp-appendix-b-final-environmental-analysis.pdf.

CARB recommends that 3 million new and existing homes be electric-ready and electric-friendly by 2030 and 7 million new and existing homes be electric-ready and electric-friendly by 2035. These recommendations support the installation of 6 million heat pumps statewide by 2030. CARB recommends that 80 percent of appliance sales for existing homes are electric by 2030, 100 percent of appliance sales are electric by 2034, and appliances are replaced at the end of life with efficient electrical appliances. CARB also recommends that 80 percent of appliance sales for existing commercial buildings are electric by 2030, and 100 percent of appliance sales are electric by 2045.[324]

Technological Approaches to Achieving These Goals

Building electrification supports decarbonization by shifting energy use away from gas combustion. The CEC *2021 Decarbonization Report* details numerous building GHG emission reduction strategies in addition to building electrification, including electricity generation system decarbonization, energy efficiency, refrigerant leakage reduction, distributed energy generation, gas system decarbonization, and load flexibility.[325]

Energy efficiency is the "first action and lowest-cost strategy" for building decarbonization. Building envelope improvements reduce energy waste and increase comfort because "more than 50% of the existing housing stock was built before state energy codes" were implemented in 1978, and most buildings "lack proper insulation and infiltration air gap savings."[326] Programs such as whole-home retrofits and targeted small commercial incentives can improve building envelopes and energy efficiency. These strategies reduce building electricity and gas demand, limit heat gain or loss, and allow efficient precooling and preheating to reduce peak loads.

Reaching HFC leakage reduction goals is also vital to achieving state goals.[327] The research, development, and implementation of low- to zero-global warming potential (GWP) refrigerants is essential to reducing GHG emissions from refrigerant sources, especially as demand for refrigerants increases with the installation of electric heat pumps and other refrigeration systems. Implementation of low- to zero-GWP refrigerants will require replacement or conversion of existing systems to the lowest practical GWP technologies.[328]

---

324 California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*,https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf.

325 California Energy Commission. 2021. *California Building Decarbonization Assessment*, pg. 4–6. Publication Number: CEC-400-2021-006.

326 California Energy Commission. 2021. *California Building Decarbonization Assessment*, pg. 90–91. Publication Number: CEC-400-2021-006.

327 California Energy Commission. 2021. *California Building Decarbonization Assessment*, pg. 10. Publication Number: CEC-400-2021-006.

328 California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*, pg. 237.

Distributed energy generation such as rooftop solar electric, solar thermal, thermal batteries, and electricity storage batteries are an additional path to decarbonizing buildings. These strategies support load flexibility, ease strain on the electrical grid, increase the resiliency of buildings to power outages, and potentially reduce customers' electricity bills. These technologies provide clean electricity and energy storage, which reduce the GHG emissions of a building while the electricity generation system has not yet reached net-zero carbon.[329]

Load flexibility allows building loads to respond to changing emissions, electricity rates, or electric grid operator signals. This strategy requires the "presence of automated control technologies," such as thermostats, home battery systems, and water heaters that can react to incoming utility signals. Load flexibility can reduce GHG emissions by reducing loads during peak times, preventing the burning of fossil gas to meet increased demand, or shifting loads to times of high renewable generation.[330]

The gas system can also be decarbonized using biomethane, though costs are an issue. The CPUC is implementing Senate Bill 1440 (Hueso, Chapter 739, Statutes of 2018)[331] and is establishing biomethane targets for the gas system.

329 California Energy Commission. 2021. *California Building Decarbonization Assessment*, pg. 103–104. Publication Number: CEC-400-2021-006.

330 Ibid., pg. 106–107.

331 Senate Bill 1440. https://leginfo.legislature.ca.gov/faces/billStatusClient.xhtml?bill_id=201720180SB1440.

APPENDIX B:
Equitable Stakeholder Analysis and Engagement

Senate Bill 48 (Becker, Chapter 378, Statutes of 2024) requires an extensive stakeholder analysis and engagement process (stakeholder process) for developing the California Building Energy Performance Strategy report.[332] The stakeholder process is based on established stakeholder analysis and engagement tools, lessons learned from other state and local engagement processes, and input from the California Energy Commission (CEC) Office of the Public Advisor. This stakeholder process centers energy equity and can potentially be used for stakeholder engagement by other project teams.

The objectives of the stakeholder analysis and engagement process were to:

- Identify and describe stakeholder organizations and individuals.
- Analyze stakeholders' needs and constraints, to ensure effective participation in the stakeholder process.
- Develop appropriate outreach and engagement strategies for the stakeholder process with input from stakeholders.
- Engage effectively with each stakeholder with respect to their needs and meaningfully incorporate their input into the report.
- Ensure staff time is used efficiently.
- Track stakeholder participation and support throughout the development of the stakeholder process and California Building Energy Performance Strategy report.

On October 31, 2024, staff presented the stakeholder process for input and feedback to *community-based organizations* (CBOs)[333] that are part of the California Supporting Equitable Building Performance (SEBP) cohort. On February 21, 2025, staff presented the stakeholder process to the Disadvantaged Communities Advisory Group (DACAG). CEC staff received input and positive feedback from both the SEBP cohort and the DACAG.

---

332 Senate Bill 48, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB48.

333 *Community-based organizations* are nonprofit organizations that represent place-based communities or significant segments of them and provide educational, social, or related services to individuals in those communities.

California Air Resources Board. CARB Community Engagement Model, December 2024, https://ww2.arb.ca.gov/community-engagement-model.

CEC staff reported to CEC management and leadership through regular weekly project updates, efficiency lead management meetings, and other channels.

Equity Requirements and Guidance

This section describes the equity requirements and guidance the CEC is subject to, in developing this report. The requirements and guidance include the CEC tribal engagement and SB 48 requirements, as well as guidance from the CEC Justice, Access, Equity, Diversity, and Inclusion (JAEDI) Framework and the DACAG Equity Framework.

Requirements From SB 48

SB 48 requires the CEC to contract with organizations that have experience representing underresourced communities, low-income residents, and small commercial tenants to ensure equitable stakeholder participation during strategy development. The CEC used existing contract funds to collaborate with CBOs to identify potential equity metrics that could be used to measure how the adopted strategy impacts "underresourced communities, low-income residential tenants, and small commercial tenants" and "assess whether the strategy is achieving just and equitable outcomes."[334] Appendix I details these potential equity metrics.

SB 48 also requires the CEC to consider feedback and recommendations from each contracted organization, and if any of the recommendations are not adopted in the final strategy, to provide an explanation as well as an alternative method of addressing the issues raised in those recommendations. Contracted CBO comments and the CEC's response to those comments are detailed in Appendix J.

SB 48 requires the CEC, along with other agencies, to develop a strategy for using benchmarking data to achieve state goals for energy and greenhouse gas (GHG) emissions from existing buildings. Per Public Resources Code (PRC) Section 25402.16, subdivision (d), the CEC shall consider input from affected stakeholders, including:

1. Members of underresourced communities and CBOs representing tenant advocacy, equity, and environmental justice concerns of underresourced communities.
2. Representatives of local city or county government.

---

334 Senate Bill 48. Accessed August 2024, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB48.

A *small commercial tenant* has the same definition as a *qualified commercial tenant*, as defined in Public Resources Code Section 24502.10., which is a tenant of a commercial building that meets the following requirements:

1. "The tenant is a *microenterprise*, a restaurant with fewer than 10 employees, or a *nonprofit organization* with fewer than 20 employees."
2. The tenant has provided annual verification to their landlord that they are a qualified commercial tenant, unless the tenancy is for a period of one month or less.

3. Owners or operators of affordable housing.
4. Groups representing low-income residential and small commercial tenants, including organizations that provide legal services to those tenants.
5. Providers of energy efficiency, renewable energy, and building decarbonization equipment and services.
6. Labor unions that represent workers who implement building upgrades related to, or who manage or service the energy infrastructure of, covered buildings.
7. Technical building design professionals.
8. Facility operations professionals.
9. Multiunit residential building owners.
10. Nonresidential building owners.
11. Energy utilities.

CEC staff also engaged with national agencies, national labs, and state and local agencies from jurisdictions outside California that are researching or implementing building performance strategies.

Per PRC Section 25402.16, subdivision (c), the CEC was required to do the following in developing the strategy:

- "Avoid increasing utility and rental cost burdens for, or causing evictions, harassment, or displacement of, tenants of covered buildings."
- Consider "requirements to prohibit a renovation to a covered building that is required by the strategy from being a basis for terminating a tenancy and to ensure that any temporary relocation costs resulting from the renovation is paid for by the covered building owner."
- Consider "requirements to prohibit an increase in rent for a tenant as a result of a renovation to a covered building that is required by the strategy or to limit the increase in rent to the long-term energy savings to a tenant resulting from the renovation."
- "Encourage equitable access to jobs and other economic opportunities that may result from increased investment in covered building upgrades."
- "Prioritize efficiency and decarbonization measures that will benefit tenants, including measures that reduce tenants' energy costs and remove indoor environmental hazards."

Per PRC Section 25402.16, subdivision (e), the CEC was required to collect input from specific affected stakeholders, including some groups that have historically lacked the resources to engage in policy development. Those groups include:

- Members of underresourced communities and CBOs that represent tenant advocacy, equity, and environmental justice concerns of underresourced communities.
- Groups representing low-income residential and small commercial tenants, including organizations that provide legal services to those tenants.

California Natural Resources Agency and CEC Requirements for Tribal Engagement

The Governor's Executive Order B-10-11 and the California Natural Resources Agency Tribal Consultation Policy require state agencies to consult with tribes when engaging in legislation, regulation, rules, policy, programs, projects, plans, property decisions, and activities that may affect tribes. The CEC's tribal policy is that consultations with tribes will occur "early and often and be meaningful, respectful, and inclusive." The Tribal Consultation Policy provides guidance to CEC staff on how to engage with tribes during proceedings.[335]

California Energy Commission's Justice, Access, Equity, Diversity and Inclusion Framework

The CEC JAEDI Framework outlines the CEC's commitment to embedding energy equity and environmental justice into California's energy future. The JAEDI Framework commits the CEC to "prioritize efforts to increase resources, benefits, and opportunities to, while measurably reversing existing disparities and inequities for California Native American tribes and justice communities."[336]

The JAEDI Framework defines "energy equity" as follows:

> Energy Equity recognizes the historical and cumulative burdens of the energy system borne by Tribes and Justice Communities and by Black, Brown, and Native people in particular. To eliminate these disparities, energy equity centers the voices of Tribes and Justice Communities in energy planning and decision-making and ensures the fair distribution of clean energy benefits and ownership.

---

335 California Energy Commission. 2024. *Tribal Consultation Policy.* CEC-700-2022-001-REV, https://www.energy.ca.gov/sites/default/files/2022-02/CEC-700-2022-001.pdf.

336 Tribes are differentiated as the California Energy Commission recognizes their distinct status as sovereign nations instead of including them in the "community" category. Please see the Agency Requirements for Tribal Engagement section for more information.

California Energy Commission. February 2023. *Justice Access Equity Diversity Inclusion (JAEDI) Framework*. Publication Number: CEC-100-2022-001-CMF-APA, https://www.energy.ca.gov/sites/default/files/2023-11/CEC-JAEDI-Framework_ada.pdf.

The JAEDI Framework highlights four key dimensions of energy equity:

- Recognitional equity: To identify the communities that have been harmed by the energy system and deserve a larger share of benefits and investments in the future.
- Procedural equity: To implement inclusive, accessible, authentic engagement and representation in policies, programs, projects, and operations. Decisions should be guided by those who will be affected by the decisions while recognizing historical, cultural, and institutional dynamics.
- Distributional equity: To distribute resources strategically to those communities with the highest need first and at a level that will adequately address needs.
- Restorative equity: To remedy past harms from the energy system and prevent future harms from occurring.[337]

In developing the building performance strategy required by SB 48, CEC staff has prioritized procedural equity by working with justice communities with the goal of implementing inclusive, accessible, authentic engagement and representation.

California Disadvantaged Communities Advisory Group Equity Framework

Senate Bill 350 (De León, Chapter 567, Statutes of 2018) called for the creation of a statewide DACAG that consists of members who are from or represent disadvantaged communities. The DACAG advises the CEC and California Public Utilities Commission (CPUC) on the "development, implementation, and impacts of proposed programs related to SB 350 and other relevant clean energy programs and policies."[338] The goal of the DACAG Equity Framework is "to ensure that equity was placed front-and-center when considering any climate investment or intervention administered by the CEC or CPUC."

Ensuring Equity During the Development of This Report

SB 48 requires the CEC to "ensure equitable participation and input from stakeholders representing under-resourced communities, low-income residential tenants, and small commercial tenants in the development of" the California Building Performance Strategy

337 California Energy Commission. February 2023. *Justice Access Equity Diversity Inclusion (JAEDI) Framework*. Publication Number: CEC-100-2022-001-CMF-APA.

338 Disadvantaged Communities Advisory Group. September 12, 2024. *2024 DACAG Equity Framework Update*. California Energy Commission.

Report.[339] Energy-inefficient buildings and inefficient *energy services*[340] disproportionately impact low income households and businesses because they tend to spend a larger percentage of annual income on energy.[341] This section discusses how the CEC engaged with interested members of the public to meet the requirements and guidance outlined in the DACAG Equity Framework.

Tribal Engagement

CEC staff engaged with California Native American tribes through the CEC's tribal consultation process. The Office of the Public Advisor, Energy Equity and Tribal Affairs (PAO+) at the CEC promotes engagement with tribes. Through the Tribal Newsletter developed by PAO+, the CEC informed and will continue to update tribes about this report. Tribes are invited to contact the CEC tribal liaison to provide input or engaging in direct consultation. The CEC also invited tribes to public workshops.[342]

Buildings within Indian country, as defined by 18 United States Code Section 1151, are outside the scope of the requirements of SB 48.[343] Some tribal buildings may not be exempt due to gaming compacts or other waivers.

Stakeholder Analysis and Engagement Process

The CEC designed the stakeholder analysis and engagement process to meet the equity and engagement requirements of SB 48. The stakeholder process uses the DACAG and JAEDI Equity Frameworks and state guidance. The stakeholder process also uses input from justice communities and recent engagement processes that received positive feedback from stakeholders, such as the CEC Equitable Building Decarbonization (EBD) Program[344] and CPUC San Joaquin Valley Affordable Energy Proceeding.[345] The CEC will continue to consult with the DACAG to obtain its input on the proposed process.

---

339 Senate Bill 48. Accessed August 2024.

340 *Energy services* are tasks performed to benefit people using energy. These tasks include, but are not limited to, space and water heating, cooking food, transportation, and plug loads. Energy services could also include utility services that rely on energy such as sewer, water, and other municipal services.

341 American Council for an Energy-Efficient Economy. September 2024. *Data Update: City Energy Burdens*, https://www.aceee.org/policy-brief/2024/09/data-update-city-energy-burdens

342 California Energy Commission. 2024. *Tribal Consultation Policy.* CEC-700-2022-001-REV.

343 Public Resources Code Section 25402.16(a)(2) defines a covered building as any building subject to benchmarking regulations, which does not include most buildings in Indian country.

344 California Energy Commission. Accessed April 2025. "Equitable Building Decarbonization Program," web page, https://www.energy.ca.gov/programs-and-topics/programs/equitable-building-decarbonization-program.

345 California Public Utilities Commission. Accessed April 2025. "San Joaquin Valley Affordable Energy Proceeding," web page, https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/identifying-disadvantaged-communitie.

The CEC must work to build trust with interested members of the public, especially California Native American tribes, justice communities, and stakeholders heavily impacted by energy policy with limited resources to engage in policy development to ensure a successful stakeholder process.

Initial feedback from CBOs' part of the SEBP cohort emphasized the importance of building trust with CEC staff developing building performance strategies and providing transparency in decision-making. These participants also emphasized the importance of paying stakeholders for their time, removing barriers to participation, and coordinating with relevant state entities to reduce the number of meetings to avoid "community engagement fatigue."[346]

Identify Stakeholders

The first step of the stakeholder process was to collect contact information and location to ensure complete statewide coverage. CEC staff and the contracted organization performed gap analyses to confirm representative engagement based on regional focus and stakeholder type.

Interest, Barriers, and Funding

The second step of the stakeholder process was to identify stakeholder interests, barriers, opportunities and strengths, and funding sources. This stage helped CEC staff understand the motivations of each stakeholder, as well as supported the stakeholder analysis by identifying resources available to stakeholders. These data allow CEC staff to look for common stakeholder interests and barriers to determine appropriate engagement events and strategies. For this analysis component, interests, barriers, and funding sources are defined as follows:

- Interests: The project aspects and policy areas most important to stakeholders, and what stakeholders would like to achieve through their engagement in policy development.
- Barriers: Factors that hinder stakeholder participation and the inclusion of stakeholder interests in policy development (for example, internal or external factors, social or political factors, technology, and financial factors).
- Opportunities: Factors or resources that support stakeholder participation and the inclusion of stakeholder interests in policy development (for example, dedicated government coordination staff, connections to decision-makers, and technical expertise).
- Funding: Sources of stakeholder funding and the estimate of resources stakeholders are willing and able to dedicate to the policy development process. This information will help CEC staff understand the funding influences

346 See Chapter 1 for discussion of these issues.

on those interested in building performance standard policy and identify if one stakeholder has more influence over policy development.

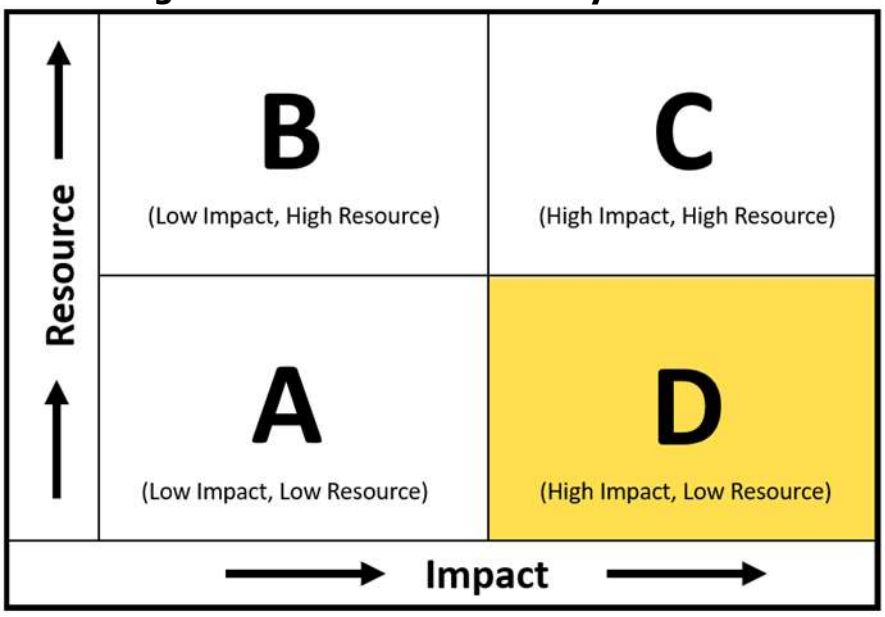
Analysis of Stakeholder Groups

The stakeholder process tailors outreach and engagement to the needs of each stakeholder group to achieve equitable policy and program outcomes. Stakeholders were first sorted along two dimensions:

- Impact: the level of impact a policy under consideration could have on the health, financial well-being, safety, or living conditions of a stakeholder and those it represents
- Resource: the level of resources currently and historically available to stakeholders, or the communities they represent, to engage in policy development

The matrix in Figure B-1 shows the categories stakeholders are sorted into based on the dimensions described. Each stakeholder category includes a suite of proposed outreach and engagement processes and activities. In addition, CEC staff may publish surveys targeted at specific stakeholders or all stakeholders.

Figure B-1: Stakeholder Analysis Matrix



Source: CEC staff

The CEC and consultants conducted gap analyses based on the stakeholder categories outlined in SB 48 and a stakeholder's region of operation to ensure there was broad

representation from impacted communities, companies, organizations, and local and regional governments across the state.

Category A — Low Impact, Low Resource

Category A includes stakeholders that have low levels of resources and would not be affected much by the policies. These stakeholders were able to participate in the stakeholder process by subscribing to the CEC Building Performance Standards subscription list, participating in public workshops, and submitting public comments in a proceeding docket. Informational materials were also made available to all stakeholders as they were developed.

Examples of Category A stakeholders include small companies and individuals that operate in other states or jurisdictions that would not be directly affected by a building performance policy and provide energy efficiency, renewable energy, and decarbonization equipment and services. Other examples include subject matter experts or advocates that would not be directly affected by a building performance policy because they operate outside California or do not represent low-income or justice communities.

Category B — Low Impact, High Resource

Category B includes stakeholders that have many resources and would not be affected much by the policies. Examples of Category B stakeholders include regional or national energy and environmental advocacy groups with significant resources to affect policy but who are less affected by a potential building performance policy, such as the Natural Resources Defense Council, the Building Decarbonization Coalition, and the Building Electrification Institute.

Category C — High Impact, High Resource

Category C includes stakeholders that have many resources and would be highly affected by a potential building performance policy. Examples of Category C stakeholders include private landlords that operate many properties in California and have dedicated government affairs staff.

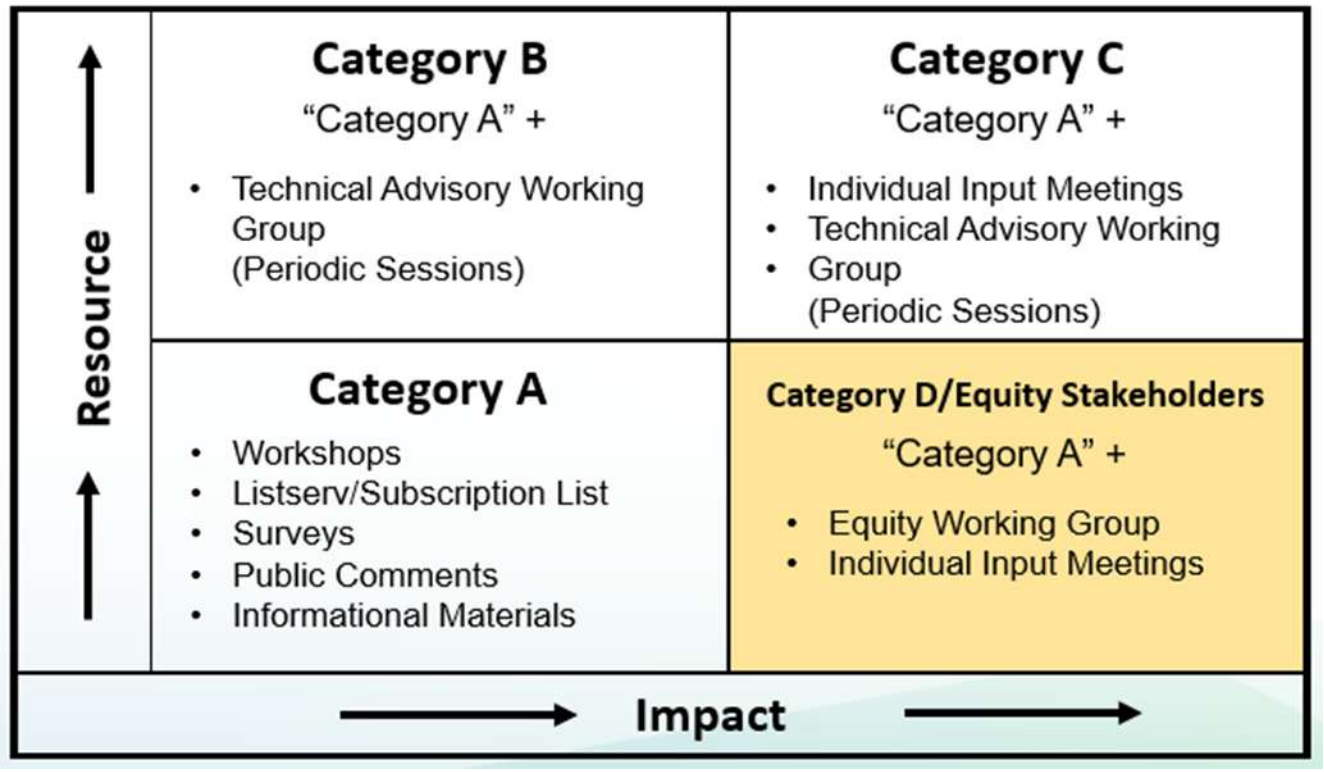
Category D — High Impact, Low Resource

Category D, or "equity stakeholders," includes stakeholders that have few resources and would be highly affected by policies. This category also includes organizations that represent those low-resource stakeholders, even if the organization itself has many resources.

These stakeholders are those that staff identifies as significantly affected by proposed policies but that have or historically have had limited resources to engage in policy development or influence public policy. These stakeholders are identified as needing more staff time and support to ensure their perspectives are included in the stakeholder process. Examples of equity stakeholders include grassroots, local, or statewide environmental justice or tenant rights organizations that represent those who will be

highly affected by building performance policies, for instance, a CBO focused on representing multifamily housing tenants in justice communities. Figure B-2 summarizes initial stakeholder outreach and engagement activities based on the stakeholder analysis process.

Figure B-2: Stakeholder Engagement Opportunities



Source: CEC staff

Engagement

CEC staff developed engagement plans based on the participants' capacity to engage and needs. Engagement plan development included working with other divisions, agencies, and local governments to evaluate what research has already been completed that could guide the engagement process. CEC staff also collaborated with other entities on engagement events to reduce the number of events equity stakeholders are asked to participate in, which helps reduce meeting fatigue. CEC staff worked with stakeholders to ensure stakeholder input was incorporated into the report.

All stakeholders were able to participate in the stakeholder process by subscribing to the CEC's Building Performance Standards subscription list, participating in public workshops, and submitting public comments in a proceeding docket. The docket will be open for public comment throughout the proceeding. However, there was a specific comment period after the CEC published the draft report. The CEC will also continue to publish informational materials for stakeholders. In addition, staff may publish surveys targeted at specific stakeholders or all stakeholders. Opportunities for stakeholder engagement are described in Table B-1.

Table B-1: Stakeholder Engagement Opportunities

Type of Engagement	Stakeholder Categories	Description of Engagement
Public Workshops	All stakeholder categories	The CEC held the SB 48 Kickoff Lead Commissioner workshop in July 2024 and a second staff public workshop in July 2026 following the release of the draft report. The purpose of these workshops was to present information to the public and solicit broad public comments on the overall scope and content of this report.
Individual Input Meetings	Categories C and D	CEC staff was available for individual input meetings with highly impacted stakeholders. Highly impacted stakeholders that were unable to attend working group meetings or workshops to provide input could schedule meetings at times convenient for them.
Technical Advisory Working Group	Categories B and C	Category B and C stakeholders were also able to participate in technical advisory working group meetings for stakeholders who can provide input on building performance methods, metrics, and other technical topics. These working groups let stakeholders identify technical topics and discuss potential solutions they wish to explore with the CEC and other stakeholders. CEC staff also used these technical advisory working groups to get stakeholder feedback on potential policy recommendations.
Equity Working Group	Category D	CEC staff engaged with Category D stakeholders through small working group meetings that included CBOs, equity groups, and environmental justice organizations. During these working groups, staff presented information relevant to equity stakeholders to make the most efficient use of their time.

Source: CEC staff

Spectrum of Community Engagement to Ownership

For this stakeholder process, the CEC used the Spectrum of Community Engagement to Ownership (spectrum) as a design, facilitation, and evaluation tool to meet equity stakeholders at their respective levels of technical knowledge, understanding, and experience of the policy-making process.

The spectrum is a collaborative governance tool developed by Facilitating Power and identified by the Institute for Market Transformation,[17] the National Association of State Energy Officials,[18] the Urban Sustainability Directors Network,[19] and the SEBP cohort as a tool to encourage community participation in making policy. This tool is partially based upon the International Association for Public Participation Spectrum for Public Participation,[347] which the DACAG highlights as a tool to help identify various levels of potential engagement and ensure clarity regarding the types of engagement requested from communities. The CEC used this tool to evaluate whether the relationship between the CEC and CBOs meets the expectations of the parties involved.

The spectrum in Figure B-3 is designed to:

- Acknowledge the status quo marginalization of California Native American tribes and justice communities.
- Establish a vision of creating policy and regulation through inclusion, racial justice, and community ownership.
- Articulate a developmental process for empowering local communities by investing in their capacity to participate and to break down systemic barriers to participation.
- Assess community participation efforts and progress toward participation goals.[24]

347 González, Rosa. Updated March 2026. *The Spectrum of Community Engagement to Ownership*, pg. 2. Facilitating Power, https://www.facilitatingpower.com/spectrum_of_community_engagement_to_ownership.

Figure B-3: The Spectrum of Community Engagement to Ownership



The Spectrum of Community Engagement to Ownership						
Level of Engagement	**0- Ignore**	**1- Inform**	**2- Consult**	**3- Involve**	**4- Collaborate**	**5- Defer To**
Impact	**Marginalization**	**Preparation or Placation**	**Limited Voice or Tokenization**	**Voice**	**Delegated Power**	**Community Ownership**
Community Engagement Goals	Deny access to decision-making processes	Provide the community with relevant information	Gather input from the community	Ensure community needs and assets are integrated into process & inform planning	Ensure community capacity to play a leadership role in decision-making and the implementation of decisions.	Foster democratic participation through community-driven decision-making; Bridge divide between community & governance
Message to Community	Your voice, needs, & interests do not matter	We will keep you informed	We care what you think	You are making us think, and therefore act, differently about the issue	Your leadership and expertise are critical to how we address the issue	It's time to unlock collective power and capacity for transformative solutions

Source: Facilitating Power. *The Spectrum of Community Engagement to Ownership.*

The spectrum consists of six levels of engagement that each represent the relationship between policy developers and a community. "Leaders across multiple sectors, such as community-based organizations, local governments, philanthropic partners, and facilitative leaders trusted by communities, can use this spectrum to assess and revolutionize community engagement efforts to advance community-driven solutions."[348] The intent is for public agency staff and participants in the public policy development process to have common language to communicate as they collaborate.

As the relationship between the communities affected by public policies and policy developers moves along the spectrum, the process becomes more equitable, and communities increase their capacity for participation. As capacity increases, communities and policy developers become able to collaborate more effectively, and communities can take more ownership over policy development.

The community engagement goals of each level of the spectrum are:

0. Ignore: Activities in this level include private meetings that are not open to the public, misinformation, and voter suppression. Ignoring the community results in marginalization, or the reduction of communities to a powerless position in policy development. An organization interacting with communities at this level sends a message to the community, "Your voice, needs, and interests do not matter."
1. Inform: Activities at this level include fact sheets, open houses, presentations, billboards, and videos. Engaging with communities to inform can soothe community dissatisfaction and educate them so they are better prepared for more participation.

348 Ibid.

2. Consult: Activities at this level include public comment, focus groups, community forums, and surveys. Policy developers that consult communities intend to gather input from the community and send the message, "We care what you think." However, if engagement does not progress beyond this level, it limits community voice and can result in community tokenization (that is, including communities in decision-making processes without incorporating their input).
3. Involve: Activities at this level include community organizing and advocacy, interactive workshops, polling, and community forums. The goal of involving communities is to ensure the needs of the community are considered and the process incorporates community expertise. Involving the community sends the message, "You are making us think, and act, differently about the issue." Engaging at this level results in community influence over the policy development process.
4. Collaborate: Activities at this level include developing memoranda of understanding with CBOs, forming citizen advisory committees, and conducting collaborative data analyses. Policy makers that collaborate with communities in the policy development process delegate power to those communities and ensure they have the capacity to lead. This delegation sends the message, "Your leadership and expertise are critical to how we address the issue."
5. Defer to: Activities at this level include community-driven planning and governance, consensus building, participatory budgeting, and research in collaboration with the communities being studied. The final stage on the spectrum represents the highest level of participation, time commitment, and resource requirement from the community. This level means the community owns the decision-making processes. The goal is to encourage equity through direct community participation and community-driven decision-making. Engaging with communities at this level expresses that policy developers wish to work with communities to develop solutions to difficult processes or policy questions that are firmly based on community needs and are driven by the community.

The CEC's goal was to reach Level 3 in the spectrum, to "Involve," all equity stakeholders who want to and have the capacity to engage in the policy development process at Level 3 on the Spectrum. Accordingly, the CEC developed engagement strategies, outlined in Table B-1, to align with this goal. In addition, the CEC used the spectrum to determine where equity stakeholders would like to be in the spectrum in the future and what resources they need to get there. The CEC incorporated this input into the California Building Energy Performance Strategy report to help assess the most

appropriate future level of engagement, driving more equitable engagement processes in the future potentially.

By building transparency into the stakeholder process and collecting regular feedback from participants, the CEC hopes to build on the successful outreach process implemented in the EBD Program and continue to foster trust and longstanding relationships with stakeholders.

Contract With Advisory Organization

The CEC contracted with ADM Associates to develop this report. ADM conducted tasks such as:

- Assessing if the CEC engages the stakeholders required by law and provides recommendations to close gaps.
- Developing field studies to provide examples of how sample buildings within California could comply with building performance pathways that achieve California's goal of zero-carbon emissions by 2045.
- Subcontracting with organizations with experience representing underresourced communities, low-income residential tenants, and small commercial tenants. The subcontracted organizations advised the CEC on the potential building performance strategy and recommended metrics that the CEC could use to measure how the strategy impacts these communities.

APPENDIX C:
Programs That Provide Financial Incentives for Community Engagement

The California Public Utilities Commission (CPUC) Solar on Multifamily Affordable Housing (SOMAH) Program "provides financial incentives for installing solar panel systems that benefit both low-income tenants and property owners throughout California."[349] The SOMAH Advisory Council "brings together key stakeholders to support [SOMAH] program development, oversee progress, and provide guidance to maximize benefits for low-income housing tenants and disadvantaged communities."[350] SOMAH Advisory Council members serve two-year terms, are selected through a competitive application process, and "represent environmental justice, affordable housing, tenants, labor and workforce development, and industries related to SOMAH implementation, such as solar photovoltaics and energy efficiency."[351]

To support development of Clean Space and Water Heater Standards, the California Air Resources Board (CARB) held a solicitation for individuals and organizations ("public experts") who "possess expertise in high-priority topic areas and across California regions to help inform the staff analysis and implementation planning for potential zero-emission space and water heater standards." The scopes of work are organized into three overlapping tracks:

- "Staff Analysis and Engagement Support"
- "Listening Session Cohosting"
- "Implementation Planning Support"[352]

Applicants must be affiliated with a community-based organization (CBO), represent themselves as an individual with income under 80 percent of their county's area median income, or otherwise demonstrate their need for financial support to participate. A total of $50,000 was available for fixed scopes of work with up to $4,950 per track. Public experts could apply for compensation for their participation in more than one track.

Compensated public experts entered into a subcontract with the Sacramento State Consensus and Collaboration Program at the College of Continuing Education, which has an interagency agreement with CARB to support public engagement related to standards development and implementation. The review panel for applicants consisted of Sacramento State staff, CARB

349 Solar on Multifamily Affordable Housing. Accessed April 2025. "CalSOMAH," web page, https://calsomah.org.

350 Solar on Multifamily Affordable Housing. Accessed April 2025. "Advisory Council," web page, https://calsomah.org/advisory-council.

351 Solar on Multifamily Affordable Housing. Accessed April 2025. "SOMAH Advisory Council Bylaws," web page, https://calsomah.org/advisory-council.

352 California Air Resources Board. December 2023. *Outreach and Engagement Strategy and Plan for the Development of Zero-Emission Appliance Standards.* https://ww2.arb.ca.gov/sites/default/files/2023-12/ZEAS%20Outreach%20and%20Engagement%20Strategy%20and%20Plan_2023.pdf.

staff working on the Zero-Emission Space and Water Heater Standards program, and CARB staff with public engagement expertise. Most public experts applied without requesting funding.

The California Energy Commission (CEC) Equitable Building Decarbonization (EBD) Statewide Direct Install Program provides decarbonization upgrades for low-income households in under resourced communities and funds CBO engagement through contracts with regional administrators.[353] Assembly Bill 209 (Committee on Budget, Chapter 251, Statutes of 2022), which established the EBD program, requires the CEC to "prioritize applications from entities that employ workers from local communities and entities that include at least one CBO." This requirement is meant to ensure "culturally-appropriate outreach, education, and support to households participating in the direct install program."[354]

CBOs, as subcontractors of the regional administrators, will be compensated for conducting outreach and engagement in local communities. In addition, funding from the regional administrator budgets will also be used to pay members of an advisory group that require resources to participate.[355]

In the Budget Act of 2022 (Assembly Bill 179, Ting, Chapter 249, Statutes of 2022), the Legislature appropriated $30 million to the Equity and Access (E&A) Grant Program for capacity grants to California Native American tribes and CBOs for participation in CPUC decision-making processes.[356] The CPUC has three mechanisms for providing compensation through the E&A Grant Program described in Table C-1. Each grant account focuses on different aspects of technical assistance and capacity building.

353 California Energy Commission. Accessed April 2025. "Equitable Building Decarbonization Program," web page, https://www.energy.ca.gov/programs-and-topics/programs/equitable-building-decarbonization-program.

354 Assembly Bill 209. Accessed April 2025, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB209.

355 California Energy Commission. Equitable Building Decarbonization Program Guidelines, unpublished.

356 California Public Utilities Commission. April 3, 2025. Resolution M-4875, pg. 2, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M561/K311/561311425.pdf.

Table C-1: Equity and Access Grant Program Funding

Grant Account Name	Scope
Public Participation Grant	• Remove financial and public participation barriers • Support engagement such as working groups, panels, or focus groups
Equity, Engagement, and Education Grant	• Enhance the capacity of tribal organizations, CBOs, and community groups to understand and engage with the CPUC and its decision-making processes • Fund projects focused on educating consumers or conducting outreach within underserved communities
Clean Energy Access Grant	• Award grants to tribal organizations and CBOs • Address access or education about the Microgrid Incentive Program, Self-Generation Incentive Program, and Technology and Equipment for Clean Heating Initiative

Source: CPUC Now Accepting Applications for New $30 Million Equity and Access Grant Program

The CPUC awarded about $1.6 million in grants under the E&A Grant program initially.[357] In June 2024, the 2024–25 State Budget eliminated the E&A Grant program funding, and the remaining balance of program funds were returned to the state.

In September 2024, the Legislature allocated $2 million to the E&A program "for community-based organizations to provide education and outreach about building decarbonization, healthy homes, and related health impacts," in the Aliso Canyon Disaster Area and the San Fernando Valley in Los Angeles County mainly.[358] Table C-2 highlights the funding program, source, description, and amount allocated for the different compensation mechanisms discussed above. Some of these mechanisms apply to specific programs, whereas others are agencywide.

Table C-2: Stakeholder Compensation Mechanisms

Funding Program	Funding Source	Description	Funding Amount
CPUC-Equity and Access Grant Program[359]	AB 179, Budget Act of 2022 (General Fund)	1) Public Participation Grant 2) Equity Engagement & Education Grant 3) Clean Energy Access Grant	2022: $30 million, funding reduced in 2024.

357 California Public Utilities Commission. April 3, 2025. Resolution M-4875, pg. 2.

358 California Public Utilities Commission. April 3, 2025. Resolution M-4875, pg. 3.

359 California Public Utilities Commission. April 3, 2025. Resolution M-4875, pg. 2.

Funding Program	Funding Source	Description	Funding Amount
CPUC — SOMAH Program Advisory Council[360]	Investor-owned utilities cap-and-invest auction revenue	Key stakeholders contribute to program development and implementation, monitor program progress, and provide advice to ensure the program maximizes benefits to low-income housing tenants and disadvantaged communities.	$500 per quarterly meeting per stakeholder ($30,000 for 15 members)
CARB — Public Experts to Support Development of Clean Space and Water Heater Standards[361]	CARB Sustainable Transportation and Communities Division Contract Budget Public experts funded via subcontracts with Sacramento State Consensus and Collaboration Program	Solicited individuals and organizations (public experts) possessing expertise in high-priority topic areas and across California regions to help inform the staff analysis and implementation planning for potential zero-emission space and water heater standards.	Up to $4,950 per track per Public Expert Maximums: $50,000 broken into fixed scopes of work of up to $4,950 each.
CEC — EBD Direct Install Program[362]	Regional Administrator Contract Budget	CBOs will be compensated for providing guidance on the implementation and evaluation of the program.	Subcontract budgets and compensation per quarterly advisory group meeting to be determined

Source: CEC staff

360 Solar on Multifamily Affordable Housing. Accessed April 2025. "CalSOMAH," web page, https://calsomah.org.

361 California Air Resources Board. Accessed April 2025. "Zero-Emission Space and Water Heater Standards," web page, https://ww2.arb.ca.gov/our-work/programs/zero-emission-space-and-water-heater-standards.

362 Diana Maneta. March 27, 2025. Personal communication. California Energy Commission.

APPENDIX D:
Administrative Enforcement Processes

The steps below describe how administrative enforcement is carried out in some jurisdictions that have BPS policies.

Inform Responsible Party of Violation

Informing the responsible party involves identifying the correct party and sending a notification of the violation or violations.

Identify the Responsible Party

The first step in enforcement is to identify the party that committed the violation and is subject to enforcement and penalties. The responsible party must meet the statewide BPS and should submit the required benchmarking data and reports to show compliance.

Notification of Noncompliance

Some jurisdictions first send a building owner a notification that a covered building is out of compliance. The notification of noncompliance is an official letter from the enforcing body that may act as a first warning or early warning of a notice of violation. The Real Estate Roundtable suggests jurisdictions provide building owners with fair notice and an opportunity to correct violations.[363] The following jurisdictions send a notification of noncompliance before sending a notification of violations:

- Denver, Colorado[364]
- England and Wales[365]
- State of Washington[366]

---

363 Becker, Rebecca. March 24, 2025, Rebecca Becker Comments on CA BEPS process, https://efiling.energy.ca.gov/GetDocument.aspx?DocumentContentId=98822&tn=262300.

The Real Estate Roundtable, October 2024, *Lessons Learned to Shape Fair and Reasonable Building Performance Standards (BPS)*, page 41.

364 City of Denver. Accessed March 2025. "Performance Requirements," web page, https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-and-Resiliency/Cutting-Denvers-Carbon-Pollution/Efficient-Commercial-Buildings/Denver-Building-Regulations/Energize-Denver-Building-Performance-Policy/Buildings-25000-sq-ft-or-Larger/Performance-Requirements.

365 The National Archives. Accessed November 2024. *The Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015*, https://www.legislation.gov.uk/uksi/2015/962/contents/made.

366 Washington State Legislature. Accessed February 2025. WAC 194-50-150, Section Z5.2.

- Washington, D.C.[367]

Notification of Violation

Many jurisdictions with BPS policies issue a notice of violation to building owners which may include penalties assessed or a notification that penalties will be assessed for failure to respond or come into compliance. For the California benchmarking program, Public Resources Code (PRC) Section 25321 requires the California Energy Commission (CEC) to notify a responsible party that failed to comply with data collection requirements of a violation.[368]

For the California Appliance Efficiency Standards, the CEC's Office of Compliance Assistance and Enforcement sends a notice of violation, also called a *violation letter*, after identifying violations of the standards. The notice of violation informs the potentially responsible party of the violations committed and gives them the opportunity to open communications with the CEC to resolve the matter. The notice of violation includes:[369]

- The statute, regulation, order, or decision upon which the notice of violation is based and any provisions relating to the assessment of administrative civil penalties.
- A description of the facts supporting the violation determination.

The following jurisdictions issue a notification of violation for failure to comply with BPS policies:

- State of Colorado[370]
- Denver, Colorado[371]

---

367 District of Columbia Department of Energy and Environment. October 26, 2016. "Flowcharts Explaining Fines Process," web page, https://doee.dc.gov/publication/flowcharts-explaining-fines-process.

"Process for Resolving a Notice of Infraction at the Office of Administrative Hearings (OAH)," https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/FINAL%20Notice%20of%20Infraction%20Process%20Flowchart%2010-26-2016.pdf.

368 Public Resources Code, Section 25321, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25321.&lawCode=PRC.

369 California Code of Regulations. Title 20, Section 1609, https://regulations.justia.com/states/california/title-20/division-2/chapter-4/article-4/section-1609/.

370 Air Quality Control Commission. Colorado Code of Regulations.

157 City of Denver. "Performance Requirements," web page.

- England and Wales[372]
- New York, New York[373]
- State of Washington[374]
- Washington, D.C.[375]

Select the Appropriate Enforcement Mechanisms

Once a violation is identified and the responsible party is notified, the enforcing body must decide which enforcement mechanism to apply. In most cases, a monetary penalty is imposed. Other enforcement mechanisms may be applied based on the severity of the violation. This section will discuss factors, like violation type, that should be considered when applying an enforcement mechanism.

Apply an Enforcement Mechanism Based on Violation Type

Monetary penalties are typical enforcement mechanisms for many BPS policies. The amount of the monetary penalty varies by violation type typically, based on the assessment of factors, circumstances, and fact patterns of the case. Other enforcement mechanisms can be applied at the discretion of the enforcing body such as a publication penalty, prevention of using the building, liens, or denial of licenses and permits. The enforcing body would judge how to apply an enforcement mechanism commensurate with the category or type of violation.

Use Other Factors to Choose an Enforcement Mechanism

Selecting the appropriate enforcement mechanism and assessing the penalty requires considering other factors like the nature, seriousness, and extent of a violation. Evaluating these other factors involves considering who is affected by these violations, and what external problems these violations create or make worse.

Assess Penalties

After determining the type of violation and evaluating other factors that should be considered, the enforcing body will assess penalties using a formula or fixed amount adopted with the BPS or the process developed for the enforcement program.

---

372 The National Archives. Accessed November 2024. The Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015.

373 New York City Department of Buildings. Accessed January 2024. Requirements for Reporting Annual Greenhouse Gas (GHG) Emissions for Covered Buildings, page 28.

374 Washington State Legislature. Accessed February 2025. WAC 194-50-150, Z5.2.

375 District of Columbia Department of Energy and Environment. Building Energy Performance Standards (BEPS) Compliance and Enforcement Guidebook for Compliance Cycle 1.

Consider Mitigating Factors

Mitigating factors are considerations the enforcing body would review, or the liable party would suggest, to lower or change the penalty. Mitigating factors are often defined through statute, regulation, or a guidebook. Mitigating factors may be applied by waiving or delaying requirements, including payment of monetary penalties. Common mitigating factors include:

- Unforeseen circumstances.
- Financial hardship.
- Good faith efforts to comply.
- History of compliance and no history of violations.
- Compliance plans.

A covered building owner may fail to comply with the standards or requirements through no fault of their own and situations out of their control, such as a declared state of emergency. If a covered building owner has clearly made efforts to comply but was unable to because of unforeseen circumstances, the penalty can be adjusted to reflect this.

Financial hardship is verified through an analysis of a covered building owner's financial records. Financial hardship analysis and the challenges and considerations that come with it are discussed in this report under the heading "Monetary Penalties."

Good faith efforts to comply and a history of compliance may be demonstrated by providing:

- Benchmarking reports for a designated period.
- Reports that identify building performance such as an ENERGY STAR® score.

Covered building owners may agree to create compliance or decarbonization plans to reduce a penalty, as directed by the enforcing body. Covered building owners must meet all the requirements of these plans that may differ from standard and alternative compliance pathways. Failure to achieve the goals of the plan and meet all requirements may result in additional penalties or other enforcement actions.

PRC Section 25402.11, subdivision (a), paragraph (2) authorizes the CEC to consider the following factors when assessing penalties for violations of the Appliance Efficiency Standards:[376]

376 Public Resources Code. Section 25402.11, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25402.11.&lawCode=PRC.

- The nature and seriousness of the violation
- The number of violations
- The persistence of the violation
- The length of time over which the violation occurred
- The willfulness of the violation
- The violator's assets, liabilities, and net worth

These factors could be used as a model for selecting mitigating factors for BPS enforcement.

The following jurisdictions consider mitigating factors when assessing penalties:

- Boston, Massachusetts[377]
- New York, New York[378]
- State of Washington[379]
- Washington, D.C.[380]

377 City of Boston. 7-2.2 Building Emissions Reduction and Disclosure.

378 New York City Department of Buildings. Requirements for Reporting Annual Greenhouse Gas (GHG) Emissions for Covered Buildings, page 25.

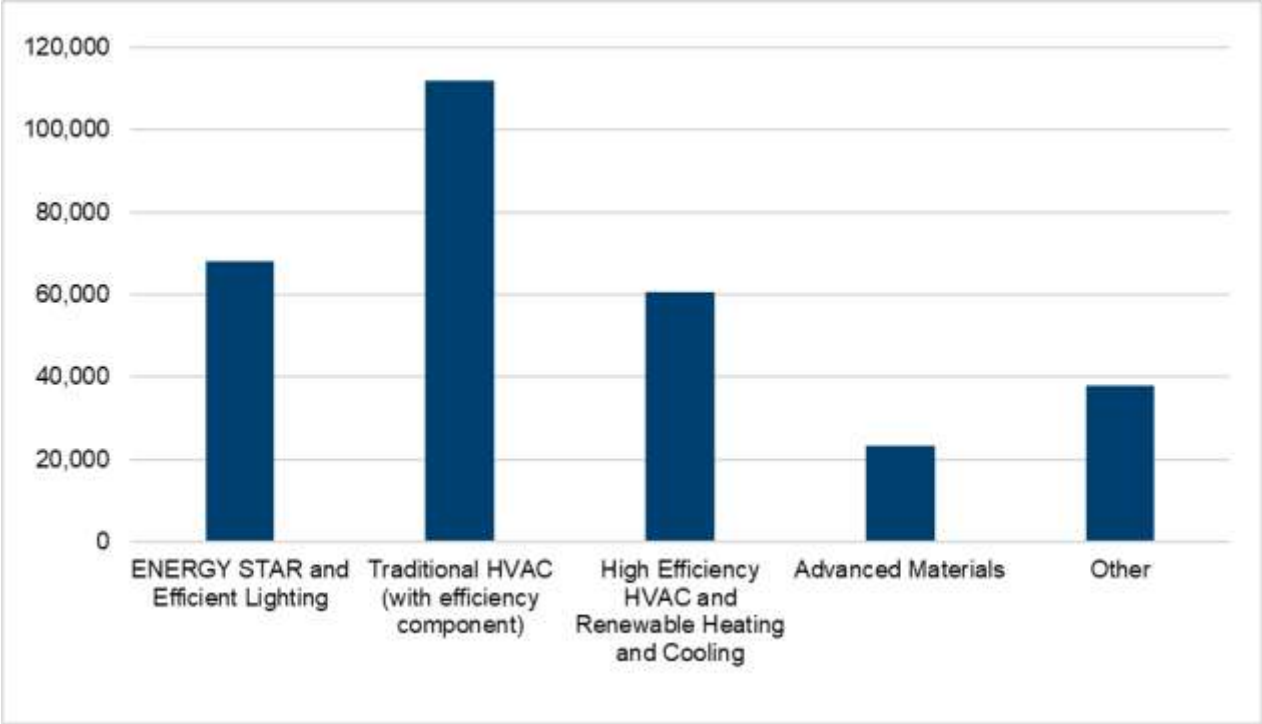
379 Washington State Legislature. Accessed February 2025. WAC 194-50-150, Z5.4.1.1.

380 District of Columbia Department of Energy and Environment. Building Energy Performance Standards (BEPS) Compliance and Enforcement Guidebook for Compliance Cycle 1.

APPENDIX E:
Energy Workforce Growth

According to the United States Department of Energy (U.S. DOE) *Energy Employment Report By State 2024*, the energy efficiency sector in California employed 302,176 workers in 2023, the largest class of clean energy workforce in the state and nation.[381] Figure E-1 shows the number of jobs in each industry of the energy efficiency sector.

Figure E-1: Number of Energy Efficiency Jobs by Industry in California in 2023



Source: U.S. DOE United States Energy & Employment Report 2024[382]

There were 640,449 clean energy jobs[383] in California in 2023, a 3.2 percent increase from 2022, which includes energy efficiency and traditional transmission and distribution jobs.[384] Research by the University of California, Los Angeles (UCLA), predicts job gains and job losses

381 United States Department of Energy. 2024. *Energy and Employment by State 2024*, https://www.energy.gov/sites/default/files/2024-09/USEER 2024 States_0913.pdf.

382 United States Department of Energy. October 1, 2024. *United States Energy & Employment Report 2024*, https://www.energy.gov/sites/default/files/2024-10/USEER%202024_COMPLETE_1002.pdf.

383 Ibid.

Clean energy jobs include all renewable electric power generation technologies, including traditional hydropower; nuclear electric power generation and fuel; microgrids and grid modernization; nonfossil storage; all biofuels, including corn ethanol; plug-in hybrid vehicles, battery-electric vehicles, and hydrogen fuel cell vehicles; all energy efficiency; and traditional transmission and distribution (including that associated with fossil fuels).

384 United States Department of Energy. 2024. *Energy and Employment by State 2024*, page 39.

as California electrifies buildings.[385] The total number of utility workers is expected to decrease as increased building electrification reduces the need for gas infrastructure.[386] Electrification could add 5,000 to 7,000 workers in electric generation, transmission, distribution, and other jobs in the electric utility sector[387] while reducing the gas infrastructure and delivery workforce by a similar amount, as shown in Table E-1.

Table E-1: Employment Impacts by Industry, Low and High Estimates (Average Annual) 2020–2045

Industry	Low Estimate	High Estimate
Building Retrofits	42,012	80,600
New Construction	-3,100	-3,600
Renewable Energy Construction	20,300	23,200
Manufacturing	3,200	4,900
Electricity Generation, Transmission, and Distribution	5,356	6,448
Gas Distribution	-3,536	-4,264
Gas Production	N/A	-3,224
Total	64,232	104,060

Source: UCLA Luskin Center

UCLA's research shows that more than half of the additional jobs would be in building decarbonization retrofits, creating an annual average of 42,000 to 81,000 additional jobs from 2020 to 2045.[388] More than half of these jobs are expected to be in the housing sector. The U.S. DOE estimates jobs in the energy efficiency sector in California will grow by 9.7 percent in the next year.[389] According to UCLA research, all-electric new construction will reduce the demand for plumbers and pipefitters.[390] However, electrification work, such as installing heat pump water heaters, would increase demand for licensed contractors, including heating, ventilation, and air-conditioning contractors; plumbers; and electricians.[391]

385 Jones, Betony, Jason Karpman, Molly Chlebnikow, and Alexis Goggans. 2019. *California Building Decarbonization: Workforce Needs and Recommendations*. UCLA Luskin Center, https://innovation.luskin.ucla.edu/wpcontent/uploads/2019/11/California_Building_Decarbonization.pdf.

386 Jones, Betony, et al. 2019. *California Building Decarbonization: Workforce Needs and Recommendations*, page 4.

387 Ibid.

388 Jones, Betony, et al. 2019. *California Building Decarbonization: Workforce Needs and Recommendations*.

389 United States Department of Energy. *Energy and Employment by State 2024*.

390 Jones, Betony, et al. 2019. *California Building Decarbonization: Workforce Needs and Recommendations*.

391 Ibid.

APPENDIX F:
Identifying and Avoiding Negative Impacts of Building Performance Standards on Tenants

Many stakeholders submitted comments to docket 24-BPS-01 for the Building Energy Performance Strategy Report expressing concerns with the equitable implementation of a building performance standard (BPS). These stakeholders include:

- Strategic Actions for a Just Economy (SAJE)
- The Natural Resources Defense Council
- Local Clean Energy Alliance
- Los Angeles Alliance for a New Economy
- Strategic Concepts in Organizing and Policy Education
- Public Health Law Center
- Institute for Market Transformation (IMT)
- Rocky Mountain Institute (RMI)
- United States Green Building Council California (USGBC CA)
- Southern California Edison (SCE)
- TRC Companies
- Public Counsel

To address tenant displacement and ensure building performance policies benefit all residents, several organizations, including tenants' rights groups, recommend revisiting tenant protection policies at the state and local government levels to understand how they align with building performance requirements.[392] Stakeholders asserted that implementing a BPS equitably requires revising tenant laws holistically or amending Assembly Bill 1482 (Chiu, Chapter 597,

392 Strategic Actions for a Just Economy, Public Health Law Center, Natural Resources Defense Council, Strategic Concepts in Organizing and Policy Education, Los Angeles Alliance for a New Economy, Institute for Market Transformation, Local Clean Energy Alliance. SAJE Response to Building Energy Performance Strategy Report. California Energy Commission, Docket Number: 24-BPS-01, TN#: 257451. https://efiling.energy.ca.gov/GetDocument.aspx?tn=257451&DocumentContentId=93322.

Southern California Edison. Southern California Edison's Comments on Building Energy Performance Strategy Report RFI. Docket Number: 24-BPS-01, TN#: 257448, https://efiling.energy.ca.gov/GetDocument.aspx?tn=257448&DocumentContentId=93327.

Institute for Market Transformation, U.S. Green Building Council California, and Rocky Mountain Institute. *CEC Building Energy Performance Strategy Report*. California Energy Commission. Docket Number: 24-BPS-01, TN#: 257443. https://efiling.energy.ca.gov/GetDocument.aspx?tn=257443&DocumentContentId=93318.

Statutes of 2019)[393] and repealing the Ellis Act of 1985 (Ellis Act) and Costa-Hawkins Rental Housing Act of 1995 (Costa-Hawkins).[394]

Strategies to Avoid Evictions, Harassment, or Displacement of Tenants

Tenant and environmental justice advocates recommend the Legislature amend the Tenant Protection Act of 2019 (AB 1482) to "establish proactive and robust enforcement," removing the burden currently placed on tenants to "defend against eviction by arguing non-compliance or suing for damages for non-compliance." These advocates outline potential enforcement structures, such as the Department of Housing and Community Development establishing a tenant-facing division dedicated to enforcement of AB 1482, or requiring localities to enforce AB 1482.[395]

In addition, stakeholders representing low-income tenants "recommend expanding the coverage of AB 1482 to include buildings constructed in the last 15 years, ensuring newer tenants also benefit from rent stabilization.[396] This measure will enhance tenant protections and prevent sudden rent increases in recently built properties, promoting housing affordability and stability across all rental units."[397]

---

393 TRC. TRC Response to CEC Building Energy Performance Strategy Report RFI. California Energy Commission. Docket Number: 24-BPS-01, TN#:25419. https://efiling.energy.ca.gov/GetDocument.aspx?tn=257419&DocumentContentId=93293.

Institute for Market Transformation, U.S. Green Building Council California, and Rocky Mountain Institute. *CEC Building Energy Performance Strategy Report*.

Strategic Actions for a Just Economy, Public Health Law Center, et al. SAJE Response to Building Energy Performance Strategy Report.

Southern California Edison. Southern California Edison's Comments on Building Energy Performance Strategy Report RFI.

394 Strategic Actions for a Just Economy, Public Health Law Center, et al. SAJE Response to Building Energy Performance Strategy Report.

Southern California Edison. Southern California Edison's Comments on Building Energy Performance Strategy Report RFI.

Institute for Market Transformation, U.S. Green Building Council California, and Rocky Mountain Institute. *CEC Building Energy Performance Strategy Report*.

395 Strategic Actions for a Just Economy, Public Health Law Center, et al. SAJE Response to Building Energy Performance Strategy Report.

396 Ibid.

397 Strategic Actions for a Just Economy, Public Health Law Center, et al. SAJE Response to Building Energy Performance Strategy Report.

Southern California Edison. Southern California Edison's Comments on Building Energy Performance Strategy Report RFI.

Institute for Market Transformation, U.S. Green Building Council California, and Rocky Mountain Institute. *CEC Building Energy Performance Strategy Report*.

To support coordination across jurisdictions, the state can guide local governments on "complementary policies that should be passed or updated."[398]

Some stakeholders recommend that to prevent potential displacement of tenants from housing not covered by rent stabilization, "any BPS adopted should […] provide specific requirements for temporary relocation due to construction and prevent no-fault evictions."[399] Stakeholders also recommend amending AB 1482, disallowing evictions for substantial remodels under legal "no-fault just cause" evictions.[400]

Washington, D.C., for example, requires landlords to show that proposed alterations "cannot safely or reasonably be made while the rental unit is occupied" and offers the tenant the right to reoccupy the unit at the same rent. Washington, D.C., also requires a relocation plan for each tenant that outlines the amount of relocation assistance payment for each unit and a plan for relocation of the tenant.[401] SCE stated in comments that BPS adopted in California should "provide specific requirements for temporary relocation due to construction" to protect low-income tenants from potential displacement.[402]

The Technology and Equipment for Clean Heating (TECH) program outlines strong tenant protections that prohibit property owners that receive funding from the TECH program from evicting tenants for reasons tied to any electrification retrofit and "avoid or mitigate temporary displacement and disruption."[403]

Another pathway to prevent evictions is to give existing tenants the first chance to purchase their building or complex through a community land trust or other feasible ownership

---

398 Institute for Market Transformation, U.S. Green Building Council California, and Rockey Mountain Institute. *CEC Building Energy Performance Strategy Report*.

399 Southern California Edison. Southern California Edison's Comments on Building Energy Performance Strategy Report RFI.

Institute for Market Transformation, U.S. Green Building Council California, and Rockey Mountain Institute. *CEC Building Energy Performance Strategy Report*.

TRC. TRC Response to CEC Building Energy Performance Strategy Report RFI.

Strategic Actions for a Just Economy, et al. SAJE Response to Building Energy Performance Strategy Report.

400 Southern California Edison. Southern California Edison's Comments on Building Energy Performance Strategy Report RFI.

TRC. TRC Response to CEC Building Energy Performance Strategy Report RFI.

Strategic Actions for a Just Economy, et al. SAJE Response to Building Energy Performance Strategy Report.

Institute for Market Transformation, U.S. Green Building Council California, and Rocky Mountain Institute. *CEC Building Energy Performance Strategy Report*.

401 Department of Housing and Community Development. Tenant Opportunity to Purchase Act. District of Columbia. https://dhcd.dc.gov/service/tenant-opportunity-purchase-assistance.

402 Southern California Edison. Southern California Edison's Comments on Building Energy Performance Strategy Report RFI.

403 California Public Utilities Commission. March 25, 2025. Decision R.19-01-011: Appendix B, pg. B-4, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M531/K094/531094134.PDF.

model.[404] Washington, D.C., requires that "tenants in buildings up for sale must be offered the first right to buy the building" through the Tenant Opportunity to Purchase Act.[405]

Some stakeholders recommended that tenant protections follow the structure of the City of Los Angeles Housing Department policy of intervening in cases of illegal rent increases, reduction of services, and tenant harassment.[406] The City of Los Angeles Tenant Anti-Harassment Ordinance (TAHO), passed in 2021, gave tenants the right to sue their landlords for harassment, but this right places the burden of enforcement on the victim. By July 2024, three years since the law was passed, only four fines and no criminal prosecutions came from the more than 13,000 alleged harassment complaints filed with the housing department.[407] In December 2024, the Los Angeles City Council adopted an update to the TAHO ordinance, "strengthening the ordinance to include an expanded definition of harassment and a requirement that tenants receive compensatory damages."[408]

In 2022, the City and County of San Francisco passed the "Tenant-Right-to-Organize Ordinance," commonly known as "Union-at-Home." This ordinance protects tenants' rights to organize and form tenants' associations and requires landlords to meet and confer with tenants' associations "in good faith."[409] This policy is most useful in contexts where tenants have the capacity to organize individual buildings and is less widely applicable than TAHO in Los Angeles.

Strategies to minimize disruption to tenants during retrofit work include tenant habitability plans, petitions for construction-related rent reductions, and stringent penalties for illegal construction. These strategies ensure living conditions are habitable during construction or provide for temporary location and provide mechanisms to address disruption and protect or compensate tenants if disruption occurs. The City of Los Angeles requires owners of buildings

---

404 Engelman, Billierae, Isabel Langlois-Romero, Molly Retig, Shanti Pless, and Alex Chapin. 2023. *Implementing a Building Performance Standard (BPS): A Guide To Mitigating Risks in Your Jurisdiction*. United States Department of Energy, https://energycodes.gov/sites/default/files/bps/2024-03/Risk_Guide_BPS.pdf.

405 Code of the District of Columbia. Section 42–3505.01. Evictions f(1)(A), https://code.dccouncil.gov/us/dc/council/code/sections/42-3505.01.

406 Strategic Actions for a Just Economy, et al. SAJE Response to Building Energy Performance Strategy Report.

Southern California Edison. Southern California Edison's Comments on Building Energy Performance Strategy Report RFI.

Institute for Market Transformation, U.S. Green Building Council California, and Rocky Mountain Institute. *CEC Building Energy Performance Strategy Report*.

407 Esquivel, Paloma. August 30, 2024. Accessed April 2025. "In L.A., 13,000 Complaints Of Tenant Harassment Led To Four Fines. Advocates Call For Stronger Laws." *Los Angeles Times,* https://www.latimes.com/california/00000191-a095-dff2-a5bb-f7d7e3f90000-123.

408 Rahaman, Nithya. 2024. Accessed April 2025. "Press Release: Council Adopts Strengthened Tenant Anti-Harassment Ordinance." Los Angeles District 4, https://cd4.lacity.gov/press-releases/council-adopts-strengthened-tenant-anti-harassment-ordinance-2/.

409 San Francisco Administrative Code. Chapter 49(A) Tenant-Right-to-Organize Ordinance, https://sfgov.legistar.com/View.ashx?M=F&ID=10514976&GUID=1E551549-F00F-493B-B2DB-4C5CFBB8880C.

subject to the Los Angeles Rent Stabilization Ordinance to pay temporary relocation costs to tenants if they cannot remain in their homes during retrofitting.[410]

Subsidizing low-income rented housing could protect tenants. Subsidies could directly protect tenants by requiring landlords to agree not to raise rents or evict their tenants as a condition of receiving the subsidy.[411] Rebates, subsidies, and cost-support for unsubsidized affordable housing and deed-restricted residential housing, including "bonuses for landlords that actively protect tenants in addition to legislative minimum requirements," can also help limit incentives for landlords to sell rather than retrofit the building.[412]

Education is another potential concern surrounding the equity implications of implementing BPS policies. Some energy programs require tenant education on energy upgrades and applicable tenant protections. The Equitable Building Decarbonization (EBD) Direct Install Program guidelines require administrators to provide landlords and tenants with information about the measures that will be installed, construction hours, benefits of the project, eviction restrictions, rent increase limitations, and a phone number for tenants to contact if they have any concerns.[413]

Some tenants, especially nonnative English speakers, may not be aware of existing tenant protections. Energy programs can educate tenants and help hold landlords accountable by providing information in multiple languages that outline project information, tenant rights, and landlord responsibilities.

Strategies to Avoid Increasing Utility or Rent Burden of Residential Tenants

The National Laboratory of the Rockies suggests that the bodies that manage electric utilities direct those utilities to update rate structures to promote electrification, avoid bill increases, guarantee bill stability after electrifying, and expand awareness and access to rate designs for low-income customers.[414] Utility bill increases are most likely to occur in homes that switch from gas to a heat pump for heating, or from no space-cooling to a heat pump for space-cooling. Any rate structure should aim to protect low-income tenants from an increase in energy burden.

---

410 Kirk, Chelsea, Daniel Carpenter-Gold, and Grace Hut. March 2025. *Tenants at the Center Equitable Center An Equitable Path to Equitable Path to Building Decarbonization*, pg. 22, https://www.saje.net/wp-content/uploads/2025/03/Tenants-at-the-Center-Equitable-Decarbonization-Report-2025.pdf.

411 Carpenter-Gold, Daniel. 2023. University of California Los Angeles School of Law, Emmett Institute on Climate Change and the Environment. *Tenant-Friendly Building Decarbonization in Los Angeles: Maximizing the Benefits and Minimizing the Harms*, pg. 16. Pritzker Environmental Law and Policy Briefs, https://law.ucla.edu/sites/default/files/PDFs/Publications/Emmett%20Institute/Tenant-Friendly%20Building%20Decarb%20in%20LA%20-%20Final%20Digital%206-14.pdf.

412 TRC. TRC Response to CEC Building Energy Performance Strategy Report RFI.

413 Maneta, Diana. 2023. *Equitable Building Decarbonization Direct Install Program Guidelines*. California Energy Commission.

414 Wilson, Eric J. H., Prateek Munankarmi, Brennan D. Less, Janet L. Renya, and Stacey Rothgeb. April 17, 2024. *Heat Pumps for All? Distributions of the Costs and Benefits of Residential Air Source Heat Pumps in the United States*, pg. 1014. *Joule*, https://doi.org/10.1016/j.joule.2024.01.022.

A March 2025 study by the American Council for an Energy-Efficient Economy (ACEEE) recommends heat pump-specific plans in cold climates, including winter discount rates, demand-based rates, and time-of-use rates.[415] Massachusetts approved a plan in June 2024 to allow for a lower distribution rate for heat pump customers in winter months. Colorado mandated that investor-owned utilities submit a proposal for energy rates specific to residential customers who use heat-pump heating by August 2027.[416] Both states have high electricity costs that discourage electrification.[417]

In May 2024, the California Public Utilities Commission (CPUC) introduced a new rate structure that moves existing fixed costs into a flat-rate[418] line item on bills and shrinks the usage rate, or the price of a unit of electricity.[419] This change in billing structure is intended to make home electrification more affordable by pushing down the price of electricity usage.[420]

With the new structure, customers enrolled in the California Alternative Rates for Energy program will receive a flat-rate discount of $6 per month, and customers enrolled in the Family Electricity Rate Assistance program will qualify for a flat-rate discount of $12 per month. The new billing structure was phased-in starting in late 2025 and fully implemented in early 2026.[421] The CPUC convened an implementation working group to "identify problems with marketing, education, and outreach efforts, suggest solutions at meetings," and provide written recommendations on how to incorporate lessons learned into the design of future rates.[422]

---

415 Sussman, Reuvan, Paul Mooney, Grace Lweallen and Matt Malinowsk. March 2025. *Electricity Rates That Keep Bills Down After Electrification of Home Heating*, pg. 29. American Council for an Energy-Efficient Economy, https://fox23maine.com/resources/pdf/ce702195-411c-40af-8b46-aca8a2ae0c46-ACEEEReport.pdf.

416 Senate Bill 24-214. Colorado General Assembly, https://leg.colorado.gov/bills/sb24-214.

417 Sussman, Reuvan, Paul Mooney, Grace Lweallen and Matt Malinowsk. March 2025. *Electricity Rates That Keep Bills Down After Electrification of Home Heating*, pg. 6.

418 *Flat-rate* is plain language for fixed charge. *Fixed charge* means any fixed customer charge, basic service fee, demand differentiated basic service fee, demand charge, or other charge not based on the volume of electricity used.

419 California Public Utilities Commission. May 9, 2024. *CPUC Decision Cuts Price of Electricity Under New Billing Structure and Accelerates California's Clean Energy Transition*. https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/demand-response/demand-flexibility-oir/ab205_factsheet_050824.pdf.

420 The Public Advocates Office. Accessed April 2025. "Electric Flat Rates Will Help Address the Affordability Crisis and Enable Household Electrification," web page, https://www.publicadvocates.cpuc.ca.gov/press-room/commentary/240328-flat-rate.

421 California Public Utilities Commission. May 9, 2024. *CPUC Decision Cuts Price of Electricity Under New Billing Structure and Accelerates California's Clean Energy Transition*.

422 California Public Utilities Commission Decision. May 4, 2024. Decision 22-07-005, pg. 101, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M531/K094/531094134.PDF.

California Public Utilities Commission. May 9, 2025. *CPUC Decision Cuts Price of Electricity Under New Billing Structure and Accelerates California's Clean Energy Transition*.

Education and outreach are needed to ensure customers are on the correct electrification rate to ensure bill impacts are more positive than negative.[423] A May 2024 CPUC decision requires covered utilities to conduct marketing, outreach, and education efforts, which could reasonably include information about the new fixed charge, rate options, low-income rate options, and ways that the new rate structure will encourage electrification.[424]

SAJE recommended that the Legislature amend AB 1482 to cap rents at a maximum of 5 percent for all covered buildings to support equitable housing and protect low-income households from displacement during the state's transition to energy-efficient buildings.[425] SAJE also recommended including a prohibition on rent increases due to BPS related renovations or a prohibition on rent increases larger than the amount the tenant saves on utility bills.[426]

Stakeholders have suggested several formulations of bans or caps on pass-through costs. In the report *Los Angeles Building Decarbonization: Tenant Impacts and Recommendations,* SAJE recommends that the Legislature "ban pass-through costs for decarbonization retrofits to Rent Stabilization Ordinance (RSO) tenants, tenants in covenanted affordable units, and low-income tenants in non-RSO units."[427]

Some local jurisdictions in California, like Los Angeles, have models to limit pass-through costs on seismic retrofits.[428] West Hollywood banned pass-through costs, such as rent raises and other fees, for seismic retrofits. West Hollywood's ordinance includes a provision that allows landlords to petition for a rent increase if the property owner believes costs of completing the retrofit will exceed the income for their property.[429]

A BPS program could include limitations, or caps, on annual rent increases, as done by the San Joaquin Valley (SJV) pilots and the EBD Direct Install Program guidelines. The SJV pilots required landlords to sign an agreement limiting rent increases to 3.6 percent for five years unless they were due to increased property taxes, operating, and maintenance costs.[430] The EBD Program requires program administrators to use program participation agreements to

---

423 Sussman, Reuvan, Paul Mooney, Grace Lweallen and Matt Malinowsk. March 2025. *Electricity Rates That Keep Bills Down after Electrification of Home Heating*, pg. 29.

424 California Public Utilities Commission Decision. May 4, 2024. Decision 22-07-005, pg. 101.

425 Strategic Actions for a Just Economy, et al. SAJE Response to Building Energy Performance Strategy Report.

Institute for Market Transformation, U.S. Green Building Council California, and Rocky Mountain Institute. *CEC Building Energy Performance Strategy Report*.

Southern California Edison. Southern California Edison's Comments on Building Energy Performance Strategy Report RFI.

426 Ibid.

427 Kirk, Chelsea. 2021. *Los Angeles Building Decarbonization: Tenant Impact and Recommendations*, pg. 30.

428 Los Angeles Housing + Community Investment Department. 2020. *Summary of Tenant Rights for Seismic Retrofit Work*, https://housing.lacity.gov/wp-content/uploads/2020/08/Summary-of-Tenants-Rights-Seismic.pdf.

429 Wellis, Caleigh. 2018. Accessed April 2025. "How WeHo Residents Swung the City Council on Seismic Retrofitting." *LAist*, https://laist.com/news/how-weho-residents-swung-the-city-council-on-seismic-retrofitting.

430 California Public Utilities Commission. April 2020. Resolution E-5043, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M333/K595/333595009.PDF.

contract with program participants. These program participation agreements take one or more of the following forms — lease addendum, deed recording, or other documents. The agreements include guidelines that property owners of market-rate housing cannot increase rent by more than 3 percent per year for 5 to 10 years, depending on the property size.[431]

Unlike the SJV pilots, the EBD Program specifies that the increase includes property taxes, operation, and maintenance costs, as well as the amortization of other improvements made to the property.[432] Other energy programs depend on an honor system that requires property owners to commit, in writing, to refrain from increasing rent or utility allowances because of measures provided through the program, without specifying a percentage cap.

SCE suggested via comments that BPS program requirements cap pass-through costs from energy retrofits in residential buildings not covered by state rent stabilization to protect low-income tenants from costs associated with decarbonization.[433]

The California Utility Allowance Calculator (CUAC) is a tool designed to calculate project-specific utility allowances for low-income housing projects.[434] The CUAC provides an estimate for "what tenants will pay for utilities for projects applying for tax-credits for which the rehabilitation improves energy efficiency by at least 20%."[435] A tool such as the CUAC could be used to estimate tenant utility bills pre- and postretrofit and require landlords to limit rent increases to the estimated bill savings.

Subsidizing low-income rented housing may, on its own, protect tenants. For housing subject to the Los Angeles Rent-Stabilization Ordinance, subsidies directly prevent rent increases because subsidized work cannot be the basis of a rent pass-through.[436] Subsidies could also directly protect tenants by requiring landlords to agree not to raise rents or evict their tenants as a condition of receiving the subsidy. California's implementation of the Weatherization Assistance Program (WAP) requires landlords to "not use the work funding by WAP as a basis for a rent increase for two years."[437]

Subsidies can alleviate "pressure on landlords to recoup the cost of building-decarbonization retrofits." Subsidies can also be used to support "tenant-friendly landlords" to prevent foreclosure or sale of the properties.[438] Research from Boston, Massachusetts, found that large

---

431 Maneta, Diana. 2023. *Equitable Building Decarbonization Direct Install Program Guidelines*.

432 Ibid.

433 Southern California Edison. Southern California Edison's Comments on Building Energy Performance Strategy Report RFI.

434 California State Treasurer. Accessed April 2025. "California Utility Allowance Calculator," web page, https://www.treasurer.ca.gov/ctcac/cuac/index.asp.

435 Ibid.

436 Los Angeles County Department of Consumer and Business Affairs. Accessed April 2025. "Housing and Tenant Protections: Rent Stabilization Program," web page, https://dcba.lacounty.gov/rentstabilizationprogram/.

437 Carpenter-Gold, Daniel. 2023. *Tenant-Friendly Building Decarbonization in Los Angeles: Maximizing the Benefits and Minimizing the Harms*, pg. 16.

438 Carpenter-Gold, Daniel. 2023. University of California Los Angeles School of Law, Emmett Institute on Climate Change and the Environment. *Tenant-Friendly Building Decarbonization in Los Angeles: Maximizing the Benefits and Minimizing the Harms*, pg. 15.

landlords "file evictions at two to three times the rate of small landlords."[439] Focusing subsidies on small landlords, who likely have less access to capital for large retrofit projects, may support the maintenance of affordable housing.

Defining Small Commercial Tenants

Table F-1 provides definitions for *small commercial tenants* and the sources of those definitions.

Table F-1: Commercial Tenant Definitions

Term	Definition	Source
Qualified Commercial Tenant	A tenant of a commercial real property that meets both of the following requirements: The tenant is a *microenterprise*,[440] i. a restaurant with fewer than 10 employees, or ii. a nonprofit organization[441] with fewer than 20 employees	Civil Code 827(b)(7)(d)
Eligible Small Business Financing Customer	A business or nonprofit entity (other than a public entity) meeting at least one of the following size requirements: i. 100 or fewer employees ii. Annual revenues of less than $16 million; or iii. Meets the U.S. Small Business Administration's size standards for a Small Business matched to the North American Industry Classification System found in Part 121.201 of Title 13 of the Code of Federal Regulations	GoGreen Business Energy Financing Program Regulations[442]

Source: CEC staff

439 Gomory, Henry. 2022. "Social and Institutional Contexts Underlying Landlords' Eviction Practices." *Social Forces,* https://doi.org/10.1093/sf/soab063.

Gomory defines small landlords as owning fewer than 4 units per year and large landlords as owning 15 or more units per year.

440 Business and Professions Code Section 18000. A *microenterprise* means a sole proprietorship, partnership, limited liability company, or corporation that meets both of the following requirements:

1. Has five or fewer employees, including the owner, who may be part time or full time.
2. Generally lacks sufficient access to loans, equity, or other financial capital.

https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=18000.&lawCode=BPC.

441 *Nonprofit organization* means any private, nonprofit organization that qualifies under Section 501(c)(3) of the United States Internal Revenue Code of 1986.

442 California Code of Regulations. California Alternative Energy and Advanced Transportation Financing Authority Regulations Implementing the Commercial Energy Efficiency Financing Program. May 13, 2024. Accessed April 8 2025, https://www.treasurer.ca.gov/caeatfa/cheef/sblp/regulations/current.pdf.

Strategies to Avoid Evictions, Harassment, and Displacement of Small Commercial Tenants

Small commercial tenant representatives recommend a right-to-return policy that allows a commercial tenant to have first rights to rent a property they were evicted from due to repairs or development.[443] This policy could be like the residential right-to-return policy included in the Ellis Act, which requires landlords to give the tenant displaced from a unit the first offer for rent or lease of that unit if the unit is offered for rent or lease within 10 years of the date the accommodations were removed from the market.[444] In addition, the Ellis Act requires the landlord to charge only the rent the evicted tenant was paying, plus any increases allowed under rent control for five years, after which rent can return to market rate.[445]

To avoid increasing the financial burden on commercial tenants forced to relocate, the state or local jurisdictions could require relocation assistance.[446] The size of the commercial space and the number of years the business owner has rented the space could be used to determine relocation assistance amounts. An example policy is the United States Department of Housing and Urban Development policy on relocation assistance to business, nonprofit organizations, and farms displaced as a "direct result of acquisition, rehabilitation, or demolition for a federal project or a project in which federal funds are used."[447] The relocation assistance offered by the policy include advisory services, as well as payments for moving and reestablishment expenses.[448]

The state could require owners of buildings leased to small commercial tenants provide relocation assistance. The state could also require landlords who receive subsidies from the state offer relocation assistance and access to advisory services.

Just-cause eviction protections are another strategy to protect commercial tenants. Protections prohibit the termination of a tenancy without just cause, such as failure to pay rent or breach of lease terms. Commercial just-cause eviction protections, like the residential just-cause eviction protections specified in AB 1482, provide eviction protection to commercial tenants. However, AB 1482 has a no-fault just-cause eviction allowance for substantial remodels that would still allow evictions for substantial building retrofits.[449] Just-cause eviction protections

---

443 Public Counsel. Ritu Mahajan Comments - Commercial Tenant Displacement. Docket Number: 24-BPS-01, TN#: 264360, https://efiling.energy.ca.gov/GetDocument.aspx?tn=264360&DocumentContentId=101130.

Small Business Anti-Displacement Network. Accessed May 13, 2025. "Relocation Assistance and Right-to-Return Policies," web page https://antidisplacement.org/tool/relocation-assistance/.

444 California Civil Code. Section 7060.2(c), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml.

445 California Civil Code. Section 7060.2(d), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml.

446 Small Business Anti-Displacement Network. Accessed May 13, 2025. "Relocation Assistance and Right-to-Return Policies," web page, https://antidisplacement.org/tool/relocation-assistance/.

447 U.S. Department of Housing and Urban Development. June 2016. *Relocation Assistance to Displaced Businesses, Nonprofit Organizations, and Farms*. Publication Number: HUD-1043-CPD, https://www.hud.gov/sites/documents/1043cpd.pdf.

448 Ibid.

449 Southern California Edison. Southern California Edison's Comments on Building Energy Performance Strategy Report RFI.

that do not allow for eviction due to substantial remodel could help protect commercial renters from eviction.[450]

To protect small commercial tenants from increased rent burden due to retrofit pass-through costs, the Legislature could include commercial tenant protections in legislation for BPS.[451] This protection could be similar to the limits on pass-through costs required by the SJV pilot and EBD program, which limit rent increases for a certain number of years after an agreement is signed between the program and the property owner.

In 2024, the Center for the Built Environment at University of California, Berkeley, published a report that demonstrated 70 percent gas savings and substantial utility savings in two large office buildings, yielding a total utility cost savings of about $0.5 per square foot.[452] These savings were achieved through a combination of "deep decarbonization re-design measures" that optimize existing control systems based on standard industry guidance. These approaches also include energy efficiency improvements such as envelope improvements. These savings were achieved without replacing entire heating, ventilation, and air-conditioning (HVAC) systems or performing a gut renovation.[453]

A partial decarbonization approach is appropriate for buildings with no large gas user other than an HVAC system but has gas consumption above 700 British thermal units per month per square foot during the summer months.[454] Conducting partial building decarbonization improvements that reduce demand for heating and address inefficiencies in system controls could help commercial landlords achieve decarbonization goals without expensive equipment replacements and with less disruption to tenants than a full gut renovation. Landlords can use savings realized to invest in further decarbonization methods that are more expensive so that the landlords can meet their BPS goals by 2045.

The City of Denver offers free compliance assistance for buildings that meet the definition of Equity Priority Buildings. *Equity Priority Buildings* are buildings that serve frontline communities, groups that are more vulnerable to the deleterious effects of climate change. Qualifying buildings will receive free assistance with annual benchmarking and data verification

---

TRC. TRC Response to CEC Building Energy Performance Strategy Report RFI.

Strategic Actions for a Just Economy, et al. SAJE Response to Building Energy Performance Strategy Report.

Institute for Market Transformation, U.S. Green Building Council California, and Rocky Mountain Institute. *CEC Building Energy Performance Strategy Report*.

450 Public Counsel. Ritu Mahajan Comments — Commercial Tenant Displacement. Docket Number: 24-BPS-01, TN#: 264360, https://efiling.energy.ca.gov/GetDocument.aspx?tn=264360&DocumentContentId=101130.

Small Business Anti-Displacement Network. Accessed May 13, 2025. "Relocation Assistance and Right-to-Return Policies."

451 Small Business Anti-Displacement Network. Accessed May 13, 2025. "Commercial Rent Regulations."

452 Raftery, Paul, Hwakong Cheng, Rupam Singla, Therese Peffer, David Vernon, Carlos Duarte, Emily Lamon, Robert McMurry, Gwelen Paliaga, Marya Thawer, and Patrick Wendler. 2024. *Reducing Gas Consumption in Existing Large Commercial Buildings*, pg. 3. California Energy Commission, https://escholarship.org/uc/item/3fh0x2vm.

453 Ibid., pg. A-1.

454 Ibid.

requirements and completing applications for target adjustments. Owners are eligible to apply for an adjusted timeline to align with refinancing cycles or to accommodate other restrictions that limit timely access to capital.[455]

Community benefits agreements (CBAs) are contracts between local governments, community groups, and developers that "require developers to provide specific amenities tailored to local needs."[456] A CBA is intended to ensure that new development will directly benefit the community.[457] The City of Detroit implemented a Community Benefits Ordinance in 2016 that applies when a development project:

- Is $75 million or more in value.
- Receives $1 million or more in property tax abatement.
- Receives $1 million or more in value of city land sale or transfer.[458]

When a project in Detroit, Michigan, triggers the Community Benefits Ordinance process, "a Neighborhood Advisory Council is established, with nine representatives from the project's impact area to work directly with the developer and establish community benefits."[459] Since the ordinance was implemented, key benefits secured for the community include 60 outdoor basketball courts, the restoration of an abandoned school field for sports and recreation use, a commitment for more affordable housing, and more.[460]

Education is another potential concern surrounding the equity implications of implementing building performance strategies. Some energy programs, especially those applicable to multifamily properties, require tenant education on energy upgrades. For example, the EBD Program guidelines require administrators to provide landlords and tenants with information about the measures that will be installed, construction hours, benefits of the project, eviction restrictions, rent increase limitations, and a phone number for tenants to contact if they have any concerns.[461]

To ensure protection of small commercial tenants, California must develop consistent enforcement mechanisms. There are a few potential appropriate agencies and jurisdictions for enforcement and oversight of tenant protections. Enforcement can be "performed at the state

---

455 City of Denver. Accessed April 8, 2025. "What Is an Equity Priority Building?" web page, https://denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-and-Resiliency/Cutting-Denvers-Carbon-Pollution/Efficient-Commercial-Buildings/Resources-for-Multifamily-Housing-and-Small-Biz/What-is-an-Equity-Priority-Building.

456 Small Business Anti-Displacement Network. Accessed April 2025. "Community Benefits Agreements," web page, https://antidisplacement.org/tool/community-benefits-agreements/.

457 Ibid.

458 City of Detroit. Accessed April 2025. "Community Benefits Ordinance," web page, https://detroitmi.gov/departments/planning-and-development-department/community-benefits-ordinance.

459 Ibid.

460 Ibid.

461 Maneta, Diana. 2023. *Equitable Building Decarbonization Direct Install Program Guidelines*. California Energy Commission.

level (such as through the California Department of Justice or the California Department of Housing and Community Development) or at the local level (such as through Community Development Departments or Building Officials)."[462] However, these entities would require additional statutory authority and resources to enforce tenant protections.

Local agencies charged with enforcement of tenant protections can leverage local infrastructure and knowledge, allowing for responsive and context-sensitive enforcement tailored to the specific needs of each community. Some state agencies may not have enough resources to enforce tenant protections across the state, though statewide enforcement could reduce the burden on tenants who will need to hire lawyers to defend against tenant protection noncompliance.[463]

A tool to address this split incentive is a green lease, or a performance-based lease, that is designed to "equitably align the cost and benefits of utility efficiency investments for both parties."[464] The Institute for Market Transformation developed a model performance-based lease in 2021 as a starting point for integrating tested and new green lease clauses to "align landlord and tenant goals and meet new mandates set by [New York City's] Local Law 97."[465] Leases could also include terms for right-to-relocation, relocation assistance, and eviction protections.

462 Institute for Market Transformation, U.S. Green Building Council California, and Rocky Mountain Institute. *CEC Building Energy Performance Strategy Report*..

463 TRC. TRC Response to CEC Building Energy Performance Strategy Report RFI.

464 White, Andrew, Allison Kirby, Hannah Debelius, Jake Duncan, and Rory Gahagan. *New Leasing Languages and How Green Leasing Programs Can Help Overcome the Split Incentive*, pg. 1. ACEEE Summer Study 2020, https://imt.org/wp-content/uploads/2020/08/ACEEE-Summer-Study-2020-Final-Paper.pdf.

465 Banny, Audi. July 2021. *Model Performance Based Lease Template*, pg. 2. Institute for Market Transformation, https://imt.org/wp-content/uploads/2021/07/IMT-Model-Performance-Based-Lease-Template-July-2021.pdf.

APPENDIX G:
Financing

This appendix details examples of financing programs that can be used to support building owners in California and other jurisdictions.

Interest Rate Buydown Implementation Considerations

The following variables should be addressed when considering the design and implementation of interest rate buydown (IRBD).

Buydown Amount

The buydown amount does not have to cover the entire cost of capital (that is, reduce the interest rate to zero percent). Buydowns are effective at moving the market when they are competitively below market rate, though this "frame" can shift depending on the current economic climate and cost of capital.

Maximum and Minimum Project Sizes

Depending on the amount of IRBD capital, project size limitations may be needed in case capital is used too quickly or spent disproportionately. The following actions can be taken to limit project size:

- Adjust project funding cap to accommodate the average cost of different types of common upgrades.
- Use incentives to encourage certain types of upgrades.
- Project term and price restrictions should be flexible to meet market needs.
- Caps can be set based on the cost of each financeable measure or estimated or deemed kilowatt-hour savings to discourage contractors from marking up project costs to take advantage of the buydown funding.

Stacking Incentives

Many financing programs allow, encourage, or require the use of rebates for projects receiving buydowns. Stacking multiple incentives will bring down total project cost and help owners achieve positive or neutral cashflow.

Maximum and Minimum Loan Terms

IRBDs do not always need to cover the entire loan term because funds are limited. Shorter loan periods may reduce the total cost of IRBD for a building performance standard (BPS). Setting loan term limits may also limit overall efficiency results for a BPS.

Borrower Type

IRBDs can be targeted toward borrower types, such as building owners who need financial assistance to meet BPS targets. Consider borrower need, such as financial need, by identifying buildings located and servicing or housing tenants of disadvantaged communities, places of worship, or nonprofits.

Examples of borrower needs include:

- High need: 0 percent buydown for the entire loan term.
- Medium need: 0 percent buydown for the first few (for example, five years) years of the loan term.
- Low need: Rates would be bought down for the first year only.

IRBD Timeline

Investing in the market requires long-term availability of incentives. Therefore, it is important to ensure that the timeline of funding availability is not too short, depending on market conditions. Deadlines are useful tools for generating demand. Small or short-term buydown promotions can be deployed at key points in the BPS timeline to spark demand.

Deployment and Infrastructure

Setting up a brand-new financing program under the state can be administratively burdensome. IRBD funds could be put into a separate account that the lender can access. IRBD funds can also be transmitted to the lender in alignment with the customer's monthly remittance to protect the limited IRBD funds by spreading out the costs of each IRBD over time. This method is not common or popular among private capital providers.

Table G-1 lists examples of IRBD programs that reduce the cost to finance energy efficiency upgrades and decarbonization projects.

Table G-1: Example IRBD Programs

Implementing Organizations	IRBD Program Information
Massachusetts Clean Energy Center Solar for All Zero-Interest Loan440F[466]	• Zero percent interest loans for participating community lenders via IRBD. • Anticipates serving 3,500 to 6,000 borrowers over four to five years.

466 Massachusetts Clean Energy Center. March 13, 2025. Request for Proposals: Massachusetts Solar For All Zero Interest Loan Platform, https://www.masscec.com/sites/default/files/documents/masfa_zil_platform_rfp.pdf.

Implementing Organizations	IRBD Program Information
National Energy Improvement Fund & First Energy Jersey Central Power & Light441F[467]	Commercial: Direct Install; Prescriptive and Custom – Equipment and/or Building Improvements Multifamily Energy Efficiency — Prescriptive or Engineered Solutions • Maximum to be financed up to $250,000 at up to 2.99 percent for up to 5 years • Financing will cover 80 percent of the balance of project cost for projects >$250,000 • Rebate eligible • Borrowers must be the First Energy Jersey Central Power & Light utility account holder
National Energy Improvement Fund & Eversource Energy442F[468]	• Qualifying customers are eligible for rates of 1.99 percent for comprehensive or multiple measure projects, or 2.99 percent for noncomprehensive or single measure projects for up to $100,000 • Below-market rate financing for projects >$100,000 • Loan limits $2,000 and up443F[469] • Maximum 60-month term

Source: CEC staff

Commercial Building Rebate Programs

The commercial rebate programs in Table G-2 are specific to California and offer financial incentives for implementing energy efficiency upgrades and decarbonization projects in commercial buildings. The rebates help reduce upfront costs for building upgrades.

467 Jersey Central Power & Light. January 29, 2025. "Financing Options Available," web page, https://www.firstenergycorp.com/save_energy/save_energy_new_jersey/financing-options.html.

468 National Energy Improvement Fund. "NEIF Financing for Energize Connecticut Energy Efficiency Business Programs," https://www.neifund.org/energize-ct/.

469 National Energy Improvement Fund. *Commercial, Industrial and Municipal Financing for Energy Efficiency*, https://www.neifund.org/wp-content/uploads/2022/08/ECT_22_CI-Financing-Fact-Sheet_3.pdf.

Table G-2: Commercial Building Rebate Programs

Program Title	Program Information
Pacific Gas and Electric Heating, Ventilation, and Air Conditioning Rebates444F[470]	Variable Frequency Drives for Heating, Ventilation, and Air Conditioning (HVAC) Fans • Eligible for fan motors between 3 and 100 horsepower • $80/horsepower Demand Controlled Ventilation for Packaged HVAC Units • Eligible only for certain building types (assembly, education, small office, restaurant, retail, biotech manufacturing) • Rebate based on cooling capacity of the HVAC unit with a maximum of $500 per advanced digital economizer control and $300 for carbon dioxide sensor Enhanced Ventilation Control for Packaged HVAC Units • Eligible only for certain building types (assembly, education, small office, restaurant, retail, biotech manufacturing, grocery) • Various upgrades with rebates ranging from $10–$194/ton of air-conditioning capacity
Pacific Gas and Electric Refrigeration Rebates445F[471]	Ultra-Low Temperature (ULT) Freezers • $300 rebate for High-Efficiency ULT Freezer 15 to <24 cubic feet • $600 rebate for High-Efficiency ULT Freezer 24 to 29 cubic feet Anti-Sweat Heater (ASH) Controls • $25/linear foot (of new door width) rebate for Medium Temperature (Cooler) and Low Temperature (Freezer) ASH controls

470 Pacific Gas and Electric. *Business Rebate Catalog*, page 15, https://www.pge.com/assets/pge/docs/save-energy-and-money/rebate-and-incentives/business-rebate-catalog.pdf#page=15.

471 Ibid., page 23.

Program Title	Program Information
	New High-Efficiency Refrigeration Display Case Doors (Low Temperature) • Eligible only for restaurant, hotel, grocery, and retail building types • $75/linear foot rebate New Display Cases to Replace Open Multi-Deck Refrigerated Displays (Low and Medium Temperature) • Eligible for grocery stores only • $175/linear foot (low temperature) • $75/linear foot (medium temperature)
Pacific Gas and Electric Insulation, Water Heating, and Laundry Equipment Rebates446F[472]	Pipe Insulation • Eligible for pipes transferring fluid directly from gas-fired equipment • Rebate of $3/linear foot or fitting Ozone Laundry System • Eligible for hotels, motels, gymnasiums, skilled nursing facilities, and correctional institutions that have washing machines with washing capacity rated 200 pounds or less • $39/pound washing machine capacity rebate Modulated Gas Valve for Commercial Dryers • Eligible for dryers with drum capacity of 20 to 200 pounds • $350/unit rebate Commercial Pool and Spa Heaters • Heater must be equal to or greater than 84 percent thermal efficiency, with an on/off switch and no pilot light • $2/thousand British thermal unit-hour rebate (indoor and outdoor)

472 Ibid., page 27.

Program Title	Program Information
	Backup Power Generator • Must be located in a Tier 2 or Tier 3 high fire-threat area or served by an Enhanced Powerline Safety Setting circuit and has experienced two or more Public Safety Power Shutoffs • $300 rebate
Southern California Gas (SoCalGas) Natural Gas Oven Rebate[473]	• $120 rebate on qualifying energy-efficient residential freestanding gas ovens • Must be replacing an existing gas oven
SoCalGas Natural Gas Wall Oven Rebate	• $500 rebate on qualifying energy-efficient residential gas wall ovens • Must be replacing an existing gas oven
SoCalGas ENERGY STAR® Certified Natural Gas Dryer	$70 rebate on an ENERGY STAR-certified gas dryer with a minimum 3.48 Certified Energy Factor
SoCalGas High Efficiency or ENERGY STAR Certified Natural Gas Tankless Water Heater Rebate	$80 to $1,500 rebate on various high-efficiency or ENERGY STAR-certified gas tankless water heaters
SoCalGas High-Efficiency Natural Gas Storage Water Heaters Rebate	$75 rebate on high-efficiency gas storage water heaters
SoCalGas Natural Gas Fireplace Inserts Rebate	• Tier I (70–74.9 percent Fireplace Efficiency): $300 rebate on qualifying gas fireplace inserts • Tier II (75 percent Fireplace Efficiency or greater): $500 rebate on qualifying gas fireplace inserts
SoCalGas ENERGY STAR Certified Natural Gas Furnace Rebate	Rebate of up to $25/kilo-British thermal units on ENERGY STAR-certified gas furnaces
SoCalGas Natural Gas Pool Heater	Rebate between $600 and $1,500
SoCalGas Solar Thermal Water Heating System Rebate	Rebate between $2,500 and $5,000
SoCalGas Natural Gas Patio Heaters Rebate	$400 rebate

473 Southern California Gas Company. Accessed March 2025. "Rebates & Incentives," web page, https://www.socalgas.com/savings/rebates-and-incentives.

Program Title	Program Information
Southern California Edison Portable Power Generator Rebate448F[474]	• $200—$600 rebate for purchase of qualifying Portable Power Generator • Must be located in Tier 2 or Tier 3 high-fire risk area
Southern California Edison Smart Thermostat Rebates	$75 bill credit for enrolling eligible smart thermostat in qualifying demand response program
San Diego Gas and Electric Golden State Rebates449F[475]	• Eligible customers can receive rebates toward the purchase of energy-efficient products • Amazon smart thermostat: $40 • ENERGY STAR-certified smart thermostat: $75 • Gas tank water heater: $75 • Heat pump water heater (must be replacing electric water heater): $500 • ENERGY STAR Advance room air conditioner: $15
Sacramento Municipal Utility District Go Electric Incentives for Multifamily Properties (5 units or more)450F[476]	• Converting gas dryer to heat pump dryer ($400/unit) • Converting gas range to induction cooktop ($750 gas-to-electric per unit, $100 electric-to-electric per unit) • Converting gas furnace to heat pump HVAC (rebates vary)
Clean Power Alliance Sun Storage Rebate451F[477]	$750–$1000 rebate for customers who install eligible battery storage system

Source: CEC staff

Income Tax Credits and Deductions

Table G-3 lists federal and state income tax credits and deductions that support energy efficiency and decarbonization efforts and can offset the cost of building upgrades.

474 Southern California Edison. Accessed March 2025. "Rebates & Incentives | Rebates, Incentives, & Savings Tips | Your Home | Home - SCE," web page, https://www.sce.com/residential/rebates-savings/rebates.

475 San Diego Gas & Electric. Accessed March 2025. "Rebates," web page, https://www.sdge.com/rebates.

476 Sacramento Municipal Utility District. Accessed March 2025. "Multifamily Rebates," web page, https://www.smud.org/Business-Solutions-and-Rebates/Business-Rebates/Multi-Family-go-electric-incentives.

477 Clean Power Alliance. Accessed April 2025. "$1.6 Million Rebate Program Has Supported the Installation of 300 kWh of Solar Storage Since Launch." Blog, https://cleanpoweralliance.org/2024/07/24/1-6-million-rebate-program-has-supported-the-installation-of-300-kwh-of-solar-storage-since-launch/.

Table G-3: Income Tax Credits and Deductions Available as of April 2025

Credit	Information
California Tax Credit Allocation Committee (CTCAC)	CTCAC administers federal and state Low-Income Housing Tax Credit Programs
Energy Efficient Commercial Buildings Deduction452F[478]	• Tax deduction for buildings with Energy Efficient Commercial Building Property (EECBP) or Energy Efficient Commercial Building Retrofit Property (EEBRP) installed • Eligible improvements: interior lighting, HVAC, hot water systems, building envelope • For properties placed in service in 2023 or later, a deduction of the lesser can be taken: the cost of the installed property, or a savings per square foot (ft^2) of \$0.50 for a building with 25 percent energy savings, plus \$0.02/ft^2 for each percentage point of energy savings above 25 percent up to \$1.00/ft^2 for 50 percent energy savings • For properties placed in service prior to 2023: deduction capped at \$1.80/ft^2 for buildings with 50 percent energy savings • Increased deductions available for meeting prevailing wage and apprenticeship requirements, which include paying laborers and mechanics employed in construction, alteration, or repair no less than applicable prevailing wage rates, and employing apprentices from registered apprenticeship programs

478 Internal Revenue Service. Accessed April 2025. "Energy Efficient Commercial Buildings Deduction," web page, https://www.irs.gov/credits-deductions/energy-efficient-commercial-buildings-deduction.

Credit	Information

Advanced Energy Project Credit453F[479]	• Limited funds ($10 billion allocated under the Inflation Reduction Act)
	• Qualifying projects include:
	  ○ Re-equips, expanding or establishing an industrial or manufacturing facility to produce or recycle specified advanced energy property
	  ○ Installing technology in an industrial or manufacturing facility to reduce GHG emissions by at least 20 percent
	  ○ Re-equips, expanding or establishing an industrial facility to process, refine, or recycle critical materials
	  ○ Tax credit equals 30 percent of qualified investment costs for projects that meet prevailing wage and apprenticeship requirements and 6 percent for projects that do not meet requirements

United States Department of Energy 179D Energy Efficient Commercial Buildings Tax Deduction454F[480]	• Traditional (Modeling) Pathway: EECBP • Applies to new construction and building upgrade projects • Uses modeling approach to calculate energy and power cost savings (%) • Savings based on annual energy and power costs difference between taxpayer building model and reference building model • Alternative (Measurement) Pathway: EEBRP • Applies to upgrades to buildings placed in service at least 5 years before outset of upgrade project • Uses measurement approach for site energy use intensity (EUI) savings (%) • Savings based on measured site EUI of building before and after the energy-efficient upgrades

Source: CEC staff

479 Internal Revenue Service. Accessed March 2025. "Advanced Energy Project Credit," web page, https://www.irs.gov/credits-deductions/businesses/advanced-energy-project-credit.

480 United States Department of Energy. Accessed March 2025. "179D Energy Efficient Commercial Buildings Tax Deduction," web page, https://www.energy.gov/eere/buildings/179d-energy-efficient-commercial-buildings-tax-deduction.

Other Incentives Provided by Other States and Jurisdictions

Other states and local governments with BPS programs have implemented and stacked incentive programs to support BPS compliance. Table H-4 highlights examples of how other jurisdictions are encouraging BPS compliance through financial, technical, and other types of support.

Table G-4: Other Jurisdictions With Incentives for BPS

Jurisdiction	Incentives
Boston, Massachusetts	• Mass Save • BETA: MassCEC's Project Planning Program • Mass Property Tax Exemptions for Solar and wind • Energy Efficient Commercial Buildings Deduction • Massachusetts Community Climate Bank • Energy Saver Home Loan Program • MassHousing Partnership • MassDevelopment Green Finance • Boston Business Loans
Cambridge, Massachusetts	Building Energy Use Disclosure Ordinance Help Desk for technical assistance
Chula Vista, California	• None • List of resources to all federal and California incentives, financing, and tax rebates that may apply to BPS
State of Colorado	List of resources to all Colorado state incentives, financing, and tax rebates that may apply to BPS
Denver, Colorado	• Utility Programs that offer prescriptive rebates • Colorado Commercial Property Assessed Clean Energy Financing • Energy Savings Performance Contracting • List of resources to all Colorado incentives, financing, and tax rebates that may apply to BPS
State of Maryland	Montgomery County Green Bank Technical Assistance Program
Montgomery County, Maryland	Montgomery County Green Bank Technical Assistance Program

Jurisdiction	Incentives
New York, New York	• NYC Accelerator Program • Property Assessed Clean Energy (PACE) Financing • List of resources to all New York state incentives, financing, and tax rebates that may apply to BPS
Newton, Massachusetts	• Mass Save • PACE program • Massachusetts Community Climate Bank
Seattle, Washington	• City of Seattle Building Decarbonization Grants • List of resources to all Washington state and federal incentives, financing, and tax rebates that may apply to BPS
State of Washington	• One-time base incentive payment for building owners who demonstrate early BPS compliance (Tier 1) • One-time incentive payment to building owners who benchmark their building, develop an energy management plan, and create an operations and maintenance program (Tier 2) • Clean Building Performance Grants Program • Energy Audit Incentive for Public Buildings Program
Washington, D.C.	• Building Innovation Hub • Washington, D.C., Green Bank PACE Program • List of resources to all Washington, D.C., incentives, financing, and tax rebates that may apply to BPS

Source: CEC staff

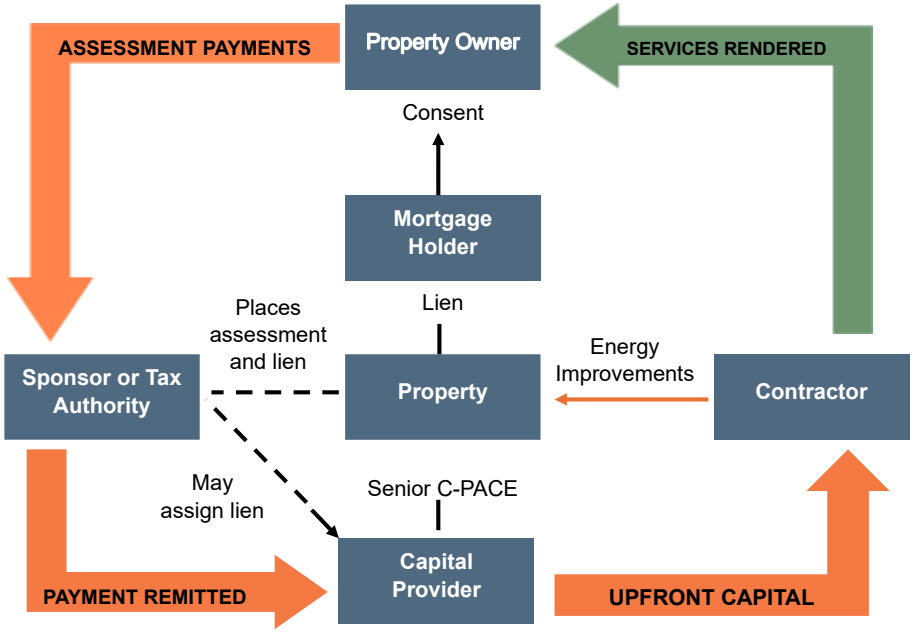
Commercial Property Assessed Clean Energy (C-PACE)

C-PACE uses borrowed capital to pay for the upfront costs, which the borrower repays over time via a voluntary tax assessment, allowing longer-term financing and transferability of the repayment obligations to the next property owner.[481] There are many variations on the steps of the C-PACE process. Figure G-1 illustrates one way that the C-PACE process might unfold

481 United States Department of Energy. *Commercial Property Assessed Clean Energy (C-PACE): A Fact Sheet for State and Local Governments*.

for a participating project. Green arrows depict the flow of funds, while orange arrows depict the flow of goods and services.[482]

Figure G-1: Simplified Overview of a C-PACE Process Model



Source: Lawrence Berkeley National Laboratory

C-PACE Implementation Considerations

When considering the design and implementation of C-PACE, the following variables should be addressed:

- Authority delegation
- The administrative structure of C-PACE can vary. Consider how much of the process can or will be delegated to third parties
- Number of projects to finance during a defined period
- Enforcement process
    - Entities responsible for each task
    - How to carry out tasks
    - Timelines for delinquency and penalties
    - Any distinct features of the enforcement process including:
        - The ability to remedy a delinquency

482 Leventis, Greg and Lisa Schwartz. June 2019. *Commercial PACE Financing and the Special Assessment Process: Understanding Roles and Managing Risks for Local Governments*, Lawrence Berkeley National Laboratory, https://eta-publications.lbl.gov/sites/default/files/cpace-special-assessmentv3.pdf.

- Whether nonjudicial foreclosures are possible

APPENDIX H:
Senate Bill 48 Requirements

Senate Bill 48 (Becker, Chapter 378, Statutes of 2023) added Section 25402.16 to the Public Resources Code. Table H-1 lists the sections of the Public Resources Code added by SB 48, the text of the code, and the chapters of this report in which the requirements are addressed or how the California Energy Commission acted to address the requirements.

Table H-1: Legislative Requirements

Section of Public Resources Code	SB 48 Requirement	Report Chapter or Action
25402.16(a)	Definitions of Benchmarking data, Covered building, Fuel-related emissions of greenhouse gases, Harassment, and Under-resourced community.	--
25402.16(b)	On or before July 1, 2026, the commission, in consultation with the State Air Resources Board, Public Utilities Commission, and Department of Housing and Community Development, shall develop a strategy for using benchmarking data to track and manage the energy usage and emissions of greenhouse gases of covered buildings in order to achieve the state's goals, targets, and standards related to energy usage and emissions of greenhouse gases of covered buildings, including both of the following targets: (1) The annual targets for statewide energy efficiency savings and demand reduction established pursuant to subdivision (c) of Section 25310. (2) The greenhouse gas emission reductions targets for the building sector established by the State Air Resources Board as part of achieving the economywide greenhouse gas emissions reductions required pursuant to the California Global Warming Solutions Act of 2006 (Division 25.5 [commencing with Section 38500] of the Health and Safety Code).	1, Building Performance Standards, Metric Objectives, Metric Selection Criteria

Section of Public Resources Code	SB 48 Requirement	Report Chapter or Action
25402.16(c)	In developing the strategy pursuant to subdivision (b), the commission shall do all of the following:	--
25402.16(c)(1)	Avoid increasing utility and rental cost burdens for, or causing evictions, harassment, or displacement of, tenants of covered buildings. For purposes of this paragraph, the commission shall consider including the following requirements as part of the strategy:	4, Identifying and Avoiding Negative Impacts of BPS on Tenants
25402.16(c)(1)(A)	Requirements to prohibit a renovation to a covered building that is required by the strategy from being a basis for terminating a tenancy and to ensure that any temporary relocation costs resulting from the renovation is paid for by the covered building owner.	2, 3, Appendix B, Appendix F
25402.16(c)(1)(B)	Requirements to prohibit an increase in rent for a tenant as a result of a renovation to a covered building that is required by the strategy or to limit the increase in rent to the long-term energy savings to a tenant resulting from the renovation.	4, Identifying and Avoiding Negative Impacts of BPS on Tenants
25402.16(c)(2)	Assess the feasibility and cost-effectiveness of building upgrades available to covered building owners for achieving increased energy efficiency and reductions of the emissions of greenhouse gases.	4
25402.16(c)(3)	Provide flexibility, to the extent feasible, for covered building owners to select among technology options and to align the timing of building upgrades with equipment replacement cycles.	3
25402.16(c)(4)	Encourage equitable access to jobs and other economic opportunities that may result from increased investment in covered building upgrades.	4

Section of Public Resources Code	SB 48 Requirement	Report Chapter or Action
25402.16(c)(5)	Prioritize reductions in fuel-related emissions of greenhouse gases because the state has already established targets, pursuant to Section 454.53 of the Public Utilities Code, for reducing, and ultimately eliminating, indirect emissions of greenhouse gases associated with electricity.	1
25402.16(c)(6)	Prioritize efficiency and decarbonization measures that will benefit tenants, including measures that reduce tenants' energy costs and remove indoor environmental hazards.	1, Metric Objectives for Occupant Impacts
25402.16(c)(7)	Consider including a process by which a covered building owner can propose, and the commission, or a local city or county building department to which the commission delegates this authority, may approve or reject, an alternative compliance plan. An alternative compliance plan shall, consistent with paragraph (1), avoid increasing utility and rental cost burdens for, or causing evictions, harassment, or displacement of, tenants.	3
25402.16(c)(8)	Consider authorizing a local jurisdiction to implement its own program for increasing energy efficiency and reducing the emissions of greenhouse gases as an alternative to the strategy developed pursuant to subdivision (b) if that program is expected to achieve substantially equivalent or better increases in energy efficiency and reductions of the emissions of greenhouse gases, and if that program guarantees substantially equivalent or stronger tenant protections.	3
25402.16(d)	In developing the strategy pursuant to subdivision (b), the commission shall consider input from affected stakeholders, including all of the following:	--
25402.16(d)(1)	Members of under-resourced communities and community-based organizations representing tenant advocacy, equity, and environmental justice concerns of under-resourced communities.	2, Appendix B

Section of Public Resources Code	SB 48 Requirement	Report Chapter or Action
25402.16(d)(2)	Representatives of local city or county government.	Appendix B, CalBPS and Utility Codes and Standards Enhancement (CASE) BPS Team
25402.16(d)(3)	Owners or operators of affordable housing.	Appendix B, Docket 24-BPS-01[483]
25402.16(d)(4)	Groups representing low-income residential and small commercial tenants, including organizations that provide legal services to those tenants.	2, Appendix B, Appendix F
25402.16(d)(5)	Providers of energy efficiency, renewable energy, and building decarbonization equipment and services.	Appendix B, Technical Advisory Working Group (TAWG)
25402.16(d)(6)	Labor unions that represent workers who implement building upgrades related to, or who manage or service, the energy infrastructure of covered buildings.	Appendix B, Docket 24-BPS-01[484]
25402.16(d)(7)	Technical building design professionals.	Appendix B, TAWG
25402.16(d)(8)	Facility operations professionals.	Appendix B, TAWG
25402.16(d)(9)	Multiunit residential building owners.	Appendix B, TAWG
25402.16(d)(10)	Nonresidential building owners.	Appendix B, TAWG

483 California Energy Commission. Docket Number: 24-BPS-01, TN#262142. https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-BPS-01.

484 Ibid.

Section of Public Resources Code	SB 48 Requirement	Report Chapter or Action
25402.16(d)(11)	Energy Utilities.	Appendix B, Utility CASE BPS Team
25402.16(e)	In order to ensure equitable participation and input from stakeholders representing under-resourced communities, low-income residential tenants, and small commercial tenants in the development of the strategy pursuant to subdivision (b), the commission shall do all of the following:	--
25402.16(e)(1)	Contract with one or more organizations with experience representing under-resourced communities, low-income residential tenants, and small commercial tenants to advise the commission on the development of the strategy.	2, Appendix B, Appendix J, Subcontract to RFP-24-401[485]
25402.16(e)(2)	Consider the feedback and recommendations from each advisory organization contracted with pursuant to paragraph (1) on the proposed strategy in advance of adopting any final strategy and, to the extent that any recommendations are not adopted in the final strategy, provide a written explanation of why the recommendations were not adopted and how the final strategy attempts to address the issues raised in those recommendations in an alternative way.	Appendix B, Appendix J, Subcontract to RFP-24-401[486]

485 California Energy Commission. RFP-24-401 — Building Energy Performance Strategy Report & Benchmarking Support. https://www.energy.ca.gov/solicitations/2024-08/rfp-24-401-building-energy-performance-strategy-report-benchmarking-support.

486 California Energy Commission. RFP-24-401 — Building Energy Performance Strategy Report & Benchmarking Support, https://www.energy.ca.gov/solicitations/2024-08/rfp-24-401-building-energy-performance-strategy-report-benchmarking-support.

Section of Public Resources Code	SB 48 Requirement	Report Chapter or Action
25402.16(e)(3)	In consultation with the advisory organizations contracted with pursuant to paragraph (1) and other stakeholders, develop metrics that could be used if the strategy is implemented to measure how the strategy is impacting under-resourced communities, low-income residential tenants, and small commercial tenants, and assess whether the strategy is achieving just and equitable outcomes.	2, Appendix B, Appendix I, Subcontract to RFP-24-401[487]

Source: CEC staff

487 Ibid.

APPENDIX I:
Equity Metrics

See consultant report.

California Energy Commission

CONSULTANT REPORT

Potential Equity Metrics for a Building Performance Strategy

Prepared for: **California Energy Commission**
Prepared by: **Strategic Actions for a Just Economy, People Organizing to Demand Environmental and Economic Rights, Emerald Cities Collaborative Northern California, and Qualus**

March 6, 2026

California Energy Commission

Primary Author(s):

Nathaniel Albers, Qualus
Francisco Arvizu, SAJE
Grace Hut, SAJE
Megan Leary, ECC NorCal
Christine Selig, PODER

ADM Associates, a Qualus Company
100 Colonial Center Parkway Suite 400,
Lake Mary, Florida 32746 Qualus
https://qualuscorp.com

PODER
255 Shotwell Street
San Francisco, California 94110
415-431-4210
www.podersf.org
Strategic Actions for a Just Economy (SAJE)
152 West 32nd Street
Los Angeles, California 90007
213-745-9961
www.saje.net

Emerald Cities Collaborative Northern California
580 California Street, Suite 1204
San Francisco, California 94104
www.emeraldcities.org

Contract Number: 400-24-001

Elizabeth Butler
Commission Agreement Manager

Ram Narayanamurthy
Branch Manager
EXISTING BUILDINGS BRANCH

Scott Blunk
Deputy Director
EFFICIENCY DIVISION

Michael J. Sokol
Director
EFFICIENCY DIVISION

Drew Bohan
Executive Director

DISCLAIMER

This report was prepared as the result of work sponsored by the California Energy Commission. It does not necessarily represent the views of the CEC, its employees, or the State of California. The CEC, the State of California, its employees, contractors, and subcontractors make no warranty, express or implied, and assume no legal liability for the information in this report; nor does any party represent that the uses of this information will not infringe upon privately owned rights. This report has not been approved or disapproved by the California Energy Commission, nor has the California Energy Commission passed upon the accuracy or adequacy of the information in this report.

TABLE OF CONTENTS

Page

Executive Summary I-6

Introduction I-8

Methodology I-11

Proposed Metrics I-12

Affordability I-12

Health I-15

Displacement Risk I-16

Workforce Development I-17

Program Compliance of Buildings I-18

Resiliency I-19

Procedural Equity I-19

Data Collection I-21

Conclusion I-22

EXECUTIVE SUMMARY

The California Energy Commission (CEC) partnered with three community-based organizations — Strategic Actions for a Just Economy, People Organizing to Demand Environmental and Economic Rights, and Emerald Cities Collaborative Northern California — with support from Qualus, to develop equity metrics required under Senate Bill 48 (Becker, Chapter 378, Statues of 2023). SB 48 directs the CEC to develop a building performance strategy that reduces energy use and greenhouse gas emissions in covered buildings without increasing costs or causing harm to low-income residential tenants, small commercial tenants, or underresourced communities. The law also requires input from these communities and metrics to evaluate whether outcomes are just and equitable.

In late 2025 and early 2026, the community-based organizations identified indicators that can help the CEC track benefits, burdens, risks, and access to opportunities from the implementation of a building performance strategy. The community-based organizations drew on their community expertise, prior building performance work centered on equity, and insights from statewide partners such as the Building Energy Equity and Power Coalition. The resulting metrics framework spans seven thematic areas:

- **Affordability** metrics assess whether the strategy affects rent or utility affordability. Metrics include rent changes, rent and energy burden, pass-through cost activity, enrollment in energy assistance programs, and the extent of community choice energy participation. These indicators help determine whether compliance creates financial strain for residential or small commercial tenants.
- **Health and habitability** metrics track whether building upgrades improve or worsen indoor environmental conditions. Proposed metrics include indoor air quality, thermal comfort complaints, gas-to-electric conversions, mold and appliance code violations, and complaints related to unsafe or harassing construction practices.
- **Displacement risk** metrics help stakeholders understand whether retrofit activity may increase eviction or housing instability. This category includes metrics on the presence of local tenant protections, rates of eviction filings, evictions related to substantial remodels like replacing whole-building plumbing systems or removing load-bearing walls, and self-reported displacement related to energy cost burdens.
- **Workforce development** metrics examine whether the strategy expands equitable access to good jobs, especially in underresourced communities. Metrics include prevailing wage payments, wage and benefit levels in building trades, and the share of upgrade contracts awarded to minority-, women-, and veteran-, -owned businesses or firms employing graduates of green workforce programs.
- **Program compliance by building type** metrics compare strategy compliance rates among buildings housing low-income residential tenants, small commercial tenants, and those in underresourced communities. These indicators determine whether implementation progress varies across building types or geographies.
- **Resiliency** metrics track how the strategy contributes to community resilience, including power outage frequency, utility disconnections, participation in community

solar and efficiency programs, and deployment of on-site energy generation or battery storage in underresourced communities.

- **Procedural equity metrics** assess the degree to which affected communities are meaningfully involved in designing and implementing the strategy. Metrics include participation by community-based organizations and tenant-serving groups in public processes and the level of public funding supporting their engagement.

The CEC can derive metrics from existing datasets such as rent registries, disadvantaged community indicators, utility program data, and the CEC covered buildings list. To capture health, habitability, and procedural equity indicators, the CEC may need to conduct new surveys or form partnerships with local and state agencies. Collecting data before and after implementation will enable the CEC to evaluate impacts over time.

The metrics provide a practical, actionable framework to detect burdens early, identify benefits, and continuously improve the statewide building performance strategy. By adopting these metrics, the CEC can ensure SB 48 implementation supports tenant stability, healthy housing, equitable economic opportunity, and resilient communities.

INTRODUCTION

The California Energy Commission (CEC) contracted with Qualus, in part, to gather stakeholder feedback about the Senate Bill 48 (Becker, Chapter 378, Statues of 2023) implementation process and the development of a strategy "…to achieve the state's goals, targets, and standards related to energy usage and emissions of greenhouse gases of covered buildings…".[488] *Covered buildings* are defined as commercial buildings more than 50,000 square feet and multifamily buildings more than 50,000 square feet with 17 or more units.[489] The CEC maintains a covered buildings list (CBL) to support the benchmarking program and could use the same list to implement a building performance strategy. According to SB 48, any strategy must:

- Avoid increasing utility and rental costs.
- Be feasible and cost-effective.
- Provide flexible pathways to compliance.
- Encourage equitable access to jobs and other economic opportunities.
- Reduce fuel-related emissions.
- Prioritize measures that benefit tenants.
- Consider offering local jurisdictions pathways to exceed the state strategy.
- Receive input from 14 stakeholder groups including low-income residential tenants, small commercial tenants, and underresourced communities.

SB 48 requires the CEC to contract with advisory organizations to provide feedback on the proposed strategy and develop metrics that could be used to measure how, if at all, the strategy is affecting underresourced communities, low-income residential tenants, and small commercial tenants. In addition, SB 48 requires the advisory organizations to develop these metrics to assess if the strategy is achieving just and equitable outcomes.[490]

Equitable is defined by the Institute for Market Transformation (IMT) as "the fair distribution of services, benefits, burdens, and decision-making power, especially for those historically excluded or harmed by environmental and housing policies."[491] When evaluating equity, it is important to consider procedural, distributional, and recognition-based outcomes of equity. *Procedural equity* refers to the engagement of those affected (for example, low-income

---

488 Senate Bill 48. Building Energy Savings Act. Accessed February 26, 2026, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB48.

489 Ibid.

490 California Public Resources Code. Section 25402.16, Accessed 2025, https://california.public.law/codes/public_resources_code_section_25402.16.

491 Sharrow, Louise, Giulianna DiLauro, and Marshall Duer-Balkind. August 2025. *Integrating Equity Into Building Performance Standards: Review of Best Practices and Implementation Examples Across North America*. Institute for Market Transformation, https://www.cityenergyproject.org/wp-content/uploads/2025/08/Integrating-Equity-into-Building-Performance-Standards-2025.pdf.

tenants or small commercial tenants) in the process of designing, implementing, and evaluating policies and programs. "*Distributional equity* refers to the fair allocation of benefits, costs, and risks across populations, with explicit attention to those historically marginalized or burdened by environmental and housing inequities."[492] The goal of an equitable approach to designing state policy and implementing a new program is to ensure that everyone has a chance for a healthy, safe, and good life. To understand if the state enacted a building performance strategy equitably, there must be some indicators or metrics the CEC and stakeholders can use to monitor the effects of the strategy on various populations over time.

Beginning in November 2025, three community-based organizations (CBOs) — Strategic Actions for a Just Economy (SAJE), People Organizing to Demand Environmental and Economic Rights (PODER), and Emerald Cities Collaborative Northern California (ECCNC) — led the development of this document as the primary architects of the equity metrics framework. Representing low-income residential tenants, small commercial tenants, and underresourced communities, the CBOs drove the analysis, shaped the proposed metrics, and grounded the work in their community experience and expertise. Qualus and the CEC supported this effort through coordination, reporting, and providing guidance and clarification, as needed.

From November 2025 through February 2026, SAJE guided the work related to low-income residential tenants and small commercial tenants, while PODER and ECCNC guided the work related to underresourced communities. Together, the CBOs developed metrics that assess how the state's building performance strategy may affect the communities they represent and whether the strategy advances just and equitable outcomes.

This consultant report focuses on the feedback, guidance, and metrics the CBOs provided. Specifically, this report proposes metrics the state could use to determine if a building performance strategy is achieving just and equitable outcomes during implementation. The following section describes the methodology used to develop these metrics and the subsequent sections present the proposed metrics.

The CBOs will engage in a second task, reviewing CEC materials, including the draft building performance strategy report, and providing detailed feedback grounded in community perspectives in addition to this consultant report.

492 Bednar, Dominic J. and Tony G. Reames. March 23, 2020. "Recognition of and Response to Energy Poverty in the United States." *Nature Energy,* https://doi.org/10.1038/s41560-020-0582-0.

METHODOLOGY

The representatives of the CBOs PODER, ECCNC, and SAJE ("the team"), in collaboration with Qualus and CEC staff, developed the proposed list of metrics in this document. The team used their expertise and experience developing metrics for other initiatives and representing specific stakeholder groups. In addition, the team sought input from colleagues including members of the Building Energy Equity and Power (BEEP) Coalition and organizations that are part of the Supporting Equitable Building Performance (SEBP) process supported by IMT, Community Climate Shift, The People's Climate Innovation Center, and the Building Electrification Institute.

The metric development process involved brainstorming metrics for consideration and identifying possible data sources for the metrics. In addition, the team used a shared document to identify the who, what, why, and how of each metric, defined below.

- "Who" is the primary group affected.
- "What" is the theme or category of the metric.
- "Why" describes the justification for monitoring a specific metric.
- "How" identifies the data needed to develop a metric. The "how" section also identifies if there is a data source for a metric or if the metric is aspirational.

The team created tables of metrics and summarized them for publication into the following sections of this report. Each section below begins with a theme (the "what") and briefly explains "why" metrics are necessary to understand that theme. The tables identify the proposed metrics, data collection, data sources, and indicate to which group the metric applies.

PROPOSED METRICS

The subsections below identify seven areas of metrics to ensure a building performance strategy leads to neutral or net positive outcomes. These areas are affordability, health, displacement risk, workforce development, program compliance, resiliency, and procedural equity. Each subsection describes the area and includes a table or tables that outline the potential metrics, data collection and analysis, possible data sources, and the group or groups with which that metric is associated.

Affordability

The state should track how a strategy could alter affordability, especially as it affects rent payments. Rent is the largest household expense typically so understanding how, if at all, a strategy may affect rent costs will be critical.[493] The metrics in Table I-1 are options the state could use to track how rent costs and a building performance strategy relate to one another over time.

493 McGhee, Eric, Marisol Cuellar Mejia. February 27, 2024. "California's Renters." Blog post. Public Policy Institute of California, https://www.ppic.org/blog/californias-renters/.

Table I-1: Metrics to Assess Rent Affordability*

Metrics	Description and Methodology	Potential Data Sources	LIRT	SCT	URC
Rent changes	Measure changes in total rent. Precompliance rents can be compared to postcompliance rents in covered buildings. Alternatively, rent changes in covered buildings could be compared to rent changes in a group of similar noncovered buildings.	• California Public Records Act requests from local housing agencies that maintain rent registries • CoStar • Internal Revenue Service tax data • Senate Bill 1103 Commercial Tenant Protection Act[494] • Survey of tenants of covered buildings • American Community Survey	✓	✓	✓
Rent burden	Measure percentage of income spent on rent (residential) or percentage of revenue spent on rent (small commercial) by census tract. Precompliance burden can be compared to postcompliance burden in covered buildings. Alternatively, rent burden in covered buildings could be compared to rent burden in a group of noncovered buildings.	• Survey of tenants of covered buildings • American Community Survey	✓	✓	✓
Pass-through costs applications	Track applications for pass-through costs for capital improvements and renovations. Relevant to tenants who live in rent-stabilized buildings. Compare pre- and postcompliance application rates in covered buildings, or applications in covered buildings vs non-covered buildings.	• California Public Records Act requests from local jurisdictions with housing departments that track pass-through cost rent increase applications (that is, jurisdictions with rent stabilization ordinances). • Identify source for business pass through costs	✓	✓	✓
Count of jurisdictions with rent control or stabilization policies	Identify jurisdictions that have rent control or stabilization policies beyond state policy like Assembly Bill 1482 (Chiu, Chapter 597, Statutes of 2019) that caps annual rent increases. Track these changes over time.	• Develop a database of jurisdictions through research by CEC staff or contractors.	✓	N/A	✓

*LIRT = low-income residential tenants; SCT = small commercial tenants; URC = underresourced communities

Source: PODER, ECCNC, and SAJE

In addition to rent changes, it will be important to understand energy affordability because energy costs can make up a large share of total expenses. Therefore, the CBO team proposes using the metrics in Table I-2 to understand how low-income tenants, small commercial tenants, and underresourced communities would be affected by the potential cost burden of utility bill changes created by a building performance strategy.

494 Senate Bill 1103 (Menjivar, Chapter 1015, Statutes of 2024). Tenancy of Commercial Real Properties: Agreements: Building Operating Costs. Accessed February 26, 2026. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB1103.

Table I-2: Metrics to Assess Energy Affordability*

Metrics	Description and Methodology	Potential Data Sources	LIRT	SCT	URC
Energy burden percentage	Percentage of income for households or percentage of revenue for small commercial tenants spent on energy in covered buildings, especially low-income housing and buildings with small commercial tenants. Estimate the amount of megawatt-hours (MWh) saved or increased because of compliance with SB 48, multiplied by cost of energy in covered buildings.	• Energy equity indicators affordability tool • Survey of tenants of covered buildings	✓	✓	✓
Capital expense burden	Percentage of revenue small commercial tenants are paying for capital expenses like restaurant equipment. Capital expense burden can track if small commercial tenants are paying more, less, or about the same for capital expenses as the state enacts a strategy.	• Survey of tenants of covered buildings	N/A	✓	N/A
Enrollment in energy savings programs	Measure enrollment rates in energy savings programs like California Alternate Rates for Energy (CARE), Family Electric Rate Assistance (FERA), programs before and after compliance in eligible covered low-income multifamily buildings.	• California Public Utility Commission (CPUC) data • Utility program reports could be used as a source for this data. Statewide resource hub or one-stop shop could track.	✓	N/A	✓
Count of covered buildings enrolled in Community Choice Electricity Program	Determine percentage of covered buildings that are in a Community Choice area vs those outside the area. Those enrolled in Community Choice may have lower energy rates.	• Community Choice data	✓	✓	✓

* LIRT = low-income residential tenants; SCT = small commercial tenants; URC = underresourced communities
Source: PODER, ECCNC, and SAJE

Knowing how often and how much investments occur in communities of interest may help the CEC understand if a strategy contributes to just and equitable outcomes over time. The team proposes the metrics in Table I-3**Error! Reference source not found.** to identify the degree to which public and private investments occur in the communities of interest. The team is unclear about whether data are available to develop some of these metrics.

Table I-3: Metrics to Assess Investments Made in the Community*

Metrics	Description and Methodology	Potential Data Sources	LIRT	SCT	URC
Amount of money spent annually on buildings in underresourced communities	Understanding how much public money is being invested in underresourced community buildings is an indication of how a strategy could improve buildings.	• To be determined	N/A	N/A	✓
Amount of service line upgrades in environmental justice (EJ) communities and grid maintenance	Knowing the degree to which investments are made in the energy infrastructure of EJ communities can be used to determine if a strategy contributes to improved infrastructure over time.	• Utility data	N/A	N/A	✓
Investments in buildings owned by minority-owned, veteran-owned, and women-owned businesses	Understanding how much public money is invested in underresourced community buildings is an indication of how a strategy may contribute to improved buildings.	• To be determined	N/A	N/A	✓

*LIRT = low-income residential tenants; SCT = small commercial tenants; URC = underresourced communities
Source: PODER, ECCNC, and SAJE

Health

The team proposes the metrics in Table I-4 to assess how a building performance strategy may influence building habitability and, in turn, the health of tenants. By tracking changes in habitability conditions and then comparing them to conditions after strategy implementation, the CEC and other stakeholders can determine whether the strategy is improving building quality and supporting better health outcomes for occupants.

Table I-4: Metrics to Assess Building Health*

Metrics	Description and Methodology	Potential Data Sources	LIRT	SCT	URC
Indoor air quality collected at covered building sites	Property level data on code violations. Can be used to identify buildings with air quality hazards over time and rates can be compared between pre- and poststrategy implementation.	• On-site air quality monitoring completed at a representative sample of covered buildings, especially in multifamily buildings.	✓	✓	✓
Count of sites converting from gas to electric cooking and heating	Switching from gas to electric cooking and heating can contribute to improved air quality in a building. An increase in electrification could indicate that air quality is improving in these buildings.	• Survey of residents and tenants of covered buildings	✓	✓	✓
Thermal comfort complaints	Property level data on code violations in buildings subject to the strategy. Can be used to identify buildings with air quality hazards over time and rates can be compared between pre- and poststrategy implementations.	• Survey of residents and tenants of covered buildings	✓	✓	✓
Amount of code violations like mold broken appliances, or similar violations	Property level data on code violations in buildings subject to the strategy. Can be used to identify buildings with air quality hazards over time and rates can be compared between pre- and post-strategy implementation.	• California Public Records Act requests from local code enforcement agencies and housing departments.	✓	✓	✓
Count of illegal and unpermitted construction complaints	Track counts of complaints about illegal or unpermitted construction activities filed by tenants in covered buildings. Compare counts in covered buildings to counts in similar noncovered buildings.	• California Public Records Act requests from local code enforcement agencies and housing departments • Surveys for residential and business tenants • Contractors State License Board	✓	✓	✓
Tenant complaints about construction-as-harassment	Track complaints filed by tenants in covered buildings. Compare count of complaints in covered buildings to count in similar non-covered buildings.	• California Public Records Act requests from local housing departments with anti-harassment protections • Surveys of residential and commercial tenants • California Civil Rights Department	✓	✓	✓

*LIRT = low-income residential tenants; SCT = small commercial tenants; URC = underresourced communities

Source: PODER, ECCNC, and SAJE

Displacement Risk

Assessing how a strategy and work resulting from a strategy could displace the groups of interest is key to reducing possible negative outcomes. The team proposes the metrics in Table I-5 to understand how residents' or tenants' risk of displacement may change because of retrofit and upgrade work resulting from a strategy.

Table I-5: Metrics to Assess Risk of Displacement*

Metrics	Description and Methodology	Potential Data Sources	LIRT	SCT	URC
Absence or presence of a local rent stabilization policy	Develop a database with data on local tenant protections and track changes or additions to local protections. Cross-reference with CBL to identify buildings that may be vulnerable to high rent increases.	• Local jurisdiction websites or municipal codes • Tenants Together statewide rent stabilization tracker • California Department of Justice Local Rent Stabilization Policy List[495]	✓	✓	✓
Absence or presence of local just cause eviction protections	Develop a database with data on local tenant protections and track changes or additions to local protections. Cross-reference with the CBL to identify vulnerable buildings.	• Local jurisdiction websites or municipal codes	✓	N/A	✓
Absence or presence of anti-harassment protections	Develop a database with data on local tenant protections and track changes or additions to local protections. Cross-reference with the CBL list to identify vulnerable buildings.	• Local jurisdiction websites or municipal codes	✓	✓	✓
Disadvantaged community rating	Cross-reference the CBL with disadvantaged community metrics to identify vulnerable buildings. Track changes of ratings over time.	• CalEnviroScreen 4.0	✓	N/A	✓
Substantial remodel evictions	Track substantial remodel eviction filings in covered buildings. Compare rates over time in covered buildings to rates in buildings without substantial remodels.	• California Public Records Act request from local housing agencies on number of filings of intent to evict notices for substantial remodels.	✓	N/A	✓
Eviction filings	Compile data on eviction filings by ZIP code. Can be used to identify vulnerable buildings or compared to postcompliance eviction rates.	• California Public Records Act request from courts or sheriff's departments on eviction lockouts	✓	N/A	✓
Self-reported displacement resulting from energy burden	Data on the effects of energy burden on housing stability.	• Survey of low-income tenants.	✓	N/A	N/A

*LIRT = low-income residential tenants; SCT = small commercial tenants; URC = underresourced communities

Notes: Most housing departments do not require landlords to file intent to evict notices so will not have this data. Courts only provide eviction data in aggregate, often by courthouse or by ZIP code, and it is not possible to get building-level eviction data from the courts.

Source: PODER, ECCNC, and SAJE

Workforce Development

Another area of interest the CEC and other state agencies may want to consider is monitoring the effects a strategy has on the workforce in California. Understanding how a strategy could change wages, training, and job opportunities will be important to determine if the strategy is

495 California Department of Justice. *Local Rent Stabilization Laws: Permissible Rent Increases.* Accessed February 25, 2026, https://oag.ca.gov/system/files/media/local-rent-laws-eng.pdf.

contributing to positive outcomes in the community. The team proposes the metrics in Table I-6 to evaluate the effect a strategy could have on the workforce in California.

Table I-6: Metrics to Assess the Impact of a Strategy on the Workforce*

Metrics	Description and Methodology	Potential Data Sources	LIRT	SCT	URC
Percentage of building trades workers that are paid prevailing wages[496]	Monitor the percentage of building trades workers that are paid prevailing wages over time.	• California Department of Industrial Relations (DIR)	N/A	N/A	✓
Average and median wages by occupation in building trades	Monitor the change in average and median wages in the building trades over time.	• DIR	N/A	N/A	✓
Percentage of jobs in building trades that provide employer paid benefits	Monitor changes in the percentage of building trades jobs that provide paid health insurance, paid leave, or retirement benefits.	• DIR	N/A	N/A	✓
Number of building upgrade contracts and dollar value awarded to minority- and women-owned businesses	Monitor change in number or dollar value of building upgrade or retrofit contracts awarded to minority- and women-owned business.	• To be determined	N/A	N/A	✓
Number of contracts and dollar value awarded to businesses with graduates from green workforce development programs[497]	Monitor change in number or dollar value of building upgrade or retrofit contracts awarded to firms that employ graduates of green workforce development programs.	• To be determined	N/A	N/A	✓

*LIRT = low-income residential tenants; SCT = small commercial tenants; URC = underresourced communities

Source: PODER, ECCNC, and SAJE

Program Compliance of Buildings

Monitoring how compliance with a strategy varies by building type will help implementers understand how a strategy is improving conditions for the groups of interest. Implementers will need to know if buildings with low-income tenants or small commercial tenants in underresourced communities have different rates of compliance than other areas of the state. To address these concerns, the team proposes the metrics in Table I-7.

Table I-7: Metrics to Measure Program Compliance by Building Type*

Metrics	Description and Methodology	Potential Data Sources	LIRT	SCT	URC
Compare compliance rates by low-income multifamily buildings	Compare compliance rates of low-income multifamily buildings to all other multifamily buildings.	• CBL	✓	N/A	N/A
Compare compliance rates by ZIP code or other geographic area	Compare compliance rates by buildings in underresourced communities to those in better resourced areas by ZIP code or other geographic area.	• Senate Bill 535 (De León, Chapter 830, Statutes of 2012) • Disadvantaged Communities Data[498] • CBL	N/A	N/A	✓
Compare compliance rates of buildings with a large share of small commercial tenants	Compare compliance rates of buildings with small commercial tenants to similar buildings with larger commercial tenants.[499]	• CBL	N/A	✓	N/A

*LIRT = low-income residential tenants; SCT = small commercial tenants; URC = underresourced communities

Source: PODER, ECCNC, and SAJE

Resiliency

Resiliency means the ability of a community to withstand, adapt, and recover from disruptions such as wildfire, flooding, or other natural or human caused events. The team proposes the metrics in Table I-8 to evaluate the effect a strategy could have on the resiliency of a community.

Table I-8: Metrics to Assess Resiliency*

Metrics	Description and Methodology	Potential Data Sources	LIRT	SCT	URC
Count of power outages by ZIP code	Monitor the number of power outages in disadvantaged community ZIP codes compared to other community ZIP codes.	• SB 535 Disadvantaged Communities Data	✓	✓	✓
Count of disconnections for residential customers and small commercial customers	Monitor the number of disconnections in disadvantaged communities compared to other communities.	• SB 535 Disadvantaged Communities Data	✓	✓	✓
Count of projects enrolled in community solar programs	Compare community solar enrollment in disadvantaged communities to those in other communities.	• SB 535 Disadvantaged Communities Data	✓	✓	✓
Count of covered buildings enrolled in energy efficiency programs	Compare enrollment of projects in disadvantaged communities to projects in other areas.	• Utility program enrollment data	✓	✓	✓
Count of on-site energy generation and battery storage projects	Compare on-site generation projects in disadvantaged communities to projects in other areas.	• SB 535 Disadvantaged Communities data	✓	✓	✓

*LIRT = low-income residential tenants; SCT = small commercial tenants; URC = underresourced communities

Source: PODER, ECCNC, and SAJE

Procedural Equity

To determine if a strategy supports procedural equity, implementers need to understand how the strategy changes the processes communities use to participate in decisions, evaluate impacts, and develop and implement solutions to any unwanted effects. The team proposes

---

496 *Prevailing wage* is the hourly rate, benefits, and overtime mandated for workers on public works projects. Prevailing Wage Requirements.

State of California Department of Industrial Relations. "Prevailing Wage Requirements," web page, https://www.dir.ca.gov/public-works/prevailing-wage.html.

497 *Green workforce development programs* are any program that aims to train, retrain, and employ workers in fields such as sustainability, climate resilience, renewable energy, and energy efficiency.

498 California Environmental Protection Agency. Accessed February 25, 2026. "California Climate Investments to Benefit Disadvantaged Communities," web page, https://calepa.ca.gov/envjustice/ghginvest/.

499 The CEC would need to define what customers to categorize as small commercial and large commercial. The CPUC and the major utilities in California define small commercial as those on a general service or agricultural rate, have fewer than 100 accounts, and do not exceed 20 kilo-watts of energy demand in more than three months in one year. The CPUC definition does not consider tenancy which would be an important consideration for this metric for the CEC to include. Additional research may be needed to determine the most appropriate method for comparing businesses.

the metrics in Table I-9 to evaluate the effect a strategy could have on procedural equity in California. It is unclear to the team what data sources may exist to develop these metrics.

Table I-9: Metrics to Assess Procedural Equity*

Metrics	Description and Methodology	Potential Data Sources	LIRT	SCT	URC
Count of CBOs or other stakeholders that represent LIRT, SCT, or URC populations that participate in public comment reviews, meetings, and other activities related to developing building strategies	Conduct a review of public comment portals or other websites that document public comments and count those from CBOs or affected groups.	• To be determined	✓	✓	✓
Tracking of public funding that supports CBOs to reach affected building owners, residents, and tenants	Survey of CBO leadership to provide insights into funding sources.	• To be determined	✓	✓	✓

*LIRT = low-income residential tenants; SCT = small commercial tenants; URC = underresourced communities

Source: PODER, ECCNC, and SAJE

DATA COLLECTION

There are opportunities to improve equity and collect data to better understand the disparities that may result from a building performance strategy.

Existing data sources do not capture fully whether building performance strategies improve equity in communities, so state agencies will need to collect new data to close those gaps. Collecting more detailed health outcomes data will help the CEC understand how building performance strategies affect community health. Because building performance strategy implementation will likely occur in phases, the CEC must gather data throughout the implementation process. Data should identify building types and geographic characteristics, including urban or rural location, ZIP code, census tract, climate zone, and utility service area.

In addition, to understand the potential effects of a strategy on the populace, it is important to collect data by various groups including:

- Age.
- Immunocompromised.
- People with disabilities.
- Economic class and environmental justice.
- Renters and homeowners.
- Temporary sheltered.
- Race.
- Ethnicity.
- Sex.
- Limited English speaking.
- Medical baseline (those that receive discounted utility because they require electricity to run medical equipment).
- Lesbian, gay, bisexual, transgender, or queer.
- Enrolled in existing programs such as CARE or FERA or similar programs.

Collecting data from these groups will help the CEC and stakeholders understand how affordability, health, and the other categories discussed above affect each group. These data will also help the CEC and stakeholders identify ways to lessen or prevent negative impacts the strategy may have on these groups.

CONCLUSION

Equity metrics are central to the success of building performance strategies by creating changes that benefit everyone. SB 48 and the CBOs' preceding work with IMT and the CEC, through SEBP, has been an excellent foundation for an effective approach to creating, implementing, and evaluating building performance strategies in California. The team appreciates the Legislature and the CEC for having the foresight at this early stage to allocate resources for CBOs to participate in this public policy process effectively through identifying and proposing appropriate equity metrics. The collaborative work of SAJE, PODER, and ECCNC, along with their statewide CBO collaborators including the BEEP Coalition, have created the foundations of an equitable statewide building performance policy that benefits everyone.

The team recommends an ongoing and iterative process where these metrics benchmark, evaluate, and guide building performance strategies, and where affected communities are part of the process of understanding disparity and cocreating solutions. An iterative procedural approach allows all those involved to learn from the metrics and create solutions that can help all people that use and live in covered buildings. Metrics help stakeholders understand what works and what solutions need to be codeveloped, which helps identify solutions that can work for everyone, including those affected most by disparity.

The metrics proposed in this report represent the data needed to understand how a building performance strategy may affect low-income residential tenants, small commercial tenants, and underresourced communities. The seven thematic areas of affordability, health, displacement risk, workforce development, program compliance, resiliency, and procedural equity will help the CEC and stakeholders determine the effect a strategy has on the groups of interest.

While all proposed metrics are valuable, several stand out as achievable and critical for early monitoring. Metrics that use existing administrative or aggregated datasets — such as rent changes; energy burden levels; enrollment in CARE, FERA, or other energy programs; eviction filings at the ZIP code level; disadvantaged community rankings; and compliance rates from the CBL — are easy to track. These datasets can be used with minimal new data collection and can provide the earliest signals of whether a strategy is benefiting or burdening the groups of interest.

Metrics that identify unintended negative outcomes are also important. Tracking substantial remodel eviction filings, changes in illegal or unpermitted construction complaints, and shifts in rent burden or pass-through costs will be essential to detect displacement related to retrofits. Some of these metrics require more data reporting or new partnerships with local jurisdictions and may take longer to implement than metrics that already have data sources. Early identification of increasing eviction attempts, spikes in harassment complaints, or disproportionate rent increases in covered buildings would allow the state to intervene and reduce these negative effects where possible.

Finally, metrics that clarify long-term, structural impacts — such as investments in underresourced buildings, access to cooling and healthy housing conditions, workforce wage

and benefit trends, and participation in programs that enhance resiliency — provide insight into whether the strategy is contributing to improvements in the building stock important to the groups of interest. Some of these metrics may require new data collection or periodic surveys and will be important for assessing whether the strategy is advancing the broader goals of health, stability, economic opportunity, and climate resilience.

These metrics offer the state a balanced and practical approach that enables near-term (next three to five years) monitoring of issues pertinent to equity, while building toward a long-term (five years or more) system for evaluating whether implementation leads to just and equitable outcomes. As the strategy evolves, these metrics can guide adaptive decision-making and ensure that California's transition to cleaner, more efficient buildings supports the communities SB 48 prioritizes.

APPENDIX J:
Summary of Comments from Advisory Organizations and CEC Responses

Senate Bill 48 (Becker, Chapter 378, Statutes of 2023) directed the California Energy Commission (CEC) to contract with advisory organizations to advise on the development of the California Building Energy Performance Strategy Report.[500] The CEC contracted with three community-based organizations (CBOs) to fulfill this requirement, Strategic Actions for a Just Economy (SAJE), People Organizing to Demand Environmental and Economic Rights (PODER), and Emerald Cities Collaborative (ECC).[501]

This appendix summarizes the comments the contracted CBOs provided in response to the draft California Building Energy Performance Strategy Report[502] and outlines changes CEC staff made to the final report in response to those comments. The appendix also includes explanations for any recommendations not adopted and how the final strategy attempts to address those issues in an alternative way. Detailed comments and recommendations are available in CEC docket number 24-BPS-01.[503]

Adopted Recommendations

This section summarizes recommendations from the CBOs, separated by theme, that resulted in changes to the final report.

Alternative Compliance Pathways

Recommendations on alternative compliance pathways (ACPs) and related changes to the final report are summarized below:

---

500 California Public Resources Code. Section 25402.16, https://legiscan.com/CA/text/SB48/id/2844354.

501 The CEC contracted with ADM, a Qualus company, to help develop this report who contracted with SAJE, PODER, and ECC.

502 People Organizing to Demand Environmental and Economic Rights. August 11, 2026. People Organizing to Demand Environmental and Economic Rights (PODER) and Emerald Cities Collaborative, Inc. (ECC) Comments/Notes. California Energy Commission, Docket Number: 24-BPS-01, TN#272116, https://efiling.energy.ca.gov/GetDocument.aspx?tn=272116&DocumentContentId=109794.

Strategic Actions for a Just Economy. August 11, 2026. Strategic Actions for a Just Economy Comments - California Energy Commission's Draft California Building Energy Performance Strategy Report, SB 48 Implementation Report. Energy Commission, Docket Number: 24-BPS-01, TN#272111, https://efiling.energy.ca.gov/GetDocument.aspx?tn=272111&DocumentContentId=109782.

Strategic Actions for a Just Economy. August 11, 2026. Strategic Actions for a Just Economy Comments - California Energy Commission's Draft California Building Energy Performance Strategy Report, SB 48 Implementation Report. Energy Commission, Docket Number: 24-BPS-01, TN#272112, https://efiling.energy.ca.gov/GetDocument.aspx?tn=272112&DocumentContentId=109788.

503 California Energy Commission. Docket Number: 24-BPS-01, https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-BPS-01.

- PODER and ECC cautioned the CEC against recommending a portfolio-wide alternative compliance option because it could create a loophole for landlords to make investments based on renter income and perceived ability to recoup costs. The CBOs expressed that common ownership should not be the sole reason to justify baseline adjustments as an ACP.

  In response, CEC staff removed the portfolio-based pathway as a potential ACP from the recommendations. The CEC also asked for broader authority from the Legislature to determine ACPs in a formal rulemaking guided by input from interested members of the public.

Tenant Protection

Recommendations on tenant protections and related changes to the final report are summarized below:

- SAJE recommended the CEC expand the discussion of "construction-as-harassment" to include other forms of tenant harassment such as intimidation, verbal abuse, misinformation, and psychological pressure. SAJE also recommended the CEC adopt the definition of harassment used by the City of Los Angeles in the Tenant Anti-Harassment Ordinance (Los Angeles Municipal Code sections 45.30-45.36).

  In response, CEC staff added "tenant harassment" as a potential equity metric that could be used to measure the impact of a building performance standard (BPS) and updated the definition of harassment to reflect the definition used in City of Los Angeles's Tenant Anti-Harassment Ordinance.

- SAJE recommended the CEC track eviction rates for buildings undergoing energy upgrades and buildings in surrounding areas not undergoing energy upgrades. SAJE noted that energy upgrades can raise property values and rents, which may indirectly displace small businesses located in buildings nearby even if those buildings did not undergo energy upgrades. SAJE also recommended the CEC create a commercial rent registry that requires landlords to report occupancy, vacancies, and reasons for prolonged vacancies, to help policymakers understand displacement risks and market conditions.

  The CEC added an appendix to the final report detailing potential metrics that could be used to evaluate the impacts of a BPS. Metrics include eviction filings by zip code and rent changes for covered buildings, which could be used to understand displacement risk and market conditions under a BPS.

- SAJE recommended the CEC recognize the difference between commercial leases and residential leases, noting that commercial leases lack standardization and often include terms unfavorable to tenants. SAJE noted that many commercial tenants operate without written leases, making it difficult for them to understand or assert their rights and recommended the CEC further emphasize green leases and performance-based leases in its policy recommendations.

In response, the CEC added language to the final report to highlight the benefits of green and performance-based leases for commercial tenants. The final report also includes discussion of how a BPS might impact residential and small commercial tenants and recognizes the distinct challenges these groups face. The report includes strategies to avoid negative impacts of a BPS on commercial tenants, including the role of green and performance-based leases.

Tenant Landlord Interaction

Recommendations on tenant-landlord interactions and related changes to the final report are summarized below:

- SAJE urged the CEC to reconsider the use of the term "naturally occurring affordable housing" (NOAH) and CEC's statement in the report that 37 percent of the available affordable housing stock is naturally occurring. SAJE noted that estimates of NOAH frequently overstate the amount because it is assumed that housing in low-income census tracts is affordable.

  In response, the CEC removed instances of the term "naturally occurring affordable housing" and "NOAH" and replaced the term with "unsubsidized affordable housing." In addition, the final report does not contain an estimation of the available unsubsidized housing stock.

- SAJE stated that the draft report alternated between the use of "NOAH" and "subsidized housing" when referring to affordable housing. SAJE recommended the report distinguish the two ownership models.

  In response, the CEC updated the final report to differentiate unsubsidized affordable housing from subsidized housing.

- SAJE noted that while the draft report references affordable housing as a potential qualifying criterion for ACPs, it does not define what constitutes affordable housing.

  In response, the CEC clarified that subsidized and unsubsidized affordable housing should be eligible for ACPs.

- SAJE asked the CEC to correct a quote in the draft report that states harassment is a prevalent issue in jurisdictions without rent stabilization ordinances to state that harassment is a prevalent issue in jurisdictions with rent stabilization ordinances.

  In response, the CEC corrected the final report to state that harassment is a prevalent issue in jurisdictions with rent stabilization ordinances.

- SAJE recommended the CEC use more consistent terminology when referring to landlords, building owners, and housing providers throughout the report.

  In response, the CEC revised the final report to use "building owner" when discussing BPS reporting and compliance responsibilities and "landlord" when discussing tenant-landlord interactions. The CEC also removed instances of the term "housing provider" in the final report.

Recommendations Considered

This section provides explanations for CBO recommendations that were not adopted and how the final strategy attempts to address those issues in an alternative way.

Building Energy Benchmarking Program

The CBOs provided the following recommendation related to the Building Energy Benchmarking Program (benchmarking program):

- PODER and ECC recommended that the CEC clarify benchmarking program compliance rates by building type, identify building types with the lowest compliance rates, and increase benchmarking compliance in preparation for BPS adoption.
- The CEC tracks benchmarking compliance by property type and makes the data publicly available on the benchmarking program website.[504] Compliance rates change constantly as the CEC engages with noncompliant building owners. The CEC will continue efforts to increase benchmarking program compliance.

Data

The CBOs provided the following recommendations related to data:

- PODER and ECC recommended the CEC identify which entity would be responsible for establishing baseline performance using available benchmarking data.

  The final report includes a recommendation that the Legislature grant the CEC authority to implement a statewide BPS, which would include establishing baseline performance for covered buildings.

- PODER and ECC recommended the CEC address challenges in obtaining benchmarking data from large retailers and clarify how to address the issues.

  The final report includes a discussion of benchmarking data collection challenges and acknowledges a potential gap in the ability of building owners to collect energy use data from tenants. Updates to benchmarking data collection may happen through the existing authority under Assembly Bill 802 (Williams, Chapter 590, Statutes of 2015).

- PODER and ECC recommended an on-site verification requirement, citing on-site verification as a tool necessary to ensure retrofits have been implemented.

  The final report includes a discussion of the benefits of on-site verification, however, the CEC does not recommend requiring on-site verification due to administrative burden and workforce constraints. The CEC encourages building owners to pursue on-site verification voluntarily.

Enforcement and Fines

SAJE provided the following recommendation related to enforcement and fines:

---

504 California Energy Commission. Building Energy Benchmarking Program, https://www.energy.ca.gov/programs-and-topics/programs/building-energy-benchmarking-program.

- SAJE recommended that financial penalties exceed the cost of compliance to create an effective incentive for BPS compliance.

  The final report includes a recommendation for the CEC to conduct a cost-benefit analysis to better understand the cost of compliance and guide penalty amounts for noncompliance.

Equity

The CBOs provided the following recommendation related to equity:

- PODER and ECC recommended that the CEC include equity considerations in the priority recommendations. The CBOs also recommended resources to be directed into equity-priority neighborhoods to avoid exacerbating equity issues.

  In the final report, CEC staff continues to recommend that the CEC follow equity best practices during program development and implementation. The CEC also continues to assert that a successful BPS policy will require monetary incentives and recommends that a portion of penalty payments collected be dedicated to fund support for underresourced communities, low-income tenants, and small commercial tenants.

Metrics

SAJE provided the following recommendation related to metrics:

- SAJE recommended the CEC consider occupant impact metrics as part of a BPS.

  While the final report does not include a recommendation for an occupant impact metric, it does recommend on-site greenhouse gas emissions intensity (GHGI) as a performance metric. Reductions in on-site fossil fuel combustion are expected to have positive impacts on indoor air quality and occupant health and safety.

Program Administration

The CBOs provided the following recommendation related to program administration:

- PODER and ECC urged the CEC to consider a community accountability board in the report's recommendations.

  The CEC included a recommendation that an advisory body could be created to support the design and implementation of a BPS and provides recommendations for how that body could be structured.

Engagement of Interested Parties

The CBOs provided the following recommendation related to engagement of interested parties:

- PODER and ECC noted that multifamily housing is the most common property type that would be affected by a BPS policy and recommended that the CEC prioritize engagement with affordable housing providers.

  The CEC agrees with this recommendation and engaged with owners and operators of affordable housing and solicited their feedback while developing the draft report.

The CEC plans to continue engaging with owners and operators of affordable housing, owners of other building types, and interested members of the public throughout the rulemaking and implementation process.

Tenant Landlord Interaction

SAJE provided the following recommendations related to tenant and landlord interaction:

- SAJE recommended the CEC reconsider the framing that building decarbonization is constrained primarily by a split incentive between landlords and tenants. SAJE noted that building decarbonization is tied closely to health, safety, and habitability and is a core responsibility of landlords rather than an amenity driven by competing financial interests.

  The CEC recognizes that the split incentive is just one of many barriers to building decarbonization and discusses the opportunities of building decarbonization related to health, safety, and habitability in the final report.
- SAJE recommended the CEC examine the unique barriers to decarbonization the deed-restricted affordable housing sector faces, which warrants separate analysis and policy recommendations.

  The final report includes a discussion of the barriers to decarbonization the subsidized affordable housing sector faces and offers potential strategies to overcome these barriers. The CEC will take this comment into consideration for future analysis efforts.
- SAJE recommended the CEC acknowledge tenants' limited control over critical building systems such as heating, ventilation, and air conditioning (HVAC) and lighting and that passing through any penalties to tenants would be inequitable and impose an undue financial burden on small businesses.

  The final report notes that commercial tenants may have limited control over major building systems such as HVAC and lighting. The final report also contains a recommendation to prohibit the pass-through of penalties to small commercial tenants.

Tenant Protection

The CBOs provided the following recommendations related to tenant protections:

- SAJE recommended the CEC emphasize the need for established regulatory authority to prevent the abuse of the Ellis Act of 1985 (Ellis Act)[505] and to enforce the Tenant Protection Act of 2019 (Tenant Protection Act) requirements.[506]

505 California Government Code. Sections 7060-7060.7 (Ellis Act), https://law.justia.com/codes/california/code-gov/title-1/division-7/chapter-12-75/section-7060/.

506 California Civil Code. Sections 1946.2 and 1947.12 (Tenant Protection Act of 2019), https://law.justia.com/codes/california/2019/code-civ/division-3/part-4/title-5/chapter-2/section-1946-2/ and https://law.justia.com/codes/california/2019/code-civ/division-3/part-4/title-5/chapter-2/section-1947-12/.

The final report identifies strategies to avoid causing evictions, harassment, or displacement of residential tenants, including establishing more statewide authority to prevent abuse of the Ellis Act and enforce Tenant Protection Act requirements.

- SAJE recommended the Tenant Protection Act be amended to include buildings less than 15 years old in statewide rent stabilization before a BPS is implemented.

  The final report identifies amending the Tenant Protection Act to apply statewide rent stabilization requirements to buildings less than 15 years old as a potential strategy to mitigate rent increases caused by a BPS, however this is beyond the authority of the CEC.

- SAJE recommended aligning state and local rent stabilization ordinances and strengthening the Tenant Protection Act to provide a meaningful statewide baseline of tenant protections.

  The final report identifies aligning state and local rent stabilization ordinances as one strategy to avoid negative impacts on tenants because of a BPS and provides a more detailed discussion in Appendix F.

- SAJE recommended the CEC provide temporary relocation assistance to tenants during substantial remodels, and clarify who is responsible for providing relocation assistance. SAJE also recommended amending the Tenant Protection Act to prohibit evictions for substantial remodels.

  Appendix F in the final report includes a more detailed discussion of temporary relocation and potential strategies to require relocation assistance. The CEC appreciates the recommendation to amend the Tenant Protection Act but determined it is beyond the scope of a BPS.

- SAJE recommended the CEC identify minimum protections for buildings subject to a BPS including no pass-through costs to tenants, eviction protection even where existing law would otherwise permit eviction for substantial remodels, and protections against construction-related harassment. SAJE also recommended that a BPS set clear standards for construction activities and include strong enforcement mechanisms to prevent tenant harassment and ensure safe, habitable conditions.

  While the CEC did not recommend prohibiting cost pass-throughs from landlords to tenants, the final report outlines strategies to avoid increasing costs for tenants as a result of a BPS. In addition, the final report identifies strategies to avoid the harassment and displacement of tenants, though many are beyond the scope of a BPS policy alone.

- SAJE recommended tying decarbonization incentives and other state housing subsidies to tenant protections including rent caps or extended deed restrictions, prohibiting the pass-through of BPS costs to tenants, and refraining from evicting tenants for BPS-related substantial remodel work. SAJE further recommended that violations be subject to meaningful penalties, that statewide protections require legislative authority, and that the report should clearly distinguish between voluntary incentive program conditions and the legal framework necessary to protect tenants under a mandatory regulatory program.

The final report includes a recommendation that a BPS policy incorporate tenant protection best practices, which could include restricting landlords from increasing rent after building upgrades. The final report also includes a discussion of how BPS-related incentive programs and subsidies could embed additional tenant protection requirements.

- SAJE recommended the CEC address the challenges of adopting a statewide BPS without creating unintended consequences by adopting strong, enforceable state tenant protections.

  The final report includes robust discussion of the potential unintended consequences of a BPS on tenants and offers strategies to prevent cost increases, displacement, and evictions.

- SAJE recommended the CEC recognize the lessons learned from challenges with implementing the CEC's Equitable Building Decarbonization (EBD) Direct Install Program, particularly the lack of meaningful enforcement of tenant-protection requirements. SAJE noted that tenant protections are only as effective as the mechanisms available to enforce them and that requirements that exist in program guidelines or participation agreements solely, without dedicated oversight and enforcement, provide little protection for tenants.

  The CEC appreciates this comment and will consider how to apply lessons learned from the EBD Direct Install Program during BPS implementation if granted authority by the Legislature.

- SAJE recommended the CEC clarify that subsidies are not a comprehensive solution because available public funding is insufficient to decarbonize California's entire building stock. SAJE noted that limited public resources should prioritize publicly-owned housing and mission-driven nonprofit affordable housing.

  The CEC identifies subsidies as one of many solutions to help offset the cost to comply with a BPS and recognizes that multiple financing strategies are needed to decarbonize existing buildings. The final report also includes a discussion of the challenges the affordable housing sector faces and the need for flexibility measures to support affordable housing owners with compliance.

- SAJE recommended the CEC recognize the constraints on expanding statewide tenant protections, including the CEC's lack of authority to intervene in tenant-landlord interactions.

  The CEC discusses the obstacles to expanding tenant protections in the final report, including an overview of the limitations under existing laws such as the Costa

Hawkins Rental Housing Act of 1995[507] and Costa-Keene-Seymour Commercial Property Investment Act of 1987 (Costa-Keene-Seymour Act).[508]

- SAJE recommended a BPS include strong commercial tenant protections and explicitly prohibit any pass-through of fines or penalties accrued by commercial landlords to tenants. SAJE noted that BPS policies should place clear responsibility on landlords to meet performance targets by investing in necessary upgrades and building improvements.

  The final report identifies building owners as the party responsible for compliance under a BPS and recommends penalties be issued to building owners for failure to comply with performance targets. The final report also includes a recommendation to prohibit the pass-through of penalties to small commercial tenants.

- SAJE recommended the CEC acknowledge that commercial rent control is prohibited under existing state and local laws. SAJE also recommended the CEC consider how to fund BPS enforcement given that existing enforcement agencies are currently underfunded.

  The final report includes a discussion of existing laws related to rent control and tenant protections, including limitations and prohibitions. The final report also includes a recommendation that CEC be given enforcement authority over a BPS, which may require additional funding.

- SAJE noted that the draft report contained language on right-to-return policies for commercial tenants but that these policies alone may not offer adequate protection and often require strong and guaranteed relocation assistance support.

  Appendix F in the final report includes a more detailed discussion of right-to-return policies including potential strategies to require relocation assistance.

- SAJE recommended the CEC clarify that just-cause eviction protections for commercial tenants are prohibited under the Costa-Keene-Seymour Act. SAJE further recommends that commercial tenants be provided access to free legal services and representation, funded by the state or landlords.

  The final report includes a discussion of the limitations under the Costa-Keene-Seymour Act. The CEC appreciates the recommendation about offering free legal services, however, this is beyond the scope of a BPS policy.

- SAJE recommended the CEC include protections against rent increases related to BPS that last for the duration of a tenant's occupancy to ensure long-term stability and prevent landlords from using energy upgrades as a justification for significant rent hikes.

---

507 California Government Code. Section 1954.50. https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=CIV&division=3.&title=5.&part=4.&chapter=2.7.&article=.

508 California Civil Code. Section 1954.27(a), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=CIV&division=3.&title=5.&part=4.&chapter=2.6.&article=.

The final report includes a recommendation that a BPS policy incorporate tenant protection best practices, which could include restricting landlords from increasing rent after building upgrades.

- SAJE recommended the CEC consider how to subsidize building owners' costs in ways that make pass-throughs to tenants unnecessary.

  The final report includes a recommendation on the need for monetary incentives that reduce the upfront cost of compliance for building owners and protect tenants.

- SAJE recommended CBOs be contracted to lead outreach and education on BPS and related tenant rights.

  The CEC recognizes that a BPS will require extensive outreach and education to landlords and tenants. Any contracts, if needed, to conduct outreach and education will be determined following BPS legislation.

- PODER and ECC acknowledged that the CEC recommends preventing penalty pass-throughs and displacement of tenants in the report. PODER and ECC also suggested the CEC place equal emphasis on ensuring that tenants and working-class building owners can access building decarbonization and energy-efficient opportunities, including load shifting.

  The CEC recognizes the benefits that improved building performance can provide to occupants but did not identify actions to ensure tenants have access to building decarbonization incentives.

- PODER and ECC acknowledged the importance of preventing penalty pass-throughs to residential and small commercial tenants. PODER and ECC also recommended that the CEC identify whether additional legislation is needed to clarify the definition of capital improvement, and whether a BPS could state explicitly that compliance-related upgrades cannot qualify as capital improvements eligible for pass-through.

  The final report includes a recommendation to prohibit building owners from passing penalties on to residential and small commercial tenants. While the CEC did not recommend prohibiting cost pass-throughs between landlords and tenants, the final report outlines strategies to avoid increasing costs for tenants as a result of a BPS.

Workforce

The CBOs provided the following recommendations related to the workforce:

- PODER and ECC recommended allocating a portion of noncompliance fees or penalties to build the capacity of the workforce needed to implement retrofits to comply with BPS.

  The CEC expects that penalty revenues will be limited and instead recommends directing the revenues toward helping building owners comply with the BPS policy. Appendix E identifies programs that are better suited to support workforce development.

- PODER and ECC noted that contractors, engineers, energy assessors, and other workers would serve an important role in implementing an effective BPS. The CBOs asked for clarification on potential workforce needs to support a BPS, urged the CEC

to identify the workforce that will be involved in compliance work, and asked the CEC to identify who would develop and participate in implementing a Building Performance Action Plan (BPAP). The CBOs recommended the CEC analyze how workforce opportunities could be used to support high-road workforce development. The CBOs suggested that building inspectors could support BPS compliance potentially and questioned whether there could be an opportunity for further workforce training for building inspectors.

The CEC recommends that the agency authorized to implement BPS coordinate with the California Workforce Development Board and other interested parties throughout the implementation of a BPS to increase equitable access to high-road jobs. The CEC also continues to recommend that incentive funding supporting BPS compliance should promote high-road jobs, training, and sustainable economic development when possible.

APPENDIX K:
Summary of Public Comments

This appendix summarizes major themes from public comments submitted to the docket in response to the draft California Building Energy Performance Strategy Report. Comprehensive comments and recommendations are available in the California Energy Commission (CEC) docket number 24-BPS-01.[509] The CEC also considered feedback and recommendations from contracted advisory organizations as directed under Public Resources Code (PRC) 25402.16(e)(2). The recommendations from the contracted advisory organizations and CEC staff's responses to those recommendations are outlined in Appendix J.

Building Performance Standard (BPS) With a Trajectory Approach

Several comments supported the CEC's recommendation for a BPS to apply to commercial and multifamily buildings subject to the state's existing Building Energy Benchmarking Program (benchmarking program). While some comments supported mirroring the 50,000 square foot building size threshold established by the benchmarking program, other comments suggested lowering the size threshold.

Public comments included support for the CEC's recommendation to use a trajectory approach for a statewide BPS policy. Comments emphasized that providing building owners with flexibility to comply is paramount. Some comments cautioned that a trajectory approach may be complex for the CEC to administer and that building owners may have difficulty complying. Comments also suggested the CEC offer multiple compliance options in addition to the standard trajectory compliance pathway.

CEC staff continues to recommend a trajectory approach for all buildings subject to the BPS with final performance targets established by property type and interim performance targets for each building based on baseline performance. CEC staff also continues to support alternative compliance pathways for building owners who demonstrate an inability to comply under the standard trajectory compliance pathway.

Flexibility and Compliance Pathways

Comments expressed support for some of the alternative compliance pathways (ACPs) recommended in the draft report such as target, baseline, and timeline adjustments. Comments recommended additional ACPs such as a percent energy use intensity (EUI) reduction, a high-performance pathway, fee-in-lieu of compliance, building performance action plans, and prescriptive compliance pathways. Comments recommended qualifying circumstances for ACPs such as affordable housing designation, utility constraints, permitting delays, and availability of technology.

509 California Energy Commission. Docket Number: 24-BPS-01, https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-BPS-01.

Commenters also highlighted the drawbacks of an ACP based on ownership of multiple buildings. Comments cautioned that a portfolio-based ACP could result in underinvestment in low-income properties as building owners may direct investments toward buildings that could provide greater return on investment. In response, CEC staff removed recommendations for specific ACPs from the final report and instead recommends defining ACPs through a future rulemaking process guided by public input.

Alignment With Other Codes and Regulations

Numerous comments emphasized that a BPS should align with other policies and requirements including the California Energy Code, state and federal appliance standards, American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Standard 100, permitting systems, local air district rules, the California Air Resources Board Clean Space and Water Heater Standards, and local BPS policies.

Some commenters stated that decarbonization requirements should focus on new construction first and inform retrofits in existing buildings. Other comments suggested that new construction buildings should be exempt from the first BPS compliance cycle or be allowed to comply on a voluntary basis. CEC staff added text to clarify the relationship between the California Energy Code and a BPS policy but maintain that newly constructed buildings should be covered by a BPS and subject to long-term performance targets once in operation.

Alignment with Local BPS Policies

Opinions differed on how local BPS policies should operate alongside a statewide framework. Comments included support to establish a single statewide BPS for large commercial and multifamily buildings (those with a gross floor area greater than 50,000 square feet) while encouraging local jurisdictions to adopt BPS policies for buildings smaller than 50,000 square feet. Commenters also questioned if local jurisdictions should be allowed to develop BPS policies and, if so, under what circumstances.

Some commenters recommended creating a pathway for local jurisdictions to implement their own BPS policies for large buildings. Other comments suggested that a BPS should be administered at the state level only with no local BPS policies for smaller buildings. Commenters also requested the state provide more resources to local governments to support local BPS policies and for the CEC to identify elements of the statewide BPS that local BPS policies should align with.

CEC staff continues to recommend that the CEC should administer a statewide BPS for buildings that are subject to the state's benchmarking program while encouraging local jurisdictions to administer programs for buildings not covered by a statewide BPS.

Metrics

Comments included support for CEC's recommended metrics of site EUI and site greenhouse gas emission intensity (GHGI), as well as further exploration of demand management metrics. Comments also requested the CEC consider additional metrics including water efficiency, embodied carbon, indoor air quality, and other occupant impact metrics. The CEC continues to

recommend both site EUI and site GHGI as the primary metrics of a statewide BPS and exploring a demand management metric.

Baselines and Targets

Comments asked for clarification on how building performance baselines would be established and who would be responsible for setting them. Some comments emphasized that using accurate data is critical and several comments provided recommendations for how the CEC should determine baselines. Recommendations on baseline setting included using more than one year of historical benchmarking data, requiring a professional to verify the data, and using ASHRAE Standard 100 guidance.

Public comments also requested more detail on how final performance targets would be set. Comments emphasized that established targets should be realistic and feasible to achieve. Comments also noted variations in the state's building stock, and recommended normalization factors, such as climate zone, occupancy, and other operational characteristics, to consider when setting final performance targets.

CEC staff continues to recommend using an average of several years of benchmarking data for each building to inform baselines with at least one year of data verified by a licensed professional. In response to comments received, CEC staff added discussion of potential normalization factors to consider in setting final performance targets. CEC staff also updated the report to clarify that final performance targets should be set during a formal rulemaking process, which could be guided by existing state policies and informed by stakeholder input.

Data Verification

Multiple comments supported the CEC's recommendation to include a benchmarking data verification requirement. Some comments recommended an on-site verification requirement and another comment recommended auditing a percentage of all submissions in addition to on-site verification. Other commenters suggested that hiring a licensed professional to verify submitted data should be required only when there are data quality concerns, citing the cost of data verification. Several comments recommended the CEC use utility billing data to verify reported data, including smaller buildings subject to local policies.

Comments included suggestions on the types of professionals that could be allowed to verify data. Comments also recommended the CEC rely on existing nationally recognized qualifications and California workforce standards rather than developing new certification systems for data verification.

The CEC continues to recommend establishing a new energy benchmarking data verification requirement to support fair implementation of a BPS at a cadence that aligns with key BPS evaluation years.

Cost-effectiveness

Comments included support for the CEC's recommendation to conduct a cost-benefit analysis to study the costs and benefits of compliance and to guide decisions on performance targets, implementation timelines, compliance pathways, and penalties for noncompliance. Comments emphasized that cost-effectiveness and affordability should be key considerations in a BPS

policy. Comments also provided suggestions for how to define cost-effectiveness and time horizons that should be used when evaluating cost-effectiveness. In the final report, the CEC continues to recommend completing a comprehensive cost-benefit analysis to guide targets, timelines, and penalties.

Evaluation, Monitoring, and Verification

Commenters discussed the importance of verification requirements related to workforce, tenant impacts, and building performance. Commenters raised concerns about the effectiveness of program evaluations if there is insufficient enforcement of program requirements, which could lead to an inaccurate understanding of the impact of a BPS. The final report continues to recommend the CEC monitor the impacts of the BPS policy. CEC staff also added Appendix I that details potential metrics developed by contracted advisory organizations that could be used to monitor the equity impacts of the BPS.

Responsible Parties and Penalties

Several commenters supported the use of penalties for failure to meet performance standards. Opinions were divided on whether the state should authorize penalties to be passed through from building owners to tenants. One comment raised the issue that building owners do not always have control over tenant energy use and sometimes cannot access benchmarking data that would be needed for BPS compliance. Comments advised the CEC to take into consideration how tenants could be impacted by penalties when determining penalty amounts. Many commenters suggested ways the state could structure penalties from phasing them in slowly and increasing them over time to setting penalties to exceed the cost of compliance to encourage building owners to comply with a BPS. Comments were generally in favor of using penalties to fund work to improve buildings, with a focus on affordable housing and low- to moderate-income building owners.

In response, CEC staff updated the report to recognize an existing gap in data access for building owners whose buildings have fewer than three utility accounts and cannot get data directly from tenants. CEC staff continues to recommend preventing penalties from being passed through to residential and small commercial tenants but allow penalties to be passed through to large commercial tenants.

Equity and Engagement of Interested Parties

Public comments recommended that the CEC embed equity throughout the design and implementation of a statewide BPS policy. Some comments suggested the CEC direct resources and technical support to equity-priority neighborhoods and multifamily properties. Commenters also recommended the CEC structure penalties to avoid disproportionately affecting medium to low-income tenants and affordable housing.

Public comments emphasized the need for early and meaningful engagement of interested parties, and that stakeholders should be involved in the planning, implementation, and post-project stages of a BPS. Commenters highlighted that educating and engaging BPS stakeholders is resource intensive and that organizations and jurisdictions that support BPS development and implementation will need resources and funding.

Commenters highlighted organizations that can support stakeholder engagement including community-based organizations (CBOs), regional energy networks (RENs), and local jurisdictions. CEC staff plan to continue engagement with interested and impacted stakeholders including but not limited to tribes, justice communities, tenants, and building owners.

Commenters also recommended the creation of community advisory bodies to inform the development and implementation of a BPS. The final report acknowledges that an advisory body could be created to support a BPS and provides recommendations for how that body could be structured. The final report also continues to recommend that the CEC follow equity best practices during program development and implementation.

Tenant Protections

Comments highlighted that a BPS could contribute to increased utility bills, rental costs, tenant harassment, eviction, and displacement. Some comments pointed out that while the report acknowledges risks of adverse impacts on tenants from building upgrades related to a BPS, it does not recommend a solution. Comments emphasized that a BPS should be accompanied by robust and enforceable tenant protections.

Comments recommended the state reduce upfront costs of building upgrades and allow low-cost compliance options to mitigate negative impacts on tenants. Some comments also recommended the CEC or the Legislature include tenant protections in a statewide BPS policy. Other comments noted the challenges of incorporating tenant protections into a BPS, such as enforcement challenges and lack of incentives, and recommended broader legislative action separate from a BPS policy.

Comments recommended amendments to existing statutes, with one commenter stating that the CEC should include an explicit recommendation for the Legislature to strengthen tenant protections. Several comments raised concerns that landlords could evict tenants for upgrades related to BPS due to the "substantial remodel" provision in the Tenant Protection Act of 2019 (Tenant Protection Act) requirements.[510]

Comments recommended that the CEC clearly assert in the report that existing state law governing substantial remodels present a significant risk of displacement in the context of BPS policies. Comments also recommended removing "substantial remodel" as a basis for eviction in the Tenant Protection Act.

Comments recommended the state align rent stabilization ordinances and designate regulatory authority to an oversight body to oversee the Tenant Protection Act, Ellis Act of 1985 (Ellis Act)[511], and other tenant protection requirements established under a BPS. Comments suggested the responsibilities for a designated oversight body include conducting culturally

---

510 California Civil Code. Sections 1946.2 and 1947.12 (Tenant Protection Act of 2019), https://law.justia.com/codes/california/2019/code-civ/division-3/part-4/title-5/chapter-2/section-1946-2/ and https://law.justia.com/codes/california/2019/code-civ/division-3/part-4/title-5/chapter-2/section-1947-12/.

511 California Government Code. Sections 7060-7060.7 (Ellis Act), https://law.justia.com/codes/california/code-gov/title-1/division-7/chapter-12-75/section-7060/.

responsive tenant outreach and education and developing strategies to inform tenants of upcoming building upgrades and tenant rights throughout the retrofit process. Other comments recommended that CBOs lead outreach and education for a BPS and related tenant rights. Some comments called for the CEC to establish cross-agency coordination with state and local housing enforcement authorities.

In the final report, the CEC continues to recognize that a BPS could potentially cause adverse impacts on tenants and recommends the CEC incorporate best practices to avoid increasing rental and utility costs for residential and small commercial tenants. The CEC also continues to recommend the implementation of best practices to protect tenants from displacement and promote housing stability in buildings that benefit from public investments or incentive programs.

Support for Building Owners

Comments recognized that avoiding rent increases for tenants may conflict with efforts to limit costs for building owners, especially in the absence of significant monetary incentives. Multiple comments emphasized the need for monetary incentives to support building owners, citing significant upfront capital investment needed to comply with a BPS. Comments included recommendations to assess whether existing incentive programs are sufficient to support building owners, expand the budgets of existing programs, and establish new funding mechanisms. Commenters recommended the CEC coordinate with the California Public Utilities Commission, utilities, RENs, and other program administrators on how to support building upgrades related to BPS. Some comments recommended that tenants should also be eligible to receive incentives. The CEC appreciates these comments and intends to coordinate with all relevant stakeholder groups to use existing incentives to support compliance with a BPS.

Comments also included examples of monetary incentives that could be used to support a BPS policy including funding from California's Cap and Invest Program to support affordable housing, on-bill financing programs, grants, rebates, and tax incentives.

In addition to monetary incentives, commenters recommended the CEC establish a resource hub and provide technical assistance for building owners, especially multifamily housing owners. Commenters suggested that the technical assistance and resource hub could identify available incentives, feasible scopes of work, sequencing retrofit measures, and options for engineering, design, and construction.

In the final report, CEC staff added discussion of on-bill financing as a potential mechanism to support building owners. The final report continues to assert that a successful BPS will require robust monetary incentives and recommends a resource hub that serves as a centralized location where all stakeholders can access BPS information, guidance, technical assistance, and available incentives.

Workforce

Public comments recognized the need for a workforce trained and skilled in building energy technology and building operations to ensure quality installations that improve building performance. Comments stated that the workforce will need to grow significantly to

accommodate the need for verification of building performance, including benchmarking, energy auditing, commissioning, and data verification. Public comments also noted that investments in workforce development should be focused on state-approved and established programs, such as the California Workforce Development Board and apprenticeship programs. Commenters recommended the CEC draft an action plan to address the needs and opportunities for workforce development to meet the goals of a BPS. Comments also recommended the CEC define "high-road" jobs more clearly in the report to emphasize the importance of providing career opportunities as part of the building performance strategy to ensure equitability.

The CEC included a more specific definition of "high-road" jobs in the updated report and updated the definition of workforce to be clear about the scope of the discussion. The CEC continues to engage with stakeholders in workforce development to support building decarbonization.