



### Energy Efficiency

#### *Introduction*

Energy efficiency entails using advancements in technology to provide the same or better level of energy service<sup>1</sup> to a consumer, while using less energy. Energy efficiency efforts in California have reduced energy demands, made businesses more competitive, and allowed consumers to save money, improve health, and increase comfort. As a critical element of the state's energy policy, energy efficiency can reduce the need for new electricity generation. Established in 2003 by the state's principal energy agencies, the loading order policy directs that California's energy demands be met first by efficiency and demand response before new generation is considered. The loading order is a core component of diverse, reliable, low-carbon energy supplies. Highly efficient products and practices increasingly bundle with modern digital communication and control features, which promise to provide highly enhanced functionality for customers as well as valuable and much needed grid flexibility. At sufficient scale, energy efficiency can reduce the need for both fossil and renewable generation, thus increasing system flexibility while lowering costs of all energy supply scenarios.

California has long been a leader in advancing appliance and building energy efficiency. Over the last 40 years, California has implemented cost-effective appliance and building energy efficiency standards that have saved consumers well over 100 billion dollars. The policies have reduced both the investment requirements and negative environmental impacts of the state's energy systems. Combining efficiency gains from standards and efficiency programs, the cumulative annual efficiency and conservation savings for electricity surpassed 70,000 gigawatt hours (GWh) in 2017, as shown in **Figure 1**.

The California Energy Commission's earliest efforts on energy efficiency focused on reducing the need for expensive and environmentally detrimental power plants. In the 1970s, the Commission developed the nation's very first energy conservation standards for buildings and appliances. Today, the Commission continues to build on that foundation, balancing environmental and cost concerns to provide California residents energy that is affordable and environmentally sustainable.

This document tracks the progress of these efforts toward meeting California's energy efficiency targets and goals. Below is an account of the Energy Commission's efforts through appliance standards and guidelines; building energy efficiency standards; advancing energy efficiency in existing buildings; statewide commercial building benchmarking and disclosure; the Proposition 39 K-12 program; the Energy Conservation Assistance Act loan program; and extending benefits to low-income persons and disadvantaged communities.

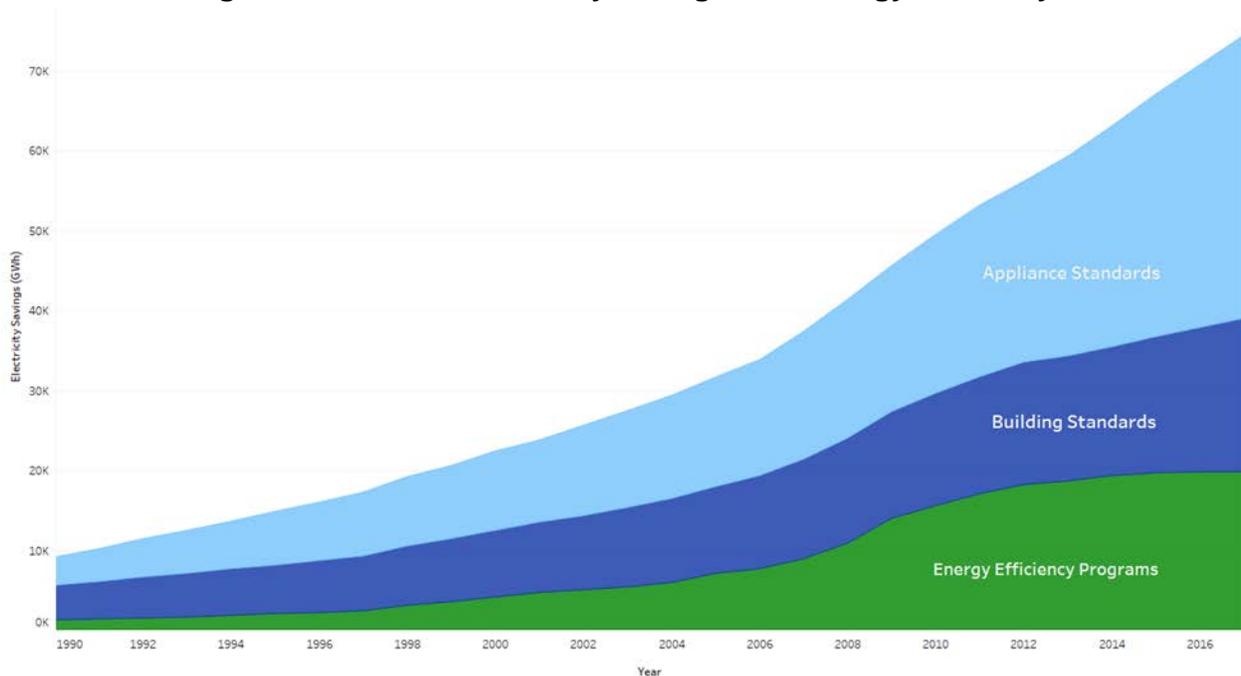
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<sup>1</sup> "Energy service" includes all the ways people use energy, including for lighting, heating, and air conditioning.



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Figure 1: Statewide Electricity Savings from Energy Efficiency



Source: California Energy Commission, Demand Analysis Office, 2018

### *The Governor and California Legislature Aim to Strengthen Energy Efficiency*

One of the most important drivers of energy efficiency in California is the commitment of Governor Edmond G. Brown Jr. and the Legislature, who have put in place a set of ambitious mandates, policies, and goals for reducing climate pollutants and improving the energy performance of California's economy. In his 2015 inaugural speech, one of the goals Governor Brown put forward was to double the efficiency of existing buildings and make heating fuels cleaner by 2030. Governor Brown's energy efficiency goal was codified in the [Clean Energy and Pollution Reduction Act of 2015](#) (Senate Bill 350 [SB 350], De León, Chapter 547, Statutes of 2015). Senate Bill 350, and other important legislative and administrative efforts, will steadily reduce greenhouse gases (GHG) from California's energy systems.

### *Doubling Energy Efficiency Savings*

Senate Bill 350 calls for the Energy Commission to establish targets that will achieve a cumulative doubling of energy efficiency savings by 2030. Achievement of the savings will not only necessitate additional energy efficiency innovation in buildings and appliances—the historic focus of California's energy efficiency work—but will also require savings in industry and agriculture, areas that have received less attention but where additional potential may exist. Senate Bill 350 also directs that specific attention be paid to ensuring that the benefits of energy efficiency are felt by low-income Californians.



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Senate Bill 350 continues, enhances, and expands the existing building energy efficiency program established by [Assembly Bill 758 \(Skinner, Chapter 470, Statutes of 2009\)](#) and contained in the [Existing Building Energy Efficiency Action Plan](#). In December 2016, in response to SB 350, the [Low-Income Barriers Study, Part A](#)<sup>2</sup> was adopted by the Energy Commission, which includes recommendations for improving access by low-income customers to energy efficiency and weatherization investments, including those in disadvantaged communities.

A June 2018 *Integrated Energy Policy Report* (IEPR) workshop<sup>3</sup> on doubling energy efficiency savings highlighted additional savings potential in the industrial and agricultural sector, as well as pilot programs for conservation voltage reduction. Beginning in 2019, updates to the SB 350 energy efficiency doubling report and the AB 758 *Existing Building Energy Efficiency Action Plan* will be combined into one overall status report and action plan to guide work statewide towards doubling energy efficiency savings by 2030.

### *Statewide Commercial Building Benchmarking and Disclosure*

[Assembly Bill 802 \(Williams, Chapter 590, Statutes of 2015\)](#) established a new statewide building energy use benchmarking and public disclosure program for commercial and multifamily buildings larger than 50,000 square feet. Benchmarking is the measurement of a building's energy performance over time relative to similar buildings.

### *Other Policy Drivers*

**Figure 2** shows the timeline of major state policies from the 1970s to date that address climate change in general and energy efficiency specifically.

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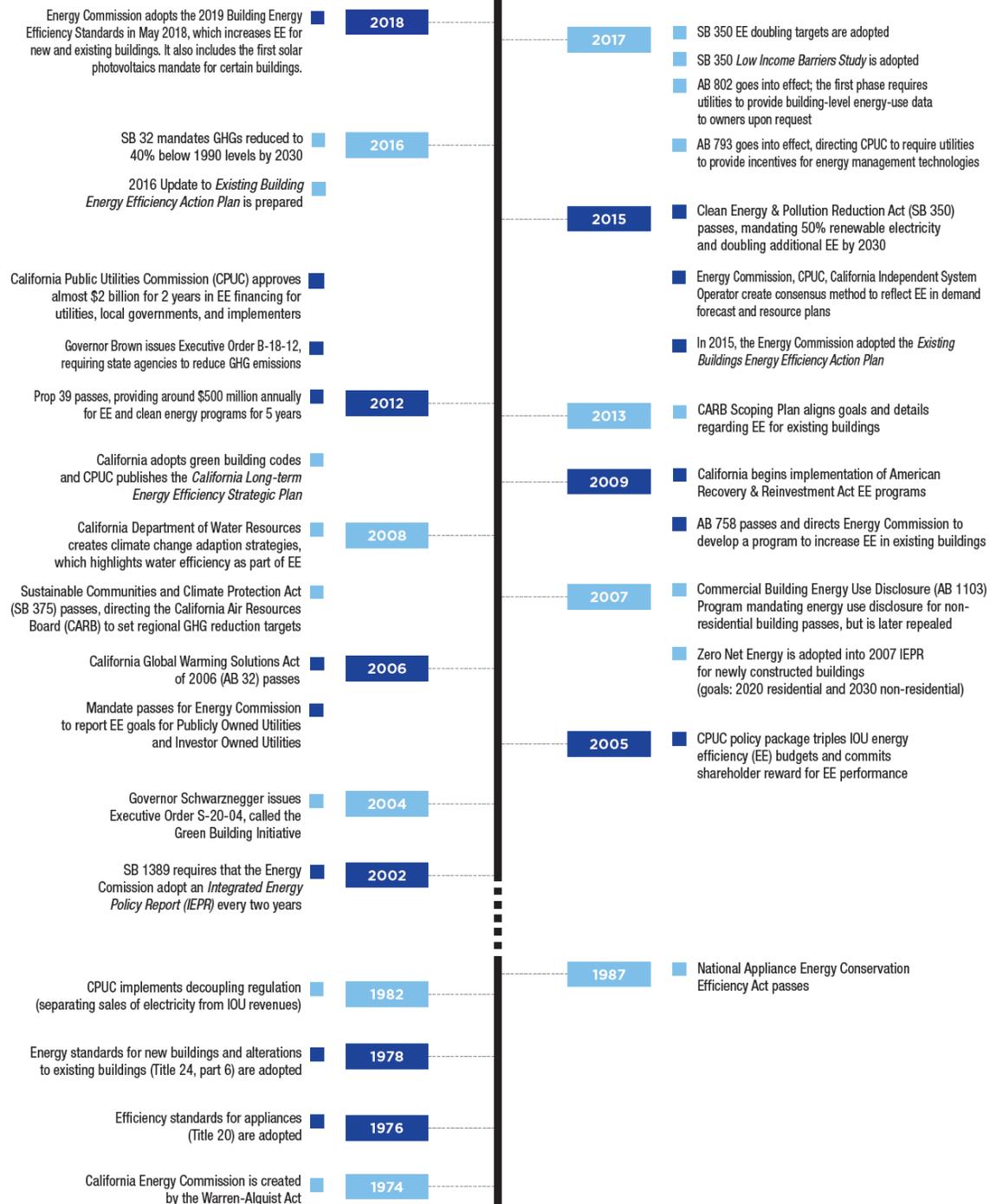
<sup>2</sup> Scavo, Jordan, Suzanne Korosec, Esteban Guerrero, Bill Pennington, and Pamela Doughman. 2016. *Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-income customers and Small Business Contracting Opportunities in Disadvantaged Communities*. California Energy Commission. Publication Number: CEC-300-2016-009-CMF.

<sup>3</sup> [http://www.energy.ca.gov/2018\\_energypolicy/documents/#06072018](http://www.energy.ca.gov/2018_energypolicy/documents/#06072018).



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**Figure 2: Timeline of Major Energy Efficiency Policy Measures**



Source: California Energy Commission



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### *Energy Efficiency Research Brings Innovation to Building and Appliance Efficiency Standards and to the Marketplace*

California's pursuit of a low-carbon future will hit a critical milestone in 2030. To reach the targets for energy efficiency and GHG reductions, the pace of technological progress will need to increase. This includes support for pre-commercial technologies and strategies at the applied lab level, large-scale demonstrations to reflect real life operating conditions and, finally, market facilitation to support deployment and expand access to clean energy technologies.

At the applied and demonstration level, information on equipment and technology operations and test data help to inform and justify future building and appliance energy efficiency standards. Research investment in this area has yielded enormous return for California ratepayers. For example, the Energy Commission invested \$27.8 million<sup>4</sup> leveraging \$7.4 million in match funds in building and appliance efficiency research. This contributed to 15 code changes between 2005 and 2016, which will save ratepayers over \$10 billion by 2025. More than 90 percent of the energy savings during this period will accrue to electricity ratepayers. These savings will increase as California's economy continues to grow. Overall, for every \$1 in research and development funding, Californians will gain more than \$350 in cost savings.<sup>5</sup>

Several technologies developed through the Energy Commission's research program are now available in the marketplace including adaptive lighting controls, aerosol duct sealing, building performance controls, data center cooling, and tartrate removal from wine. These technologies were demonstrated and shown to have substantial savings as a result of funded research. Future research will continue to focus on technology advancements to drive cost and performance improvements of energy efficiency components that aim to:<sup>6</sup>

- Accelerate the adoption rate of energy efficiency upgrades in existing buildings and facilities.
- Increase cost-effective options for energy efficiency in future buildings.
- Electrify traditionally non-electric appliances and equipment.
- Improve the energy efficiency of the industrial sector.

### *Appliance Efficiency – Standards and Performance Guidelines*

Drawing on its research and development work in energy efficiency, California continues to lead in setting the most aggressive appliance energy and water efficiency standards in the nation and

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<sup>4</sup> This is the nominal figure consisting of research funded in consumer electronics, and lighting and mechanical systems that helped inform building and appliance standards between 2005 and 2016.

<sup>5</sup> ten Hope, Laurie, 2017. *Fostering Energy Innovation*, Senate Energy Utilities and Communications Committee Staff Briefing.

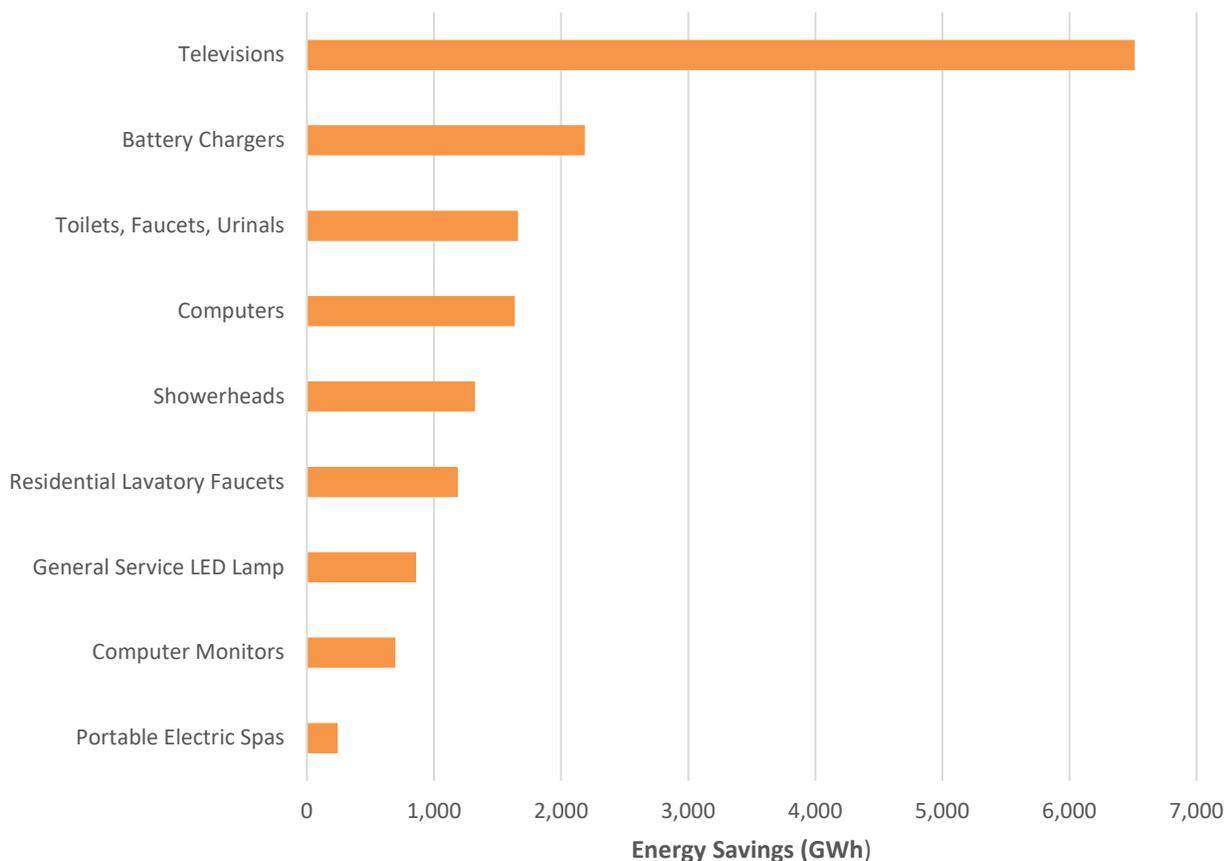
<sup>6</sup> California Energy Commission, 2017. *The Electric Program Investment Charge: 2018-2020 Proposed Triennial Investment Plan*, Staff Report. Publication Number: CEC-500-2017-023-SF.



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globally. California appliance standards often become the *de facto* national standards ahead of other states and the federal government. Over time, appliance standards have achieved the most energy savings, more than the building energy standards and efficiency programs from utilities and public agencies, as shown in **Figure 3**. Different appliances produce varying amounts of energy savings.

**Figure 3: Energy Savings from Recent Appliance Standards**



Source: California Energy Commission, Appliances Office

“Lamps” includes small-diameter directional lamps and general service LED lamps. “Toilets, Faucets, Urinals” includes residential and commercial toilets, residential lavatory faucets, residential faucets, kitchen faucets, public faucets, and urinals.

[Title 20](#) of the California Code of Regulations includes efficiency standards for both federally regulated and nonfederally regulated appliances, and these regulations cover most major residential and commercial appliances sold or offered for sale in California. The appliance efficiency regulations set minimum efficiency levels for both energy and water consumption in many types of products, including consumer electronics, such as computers, televisions, and monitors; household appliances, such as refrigerators and clothes washers; and plumbing



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equipment, such as showerheads, toilets, and kitchen and lavatory faucets. The goal of these standards is to shift the marketplace toward more efficient products, providing significant, cost-effective energy savings to California consumers without affecting the utility or functionality of the products.

Appliance efficiency regulations adopted for computers and computer monitors, small diameter directional lamps, general purpose light-emitting diode lamps, and battery chargers are estimated to save 2,332 GWh/year, 1,600 GWh/year, 2,194 GWh/year, and 2,187 GWh/year in electricity consumption after stock turnover statewide, respectively. Together, that is a reduction of 8,313 GWh per year in electricity consumption, equivalent to meeting the total electricity needs of Ventura and Monterey counties in 2015. Lower electricity consumption results in reduced GHG and criteria pollutant emissions, primarily from lower generation in hydrocarbon-burning power plants, such as natural gas power plants. Future appliance efficiency regulations provide an opportunity to address the growing percentage of energy attributed to plug loads and miscellaneous electric loads in California.

Continuing to build on the standards set in previous years, the Commission adopted standards for portable electric spas and battery charger systems at its April 2018 business meeting.<sup>7</sup> As part of the [pre-rulemaking](#) throughout 2018, the Commission will also be accepting proposals from interested stakeholders for standards, test procedures, labeling requirements, and other measures that will improve the efficiency and reduce the energy or water consumption of portable air conditioners, commercial and industrial air compressors, hearth products, and federally exempted linear fluorescent lamps.

### ***Building Energy Efficiency Standards***

The Warren-Alquist Act<sup>8</sup>, enacted in 1974, requires the Energy Commission to create and periodically update statewide [Building Energy Efficiency Standards](#). Every three years these energy standards address newly constructed buildings and additions/alterations to existing buildings. In addition to being cost effective for building owners over the 30-year lifespan of a building, the standards also ensure that builders use the most energy efficient technologies and construction practices. The standards have, in combination with appliance efficiency standards and utility-sponsored incentive programs, contributed substantially to California's per capita electricity consumption levels remaining relatively flat since the mid-1970s. California's energy standards are crucial to reducing GHG emissions of the electricity and natural gas sectors, and to lowering the costs of energy to consumers.

Effective on January 1, 2020, the [2019 Building Energy Efficiency Standards](#) focus on four areas: envelope efficiency, which refers to improving the insulation of a building's windows, exterior walls, floors, and roof; leveling the playing field for all-electric homes; appropriately sized solar

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<sup>7</sup> [https://www.energy.ca.gov/releases/2018\\_releases/2018-04-11\\_cec\\_adopts\\_energy\\_saving\\_spa\\_standards\\_nr.html](https://www.energy.ca.gov/releases/2018_releases/2018-04-11_cec_adopts_energy_saving_spa_standards_nr.html).

<sup>8</sup> Warren-Alquist State Energy Resources Conservation and Development Act.



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photovoltaics; and grid harmonization strategies that maximize self-utilization of photovoltaic output and limit exports to the grid. It is projected that these new standards will reduce 700,000 tons of carbon dioxide emissions over three years, which is equivalent to taking 115,000 gas cars off the road.

The 2013 standards promoted “solar ready roof” design to make it easier to install solar photovoltaic or solar thermal systems in the future. The [2019 standards](#) take the next step by requiring solar systems for new homes for the first time. A new home with solar photovoltaics installed will reduce energy consumption by over two-thirds compared to a 2005 home. Optimizing these solar photovoltaic systems will benefit California’s electricity distribution grid. The standards also allow community solar projects to count for compliance. It is expected that models for this approach will develop and evolve over time. Exceptions to the solar requirement can be evaluated by the Commission on a case-by-case basis, for example at shaded home sites and for locales with uncommonly low electric rates that undermine cost effectiveness.

The residential standards also promote demand responsive technologies, such as battery storage and heat pump water heaters, and improvements to a building’s thermal envelope. In nonresidential buildings, new lighting requirements maximize LED technology to achieve projected energy savings of 480 gigawatt hours in the first year. This is equal to the power needed by a fleet of 190,000 electric cars. In both types of buildings, the standards tackle air quality by improving kitchen ventilation systems and specifying highly efficient filters to capture harmful particulates from outdoor air and indoor cooking. For the first time, the standards also create requirements for newly constructed healthcare facilities.

Existing buildings must comply with the standards as well, when a triggering event occurs such as renovation, addition, or major equipment replacement. More than 55 percent of existing residential buildings and more than 40 percent of existing nonresidential buildings were built before the energy standards were established, and most of those buildings perform at a level far below what current efficiency standards require.

As of 2015, average energy consumption for California households is 53.1 million British thermal units (Btu) per home, which is 31 percent less than the national average of 77.1million Btu per home.<sup>9</sup> This lower average consumption results in energy bills that are 21 percent less in California compared to the national average. Average site electricity consumption in California households is among the lowest nationally, as the mild climate in much of the state leads to less reliance on electricity for air conditioning and heating. Spending on electricity by California households is closer to the national average due to higher unit electricity prices in the state.

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<sup>9</sup> U.S. Energy Information Administration, [2015 Residential Energy Consumption Survey: Energy Consumption and Expenditures Tables](#).



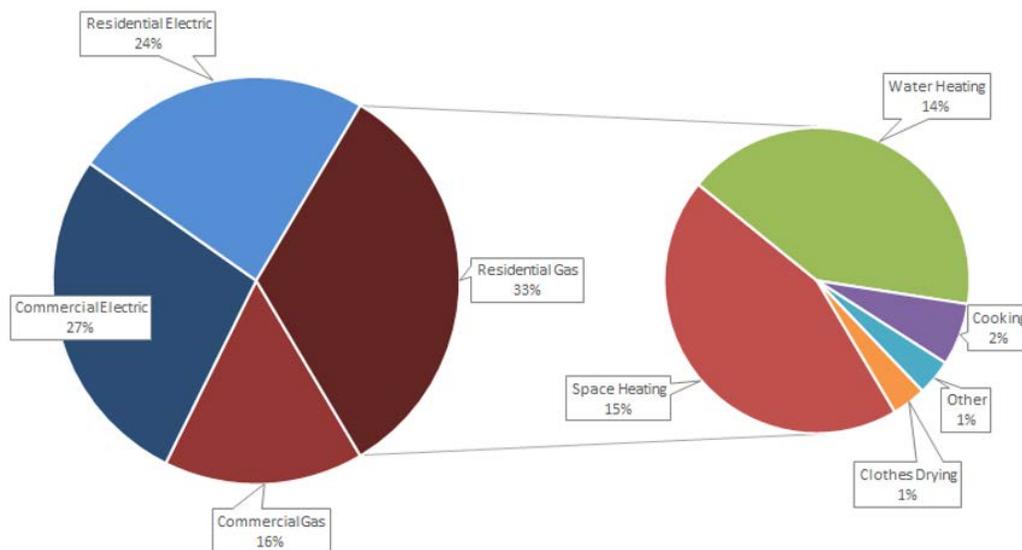
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### Building Decarbonization

To further reduce GHG emissions, the Commission has also explored building decarbonization, which is the multi-faceted process of reducing building emissions directly (as on-site combustion of fossil fuels) or embedded in the electricity consumed. Building energy efficiency could be one of the least costly methods of long-term carbon abatement, according to a recent [report from Energy+Environmental Economics \(E3\)](#).<sup>10</sup> In the context of upcoming goals for GHG reductions, it is crucial that policy strategies are implemented as soon as possible, since new construction and equipment replacements will create rigid energy systems that produce emissions for many years to come.

One of the central strategies being explored in the *2018 IEPR Update* is to transition away from reliance on natural gas at the end-use through building electrification. This not only provides the flexibility to integrate renewable energy sources, but also significantly reduces carbon emissions from buildings. Electrification refers to substituting natural gas appliances used for space heating, water heating, air conditioning, stoves, et cetera with electric appliances. As shown in **Figure 4**, the opportunity for reducing natural gas usage is greatest in the residential sector, with most usage in water heating and space heating. Over the years, the Energy Commission has funded research on electrification technologies, such as heat pumps and induction stoves, and the *2019 Building Energy Efficiency Standards* removed barriers for all-electric buildings.

**Figure 4: 2016 Energy Use in California Buildings (MMBtu)**



Source: California Energy Commission

10 Mahone, Amber, Zachary Subin, Jenya Kahn-Lang, Douglas Allen, Vivian Li, Gerrit De Moor, Nancy Ryan, Snuller Price. 2018. Deep Decarbonization in a High Renewables Future: Updated Results from the *California PATHWAYS Model*. California Energy Commission. Publication Number: CEC-500-2018-012



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In addition, taking California's diverse climate zones into consideration, buildings have different heating and cooling demands based on location. According to staff analysis, the largest potential to reduce GHG emissions is in space heating in new homes for moderate and cold inland climates and water heating for mild coastal climates.

A common challenge across the state is refrigerant leakage, which would remain a major GHG emissions source even after building electrification. At the June 2018 IEPR workshop on building decarbonization, California Air Resources Board (CARB) staff emphasized the importance of addressing refrigerant leakage alongside building electrification. A recent CARB report found that 17 percent and 6 percent of all commercial and residential building emissions (in carbon dioxide [CO<sub>2</sub>] equivalent) are from hydrofluorocarbons (HFC), a common class of refrigerants. Refrigerants are particularly concerning because of their high global warming potential (GWP), which can be hundreds to thousands of times higher than that of CO<sub>2</sub>. CARB staff recommended using low-GWP refrigerants, designing appliances that require less refrigerants, and improving refrigerant reclaim and recovery programs.

California is not alone in pursuing building decarbonization as an emissions reduction strategy. As part of a collective called the Pacific Coast Collaborative (PCC), the province of British Columbia; the states of Washington, Oregon, California; and the cities of Vancouver, Seattle, Portland, San Francisco, Oakland, and Los Angeles have committed to lowering the carbon intensity of heating fuels in residential and commercial buildings. For much of the Pacific Coast, buildings still rely on fossil fuels such as heating oil and natural gas for heating and cooling. PCC collaborates on energy efficiency improvements, electrification of heating and cooling, and renewable natural gas to achieve its goal of thermal decarbonization by 2050. Although challenges such as the future of natural gas infrastructure remain, the group will work to create complementary policies that engage a broad range of stakeholders, and ensure affordability and equity.

### *Energy Efficiency in Existing Buildings*

#### *Low-Income Customers' Barriers*

Improving the energy performance of buildings for lower-income Californians and those living in disadvantaged communities present a particular set of challenges. At the same time, it is clear that solutions must be inclusive of and accessible to these communities for the state's clean energy transition to be considered a success. Most low-income residents in California are renters, which leads to split incentives. Property owners have little financial incentive to invest in energy upgrades, while their tenants bear the cost of inefficiency via their utility bills. Low-income customers who own homes may also run into barriers with energy efficiency programs or renewable energy programs that require expensive upfront payments or copayments. All of this is compounded by the fact that utility bills represent a greater proportion of these customers' incomes.



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As mandated by SB 350, the Energy Commission created the [Low-Income Barriers Study, Part A](#), which studied the unique challenges faced by low-income customers and local small businesses in disadvantaged communities. The Energy Commission adopted the report in December 2016.

The [Low-Income Barriers Study, Part B<sup>11</sup>](#), by CARB, focused on clean transportation options for low-income and disadvantaged communities. CARB finalized it in February 2018.

### *Multifamily Buildings*

Given that nearly half of low-income residents in California live in multifamily buildings, one of the recommendations of the *Low-Income Barriers Study, Part A* specified the creation of an action plan for incorporating more clean energy in multifamily buildings. The May 2018 IEPR workshop focused on this topic. A draft of the plan, called [Clean Energy in Low-Income Multifamily Buildings Action Plan](#) (CLIMB Action Plan), identifies current programs and policies, remaining challenges, and concrete actions the state can administer. The report defines strategies for accelerating implementation of distributed energy resources in this sector, encompassing energy and water efficiency, demand response, on-site renewable energy, electric vehicle infrastructure installation, and energy storage. In developing the *CLIMB Action Plan*, the Energy Commission collaborated with five principal partner agencies in the state: California Public Utilities Commission, Department of Housing & Community Development, Department of Community Services & Development, State Water Resources Control Board, and CARB. The Energy Commission will adopt the *CLIMB Action Plan* by late 2018.

### *Benchmarking and Disclosure*

Beginning in 2017, California's major utilities began facilitating the provision of whole-building energy usage data to building owners, as stipulated in AB 802, with the purpose of enabling benchmarking. Benchmarking allows building owners, tenants, and the general public to better understand the buildings that they inhabit, making clear the relative opportunities for efficiency and other clean energy investments. Benchmarking and disclosure are major energy efficiency policies.

The first round of benchmarking data has been collected for 2017 and data collection will continue annually. Assembly Bill 802 directs that California's utilities must provide whole-building data access to commercial and multifamily building owners, or their representatives.

Also in accordance with AB 802, owners of buildings larger than 50,000 square feet now have a time-certain requirement to benchmark their building: June 1, 2018, for commercial buildings and June 1, 2019, for multifamily. The initial benchmarking effort affords building owners time to familiarize themselves with the process, and to consider how they might improve their scores.

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<sup>11</sup> [https://www.arb.ca.gov/msprog/transoptions/sb350\\_final\\_guidance\\_document\\_022118.pdf](https://www.arb.ca.gov/msprog/transoptions/sb350_final_guidance_document_022118.pdf).



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Further, the Energy Commission will use the information to iron out any process issues, evaluate trends, and identify opportunities for future outreach and programs.

Public disclosure of some building energy performance information will begin after one year of required benchmarking: 2019 for commercial buildings and 2020 for multifamily buildings. The expectation is that tenants will compare relative performance of buildings as they search for leased space, and make energy-related investment decisions. For affordable multifamily buildings, usage and benchmarking data can be helpful when deciding to participate in energy financing, grant, and incentive programs.

### *Clean Energy Jobs Act, Proposition 39 K-12 Program*

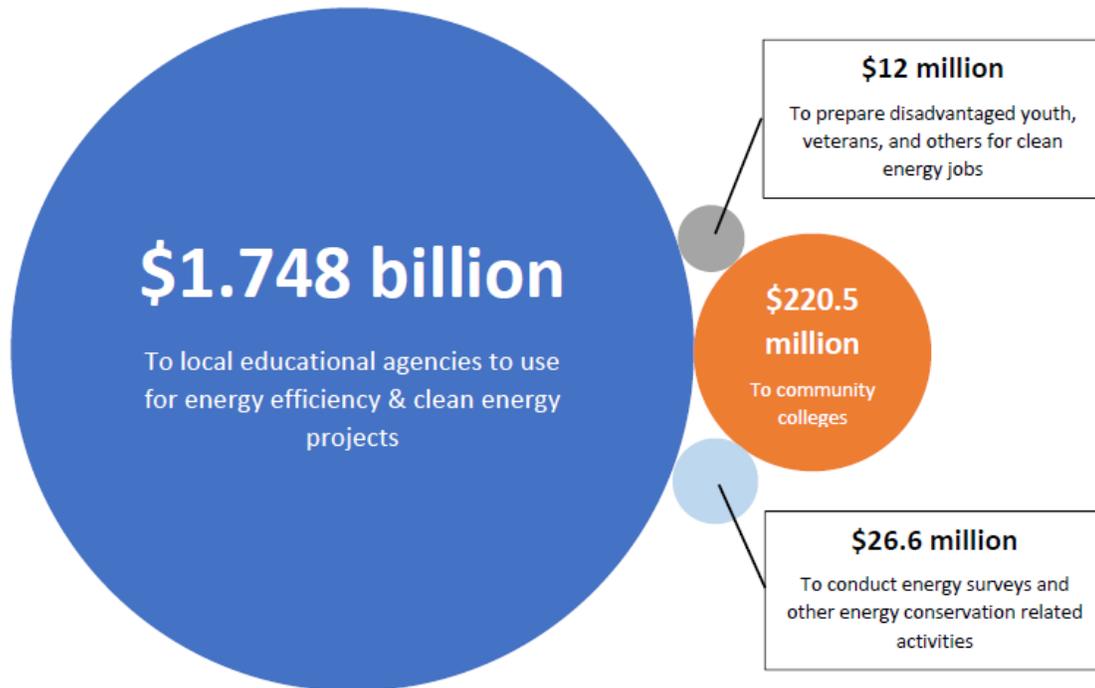
In November 2012, California voters approved Proposition 39, the [California Clean Energy Jobs Act](#). The [initiative](#) changed the corporate income tax code and allocated revenues to the Clean Energy Jobs Creation Fund for five years, from July 1, 2013, through June 30, 2018. A general program outline and funding specifics were codified in Senate Bill 73 (Senate Budget and Fiscal Review Committee, Chapter 29, Statutes of 2013). Proposition 39 provided funding for the planning and installation of energy efficiency upgrades and clean energy generation measures.

The Energy Commission was the administrator of the Proposition 39 K-12 program, which included local educational agencies (LEA) such as public school districts, charter schools, county offices of education, and state special schools. For each of the five years, LEA were allocated funding based on average daily attendance and an additional amount based on student participation in the free and reduced meal program. Local educational agencies submitted proposed eligible energy efficiency measures for review through an Energy Expenditure Plan (EEP). Upon approval, the Energy Commission notified the California Department of Education, which disbursed the allocated funds to the LEAs to implement the cost-effective [energy efficiency and renewable energy generation projects](#). The total appropriation of funds is shown in **Figure 5**.



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Figure 5: Appropriated Funding for Proposition 39



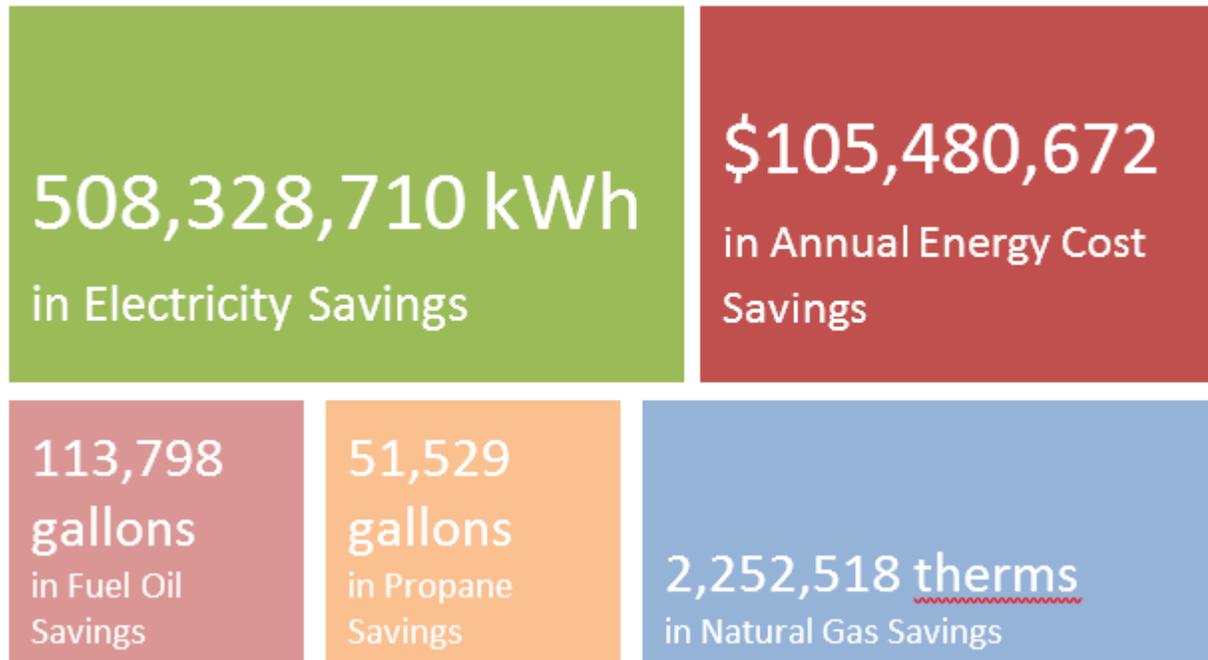
Source: California Energy Commission

Of the 2,200 LEAs eligible for Proposition 39 K-12 funding, 98 percent of public school districts, 98 percent of county offices of education, 100 percent of state special schools, and 65 percent of charter schools submitted EEPs, for an overall participation rate of 80 percent. The Energy Commission approved 2,139 EEPs representing 7,298 project sites for a total of \$1.5 billion, comprising 84.7 percent of the available program funds. In addition, 1,646 LEAs requested and received energy planning funds totaling \$154 million. Energy Commission estimates for annual energy and cost savings from approved EEPs are shown in **Figure 6**.



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Figure 6: Estimated Annual Savings from Approved Proposition 39 EEPs



Source: California Energy Commission, Local Assistance and Financing Office, June 2018

Proposition 39 K-12 Program funding ended June 30, 2018. Senate Bill 110 (Senate Budget and Fiscal Review Committee, Chapter 55, Statutes of 2017) continues to create energy efficiency and clean energy jobs beginning in fiscal year 2018-19. Senate Bill 110 specified that any funds remaining in the Proposition 39 K-12 Program after fiscal year 2017-18 be reauthorized to three new programs:

- The first \$75 million will go to a School Bus Replacement Program.
- The next \$100 million will establish an Energy Conservation Assistance Act-Education (ECAA-Ed) Competitive Loan Program.
- The remainder will establish a Proposition 39 Competitive Grant Program.

Due to high participation, there was roughly \$117 million remaining at the close of the program. The School Bus Replacement Program was fully funded, the ECAA-Ed Competitive Loan Program will receive roughly \$42 million, and the Proposition 39 Competitive Grant Program will not be funded.

While SB 110 changed the prior ECAA-Ed Loan Program from first-come, first-served basis to a competitive basis, the \$42 million infusion will create new loan opportunities for K-12 schools. The interest rate will remain at zero percent and the new program is structured to encourage greater participation by allocating funding based on region, size of school, and student eligibility for the Free and Reduced Price Meal Program, further benefitting disadvantaged communities.



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### Technical Assistance

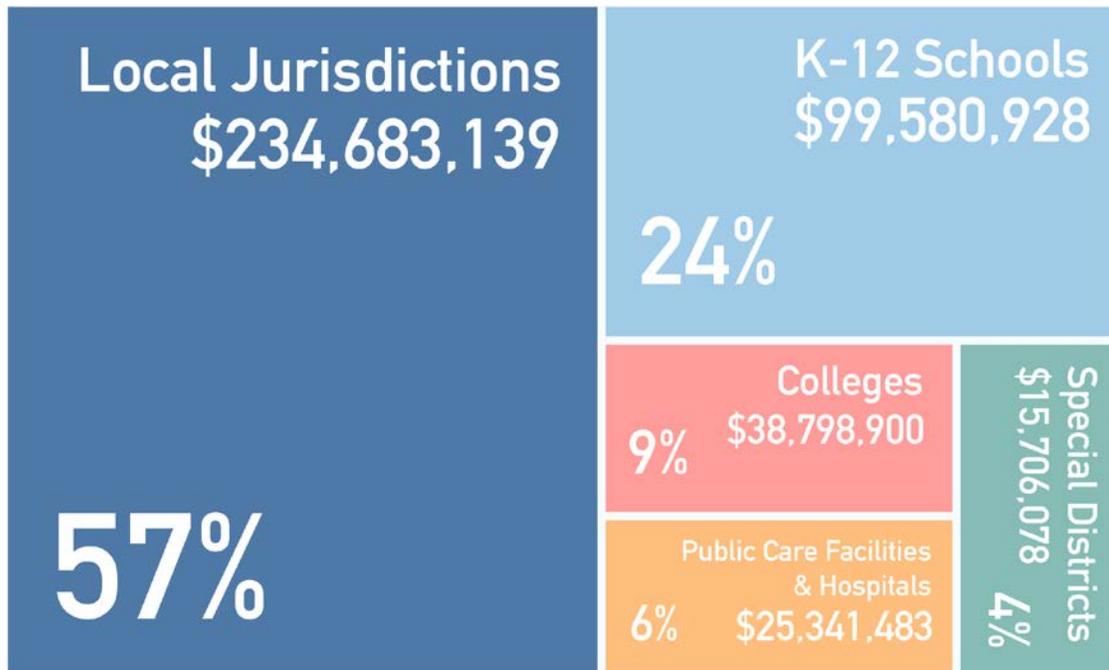
In addition to the ECAA Loan programs, the Energy Commission continues to offer free technical assistance through the Energy Partnership Program (EPP) and Bright Schools Program (BSP). EPP offers energy audits and other project assistance to cities, counties, public health care facilities, and colleges and universities. The BSP offers similar assistance to K-12 schools and remains a first-come, first-served program with a simple application.

### Energy Conservation Assistance Act Loan Program

Since 1979, the Energy Commission has provided the public sector with low-cost financing for energy efficiency and clean energy generation projects. The [Energy Conservation Assistance Act](#) (ECAA) loan program provides low interest rate loans (currently 1 percent) to local governments, colleges and universities, special districts and public health care facilities, with percentages for each shown in **Figure 7**.

A total of more than \$414 million in loans has been allocated since the program began. In 2017 alone, the ECAA programs funded seven loans totaling over \$14 million to cities, counties, schools, and special districts for lighting upgrades, HVAC, lighting and HVAC controls, and solar photovoltaic projects. Annually, these projects are estimated to save \$1.1 million in energy costs, reduce electricity usage by more than 8,000 GWh, and natural gas by more than 2,300 therms.

**Figure 7: Percentage of Loan Funds by Recipient Type**



Source: California Energy Commission



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### Additional References:

- Energy Efficiency Programs <http://www.energy.ca.gov/efficiency/>
- Appliance Standards <http://www.energy.ca.gov/appliances/>
- Building Energy Efficiency Standards <http://www.energy.ca.gov/title24/>
- Online Resource Center, Building Standards <http://www.energy.ca.gov/title24/orc/>
- Existing Buildings Energy Efficiency Program <http://www.energy.ca.gov/ab758/>
- Building Benchmarking and Disclosure Program <http://www.energy.ca.gov/benchmarking/>
- Energy Conservation Assistance Act (ECAA) Loan Program <http://www.energy.ca.gov/efficiency/financing/index.html>
- Clean Energy Jobs Act (Proposition 39 K-12 Program) <http://www.energy.ca.gov/efficiency/proposition39/>

### Contacts:

- Energy Efficiency Programs: Dave Ashuckian, [Dave.Ashuckian@energy.ca.gov](mailto:Dave.Ashuckian@energy.ca.gov)
- Appliance Standards: Kristen Driskell, [Kristen.Driskell@energy.ca.gov](mailto:Kristen.Driskell@energy.ca.gov)
- Building Energy Standards: Christopher Meyer, [Christoper.Meyer@energy.ca.gov](mailto:Christoper.Meyer@energy.ca.gov)
- Online Resource Center: Chris Olvera, [Chris.Olvera@energy.ca.gov](mailto:Chris.Olvera@energy.ca.gov)
- Existing Buildings: Eugene Lee, [Eugene.Lee@energy.ca.gov](mailto:Eugene.Lee@energy.ca.gov)
- Benchmarking and Disclosure Program: Eugene Lee, [Eugene.Lee@energy.ca.gov](mailto:Eugene.Lee@energy.ca.gov)
- Proposition 39 K-12 Program: Elise Ersoy, [Elise.Ersoy@energy.ca.gov](mailto:Elise.Ersoy@energy.ca.gov)
- ECAA Loan Program: Elise Ersoy, [Elise.Ersoy@energy.ca.gov](mailto:Elise.Ersoy@energy.ca.gov)

### Hotlines:

- **Appliance Standards (Title 20) Compliance Assistance (MAEDBS)**  
(888) 838-1467 Toll-free in California  
(916) 651-7100 Outside California  
[Appliances@energy.ca.gov](mailto:Appliances@energy.ca.gov)
- **Energy Standards (Title 24)**  
(800) 772-3300 Toll-free in California  
(916) 654-5106 Outside California  
[Title24@energy.ca.gov](mailto:Title24@energy.ca.gov)
- **Proposition 39 K-12 Program**  
(855) 380-8722 Toll-free in California  
(916) 653-0392 Outside California  
[Prop39@energy.ca.gov](mailto:Prop39@energy.ca.gov)
- **Building Energy Benchmarking Program**  
(855) 279-6460 Toll-free, [Benchmarking@energy.ca.gov](mailto:Benchmarking@energy.ca.gov)

### Next Update:

June 2019