

## CASE STUDY

# RESIDENTIAL ENERGY RETROFITS



In the U.S., residential energy retrofit programs support single-family homeowners through the process of retrofitting their homes to increase energy efficiency and/or to lower energy costs. These programs generally include three steps: assessment, financing and retrofitting. These programs were developed in response to increased interest at all levels of government to reduce the greenhouse gas (GHG) emissions of buildings; energy efficiency retrofits being seen as “low-hanging fruit” toward this outcome. Many of the existing U.S. programs at both the city and state levels received their initial start-up funding as part of the U.S. federal stimulus package.

## BENEFITS

### ENVIRONMENT

- Conserve energy
- Reduce greenhouse gas (GHG) emissions

### EQUITY AND COMMUNITY

- Support interested homeowners to overcome potential financial barriers to participation
- Provide help to those living in energy-inefficient housing
- Provide workforce training and apprentice opportunities for this new line of retrofitting business
- Improve overall quality and performance of existing housing stock

## ECONOMIC

- Create and retain jobs (like livable-wage construction jobs) in the area
- Provide utility bill savings and resulting discretionary income for homeowners

## BARRIERS TO IMPLEMENTATION

### INSTITUTIONAL

The largest barrier to the implementation of residential energy retrofits is determining the appropriate party that will be responsible for administering the program. Most current programs are run by the municipality as part of its departmental responsibilities or in partnership with a nonprofit organization with experience in energy efficiency. This nonprofit organization can either be already established or newly formed for the purpose of administering the program. More and more, cities are turning to local utilities to finance and administer such programs. A good example of this is the Bainbridge Island, Washington retrofit program, which is being implemented by the Conservation Services Group, Inc.



### FINANCIAL

Residential energy retrofit programs require upfront funding for the energy assessment and the retrofitting, which is a common barrier for participation. While some homeowners may be able to pay the initial costs and be reimbursed later, many will not. Accordingly, the entity implementing the program (either public or private) will need access to a large source of funding to provide to homeowners or directly to the contractors doing the work. In instances where the homeowner provides the initial funding, reimbursement comes from the city and/or the state in the form of rebates, tax credits, and direct payment. Where a utility has assumed financial responsibility, an additional charge is added to the homeowner's monthly utility bill to pay back the cost of the retrofit.

### POLITICAL

Fannie Mae and Freddie Mac, the two government-sponsored enterprises that secure all U.S. home mortgages, have expressed an unwillingness to secure the mortgage of a house that has an energy retrofit payment lien that is senior to the mortgage. As a result, many of the original energy retrofit programs have ceased.

## CASE STUDY ENHABIT

Enhabit (formerly Clean Energy Works Oregon) began as a pilot program of the City of Portland, Oregon and was initially funded through a grant from the U.S. Department of Energy. The program provides the financing and expertise required for home energy-efficiency remodels.

### STRATEGIC PARTNERS

Enhabit is a nonprofit organization created by the City of Portland Bureau of Planning and Sustainability (BPS), who works in partnership with Energy Trust of Oregon, utilities, financial institutions, local communities and contractors—including the BPS, the Oregon Department of Energy, Craft3 (CDFI), NW Natural, Pacific Power and Portland General Electric (PGE). Homeowners apply to participate.

### FINANCING

The pilot program's loan fund was started with Recovery Act funds from the Energy Efficiency and Conservation Block Grant (EECBG) program and other City resources. Financing for program participants is provided by Craft3 (CDFI), Umpqua Bank (community bank), SOFCU Community Credit Union, Pacific Crest Federal Credit Union, Community Credit Union also provide.

### IMPLEMENTATION

The program consists of three parts: assessment, financing and retrofitting. Once a home is accepted into the program, a Building Performance Institute-certified contractor conducts a Home Energy Assessment to identify energy-savings opportunities and the estimated impact on the home heating bill. Based on identified need and estimated cost-savings, upfront financing is provided to the homeowner to pay for the retrofits with the loan payment assessed from the cost-savings by the utility company.

### LESSONS LEARNED

- While more expensive initially, programs that take a “whole house” approach and do all needed retrofits at once see greater overall cost-savings than programs that finance individual projects within a home.
- An initial assessment of potential cost-savings is critical for knowing which potential upgrades have the shortest payback period. Projects with a long payback period, while sometimes very effective, are not usually feasible for this type of program.
- The city or agency managing the program needs to establish guidelines for quality work and make sure that both contractors and homeowners are familiar with the guidelines.
- Middle-income, educated homeowners are the most likely to participate in these programs.
- Cities or organizations should target specific geographic areas with the demographics and home era best suited for the program.

## OTHER PROJECTS

- Home Performance with ENERGYSTAR
- CALIFORNIA CHF Residential Energy Retrofit
- FLAGSTAFF, AZ Flagstaff Residential Energy Retrofit
- TUCSON, AZ Residential Energy Efficiency Retrofit
- BABYLON, NY Long Island Green Homes

## REFERENCES

- Enhabit: <https://enhabit.org/>
- CHF Residential Energy Retrofit Program: [http://chfloan.org/Programs/Energy/energy\\_program.html](http://chfloan.org/Programs/Energy/energy_program.html)
- U.S. Department of Energy: [http://www1.eere.energy.gov/wip/retrofit\\_guidelines.html](http://www1.eere.energy.gov/wip/retrofit_guidelines.html)