Residential Energy Conservation Ordinances:
A regional approach to home energy efficiency

Introduction

A growing number of local governments in the Bay Area are considering adopting policies to improve the energy efficiency of existing housing stock. Local governments have an array of policy options available, from promoting voluntary programs, to requiring energy disclosure or upgrades.

A Residential Energy Conservation Ordinance (RECO) is one of the policy tools that local governments can use to improve the energy efficiency of existing homes, reduce greenhouse gas emissions, and meet other community goals. BayREN has developed RECO policy tools to build the capacity of local jurisdictions to evaluate, adopt, and implement residential energy conservation policies. The strategy is to develop a policy framework for regional consistency, while maintaining flexibility for cities to tailor the policy to meet their customized local needs.

This regional approach will:

- create a consistent playing field for homeowners, potential home buyers, construction professionals, and the real estate community
- reduce administrative burdens and costs for cities
- result in more cost-effective GHG reductions than a city-by-city approach

This background paper describes the components of the BayREN RECO policy toolkit and how they can be used by jurisdictions. It discusses the pros and cons of alternative policy options and offers a framework for decision makers.

While commercial and residential energy requirements can be implemented simultaneously, this background paper and the RECO toolkit contains guidance relevant only to single family homes. Experience in this sector will inform future efforts to target 2-4 unit residential buildings, and eventually to build out the tools necessary to reach all building types and sizes. It is anticipated that additional resources will also be developed to promote water efficiency.

The Residential Sector

In California, improving the energy efficiency of existing residential buildings is an urgent priority for state, regional and local government agencies seeking to meet goals for deep carbon emissions reductions. Making significant improvements to the performance of California's nine million single-family homes requires coordinated, sustained and multifaceted interventions to motivate investments in energy efficiency.

- Homes in the United States consume more than 20% of our nation's energy and more than half of the energy used in the buildings sector.

- In California, the residential sector is responsible for producing 18% of total greenhouse gas emissions.
- More than two-thirds of California's residential buildings were built before 1982 and therefore predated the energy performance requirements from the CEC.
- The number of existing homes sold each year is triple the number of new homes that are built. By improving the existing building stock, GHG emissions can be greatly reduced in a building sector that would otherwise remain relatively stagnant.
- The California Public Utilities Commission Long Term Energy Strategic Plan includes a goal to reduce energy consumption in existing homes by 20% by 2015 and 40% by 2020, listing RECOs as a role for local governments in reaching this goal.

Multiple Benefits

Increasing home energy efficiency has multiple non-energy benefits including improved durability, occupant comfort and indoor air quality, lower utility bills and the creation of green jobs.

Economic benefits:

- annual energy and cost savings
- job creation
- increased property value

Occupant benefits:

- improved comfort;
- indoor air quality; and
- fire/combustion safety

Environmental benefits:

- reduction in GHG emissions and other air pollutants associated with the generation of energy;
- water conservation; and
- reduction in reliance on fossil fuels

RECO Challenges

RECOs typically mandate that a home meet certain energy (and often water) efficiency requirements, usually at time or sale or major remodel, and establish a process for verifying that such standards have been satisfied. However, this approach has proven very difficult for local governments to adopt and implement. Obstacles include the expense of local government administration and enforcement, political opposition from the real estate community, and the high cost of compliance by homeowners. The cost of meaningful energy improvements varies broadly, exacerbating challenges around implementation and equity.

Many older RECOs were prescriptive in nature, and emphasized installation of a set of measures for every home. There are several problems with compelling a list of minimum energy saving measures. Prescriptive measures:

- Lag behind the current Title 24 Energy Code
- Become outdated given advances in technology and building science
- Miss opportunities for tailored options, rather than "one size fits all" requirements
- Can be cost-prohibitive and not deliver the maximum energy savings return on investment.
- Are not necessarily aligned with rate-payer funded incentive programs.

For these reasons, there has been a shift away from prescriptive checklists toward a more integrated approach that better aligns with current performance-based incentive programs. Evolving energy efficiency technologies and a growing focus on whole-house integrated systems to achieve optimal energy reductions has increasingly resulted in performance-based energy improvements. This strategy emphasizes customized, comprehensive, quantifiable measures that foster the greatest energy improvement outcomes for a particular home.

However, mandates to improve home energy performance come with significant compliance cost – estimated at $12,000 on the high end for energy improvements for poor performing, high opportunity single family homes. Moreover, the systems to track, verify, and enforce program compliance have proved challenging and costly to program administrators.

If improvements are required, a jurisdiction should consider:

- maximum threshold for cost to homeowner
- minimum threshold for energy savings
- average value and age of housing stock
- provisions for low-income/hardship/foreclosure
- availability of rebates/financing to offset cost to homeowner
- resources for enforcement and evaluation

Residential Energy Assessment and Disclosure (READ)

Given the difficulties in adopting, implementing, and enforcing traditional RECOs, a new generation of policy alternatives is emerging to address home energy efficiency: Residential Energy Assessment and Disclosure (READ) ordinances. Energy disclosure is a market transformation tool that makes building energy information more transparent to owners and prospective renters or buyers. It offers the potential to accelerate energy efficiency by providing a compelling action plan that leverages incentives and non-energy benefits to owners while creating transparency in the market place to increase the value of efficiency.

Energy assessment and disclosure policies:

- Provide building-specific recommendations to maximize efficiency, health, safety & comfort, reduce energy costs, and increase property values.
- Teach owners how to access valuable financing & incentive opportunities.
- Catalyze property owners to invest in energy-saving improvements, and leverage their investments in the marketplace.
- Allow buyers and renters to take energy efficiency into account when making housing decisions, and enhances consumer understanding about the costs associated with operating a home.
- Increase transparency in the marketplace regarding the energy performance of residential buildings, and stimulate demand for and supply of energy-efficient homes.

READ Stakeholders

- Homeowners / sellers – identify energy and cost saving priorities for home energy improvements, and increase value of energy efficiency features in the marketplace.
- Prospective home buyers / renters – gain information about a home's hidden operational cost, as well as associated health and comfort issues.
- Realtors – become informed on how energy efficient a home is, enabling effective communication with clients about the attributes of a green home.
- Policymakers – gain access to data on energy use of existing homes to track progress toward meeting local energy goals and to inform future policies.
- Building Professionals – new business opportunities for contractors, inspectors, and raters as a result of growing workforce demand in the residential energy sector.

Types of Energy Disclosure

There are two main types of energy disclosure policies: Operational ratings and Asset ratings.

- Operational ratings report on energy consumption during a building's operation as measured by energy data, such as utility bills. Metered energy use data can be analyzed to assess how a building's energy consumption compares to similar buildings. Actual historic energy use is disclosed, and sometimes software is used to calculate a rating based on past usage to compare similar buildings. Portfolio Manager is the most commonly used commercial building benchmarking tool, but there is no widely established equivalent platform for the residential sector. While utility bill information is readily accessible and may be helpful in comparing the same occupants' energy use over time, utility use can change dramatically based on occupant behaviors. Therefore operational ratings are not an objective evaluation of the home's structural characteristics.

- Asset ratings are designed to indicate a building's energy performance as built, based on its physical characteristics, equipment and systems. By definition, an asset

rating does not reflect the behavior of building occupants. An asset rating seeks to evaluate a home to allow it to be compared to others based on differences in its fixed characteristics, while holding occupant-determined factors and behaviors constant.

Asset Rating Systems

Building labeling and rating systems allow homeowners, home buyers, renters, lenders and other actors in the real estate transaction chain to better understand how a home with energy efficiency and other green features compares to non-upgraded homes. By evaluating physical characteristics and not attempting to capture operational issues related to the lifestyle and behaviors of the residents, asset ratings are valuable to use during a sale transaction where the occupancy is changing.

Two California based asset ratings for existing homes are:

- HERS II, the whole-house version of the Home Energy Rating System, which scores a home's energy use based on a standardized scale called the HERS index, and
- GreenPoint Rated for Existing Homes, which scores a home's environmental impacts in five categories: community, energy, indoor air quality/health, resources and water.

However, both HERS II and the Green Point Rated labels are complex, time consuming, and expensive, making them problematic for local government to mandate for single family homes. A new alternative asset rating, the DOE's Home Energy Score, is now being implemented in jurisdictions throughout the country.

- Home Energy Score (HES) is a rating system that uses a simple metric similar to a vehicle's mile-per-gallon rating. Homes are scored on a scale from 1 to 10, with 10 representing a highly efficient home, and 1 representing a low efficiency home, relative to other homes in the same climate zone. The rating reflects the home's expected energy performance based on its building energy efficiency characteristics.

Home Energy Score

Home Energy Score is a simple and low-cost way to increase awareness and spur investment in home energy efficiency. A Home Energy Score report provides not only the Score, but customized recommendations, associated energy and cost saving estimates, and referrals to home upgrade programs, incentives, and financing tools. The HES report becomes a critical link between information and action. Linking the rating to supporting resources encourages homeowners to identify opportunities, make the improvements that will result in increased efficiency and comfort, and leverage investment in home energy upgrades in the marketplace.

HES offers ease of deployment, and a standardized way to compare a home's efficiency (and long-term energy costs) to comparable homes of similar size within the same climate zone. The HES assessment process is simpler, less expensive, and less time consuming than other rating systems. It takes approximately 1.5 hours, and in some cases a score can be generated onsite. The cost ranges from $150-$250. This asset rating can be completed as a stand-along service in a single visit, or as an add-on to a home inspection, remodeling, or energy upgrade project.

Home Energy Score in the Bay Area

In California, there are two Home Energy Score Partners working to adapt the national tool for the California market. In the San Francisco Bay Area, StopWaste is the regional partner for Qualified Assessors that provide a home energy assessment using the Home Energy Scoring Tool.

BayREN, in collaboration with StopWaste, is developing tools and providing policy support to local governments that are interested in launching Home Energy Score in their jurisdictions. In the City of Berkeley, BayREN has supported technical and workforce development for the new Building Energy Saving Ordinance (BESO) that requires single family homes to obtain a Home Energy Score at time of sale. BayREN has enabled the recruitment and training of HES qualified assessors, developed HES program protocols, and created a customized HES Energy Improvement Recommendations form that aligns with the Home Upgrade program.

READ Case Study: Berkeley Building Energy Saving Ordinance

The City of Berkeley has adopted the first Residential Energy Assessment and Disclosure (READ) policy in California. The 2015 Building Energy Saving Ordinance (BESO) eliminates the former RECO and CECO energy and water efficiency requirements and replaces them with a requirement for property owners to conduct and publically disclose an assessment of a building's energy efficiency.

> *"The City of Berkeley finds Home Energy Score to be a very useful tool, allowing us to standardize assessment requirements and streamline data collection for all residential properties subject to the City's new Building Energy Saving Ordinance (BESO)."*
> *Billi Romain,*
> *Sustainability Program Manager*

The ordinance mandates that single family homes that undergo a sales transaction must obtain a Home Energy Score, or equivalent rating. The assessment serves as a basis for actionable recommendations to the homeowner that identify cost effective opportunities, rebates and incentives, and health, comfort, and safety benefits of energy improvements.

By adopting Home Energy Score as the requirement for BESO, Berkeley sought to leverage a broader workforce and shift the cost of compliance to the market. Home Energy Scores can be included in the MLS listing at time of sale. National and international research has demonstrated that higher scores on asset ratings tend to result in higher home values over time.

A key goal of the new law is to make building energy use information more transparent to owners and prospective renters or buyers, and ultimately catalyze investment in energy upgrades. Policies designed to support accurate valuation of energy efficient homes at the time of sale are a promising way to drive consumer demand for energy efficiency.

In addition to cutting down on local greenhouse gas emissions, the BESO aims to meet other policy objectives, including reducing utility costs, creating a more comfortable, durable building stock, as well as fortifying the local "green" workforce.

BESO provides several exemption provisions, including for highly efficient buildings, distressed sales, and financial hardship.

Regional Policy Toolkit

To support the adoption of READ policies by other Bay Area jurisdictions, the BayREN model policy toolkit includes core elements of the BESO that are recommended to be consistent among multiple jurisdictions, model policy language and templates to adapt Home Energy Score for the Bay Area and the state.

Key regional components:

- Standardized Home Energy Score assessment tool and program protocols
- Workforce development to support HES assessors with training, mentoring, QA/QC
- Custom Recommendation Form that aligns with Energy Upgrade California
- Referral to BayREN Home Upgrade Advisors and available rebates
- Support for developing data protocols
- Building awareness in the real estate community about Home Energy Score and energy efficiency improvements
- Marketing, education, and outreach to building professionals
- Presentations and forums for elected officials and agency staff
- Model READ ordinance language
- Guidance on Rental RECOs

Trigger Events

Within this regional policy framework, the most fundamental decision for any local jurisdiction considering an energy conservation ordinance is the trigger event for compliance.

The most common triggers are:

- Time of building sale
- Time of major remodeling permit
- Date certain
- Time of rental housing inspection/permit

Because a home sale transaction does not require local government approval, the burden of enforcement of an energy efficiency ordinance triggered by time-of-sale would fall heavily on the private sector. Time-of-sale triggers have spurred political opposition from realtors because they may become default enforcers of the ordinance among their client base. This can cause delays in an already complex sales transaction.

In contrast major remodels require a building permit, so there is an existing process for engagement with local government. However, such projects would already be subject to energy efficiency standards under CALGreen building codes. It is no longer necessary for a jurisdiction to include remodeling projects in a local ordinance.

Another mechanism for activating a residential energy ordinance is to establish a deadline by which all covered buildings must comply, an approach known as a date certain trigger. This would potentially capture a greater proportion of buildings, since only a fraction of homes will undergo a sales transaction or major remodel. However, this option can be logistically challenging because there is no existing administrative infrastructure for a jurisdiction to reach all homeowners, and therefore monitoring and enforcement would be difficult. Such an approach may also be politically unpopular, and residents might delay obtaining energy audits, especially if assessments were coupled with mandatory upgrades.

A significant opportunity for improving energy efficiency may exist in the rental market. Rental housing is a segment of the residential sector that local government is engaged with through regulations and licensing requirements. Jurisdictions could choose to leverage this existing infrastructure to include energy assessment requirements for rental properties.

Rental RECO Case Study: Boulder SmartRegs

The Boulder City Council adopted a SmartRegs ordinance in 2010. SmartRegs require all rental housing, about half of Boulder's housing stock, to meet a basic energy efficiency standard by January 2019. In Boulder, all rental properties are required to maintain a valid rental license. If a rental does not pass a SmartRegs inspection and achieve a compliance designation by 12/31/2018, the rental license will expire and the property owner will be unable to receive or renew a rental license until compliance with the minimum energy standards is met.

Property owners can comply with the energy efficiency requirements by following either a performance or prescriptive path.

1. The performance path requires a Home Energy Rating System (HERS) score of 120. The HERS index is used for the verification of energy performance. A HERS score must be performed by an accredited rater.

2. The prescriptive path entails a checklist designed as an alternative to the performance path. To meet the requirements, each unit must achieve 100 points on the energy checklist, in addition to specific mandatory water conservation measures.

The energy inspection costs approximately $150. In the event that a rental unit fails the inspection, specific energy upgrade improvements are recommended. A free EnergySmart Advisor service is offered to assist with evaluating upgrade options. By recommending the most cost-effective measures with proven energy savings, the program aims to ensure that any rent increase (that may be passed on to recoup owner investments in efficiency) is balanced by utility cost savings to the tenant.

As of September 2015, more 11,000 licensed rental units have been evaluated of which 8,500 are compliant with the required energy efficiency standard. Improving energy performance in existing rental housing is an effective strategy to reduce Boulder's greenhouse gas emissions and meet community climate objectives.

Positive Drivers

As a complement or alternative to a regulatory approach to energy ordinances, there are positive drivers that can incentivize building owners to assess building efficiency and install improvements. Examples include local tax credits tied to improvements or ratings, mortgage incentives for installing efficiency measures, rebates, and innovative financing tools.

Addressing the upfront costs of energy efficiency upgrades to homeowners is one of the most significant ways in which policymakers can drive residential energy efficiency. Although homeowners can expect to see bill savings from energy upgrades, these savings are realized over long periods of time. This upfront cost represents a significant financial investment, and a primary deterrent for many homeowners who might otherwise be interested in upgrading their homes.

Policymakers have two broad strategies for helping homeowners manage these upfront costs:

- Incentives, in the form of tax credits and/or rebates; and,
- Financing, including traditional consumer loans as well as more innovative forms of financing and repayment, such as on-bill programs and Property Assessed Clean Energy (PACE) programs.

Incentives, typically in the form of tax credits or rebates for energy efficiency measures or whole-house upgrades, are a very common policy option to encourage homeowners to undertake energy efficiency measures. The amount of the rebate is a crucial consideration that may spur the consumer's interest and willingness to move from completing an energy efficiency assessment to undertaking an energy efficiency upgrade project.

Incentive Options for Residential Asset Ratings

Incentive Category	Type	Description	Potential Implementers
Rebates	Subsidized score	A simple rebate could subsidize or cover the cost of obtaining an asset rating.	Local governments, IOUs, others
	Integration into existing rebate programs	Under Energy Upgrade California, rebates available for home improvements already use trained contractors and require a test-out, as well as quality assurance protocols. An asset rating can be bundled into these programs by: o Training participating contractors to become asset rating providers o Requiring or incentivizing asset ratings to be generated during test-out o Streamlining the test-out and asset rating requirements to match as closely as possible and, ideally, allow software integration o Coordinating QA programs between the rebate program and asset rating	Program implementers
	Rebates for improvement	Asset ratings can support a deemed saving rebate for home improvement. For example, a home that moves from a Home Energy Score of 4 up to 7 might receive a rebate of $2,000.	Local governments, program implementers
Tax Credits	Local property tax credit	Could be a small credit (e.g., $200–$500) for obtaining an asset rating or a larger amount for an energy improvement.	Local governments
	State income tax credit	Could be provided for an improvement in asset rating score or a reduction in Btus. This type of tax credit is likely to appeal to real estate professionals and their clients because it would provide a clear benefit for obtaining an asset rating even for underperforming homes.	State government
Mortgage Incentives	Incentive for improvements	Working through mortgage lenders, a jurisdiction can promote energy efficacy by providing a matching loan benefit to homeowners based on tiered rebate scale.	Governments partnered with mortgage lenders

Residential Energy Assessment Disclosure (READ)
Model Policy Language

Purpose.

The purpose of this chapter is to reduce energy consumption in existing single family homes by assessing and disclosing residential energy performance and improvement opportunities. Efficiency improvements will lower energy costs and greenhouse gas emissions, and increase comfort, safety and health for building occupants.

Applicability.

The requirements of the chapter shall apply to all detached single family residences located within the jurisdiction.

Definitions.

A. "Qualified Assessor" means an entity that has been registered by the Administrator to provide a Home Energy Score as required by this ordinance.
B. "Administrator" means the Program Director or her/his designee.
C. "Home Energy Score" means an asset rating of a home's expected energy performance based on its major energy systems and building attributes.

Requirements.

Energy Assessment.

Owners of Single Family Buildings shall have a Qualified Assessor prepare and submit a Home Energy Score report at one or more of the following triggers:

- Time of building sale
- Time of major remodeling permit
- Date certain
- Time of rental housing inspection/permit

Disclosure.

A summary version of the Home Energy Score shall be made publicly available and shall be provided by the Building Owner to existing tenants or prospective lessees and buyers prior to execution of a lease or contract for sale.

Incentives.

The Administrator may establish rules and regulations to encourage participate in local, regional and statewide incentive programs and to otherwise incent property owners to pursue early compliance and/or achieve a high performance exemption.

Exceptions, Deferrals and Extensions.

Qualified exemptions shall include, but are not limited to:

1. Any building that receives a Building Energy Score or Green Building Rating that demonstrates a high level of energy efficiency, as determined by the Administrator.
2. Any building that completes a multi-measure energy improvement project with a verified minimum improvement, as determined by Administrator.
3. Hardship deferral for any building that has been served by an income-qualified Weatherization Assistance program for low-income households.
4. Any new building or Extensive Renovation with a construction completion date within ten years of the reporting deadline.
5. Others _____

Deferral at Time of Sale. The requirements for compliance prior to Sale may be deferred from the seller to the buyer, and any subsequent buyers, when the buyer and any subsequent buyers consent to comply with the requirements within 12 months of the original sale date with an application for deferral to the Administrator prior to execution of contract of sale.

Responsibilities.

A. It shall be the responsibility of sellers, buyers, owners, real estate agents and brokers, property managers, title companies, non-residential tenants, Home Energy Assessors to comply with the requirements of this Chapter.

B. The seller of any real property and the licensed real estate agent or broker handling a sale of real property shall be jointly responsible for disclosing to the prospective buyer the compliance status of the real property in question.

Administration and Enforcement.

The Administrator may adopt reasonable rules and regulations implementing the provisions and intent of this Chapter before the operative date of this Chapter and may amend these rules and regulations as needed.

Fees.

The jurisdiction may set fees, by resolution, for the administration of this Chapter.

Enforcement.

The Administrator shall issue a written Notice of Violation to any building owner determined to be in violation of any provision of this Chapter.