

AB 758 COMPREHENSIVE ENERGY EFFICIENCY PROGRAM FOR EXISTING RESIDENTIAL AND NONRESIDENTIAL BUILDINGS

History and Background

As a result of California's efforts since 1978 to make newly constructed homes energy efficient through Title 24 Part 6 *Building Energy Efficiency Standards (Standards)*, California has avoided the need to build over 3,000 MW of new electricity generating capacity or about 6 medium sized power plants, reducing California's energy bills and improving the state's economy and environment. However, 55 percent of California's 13 million residential units and just over 40 percent California's nonresidential buildings was built prior to any standards. As California's *Standards* have become more stringent over time, substantial efficiency improvements are feasible and cost effective in a high percentage of California's existing buildings.

In its 2005 **AB 549 Report to the Legislature**, *Options for Energy Efficiency in Existing Buildings (AB 549 Report)*, the Energy Commission made a series of recommendations for capturing these important energy savings. Among them, the Energy Commission recommended expanding its efforts to establish, through *Standards*, energy efficiency requirements for alterations to existing buildings, disclosure of home energy ratings at point-of-sale, expansion of whole-building diagnostic testing and repair, and special attention to quality installation and tune-up of heating and air conditioning equipment. For the nonresidential sector, the *AB 549 Report* advocated for expanded benchmarking and retro-commissioning of existing buildings. The *AB 549 Report* has been foundational in guiding the efforts of the Energy Commission that has led to the comprehensive program mandated by AB 758.

In 2006, **AB 2021** (Levine) required the Energy Commission to develop a plan to improve the efficiency of air conditioners in the state. The resulting report, completed in June 2008, identified a major failure within the heating, ventilation and air conditioning (HVAC) industry to obtain permits for installing replacement furnaces and air conditioners, as required by law. Studies show that mechanical contractors pull permits for less than 10 percent of replacement HVAC jobs, and poor quality installations and improperly sized units are commonplace. It is estimated that the energy use of the central air conditioners replaced in California homes and small commercial buildings (estimated at close to 420,000 units in 2010) is 30 to 50 percent greater than it should be due to poor quality installations. And local governments are denied the resources necessary to enforce health and safety codes and energy efficiency standards because the revenue for funding this enforcement comes from permit fees.

Also in 2006, the Legislature and Governor Schwarzenegger enacted **AB 32, The Global Warming Solutions Act**, capping California's greenhouse gas emissions at the 1990 level by 2020. The Air Resources Board's *Scoping Plan* identifies energy use in buildings as the second largest contributor of greenhouse gases, at almost one-quarter of California's greenhouse gas emissions. According to the *Scoping Plan*, improving the energy efficiency of existing residential and nonresidential buildings is the single most important activity to reduce greenhouse gas emissions in the electricity and natural gas sectors. The *Scoping Plan* calls for aggressive actions for existing buildings, including mandatory disclosure of building energy use ratings, efficiency improvement requirements for under-performing buildings, and creative financing options such as on-bill financing.

AB 1103 (2007, Saldaña) mandated that nonresidential building owners disclose benchmarking and energy use data to prospective buyers, lessees, or lenders, and AB 531 (2009, Saldaña), gave the Energy Commission the authority to establish a time schedule for compliance. The Energy Commission is currently in the process of developing regulations to carry out these mandates.

In the same year, the Energy Commission's Integrated Energy Policy Report (*IEPR*) focused primarily on how to expand the Energy Commission's efforts to ensure reliable, affordable and environmentally sound energy to minimize greenhouse gas emissions. The 2007 *IEPR* concluded that climate change is the most important environmental and economic challenge of the century; greenhouse gas emissions are the largest contributors to global warming; and California's ability to slow the rate of greenhouse gas emissions will depend first on energy efficiency. As a result, the 2007 *IEPR* recommended the 100 percent achievement of all cost-effective energy efficiency in the State.

These recommendations provided the foundation for the Public Utility Commission's (CPUC) **California Long Term Energy Efficiency Strategic Plan** (*Strategic Plan*) of 2008, which reiterated that California investor owned utilities (IOUs) must refocus their residential efficiency efforts away from "widget" based programs (i.e. rebates for energy efficient equipment), to "whole-house" approaches that provide comprehensive energy assessments, rebates, financing options and quality installations. The *Strategic Plan* endorsed California's Home Energy Rating System (HERS) standards for existing homes, disclosure of HERS ratings at the point-of-sale of homes and multi-family buildings, and inclusion of HERS ratings in real estate listing information. The *Strategic Plan* also endorsed commercial building benchmarking and retro-commissioning, echoing the Energy Commission's *AB 549 Report*, and the development of building labels for existing nonresidential buildings to include both operational ratings (comparative energy consumption) and asset ratings (comparative level of energy efficiency features). The *Strategic Plan* concluded that building ratings and labels would result in energy efficiency becoming a key determinant in driving the commercial real estate market.

ARRA Funding and AB 758 Pilot Programs

In March 2009, the U.S. Department of Energy (DOE) released its State Energy Program (SEP) funding announcement and guidelines for states to apply for \$3.1 billion in American Recovery and Reinvestment Act (ARRA) funding. The goals of the SEP program include creating and preserving jobs, promoting economic recovery, reducing energy consumption and costs for consumers, reducing reliance on imported energy, reducing greenhouse gas emissions, and other activities that provide long-term economic and environmental benefits. In addition, states are encouraged to use their SEP ARRA funds to create sustainable programs that will provide lasting benefits and lead to long-term market transformation, beyond the termination date of ARRA funding.

California responded to DOE's announcement with two major new initiatives: a statewide energy efficiency retrofit program for existing residential and nonresidential buildings, and a comprehensive, clean energy workforce development program. In May 2009, California was granted \$226 million of ARRA SEP funding. \$125 million in SEP and an additional \$8 million in Energy Efficiency and Conservation Block Grant (EECBG) funds was used to develop residential and nonresidential retrofit programs across the state; coordinate ARRA programs with IOU retrofit programs under the "Energy Upgrade California" statewide brand, provide information to the public on money-saving energy improvements, rebates, funding options, eligible contractors and more; and pilot alternative residential and

nonresidential financing programs. In addition, \$20 million was used to launch the largest state-sponsored clean energy training program in the nation, to develop curricula and train the workforce necessary to perform the energy assessments and deliver best practice energy efficiency upgrades to California's existing buildings.

The programs that have been launched with a combination of ARRA funding and significant amounts of public, private and utility leveraged funds include:

- **Comprehensive Residential Retrofit programs**, which collectively have a goal of assessing and retrofitting over 40,000 existing market rate, affordable and low income single family and multi-family dwellings in over 40 counties in the state. Energy assessments, audits and retrofits will use an "Interim Performance Approach" for a limited time, as well as the HERS whole-house rating, building labeling and energy audit program, which are described in more detail below. Energy assessments will identify opportunities for energy savings, prioritized by cost effectiveness, and will be modeled to achieve energy savings of 10 to 35 percent and more energy over existing conditions.
- **Commercial/Municipal Targeted Measures Retrofit programs** will conduct energy use assessments in tens of thousands of small grocery stores, mini-marts, municipal and commercial buildings and parking structures across the state, and will result in retrofits of thousands with bi-level and advanced lighting technologies and controls, LED refrigeration lighting, energy management system controls, and HVAC controls. These state of the art technologies were tested, demonstrated and brought to market with the help of Energy Commission PIER research funding;
- **Property Assessed Clean Energy (PACE) financing pilots** for both the residential and commercial markets. The residential PACE pilot program will use a pooled bonding/financing approach, and will develop a hub tool in coordination with the statewide Energy Upgrade California web portal. The program addresses concerns raised by the Federal Housing Finance Authority (FHFA), and demonstrates the viability of, and will serve as a template for adoption of a residential PACE model throughout the State. The commercial PACE pilot program promotes comprehensive retrofitting and retro-commissioning, and models owner-arranged tax lien financing for retrofits of large commercial properties, through which commercial property owners can negotiate financing from lenders on negotiable terms, scale and schedules. In both programs, repayment will be secured through a contractual assessment on the building's property tax bill.
- **Clean Energy Workforce Training Programs (CEWTP)** include collaboration with state and local partners to develop regional plans for training workers in sustainable "green" industries, including energy efficiency and renewable energy. The Energy Commission has created partnerships statewide with high schools, community colleges, employment training panels, and job placement organizations to design curricula and deliver training programs, on-the-job training and internships to prepare the workforce necessary for successful implementation of the ARRA funded programs, and the future AB 758 program.

The programs that are being launched, and the infrastructure that is being develop are expected to benefit California's economy and workforce beyond the program end date. The programs vary in scope and design, but have been carefully selected to serve as test beds for job creation and retention in large population centers as well as rural corners of the state; development and demonstration of best practice techniques, tools and protocols for

energy assessments, ratings and building labeling; and demonstration of cost effective energy saving retrofits and alternative financing opportunities. They are also expected to contribute to California's goal of achieving 100 percent of cost-effective energy efficiency, and to help achieve AB 32 greenhouse gas emissions reduction goals. As public education on the benefits and value of energy efficiency continues to be a barrier to full and effective implementation of energy efficiency programs, all programs include creative public education, marketing and outreach efforts to ensure that the programs achieve the maximum potential benefits in terms of energy savings, greenhouse gas reductions, programmatic momentum and sustainability into the future. Additionally all programs will be carefully monitored over the duration of the ARRA funding term, and will be foundational in the development of the AB 758 program.

AB 758 Legislative Requirements

AB 758 (2009, Skinner) requires the Energy Commission to develop a comprehensive energy efficiency program for existing residential and nonresidential buildings. The program, which will be established through the regulatory process, is required to improve the energy efficiency of existing residential and nonresidential structures which fall significantly below the efficiency required by the current *Standards*. AB 758 directs the Energy Commission to consider effective ways to report building energy assessment results to building owners, prioritize annual energy saving opportunities, and estimate customer utility bill savings that could result from the improvements. Additionally, the Energy Commission is to determine the most cost-effective means and reasonable timeframes to achieve the goals of the program, design appropriate methods to inform and educate the public about the need for, benefits of, and environmental impacts of comprehensive energy efficiency programs, provide current information regarding incentives, rebates and tax credits to help offset the costs of the improvements, and provide information about financing options.

A major responsibility of the Energy Commission will be the development and ongoing upgrading of building energy assessment tools and protocols. The Energy Commission recently adopted the **Home Energy Rating System (HERS) Phase II** regulations, establishing standards for the completion of HERS whole-house ratings and energy audits. The Energy Commission will determine the appropriateness of the HERS program to support the goals of AB 758, using the ARRA funded Comprehensive Residential Retrofit programs, and other voluntary programs in the IOU and POU service territories, as test cases. Following an interim period, during which an "Interim Performance Approach" method will be used to determine and accomplish energy savings in existing homes, the HERS program will be used to perform energy assessments, ratings and building labeling, and will provide critical feedback as to its strengths and weaknesses. The Energy Commission will also, at a later date, expand the HERS regulations and protocols to include multi-family structures. The Energy Commission will also need to assess whether there are a sufficient number of HERS-certified raters to meet the program demands. Approaches will need to be developed to disclose ratings at point-of-sale, while assuring that energy efficiency assessments, ratings, or improvements do not unreasonably or unnecessarily affect the home purchasing process or the ability of individuals to rent housing, as is required by AB 758.

Likewise, the Energy Commission will need to develop a counterpart to perform energy assessments for commercial buildings to fulfill the AB 758 requirement for development of a system of energy assessments, ratings and building labeling for nonresidential buildings. This will be the Energy Commission's first order of business. This tool will need to address

the diversity and complexity of commercial buildings in the Golden State. This effort will build upon recent collaboration between the Energy Commission and national experts to develop nonresidential building rating and labeling tools and programs, and will include both operational ratings and building benchmarking (energy consumption as compared to similar buildings); and asset ratings (energy efficiency of physical characteristics or assets of the building). The commercial building energy assessor and commissioning agent workforce will need to be trained and made available in sufficient numbers to meet program demand, and AB 758 directs the Energy Commission to ensure that the energy improvements do not have an undue economic impact on California businesses.

The Energy Commission will also need to consider strategies to complete ratings at other trigger events in the life of buildings, including at the point of refinancing, building alterations, and replacement of appliances and equipment, and utility service changes.

The program calls out coordination with a variety of California workforce development organizations, community colleges, and other entities to create a sustainable residential and nonresidential energy retrofit workforce, including energy efficiency raters and assessors, contractors, commissioning agents, clean energy systems contractors, and others to implement the program requirements. The Energy Commission will be required to coordinate with the Public Utilities Commission, and consult with representatives of the Department of Real Estate, Department of Housing and Community Development, investor-owned and publicly-owned utilities, local governments, real estate licensees, commercial and home builders, commercial property owners, small businesses, mortgage lenders, financial institutions, home appraisers, inspectors, consumer groups, environmental and environmental justice groups, and other entities the Energy Commission deems appropriate.

To Conclude

The comprehensive AB 758 program is expected to evolve and transform the market, and deliver substantial energy savings and greenhouse gas emissions reductions inherent in the state's existing residential and nonresidential buildings. The Energy Commission will solicit public input during all phases of program development, and will periodically update the program and adopt revisions that in its judgment will improve or refine the program. Success of the program will depend, in large part, on contractors' increased compliance with the Building Code, including pulling building permits and designing systems in accordance with the *Standards*. This effort will build on the identification of these problems in the AB 2021 report, and consequent actions taken to work with stakeholders and industry.

The ARRA SEP and EECBG-funded programs are designed to be important cornerstones of the AB 758 comprehensive program. The delivery of the ARRA funded programs will provide valuable information about the viability of whole building approaches, and put us ahead of traditional low cost, relatively low impact, single measure programs, with minimal attention to quality installation. The Energy Commission will face the major challenge, after the ARRA program termination date, of building the most successful aspects of these programs into the AB 758 comprehensive program, modifying and refining them over time, and designing regulatory and market-based programs that will maintain and expand the momentum of these programs into the future.