

THE *Future* OF CALIFORNIA CONSUMER ENERGY FINANCE

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Policy Brief



California leaders have established ambitious state goals to reduce state greenhouse gas emissions 40 percent by 2030 and 85 percent (and achieve statewide carbon neutrality) by 2045. These goals build on decades of decarbonization efforts across multiple sectors, including measures to address emissions from energy consumption in buildings, which are responsible for over 10 percent of statewide greenhouse gas emissions and are one of the most difficult to decarbonize sectors for a host of financial, technical, and structural reasons. They present a high-priority opportunity to couple emissions reduction efforts with strategies to promote indoor air quality, reduce energy cost burdens, and improve quality of life for millions of Californians.

These strategies include utility customer- or state-supported financing programs designed to incentivize property owners to take on retrofit projects using private capital, with government-directed funds dedicated to lowering the cost of capital to borrowers and creating a project pipeline through incentive access and contractor management. California's flagship financing initiative, GoGreen Financing, enables financial institutions to provide lower-cost loans for qualifying energy efficiency retrofit projects, with utility customer-funded support via a loan loss reserve fund to protect against defaults. (GoGreen is administered by the California Alternative Energy and Advanced Transportation Financing Authority, or CAEATFA.)

Nearly a decade after its initial conception and over six years since first issuance of loans, GoGreen Financing has gradually grown, enrolling over 3,000 loans and facilitating over \$50 million in residential retrofit projects through early 2023. However, California needs to significantly accelerate the pace of retrofits across 14 million existing homes and units if the state is to achieve its 2045 decarbonization target—and expand the suite of available low-cost tools in order to meet the needs of lower- and moderate-income residents in that timeframe. This policy brief summarizes a [report](#) that analyzes the future of consumer energy finance in California and discusses strategies to improve program reach, integrate with new models to serve lower- and moderate-income Californians, and accelerate progress in pursuit of the state's long-term decarbonization goals.

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CALIFORNIA’S EXISTING BUILDING DECARBONIZATION CHALLENGE

According to 2022 data from the California Energy Commission, direct emissions from residential and commercial buildings account for approximately 10 percent of state greenhouse gas emissions, and total building energy use accounts for 25 percent of systemwide state emissions. Reducing emissions from buildings is therefore critical if the state is to meet its decarbonization and climate goals.

For all building types, a substantial increase in energy efficiency coupled with a transformational shift from fossil fuel-powered to electricity-powered homes and appliances—including millions of retrofits and replacements—will be essential to meet the state emissions reduction goals established by the Legislature and detailed in the California Air Resources Board’s most recent Scoping Plan. Figure 1 shows how the building fuel mix must shift to nearly 100 percent electricity by 2045 according to the Board.

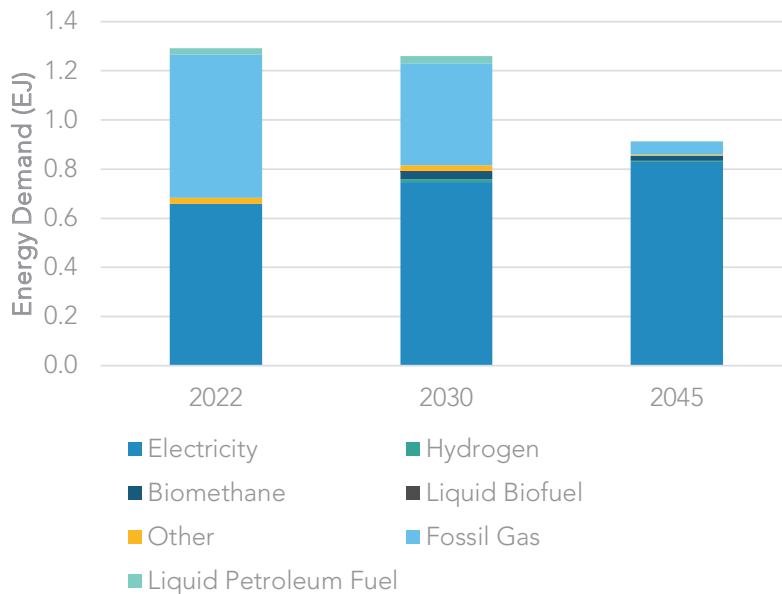


Figure 1: Building energy demand in the CARB Scoping Plan Scenario (40 percent GHG emissions reduction by 2030, 85 percent reduction and statewide carbon neutrality by 2045). Source: CARB, 2022 Scoping Plan.

Analysis from the Energy Commission has found that aggressive electrification is required to achieve statewide decarbonization by 2045, as shown in Figure 2.

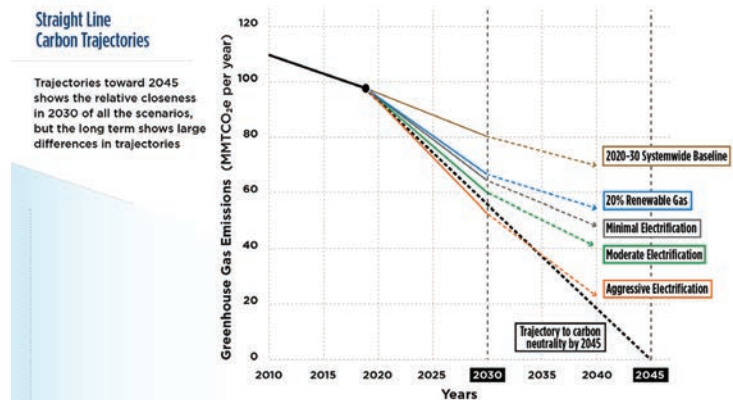


Figure 2: Systemwide straight-line building emission trajectories of scenarios compared to 2045 carbon neutrality. Source: California Energy Commission (CEC), California Building Decarbonization Assessment.

Given these scenarios, leading consumer energy financing and building decarbonization experts and advocates broadly agree on the need for rapid acceleration of retrofit efforts and on the fact that financing programs are very important to that acceleration, but also agree that these measures need to be complemented by other policies. Among advocates and experts, including those interviewed for this report, some divergence exists on program design priorities such as the relative priority of efficiency and electrification investments (given limited capital) and the appropriateness of debt-based strategies for lower-income residents. But there is broad consensus on the need for program expansion and transformation.

Against this backdrop of ambitious state climate policies, significant need for increased scale, and a complex ecosystem of financing, incentive, grant, and rebate programs for consumers, our [report](#) offers analysis of California’s programs and out-of-state examples, insights from a range of experts and stakeholders, and recommendations for building decarbonization leaders to achieve California’s goals.

SELECT FINDINGS AND RECOMMENDATIONS

The following findings and recommendations are based on literature review, expert interviews, and an October 2022 expert roundtable hosted by UC Berkeley. Findings are broken into distinct but overlapping groups: expanding financing programs, serving lower-income residents, accelerating decarbonization, recovering costs equitably, and learning through program design. This grouping is based on a central insight obtained from the authors’ research and expert outreach: that the scale of California’s residential building retrofit need in light of the state’s 2045 carbon neutrality target is monumental and will rely largely on private capital; state-supported strategies to marshal private capital such as GoGreen Financing can play a key role in this effort but are only a partial solution; and additional approaches will be needed to meet the needs of lower-income residents and achieve state targets.

Expanding and Improving California’s Consumer Energy Financing Programs

Taxpayer/state funding rather than ratepayer funding can drive success

Other states’ financing programs have achieved greater loan and project volume through less reliance on ratepayer funds and more on the state budget. This taxpayer/state budget-funded model has the potential to draw more customers from all utility service territories, facilitate more comprehensive projects regardless of fuel source and utility, and make revenue generation more equitable by relying on more progressive tax sources rather than regressive utility charges.

Program flexibility is important to meet customer needs

While some programs operate with a strict “efficiency first” philosophy, experts have found that flexibility is critical for engaging customers. In order to achieve scale and facilitate overlap with other funding streams, GoGreen Financing could fund a wider array of eligible measures beyond pure efficiency (such as solar plus storage) and change requirements from project-specific to portfolio-wide energy. CAEATFA has requested that the California Public Utilities Commission (CPUC) grant authorization for this funding flexibility, which would also be supported by a shift in revenue source.

Financing programs should cultivate data-sharing opportunities to avoid emergency equipment replacement situations and automation of approvals to increase contractor and customer ease-of-use

Most residents conduct home improvements and appliance repairs when necessary upon equipment failure, rather than in a proactive fashion. But new smart metering and smart appliance technologies could offer utilities and program administrators the ability to know in advance when an appliance is nearing end-of-life, creating an opportunity to engage residents immediately before equipment failure rather than after.

Serving California’s Lower-Income Residents and Customers

Traditional state-supported financing is valuable for middle-income customers but has limited use for low-income residents; continuing to expand the range of electrification and decarbonization program types will help move the state forward

The GoGreen Financing programs are targeted at a specific section of the population—those who can afford to repay financing on energy efficiency measures but lack the resources to pay out of pocket for upgrades. In general, direct install and zero-cost programs that do not require out-of-pocket expenditures or ongoing payment obligations—such as California’s Low-Income Weatherization Program—and high-subsidy programs like TECH Clean California are likely more appropriate for lower-income families than traditional financing. Tariffed on-bill and inclusive models can also serve this population segment at lower risk of creating burdensome long-term debt although not without potential bill increases. Continuing to expand the range of available program options beyond financing will help the state reach customers at every income level. Figure 3 below depicts the appropriateness and effectiveness of different program types

for different income groups, offering an illustrative prioritization for policymakers in program design.

	LOWER INCOME	UPPER INCOME
TRADITIONAL FINANCING	Inappropriate/ineffective	Appropriate* Most Appropriate***
ON-BILL/INCLUSIVE	Potentially Appropriate*	Most Appropriate
DIRECT-INSTALL/GRANT	Most Appropriate	Potentially Appropriate** Innapropriate
RETROFIT SCOPE	Weatherization and appliance replacement Gradual/piecemeal	Deep decarbonization*** Comprehensive
*Consumer protections needed **Only in cases of market development/technology acceleration ***Limited state/ratepayer support coupled with eventual retrofit mandates		

Figure 3: Appropriateness and effectiveness of retrofit investment types by income.

Microloan marketplace programs can expand lower- and moderate-income residents’ access to efficient and electrified appliances

While many lower- and moderate-income residents lack the financial and time resources to undertake comprehensive home retrofits, microloan marketplace programs offer a way to finance single appliance purchases that can increase household efficiency and electrification in a piecemeal fashion.

Financing programs should automatically redirect customers who do not meet eligibility criteria (if any) into alternative financing programs and direct-install options

Another key strategy to take advantage of customer engagement is to ensure that if a customer’s financing application is denied, the customer is automatically redirected to alternative programs that meet their needs. For example, the Detroit Loan Fund program directs any Detroit resident who applies for Michigan Saves financing but does not meet credit criteria to an alternative underwriting program operated directly by Michigan Saves (rather than the participating credit unions). This type of program could offer a key method to retain customers, particularly as GoGreen leaders seek to incorporate Inflation Reduction Act and other federal funds.

Accelerating Building Decarbonization Toward California’s 2045 Carbon Neutrality Goal

Scaling up existing programs is needed to achieve maximum impact in California

In order to reach the over 10 million existing California residential units in need of retrofit work by 2045, policy makers will have to significantly expand existing programs. Increasing the amount of funding available for direct-installation and high-subsidy

programs like LIWP and TECH can help customers with the greatest financial need, while ramping up GoGreen could draw more private capital into the system. Expanding the GoGreen Financing programs to reach all Californians regardless of Investor-Owned Utility (IOU) service territory and all greenhouse gas emissions-reducing measures could assist in this effort but might require a shift away from utility ratepayer funds as a primary revenue source.

State leaders should employ Infrastructure Investment and Jobs Act and Inflation Reduction Act funds strategically to maximize the total capital infused into the retrofit effort while focusing on residents with the greatest need

The Infrastructure Investment and Jobs Act of 2021 (IIJA) and Inflation Reduction Act of 2022 (IRA) are landmark federal investments in clean energy and greenhouse gas emissions reduction, with the IRA in particular providing billions of dollars for building decarbonization efforts. These include expanded federal tax credits for residential energy efficiency installations, such as up to \$2,000 for heat pumps and \$1,200 for envelope improvements; and over \$4 billion for states to establish whole-home retrofit programs. The IRA also created a \$27 billion “Greenhouse Gas Reduction Fund” designed to mobilize financing and leverage private capital for emissions reduction investments including home retrofit programs. Leaders at CAEATFA, the California Energy Commission, and the Treasurer’s Office are considering a joint application on behalf of a state “green bank” consortium. Such a coordinated effort, with clear direction to channel funds into retrofit efforts targeted for lower- and moderate-income residents (including expanded financing initiatives, tariffed on-bill pilots, and direct-install programs) could be vital to kick-starting retrofit efforts in line with the state’s 2045 targets.

An incremental approach can be a good alternative if deep retrofits are not possible

Because most areas of California experience milder winters, space heating needs (and associated energy expenditures) are lower than average. As a result, it can be more difficult to generate cost savings from heating/cooling and building envelope retrofits. An incremental approach, where homeowners phase in projects one at a time, can be a useful strategy and in that instance, a good initial step can include some envelope efficiency measures and equipment replacement. For homeowners less able or inclined to plan, programs that encourage efficient equipment replacement at the time of failure can help create turnover of less climate friendly equipment.

Equitable Recovery of Consumer Energy Finance Program Costs

Pursue funding from state and federal sources for administrative costs and credit enhancements

The current approach of funding consumer energy finance programs by increasing consumer energy bills is a widely used practice in California that enabled CAEATFA to begin developing, piloting, and growing consumer energy finance programs. However, this funding approach is regressive and increases rates, thereby discouraging electrification. An alternative approach is to fund both the administrative costs and credit enhancements with state and federal funding sources. Appropriating program funding through the state budget process would put less pressure on utility bills, thereby making rates more consistent with decarbonization goals. However, the consistent availability of state

funding could be subject to the state’s overall budget outlook and changing legislative priorities.

Recover program costs through income-graduated fixed charges

The current approach of funding GoGreen Financing and other energy efficiency programs administered by IOUs is inequitable and undermines electrification because the costs increase volumetric (i.e., per kilowatt) energy rates. Alternative rate structures can avoid these negative consequences. Collecting the program costs through a monthly fixed charge is a way to avoid undermining electrification. Then designing a fixed charge that varies based on household income can avoid the inequity of the current approach. The CPUC is working with stakeholders to develop income-graduated fixed charges in Rulemaking 22-07-005, following passage of Assembly Bill 205 (2022) which directed the CPUC to consider the practice.

Learning through Consumer Energy Finance Program Design

Consider one or more experiments aimed at increasing GoGreen Home program uptake

While GoGreen Home has been in the California market for several years, it is not yet widely known and has not yet been a catalyst for energy efficiency or building electrification investments by many California households. There are still ample opportunities to consider program changes and evaluate these changes through randomized experiments. The CPUC and CAEATFA should consider carrying out one or more randomized experiments to evaluate program changes and make further improvements, with an aim of increasing program take-up.

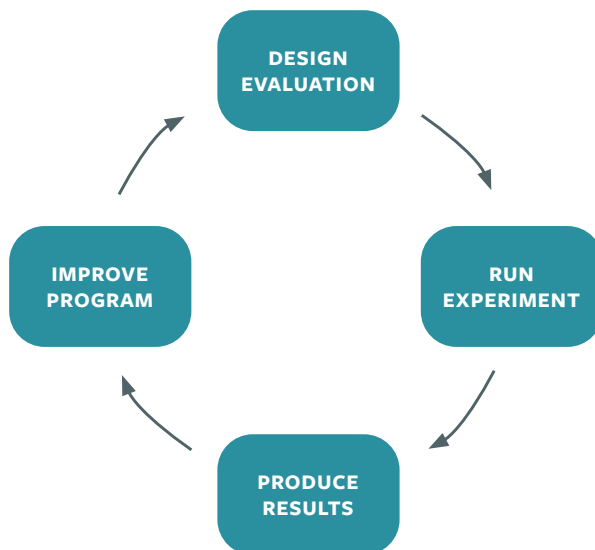


Figure 4: The virtuous cycle of evaluation.

Access the full report [here](#).

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