Whole Building Pay for Performance (P4P): Unlocking Ontario's Untapped Commercial Sector Gas Conservation Potential

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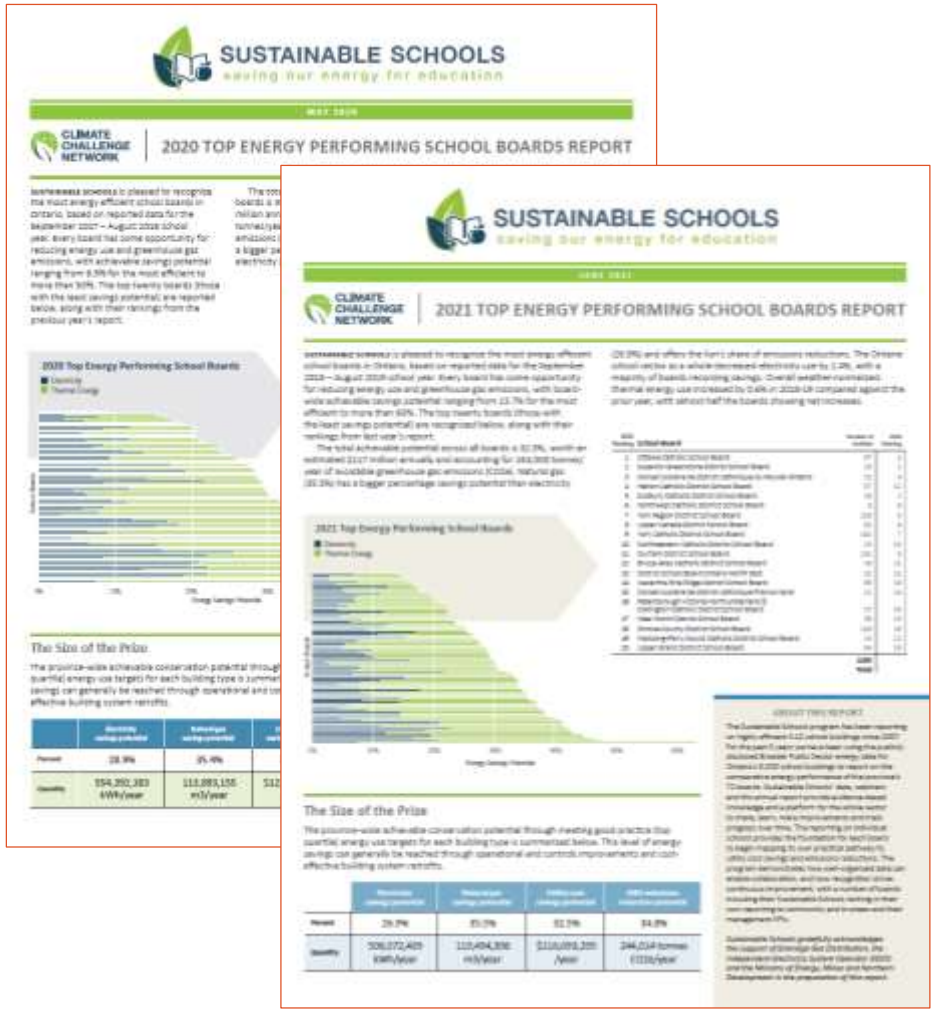
Building Towards a Sustainable Future

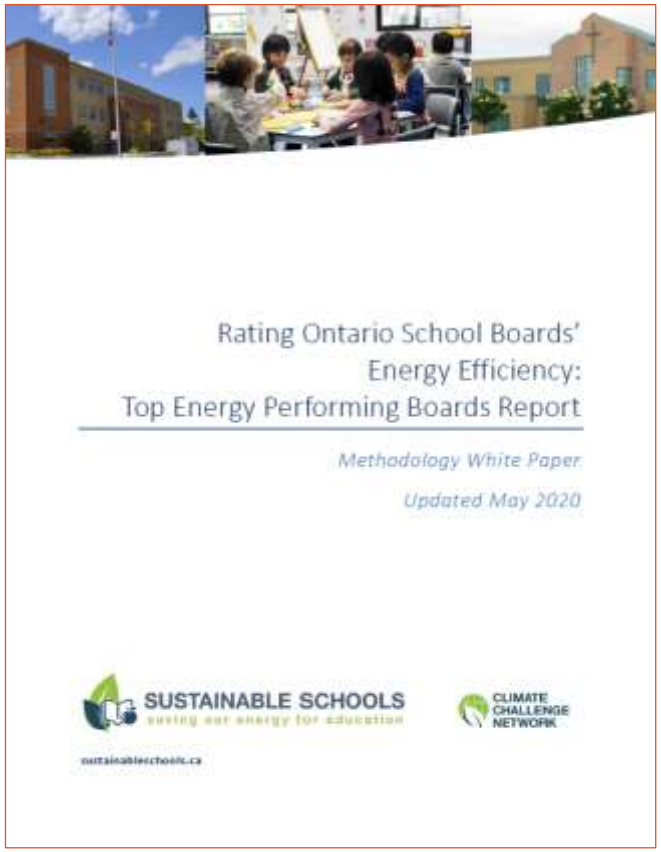
The Power of P4P – Performance-Based Conservation

Rapid growth in knowledge derived from metered energy data is transforming the understanding of the magnitude and nature of the energy conservation potential in commercial, institutional and multi-residential buildings:

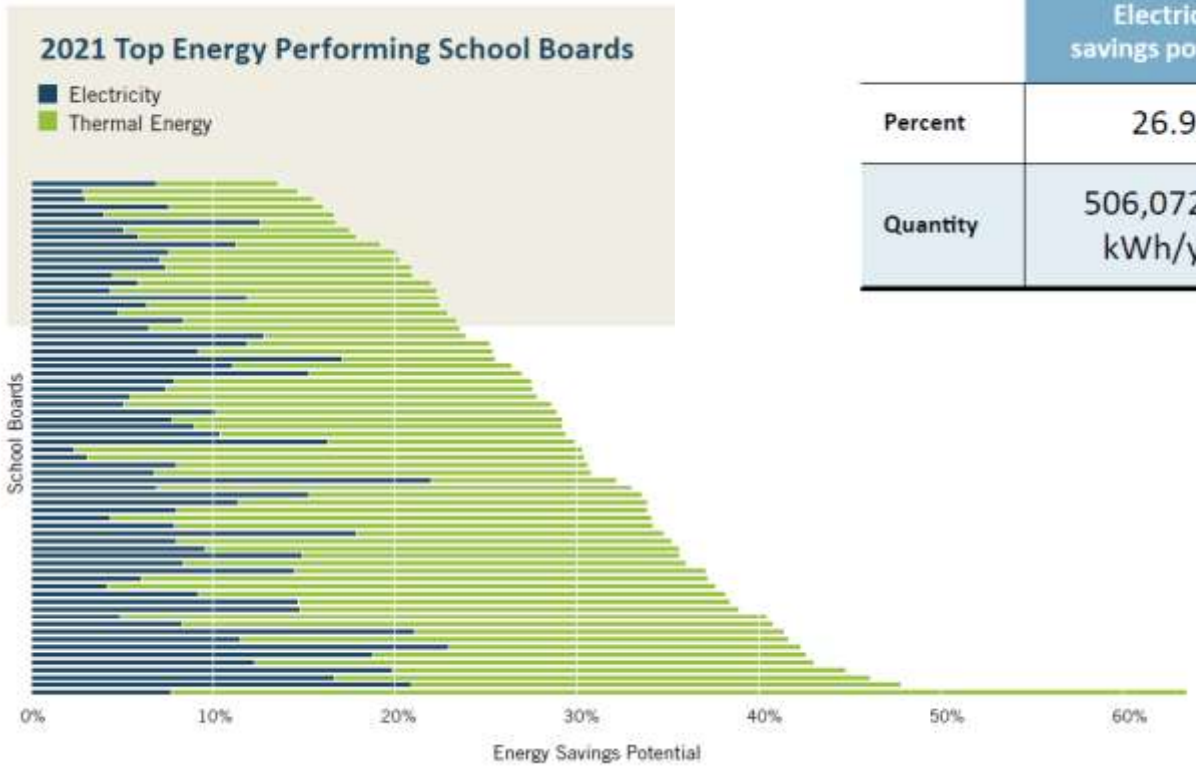
- Achievable savings are far greater than traditional APS studies indicate
- The biggest savings are in operational changes and are site-specific
- Savings must be measured at the meter to have confidence that progress is being made
- Annual province-wide targets and reporting of savings results are needed to drive continuous progress towards emissions reduction goals

Ranking Ontario's School Boards – Sustainable Schools





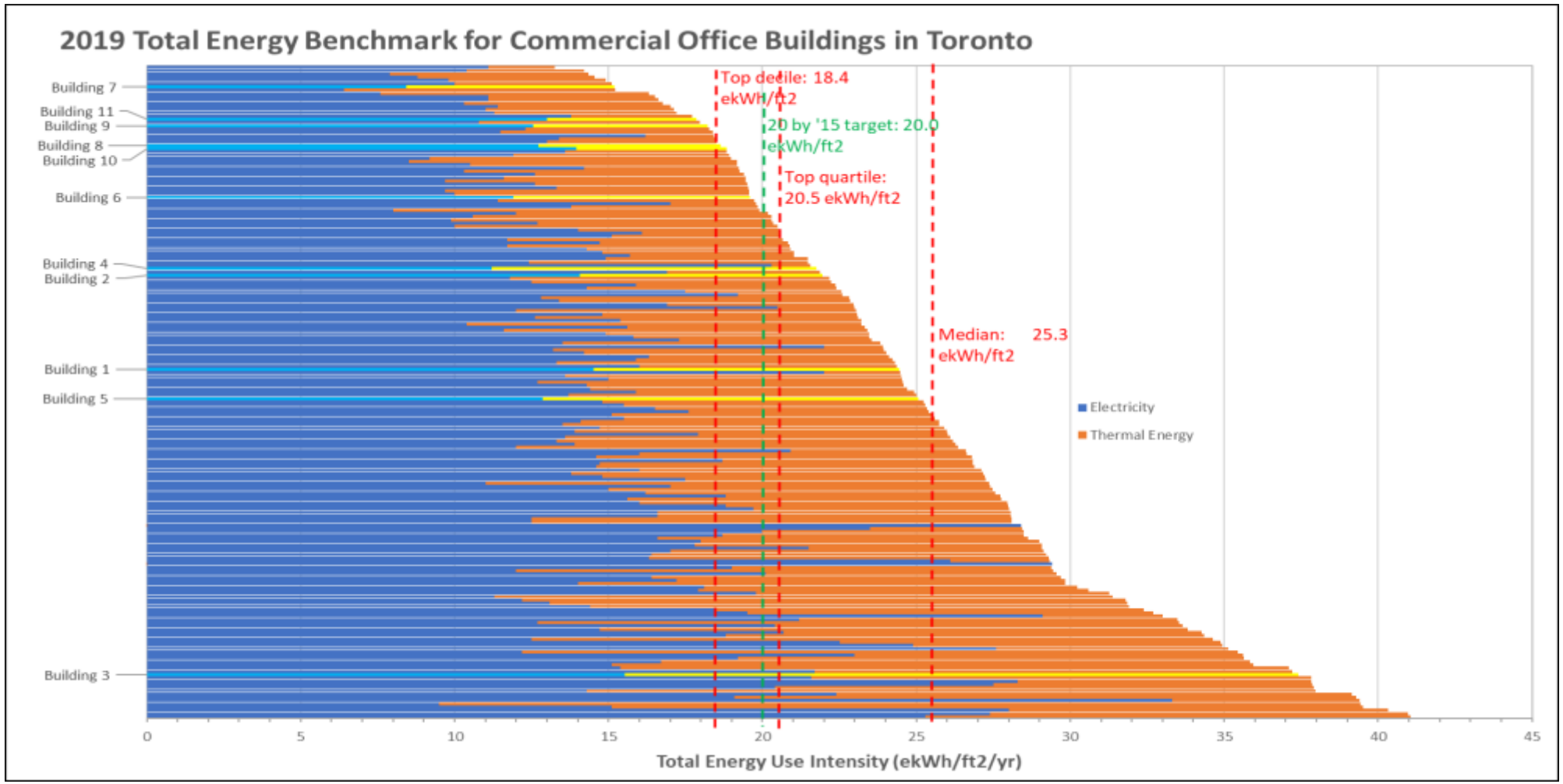
Target Achievable Savings Potential



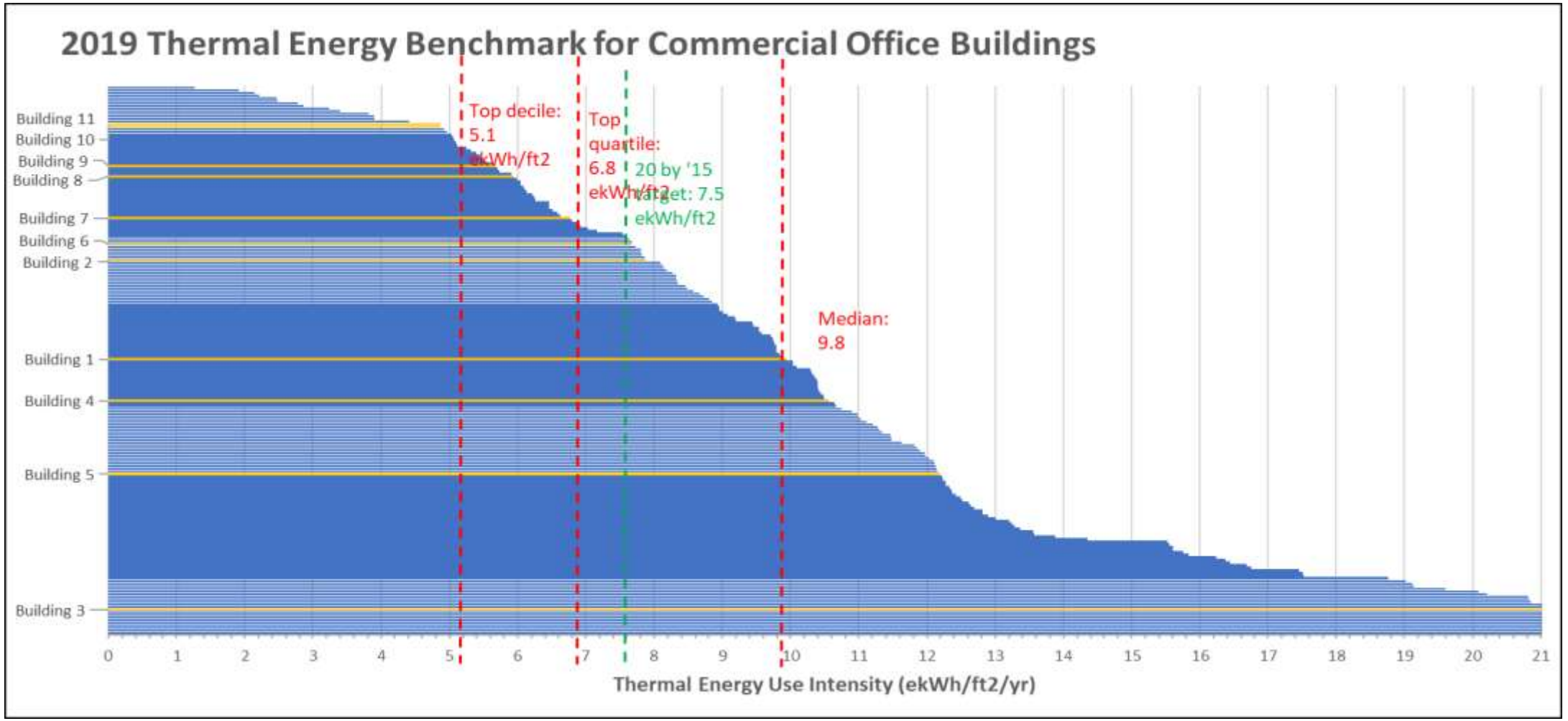
	Electricity savings potential	Natural gas savings potential	Utility cost savings potential	GHG emissions reduction potential
Percent	26.9%	35.5%	32.5%	34.8%
Quantity	506,072,409 kWh/year	119,494,398 m3/year	$116,693,295 /year	244,014 tonnes CO2e/year

Source: 2021 Top Energy Performing School Boards Report (sustainableschools.ca)

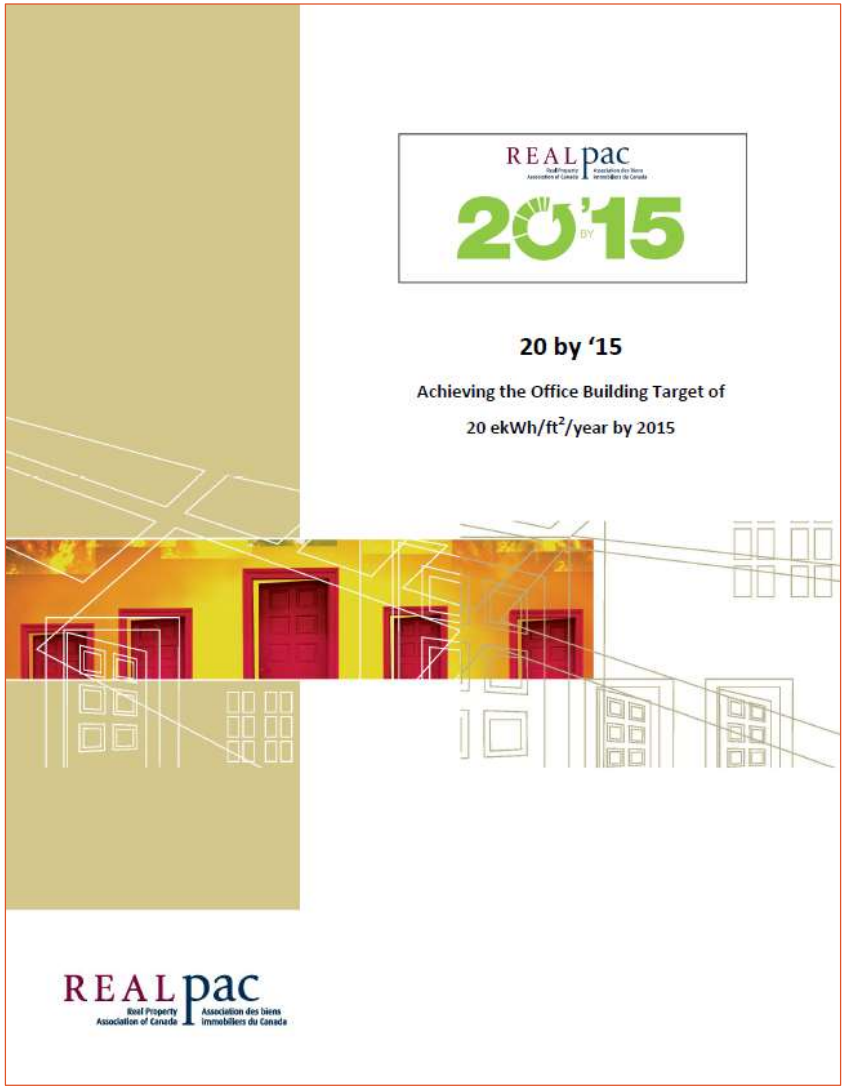
Commercial Office Benchmarking (EWRB data)



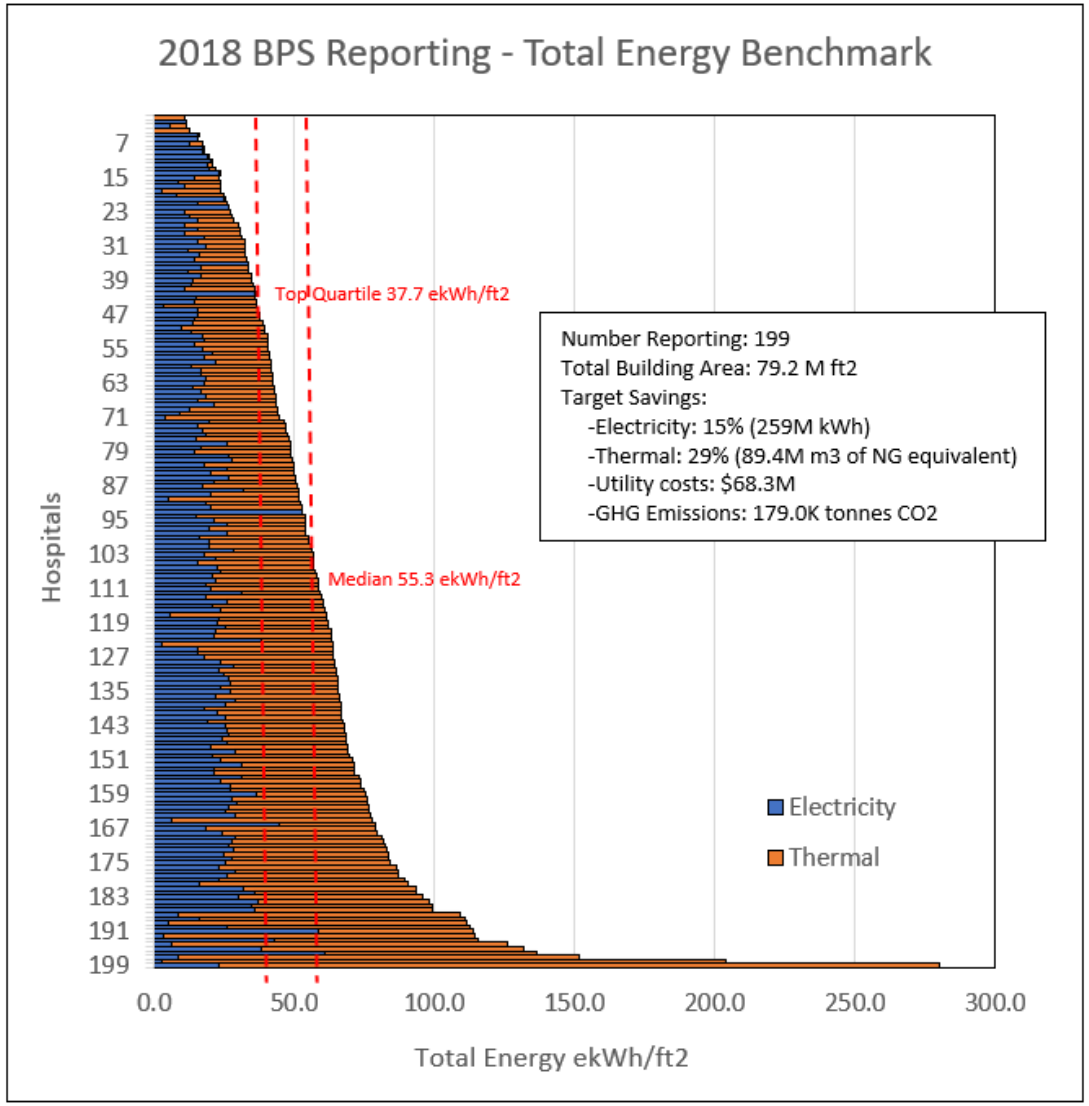
TEDI – The Low Carbon Driver



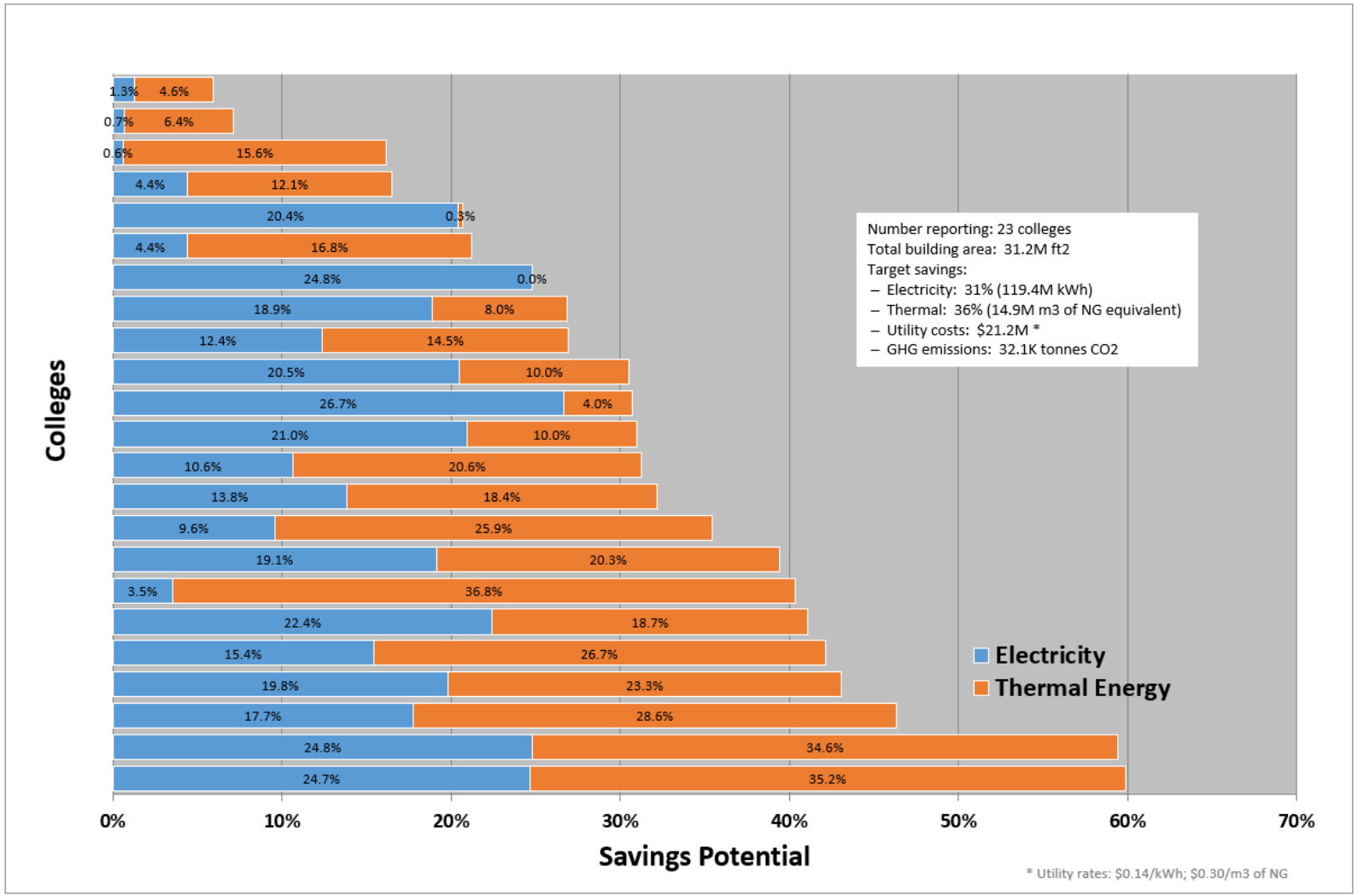
Rational Energy Targets – REALPAC 20 by ‘15



Ontario Hospitals – Target Savings Potential (BPS data)



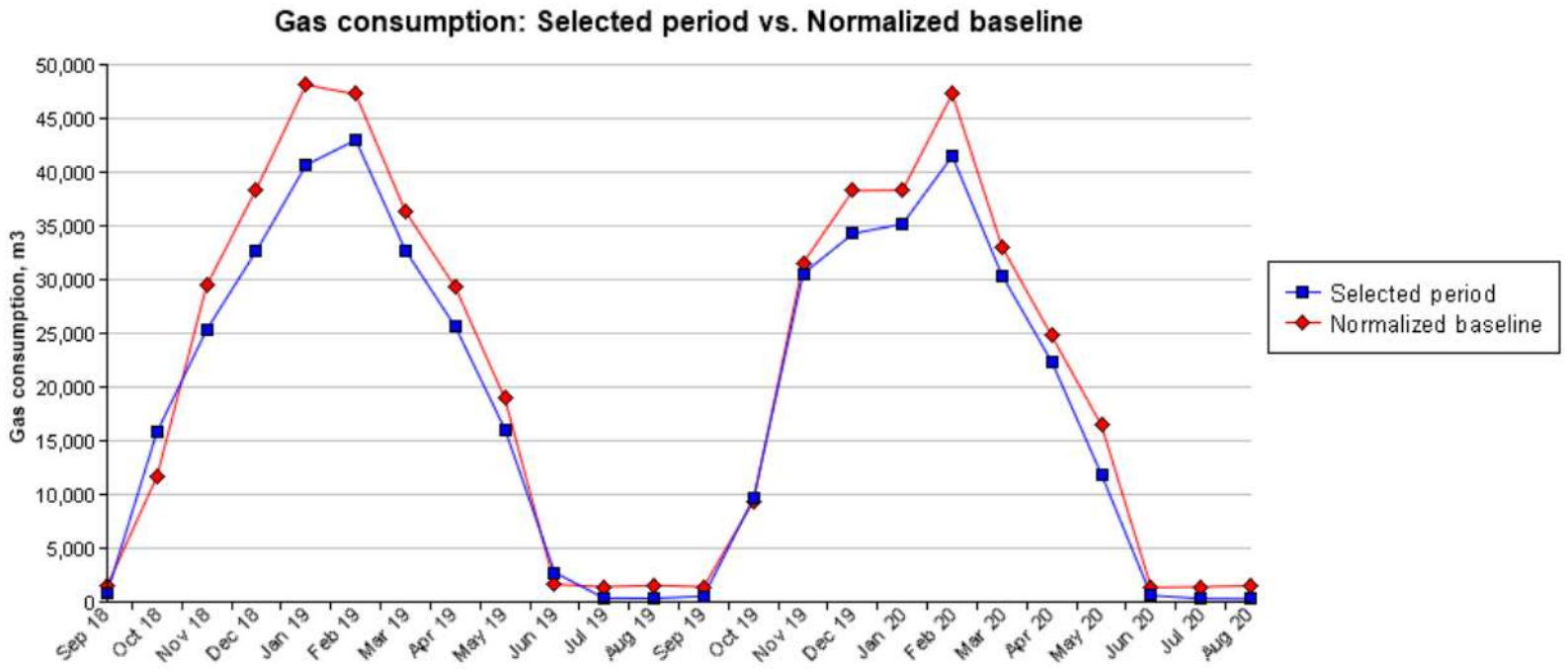
Ontario Colleges – Target Savings Potential (BPS data)



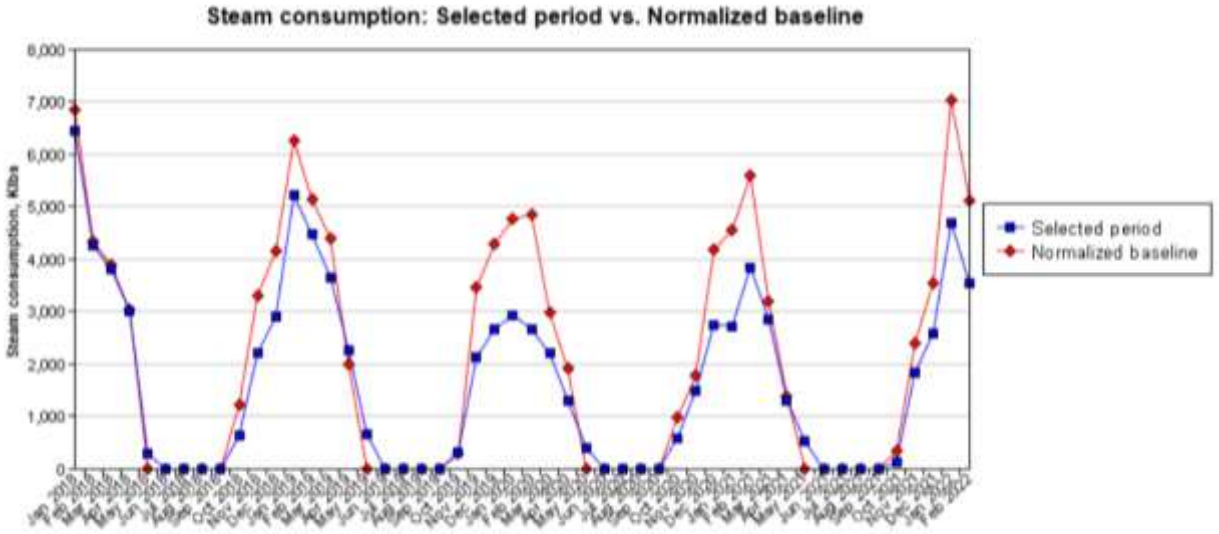
Using Benchmarking to Determine Achievable Savings Potential

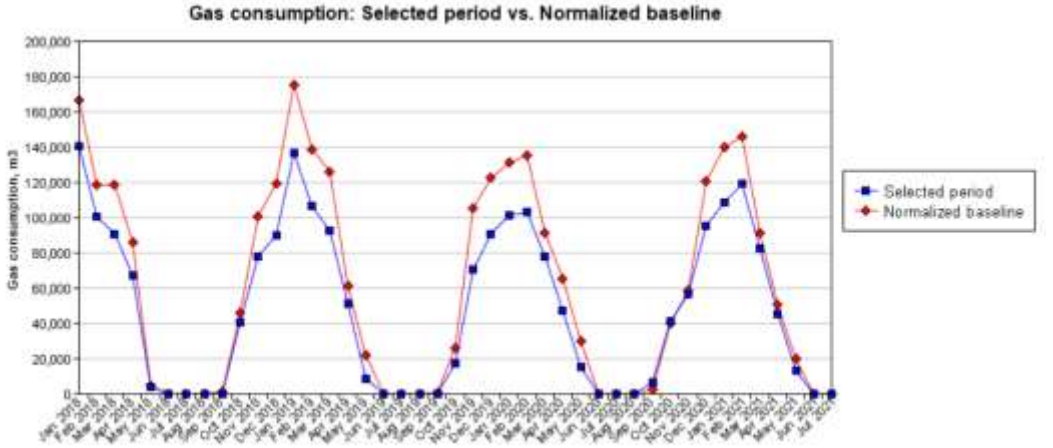
- Real data readily available from Ontario's BPS and EWRB reporting regulations
- Top-quartile targets documented for most building types and updated each year
  - Weather normalization protocol is straightforward
  - Adjustments made for material HVAC system, operational and envelope variances
- Conventional (TRM, modeling) calculations underestimate the magnitude of operational savings
- Annual reporting enables tracking of actual province-wide progress towards reduction targets
- Determining savings potential by building provides a foundation for program design

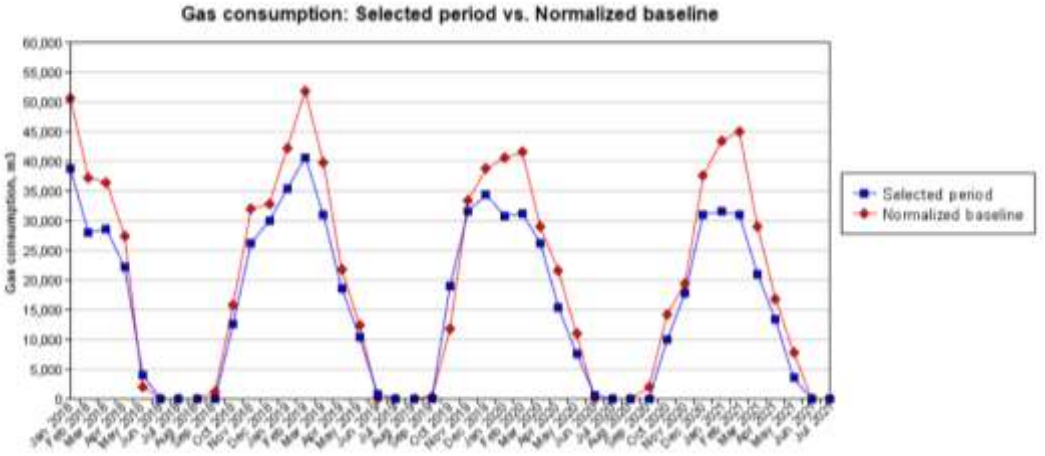
Measuring Actual Savings at the Meter: School



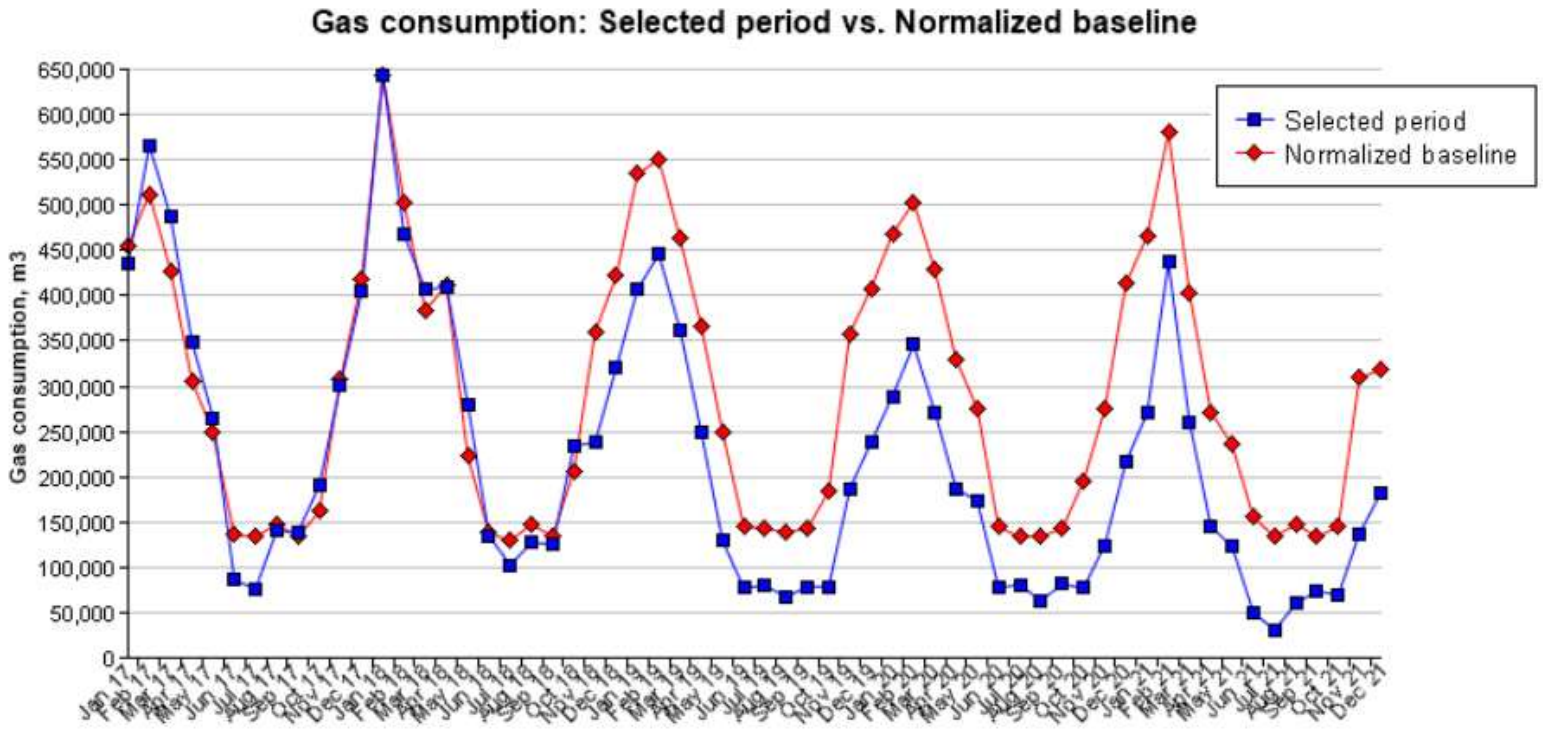
Measuring Actual Savings at the Meter: Office Buildings







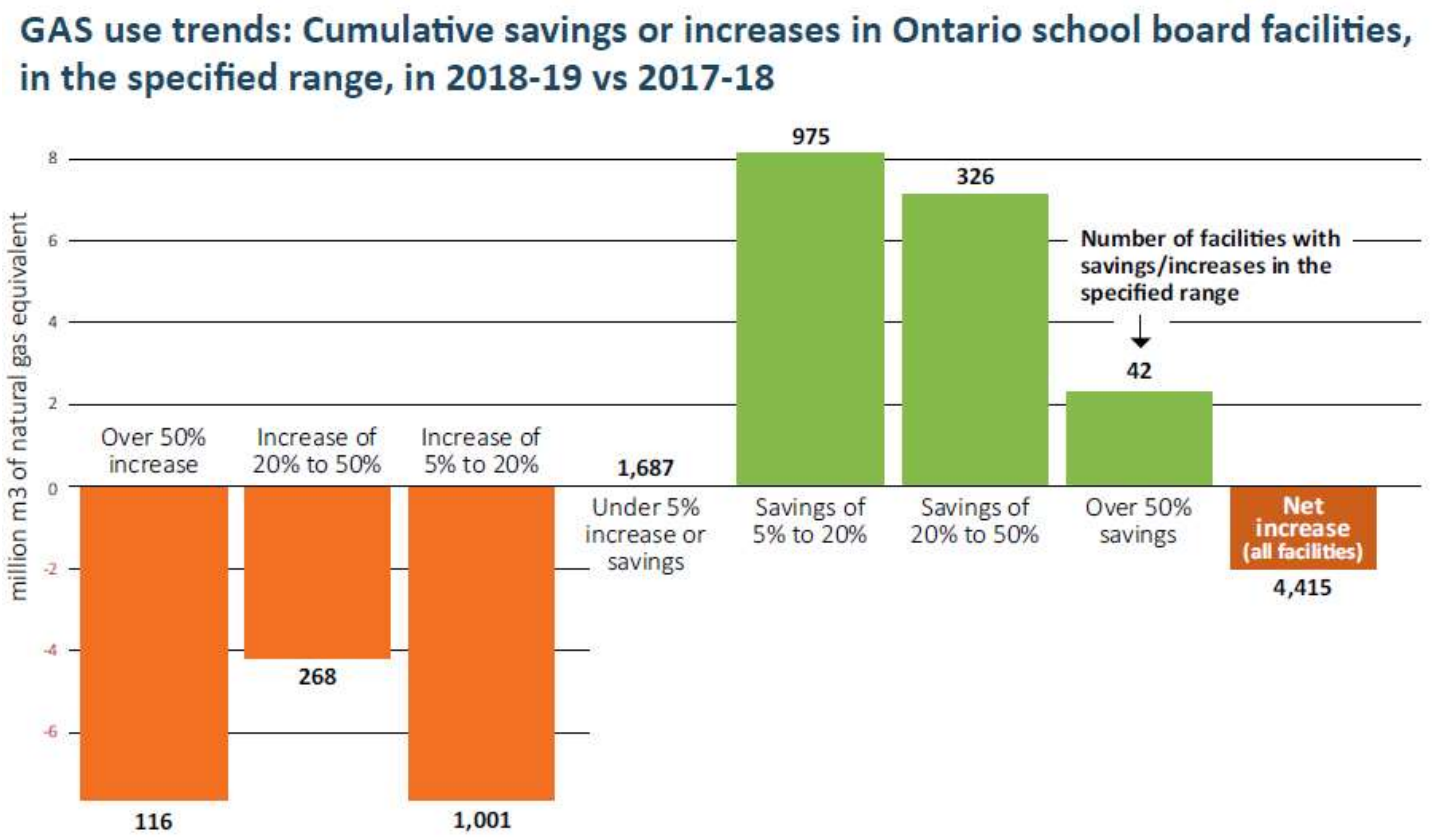
Measuring Actual Savings at the Meter: Hospital



The Nature of Actual Savings

- Variances between higher and lower target and actual savings show little correlation with building age, envelope or technology
- The predominant differences are found in:
  - Building system operations (scheduling)
  - Equipment maintenance (control valves, dampers, boilers)
  - Building automation and controls (setpoints and resets)
  - Air and water flow imbalances (zoning and testing)

Gas Use Trends in Schools



Source: 2021 Top Energy Performing School Boards Report (sustainableschools.ca)

The Counterfactual Argument

- The biggest gas savings can only be identified and quantified through empirical (metered consumption) data
  - Weather and material operational variance adjustments are readily made
- Uncertainty about baseline variations is small compared to uncertainty around assumptions and calculations
  - Site-specific issues cannot be generalized or assumed
- Modeling and engineering calculations (with targeted measurement and testing) should still be used selectively to help understand the savings, refine the TRM and inform program design and improvement

Pay For Performance (P4P): Design Principles

- Responding to customer demand for deeper savings, less administrative burden
- Focus on high savings potential portfolios and buildings
  - Target 20% savings
- Whole building performance with savings measured at the meter
  - Drive innovation, site-specific solutions
- Multiple year engagement with technical support for persistence of savings, low free ridership

Pay For Performance (P4P) Draft Metrics: K-12 Schools

Building Type	Total Gas Savings During Program (m3)	Total P4P Lifetime Gas Savings (m3)	Total Incentive Cost ($)	Total Administrative Cost ($)	Total Technical Cost ($)	Total Participant Cost ($)	Total Program Costs ($)	Total Cost of Savings ($/m3)	TRC-Plus Ratio
Schools (K-12)	23,898,880	119,494,398	8,364,608	1,194,944	1,194,944	4,596,421	15,350,917	0.13	2.50

Pay For Performance (P4P) Expansion to Other Building Types

Building Type	Total Gas Savings Potential (m
Schools (K-12)	119,494,398
Commercial	407,827,000
Hospitals	89,357,604
Multi-Residential	384,462,560
Colleges	14,900,000
Total	**1,016,041,562**

Working Together

- Integration with the IESO's EPP
- Community Partnerships with:
  - BOMA's Race to Reduce
  - City of Toronto's Green Will Initiative
  - Toronto's Tower Renewal Office
  - Climate Challenge Network