

*Co-operative Housing Federation
of Canada's Annual General
Meeting June 6th 2019*

Value of Benchmarking
+

Energy and Water Reporting and Benchmarking
(EWRB) Journey from Portfolio Manager to
Efficiency Savings



Scott Rouse, P.Eng, MBA, CEM, CSDP, CMPV
Managing Partner
Energy@Work Inc.

Agenda: Benchmarking + Energy & Water Reporting and Benchmarking (EWRB)

4:00 – 4:20

EWRB: Opportunity to Create **Value**

Property: Effort must demonstrate granular value to stakeholders

Industry: Understanding, supporting and working together

Our approach: Accurate and Reliable Benchmarks via Key Performance Indices (KPI)

Energy (ekWh/sqft) **Water** (M³/M²) & **Cost** (\$/SqFt)

4:00 – 4:20

Introduce Benchmarking Case Study

4:25 – 4:30

Break (5 min)

4:30 – 4:45

Group discussion and Wrap up



Ontario's Dynamic Energy Landscape

Consistent Increases in Utility Rates: Global Adjustment in April over \$1 BILLION/Month!

- 10% increase in natural gas rate – cost of carbon
- 10% increase in water rates every year
- Electricity costs continues to rise and insists on being complicated!

Other Emerging Issues and Opportunities

Multi-Res price break is coming off

- Industrial Conservation Initiative & Global Adjustment (GA) Mechanism
- Tower Renewal & Provincial Cap and Trade \$8 B pot – where will this be spent?
- Potential incentive program collapse? DSM / CDM <MARCH 21st Announcement>
- **Mandatory Energy and Water Reporting** – July 1, 2019

Success is achieved through proactive planning



EWRB Fundamentals: Why Bother?

1. It is the Law

- More importantly, it is the “right thing” to do!

We can not manage what we do not measure

- Use EWRB to complete utility assessments: Consider what you spend each year

2. Obtain The Help You Need: The regulation requires a licensed professional

3. Your E-MAP can Set Cooperative Targets: Building Use & Tenant Use

- Race 2 Reduce is an example of landlord and tenant support

Energy@Work's Focus: Operational Excellence

Commercial office study, i.e.: “Green is better”

Net effective rents:	3.7 %	better
Rent concessions:	4 %	better
Occupancy rates:	18.7 %	better
Tenant renewal rates:	5.6 %	better
Tenant satisfaction scores:	7 %	better
Energy consumption:	14 %	better

Multi-Residential leaders have a sustainability presence:
Minto, Tridel, QuadReal, etc.



General Observations

1. Consistently finding Energy Efficiency Measures – often with less than a 3 year payback
2. Noticeable opportunities to improve, e.g.:
 - Communication and the use of best practices
 - Maintenance practices are often the cheapest
 - Failure response plan: can providers respond adequately to failure?
 - Overall awareness; Energy & Water? Very low
3. Opportunity exists to share Best Practices Strategy from individual property assessments
4. Few know or understand their buildings' performance or **resources that are available**

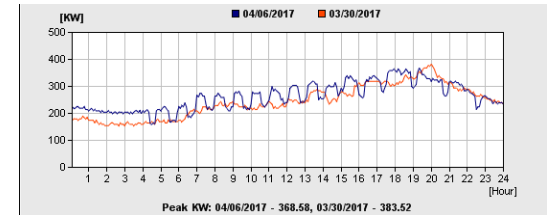
4 EWRB Tools That Work!

1) EWRB Regulation: Utilities are required to provide aggregated data “Yours to Discover”

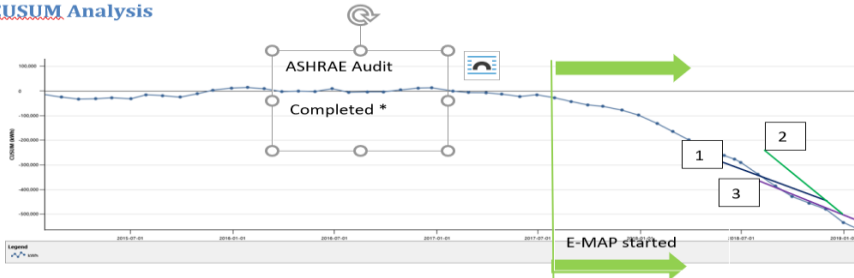
2) Real Time Monitoring (RTM): Seeing what the building is doing

3) Cu Sum – every property should have one!

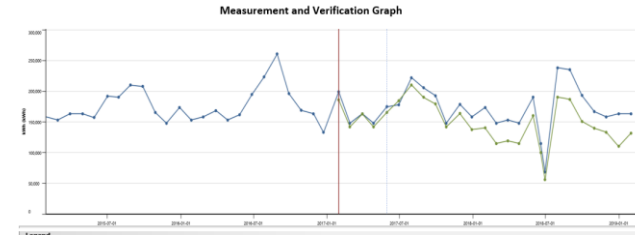
4) Measurement and Verification (M&V) Plan



CUSUM Analysis



20.7% savings in the second year





However: **Exercise Caution**

False and Dangerous Promises are being made

EWRB has also created: “new, magical solutions”

- suddenly energy and water can be reduced overnight by unproven solutions

Be cautious!

**Insist on an approved means to measure results called
“Measurement and Verification”**



Value to the Property

Key Performance Indices (KPIs) Accurate, Concise & Consistent Reports & Advice

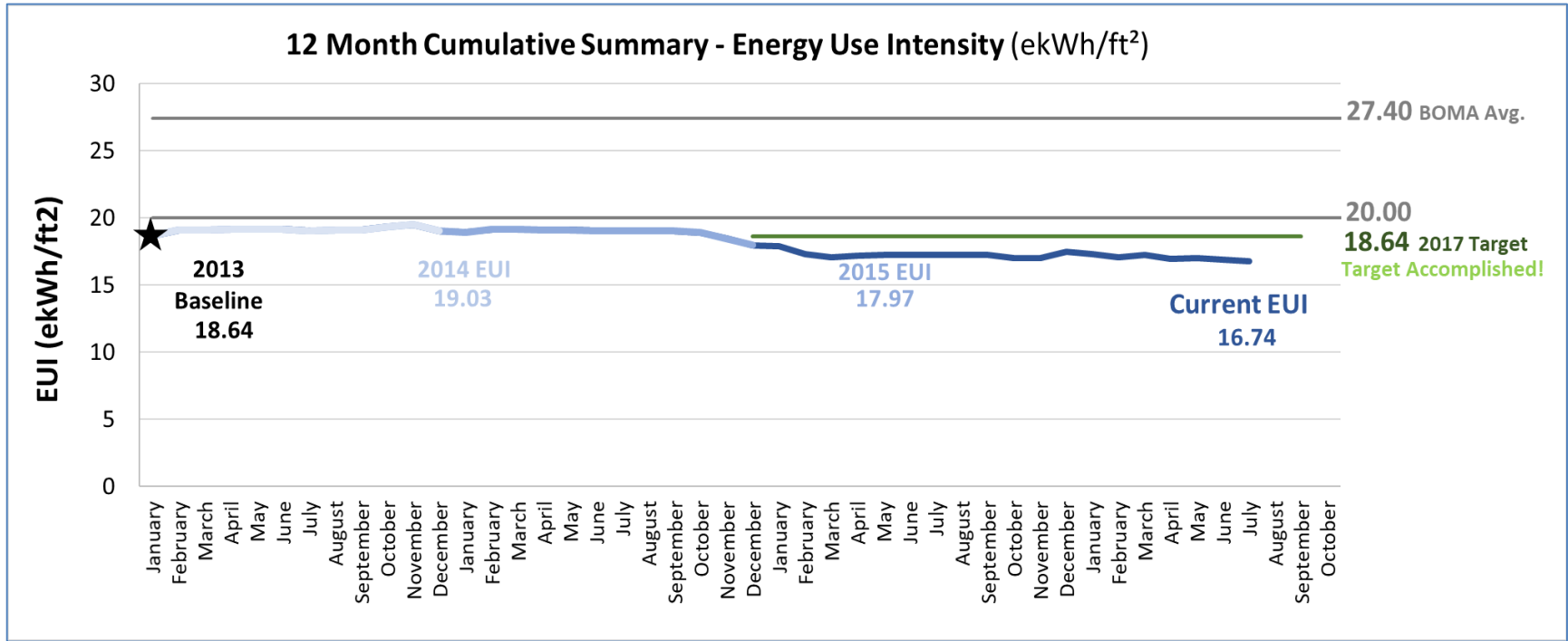
3 Key Performance Indices (KPI): Building the foundation to understand & respond

<u>KPI</u>	<u>Metric</u>	<u>Description</u>	<u>Comment</u>
Energy Use	ekWh/sqft	Utility Use & GFA	E@W enter bills
Water Use	CuM/SqM	Match BOMA	Track high use
Cost	\$\$/SqFt	Explain Rate Vs Use	Use both GFA / GLA

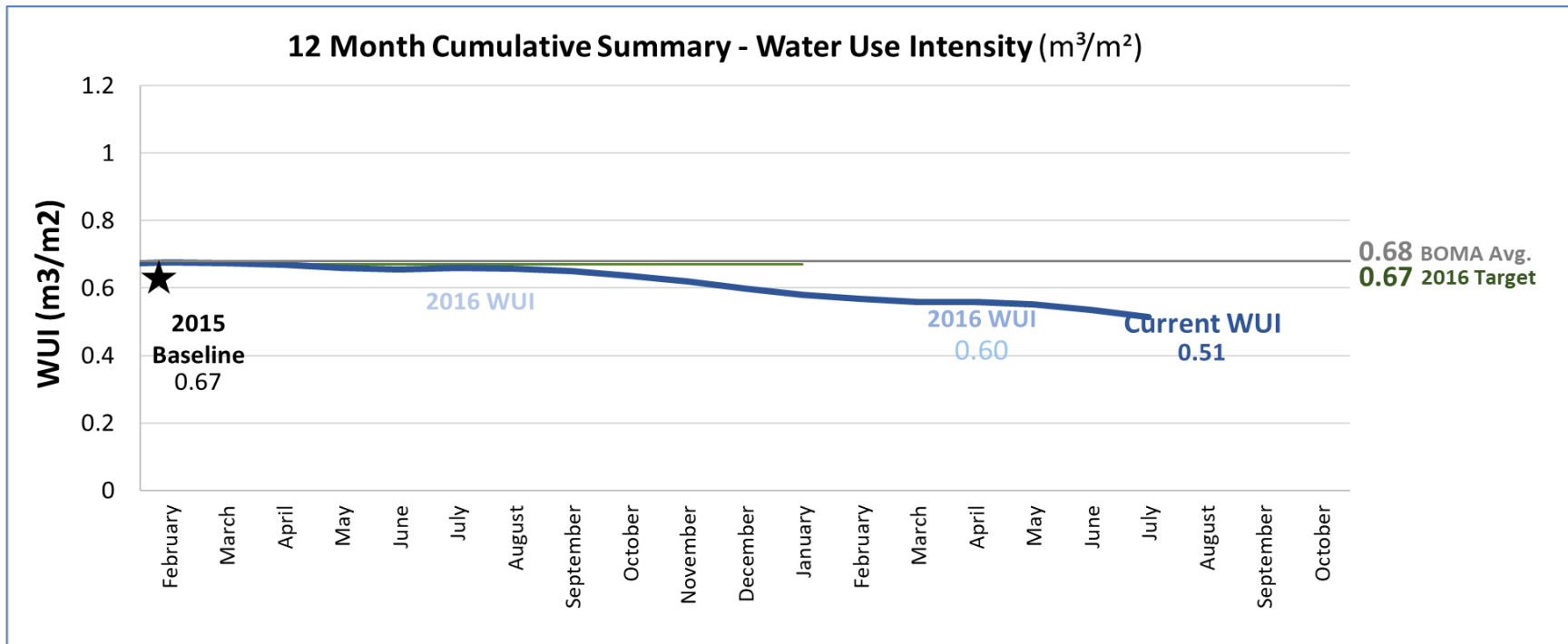
Energy and Water Reporting and Benchmarking is helping to make this possible!

Example: Useful Reports

– stay on track or not?



Same for Water Use!



Outcome? Continuous Improvement



Mandatory EWRB Reporting: Leading to Performance Rating

ENERGY STAR® Statement of Energy Performance

88
ENERGY STAR® Score¹

EAWTO01
Primary Property Function: Office
Gross Floor Area (m²): 30,169.1
Built: 2006

For Year Ending: December 31, 2014
Date Generated: January 08, 2016

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address EAWTO01 Toronto, Ontario M1K 3M6	Property Owner [Redacted]	Primary Contact Scott Rouse 250 The Esplanade, Suite 401A Toronto, ON M5A 1J2 (416) 642 0571 requests@energy-efficiency.com
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Property ID: 3293658
Address: [Redacted]
Unique Building Identifier: EAWTO01

Energy Consumption and Energy Use Intensity (EUI)

Site EUI 0.81 GJ/m ²	Annual Energy by Fuel Natural Gas (GJ) 9,031 (37%) Electric - Grid (GJ) 15,345 (63%)	National Median Comparison National Median Site EUI (GJ/m ²) 1.16 National Median Source EUI (GJ/m ²) 1.93 % Diff from National Median Source EUI -30% Annual Emissions Greenhouse Gas Emissions (Metric Tons CO ₂ /year) 956
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Source EUI
1.35 GJ/m²

Signature & Stamp of Verifying Professional

Scott Rouse (Name) verify that the above information is true and correct to the best of my knowledge.
Signature: *[Signature]* Date: *January 8, 2016*

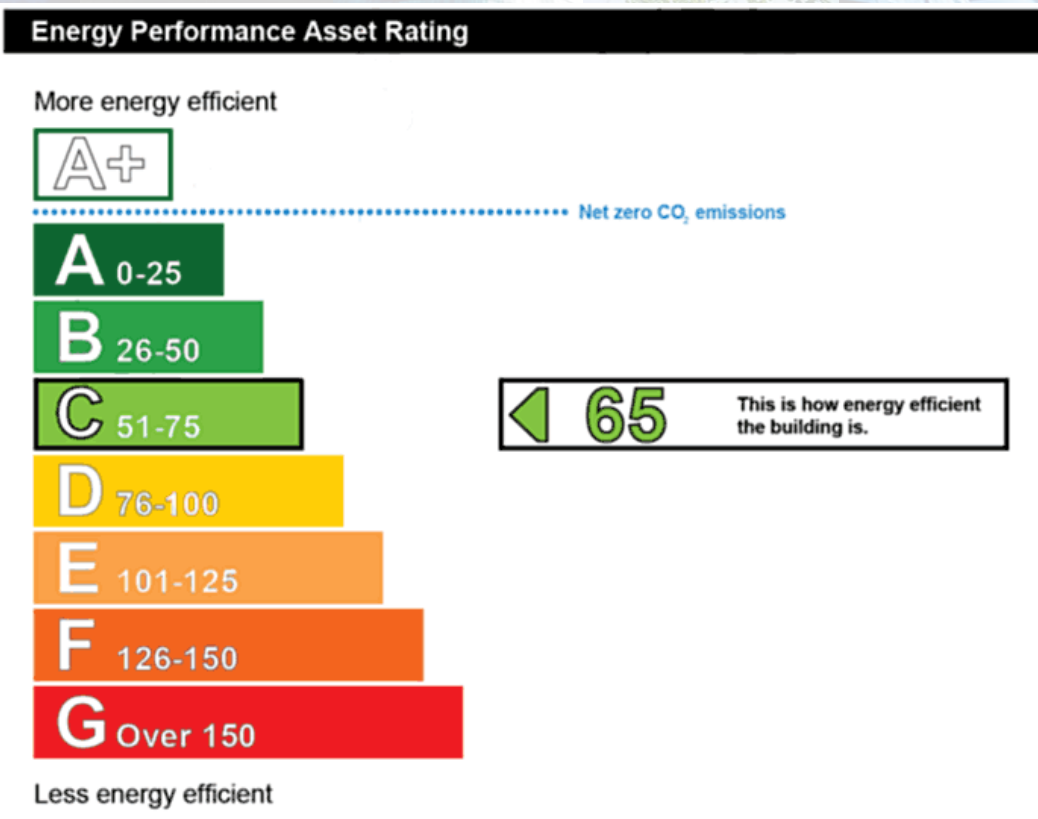
Licensed Professional

Scott Rouse
250 The Esplanade, Suite 401A
Toronto, ON M5A 1J2
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requests@energy-efficiency.com



Professional Engineer Stamp
(if applicable)

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www.Energy-Efficiency.com 416-642-0571



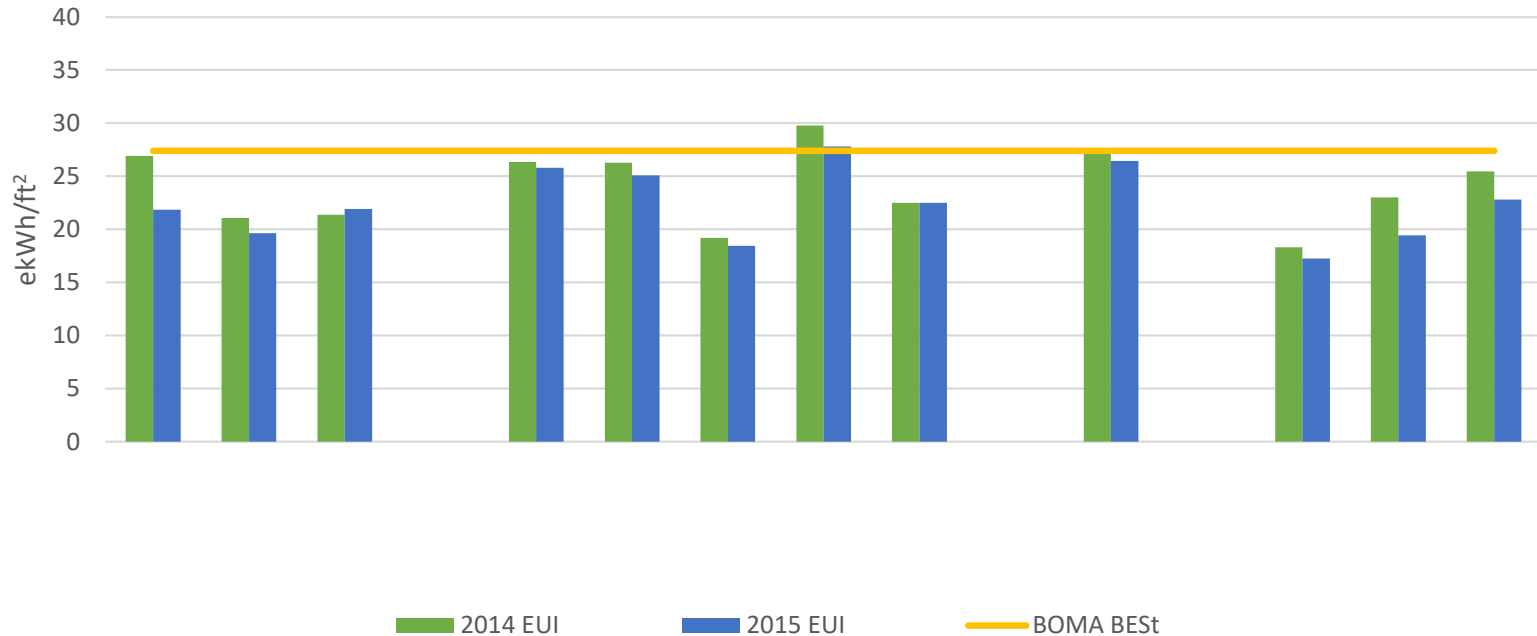


Industry Value: Working Together

Knowing how buildings are doing and comparing them to each other + peers'

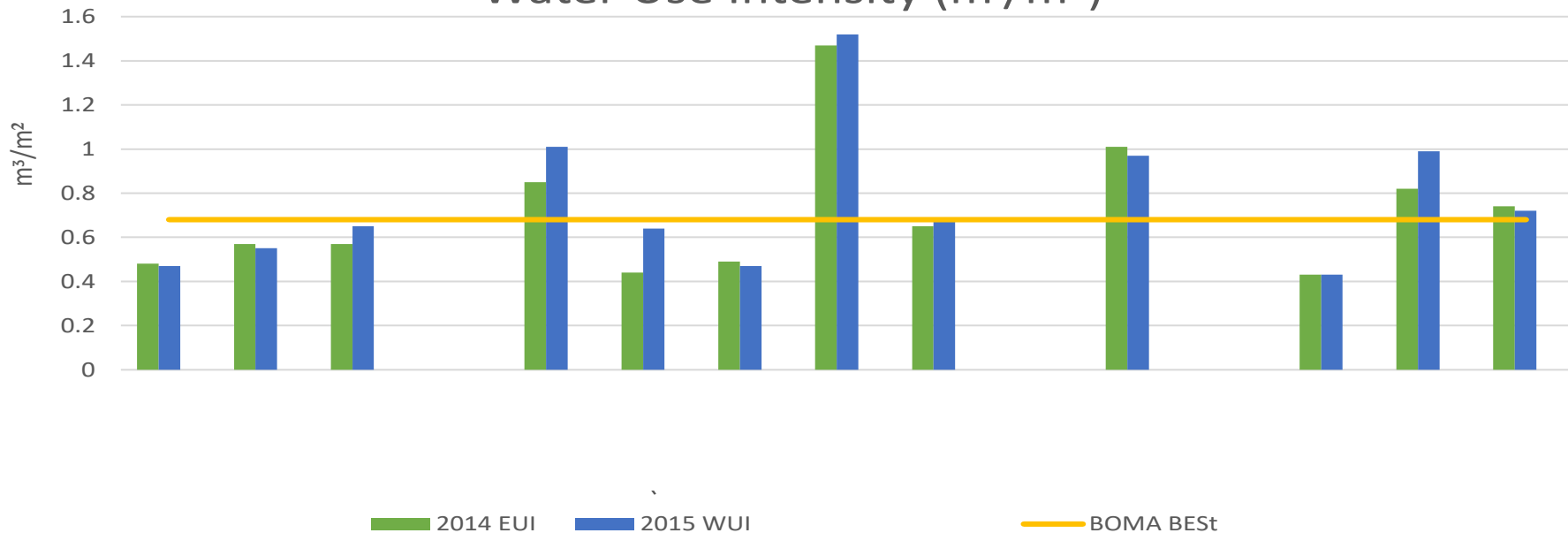
Industry: KPI# 1: Energy Use Comparison

Energy Use Intensity (ekWh/Ft²)



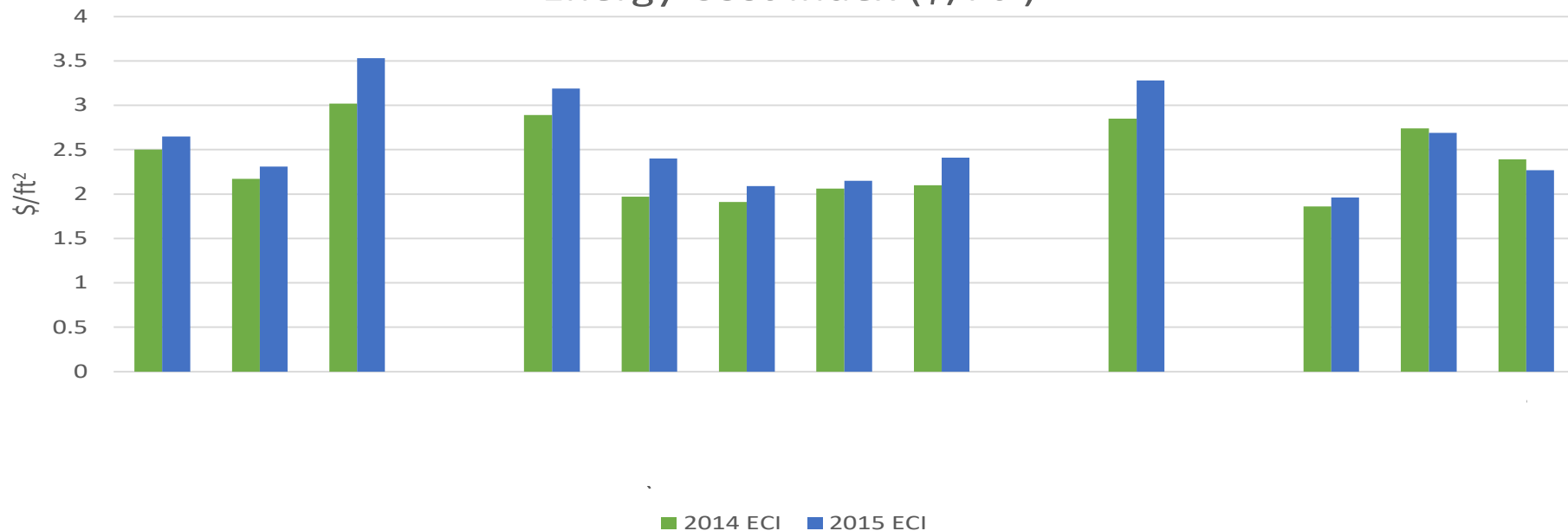
Industry: KPI#2: Water Use Comparison

Water Use Intensity (m³/m²)



Industry: KPI#3: Accurate Cost Comparison

Energy Cost Index (\$/Ft²)



Example of a Toronto Office Commercial Portfolio: Actual Results!

Energy & Cost Avoidance

Energy Reduction

46,512,503

ekWh

Avoided GHG Emissions

24,748

Metric Tons

Avoided Costs

\$6,051,940



Use EWRB as the Opportunity it is!

- 1) Use the 3 KPI's to determine benchmarks, targets and objectives
- 2) Establish best practices: Consider BOMA BEST
- 3) Consistent language in talking to:
 - tenants, proposed tenants & others
- 4) Great branding opportunities and examples are available
- 5) Re-positioning the asset
- 6) Lower costs – Why do we insist on paying utility costs month over month but do not understand the basic bill?

BOMA BEST: Available for Multi-Res



“Scott

We have had QuadReal commit their entire portfolio as an example. We can do some more research, but we have data that shows increased asset value. I'm not sure there is anything they can do to potentially increase returns for such a little investment. Supporting article: <http://www.nreionline.com/property-management/how-sustainability-helps-enhancing-property-values>”

John Smiciklas, Director, Energy & Environment, BOMA Canada



Suggested Approach

Develop Your Energy Management Action Plan (E-MAP) “Green” Team

1. Obtain stakeholder ‘agreement in principal’

- Develop a “Green Level 1 Service Package: Standard 3 KPI” – portfolio foundation
- Complete utility assessments using EWRB

2. Review results and agree on a specific property plan, based on priorities

3. Customize your E-MAP

- Share best practices
- Have an Incentive strategy
- Consider all programs? Tower Renewal, Retrofit / Audit / EPP

4. Ensure information is accurate!

O.Reg 506/18:

(3) An owner who is required to undertake verification under this section shall ensure that the information in respect of the prescribed property is verified by a person who holds an accreditation or certification in Canada or the United States that qualifies the person to perform data verification with respect to reported under this Regulation, such as a certified energy manager, building operator, measurement and verification (M&V) commissioning agent.



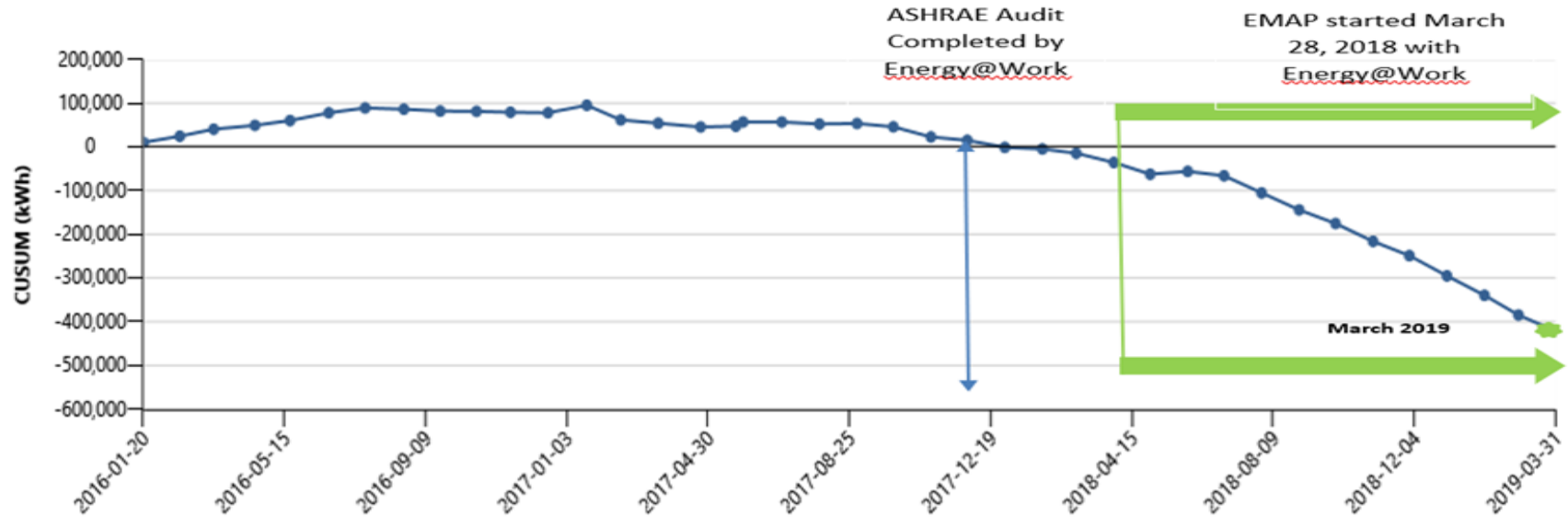
Thank You – Questions?



Case Study

Starting with the End in Mind: Case Study Example

1. Commercial Building: E-MAP Established Energy & Water KPI and Baseline



Success Spreads:

1 Property Expanded to 3 and Now 5!

First property: 10% Second: 6% and climbing Third: 21% and all 3: NO CAPITAL COST!

Properties Using Energy@ Work's E-MAP				As at March 2019					
Property	GFA	Start Date	kWh Used Jan - Dec 2018	EUI (kWh/SqFt.)	Baseline kWh	Actual kWh M&V	kWh Saved	% kWh Savings	Cost Avoided \$
Property 1	249,588	27-Mar-18	3,373,172	13.25	3,694,027	3,308,003	386,024	10%	\$ 57,831
Property 2	144,523	05-Nov-18	2,036,800	13.69	815,662	764,000	51,662	6%	\$ 8,327
Property 3	70,035	29-Nov-18	960,664	13.67	335,083	264,416	70,667	21%	\$ 12,143
Property 4	120,806	TBD	2,129,802	17.63	TBD	TBD	TBD	TBD	TBD
Property 5	97,088	TBD	2,158,065	22.23	TBD	TBD	TBD	TBD	TBD

Source File: 2019-04-17 Madison Energy@Work E-MAP

Note: EUI is the Electricity Use Intensity of the building i.e. kWh/sqft.

BOMA's average EUI is 17 kWh/sqft.

Energy@Work

Understand Right. Use Right. Buy Right.®

Example Mileage- Something we all have done?

What is the mileage of my car?

Mileage	km	liters	km/l	l/100 km	l/100 km	Better or Worse?
Start	125,335	0	Actual	Actual	Benchmark	
Re-fill	126,110	80.114				
	775	80.114	9.7	10.3	8.4	

Cost / litre	\$1.289				
Cost of a Fill Up	\$103.27				
If annual mileage is:	100,000		Annual fuel cost is:		

2019-05-25 Case Study for CHF AGM- June 6th (Energy@Work) excel

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Answers: km/l OR l/100km

Mileage	km	liters	km/l	l/100 km	l/100 km	Better or Worse?
Start	125,335	0	Actual	Actual	Benchmark	
Re-fill	126,110	80.114				
	775	80.114	9.7	10.3	8.4	

worse by 23%

Cost / litre	\$1.289		
Cost of a Fill Up	\$103.27		
If annual mileage is:	100,000	Annual fuel cost is:	Estimated \$13,324.77

Estimated \$13,324.77

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<https://learn.eartheasy.com/guides/how-to-calculate-gas-mileage/>

Compare selected models
Save selected models

Conventional/hybrid vehicles

Results 1 to 1 of 1

Select	Make & Model	Year	Class	Eng/ Cyl	Trans	Fuel	Consumption L/100 km			\$/yr	CO ₂ (g/km)	Ranking	
							City	Hwy	Comb			Class	All
<input type="checkbox"/>	Acura RLX Hybrid	2019	M	3.5/6	AM7	Z	8.4	8.2	8.4	\$1,966	196	75	226

What about your Building?

What is important to get right? Energy and Water Use Reporting and Benchmarking (EWRB)

Energy Use Intensity Comparison

Output is:	Energy Use Intensity	EUI	eKWh/sqft
	Water Use Intensity	WUI	M ³ / M ²

Necessary Inputs:
1 _____
2 _____
3 _____
4 _____
To be meaningful what else would be important?
a) _____
b) _____
c) _____
d) _____
e) _____

We will take a 5 minute break
- form groups and meet back at 4:30

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Comments

Cost / litre	\$1.289	
Cost of a Fill Up	\$103.27	
If annual mileage is:	100,000	Annual fuel cost is: <input type="text"/> Estimated <input type="text" value="\$13,324.77"/>

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Energy and Water Use Reporting and Benchmarking (EWRB)

Energy Use Intensity Comparison

Output is:	Energy Use Intensity	EUI	eKWh/sqft
	Water Use Intensity	WUI	M^3/ M^2

Necessary Inputs:
1 _____
2 _____
3 _____
4 _____
To be meaningful what else would be important?
a) _____
b) _____
c) _____
d) _____
e) _____

Essential

Gross Floor Area

Electricity Use

Natural Gas Use

Water Use

Considerations

of Units

Amenities, pool

occupants

unusual use - anything else included

Etc.

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Final Thoughts: 3 Things to Take Away

1. Value of Benchmarking: EWRB is designed to help. An Opportunity, Not a Threat

2. Must avoid 'Garbage in = Garbage Out'

Ensure you have a certified professional to:

i) enter data

ii) understand the importance and

iii) interpret the results

3. Investing in Yourself!

EWRB will lead to a better building AND it can be fun to see the results!

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