

MF HERCC Task Group Meeting

APRIL 25, 2018 - STOPWASTE

AGENDA

- 9:30 Ice-breaker & Introductions
- 9:40 Context
- 9:45 Low-Cost Assessment Tool
- 11:15 Break
- 11:25 Benchmarking
- 12:00 Discussion and next steps (over lunch)

Multifamily HERCC

- Industry Collaborative since 2009
- 2013 Original Report and 2015 Update
 - Whole-Building Performance Approach, Energy Analysis Software, Performance Measurement, Tracking & Benchmarking, Streamline Program Participation Process, Increase Accessibility of Whole-Building Energy Use Data
- Audit & Combustion Appliance Safety Protocols
 - Field Data Collection Form, EnergyPro Lite Software, Tracking & Benchmarking

Improving California's
Multifamily Buildings:
Opportunities and
Recommendations for Green
Retrofit & Rehab Programs

*Findings from the Multifamily Subcommittee
of the California Home Energy Retrofit
Coordinating Committee*



Final Report
April 11, 2015



Program Consistency

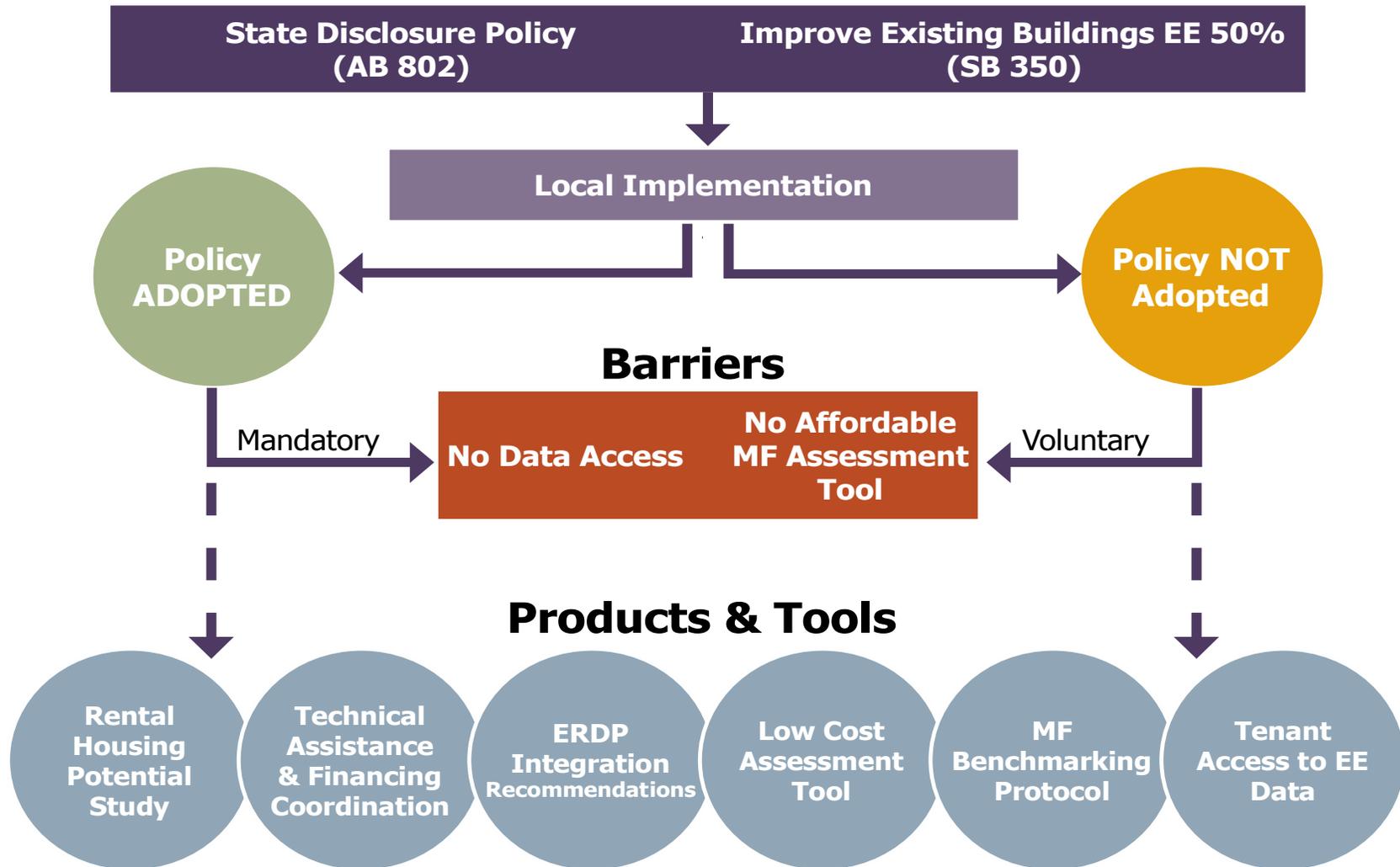
**MF HERCC Recommendations & Audit Protocols
utilized in multiple CA programs**



Multifamily Upgrade Program



Local Government Challenge Grant



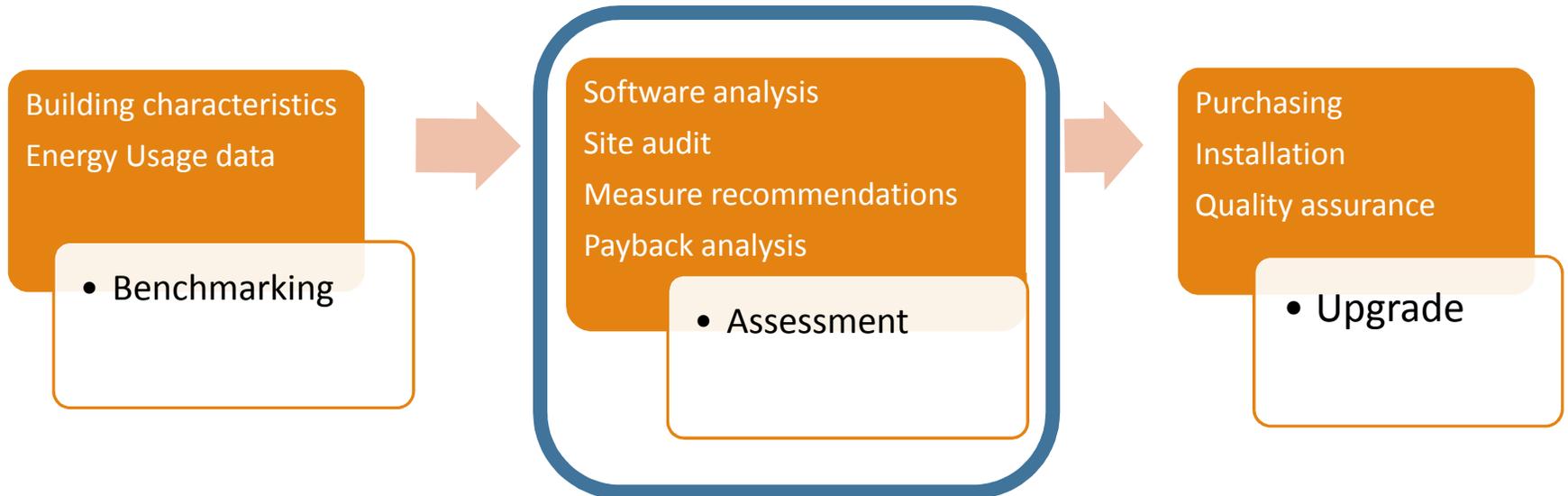
Low Cost Assessment Tool (LCAT)

MULTIPLE USE CASES

TOOL COMPARISON

LCAT Use Cases

1. Incentive Programs
2. Market-based Applications
3. Local Government Ordinances



1. Incentive Programs

- **Lower cost modelling software (EnergyPro Lite)**
 - Provide up-front screening mechanism, avoid costly audit & analysis
 - Decouples accuracy of energy savings predictions from measure upgrade assessment
 - Details presented on output reports vary for:
 - Property owner measure recommendations and program compliance
 - Software modeler/auditor savings and cost estimates
 - Reporting savings claims to CPUC

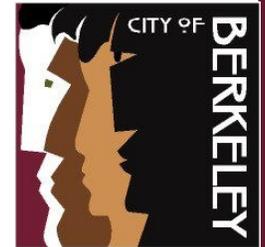
- **Longer term goal to true-up analysis to actual bills when data is available**
 - Would enable use for escalating performance-based incentives
 - In current program delivery savings calculations performed by one (or limited pool of) providers rather than open market of raters.

2. Market-based Applications

- ✓ **Open market use by raters, auditors, and contractors**
- ✓ **Energy efficiency financing products**
- ✓ **Others?**

3. Local Government Ordinances

Trigger Event	Requirement	Public Disclosure	Delivery Model	Exemptions
Time of rental inspection	Prescriptive checklist	Yes – online	Third party inspector or rater	Rebate recipient
Requirement for rental license	Light energy assessment	Yes – on-site posting or other	City inspector	Green building certification
Date certain	Full energy performance audit	No	Self-reported	Low-income
Time of sale	Utility bill benchmarking			Foreclosure
Unit turnover	Upgrade			



BESO Overview

Caytie Campbell-Orrrock
Climate Action Program Specialist
Office of Energy & Sustainable Development
April 25, 2018

How did BESO originate?

1987 RECO

Residential Energy Conservation Ordinance required all homes to complete up to 11 minimal energy efficiency measures when a home was sold, transferred, or underwent major renovations.

1993 CECO

Commercial Energy Conservation Ordinance required all commercial buildings to meet minimal energy efficiency measures when a building was sold or transferred.

Neither state ordinance mandated any public reporting, or achieved deep energy savings.

2006 MEASURE G

Berkeley residents voted to take decisive action on global warming by approving Measure G, which advised the Mayor to work with the community to develop a plan for an 80% reduction in Berkeley's greenhouse gas emissions by 2050.

2009 BERKELEY CLIMATE ACTION PLAN



Buildings

Reduce emissions 30% by 2020
80% by 2050



Transportation & Land Use



Community Outreach



Waste Management



Adaptation & Resilience

2015

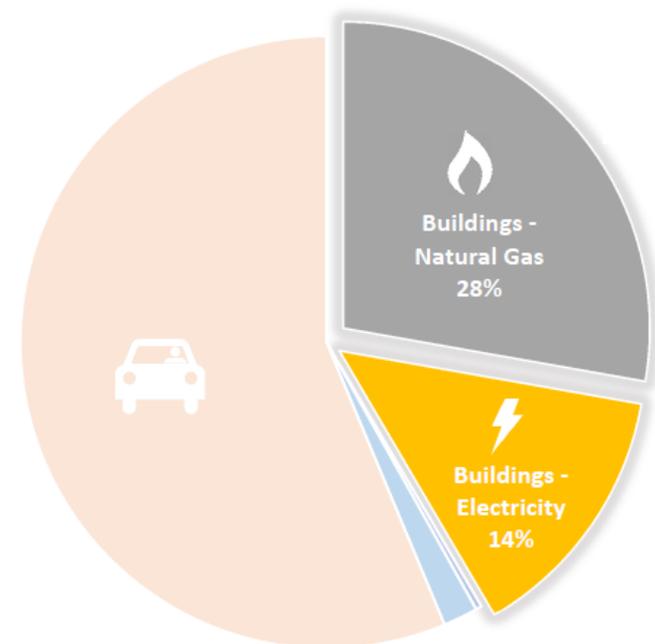
Building **E**nergy **S**aving **O**rdinance

BESO Overview

- Began in 2015, to reduce building GHGs
- Time of sale & date certain phase-in
- Assessments completed:
 - 873 Homes
 - 42 Commercial/Mixed Use
 - 46 Multifamily
- **Goal** Motivate owners to complete upgrades & take advantage of available programs and rebates:



Berkeley's 2015 Community-Wide GHG Emissions



Phase In Schedule

Building Size (sq ft)	Compliance Deadline	Reporting Requirements
50,000 or more	7/1/2018	Energy Assessment every 5 years AND Annual Benchmarking Report through Energy Star Portfolio Manager
25,000- 49,999	7/1/2019	
15,000-24,999	7/1/2020	Energy Assessment every 10 years. If building sells prior to this deadline, they must comply at Time of Sale .
5,000-14,999	7/1/2021	
<5,000	7/1/2022	

Approximate Building Count

Building Use Type	Phase I (2018)	Phase 2 (2019)
Commercial	55	93
Multifamily	50	93
Industrial	34	63
Mixed Use	7	5
Total	146	254

Assessment Requirements

Use Type	Gross Floor Area (ft ²)	Required Energy Assessment*
Commercial or Predominant Commercial	50,000 and above 25,000 – 49,999	ASHRAE Level 2 ASHRAE Level 1
Multifamily or Predominant Multifamily	50,000 and above 25,000 – 49,999	ASHRAE Level 2 ASHRAE Level 1
Mixed Use	10,000 and above	Commercial <u>AND</u> Multifamily - ASHRAE Level 1 or 2 depending on square footage of use type (coordinate submission)

* If eligible: East Bay Energy Watch Lighting Audit for Commercial Space



Assessment Requirements

Report Contents:

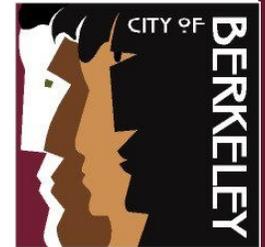
- Verification of property details
- Estimated costs savings of cost-effective improvements (SPP/NPV analysis)
- Submission of Asset score template (for commercial)
- Building Energy Score (if applicable)
- Benchmarking summary (if complete)
- Full list of requirements in [admin regulations](#) on website

Multifamily: sample 1 of 7 for every unit type



Commercial: rooftop solar potential analysis





Thank you!

BESO Team

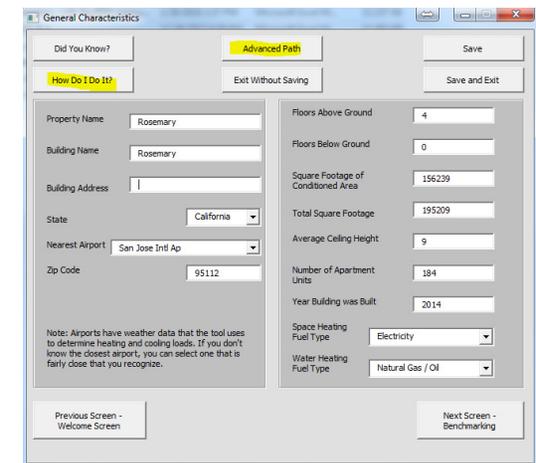
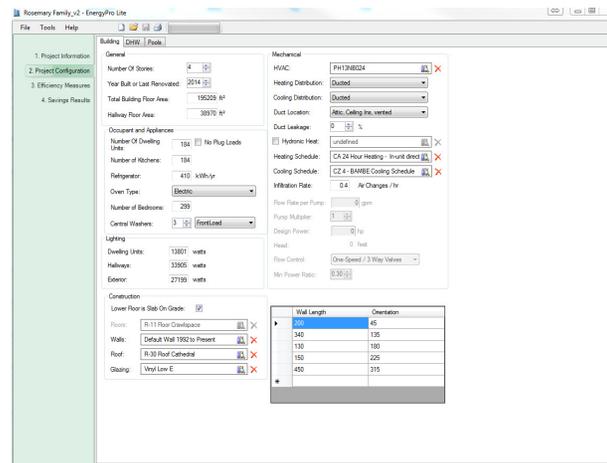
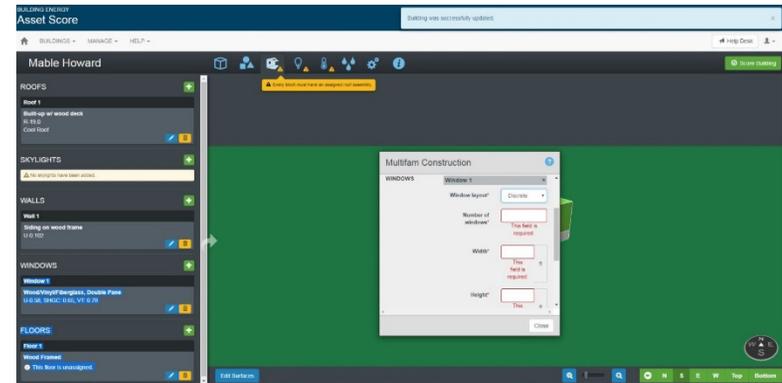
www.cityofberkeley.info/beso/

510-981-7465

beso@cityofberkeley.info

LCAT Comparison

1. DOE Asset Score
2. EnergyPro Lite
3. EZ Retrofit



LCAT Criteria

	Free	Intuitive User Experience	Web Based	Manual & Default Input Operation	Tool Maintained by 3 rd Party	Precision of Modeled EUI	Detailed Efficiency Measures Summary
DOE	✓	✗	✓		✓	✓	✗
EPL	✓	✗		✗	✓	✓	✗
EZ Retrofit	✓	✓		✓	✗	✓	✓

✓ Satisfactory/Available

✗ Needs Improvement

LCAT Policy Needs

- **Potential automated reporting capabilities**
 - City Building Compliance Databases (SEED CSV, Building XML)
 - Owner-facing report, including \$ savings (would require utility rate inputs or assumptions)
- **Cost estimate data for suggested measures**
- **Potential semi-automated measure selection**
- **Internalize some measures that are currently calculated externally**
- **Potential updates to some algorithms, pending additional research**

Discussion

- **Is there value to scaling a LCAT for incentive and market based applications (in addition to policy)?**
- **Strategy for maintenance of tool over time?**

Benchmarking

Benchmarking Pilot

➤ **Building Attributes Variety**

- Climate Zones
- System Types
- Building Vintage, # of Stories
- Size (focus on 50K+ sq. ft.)

➤ **Completed BayREN program 2015 & 2016**

- 12 months of data post-upgrade for validation

How It Works

- 1. Create Portfolio Manager profile (*1-2 hours per property*)**
- 2. PG&E benchmarking portal for aggregated tenant data (*1-5 hours per property*)**
- 3. PG&E “standard” data request for common area meters (*1-5 hours per property*)**
- 4. Offline Analysis (*2-6+ hours per property*)**

PG&E Portal

➤ Meter selection

- Can only select 50 meters at a time
- Must enter service address exactly as it appears on bills (1-20+ service addresses per property)
- Meters cannot be included in more than one data request

PG&E Together, Building a Better California

Manage Buildings My Profile

Building Detail Remove Building

This building is not linked to your Energy Star Portfolio Manager account. A link must be established before customer data can be shared. [View Instructions >](#)

Building Name: Rosemary Family
Address:

Energy Star Portfolio Manager
User ID: 1000138
Building ID: 2392033551

Meter Status
Gas : Not Linked
Electric: Not Linked

To add or remove premise(s) mapped to this building, use the "Update Mapping" button.

[Update Mapping](#)

Click "View Meter IDs" to see a list of meter IDs for active premises.

[View Meter IDs](#): Gas: 0 Electric: 46

Premise Address	Gas Services		Electric Services	
	No.	Auth Status	No.	Auth Status
APT 101 SAN JOSE CA	0	N/A	1	N/A
APT 103 SAN JOSE CA	0	N/A	1	N/A
APT 104 SAN JOSE CA	0	N/A	1	N/A
APT 105 SAN JOSE CA	0	N/A	1	N/A

Portfolio Manager (ESPM)

➤ Linking PG&E Portal to Portfolio Manager

- Use custom Building ID and User ID generated by PG&E portal

PortfolioManager®

MyPortfolio Sharing Reporting Recognition

Rosemary Apartments

Not eligible to apply for ENERGY STAR Certification

Weather Normalized Source EUI (kBtu/ft²) Mtu/ft² year

Current EUI: N/A

Baseline EUI: N/A

Summary Details Energy Water Waste & Materials Goals Design

Property Profile (Future enhancements)

This section will be deleted in 2018, except for the property photos which will remain. [More information.](#)

[Create Profile](#)

Source EUI Trend (kBtu/ft²)

Total GHG Emissions Trend (Metric Tons CO2e)

Metrics Summary

Metric	Not Available (Energy Baseline)	Not Available (Energy Current)	Change
ENERGY STAR Score (1-100)	Not Available	Not Available	N/A
Source EUI (kBtu/ft²)	Not Available	Not Available	N/A
Site EUI (kBtu/ft²)	Not Available	Not Available	N/A
Energy Cost (\$)	Not Available	Not Available	N/A
Total GHG Emissions Intensity (kgCO2e/ft²)	Not Available	Not Available	N/A
Water Use (All Water Sources) (gpd)	Not Available	Not Available	N/A
Total Waste (Disposed and Diverted) (Tons)	Not Available	Not Available	N/A

Check for Possible Data Errors

Run a check for any 12-month time period to see if there are any possible errors found with your data.

Sharing this Property

2 People Have Access to this Property

Name	Permissions	Action
Pacific Gas and Electric Whole Building (pg&e_benchmark)	Exchange Date Pending Shared by Rachel Kuykendall	I want to...
Rachel Kuykendall (AEAWESTCOAST)	Property Data Administrator	I want to...

[Copy Property](#) [Transfer Ownership](#) [Download Property to Excel](#)

Data Requests from Other Utilities

- **Experience with SoCalGas, TID (Turlock Irrigation District)**
 - Differing initiation and data provision protocols
 - Cannot self-select meters
 - Do not provide unit addresses
 - Long wait time
 - Difficult to back out common area meters and allow some granularity



Common Issues with Vetting Data

- 1. Difficult to confirm metering locations**
 - Common area versus aggregated tenant
 - Especially in campus settings with shared common meters
- 2. Lack of bill back-up to verify questionable data**
- 3. Qualitative info on equipment/building changes**
 - O&M issues, occupancy changes, decommissioned equipment brought back online
- 4. Inconsistent length of historic data**
- 5. Pre-existing benchmarking accounts**

Identified Limitations

- **Time commitment of 5-15+ hours per property**
- **Difficult to see trends due to sample size and building variability**
- **Zero entry errors and other questionable data**

<input type="checkbox"/>	10/3/2017	11/1/2017	10,381	2,144.39	<input type="checkbox"/>	<input type="checkbox"/>			11/14/2017 Pacific Gas and Electric Company
<input type="checkbox"/>	11/1/2017	12/3/2017	11,855	1,874.48	<input type="checkbox"/>	<input type="checkbox"/>			12/6/2017 Pacific Gas and Electric Company
<input type="checkbox"/>	12/3/2017	1/2/2018	0	1,863.69	<input type="checkbox"/>	<input type="checkbox"/>			1/5/2018 Pacific Gas and Electric Company
<input type="checkbox"/>	1/2/2018	1/31/2018	10,592	1,795.23	<input type="checkbox"/>	<input type="checkbox"/>			2/10/2018 Pacific Gas and Electric Company
<input type="checkbox"/>	1/31/2018	3/4/2018	11,564	1,934.79	<input type="checkbox"/>	<input type="checkbox"/>			3/26/2018 Pacific Gas and Electric Company

Discussion

- **How can it be made easier to obtain data?**
- **How can interoperability between data platforms be improved?**
- **How can we make the data more relevant for Multifamily?**
- **What are decision makers going to do with the data once they have it?**

Next Steps

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