

Benchmarking Multifamily Buildings in CA

How It's Working and What We Can Do with the Data

BAYREN CODES & STANDARDS FORUM

JUNE 11, 2020

The Realities of Benchmarking

- It's not perfect!
 - IOUs, municipal utilities (PA and Alameda) have different energy infrastructure and backend data collection
- These will be solved over time
- Right now, compliance and accuracy are the priorities

CEC Multifamily Benchmarking Report

- Submitted to CA Energy Commission in March
- Based on experience benchmarking 89 properties
 - 92% EE program participants, 78% PG&E customers,
 - 75% Bay Area, 72% deed-restricted
 - 8 climate zones and 8 utility territories represented
- Three primary sections
 - Improving benchmarking data quality
 - Layering EE program data to determine effect of heating systems types on EUI
 - Using benchmarking data to compare modeled versus actual savings

How it's working, current issues

Inability to Benchmark (11 Sites, 12%)

- Data access
 - Data request allowances
 - Incomplete service addresses
 - Unclear utility processes for municipal utilities
- Data quality
 - Incomplete or inaccurate
- New buildings
 - Need one year of consumption data to benchmark

Data Quality Issues

- Including ALL meters
- Multiple data requests
- Vetting and maintaining data

Including ALL Meters

- Multiple service addresses, even for single buildings
- Particularly challenging for garden style apartments or those with one service address per unit



Meters and Electrification

- Data not available for meters that were recently removed
- Most common for major renovations or electrification

Premise Address	Gas Services	
	No.	Auth Status
APT 101 SACRAMENTO CA	0	N/A
APT 102 SACRAMENTO CA	0	N/A
APT 103 SACRAMENTO CA	0	N/A
APT 104 SACRAMENTO CA	0	N/A
APT 105 SACRAMENTO CA	0	N/A
APT 106 SACRAMENTO CA	0	N/A
APT 107 SACRAMENTO CA	0	N/A
APT 107 SACRAMENTO CA	0	N/A
APT 108 SACRAMENTO CA	0	N/A

Compliance vs. Accuracy

- System complexity and unique data request methods
- 3rd party haste
- Bottom line, it's not always easy for owners or consultants to do this on their own or quickly

Resources for building owners and managers

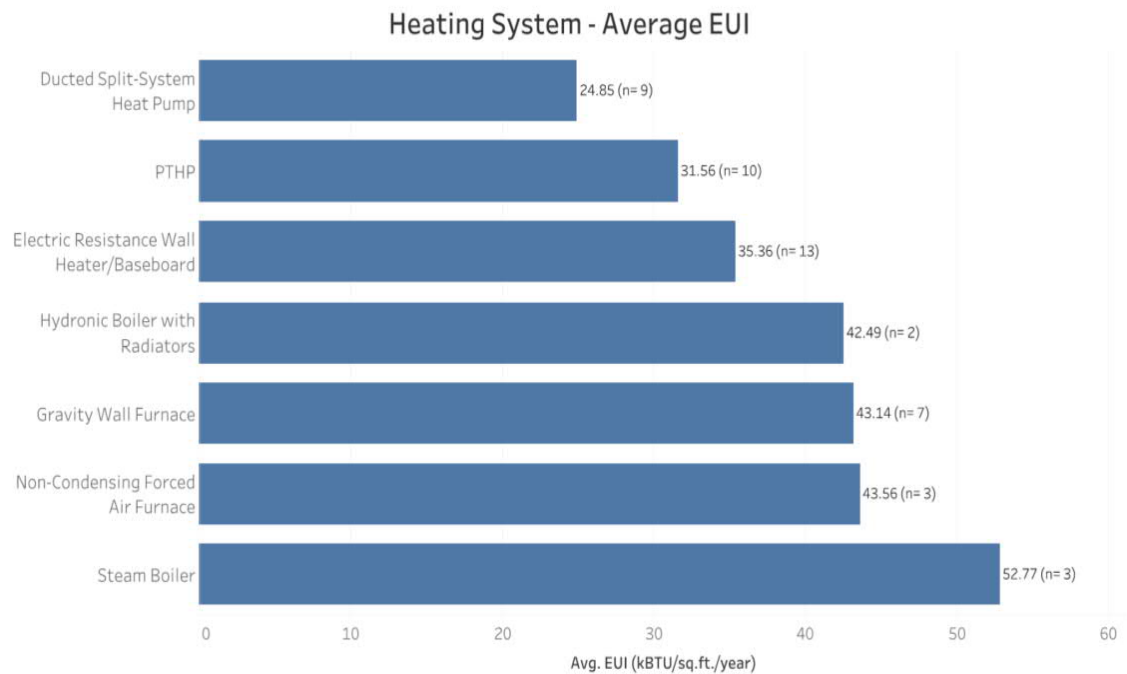
- [EnergyStar Portfolio Manager Help Page](#)
 - Includes FAQ, active and recorded trainings, etc
- [CEC Benchmarking FAQ](#)
 - Answers Qs around the program, compliance, disclosure and more
- [PG&E Benchmarking](#)
 - Link to Portal and guidance docs, authorize release of meter data
 - Direct questions can be emailed to benchmarking@pge.com

Using Benchmarking Data

WAYS TO COMBINE BENCHMARKING DATA WITH OTHER DATA

Predictors of Multifamily Energy Use Intensity (EUI)

- Explored climate zone, building age, heating system, and cooling system as predictors
- Heating system type explained the most variation in EUI for this
- Larger data set needed to support results

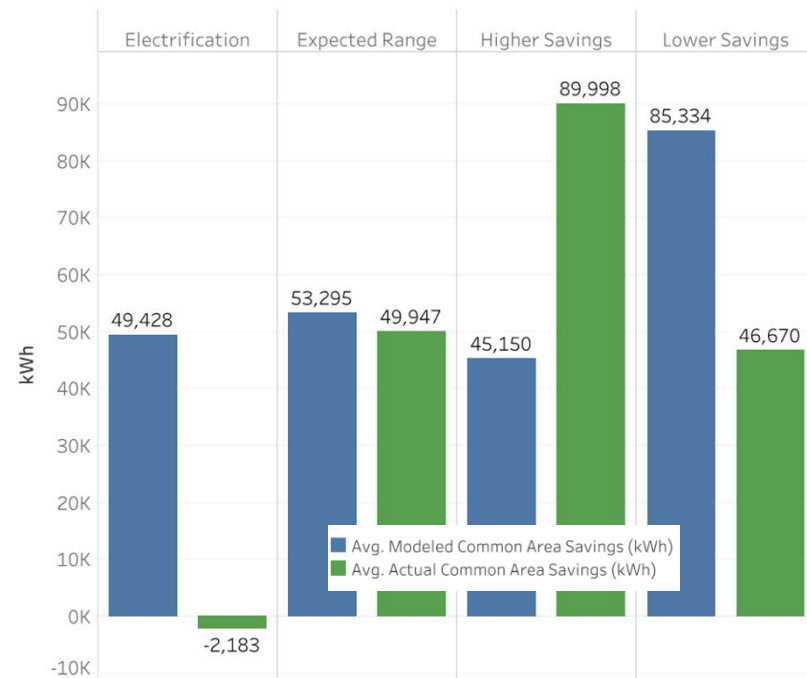


Reviewing Performance

- Analyzed utility data pre-upgrade versus post-upgrade for 44 properties
- With a large enough data set, valuable conclusions can be drawn
 - ECM effectiveness and persistence
 - Modeling accuracy

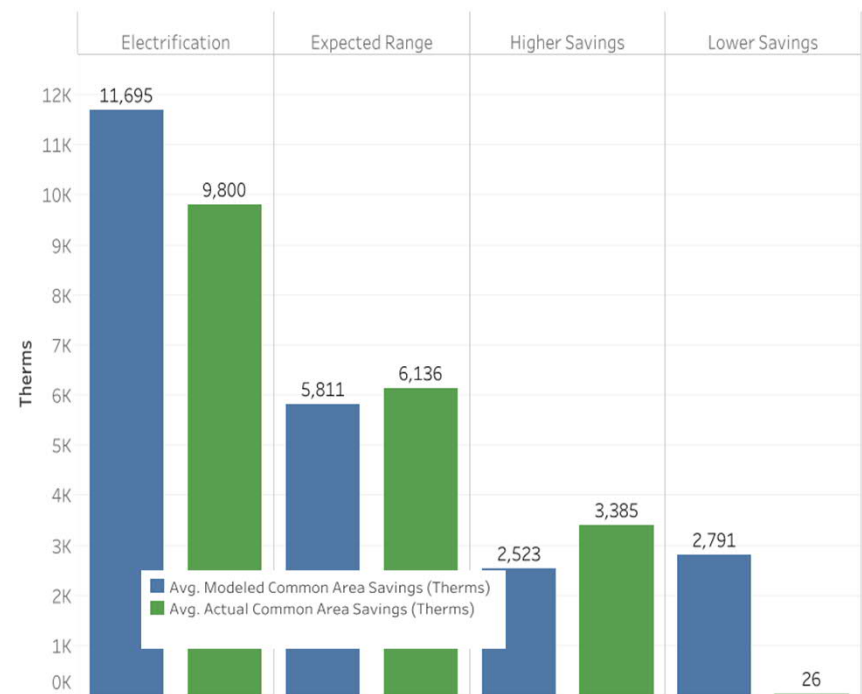
Reviewing Performance - Electricity

- Modeled vs. Actual Elec. Savings
 - Electrification – 9 projects (WAY OFF)
 - Savings in expected range (+/- 5%) – 13 projects
 - Savings higher than predicted (>5%) – 6 projects
 - Savings lower than predicted (<5%) – 16 projects
- Potential causes of underperformance:
 - Need for updates to modeling algorithms
 - Changes to recirculation pump settings



Reviewing Performance – Natural Gas

- Modeled vs. Actual Gas Savings
 - Electrification – 9 projects
 - Savings in expected range (+/-5%) – 5 projects
 - Savings higher than predicted (>5%) – 10 projects
 - Savings lower than predicted (<5%) – 19 projects
- Potential causes of underperformance:
 - Need for updates to modeling algorithms
 - Changes to recirculation pump settings
 - Low persistence for aerators and showerheads
 - Unrelated operations issues or changes



How Local Govts Can Layer Benchmarking Data

- Equity
 - Review energy burden by area – e.g. DACs
 - Layer with assessor, census, air quality data
 - Air quality
- GHG emissions
 - More granular insight than GHG inventories
 - Electrification
- City Departments
 - Bldg Dept - Permit data, Planning Dept

Summary

- It's early! We're in this together
 - There are and will continue to be kinks, they'll get worked out
- We can effectively benchmark now, assistance helps
- Potential for layering data is AWESOME

THANK YOU!

For more information, contact:

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CEC Multifamily Benchmarking Report

- Provided benchmarking TA to 89 properties
 - 92% EE program participants
 - Able to fully benchmark 70 properties,
 - Benchmarked common area of 8 additional properties
 - 11 not able to be benchmarked
 - 75% located in or near the 9 county Bay Area
 - 72% deed-restricted affordable
 - 78% PG&E customers
 - In all, 8 climate zones and 8 utilities

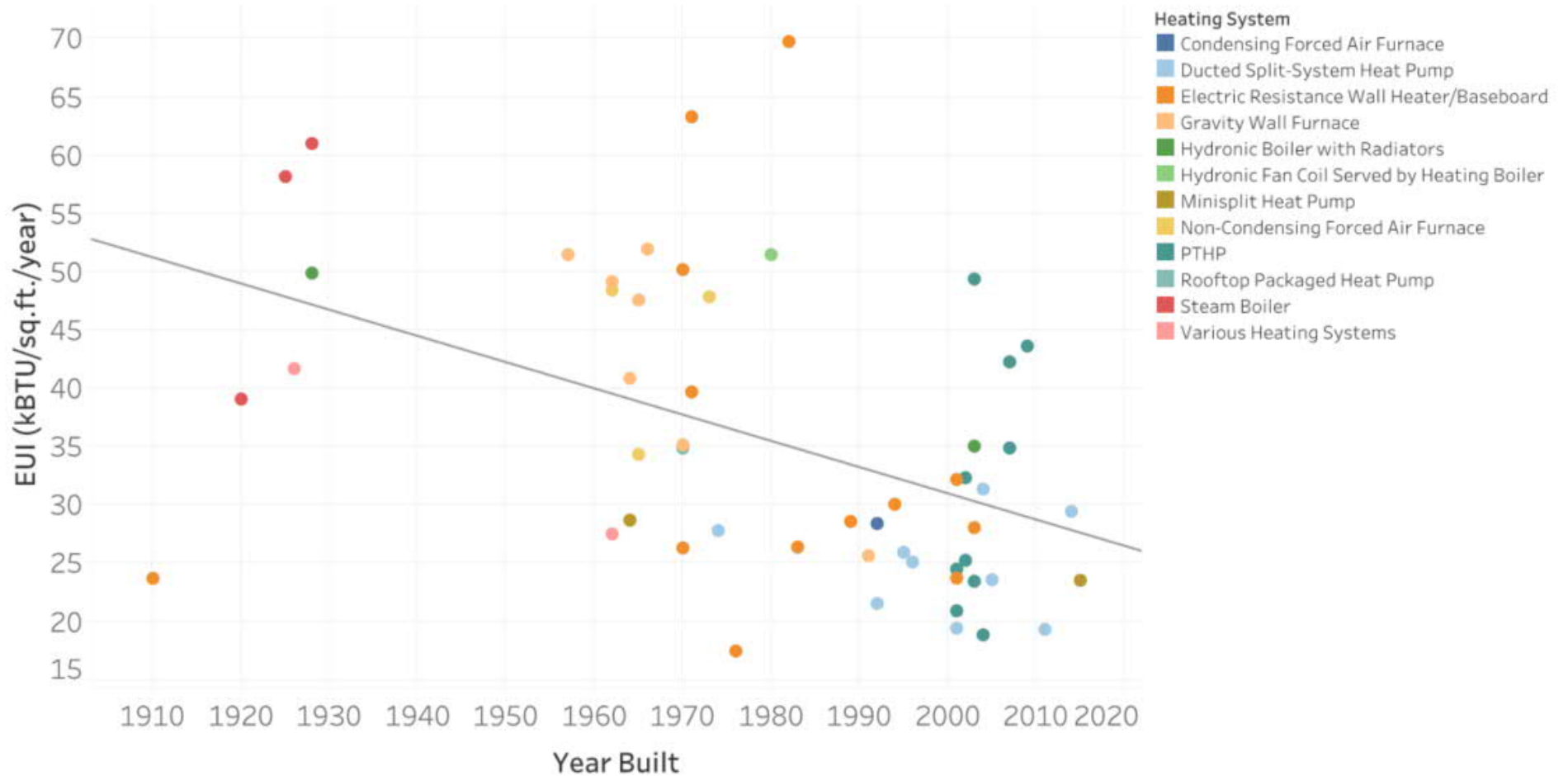
Layering and Opportunities for Local Governments cont.

- Building department - permit data
- Planning dept, what data? **Ask Emily**
- County assessor, asset info data like...
- Census data, **what else?**
- How can you get other departments excited? Or how can benchmarking data layered with other departmental data help them do their job better/more efficiently
- CCAs
 - GHG data

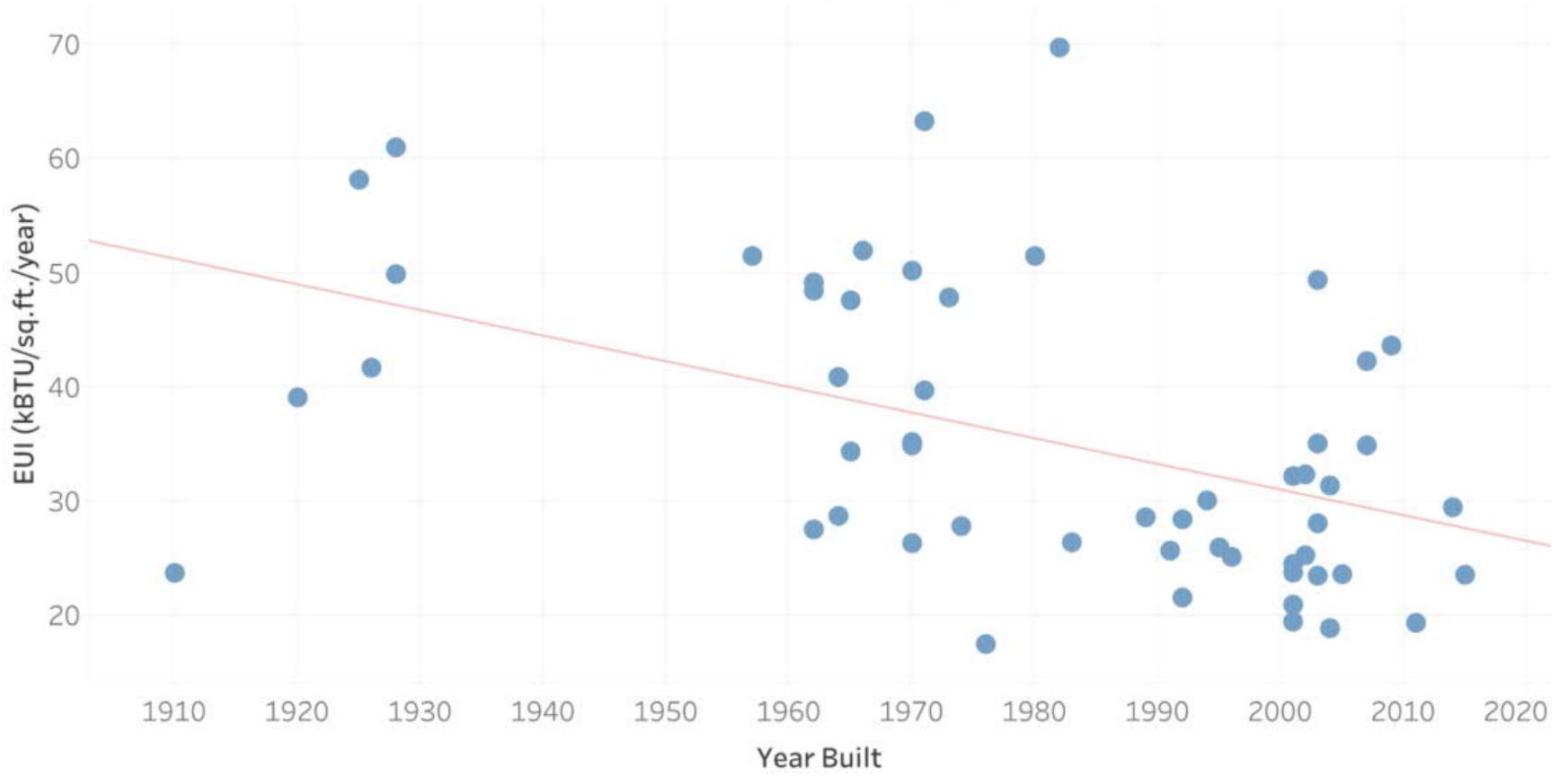
AGENDA

- Will pull this slide, just for draft reference.
- 20min pres, with 15-20min joint QA with Eugene
- Realities of benchmarking
- Main takeaways from final benchmarking report (25min)
 - Opportunities to improve data quality
 - Reassessing potential predictors of EUI
 - Reviewing performance of building upgrades
- Opportunities for local governments
 - Layering with other data – building department (permit), county assessor, planning department
- Q&A (?)

EUI and Building Vintage with Heating System



EUI and Building Vintage



Q&A

- Robert asked which modeling program we used. Bick mentioned LCAT upgrades and CPUC workpapers
- Disclosure – Begins with who has reported. MF is one step behind comm. CEC still doing their best to do outreach and education to communities. Due to pandemic, there will be difficulty in reporting. Enforcement of non-compliance not happening until at Sept.
- Layering – Very generally, yes absolutely interested but casting a wide net. Spoke to people at Water Board as they're doing water, may be able to connect. Dept of General Services, reporting energy and water at the agency level. Equity indicators dashboard – where is that? Can interface with buildings and performance. DOE has a pretty robust website LEED tool measures energy burden, can look at that across the nation.