California has set ambitious climate goals, which include reducing state greenhouse gas (GHG) emissions 40 percent by 2030 and reducing GHGs 85 percent (and achieving statewide carbon neutrality) by 2045. Amongst all the sectors state leaders seek to address, existing buildings (which are responsible for over 10 percent of state emissions), and especially existing residential structures, are among the most difficult to decarbonize. Although households may end up paying less in energy costs in the long run, many measures to reduce emissions such as electric heat pumps and envelope upgrades can come with up front costs that run tens of thousands of dollars or more.

The state has established a range of different programs to address the problem, among them subsidy-based initiatives like the TECH Clean California (TECH) Initiative, Low-Income Weatherization Program (LIWP), and Solar on Multifamily Affordable Housing (SOMAH), which can be a particularly effective strategy to help lower-income Californians upgrade their residences. Providing grants to retrofit each of California's 14 million existing residential units, however, is unfortunately infeasible.

Because there are not enough public funds to cover the tens (if not hundreds) of billions of dollars in needed upgrades, the state has established programs like GoGreen Financing, which provides access to low-cost capital as an incentive for homeowners to invest their own funds in efficiency and decarbonization retrofits. GoGreen Financing enables financial institutions to provide low-cost loans and other financing options for qualifying energy efficiency retrofit projects with state support via a loan loss reserve fund that protects lenders from costly defaults. In the seven years in which GoGreen Financing has operated, it has enrolled over 3,000 loans and facilitated over $55 million in residential retrofit projects.

However, the GoGreen Financing programs have not yet achieved the necessary scale and speed compared with similar programs and given California's 2045 climate goals. Comparable institutions in Connecticut and Michigan, for example, which administer similar loan loss reserve programs, have achieved greater volumes. Connecticut facilitated more than 6,300 projects totaling over $97 million of financing between 2012 and 2022, and Michigan facilitated more than 36,000 residential projects exceeding $460 million in financing between 2009 and 2022. Moreover, even at their most robust and effective, the California GoGreen Financing programs will likely only fund a portion of the necessary retrofits given the millions of units in need of decarbonization work. Furthermore, financing programs are not always appropriate for lower-income residents, who will require access to

alternative measures involving minimal or zero repayment obligations. A new UC Berkeley report, *The Future Of California Consumer Energy Finance*, projects the future of California energy finance and lays out strategies to supplement and improve the reach of California's consumer financing programs. The report, a collaboration between CLEE and the Energy Institute at Haas, is based on research, analysis, and interviews with building decarbonization and financing experts from around the country.

The core finding of the report is that a comprehensive approach to efficiency and decarbonization investments, which maximizes public and private capital and includes financing strategies, should target different income levels with different tools. Other recommendations from the report include:

- The state should consider recovering program costs through income-graduated fixed charges rather than the current volumetric energy rate structure.
- 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.
- 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. And an incremental approach can be a good alternative if deep retrofits are not possible.
- Microloan marketplace programs can expand lower- and moderate-income residents' access to efficient and electrified appliances.
- State regulators should conduct randomized experiments to test program efficacy, in particular for emerging tariffed on-bill strategies.

A central recommendation throughout the report is that state legislators and financing program administrators consider alternatives to utility ratepayer funds as the core revenue source for GoGreen Financing programs credit enhancement. Shifting from ratepayer funds to alternative sources including taxpayer funds, federal funds, and philanthropic sources could potentially help scale up the GoGreen Financing programs in multiple ways by: extending the programs' reach and flexibility across utility service territories, fuel sources, and eligible measures; facilitating more seamless integration with other state programs; reducing procedural barriers to rapid adaptation to market and technology developments; and advancing equity by relying on a more progressive revenue source. (In fact, a CPUC proposed decision, attached to this post, recently authorized GoGreen

Financing programs to expand eligible technologies to include on-side generation, battery storage, EV charging and more, and to seek external (i.e., state and federal) funding to support those expanded measures).

Electrifying California's existing homes and apartments can not only help the state reach its decarbonization goals on time but also improve indoor air quality and health and reduce energy costs for residents. But California must move faster on retrofits. The recommendations in *The Future Of California Consumer Energy Finance* point the way to progress.

For more findings from this report, please see a blog post by Andrew G. Campbell, Executive Director at Energy Institute at Haas.

Proposed Decision in CPUC Rulemaking 20-08-022