

ATTACHMENT 1

BayREN HVAC Pilot Program Summary

Department of Energy EERE FOA: DE-FOA-0001073 State Energy Program 2014 Competitive Awards

Application Deadline: 30 June 2014

Award Notice: 24 September 2014

Grant Priority

This SEP Grant seeks applications to advance policies, programs, or market strategies to conserve energy while improving energy and climate security, economic development, and support for DOE goals. Area of Interest 2 prioritizes innovative opportunities for efficiency best practices tailored to local conditions and that builds upon the successes of earlier DOE investments in technologies, codes, and processes. Topic of Emphasis 5 is specific to supporting partnerships with Local Governments, and seeks to assist cities with their ability to design and implement effective EE strategies in areas of critical need.

The Problem

Inefficient heating and cooling systems are among the largest energy users in the residential sector. California, through both the CEC and CPUC, has prioritized performance improvement of these systems as one of its Big Bold Energy Efficiency Strategies (“Heating, Ventilation and Air Conditioning will be transformed to ensure that its energy performance is optimal for California’s climate”). Despite effective standards for the design, installation, and verification of these systems, compliance with these standards is exceptionally low, with estimates ranging from five percent (Contractors State Licensing Board) to 10 percent (California Energy Commission) for replacement systems. Only through the local government permitting process can these standards be ensured and enforced. While local government resource constraints make proactive enforcement difficult, the fundamental causes of permit avoidance are the lack of customer expectations and short-term economic decision making.

The Solution

The CEC will facilitate higher performance HVAC systems through a progressive and targeted campaign to increase permitting of residential HVAC installations, thus increasing compliance with applicable energy standards. The comprehensive HVAC Compliance Enhancement Pilot would utilize the experience of the Bay Area Regional Energy Network (BayREN) to launch the effort in the City of San Ramon, located in California Climate Zone 12 and in an area of high cooling demand. The program seeks to drive up permit compliance through a combination of communication strategies aimed at both homeowners and HVAC contractors. The key differentiation of the program would be its integration of elements from multiple areas of energy efficiency, including behavioral science, technology, and process education. Key areas of messaging would include:

- Homeowner decision making (behavioral science approach)
 - Discounting the future, anchor bias, status quo bias, social norm behavior
- Economic conditions
 - Lifecycle cost comparison, reduced monthly bills, greater reliability

- Benefits in the home
 - Increased comfort, improved indoor air quality, greater convenience
- Risk Reduction
 - Alleviating concerns about non-permitted work, effects on resale of home
- Contractor “Education”
 - CSLB developed language on increased enforcement, penalties, approach

Additional Details

The Funding Opportunity Announcement cites improvements to HVAC systems and controls as an area in which municipalities can target energy efficiency improvements, and states “local governments can also promote energy efficiency...through effective building code enforcement.” This approach allows for a focused compliance enhancement strategy to be implemented in a small area, within the jurisdictional boundaries of a single municipal government. The City of San Ramon offers an opportunity to target solutions to an area with high potential to generate meaningful increases in permit volume and associated energy savings. The goal will be to identify and work with the City to generate building permit data that can be analyzed and tracked both by permit type and location, providing a data source to analyze the effect of the program on overall permit volume. By targeting an area large enough to provide a statistically significant sample size but small enough to reach all homes, this approach will ensure that the effects of the Pilot can be measured and evaluated, and cost effectiveness determined.

This approach will provide for a structure that makes good use of the resources and goals of each of the three key parties – The CEC, BayREN, and the City of San Ramon. Roles and responsibilities can be clearly defined, methods described in full detail, accurate measurement of impacts made, and scalability to other cities and counties demonstrated. This approach works well relative to each of the three merit review criteria (Program Strategy and Plan, Potential Impact, Capabilities and Partnership Structure), and is both supported by and consistent with the existing focus areas of BayREN’s Energy Codes and Standards Program.

Finally, this approach reflects a program design not currently utilized in any of the existing utility or government programs addressing code compliance enhancement. Code-specific education has been part of the IOU Codes and Standards approach to HVAC compliance for several years, and two additional pilot programs (Cool Comfort Financing from The Energy Network and HVAC Permit Incentive Pilot from SDG&E) focus on the effects of incentives and finance support. However, none of these efforts addresses the fundamental issues causing low compliance. This proposed approach utilizes some of the most progressive and effective behavioral elements from energy efficiency programs and applies them to an issue which has human behavior as its fundamental cause. By changing the expectation, understanding, and desires of the homeowners, this Pilot will evaluate the potential to drive improvements in permit compliance and thus HVAC system efficiency.