












Multifamily myth-busting

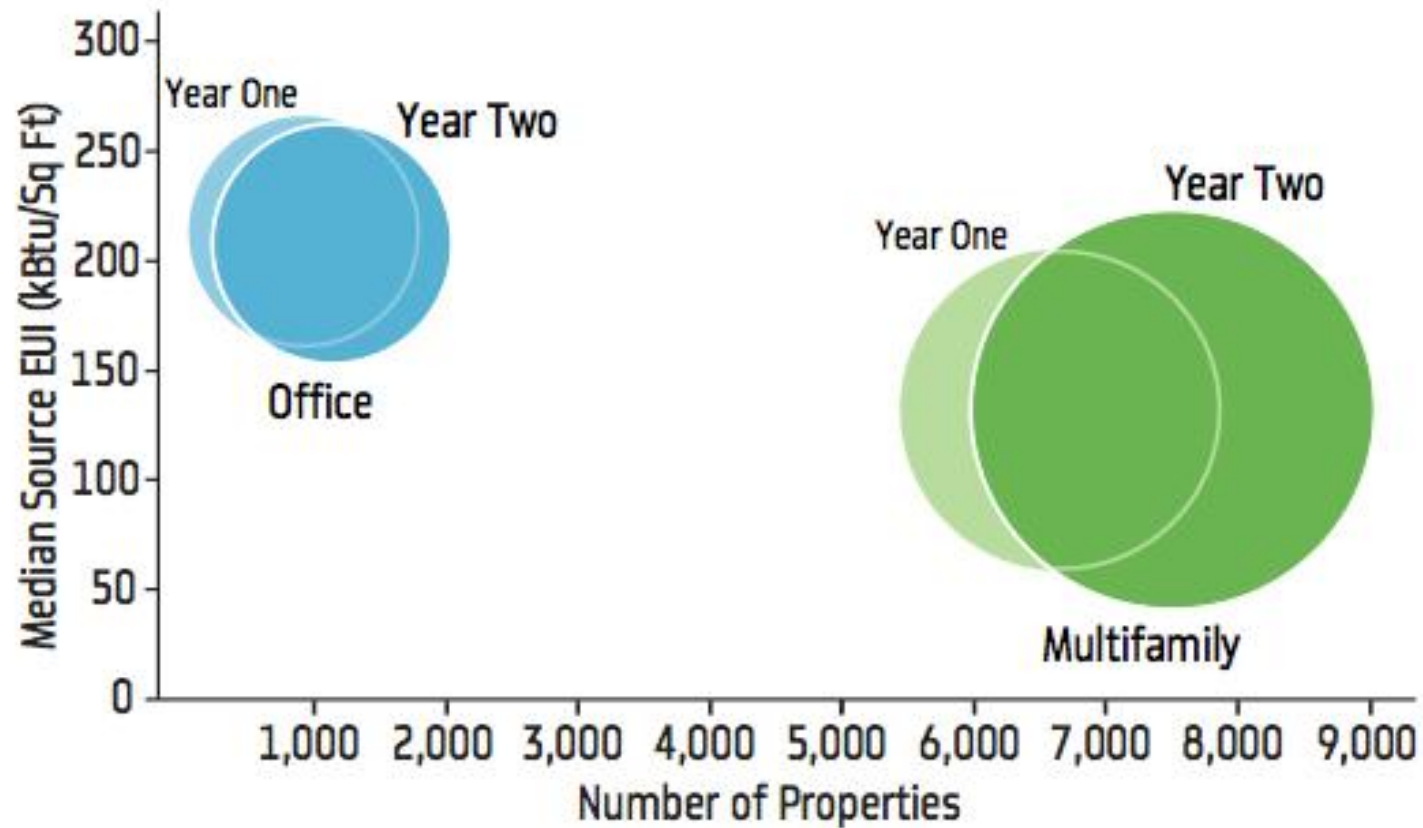
 Owner Energy <i>Partial</i>	D	98 kBTU/ ft ² /yr	
 Cooling <i>Common Area</i>	N/A	0.0 BTU/ ft ² /CDD	
 Heating <i>Whole Building</i>	D	13.4 BTU/ ft ² /HDD	
 Electric Baseload <i>Common Area</i>	A	286 kWh/unit/yr	
 Fossil Fuel Baseload <i>Whole Building</i>	C	18.4 mmBTU/bdrm/yr	
 Water	B	76.9 gal/bdrm/day	

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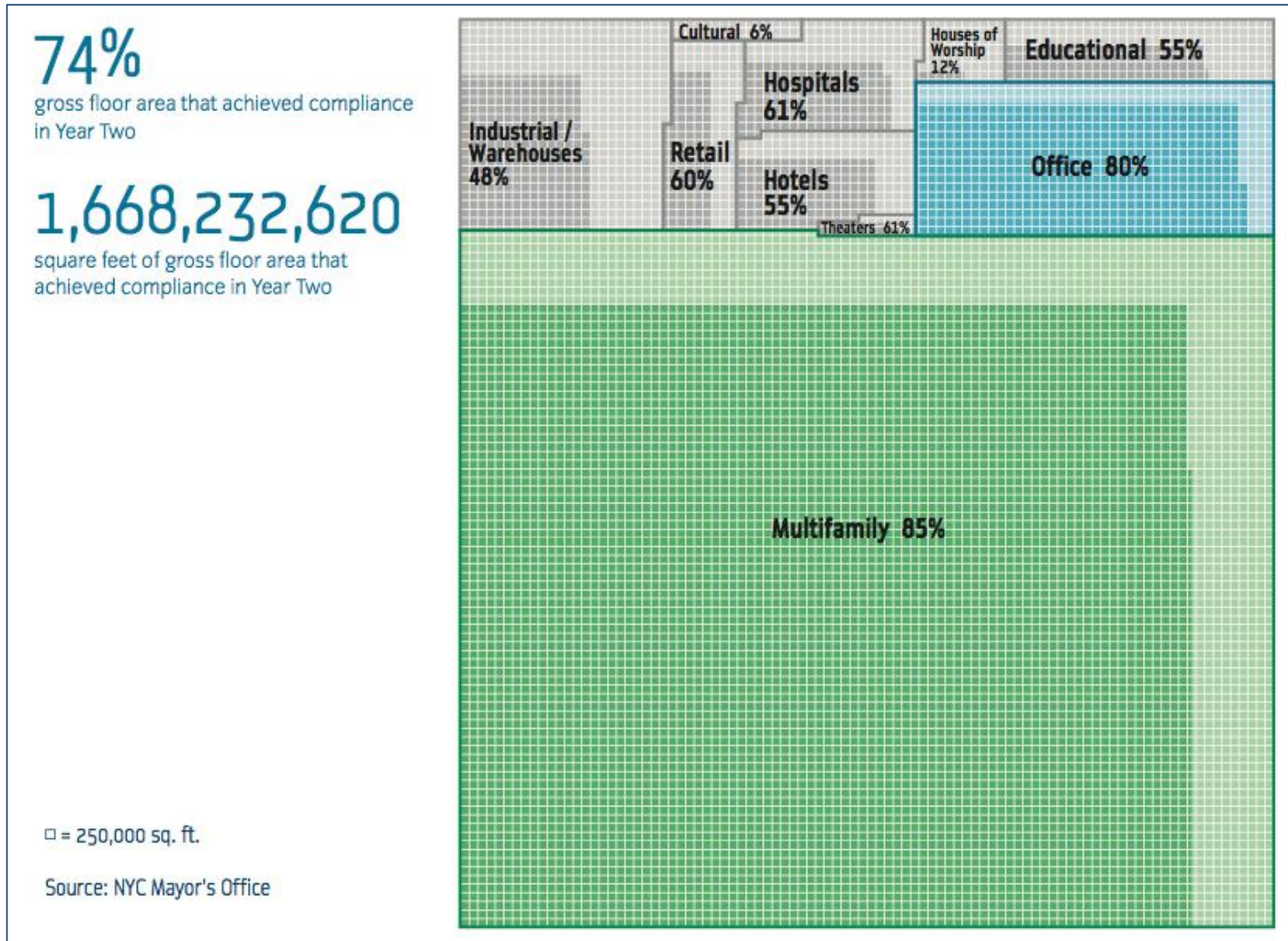
Myth #1:

You can't benchmark multifamily buildings.

[Fig. 18] Median EUI, Number of Properties and Total Energy Per Sector, Year One vs. Year Two¹⁹



Source: University of Pennsylvania and NYC Mayor's Office



What's behind
myth #1?



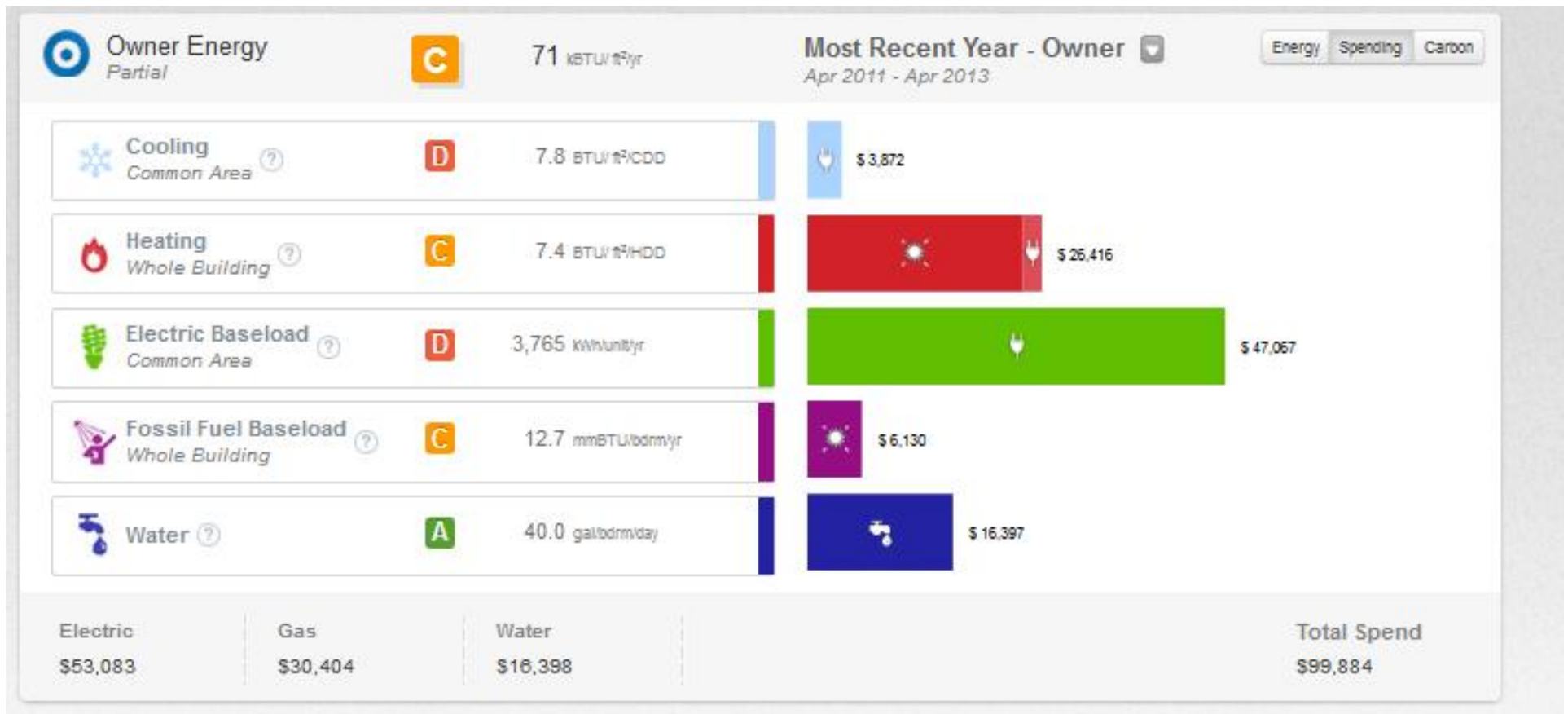
What's behind myth #1?

- Hard to get tenant data
- No national multifamily rating (yet)
- Diversity in building stock
- Some comparisons are misleading

Insider benchmarking tips

- Get data electronically where possible
- **Benchmark owner-paid energy to start!**
- **Use weather and property information to create sensible metrics**
- Tenant data: scale up from a reasonable sample
- Find some comparable data (it's out there!)

Owner-paid energy benchmark




Whole building benchmark



What are you paying for?



Benchmark against buildings with similar metering

 **Cooling**


Fuel Elec Gas Prop Oil Steam N/A

Pays Tenant Owner Not Sure

 **Hot Water**

Type Elec Gas Prop Oil Steam N/A

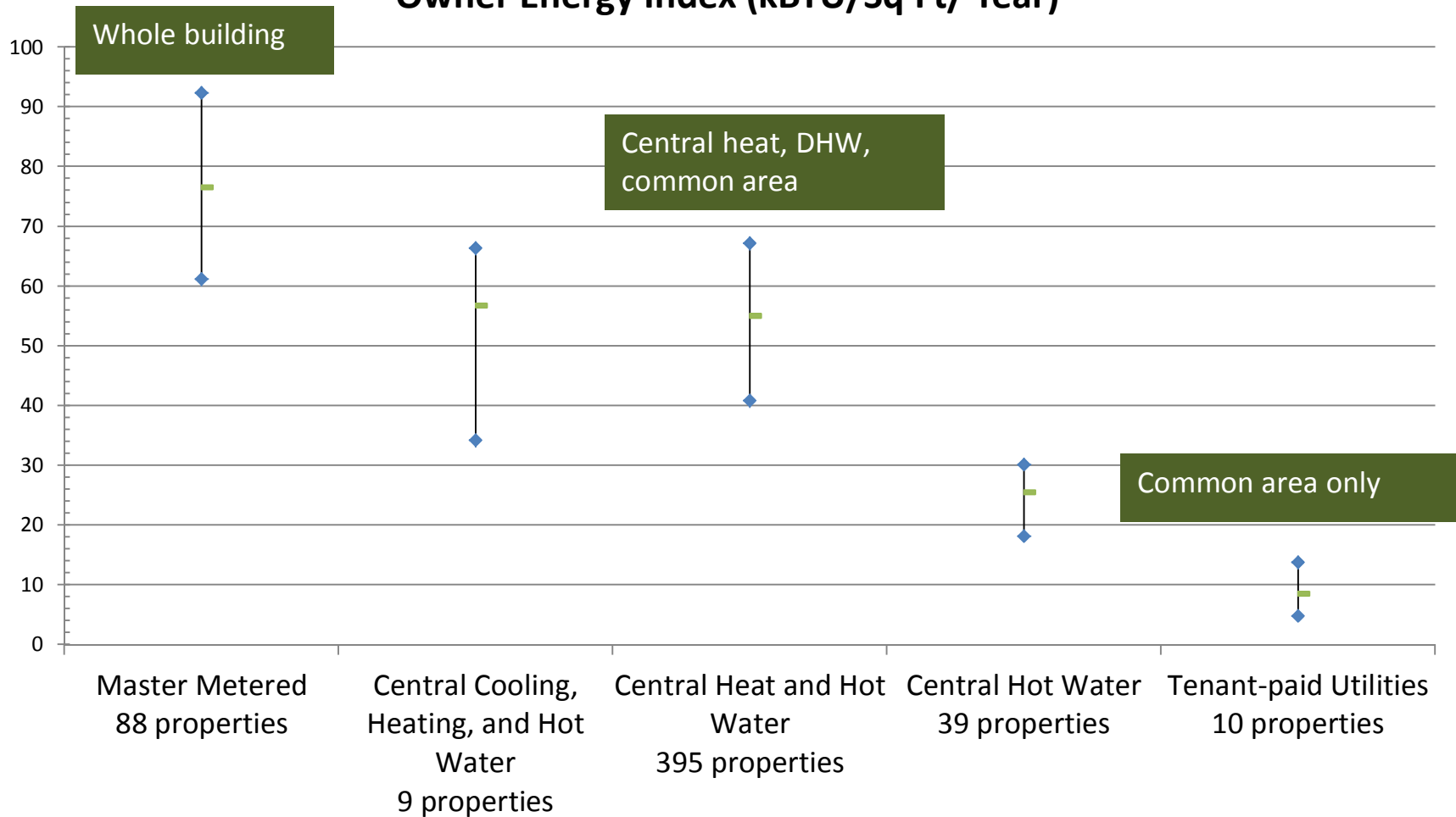
Pays Tenant Owner Not Sure

 **Heating**

Fuel Elec Gas Prop Oil Steam N/A

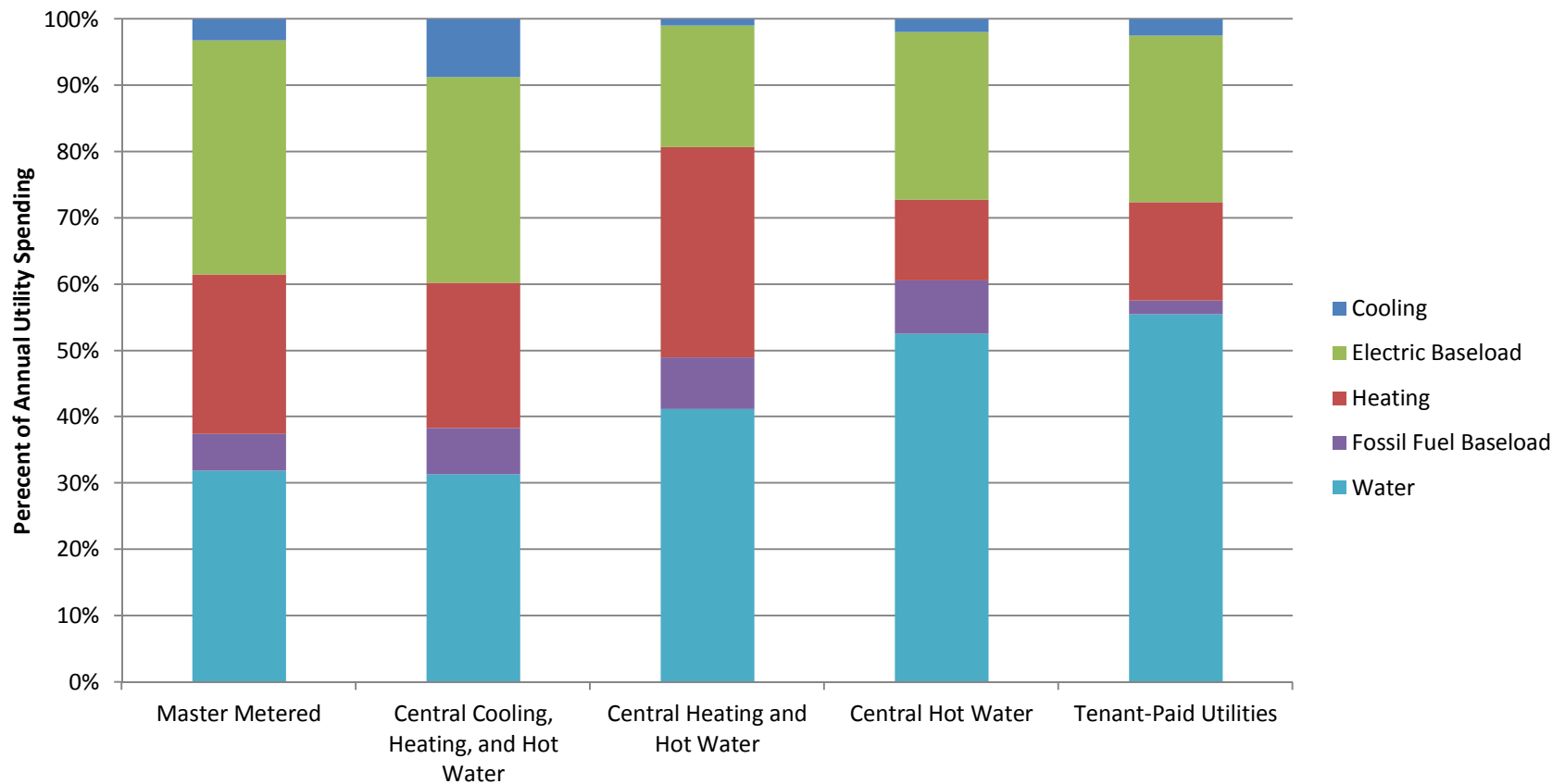
Pays Tenant Owner Not Sure

Owner Energy Index (kBTU/Sq Ft/ Year)

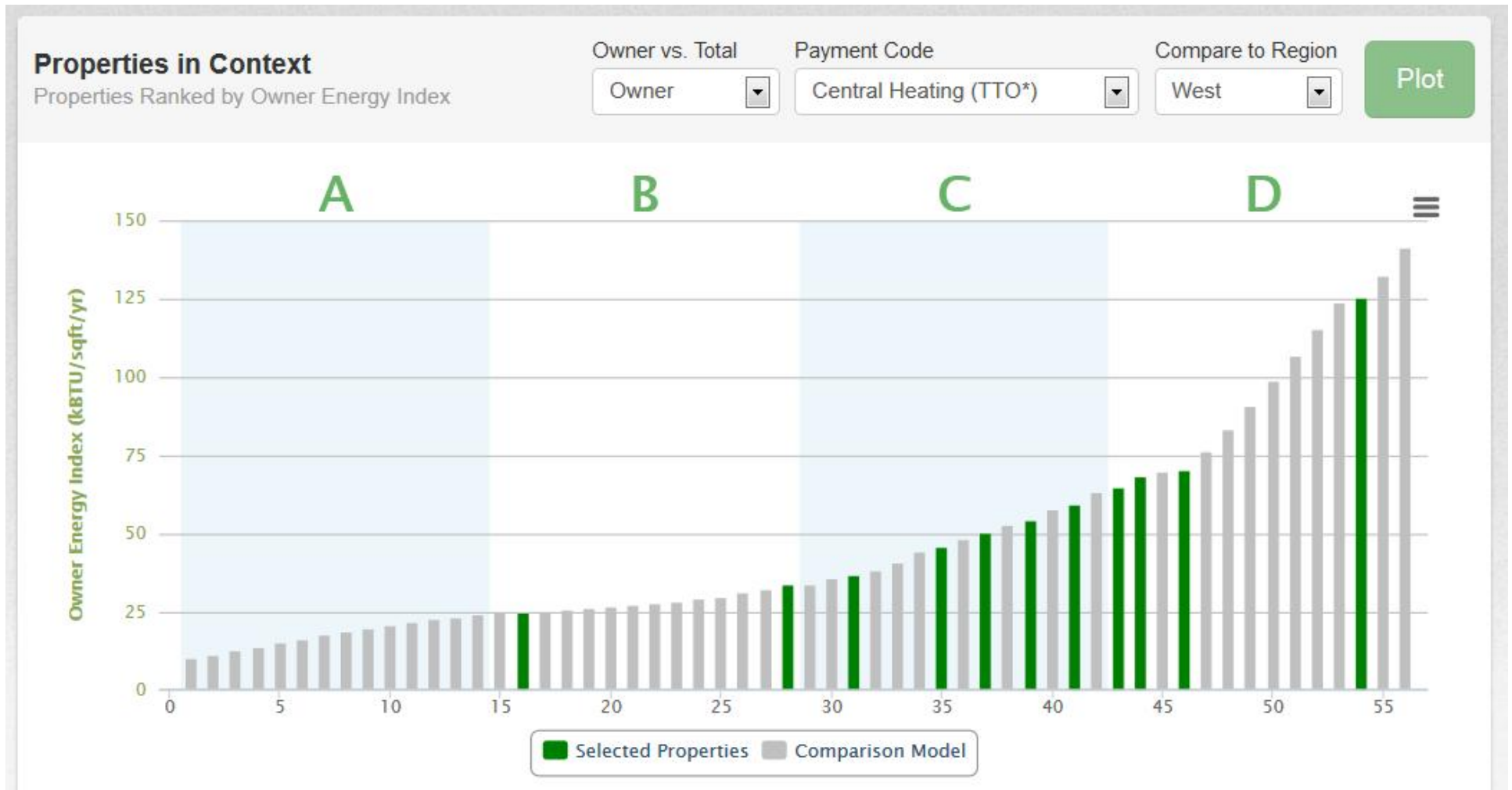


What matters to multifamily owners?

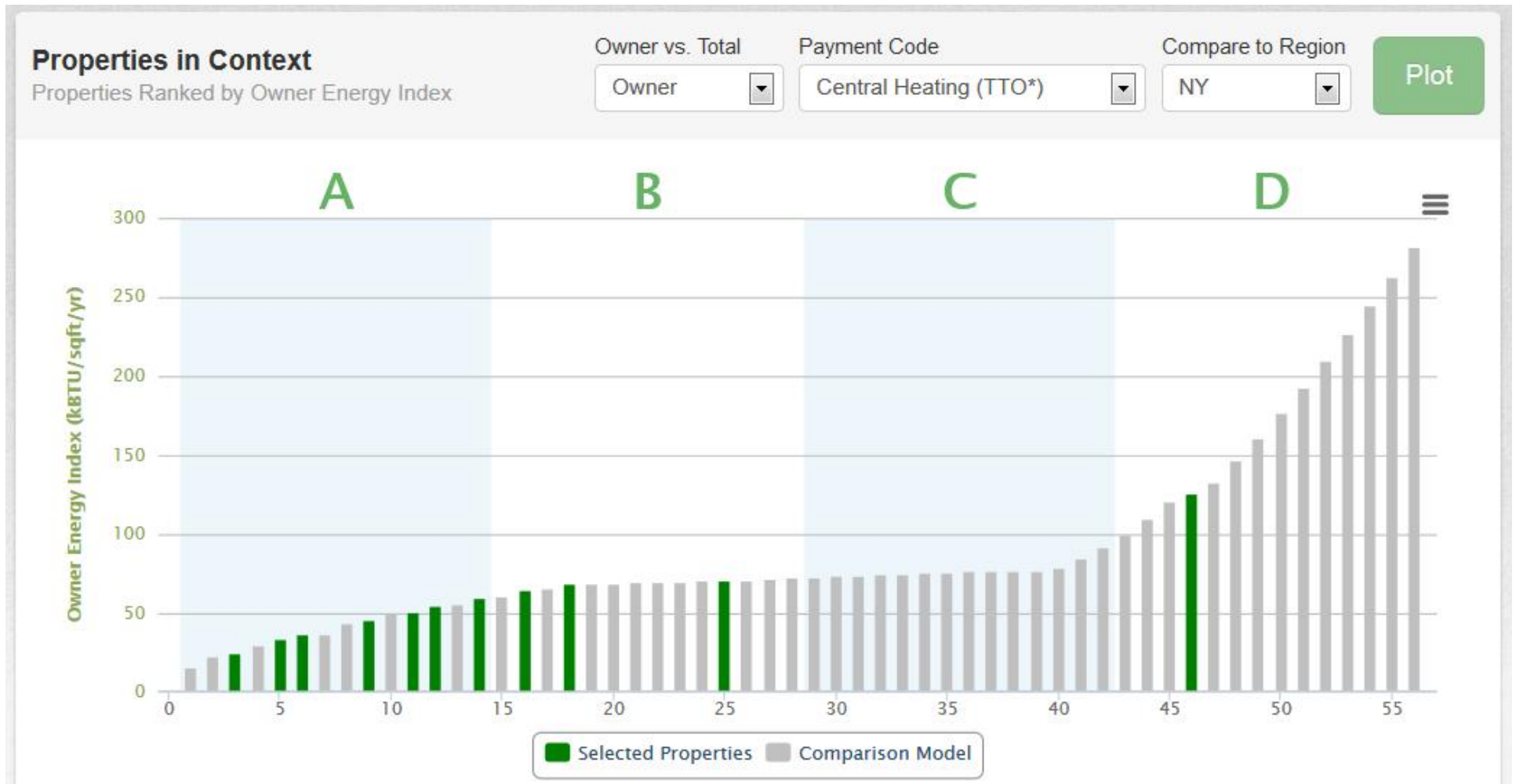
Owner Spending Percentages - All Utilities



Context matters



Context matters



Why is electricity use high at this property?

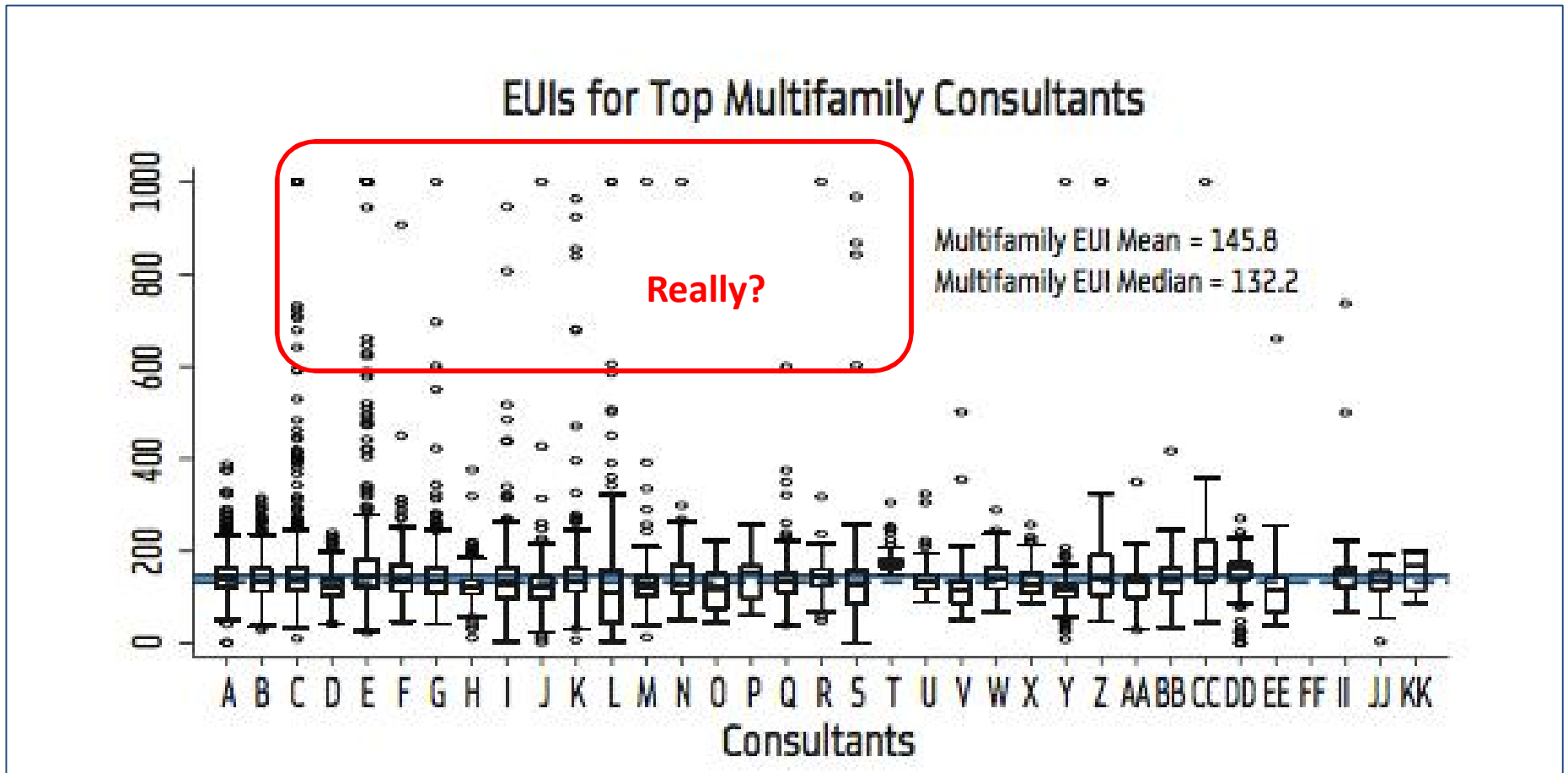


Think before you benchmark

- Benchmark what?
 - Consumption
 - Spending
 - Energy, water
 - Metrics
- Owner vs. tenant data
- 365 days (billing date issues)
- Do you have all accounts?
- Weather normalization
- Correct property information



How did the Consultants compare to each other?



Myth #2:

There's no proof that energy and water efficiency works in multifamily buildings.

What's behind myth #2?



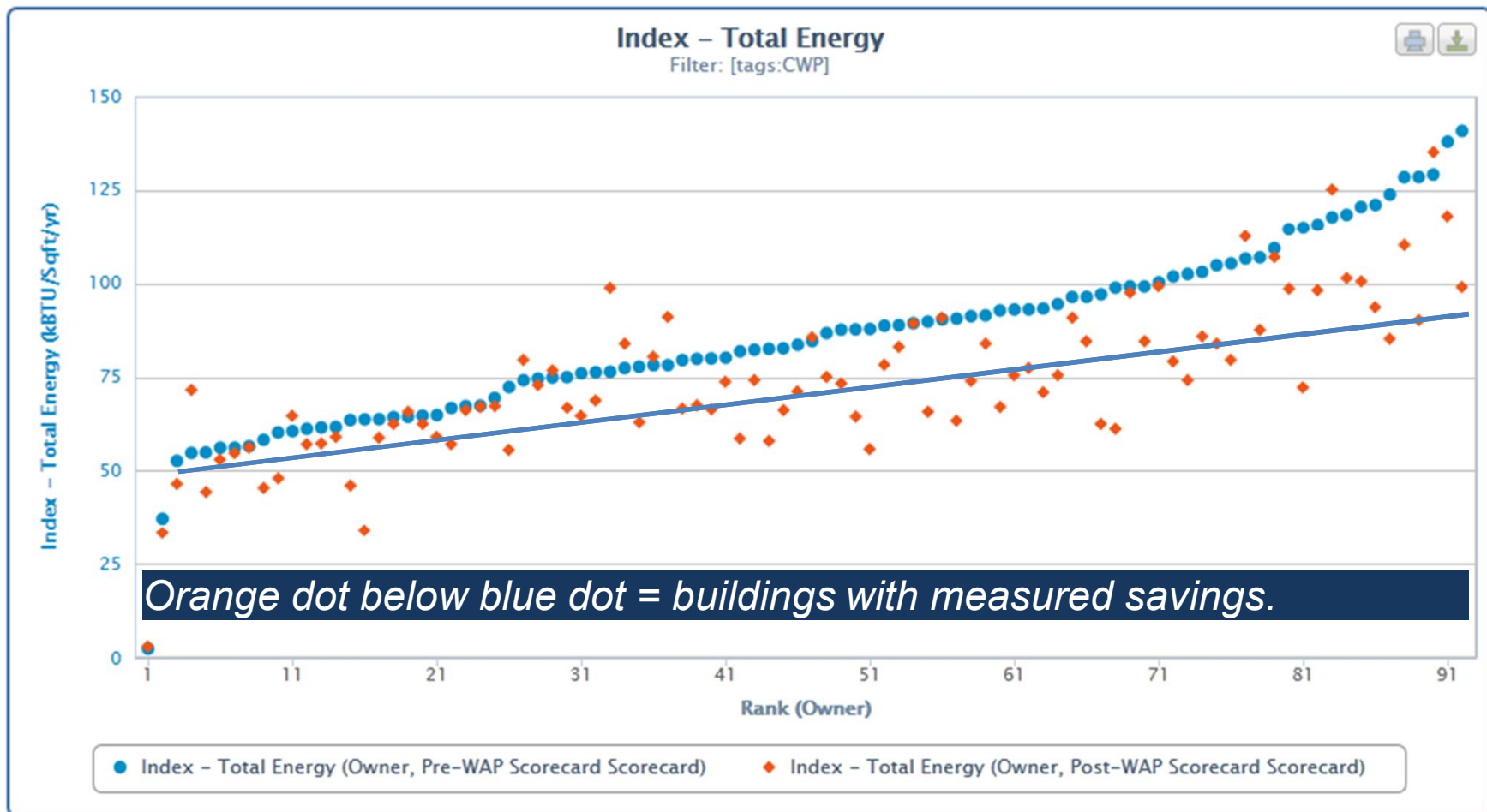
What's behind myth #2?

- Historically energy programs often didn't track savings – this is changing
- Not all retrofits save energy, or appear to...
- Lack of confidence in energy modeling
- Fixing deficiencies can increase energy consumption
- Buildings are living communities, not contained experiments

The proof

- A growing body of data documents before/after energy use in multifamily retrofits
- Generally savings of 5-25% are achieved
- Wide range of performance
- Average realization rates 60-80%
- Inefficient buildings tend save more
- Need more data, especially on tenant savings
- Not just programs: independent successes

Tracking in energy program design



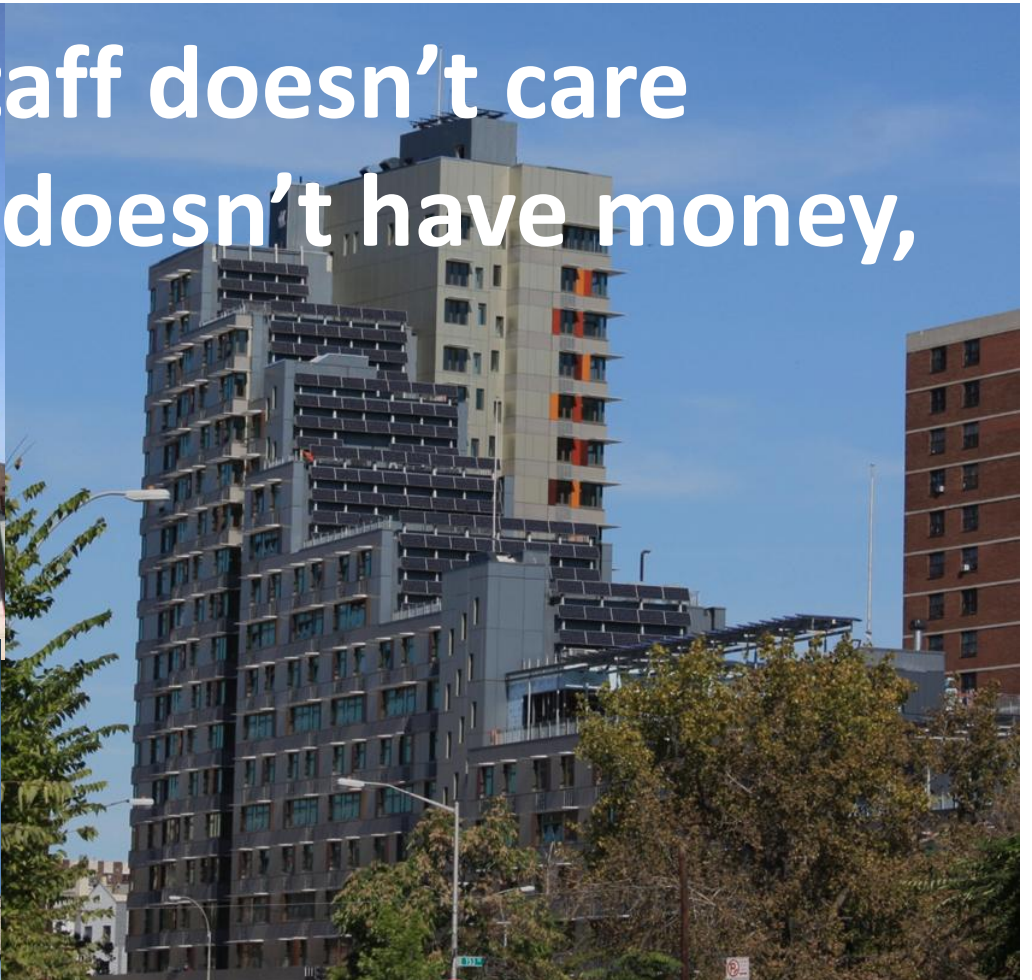
A committed and active portfolio

Owner Spend by Property

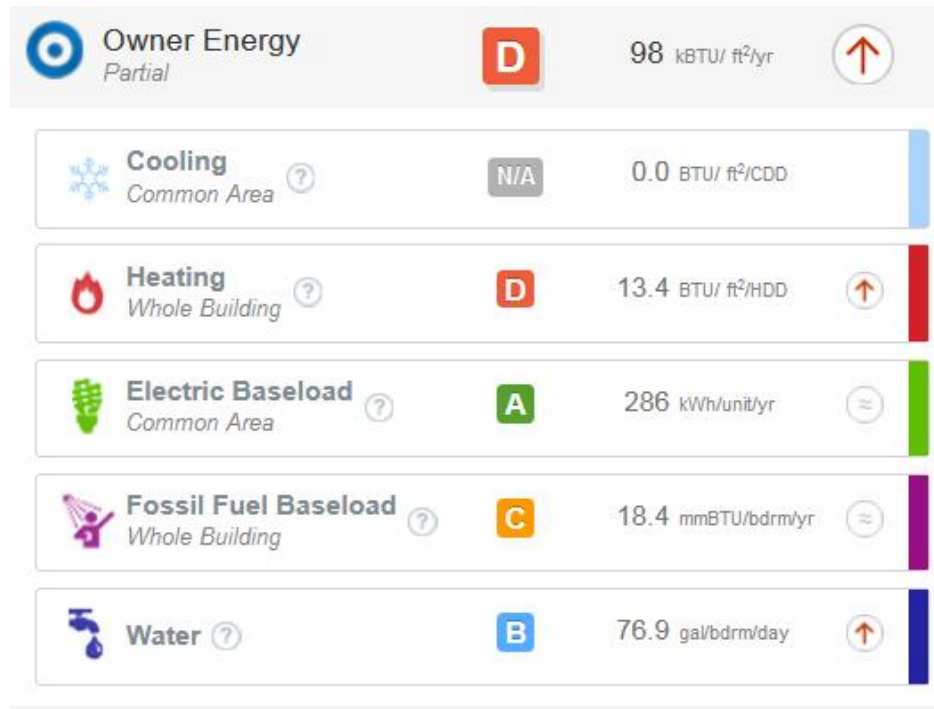
Portfolio	Property	Full Year 2011	Most Recent Year	Difference
		\$149,268	\$116,557	(\$32,712) -22%
		\$35,111	\$27,436	(\$7,675) -22%
		\$2,098	\$1,652	(\$445) -21%
		\$15,519	\$12,679	(\$2,840) -18%
		\$17,461	\$15,049	(\$2,412) -14%
		\$77,431	\$67,971	(\$9,460) -12%
		\$7,914	\$7,050	(\$863) -11%
		\$34,060	\$31,388	(\$2,672) -8%
		\$30,153	\$29,040	(\$1,113) -4%
		\$15,494	\$15,013	(\$481) -3%

What are they doing?
 Common area and in-unit lighting, appliance upgrades, water efficiency, air-sealing, controls, solar PV, solar DHW, etc. etc.

Myth #3: building staff doesn't care
(doesn't have time, doesn't have money,
etc.)



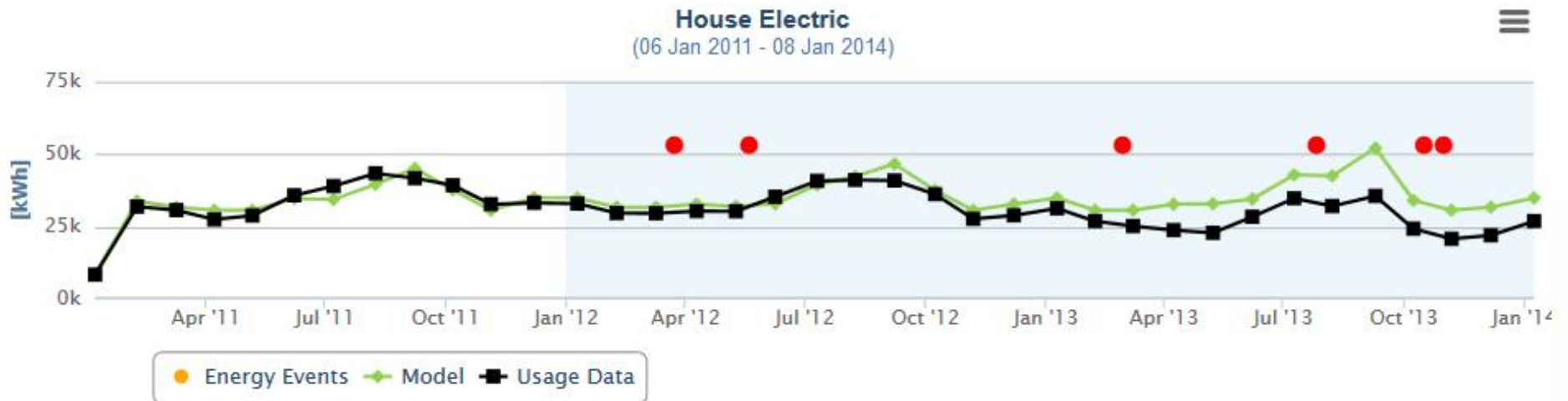
They care, if presented with the right information, and given tools to act.



Property manager: what can we do?



Target inefficiency and high spending



Progressive action and savings

- Program thermostats on hallway HVAC
- T-12 to T-8 upgrade in parking garage
- Bi-level lighting in stairwell
- What's next?

Indices	Full Year 2011 - Owner	Most Recent Year - Owner	Difference		Units
Energy Index	25 D	22 C	↓ -13%	-3.00	kBTU/ ft ² /yr
Cooling Index	9.7 D	5.9 C	↓ -40%	-3.80	BTU/ ft ² /CDD
Heating Index	3.2 B	3.5 B	↑ 9%	0.30	BTU/ ft ² /HDD
Electric Baseload Index	3,113 D	2,431 D	↓ -22%	-682	kWh/unit/yr
Fossil Fuel Baseload Index	5.6 A	5.2 A	↓ -8%	-0.40	mmBTU/bdrm/yr
Water Index	71.2 B	71.8 B	~	0.60	gal/bdrm/day

Energy Events				
Measure Type	Measure	Implemented On	Cost	Projected Annual Savings
[Appliances] Washing Machines- Install/Upgrade	New W & D	03/23/2012	\$0	\$0
[Lighting] Lighting Controls/Sensors/Timers- Install/Upgrade	adjusting the exterior light timers	05/19/2012	\$0	\$0
[Heating] Other Heating Improvement	Adjusted air-handlers to not run constantly	05/19/2012	\$0	\$0
[Lighting] Other Lighting Improvement	garage retrofit T12 to T8 w occupancy sensor	02/28/2013	\$6,100	\$3,364
[Lighting] Bi-Level Lighting- Install	COOPER LIGHTING #STL25/120V	07/26/2013	\$10,458	\$0

What's in it for me?

1. Maintenance/Facilities Staff

- a) Identifying leaks
- b) Improve O&M

2. Accounting Staff

- a) Energy procurement
- b) Catch bill errors


3. Resident Services

- a) Answering tenant questions

4. CEO/Exec. Director/ Board

- a) Drive long-term goals
- b) Compare to industry norms





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Energy Conservation

Owners, residents, and the federal government are wasting huge sums on building energy and water bills in affordable multifamily housing. HUD alone spends more than \$6.8 billion a year on those costs in public and assisted housing, and the bills are borne directly by owners and residents in the 16 or so million unassisted apartments, many of which are affordable without subsidy. Meanwhile, 21% of carbon emissions are attributable to residential use.

SAHF has taken on the challenge of developing a model to reduce utility consumption in affordable rental properties. On the principle that owners cannot manage what they do not know and that policy makers cannot set sensible policy without data, SAHF first concentrated its efforts on sophisticated data collection and analysis.

Working with its contractor Bright Power/ EnergyScoreCards, SAHF built a database of 700 properties nationally, to which another 500 have been added, a database that to our knowledge is the deepest in the field. Sophisticated analysis of the data it contains enables SAHF and its members to benchmark properties against one another, target those most likely to benefit from retrofits and the measures most likely to make a difference, track savings achieved by retrofits, and enable owners to manage utility consumption on an ongoing basis. SAHF continues to build that database with properties of state housing finance agencies and other owners, but is also actively making use of funds provided under the American Recovery and Reinvestment Act of 2009. Most importantly, SAHF is putting in place a follow-on program designed to enable energy conservation retrofits to get to scale by relying principally not on grant funds but on borrowed funds to be repaid from savings on utility bills.

SAHF is grateful for the critical financial and strategic support for this work that it is receiving from the John D. and Catherine T. MacArthur Foundation, The Kresge Foundation, The New York Community Trust, and the Doris Duke Charitable Foundation.

- ▼ MULTIFAMILY ENERGY AND WATER MANAGEMENT TOOLKIT
- ▶ DOE WEATHERIZATION INNOVATION PILOT PROGRAM
- ▶ POLICY PROPOSALS FOR FINANCING IN THE POST ARRA WORLD

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Bonus myth: Solar doesn't work on multifamily buildings.



Don't even try it.

Multifamily myth-busting



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