

Energy efficiency in multi-unit residential buildings

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Agenda

Introduction to Multi-unit residential buildings (MURBs): Specifically Rental Properties and Condominiums

- Multi-residential buildings may appear similar, but condominiums and rentals are distinct from each other.

Determining the Energy Efficiency Value in MURBs: Start with your data, what is it telling you?

- Motivation: People are key – process and products are of secondary importance

Overview of the SaveOnEnergy incentives, specifically

- Existing Building Commissioning (EBCX): Practical and Proven
 - Two Case Studies: Utility Savings + Performance Improvement



Stephen Dixon

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Scott Rouse

Managing Partner, Energy@Work

Who We Are

Energy@Work

Understand Right. Use Right. Buy Right.®

is a Canadian energy efficiency and sustainability consulting firm.

Who We Are

- Mission -

*"Our mission is to achieve **sustainable and cost-effective solutions** for our clients. We provide independent strategic advice and support to **optimize energy use and decarbonization objectives.**"*

As your partner in utility management, we are committed to helping you achieve sustainability and ESG targets. We do this by optimizing utility performance and helping ensure key decisions deliver maximum value.

- 20+ years of experience supporting commercial real estate, institutional, and multi-residential clients.
- Specialists in energy efficiency, green building certifications, and sustainability strategies
- Dedicated to helping clients reduce costs, improve performance, and achieve long-term goals

Understanding the Multi-Residential Sector

Welcome to the MURBs Sector

- Multi-residential buildings (MURBs) are complex, people-focused environments
- This is very important: safety comes first, followed by comfort, reliability, affordability and maybe energy performance.
- Each sub-sector is unique, for example:
 - Rental apartments, Condominiums, Affordable housing, Co-operative housing, Mixed-use residential buildings.
- Although there are common energy-consuming systems such as HVAC, ventilation, domestic hot water, pumps, fans, lighting, etc. there are differences with, building controls, parking garages and shared amenities
- Decision making and 'people' components are very different in across sub-sectors
- Therefore, achieving Energy Efficiency is less dependent on technical process and products.

Welcome to MURBs Sector

People will determine success based on:

- Ownership and governance
- Responsibility and decision-making authority
- Resident and occupant expectations
- Budgets, internal processes and most importantly: follow-through

Benchmarking and Reporting: EWRB

Energy and Water Reporting and Benchmarking (EWRB)

- 2026 Energy, Water Reporting & Benchmarking (EWRB) for
 - Ontario Regulation 506/18 AND
 - Toronto Municipal Code Chapter 367: Building Emissions Performance
- Ontario Regulation 506/18 (EWRB) requires owners of buildings over 50,000 sq. ft to report their annual Energy and Water use by July 1st each year.
- Toronto By-law Chapter 367 requires owners of buildings over 50,000 sq. ft to report their annual Energy and Water use by July 2nd each year.

EWRB - Multi Unit Residential Buildings (MURBs)

EWRB Submissions Summary: Ministry of Energy and Mines (MEM) and Energy@Work

EWRB MURB Properties Submission Breakdown - 2018 to 2025 - Data from Ontario's Ministry of Energy and Mines (MEM) and Energy @Work's Portfolio										
Ontario Ministry of Energy and Mines Multi-Unit Residential-Building (MURB) Data	All Ontario Submissions			Ontario Submissions - MURB		Toronto Submissions - MURB		Energy@Work Ontario Submissions - MURB		Comments
	Data Year	Total Ontario EWRB Submissions	Percent Change	Total Ontario MURB Submissions	Percent of Ontario Submissions	Total Toronto MURB Submissions	Percent of Ontario Submissions	Total Energy@Work Ontario MURB Submissions	Percent of Ontario Submissions	
	2018									EWRB began in Ontario in 2018 >250,000 SqFt. required to report.
	2019	3093	479%	1569	51%	852	28%	119	4%	Buildings 100,000 SqFt or larger required to report for Ontario.
	2020	3491	13%	1788	51%	682	20%	123	4%	
	2021	3611	3%	1770	49%	659	18%	118	3%	
	2022	6864	90%	3194	47%	1199	17%	157	2%	Buildings 50,000 sqft or larger required to report for Ontario
	2023	6361	-7%	3085	48%	1132	18%	144	2%	Buildings 50,000 sqft or larger required to report for both Ontario and City of Toronto.
	2024	6739	6%	3306	49%	1227	18%	120	2%	
	2025	n/a	n/a	n/a	n/a	n/a	n/a	124	n/a	Ontario releases data for 2025 in December 2026/January 2027

2026-07-23 EWRB 2026 Master Benchmark(Energy@Work) R3.xlsx

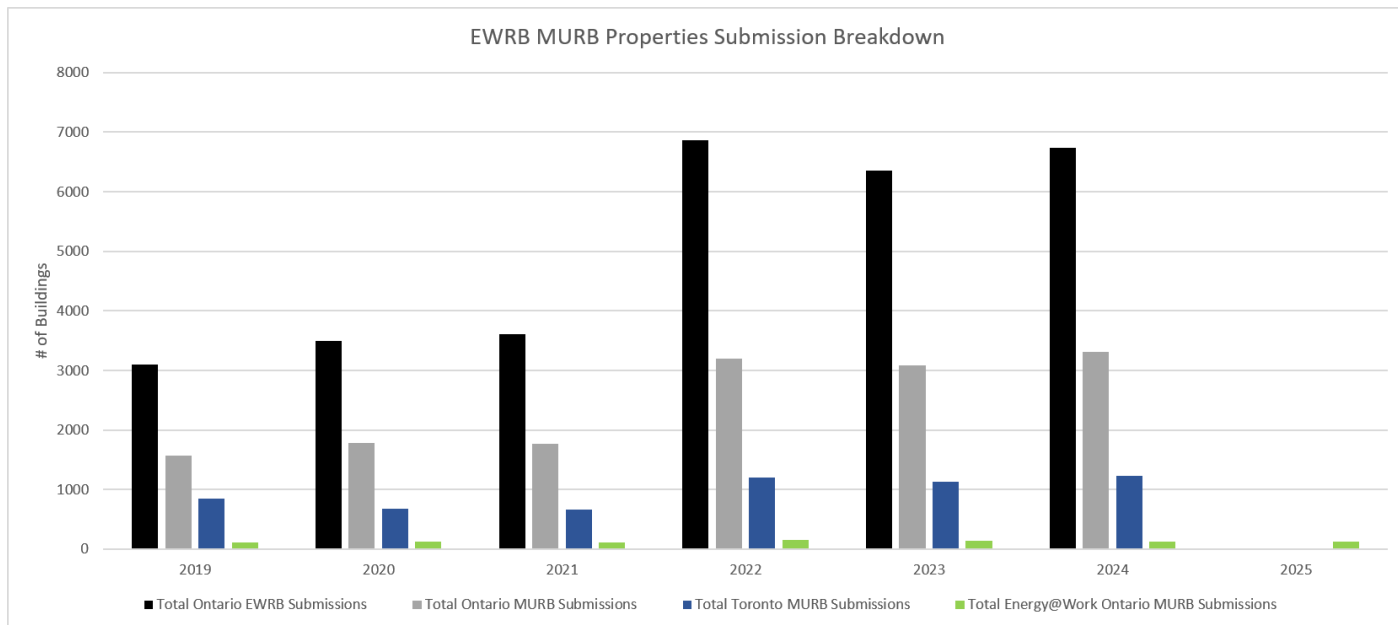
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2026-07-23 EWRB 2026 Master Benchmark(Energy@Work) R3.xlsx

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EWRB - Multi Unit Residential Buildings (MURBs)

EWRB Submissions Summary: Ministry of Energy and Mines (MEM) and Energy@Work



EWRB - Multi Unit Residential Buildings (MURBs)

- Ministry of Energy and Mines (MEM) Vs Energy@Work: Key Performance Indices

EWRB MURB Consumption Breakdown - 2019 to 2025 - Data from Ontario's Ministry of Energy and Mines (MEM) and Energy@Work's Portfolio														
	Data Year	All Ontario Submissions				All Toronto Submissions				Energy@Work Ontario Submissions				Comments
		MURB Electricity Use Intensity (kWh/sq.ft)	MURB Natural Gas Use Intensity (ekWh/sq.ft)	MURB EUI Average (ekWh/sq.ft)	MURB WUI Average (m3/sq.ft)	MURB Electricity Use Intensity (kWh/sq.ft)	MURB Natural Gas Use Intensity (ekWh/sq.ft)	MURB EUI Average (ekWh/sq.ft)	MURB WUI Average (m3/sq.ft)	MURB Electricity Use Intensity (kWh/sq.ft)	MURB Natural Gas Use Intensity (ekWh/sq.ft)	MURB EUI Average (ekWh/sq.ft)	MURB WUI Average (m3/m2)	
Ontario Ministry of Energy and Mines Multi-Unit Residential-Building (MURB) Data	2019	6.9	14.9	22.0	0.15	7.0	16.4	23.7	0.16	n/a	n/a	19.6	0.12	
	2020	7.1	15.2	21.1	0.25	7.2	16.2	22.7	0.21	n/a	n/a	18.0	0.12	
	2021	6.9	13.9	19.6	0.15	7.1	15.8	21.7	0.16	n/a	n/a	18.0	0.11	
	2022	7.0	17.2	21.0	0.15	7.0	17.2	23.1	0.16	7.2	11.5	18.7	0.13	
	2023	6.8	38.3	20.9	0.05	6.9	43.4	23.4	0.06	6.8	10.1	16.9	0.13	Ontario's MEM data for natural gas and water values appear to be outside the range observed in other reporting years.
	2024	6.8	14.5	21.1	0.19	7.1	15.9	22.9	0.20	6.9	9.5	16.4	0.12	Ontario averaged 21.1 ekWh/sq.ft. and Toronto 22.9, while Energy@Work's portfolio averaged a lower 16.4 ekWh/sq.ft.
	2025	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	7.6	10.3	18.0	0.16	

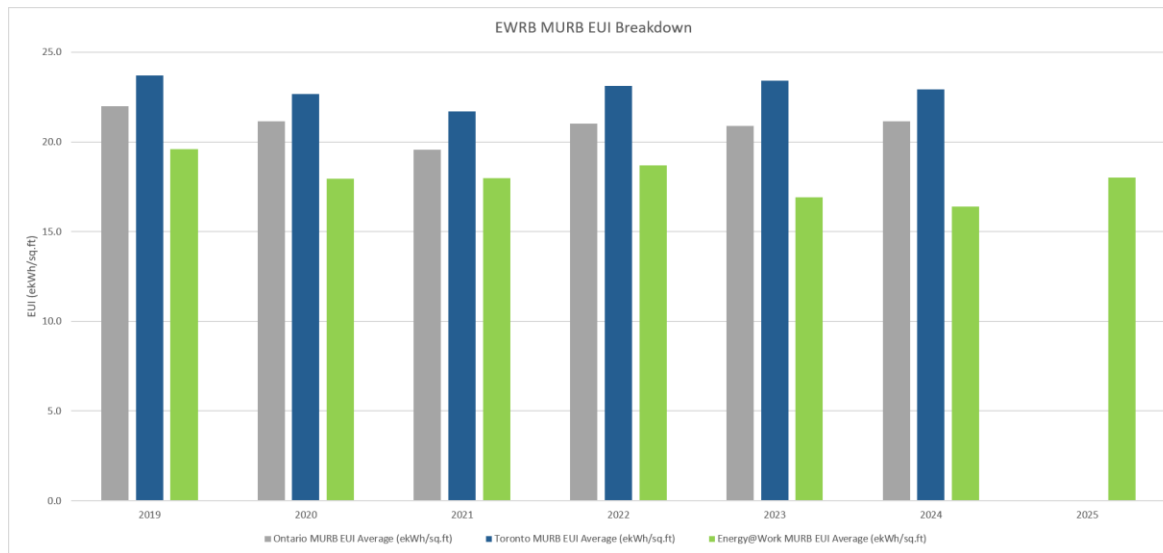
2026-07-23 EWRB 2026 Master Benchmark(Energy@Work) R3.xlsx

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- Energy Intensity from 2019 to 2026 reporting has remained remarkably consistent around 21 ekWh/sqft.

EWRB - Multi Unit Residential Buildings (MURBs)

- Ministry of Energy and Mines (MEM) Vs Energy@Work: Energy Use Intensity (EUI)



- Energy Intensity from 2019 to 2026 reporting has remained remarkably consistent around 21 ekWh/sqft.

EWRB - Multi Unit Residential Buildings (MURBs)

- Energy@Work KPI Per Suite: Typically, of greater value than per SqFt

Energy@Work Multi-Res Per Suite EWRB DATA(ESPM Data Base)								
Year	MURB Electricity Use Intensity Average (kWh/sq.ft)	MURB Natural Gas Use Intensity Average (ekWh/sq.ft)	MURB Energy Use Intensity Average (ekWh/sq.ft)	Total Number of Suites	ekWh/Suite/yr	Electricity/Suite/yr (kWh/Suite/yr)	Natural Gas/Suite/yr (m3/Suite/yr)	Water/Suite/yr (m3/Suite/yr)
2022	7.2	11.5	18.7	40,738	25,015	9,793	1,474	196
2023	6.8	10.1	16.9	36,436	22,490	9,058	1,300	208
2024	6.9	9.5	16.4	31,028	21,792	9,133	1,225	156
2025	7.6	10.3	18.0	32,711	22,389	9,533	1,245	169

2026-07-23 EWRB 2026 Master Benchmark(Energy@Work) R2.xlsx

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- Data taken from Energy@Work's Energy Star Portfolio Manager (ESPM)

Note: These KPI / suite can be derived from access to ESPM.

EWRB - Multi Unit Residential Buildings (MURBs)

What Does The Data Tell Us?

2025 Average Intensity:

- 21 ekWh/sqft.yr
- 22,389 ekWh/ suite.yr

1. Reporting increased in 2022, due to 50,000 sqft. reporting requirements and has since leveled off
2. Energy intensity has not improved significantly
Accurate water reporting remains the most challenging
3. Benchmarking by itself is not enough to see an improvement?

Action is needed to make improvements: Take Control!

First Step? Listen to your Data:

Ministry of Energy and Mines (MEM): Per SqFt

What is your data telling you?

- EWRB becomes a key tool in understanding performance. Compare with others or Yourself over time. Better or worse?

- Key Performance Indies (KPI) can be used collect, track and report performance. Each is a window into the past and with the case studies we will share this morning, provide you a path to move forward!

Suggested KPI include	KPI	Unit	Range
Cost Intensity (most common)	\$\$ per Number of Suites	\$\$/Suite	Not reported
Energy Intensity	Electricity +Equivalent Natural Gas	ekWh/sqft	21.0 ekWh/sqft (19.6 - 22.0 ekWh/sqft for 2018-2024)
Electricity Intensity	Electricity	kWh/sqft	6.9 kWh/sqft (6.8 - 7.1 kWh/sqft for 2019-2024)
Natural Gas Intensity	Natural Gas	ekWh/sqft	15.1 ekWh/sqft (13.9 - 17.2 kWh/sqft for 2019-2022,2024)
Water Use Intensity	Water	M ³ /sqft	0.17 M ³ /sqft (0.13 – 0.25 M ³ /sqft for 2018-2022,2024)

First Step? Listen to your Data:

Energy Star Portfolio Manager: Per Suite

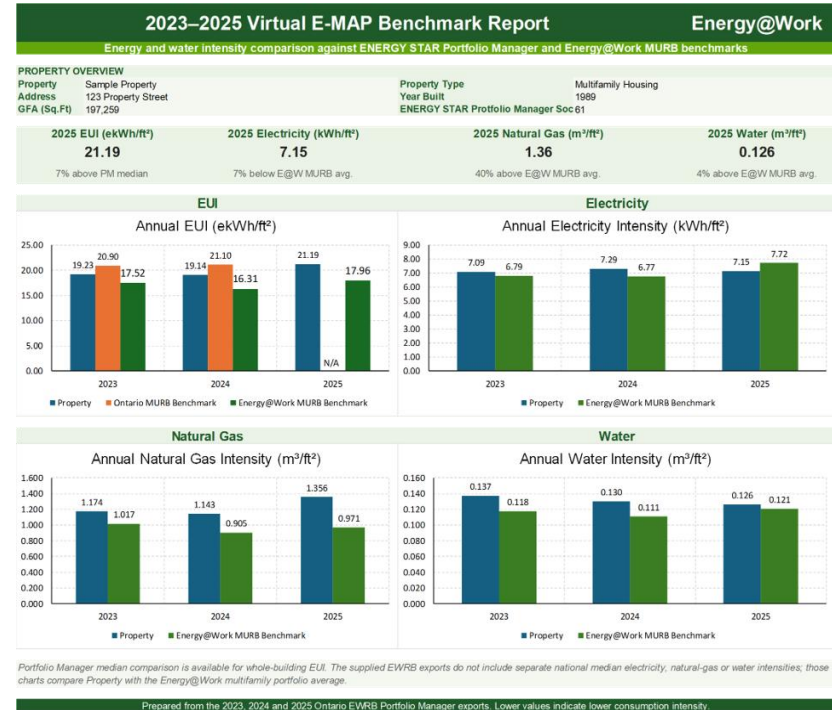
Multi-residential reporting:

KPIs per suite are preferred by Property and Condominium Managers over KPIs Per SqFt. Aka “per door”

Suggested KPI Include	KPI	Units	Range
Cost Intensity	\$\$ per number of Suites (most common)	\$\$/Suite	Not Reported
Energy Intensity	Electricity+Equivalent Natural Gas	ekWh/suite	22,291 ekWh/suite
Electricity intensity	Electricity	kWh/Suite	9,379 kWh/suite
Natural Gas Intensity	Natural Gas	ekWh/Suite	1,311 ekWh/suite
Water use Intensity	Water	M^3/Suite	182 M^3 ekWh/suite

Annual EWRB Benchmarking Reports

- Annual Reporting allows you to keep current with the market as well as yourself
- Data tells a story, when you take time to LISTEN!



What Is Your Data Telling You?

What is your data telling you?

Consider the economic potential by considering:

- **Organizational factors:** Key to success
- **Building systems:** Lighting, Heating, Cooling, Ventilation
- **Controls:** Lighting, Tenant, BAS

Example:

- Kilgour Estate: Listened – Took Action – and achieved economic savings of 26% over 4 years.

Case Study: Kilgour Estate Took Control!

KILGOUR
ESTATE II

Energy and Water
Reporting and
Benchmarking
(EWRB)



Board President confirmed:

- 1) The opportunity to reduce cost was motivated by seeing what others were using.
- 2) Convinced on the economic opportunity by: **TAKING CONTROL**
- 3) Value from taking that extra step to achieve **ENERGY STAR Building Certification**

Bottom Line: Reduction in costs as well as an increase in asset value

Motivating People: Data Driving Action

KILGOUR
ESTATE II

Energy and Water
Reporting and
Benchmarking
(EWRB)



Ram Krishna: Unit Owner & Member of Energy Committee

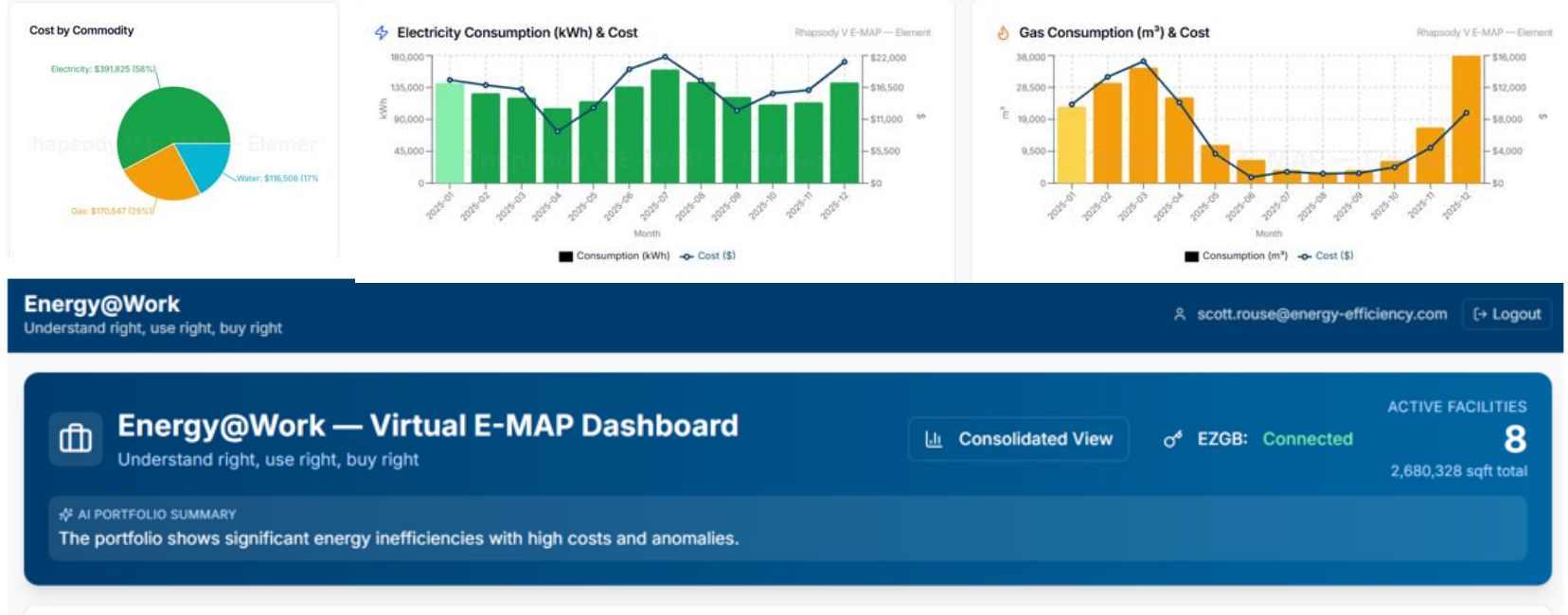
Ram keeps a vigilant eye on performance with the following points:

Two main points:

- *"Hydro is one of 4 items that make up roughly 80% of our budget.
(4 items: On-site wages, Contracted on-site personnel, contracts & hydro)"*
- *Electricity:
"While consumption is up 4.7%, (mostly weather related) **cost is up 21%**"*

Ram knows!

Make Your Data Visible and Meaningful so You Understand



- What is your data telling you? Ask your questions so you get the answers you NEED!

People, Process and Products

People, Process & Products: There Is No Silver Bullet to EE

We identified 33 barriers to energy efficiency, grouped into the 7 A's

Attention

Awareness

Affordability

Accessibility

Acceptability

Accountability

Apathy

- Different buildings face different combinations of these barriers.
- Success therefore requires a structured process that identifies the specific barriers affecting your building.
- Engages the appropriate people and decision-makers.
Selects the process that have the right tools and technical solutions
Supports implementation, verification and on-going follow-through
- A great example is: Existing Building Commissioning (EBCX)

Focus on the 3 P's of EE to overcome the 7 A's



People: #1 for success in the multi-residential sector

Identify the stakeholders, understand their roles and determine who has the authority to approve, implement and sustain improvements.



Process

Understand how decisions are currently made and establish the steps, responsibilities and follow-up needed to move opportunities from identification to implementation.



Products

Use the appropriate tools, technologies and information—such as benchmarking, utility data, BAS analytics, controls and equipment—to identify and deliver improvements.

Successful energy management requires the right people following a clear process, using the right products and making the right decisions at the right time.

Motivating People: What Drives Action?

1. **Financial Benefit:** "Saving energy reduces operating costs and utility bills."
2. **Environmental Responsibility:** "Saving energy conserves resources and reduces emissions."
3. **Good Citizenship:** "Saving energy is the responsible thing to do."
4. **Social Proof:** "Other buildings, communities and peers are already taking action."

Key Takeaway:

People are strongly influenced by what their peers are doing.

Showing credible examples, comparisons and demonstrated results can be more motivating than simply telling people to save money or protect the environment. Here are several **real-world** case studies!

Existing Building Commissioning (EBCx)

Existing Building Commissioning (EBCx)

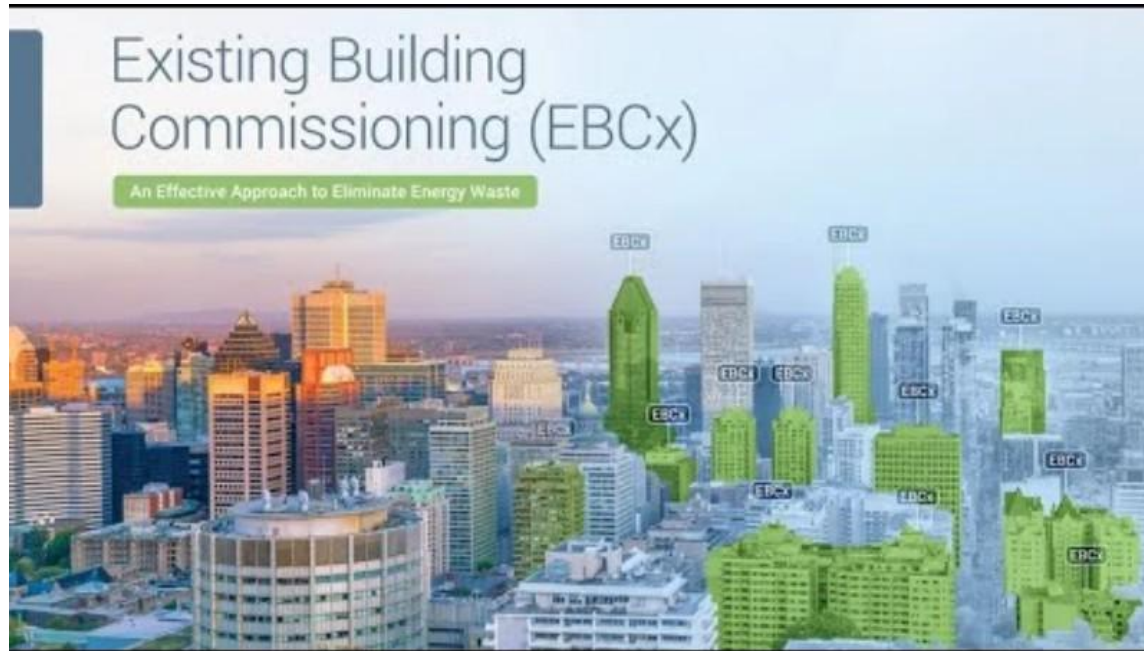
EBCx is a practical example of a process that brings the 3 P's together.

EBCx combines:

- **People:** owners, boards, managers, operators and service providers
- **Process:** planning, investigation, implementation and persistence
- **Products:** benchmarking, utility data, BAS trends, functional testing, controls, training and documentation.

We will demonstrate how EBCx has delivered results in both a **condominium** and a **rental property**.

Natural Resources Canada (NRCan) Video on EBCx



<https://www.youtube.com/watch?v=a8MgOV-4eYU>

Phase One: Planning and Application to the SaveOnEnergy Program

EBCx 4 Phases: Energy@Work's Approach

Commissioning Provider (CP): Energy@Work

4-Phase Approach Adopted by: PEI, BCxA, NRCan, ENSPIRE & IESO

% of Work Required by CP and Client

		CP %	Client	Continual	Comment
1 Application and Planning Phase		80%	20%	0%	Essential to start an EBCX - work split
1.1 Application to Utility (If applicable)		CP is responsible for application and the EBCX Plan			
1.2 EBCX Plan complete with:					
Current Facility Requirement (CFR)					
Owner Project Requirements (OPR)		Client responsible for inputs: data, BAS access, etc.			
Kick-off meeting with Communication plan		Final Review and EBCx Approval			

Phase Two: Investigation

EBCx 4 Phases: Energy@Work's Approach

Commissioning Provider (CP): Energy@Work

4-Phase Approach Adopted by: PECL, BCxA, NRCan, ENSPIRE & IESO

% of Work Required by CP and Client

CP %	Client	Other	Comment
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2 Investigation	85%	15%	Minimal	Questions for BAS vendor
2.1 Finding List	CP is responsible for:		Preparation + EBCX Tools	
2.2 Monitoring Plan(s)			Identification of Findings	
2.3 Pre-Functional Test			Estimated benefits and final report	
2.4 Post-Functional test				
2.5 Site Visit Reports - minimum 3	Client is responsible for:		Reviewing to understand Findings	
2.6 Investigation Report			Approving Final Findings	

Phase Three: Implementation

EBCx 4 Phases: Energy@Work's Approach

Commissioning Provider (CP): Energy@Work

4-Phase Approach Adopted by: PECI, BCxA, NRCan, ENSPIRE & IESO

% of Work Required by CP and Client

CP %	Client	Other	Comment
15%	85%	Varies	Others are required, i.e., BAS
CP is responsible for:		Clear Implementation Plan	
		Clear Implementation Report	
Client is responsible for coordination & implementation of EEM			

3 Implementation

3.1 Pre-Implementation Plan

3.2 Convert Finding to Energy Efficiency Measure (EEM)

3.3 EEM Implementation Instruction

3.4 Implementation Report

Phase Four: Transfer and Persistence

EBCX 4 Phases: Energy@Work's Approach

Commissioning Provider (CP): Energy@Work

4-Phase Approach Adopted by: PECL, BCxA, NRCan, ENSPIRE & IESO

% of Work Required by CP, Client & Other

CP %	Client	Other	Comment
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4 Transfer and Persistence (T&P)

95%	5%	0%	
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4.1 Prepare the T&P Plan

CP is responsible for preparing & communicating the T&P PLAN

4.2 Specific instruction for each measure

4.3 Operation and Management Training to maintain outcome

Client is responsible for on-going persistence

Final thought: EBCX is a structured process that has integral components that should be included and not a "fix it" list or audit

2026-07-03 EBCX Simple Process (Energy@Work) excel R0

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Case Studies

Case Study, MURB: 15 Roehampton (eCentral) Rental Property

EBCx Application and Planning Summary

- 36-storey multi-unit residential building, opened in 2018
- 466 suites
- 340,000 ft² residential GFA

Major Systems Reviewed

1. Heating system: 4 condensing boilers
2. Cooling system: 420-ton centrifugal chiller, dry cooler for free cooling, and cooling tower
3. Ventilation: 2 make-up air units, each rated at 23,000 CFM
4. Controls: BAS-controlled HVAC systems, along with embedded and local controllers



15 Roehampton (eCentral)

Existing Building Commissioning (EBCx)

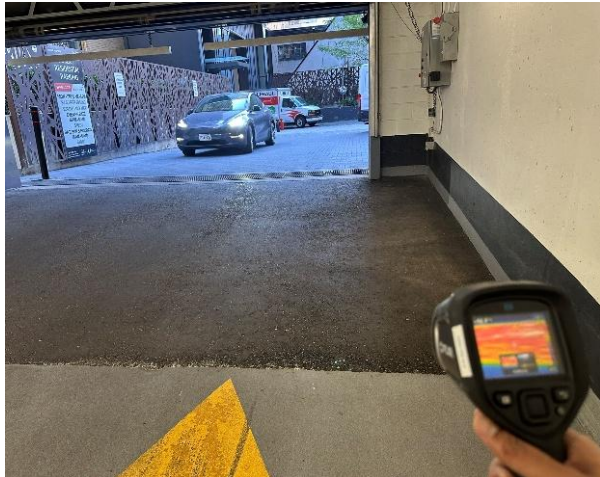
Toronto, Ontario



Summary of Identified Opportunity Types (Finding List)

Opportunity Type	Examples EEMs / Findings	Savings Status
Central Plant Control Optimization	Dry cooler / chiller operation, boiler reset, heating pump control	Largest savings area
Scheduling / Unnecessary Operation	Ramp heating, outdoor lighting, MAU operation	Quantified Savings
MAU/Ventilation Performance	Belt replacement, coil cleaning, valve/ control issues	Partly quantified
BAS/Sensor/ controls	OAT sensor, VFD feedback, thermostat calibration, BAS graphics	Enables persistence

15 Roehampton: On-site Investigations



15 Roehampton: On-site Investigations



15 Roehampton Rental Property: Investigation Summary

23 findings identified

- 6 findings with quantified electricity savings: 300,000 kWh/year identified electricity savings plus 52kW peak demand reduction

Main savings areas

- Controls, schedules, reset strategies, BAS logic, sensor/feedback issues, and maintenance corrections
- Examples: simultaneous heating/cooking, heating lockout overrides, fixed condenser-water temperature setpoints, chilled-water reset limitations, ramp heating operation, OAT sensor location issues, MAU schedule and damper logic, and heating valve control issues.

Key message: Even in new buildings EBCx identified meaningful low-cost operational savings through BAS review, trending, functional testing and seasonal verification.

15 Roehampton Rental Property: Finding with Avoided Cost and Incentive

Findings identified	23 in Total					
Operation & optimization	12					
Maintenance	4					
Capital	1					
Further investigation required	5					
Uncategorized / cleanup item	1					
Quantified Electricity Savings	6	\$/kWh	Avoided \$\$	\$/kWh	Incentive	Total
Annual electricity savings, kWh.yr	313,000	\$ 0.14	\$ 43,820	\$ 0.06	\$ 18,780	\$ 62,600

Timeline: Project started September 2025 and included Planning plus a three-season and will finish in Aug 2026.

Condominium EBCx: Performance Improvement



Existing Building
Commissioning (EBCx)

*“Your EBCx recommendation to seal the ducts and reduce MAU airflow has proved to be tremendously effective. I have been taking data in the corridors since the work was done and **the improvements are amazing!** We thank you and your colleagues.”*

Ron Jhu
Board Member at 5 Kenneth

Energy@Work
Understand Right. Use Right. Buy Right.®



5 Kenneth Avenue

Existing Building Commissioning (EBCx)
Toronto, Ontario

Existing Building Commissioning (EBCx) Program

Existing Building Commissioning (EBCx) Program overview

EBCx helps commercial and institutional building owners, operators and managers improve energy management through better operations and maintenance practices.

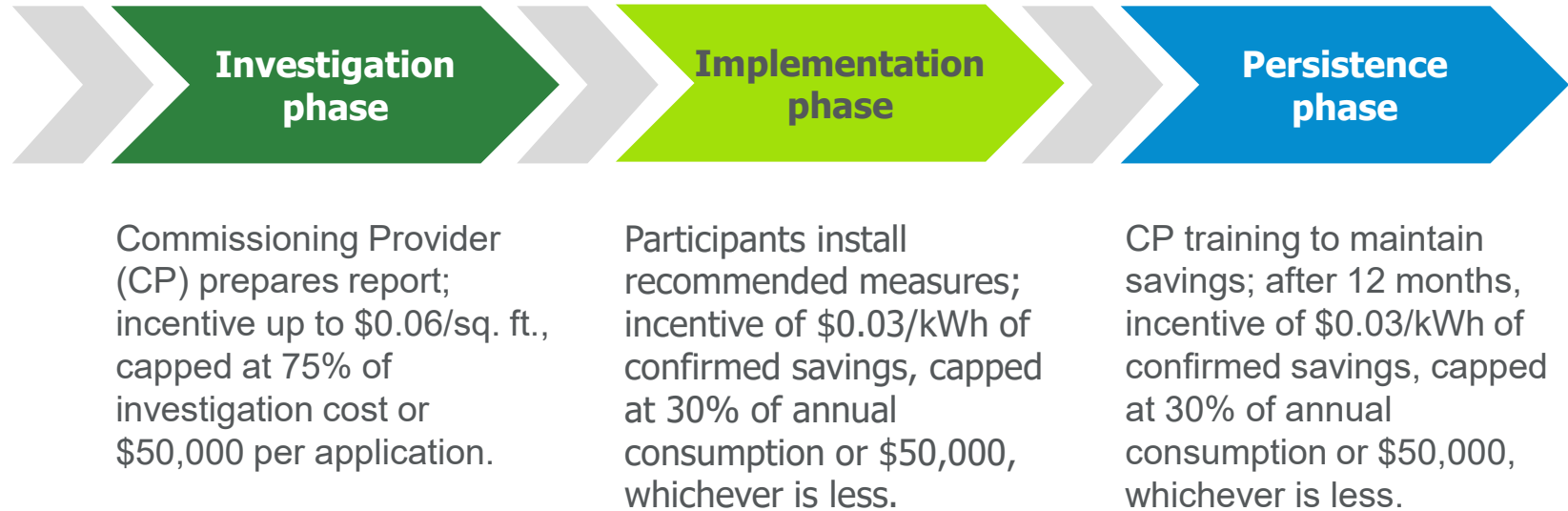
Benefits

- Lower energy waste and costs
- Enhanced occupant comfort
- Improved operational efficiency
- Increased profitability



Learn more at saveonenergy.ca/ebcx

How it works



Eligibility

Participants must:

- Have at least 12 months of consecutive electricity consumption data
- Consume a minimum of 750,000 kWh per year (excluding industrial or manufacturing process energy)
- Maintain baseline models that meet program standards
- Not have completed a commissioning exercise in the past two years
- Not be enrolled in a building accreditation system that requires EBCx as a pre-requisite
- Be connected to, or behind the meter of, an electricity customer on the IESO-controlled grid or a local distribution system

Conclusion and Wrap UP

Suggested Approach, Use EWRB to Develop your own E-MAP

Energy Management Action Plan (E-MAP)

1. Use EWRB to ask the questions:

- What is our Energy and Water Use Intensity?
- Is it above or below the average of 18 ekWh/Sqft for energy intensity?
- Is it above or below the average per suite of 22,389 ekWh/Suite for energy intensity

2. Investigate the tools that work for you and visit **SaveOnEnergy**

- Existing Building Commissioning (EBCX)

3. Understand your data

- What is your data telling you? Use the programs to improve performance

What are Your Next Steps?

1. _____

(Review your building's energy and water performance compare with the average)

2. _____

(Discuss with your team: How are you doing)

3. _____

(Take Control: Speak with Others and Review the SaveOnEnergy resources)

Thank you

SaveOnEnergy.ca

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