


Office of the City Manager

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ACTION CALENDAR

January 27, 2015

(Continued from January 20, 2015)

To: Honorable Mayor and Members of the City Council
From:  Christine Daniel, City Manager
Submitted by: Eric Angstadt, Director, Planning and Development Department
Subject: Revised Building Energy Saving Ordinance Proposal

SUMMARY

The purpose of this supplemental report is to present City Council with revised options for the design of the Building Energy Saving Ordinance (BESO). Direction from Council on the revised options will guide staff revisions of the draft ordinance. If approved, staff will return to the City Council with a revised ordinance for first reading at a future meeting.

The initial proposed BESO presented to City Council on November 18, 2014, would have done the following:

- Eliminated the current mandatory energy and water upgrades required at the time of sale or remodel under the existing Residential and Commercial Energy Conservation Ordinances (RECO and CECO)
- Replaced the current RECO and CECO requirements with a requirement for residential and commercial building owners to instead conduct and disclose a site-specific assessment of potential energy and cost-saving opportunities at the time of sale or by a certain future date (phased in by building size), whichever comes first (exemptions would exist for low-income households and for properties with low total energy use or that are already energy efficient)
- Simplified the compliance process for residents and businesses by enabling paperwork to be submitted on-line and by requiring a maximum of one site visit to the property, compared with the 2 to 4 visits required under the current RECO and CECO

Based on input staff received from City Councilmembers and community members at and subsequent to the November 18 Council meeting, staff recommends that Council consider the following specific revisions to the ordinance proposed on November 18:

1. Eliminate the proposal to require all residential properties of 4 units or less to conduct an energy assessment by a future date, and instead only require the energy assessment at the time of sale or within 12 months after the sale; AND

- a. Conduct a program evaluation within 3 years with the intent to amend BESO to phase in energy assessment requirements for all 1-4 unit residential buildings starting in 2020. The phased-in requirement for 1-4 unit residential buildings would include income, low energy use, and energy efficiency exemptions. If the program evaluation demonstrated that local GHG reductions are meeting the CAP target, then the amendment would be unnecessary.

OR

- b. Conduct a program evaluation within 3 years without the stated intent to amend BESO to phase in energy assessment requirements for all 1-4 unit residential buildings. The evaluation could result in proposed amendments to the ordinance or other recommendations for increasing residential energy savings.

This revised proposal would only change requirements for residential properties of 4 units or less. The requirements for commercial and multifamily properties of 5 or more units would not change from the November 18 proposal.

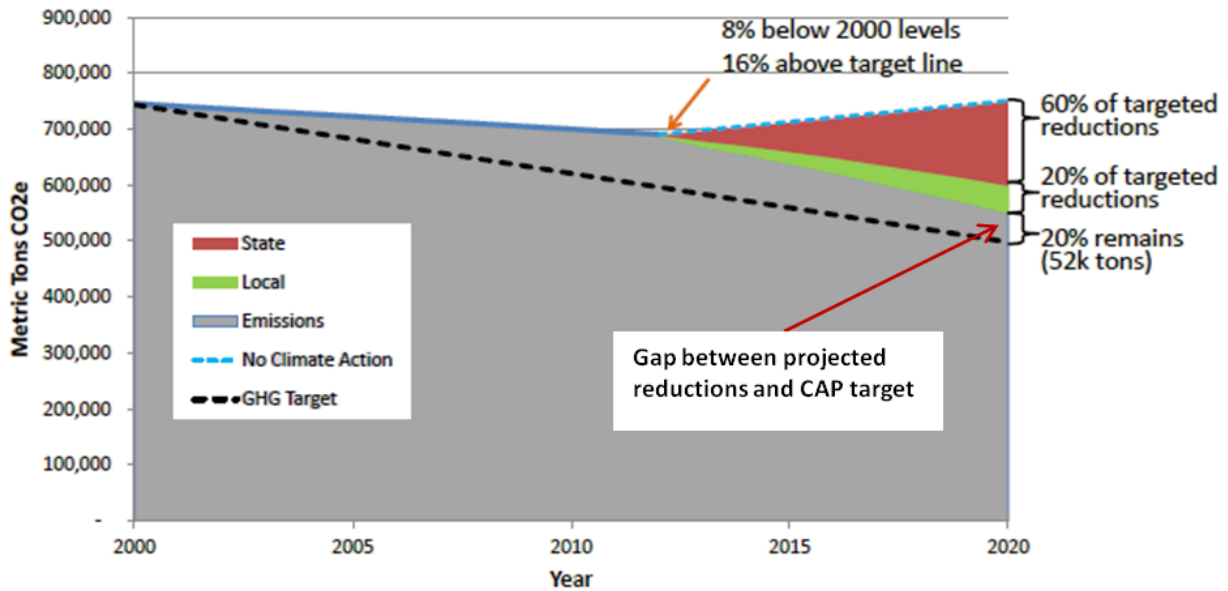
The rationale for staff's recommendation to replace the current RECO and CECO, which have been in place since 1987 and 1994 respectively, with an updated energy-saving ordinance also remains unchanged: the Berkeley community will not achieve its voter-approved and City Council-adopted Climate Action Plan goal without achieving deeper energy savings in more buildings across all building types. Both of the BESO options identified above (1a. and 1b.) are designed to achieve deeper energy savings per property affected. Option 1a. is more likely to achieve significantly more total energy savings because the intent is to affect all properties, rather than only the approximately 3% of properties that are triggered by the time of sale requirement each year.

The remainder of this report provides additional explanation of the revised BESO proposal and analysis of the relative impact of both BESO options (1a. and 1b.) on Berkeley's CAP goals.

CURRENT SITUATION AND ITS EFFECTS

According to the best available data, Berkeley's community-wide greenhouse gas (GHG) emissions, including emissions from building energy use, transportation, and solid waste disposal, are approximately 8% below 2000 baseline levels. While this reduction is a significant accomplishment, the community is not currently on track to achieve the adopted target of reducing emissions 33% below 2000 levels by 2020 and 80% by 2050. As is illustrated in the chart below, current community-wide emissions are approximately 16% higher than our targeted trend, and there is a significant gap (52,000 tons of GHG emissions) between the future reductions that will likely be achieved by existing state (red wedge) and local (green wedge) efforts and the actual reductions needed to achieve Berkeley's CAP target. The scale of GHG reductions required to fill the gap is approximately equivalent to reducing to zero the energy consumed by 16,000 Berkeley households, taking 28,000 vehicles off the road, and achieving Berkeley's zero waste goal.

Berkeley Greenhouse Gas Emissions: Current Trends and Forecasted Reductions and Gap



The current RECO and CECO are inadequate for achieving the scale of reductions required to meet Berkeley’s CAP goals. The energy and water efficiency upgrades mandated by the ordinances are out of date, do not align with existing rebate programs, and apply a prescriptive, one-size-fits-all approach to Berkeley’s diverse building stock.

The impact of RECO and CECO is further limited by the number of buildings affected on an annual basis. Approximately 3% of properties are triggered for compliance due to sale or remodel. Given current sales trends, it would take over 70 years to capture most buildings with a time of sale trigger, and some single family homes and many commercial and multifamily buildings will likely never go on the market in the foreseeable future. Therefore both the number of buildings and the energy savings per building affected are minimal.

Not only are the current RECO and CECO requirements inadequate, but uptake of existing voluntary energy efficiency rebate programs is slow. Since 2011, fewer than 800 single family and multifamily households (less than 2% of total Berkeley households) have participated in energy upgrade programs administered by PG&E and other regional agencies. These rebate programs are funded by a surcharge that customers pay on their utility bill. Low uptake of these programs effectively means that local ratepayer dollars are being spent for energy efficiency elsewhere.

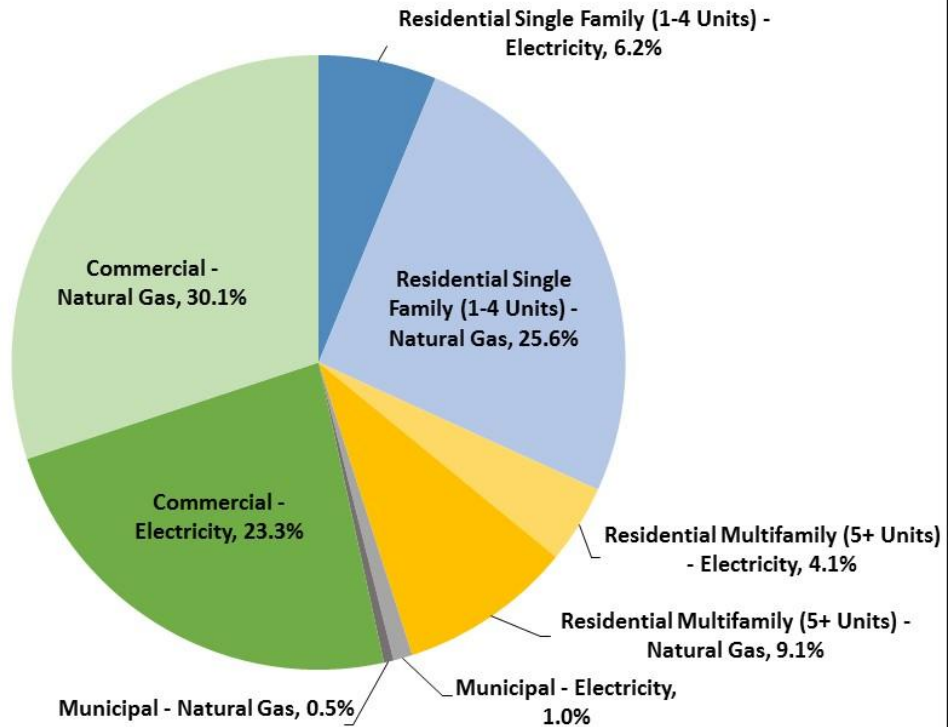
BACKGROUND

The proposed BESO is designed to accelerate community-wide energy savings by affecting more buildings and catalyzing deeper energy savings in each building affected.

Requirements for Commercial and Multifamily (5+ units) Buildings

Commercial and multifamily (5+ units) properties would be prioritized for BESO compliance. Although far fewer in number compared to residential properties, commercial buildings are the largest source of building-related GHG emissions in Berkeley. And while commercial electricity consumption decreased approximately 7% since 2000, commercial natural gas consumption increased approximately 16% in that same time period.

2013 Building GHG Emissions (CO₂e)



A phased-in compliance period for large buildings would begin in 2016; owners of large buildings (25,000 square feet or more) would be required to report energy use annually and conduct an energy efficiency assessment every 5 years. The phase-in period for medium-sized buildings (5,000 – 24,999 square feet) would begin in 2018, and would require building owners to conduct an energy efficiency assessment every 8 years or at the time of sale, whichever comes first. Small commercial buildings (up to 5,000 square feet) would be phased-in starting in 2020 and would require building owners to conduct an energy efficiency assessment every 10 years or at the time of sale, whichever comes first.

Requirements for Commercial and Multifamily Buildings (5 or more units)

Large Buildings

25,000 sq ft or more



Owners must report energy use every year. Buildings must undergo an energy efficiency audit every 5 years.
Phase-in starting in 2016

Medium Buildings

5,000-24,999 sq ft



Buildings must undergo an energy efficiency audit every 8 years or at time of sale (whichever comes first)
Phase-in starting in 2018

Small Buildings

Up to 5,000 sq ft



Buildings must undergo an energy efficiency audit every 10 years or at time of sale (whichever comes first)
Phase-in starting in 2020

Several U.S. cities have adopted similar energy efficiency assessment and energy information disclosure policies for commercial buildings, including Austin, Boston, Cambridge, Minneapolis, New York, Philadelphia, San Francisco, Seattle, and Washington, D.C.

Requirements for 1-4 Unit Residential Buildings

The initial proposed BESO presented to City Council on November 18, 2014, would have required owners of 1-4 unit residential buildings to conduct an energy efficiency assessment at the time of sale or every 10 years, whichever came first (exemptions would exist for low-income households and for properties with low total energy use or that are already energy efficient). The compliance period would have started in 2020.

Based on input staff received from City Councilmembers and community members at and subsequent to the November 18 Council meeting, staff recommends that Council consider the following specific revisions to the BESO proposed on November 18:

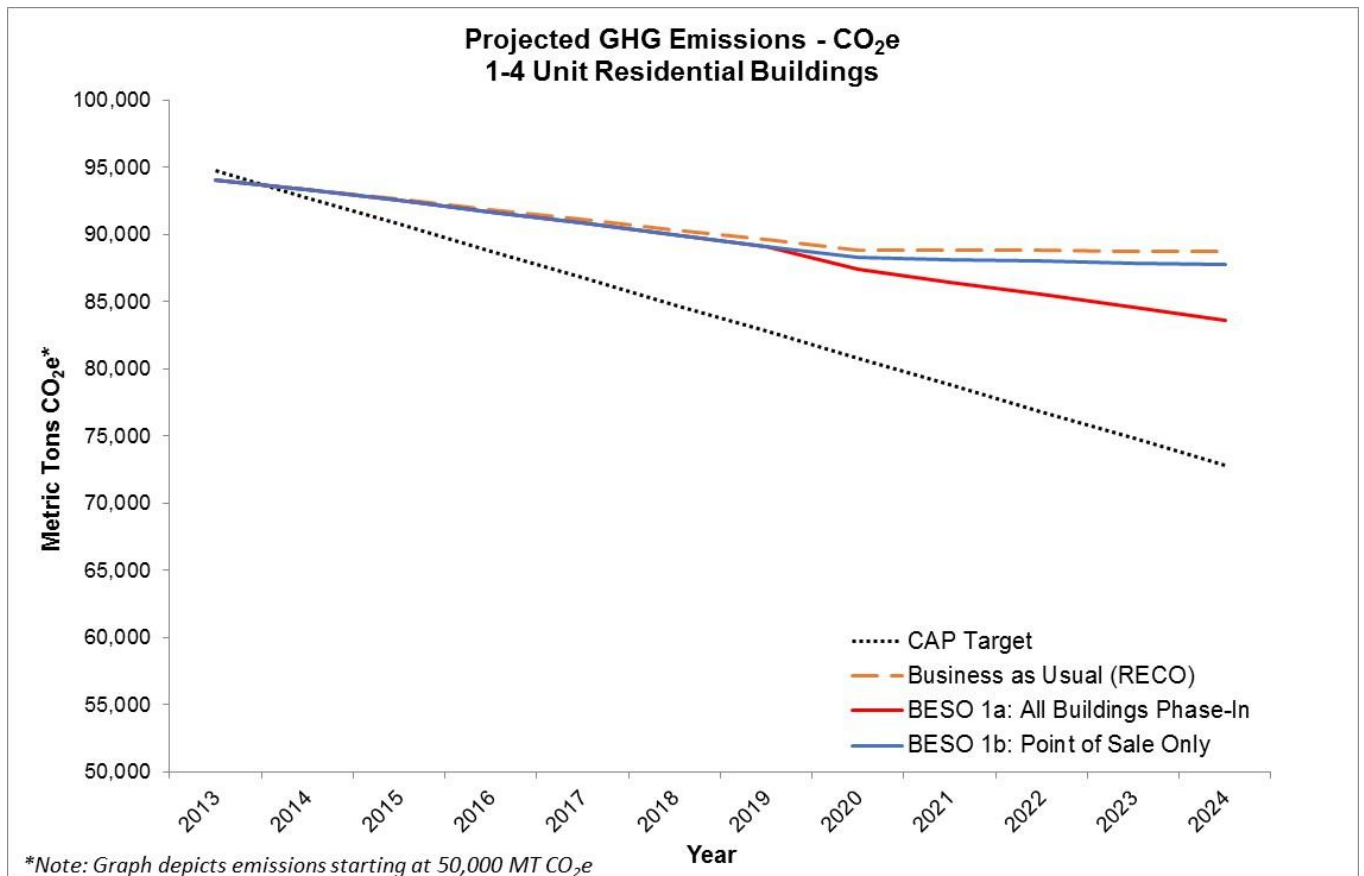
1. Eliminate the proposal to require all residential properties of 4 units or less to conduct an energy assessment by a future date, and instead only require the energy assessment at the time of sale or within 12 months after the sale; AND
 - a. Conduct a program evaluation within 3 years with the intent to amend BESO to phase in energy assessment requirements for all 1-4 unit residential buildings starting in 2020. The phased-in requirement for 1-4 unit residential buildings would include income, low energy use, and energy efficiency exemptions. If the program evaluation demonstrated that local GHG reductions are meeting the CAP target, then the amendment would be unnecessary.
 - OR
 - b. Conduct a program evaluation within 3 years without intent to amend BESO to phase in energy assessment requirements for all 1-4 unit residential buildings. The evaluation could result in proposed amendments to the ordinance or other recommendations for increasing residential energy savings.

Both options 1a. and 1b. are designed to achieve deeper energy savings per building affected. Home energy assessments provide a tailored action plan that can help residents reduce energy use and utility bills. The action plan dovetails with existing ratepayer-funded incentive programs, which helps to lower the cost of energy efficiency improvements and to keep more of Berkeley's ratepayer dollars in Berkeley. Homeowners can act on the energy-saving action plan whenever they see fit. And public disclosure of a summary of the energy assessment enables property owners to leverage investment in energy efficiency in the marketplace, while also enabling prospective tenants and buyers to assess the relative energy performance and associated costs of a given building.

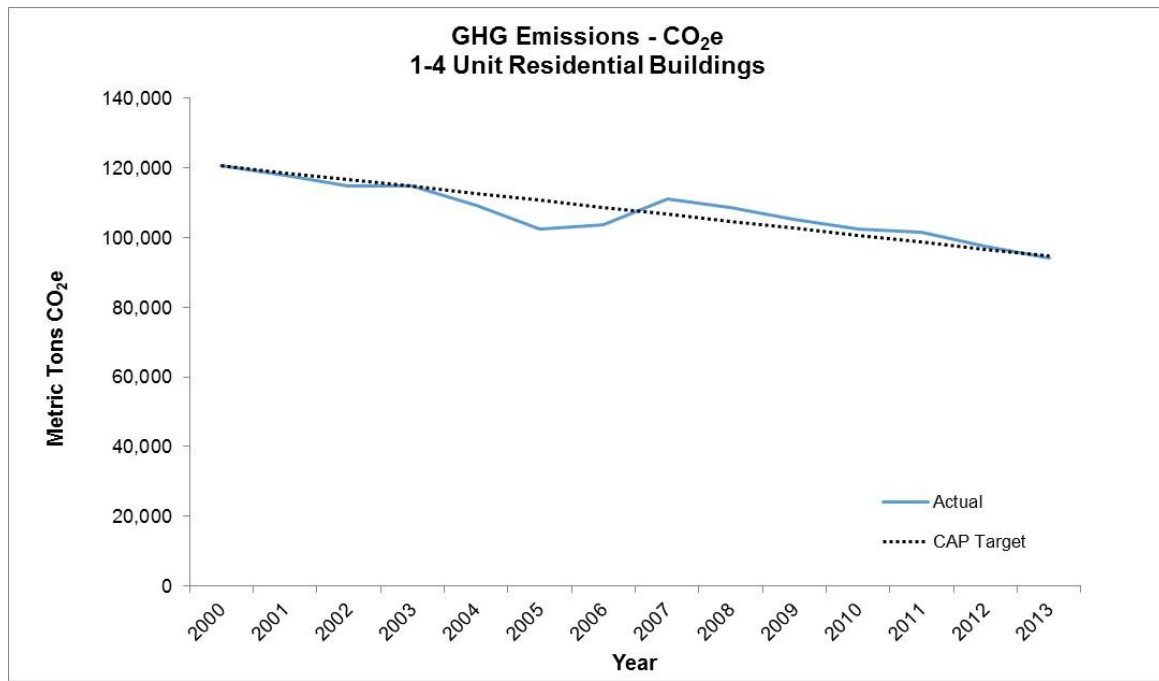
While both options 1a. and 1b. are designed to achieve deeper savings per building affected, the intent of option 1a. is to affect significantly more homes and therefore achieve substantially more energy savings and GHG reductions. Similar to the Berkeley Soft Story Program, option 1a. sends a signal to the market that, although action is not required today, it will be required starting in a specific future year.

Staff estimates that an ordinance that requires energy assessments of all homes (with the exception of those that qualify for an exemption) would achieve 75% more total energy savings by 2025 than if the ordinance was only applied at the time of sale. A time of sale compliance trigger affects approximately 3% of the housing stock annually.

The graph below illustrates the relative impact on Berkeley’s GHG reduction target of options 1a. and 1b. Both options assume an 18% GHG reduction per household, based on reductions achieved through Berkeley’s federal stimulus-funded Money for Energy Efficiency (ME2) rebate program. Option 1a. achieves greater total savings due to the assumption that it would affect significantly more households per year than option 1b. Additional savings can be expected beyond the impact of both options of BESO due to state and local efforts to advance renewable energy and energy efficiency.



Achieving deep energy savings in residential buildings is an important component of meeting Berkeley’s CAP goals. Residential energy consumption accounts for approximately 20% of total community-wide emissions and 45% of building-related GHG emissions. Although residential energy trends are going in the right direction – with residential energy consumption decreasing 16% since 2000 – additional savings are needed to stay on target and to compensate for relatively small reductions in GHG emissions achieved to date in the transportation and commercial building sectors.



BESO Frequently Asked Questions are at Attachment 1.

An outline of information used for residential and commercial energy assessments is at Attachment 2.

ENVIRONMENTAL SUSTAINABILITY

This Building Energy Savings Ordinance is consistent with the Climate Action Plan and is projected to accelerate energy savings in all building types.

POSSIBLE FUTURE ACTION

Input and direction from Council on the revised BESO options outlined here will guide staff revisions to the ordinance language, which staff would present to City Council for first reading at a future City Council meeting.

FISCAL IMPACTS OF POSSIBLE FUTURE ACTION

Half of the City costs for administration of the Building Energy Savings Ordinance would be covered by existing general funds. The other half would be covered by filing fees, ranging from \$79 to \$240 depending on building size, which will be due upon filing an energy assessment (every five to ten years).

CONTACT PERSON

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Attachment 1: Frequently Asked Questions

Attachment 2: Energy Assessment Tools

Berkeley Energy Saving Ordinance Frequently Asked Questions

1. Why is the City proposing to eliminate the existing requirement to install energy and water efficiency upgrades at the time-of-sale and renovation?

The list of mandatory prescriptive measures currently required by the Residential and Commercial Energy Saving Ordinances (RECO and CECO) are out of date and do not provide energy savings needed to meet the Climate Action Plan goals. The prescriptive list of mandatory measures provides minimal energy savings and RECO and CECO only impact a small percentage of the building stock (less than 2% annually).

2. Why not just update the existing, prescriptive requirements?

In general, the mandatory measures prescribed in an one-size fits-all list may not be the best options for a specific building, given the existing conditions, occupant concerns and owner priorities, and they may preclude deeper savings. Engaging owners in choosing efficiency strategies optimizes health and comfort benefits, leverages incentives and financing, as well as encourages innovation and energy saving behaviors.

3. Why is the City proposing to replace the existing prescriptive requirements with a requirement to conduct energy efficiency assessments and disclose energy scores?

Studies show that, when used effectively, energy information catalyzes energy savings. Specific efficiency recommendations packaged with incentives and financing that are tailored to occupant priorities motivate energy saving actions. Energy information disclosure provides transparency that recognizes highly efficient buildings versus those high in efficiency opportunities, this in turn motivates investments in energy upgrades through positive recognition and increased market value.¹

4. As a single family homeowner, when would I be required to conduct an energy efficiency assessment?

As currently proposed in the January 20 Supplemental Agenda Material, 1-4 unit residential properties that do not qualify for an exemption would only be required to conduct an energy assessment at the time of sale or within 12 months after sale. City Council may consider extending this requirement to all 1-4 residential properties at a future date.

5. My home is already efficient; do I still need an energy efficiency assessment?

Efficient buildings and those that access free income-qualified efficiency services would be exempt from the requirements for any assessments or any filing fees. Buildings that are already efficient, such those that have participated in Energy Upgrade California, would qualify for a High Performance Exemption. Likewise, buildings with efficient use of natural gas and electricity, as demonstrated by PGE bills, would qualify for a Low Energy Use Deferral. The goal is that eventually all buildings will be either high performance or low energy use and exempt from the ordinance.

¹ *Unlocking the Value of an Energy Efficient Home*, CNT Energy and the National Home Performance Council August 2013.

Behavioral Perspectives on Home Energy Audits: The Role of Audits, Labels, Reports, and Audit Tools on Home Owner Design Making, Diamond, Richard et al., LBNL- 5715E, 2012.

- 6. Will City staff be coming in my home to conduct the energy assessment?**
When an assessment is needed, home owners select an efficiency professional to conduct the assessment from a list of registered service providers available on the City's website. City staff would not be providing the assessment services.
- 7. What efficiency upgrades will I be required to install in my home?**
No energy efficiency measures are required and the efficiency measures currently mandated by RECO would be removed. Efficiency measures are most effective when homeowners are engaged in the decision-making process and able to select measures that maximize their own comfort, health, safety, and maintenance improvements.
- 8. How much will an energy assessment cost?**
Assessment cost estimates provided by service providers range from \$200 to \$600 for homes up to four units, with single unit homes closer to the \$200 to \$300 range.
- 9. What if I cannot afford an energy assessment?**
If a homeowner does not qualify for the High Performance Exemption or the Low Energy Use Deferral, and they are not eligible for other free assessment services, they may apply for a financial hardship deferral that allows the requirements to be postponed until the property is sold.
- 10. What if I cannot afford to make efficiency upgrades to my home?**
There is no requirement to install any of the recommended energy upgrades. The energy efficiency assessment report will provide a financial analysis of the costs versus energy savings, and will help identify all cash and financing incentives.

Building Energy Saving Ordinance Energy Assessments

I. **Residential – Single family** *Home Energy Score Assessment Tool*

The Home Energy Score is similar to a vehicle's miles-per-gallon rating. It helps homeowners and homebuyers understand how much energy a home is expected to use and provides suggestions for improving its energy efficiency. It also allows homeowners to compare the energy performance of their homes to other homes nationwide. The Home Energy Score is comprised of three parts including: 1) the Score itself, 2) facts about the home including data collected and energy use breakdown, and 3) recommendations to improve the Score and the energy efficiency of the home.

Energy Usage

- Current electricity & natural gas usage and costs

Building Envelope

- Building orientation
- Air leakage (estimated)
- Insulation – attic, under floor, walls
- Floor, roof and wall construction
- Window and skylights - orientation, construction and U factors

Space and Water Heating Systems

- Fuel-type
- Condition, size and efficiency
- Location and condition of ducts

Occupant Information

- Health, comfort and safety concerns
- Planned improvements
- Maintenance and repair needs

Energy Report

- Home Energy Score
- Upgrade estimated electricity & natural gas reductions and savings
- Recommended measures
- Estimated costs and savings
- Applicable incentives, cash and financing

II. **Multifamily & Commercial** *Department of Energy Building Energy Asset Score*

The Department of Energy Building Energy Asset Score (Asset Score) is a national standardized tool for evaluating the physical and structural energy efficiency of commercial and multifamily residential buildings. The scoring tool will generate an asset score and system evaluation for your building envelope and mechanical and electrical systems. The tool will also identify cost-effective upgrade opportunities and help you gain insight into the energy efficiency potential of your building.

See Data Collection form attached

U.S. DOE Commercial Building Energy Asset Score Data Collection Form - Lite Version

Building Name:	
Data collected by:	
Email, phone:	
Date of Data Collection:	

This form contains all of the minimum required data fields necessary to generate an Energy Asset Score. This Lite Version form may be used for a single-use rectangular building. Use the [Data Collection Form \[Full Version\]](#) for additional shaped buildings, mixed-use types, complex HVAC systems, and/or available optional fields and detailed instructions for data entry.

Year completed		Gross floor area	ft ²	
Building location	STREET			
	CITY		STATE	POSTAL CODE
Building use type (e.g. Office, Retail, etc)				
Building footprint dimensions (ft)	LENGTH	WIDTH	Number of floors	

Construction Properties

Roof type	Floor type	Wall type
<input type="radio"/> Built-up with Concrete Deck <input type="radio"/> Built-up with Metal Deck <input type="radio"/> Built-up with Wood Deck <input type="radio"/> Metal Surfacing <input type="radio"/> Shingles/Shakes	<input type="radio"/> Concrete (over Unconditioned Space) <input type="radio"/> Slab on Grade <input type="radio"/> Steel Joist <input type="radio"/> Wood Frame	<input type="radio"/> Brick/stone on Masonry <input type="radio"/> Brick/stone on Steel Frame <input type="radio"/> Brick/stone on Wood Frame <input type="radio"/> Metal Panel/Curtain Wall <input type="radio"/> Siding on Steel Frame <input type="radio"/> Siding on Wood Frame
Window type	Window glass type	Window-to-Wall Ratio
<input type="radio"/> Metal <input type="radio"/> Metal with Thermal Breaks <input type="radio"/> Wood/Vinyl/Fiberglass	<input type="radio"/> Single-pane <input type="radio"/> Double-pane <input type="radio"/> Double-pane w/ Low-E <input type="radio"/> Triple-pane <input type="radio"/> Triple-pane w/ Low-E	

Lighting

Fixture	Lighting type <i>(CFL, Fluorescent T5/High Output T5; Fluorescent T8/Super T8; Fluorescent T12/High Output T12; High-Pressure Sodium; Incandescent/Halogen; LED, Mercury Vapor; Metal Halide)</i>	Watts per Lamp	Lamps per Fixture	Lighting fixture details <i>(Enter either Total # of Fixtures OR % Area Served)</i>	
				# of Fixtures	% Area Served
a.					
b.					

HVAC System

Distribution equipment type	<input type="radio"/> Air Handler Unit (AHU) <input type="radio"/> Zone Equipment (e.g. fan coil units or packaged terminal units)		
Cooling source	<input type="radio"/> No cooling <input type="radio"/> DX Coil <input type="radio"/> Central Plant: Chiller (Chiller condenser type: <input type="radio"/> Air <input type="radio"/> Water) <input type="radio"/> Central Plant: District Chilled Water		
Heating source	<input type="radio"/> No heating <input type="radio"/> Central Furnace <input type="radio"/> Heat Pump <input type="radio"/> Central Plant: Boiler <input type="radio"/> Central Plant: District Hot Water	Heating fuel	<input type="radio"/> Electricity <input type="radio"/> Gas

