

New Information For Low Cost, Quick and Deep Energy Reductions in Your Buildings

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Case Studies



Nothing would be what it is, because everything would be what it isn't.

Alice in Wonderland

Case Study 1

- 1960's apartment building in Toronto
- Replaced single pane windows with triple glazed
- Result? **Gas consumption went up 15%**

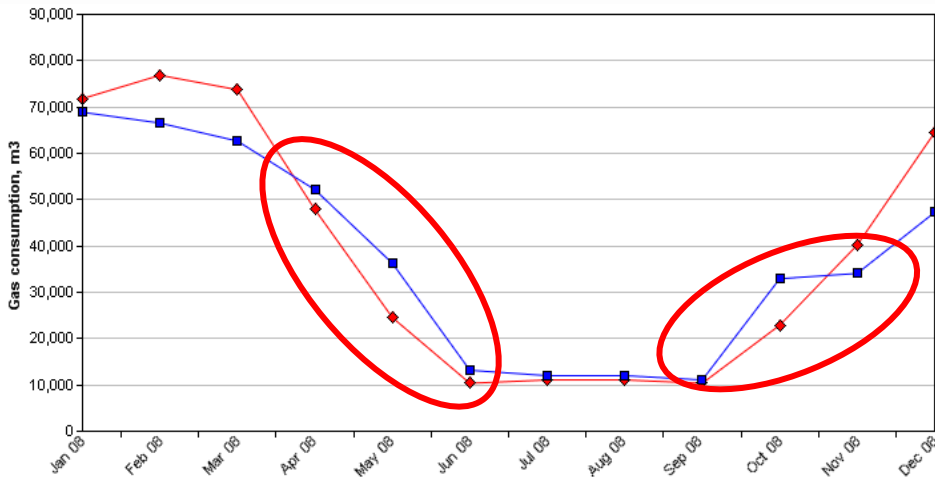
Why?

- Better envelope reduced load => boiler became oversized
- Boiler kept cycling on/off resulting in significant dynamic losses => much lower efficiency

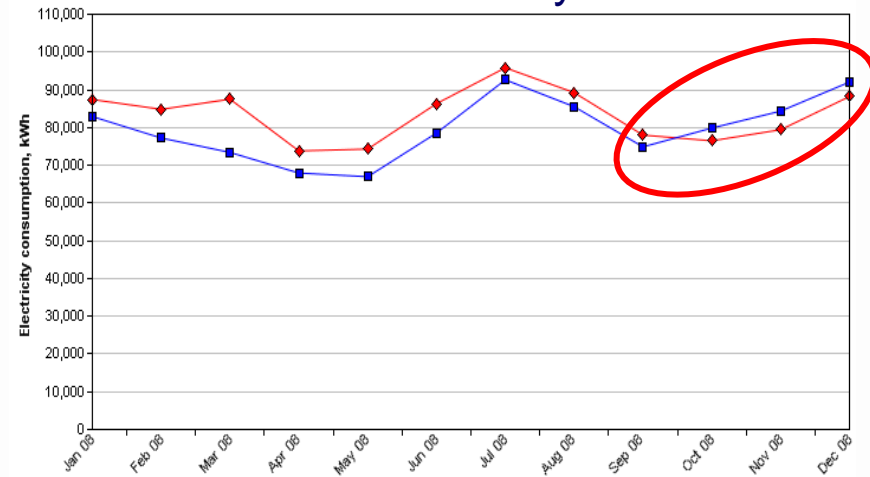
Case Study 2

Monthly review of utility costs can uncover operational savings opportunities

Gas



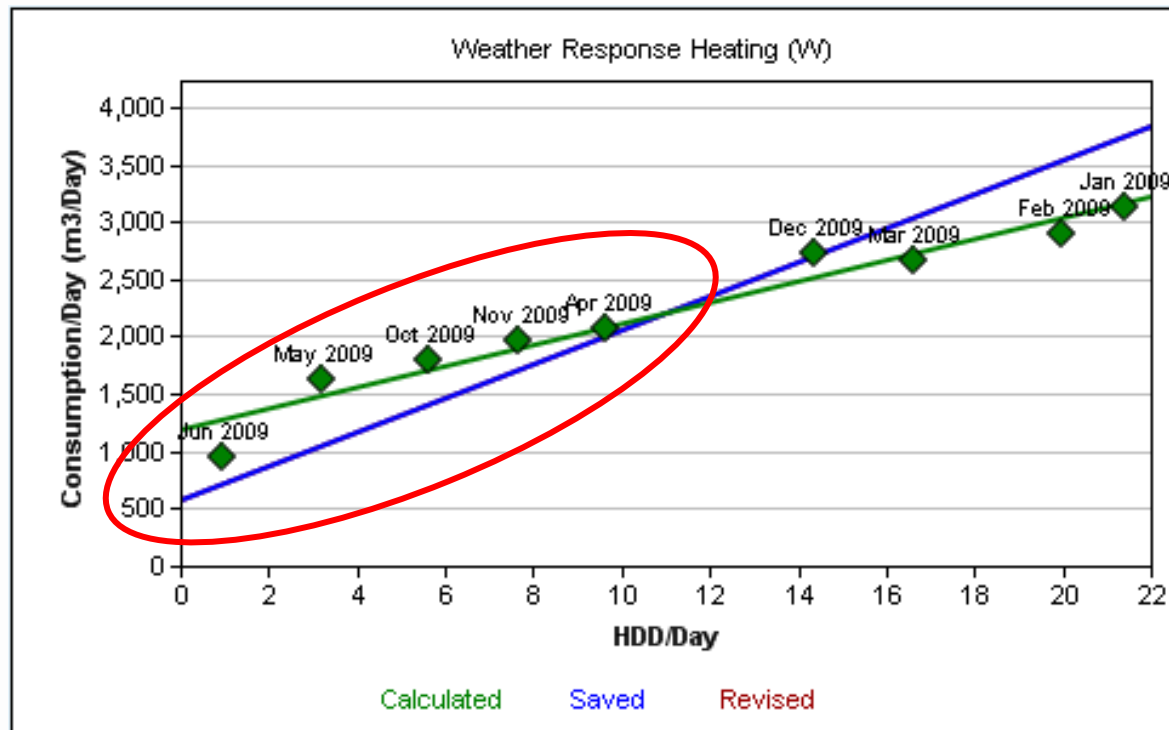
Electricity



Spring/fall shoulder seasons indicate inconsistent control of central plant

Case Study 3

Weather response review of utility bills can uncover operational savings opportunities



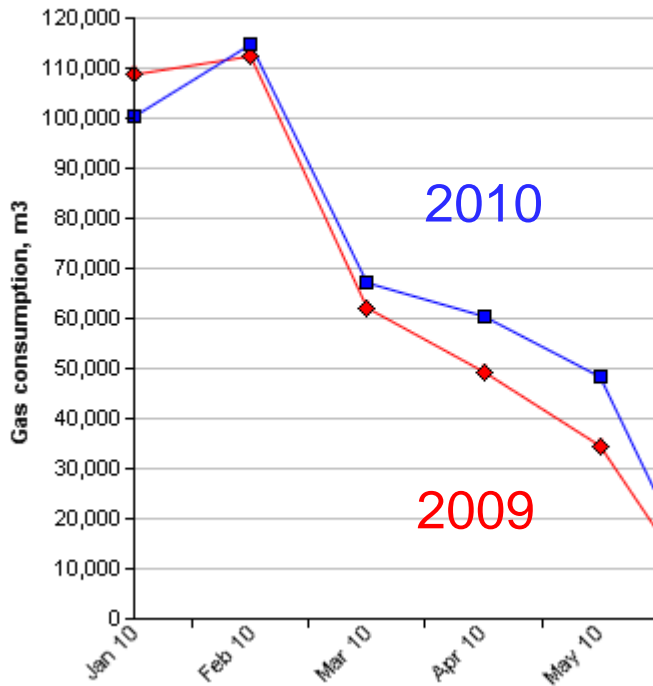
10% natural gas savings potential (\$27,000 annually)

High spring/fall natural gas bills indicate inconsistent control of central heating system

Case Study 3

2010 gas consumption is getting worse!

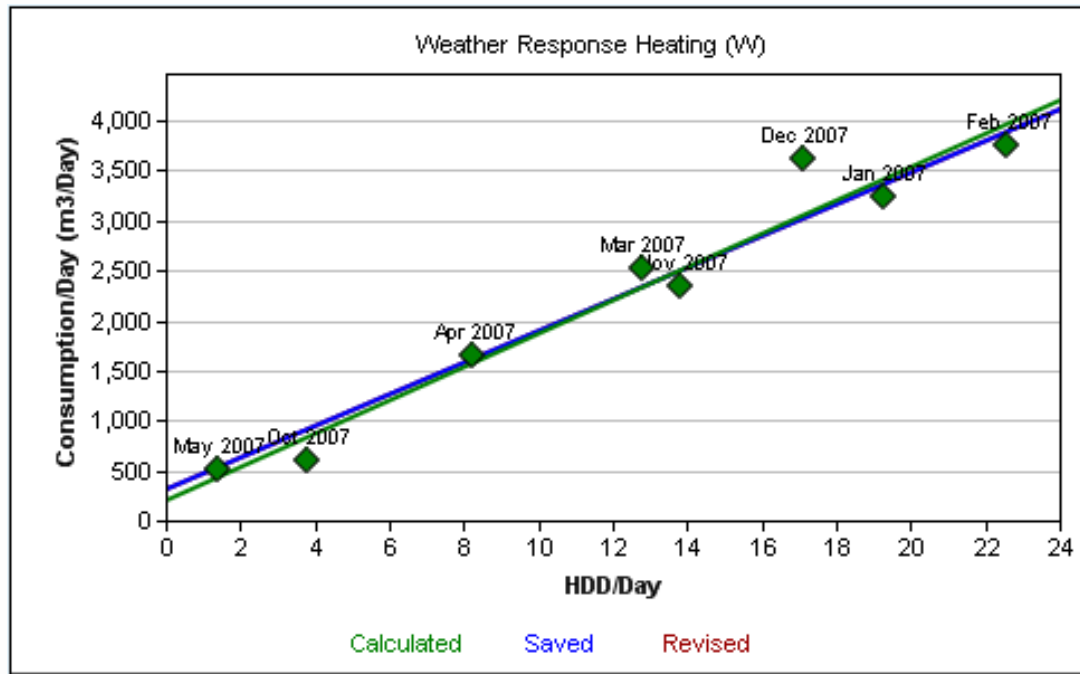
Gas consumption: Selected period vs. Normalized baseline



April & May average cost increase - \$6,000 per month (\$20 per unit)

Case Study 4

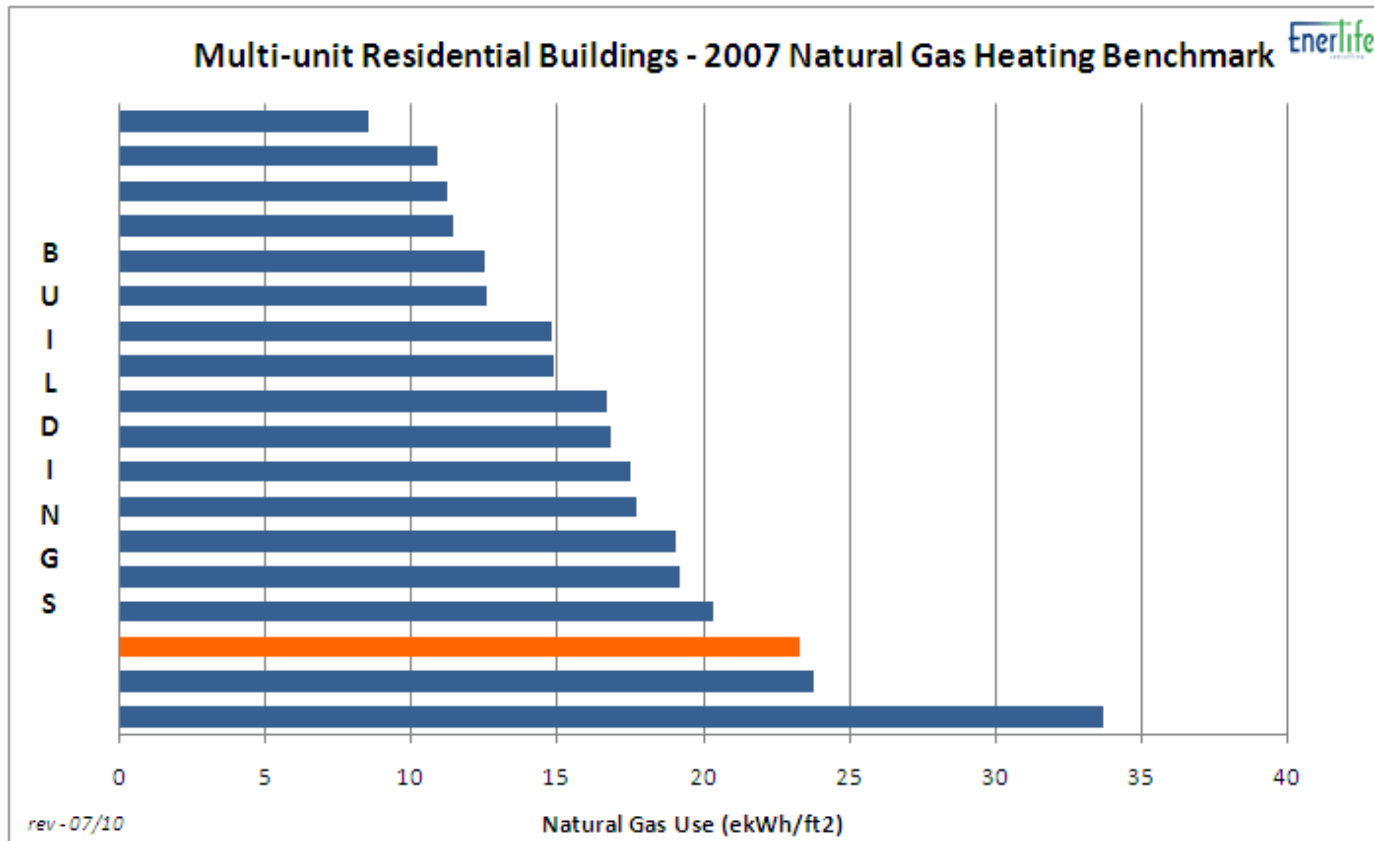
Weather response & benchmarking review of utility bills can determine savings opportunities



Bills in close proximity to weather regression line

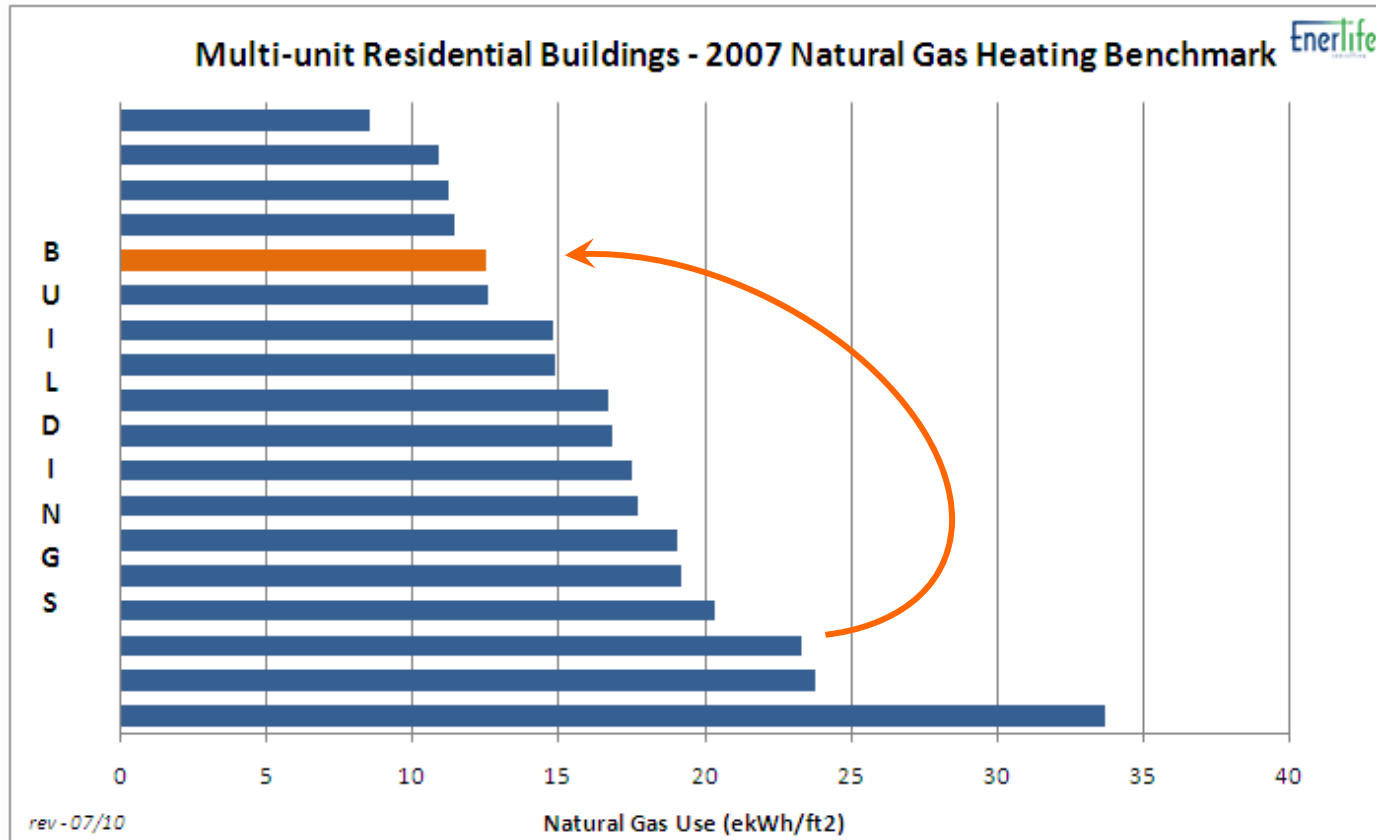
Case Study 4

Benchmarking natural gas heating consumption indicates high potential for savings



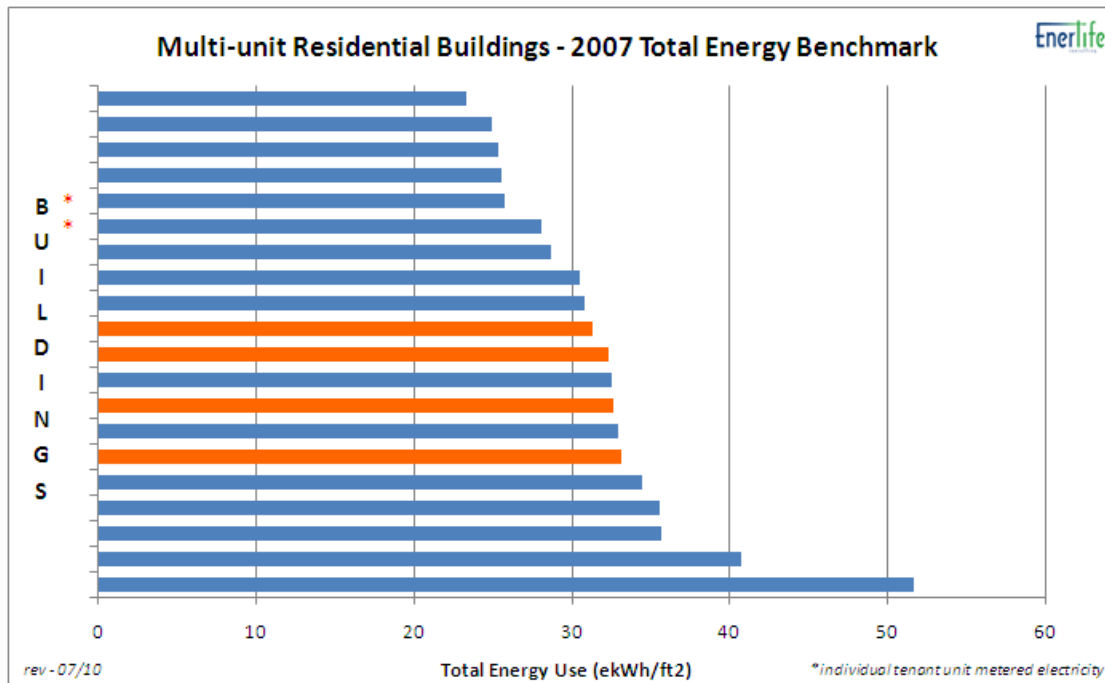
Case Study 4

Reaching top quartile would reduce heating energy by 46% = \$73,000 (\$500 per unit)

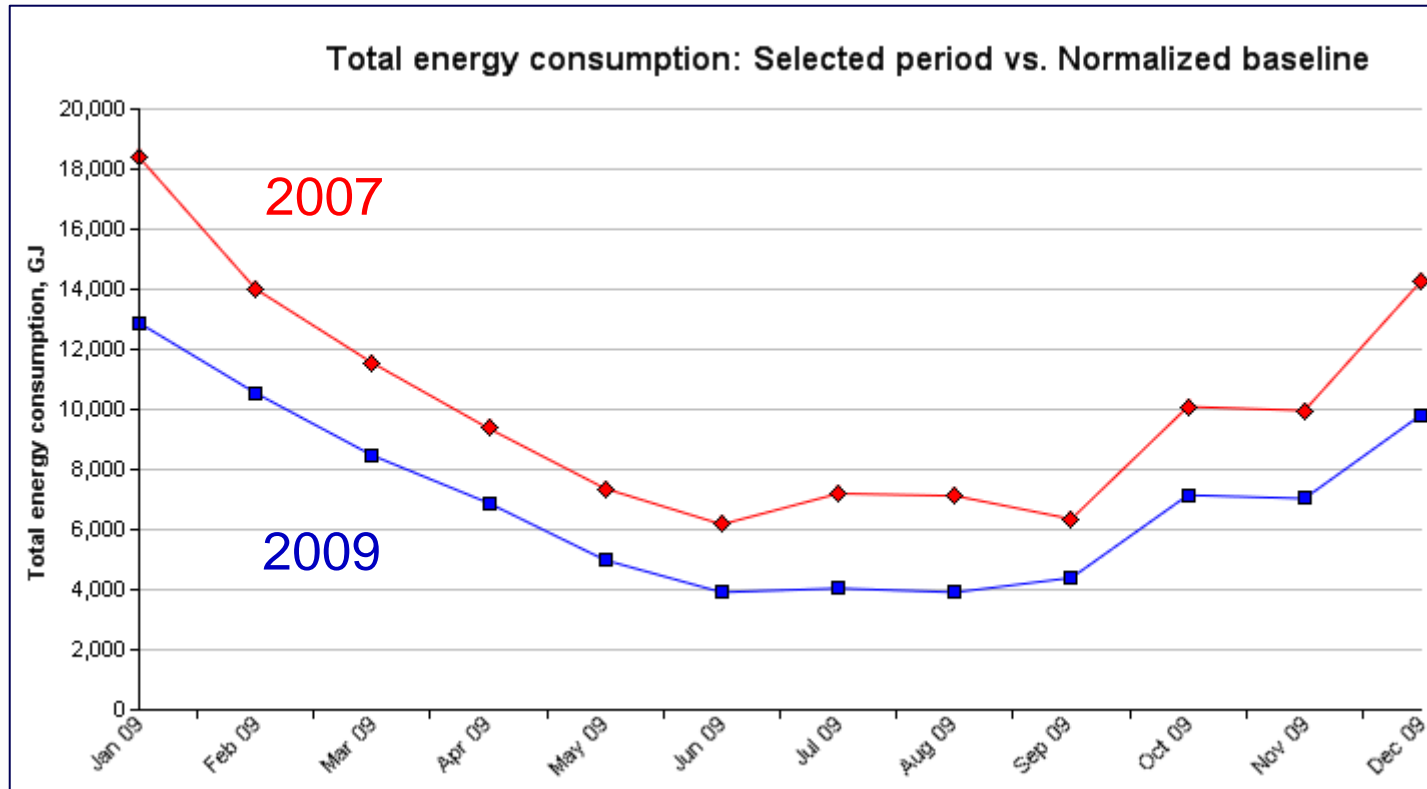


Case Study 5

- Four x 275 units apartment buildings complex
- Extensive retrofit work 2008/2009
 - Complete building automation system
 - Lighting controls
 - Boiler, pump retrofits



Case Study 5



\$385,000 (24%) annual savings across 4 buildings
= nearly \$100,000 per building

Case Study 5

2007

Indicators	2007 (ekWh/ft2)	Target (ekWh/ft2)	Target Savings %	Cost Savings Potential
Total Electricity Consumption	9.5	5.8	38.9%	\$91,202.89
Base Electricity Consumption	8.7	5.5	36.8%	
Electric Heating	0.0	0.2	0.0%	
Electric Cooling	0.8	0.1	87.5%	
Total Gas Consumption	23.2	12.8	44.8%	\$106,805.06
Base Gas Consumption	10.5	5.0	52.4%	
Heating Gas Consumption	12.7	7.8	38.6%	
Total Energy:	32.7	18.6	43.1%	\$198,007.95

Total energy savings: \$96,000 (23%)

2009

Indicators	2009 (ekWh/ft2)	Target (ekWh/ft2)	Target Savings %	Cost Savings Potential
Total Electricity Consumption	8.7	5.8	33.3%	\$63,894.06
Base Electricity Consumption	8.4	5.5	34.5%	
Electric Heating	0.0	0.2	0.0%	
Electric Cooling	0.3	0.1	66.7%	
Total Gas Consumption	16.4	12.8	22.0%	\$37,807.48
Base Gas Consumption	8.3	5.0	39.8%	
Heating Gas Consumption	8.1	7.8	3.7%	
Total Energy:	25.1	18.6	25.9%	\$101,701.54

More savings potential in base electricity and gas!

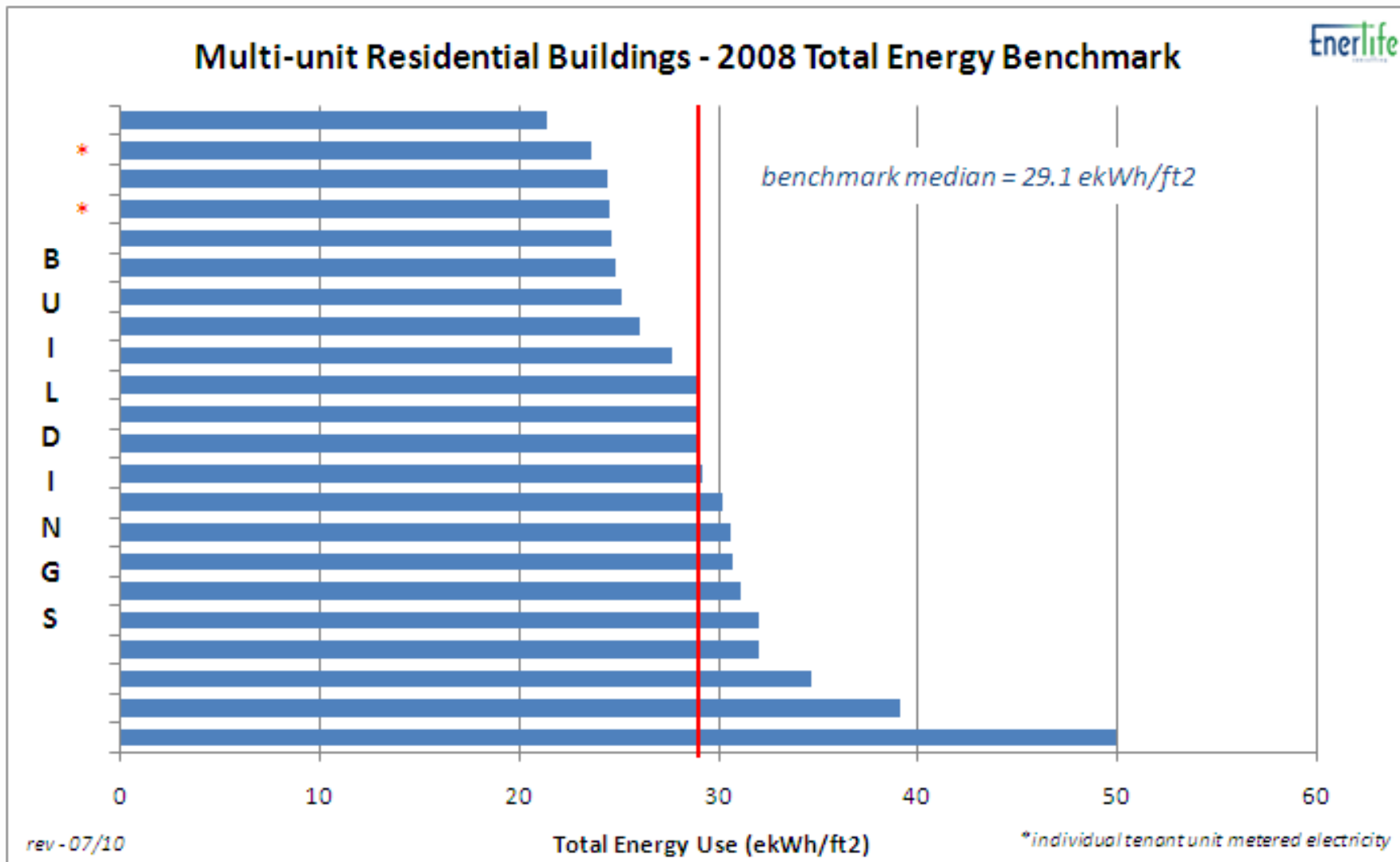


It's 2010.

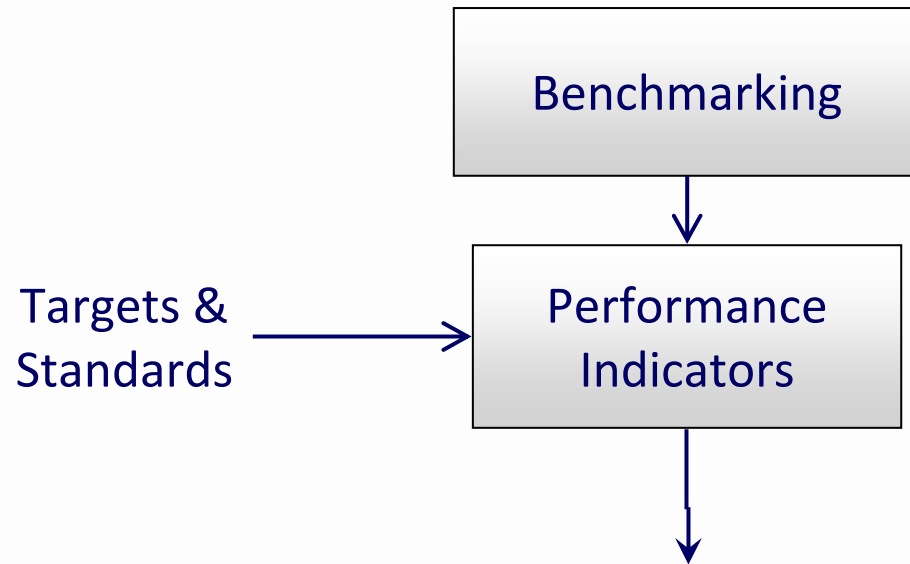
Do you know where your building is?

Benchmarking is the beginning of knowing.

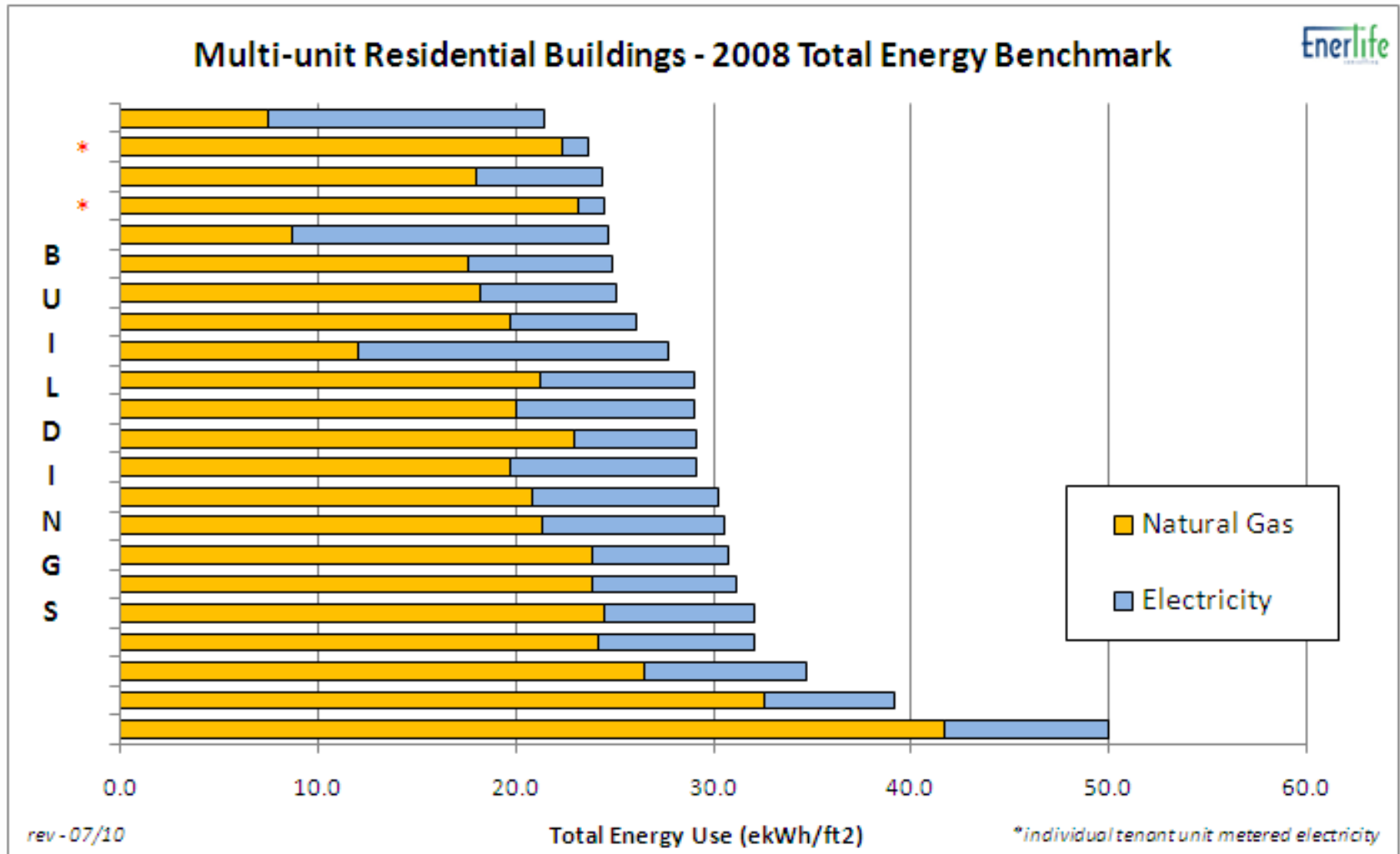
MURB Performance Database



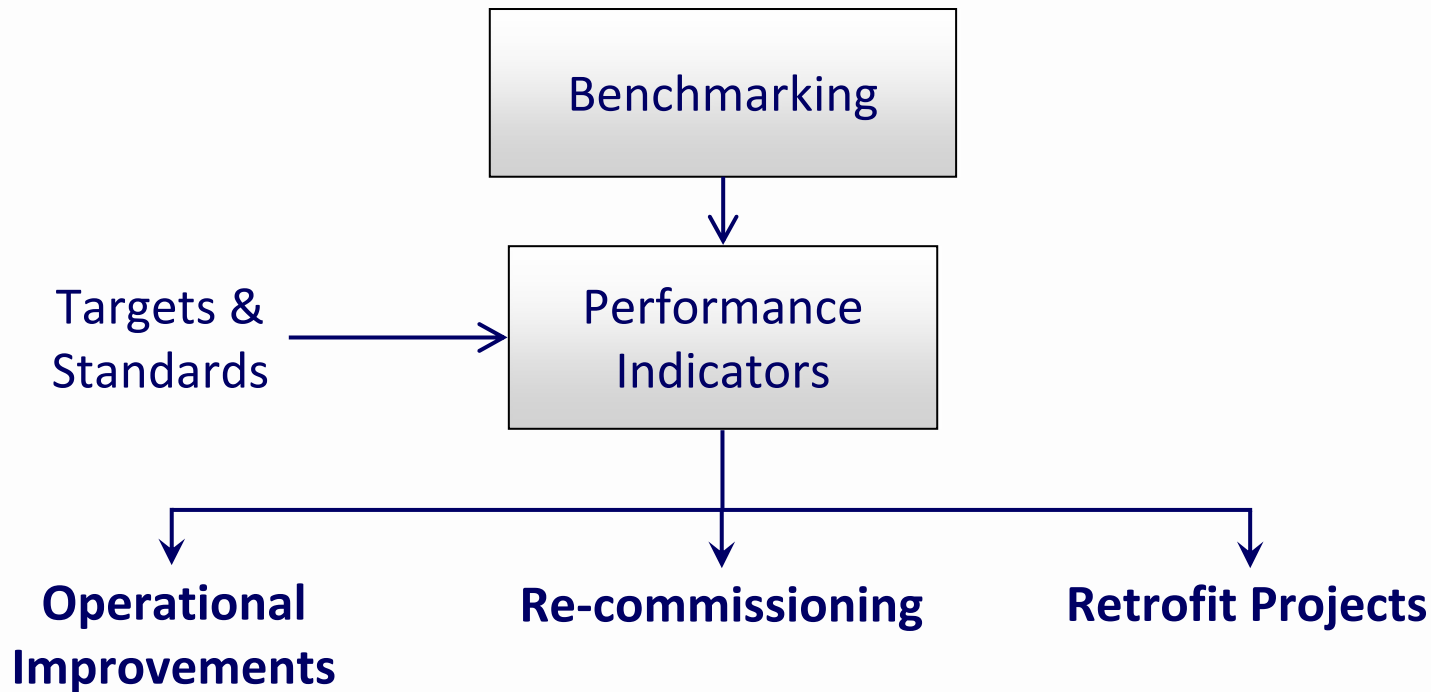
From Benchmarking to Indicators



Benchmarking – Energy Type



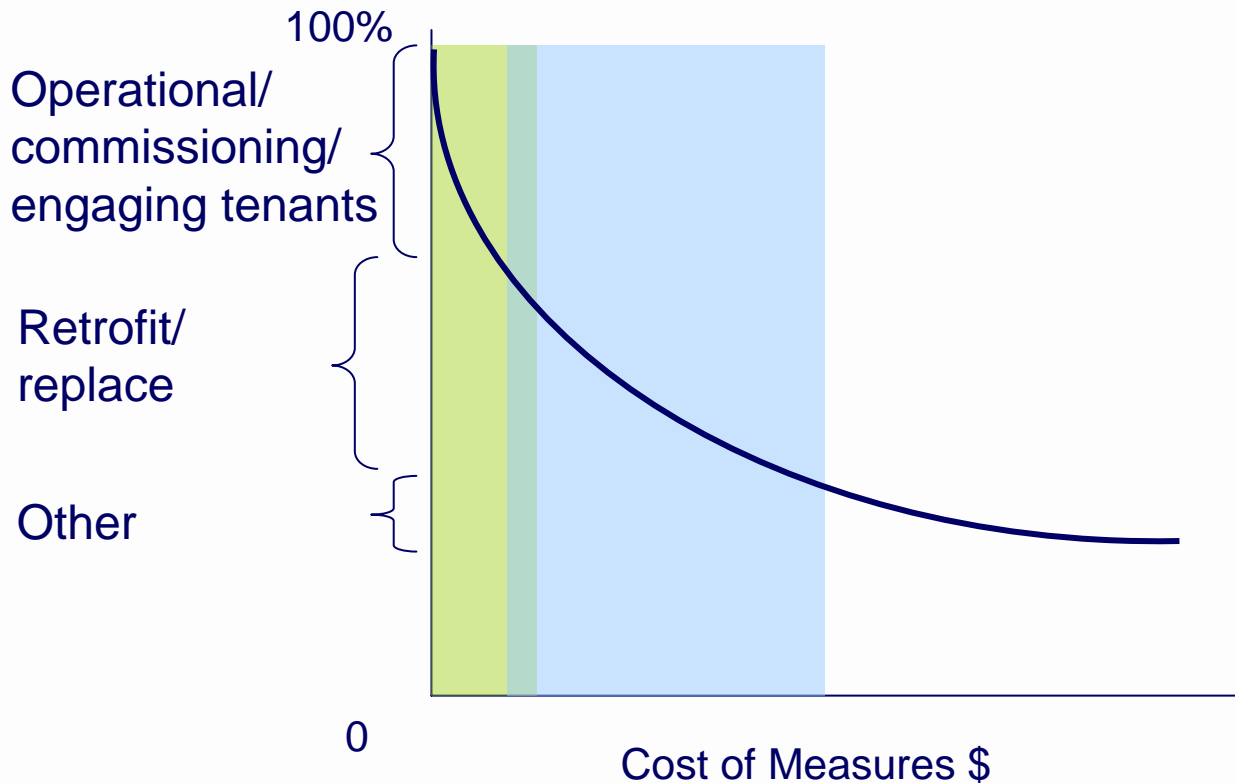
From Indicators to Right Action



Indicators point to priority areas, size of savings and next steps

Cost and Priority of Conservation Action

Energy
Consumption



The easiest, quickest, most cost-effective savings are in operations

The Three Areas for High Performance

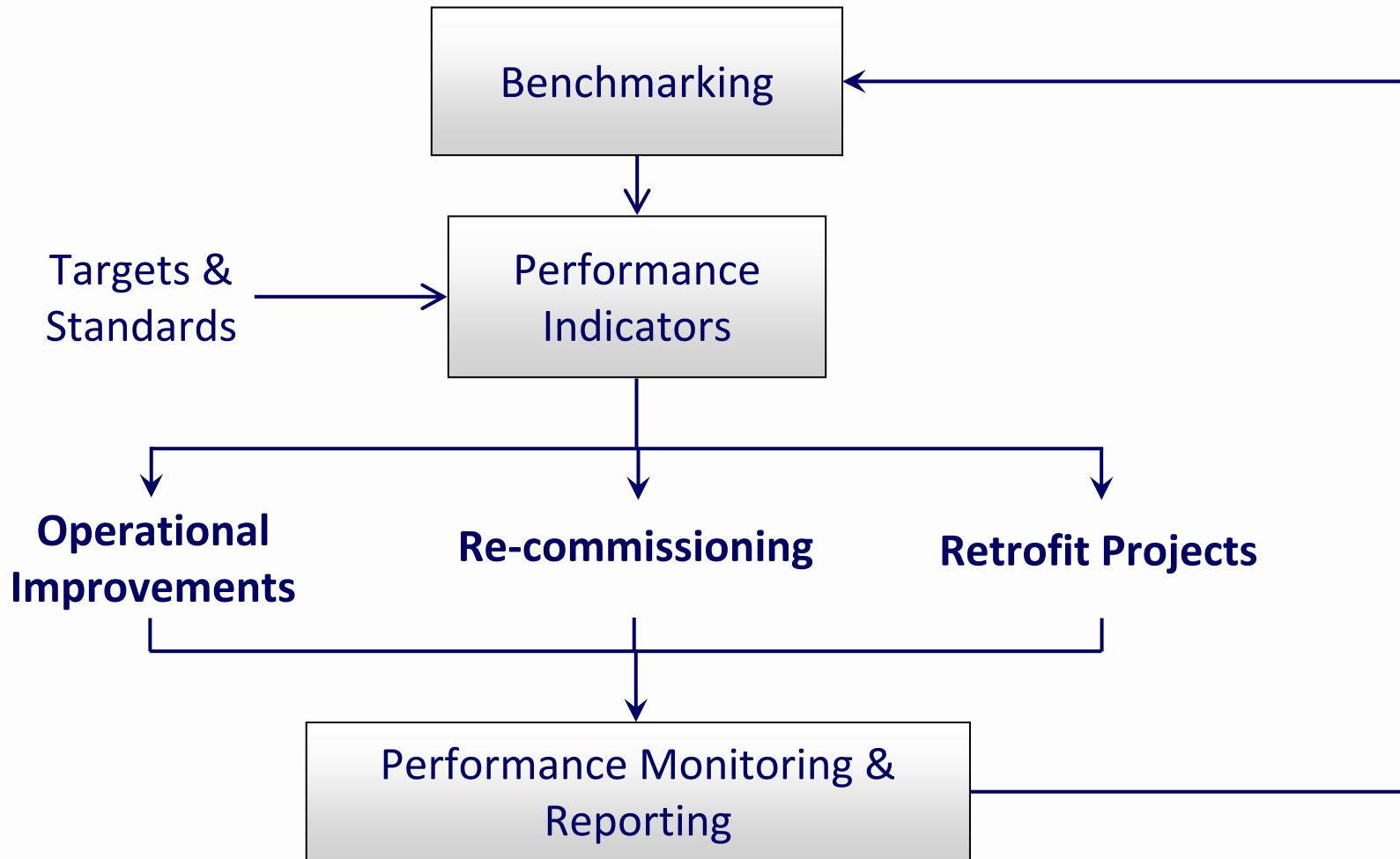
- training in operational best practice
- individual targets
- monthly savings reporting



- tenant engagement and recognition

- performance standards for new buildings and major renovations

Monitor Progress and See Results



Greening Multi-res Initiative

- Access to online MURB performance system and database for 12 months
 - Benchmark energy, water and emissions performance
 - Monitor the actual energy, water and emissions savings of your buildings over time
- Energy Assessment Report
 - Identifies indicators of good and poor areas of performance
 - Lists specific areas for focused attention
 - Can set targets and see how much savings can be obtained

Supporting Organizations

- City of Toronto - Tower Renewal
- TAF
- GTAA, FRPO
- Enbridge
- Canada Green Building Council



Greening Multi-res Initiative

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