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CALIFORNIA CLIMATE POLICY FACT SHEET: BUILDING ENERGY EFFICIENCY

In California, commercial and residential buildings account for approximately 25 percent of the state's greenhouse gas (GHG) emissions through their use of electricity and natural gas, second only to transportation. In order to achieve its robust long-term climate goals, California must significantly reduce emissions from the processes that make millions of homes and commercial buildings across the state comfortable to inhabit—heating, cooling, cooking, lighting, and more. While a formidable task, California is no stranger to reducing emissions from buildings. Since the 1970s, California has implemented leading-edge energy efficiency standards for new buildings under the California Energy Commission's (CEC) Title 24 program. In 2007, California developed a Green Building Standard to meet the emissions reduction goals set out in Assembly Bill 32 (Health & Safety Code § 38500 et seq.). The Green Building Standard is the nation's first mandatory green building code with the aim of reducing building energy use. This California Climate Policy Fact Sheet outlines the basic components and legal background of California's Green Building Standard and building energy efficiency requirements and discusses the state's continuous efforts to decarbonize the built environment.

Understanding California's Building Energy Programs:
California's Building Standards Commission (BSC) is responsible for adopting, approving, publishing, and implementing California's Building Standards Code. The California Green Building Standards Code, also referred to as CALGreen (California Code of Regulations, Title 24, Part 11), was approved by the BSC in January 2008 and went into effect in August 2009. The CEC develops building energy efficiency standards (Title 24, Part 6), which are a core element of CALGreen. The Department of Housing and Community Development (HCD) has primary responsibility for implementing CALGreen provisions for residential structures.

CALGreen is designed to improve public health, safety, and welfare through the use of sustainable construction and building concepts that reduce environmental impacts or create environmental benefits. The code applies to the planning, design, operation, construction, use, and occupancy of every newly-constructed building in California. Similar to other building codes in California, CALGreen is enforced by local agencies.

CEC's building energy efficiency standards, often referred to as Title 24, are designed to require cost-effective measures such as building insulation, efficient lighting and appliances, and air system improvements to reduce building energy use and save energy and maintenance costs over the life of a building. CEC updates the standards every three years; the 2019 edition of the standards require rooftop solar installations on new homes for the first time ever, while future editions may take on further building decarbonization measures such as complete electrification. The CEC estimates that the 2019 standards will reduce residential building energy use by over 50 percent and nonresidential energy use by 30 percent.

Importantly, CALGreen and the Title 24 energy efficiency standards only apply to newly constructed and substantially renovated buildings. Thus, even as the state increases efficiency in new building stock, existing buildings can remain highly inefficient. This can be a particular challenge for low-income and multifamily residential buildings, which are costly to upgrade and face significant barriers to access.

In addition to these efficiency standards, California regulators and utilities also offer a suite of incentive and rebate programs for energy efficiency installations. These include the Energy Savings Assistance

Program and Low-Income Weatherization Program for low-income residents, the comprehensive Energy Upgrade California program, and, previously, the highly successful California Solar Initiative.

California Building Energy Program Features:
CALGreen defines a green building as one that follows a holistic approach in its design, construction, and demolition to minimize impacts on the community and the environment. This approach is focused on five categories: planning, design, and site development; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and indoor environmental quality. The standard encompasses a comprehensive set of mandatory construction measures for each category, ranging from electric vehicle charging infrastructure to low-flow faucets to construction waste stream management.

Title 24 energy efficiency standards are divided into two parts: mandatory requirements for all buildings (e.g. energy conservation, design, construction, safety, etc.) and compliance via performance or prescriptive approaches. The performance approach requires building energy budgets (energy consumption per square foot) meet a baseline, which varies by climate zone and building type. This allows builders freedom in their designs and allows tailoring of compliance to local conditions. The prescriptive approach requires following a checklist to attain compliance.

Evolution of California's Building Energy Programs:

- AB 32 tasked the California Air Resources Board with developing a plan to achieve technologically feasible and cost-effective statewide GHG emission reductions of 1990 levels by 2020. In response to this emissions reduction goal, the BSC developed and adopted CALGreen to reduce the emissions impacts of buildings.
- Executive Order B-18-12 directed state agencies and departments to serve as models for green building in California by requiring reductions in GHG emissions of 10 percent by 2015 and 20 percent by 2020 and requiring half of existing buildings to be zero net energy buildings by 2025.
- Senate Bill 350 (Pub. Res. Code § 25310 et al.) codified an energy efficiency target of doubling energy efficiency in buildings by 2030 and created mechanisms of enforcement to do so.
- Assembly Bill 802 (Pub. Res. Code § 25402.10 et al.) required electric utilities to compile and disclose building energy benchmarking data.
- Senate Bill 1477 (Pub. Util. Code § 921 et seq.) calls upon the CPUC and CEC to develop two programs, the Technology and Equipment for Clean Heating (TECH) Initiative and the Building Initiative for Low-Emissions Development (BUILD) Program, to advance the state's market for low-emission space and water heating equipment and reduce building GHG emissions.
- Assembly Bill 3232 (Pub. Res. Code § 25403) requires that by 2021 the CEC develop an assessment of the feasibility of reducing building GHG emissions to 40 percent below 1990 levels by 2030.

Key Outcomes and Next Steps for California Building Energy Policy:
California has made significant strides in greening its buildings—the state's appliance and building energy efficiency standards represent more than $100 billion in consumer savings over 40 years. California has also adopted first-in-the-nation standards requiring solar systems for newly-built homes, and the CPUC launched a building decarbonization proceeding in early 2019. Nonetheless, achieving state climate goals will require considerable future efforts to address building GHG emissions. California will need to achieve at least a 40 percent reduction in building sector GHG emissions by 2030 and an 80 percent reduction by 2050 in order to meet state climate goals. These efforts are likely to be focused on additional energy efficiency standards and building electrification. At the same time, enhanced incentives and financing opportunities—from both state and private actors—are needed to drive these improvements.