

JANUARY 26, 2024

Energy Management and Efficient Electrification Series for Mid-Tier Commercial Real Estate: Developing a Retrofit Strategy – Your Roadmap to Big Savings

**Presented by
Stephen Dixon and Stuart Galloway**



Our objectives

This workshop is designed to provide:

- A road map to finding and implementing savings with retrofits
- Techniques for making and pitching the business case
- An overview of how Save on Energy (SoE) supports retrofits
- Insight into how alternative financing models can support deep retrofits



Speaker Bios



Stephen Dixon

sdixon@knowenergy.com

Experienced and broadly recognized energy management trainer in Canada with extensive experience in training on and developing the RETScreen Expert software.

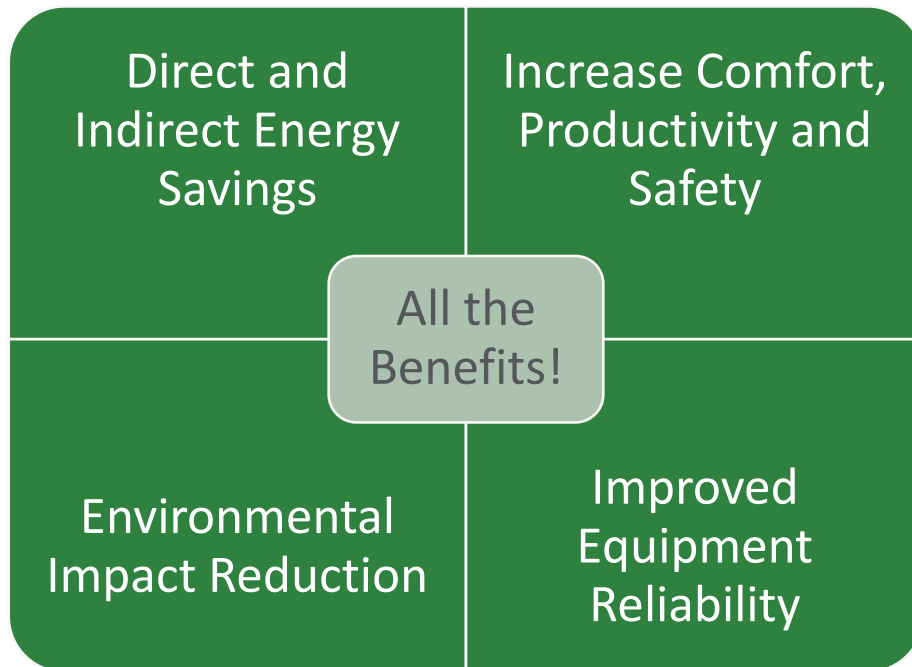


Stuart Galloway

sgalloway@sofiac.ca

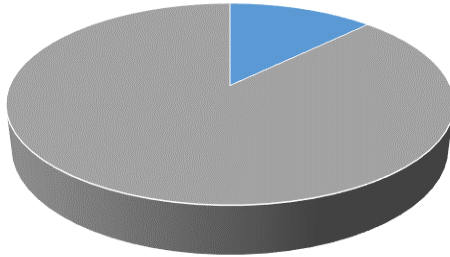
Executive vice-president of SOFIAC, providing expertise for strategic capital planning, deal structuring and procurement advice derived from over 25 years in infrastructure and project finance.

Retrofit Projects Can Deliver Many Benefits



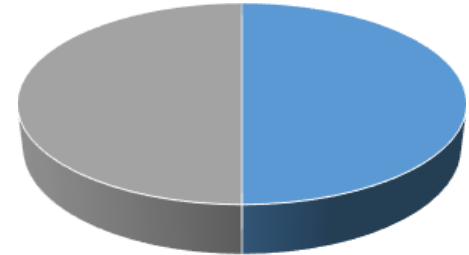
Energy, Cost and Carbon (for a typical Ontario Building)

Utility Cost



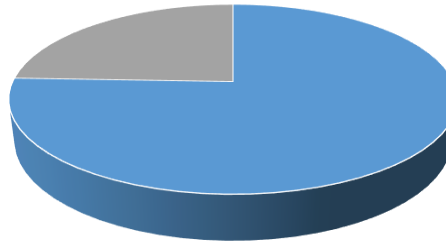
■ Natural Gas ■ Electricity

Energy Consumption



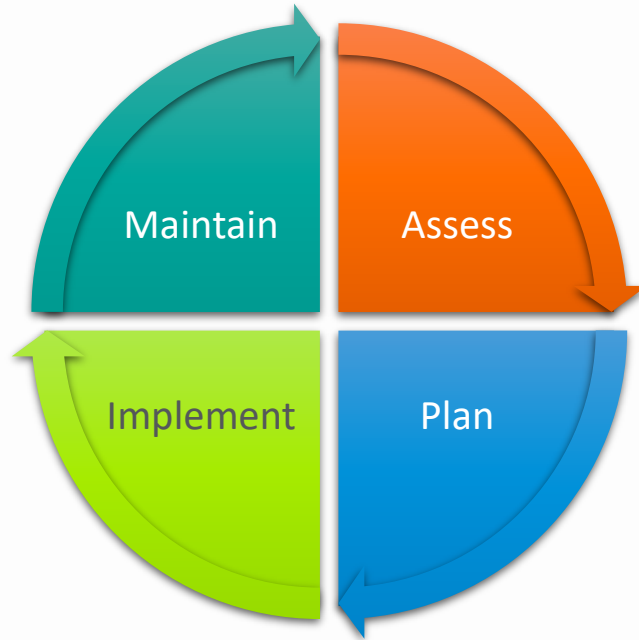
■ Natural Gas ■ Electricity

Carbon Emissions



■ Natural Gas ■ Electricity

The Approach



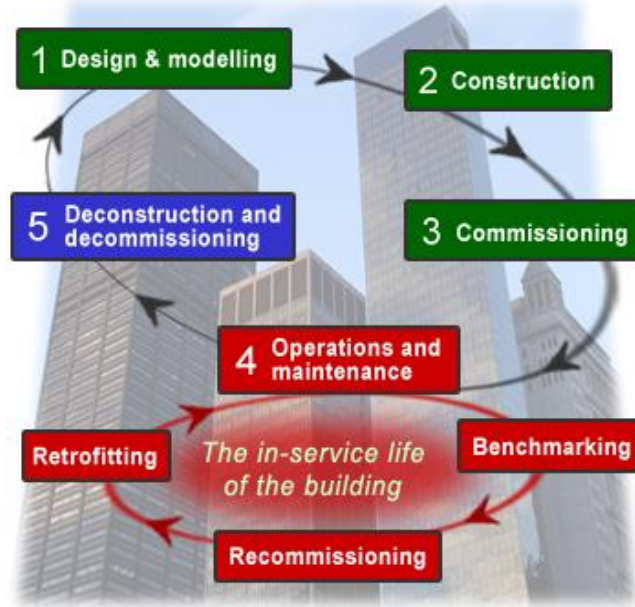
Defining the Categories of Retrofits

- **Minor retrofits** – one-off measures
 - Adding insulation
 - Upgrading lighting systems
- **Major retrofits** – holistic approach
 - Replacing window glazing and doors
 - Updating inefficient heating and cooling systems
 - Can become part of a deep retrofit
- **Deep retrofits** – extensive
 - Aimed at large overall reductions across the board
 - Multiple systems replacement
 - Accounts for synergies between systems
 - Renewable energy systems
 - Air- or ground-source heat pumps



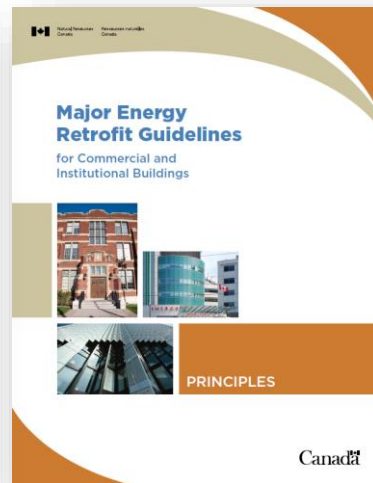
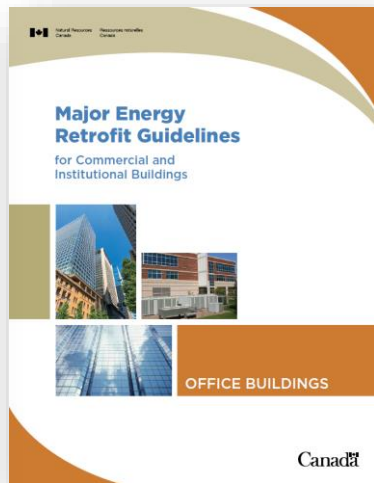
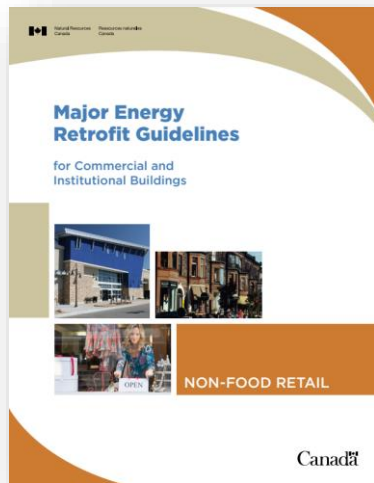
Poll:
How many participants are planning a retrofit?

Retrofitting Within the Building Life Cycle



Source: The Building Life Cycle, <http://www.nrcan.gc.ca/energy/efficiency/buildings/eeb/key/cycle/3973>

We'll Be Using This Road Map



Additional guides available:

- K-12 Schools
- Hospitals
- Hotels and Motels
- Supermarkets
- Food Stores

<https://www.nrcan.gc.ca/energy-efficiency/buildings/existing-buildings/retrofitting/20707>

Retrofit Strategy

1. Assess

- Establishing commitment
- Benchmarking with Portfolio Manager
- Identifying opportunities

2. Plan

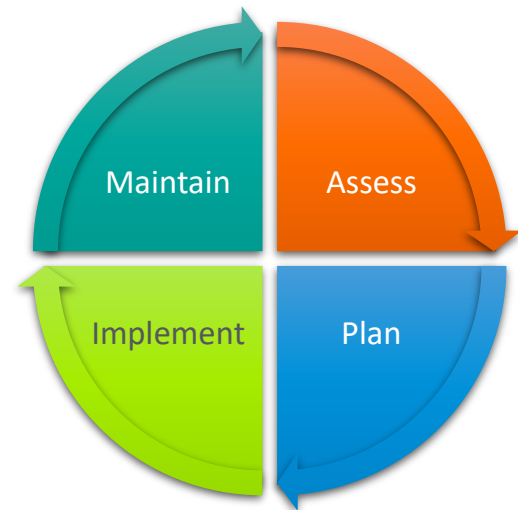
- Staging project measures
- Determining timing
- Creating the business case

3. Implement

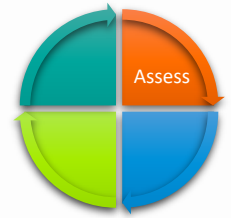
- Managing your project
- Selecting a contractor
- Commissioning and project hand-off

4. Maintain

- Training staff
- Ongoing building optimization
- Monitoring and tracking



<https://www.nrcan.gc.ca/energy-efficiency/buildings/existing-buildings/retrofitting/20707>



1. Assess

Establishing Commitment, Benchmarking and Finding the Opportunities

Establishing Commitment

- What is it?
 - Full and visible support of senior management
 - May be in the form of a vision statement or energy policy
- Why do you need it?
 - Authority
 - Profile
 - Project funding
- When do you need it?
 - Get commitment to initiate project
 - Update annually to maintain momentum

Increased
Competitiveness

Quantifiable
Cost Reductions

Environmental
Sustainability

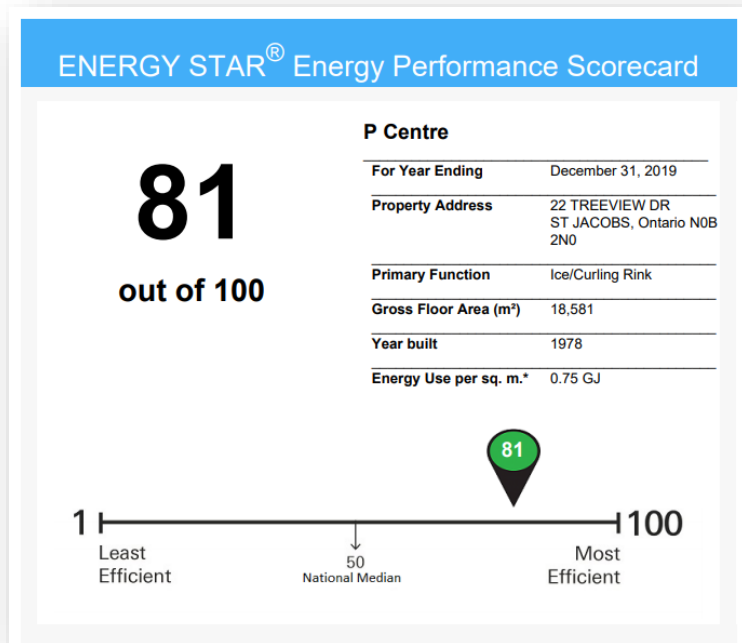
Engaged
Workforce

Corporate Profile

Asset Renewal

ESG – Environmental, Social & Governance

Benchmarking is Foundational

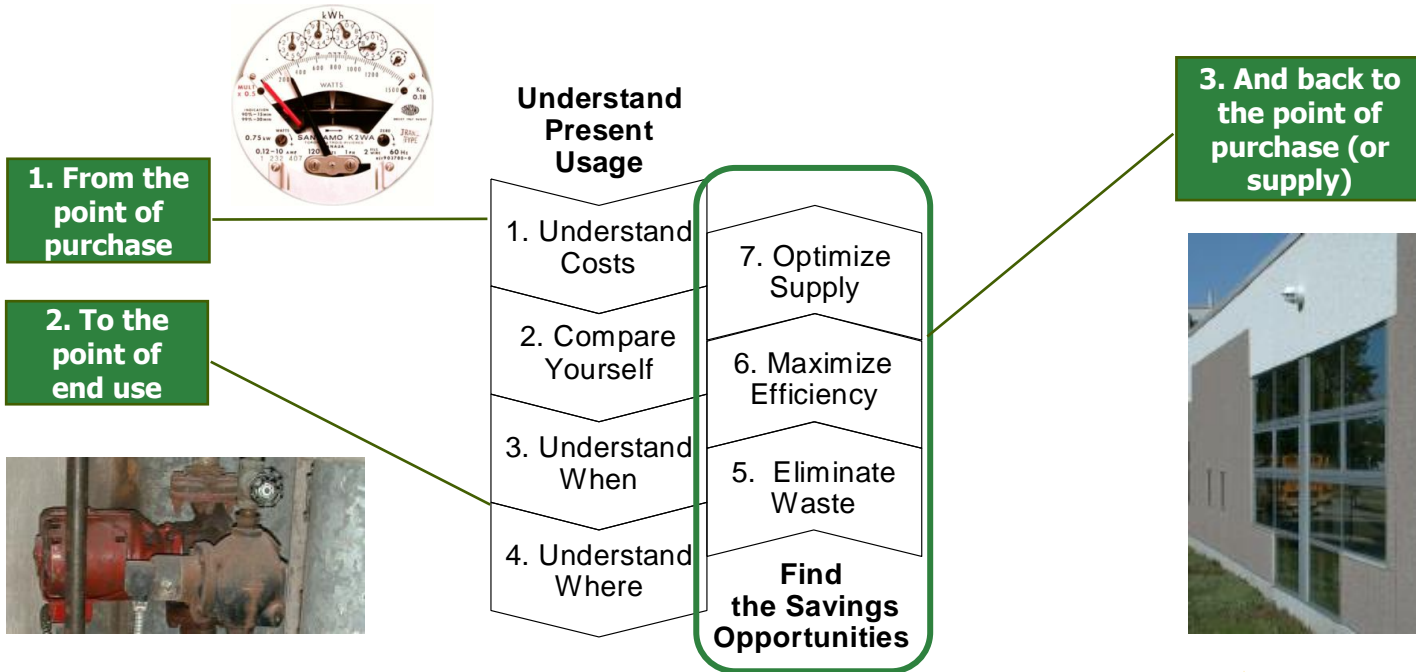


By July 2023, all buildings in Ontario over 50,000 sq. ft. will need to report under the Ontario Energy Water Reporting and Benchmarking (EWRB) Regulations.

<https://www.ontario.ca/page/report-energy-water-use-large-buildings>

Energy Assessment Process – Seven Steps

Selecting and Prioritizing Measures – Three Key Steps



Identifying Opportunities with an Energy Audit – What Makes a Good Audit?

1. Objectivity of auditor
2. Lots of input from customer and operators
3. Correct hours and correct price in savings estimates
4. Analysis of historical data
5. Installed costs – not just equipment cost
6. Accounting for interaction between measures.
7. Good financials – Savings to Investment Ratio, Net Present Value & Internal Rate of Return – not just simple payback

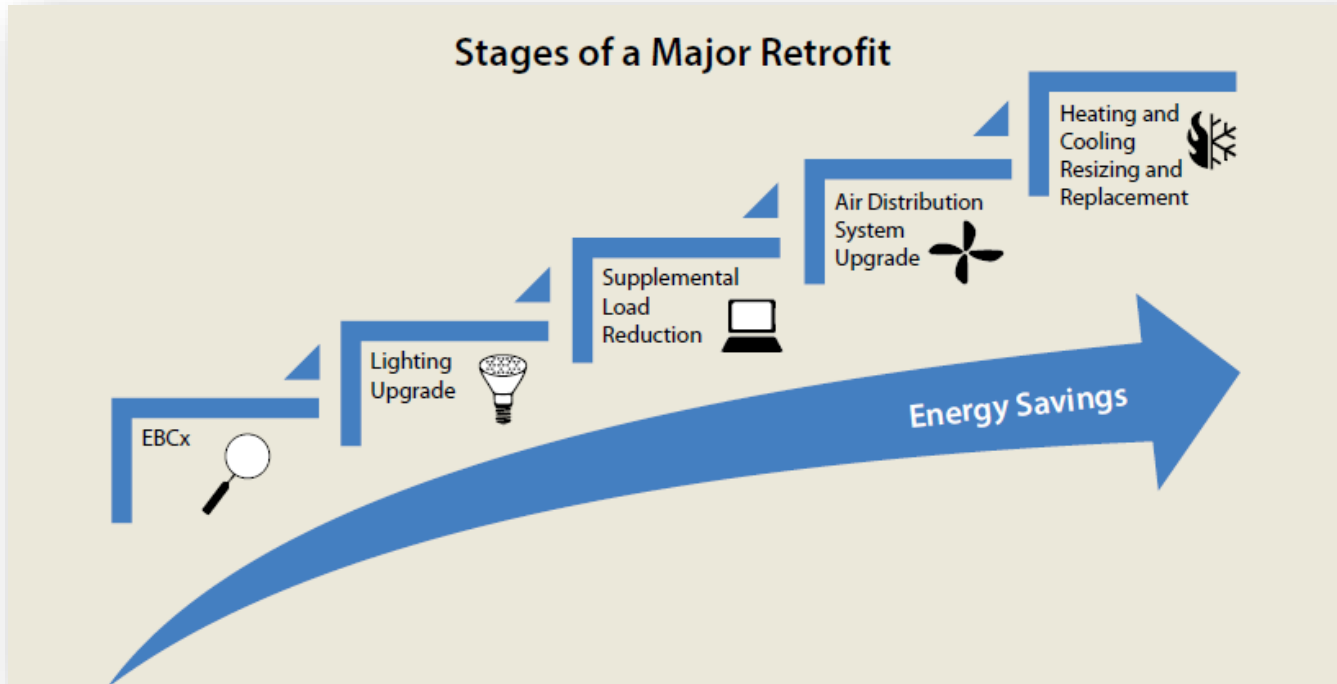




2. Plan

Staging, Timing, Building the Business Case and Financing

Staging Retrofits Will Maximize Benefits



<https://www.nrcan.gc.ca/energy-efficiency/buildings/existing-buildings/retrofitting/20707>

Existing Building Commissioning (EBCx)

- EBCx is not actually a measure, it is a process!
 - Optimize what is already in place
 - Establish the current facility requirements
 - Eliminate waste, increase occupant comfort and equipment reliability
- Within a major retrofit strategy
 - EBCx should not be done on systems that are planned to be changed within the next 3-5 years
 - It may be done to establish proper baseline operating conditions and on systems not targeted for major retrofits
 - Can be done alongside of major retrofits; often the EBCx provider becomes a Cx provider for the new systems.



Lighting Upgrades

- Changing from T8 to LED, lamp for lamp, is not always optimal and is often not a major retrofit
- Redesign of the lighting system to optimize light level and take full advantage of LED fixture efficiency, not just lamp efficiency, falls into the major retrofit category
- Requires more planning – what is the future use of my building?
- Benefit can be as much as 50% greater than a simple drop-in lamp retrofit
- Reduces cooling loads, can positively impact other major retrofits to HVAC systems



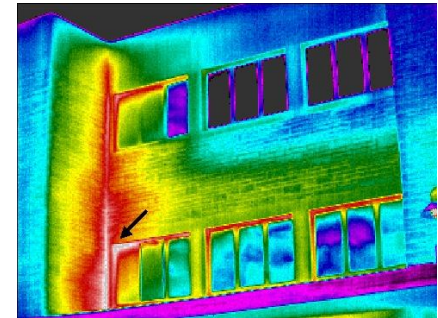
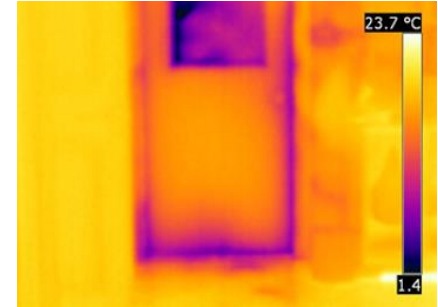
Plug/IT Load Reduction

- Often the single largest end use in an office building, twice as much as lighting in many cases
- Difficult to address as it involves mostly tenants in many buildings
 - Must involve tenants from the onset, including IT
- Can negatively, and significantly, impact HVAC if not properly planned
- Main HVAC should never serve to cool IT spaces



Building Envelope

- Lower cost
 - Repair/maintain weather stripping to reduce infiltration of outside air
 - Caulking/sealing windows and air gaps to reduce infiltration of outside air
- Higher cost
 - Replace windows with 2-, 3- or 4-pane systems with low-e and argon filled
 - Insulation upgrades to reduce heat transfer through the walls, roof and foundation



HVAC Replacement and Upgrade

- Rooftop units (RTUs) are often “install and forget” HVAC systems
 - Can lead to significant inefficiencies
- Major retrofit of HVAC including RTUs should focus on efficiency, reliability, serviceability. Look for:
 - Built quality – dampers, casings, components
 - Efficiency – EER, motor, VFDs, heating efficiency
 - Controls – open protocol/interoperability
- Consider various forms of heat pumps for heating where applicable
 - Efficient electrification resources from Save on Energy



A Checklist: Benchmarking to Opportunity

201

My Facility – Benchmarking Results

PORTFOLIO MANAGER INPUTS

Gross floor area: _____
 Weekly operating hours: _____
 # of computers: _____
 # of workers on main shift: _____
 % that can be heated/cooled: _____

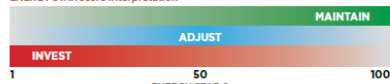
PORTFOLIO MANAGER OUTPUTS

ENERGY STAR score: _____
 Site EUI: _____
 Source EUI: _____
 Median property EUI: _____

TARGETS

ENERGY STAR score target: _____
 Site EUI target: _____

ENERGY STAR score Interpretation



Adapted from the U.S. EPA's Energy Performance Rating System

Office buildings – energy efficiency opportunity questionnaire

EBCx	Lighting upgrades	Supplemental load reduction	Air distribution systems upgrade	Heating and cooling resizing and replacement
<ul style="list-style-type: none"> <input type="checkbox"/> Do the lighting and occupancy schedules match? [Pg. 8] <input type="checkbox"/> Is the air handling system on a schedule? [Pg. 8] <input type="checkbox"/> Are the zone temperature set points set back/forward during unoccupied hours? [Pg. 8] <input type="checkbox"/> Does the air handling equipment have a properly functioning economizer to enable free cooling? [Pg. 9] <input type="checkbox"/> Are the heating coil valves turned off during the cooling season? [Pg. 9] <input type="checkbox"/> Is the zone temperature deadband wide enough? [Pg. 9] <input type="checkbox"/> Is the supply air temperature reset depending on outdoor conditions? [Pg. 9] <input type="checkbox"/> Are the outside air dampers closed during morning warm-up during the heating season? [Pg. 9] <input type="checkbox"/> Is an early morning flush performed regularly during the cooling season? [Pg. 10] <input type="checkbox"/> Is the VAV system static pressure set point automatically reset through a zone-level control feedback loop? [Pg. 10] <input type="checkbox"/> Are the VAV zone dampers operating properly? [Pg. 10] 	<p>Direct replacement</p> <ul style="list-style-type: none"> <input type="checkbox"/> Have frequently used incandescent fixtures been replaced with LED fixtures? [Pg. 16] <input type="checkbox"/> Have incandescent Exit signs been replaced with LED signs? [Pg. 16] <input type="checkbox"/> Have exterior light fixtures been replaced with LED fixtures? [Pg. 16] <input type="checkbox"/> Have fluorescent fixtures in stairways and/or exit routes been replaced with LED fixtures? [Pg. 16] <input type="checkbox"/> Have wall switches in enclosed rooms been replaced with occupancy/vacancy sensors? [Pg. 17] <p>Designed retrofits</p> <ul style="list-style-type: none"> <input type="checkbox"/> Have unnecessary lamps or fixtures been removed (delamping)? [Pg. 19] <input type="checkbox"/> Does the lighting design take advantage of specular reflectors? [Pg. 20] <input type="checkbox"/> Has the ceiling light intensity been lowered and workers provided with individual LED task lights? [Pg. 20] 	<p>Power loads and equipment</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is equipment being turned off when not in use? [Pg. 24] <input type="checkbox"/> Is ENERGY STAR equipment being used where applicable? [Pg. 25] <input type="checkbox"/> Has a policy regarding personal powered devices been implemented? [Pg. 25] <input type="checkbox"/> Has an employee energy awareness program been implemented? [Pg. 25] <input type="checkbox"/> Have transformers been replaced with energy-efficient models? [Pg. 25] <input type="checkbox"/> Has your data centre been retrofitted? [Pg. 26] <p>Envelope</p> <ul style="list-style-type: none"> <input type="checkbox"/> Have infiltration issues been addressed? [Pg. 29] <input type="checkbox"/> Has an air barrier been added or improved? [Pg. 30] <input type="checkbox"/> Do the roof and wall insulation levels meet NECB requirements? [Pg. 31] <input type="checkbox"/> Have the windows and doors been upgraded? [Pg. 32] <input type="checkbox"/> Does the building have a "cool roof"? [Pg. 33] 	<ul style="list-style-type: none"> <input type="checkbox"/> Is there a DCV system? [Pg. 41] <input type="checkbox"/> Has the CV reheat, multi-zone, or dual-duct system been converted to a modern VAV system? [Pg. 42] <input type="checkbox"/> Are fans and fan motors right-sized? [Pg. 42] <input type="checkbox"/> Have VSDs been added to pumps and fans with variable loads? [Pg. 42] <input type="checkbox"/> Is heat recovered from exhaust streams? [Pg. 42] <input type="checkbox"/> Is outdoor air pre-heated with a solar air heating system? [Pg. 43] <input type="checkbox"/> Is there a VRF system? [Pg. 43] <input type="checkbox"/> Has the mixed-air delivery system been replaced with a DOAS? [Pg. 44] <input type="checkbox"/> Have existing air filters been replaced with electronic air cleaners? [Pg. 44] <p>Central heating</p> <ul style="list-style-type: none"> <input type="checkbox"/> Have existing boilers' control systems been replaced? [Pg. 47] <input type="checkbox"/> Have flow-restricting valves been eliminated? [Pg. 47] <input type="checkbox"/> Have pumps been replaced and right-sized? [Pg. 47] <input type="checkbox"/> Are heating water pumps being controlled with VSDs? [Pg. 48] <input type="checkbox"/> Have new burners been installed on existing boilers? [Pg. 48] <input type="checkbox"/> Have turbulators been installed in firetube boilers? [Pg. 48] <input type="checkbox"/> Has a new condensing boiler been installed? [Pg. 48] <input type="checkbox"/> Has a new modulating boiler been installed? [Pg. 49] <input type="checkbox"/> Has a new hybrid boiler system been installed? [Pg. 49] <input type="checkbox"/> Has a new heat pump system been installed? [Pg. 50] <p>Central cooling</p> <ul style="list-style-type: none"> <input type="checkbox"/> Have flow-restricting valves been eliminated? [Pg. 56] <input type="checkbox"/> Are chilled water pipes insulated? [Pg. 56] <input type="checkbox"/> Have pumps been replaced and right-sized? [Pg. 56] 	

Major Energy Retrofit Guidelines for Commercial and Institutional Buildings • Office Buildings



Developing the Financial Case

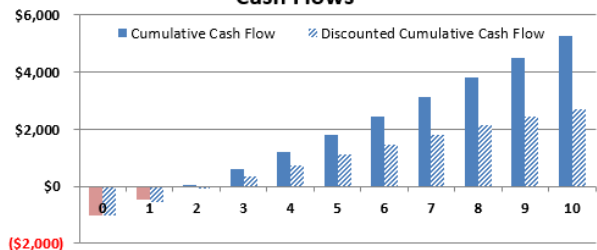
Treat Energy Efficiency as an Investment!

- As an investment, consider using value indicators such as:
 - Savings to Investment Ratio (SIR)
 - Net Present Value (NPV)
 - Internal Rate of Return (IRR)

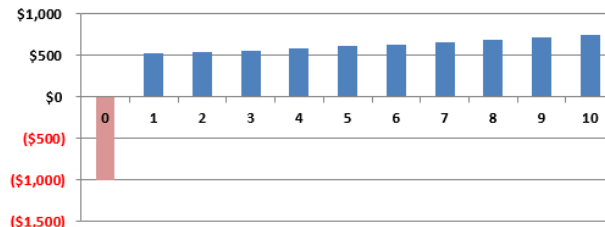
Financial Metrics

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Simple Payback	2.0 yrs										
Internal Rate of Return	IRR	-48.0%	4.0%	28.3%	40.3%	46.7%	50.3%	52.4%	53.7%	54.5%	55.0%
Modified Internal Rate of Return	MIRR	-48.0%	5.5%	21.3%	26.4%	27.8%	27.9%	27.5%	26.9%	26.2%	25.4%
Net Present Value	NPV	(\$527)	(\$80)	\$342	\$742	\$1,119	\$1,477	\$1,814	\$2,133	\$2,435	\$2,721
Savings to Investment Ratio	SIR	0.5	0.9	1.3	1.7	2.1	2.5	2.8	3.1	3.4	3.7

Cash Flows



Net Annual Cash Flow



RETScreen Expert – A Technical & Financial Analysis Tool!

RETScreen - Financial Analysis Subscriber: TdS Dixon Inc - Professional

Financial parameters		Costs Savings Revenue		Yearly cash flows		
General		Initial costs		Year	Pre-tax	Cumulative
Fuel cost escalation rate	% 2%	Incremental initial costs	100% \$ 32,682	#	\$	\$
Inflation rate	% 2%	Total initial costs	100% \$ 32,682	0	-9,805	-9,805
Discount rate	% 9%	Yearly cash flows - Year 1		1	1,560	-8,245
Reinvestment rate	% 9%	Annual costs and debt payments		2	1,641	-6,604
Project life	yr 20	O&M costs (savings) \$ -382		3	1,724	-4,880
Finance		Fuel cost - proposed case \$ 6,820		4	1,809	-3,071
Incentives and grants	\$	Debt payments - 15 yrs \$ 2,512		5	1,895	-1,176
Debt ratio	% 70%	Total annual costs \$ 8,949		6	1,983	807
Debt	\$ 22,877	Annual savings and revenue		7	2,073	2,880
Equity	\$ 9,805	Fuel cost - base case \$ 10,429		8	2,165	5,045
Debt interest rate	% 7%	GHG reduction revenue \$ 0		9	2,258	7,304
Debt term	yr 15	Other revenue (cost) \$ 0		10	2,354	9,658
Debt payments	\$/yr 2,512	Total annual savings and revenue \$ 10,429		11	2,451	12,109
Income tax analysis <input type="checkbox"/>		Net yearly cash flow - Year 1 \$ 1,480		12	2,550	14,659
Annual revenue		Financial viability		13	2,652	17,311
GHG reduction revenue		Pre-tax IRR - equity % 20.3%		14	2,755	20,066
Gross GHG reduction	tCO ₂ /yr 13	Pre-tax MIRR - equity % 13.6%		15	2,860	22,926
Gross GHG reduction - 20 yrs	tCO ₂ 268	Pre-tax IRR - assets % 5.3%		16	5,480	28,406
GHG reduction revenue	\$ 0	Pre-tax MIRR - assets % 7%		17	5,589	33,995
Other revenue (cost) <input type="checkbox"/>		Simple payback yr 8.2		18	5,701	39,696
		Equity payback yr 5.6		19	5,815	45,511
		Net Present Value (NPV) \$ 12,690		20	5,931	51,442
		Annual life cycle savings \$/yr 1,390				
		Benefit-Cost (B-C) ratio 2.3				
		Debt service coverage 1.6				
		GHG reduction cost \$/tCO ₂ -82.17				

You can explore a whole building retrofit using the Virtual Energy Analyzer



Incentives from Save on Energy

About the Retrofit Program

Which project types are eligible?



HVAC



Controls &
Automation



Refrigeration



Motors &
Drives



Compressed
Air



Lighting

Lighting incentives are offered at Point of Sale as of December 2023

Prescriptive and Custom Tracks

Prescriptive

- Set incentive rates for common retrofits
- No calculations required
- No post-project M&V

Custom

- Calculated incentive based on energy (kWh) or demand (kW) savings for more complex projects
- Estimated savings calculations required
- Post-project M&V may be required to verify savings

Retrofit Program Process (1/2)

Visit the [SOE Resources and Support page](#) for application checklists, tips and best practices



Register for the Retrofit Portal

Sign up for a Save on Energy account at saveonenergy.ca/Retrofit. A user guide and instructional videos are available online on the Retrofit Program's [Resources & Support page](#).

Submit Application Documents

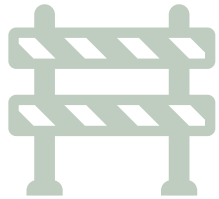
Enter project details. Attach quotes, specification sheets, calculations, pre-project photos, M&V Plan (if required)

Project Pre-Approval

Respond to any requests for information. Receive your notice of pre-approval

Retrofit Program Process (2/2)

Visit the [Resources and Support page](#) for application checklists, tips and best practices



Project Installation

Complete your project installation once you have received your notice of pre-approval

Post-Project Application

Enter project details. Attach invoices, proof of payment, QA/QC photos and M&V documents if required

Post-Project Approval

You will receive a notice of approval following review and approval of all required documents

Incentive Payment

Following approval, submit an invoice for the approved incentive amount

New Measure Incentive Rates

Measure	New Incentive
Unitary Air Source Heat Pump 20.0 to <63.3 Tons	\$18,000/unit
Refrigeration Compressors High Efficiency Scroll Compressors	\$240/HP
Circulator Pumps with ECMs >=750<1490 W (>=1<2HP)	\$2,200/unit
Compressed Air VD Variable Displacement Compressor >= 20 HP	\$3,120/unit
Demand Control Ventilation – Enclosed Parking Garage >50 to <= 75 HP	\$29,850/unit
Unitary Air Conditioning Unit 20 to < 63 tons	\$4,880/unit
Variable Frequency Drive 5 HP	\$1,050/unit
Variable Frequency Drive 150HP	\$29,400/unit

The complete list of incentives can be found on the Retrofit program [web page](#).

Retrofit Regional Adders

Save on Energy offers Retrofit regional adders in certain areas of Ontario where electricity constraints exist. These adders **double the incentive for non-lighting prescriptive measures** to further encourage uptake in the Retrofit program. The target areas are:

- Niagara region
- Kingston area
- Southern Huron Perth
- Pembroke area
- Kenora
- Waubaushene
- Barrie/Muskoka
- Elmira
- Peterborough/Belleveille

Postal codes for each eligible target area are available on the [Save on Energy website](#).

Energy Performance Program

- Holistic approach to energy savings: operational + behaviour + capital
- Savings determined by comparing annual metered consumption to the baseline energy model
- Incentive of **\$0.04/kWh** paid each year for **three years** + **\$50/kW adder** for summer peak demand savings (June - August, weekdays)
- Facilities need to save at least 5% energy savings (check in after year 2)



Existing Building Commissioning

Three Phases:

- **Investigation Phase:** Investigation Report: incentive up to **\$0.06/sq. ft.**, capped at 75% of cost paid by participant to Commissioning Provider or **\$50,000** (per facility)
- **Implementation Phase:** Incentive of **\$0.03/kWh** of **confirmed energy savings**, capped at 30% of facility's annual electricity consumption (kWh) or **\$50,000**, whichever is less
- **Persistence Phase:** At the end of 12 months, incentive of **\$0.03/kWh** of **confirmed energy savings**, capped at 30% of facility's annual electricity consumption (kWh) or **\$50,000**, whichever is less

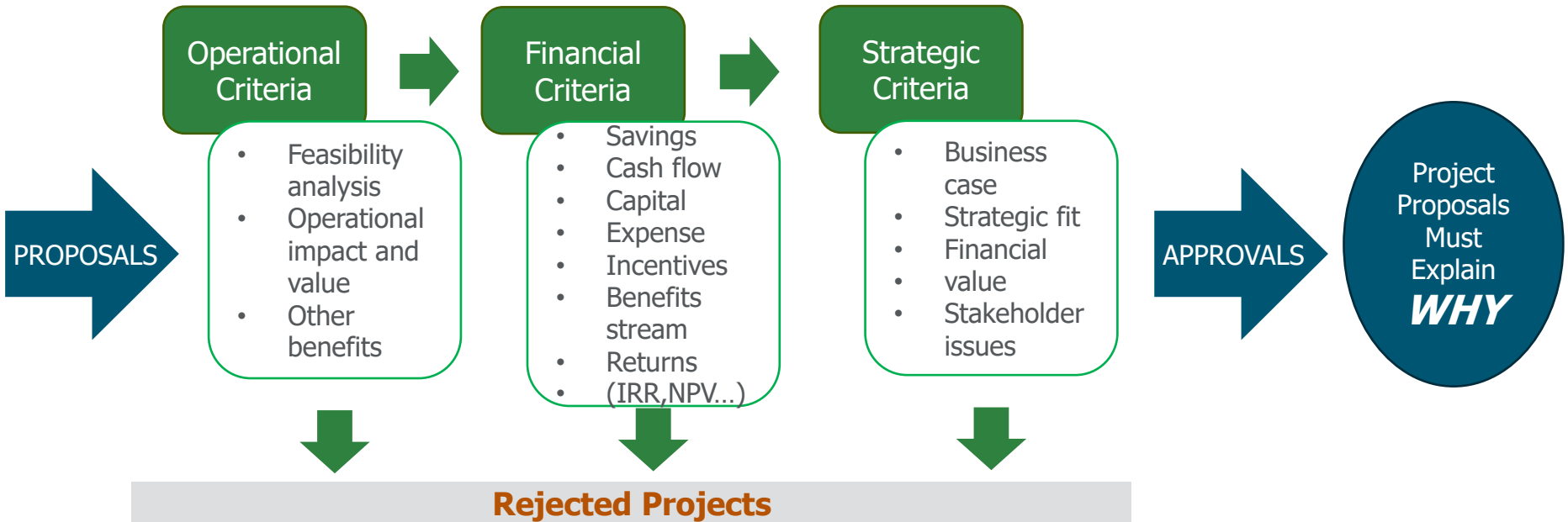


Making and Pitching The Business Case

Featuring the One-Page Proposal

Getting to Yes!

Mapping the Decision Process



The One-Page Proposal

**THE
ONE-PAGE
PROPOSAL**

**HOW TO GET YOUR
BUSINESS PITCH
ONTO ONE
PERSUASIVE PAGE**

Discover the secret to:

- organizing your ideas
- finding just the right words
- standing out among the competition
- receiving a rapid and POSITIVE response

PATRICK G. RILEY

LET'S CLEAR THE AIR

Addressing ventilation fume control needs at University of YourTown

TARGET: Modify laboratory ventilation fan system to meet peak fume-evacuation demands

- Improve working conditions for staff and students
- Extend the useful life of fan motor
- Defer capital investment
- Reduce energy expenses by \$31,000 annually
- Attract an up-front incentive equal to the first year of savings.

The University of YourTown is globally recognized as a research powerhouse and leader in research-intensive education.

The limitations of the fume hood exhaust system in the Science Building threatens the University's commitment to providing a healthy and safe workplace. The current fan system does not meet peak fume-evacuation requirements during the day, leading to a build-up of harmful fumes. Researchers and support staff in the department have been asking for transfers out at a higher rate than other buildings.

Implementing a variable speed drive technology on the ventilation will improve the exhaust performance while reducing energy waste during non-peak times. The system can be upgraded with minimal disruption to research productivity over a weekend.

We would be happy to speak with union leaders to discuss how this system will address their concerns.

FINANCIAL:		Net Present Value	\$130,373
Total Project Cost	\$145,000	Simple Payback Period	3.2
Annual Maintenance Costs	\$2,500	Return on Investment	31%
Non-utility Savings	\$7,000	Internal Rate of Return	19%
Projected Annual Savings	\$31,000	Modified IRR	2.1
Potential Rebate	\$31,000	Savings to Investment Ratio	
Operating Life	10 years		

STATUS:

A pre-qualified \$31,000 incentive to implement this project is available from the local electricity distributor.

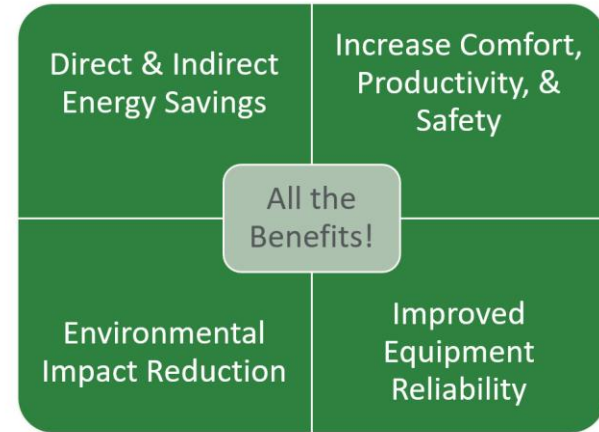
ACTION:

U of Y to authorize purchase agreement with Vendor to upgrade the lab ventilation system to variable speed drive technology to improve the laboratory fume exhaust.

The Strategic Steps of a One-Page Proposal

Follows a logical thought process:

- Title and subtitle - what's to come
- Target and secondary targets - goals
- Rationale - background, WHY, the pitch
- Financial - \$\$\$
- Status - what's happening
- Action - what do you want?





3. Implement

Project Management, Financing and Contracting

Project Management and Contracting

- A good project can get derailed by poor project management
- All retrofit projects should have formal management, typically following the five-step process
 - **Initiating** involves defining your project and obtaining authorization to proceed
 - **Planning** involves establishing the scope of work, project objectives and the course of action
 - **Executing** involves selecting contractors and completing the project work
 - **Monitoring and controlling** happens in parallel with the execution step and involves ensuring that project work is undertaken as planned, as well as managing any necessary change orders
 - **Closing** involves finalizing project activities and formally closing contracts
- The root of project management success is good communication

Project Management

In-House Projects

Design Bid Build (DBB)/ Design Build (DB)	Large team of PMs to manage large complex projects
	Must be dedicated to the project(s)
	Experts in this field?
	Document development
	Responsible when things go wrong - risk
	Approvals governance for changes and milestones
	In-house cost

Partnering Projects

SOFIAC/ Energy Performance Contracts (EPC)/ Energy as a Service (EaaS)	Smaller team of PMs – but still required!
	Likely still dedicated to the project
	Lower level of expertise in every field
	Documents already developed – faster
	Risk apportionment and accountability where it belongs
	Less governance – only at key decision stages
	Project cost

SOFIAC: Energy Performance Contracting

A \$500M investment fund for deep energy retrofit and decarbonization projects

Debt Partners:

CANADA 
INFRASTRUCTURE BANK

 **FIERA**
PRIVATE DEBT

Equity Partners:

 **Desjardins**
Global Asset Management

 **Fondaction**
Giving money meaning.

Managed jointly by:

 **ECONOLER**

 **Fondaction**
Giving money meaning.

With financial support from:

Canada 

Québec 

Comparison of Financing

	SOFIAC		Standard EPC (guaranteed savings)		Bank Lending		Energy as a service	
	SOFIAC	Client	EPC	Client	Bank	Client	Contractor	Client
Construction business model	Invest, design, build	Owns, operates, maintains (at client's discretion)	Design, build (can provide market rate financing)	Finance, owns, operates, maintains (at client's discretion)	Finance	Design, build, own, operate, maintain	Finance, design, build, own, operate, maintain	
Project investment	100% project finance		Often 100% project finance		Often 80% debt client needs to provide equity		100% project finance	
Repayment modality	Conditional on third party verified actual energy savings		Fixed monthly with annual look-back		Fixed loan repayment schedule		By agreed energy tariff, (minimum consumption commitment)	
Client positive cash flow`	Yes (up to 15% monthly savings)		No		No		No	

Comparison of Financing

	SOFIAC	Standard EPC (guaranteed savings)	Bank Lending	Energy as a service
GHG guaranteed savings	Yes	Not usually, but can be if included in contract	Can be if included in contract	No
Coverage of Development Costs	Yes	No	No	Yes
Cost of financing	Sub-market rates	Market rates	Market rates	Market rates
Contract Term	12 to 15 years (and beyond)	8 to 10 years	Up to 15 years	Up to 15 years possibly beyond
Client asset ownership	From day 1	From day 1	From day 1	Transferred to client at the end of contract with possible balloon payment
Client asset depreciation	From day 1	From day 1	From day 1	n/a
Project Performance Risk for Client	No exposure	Moderate exposure (most projects based on deemed savings), exposed to declining asset performance and potential early lifecycle replacement	Fully exposed	No exposure
Ability to exit the contract	Yes, minimal penalties or contract can be transferred	Yes, moderate penalties	Yes, minimal penalties	Yes, high penalties

Comparison of Financing

	SOFIAC	Standard EPC (guaranteed savings)	Bank Lending	Energy as a service
Maximize project energy and carbon savings	Primary objective, incentive to overperform	No incentive to overperform	n/a	Not a priority (priority is to sell energy)
Ability to incorporate additional project elements such as backlog maintenance, fleet EV conversion, etc.	Yes	Yes, subject to client's discretion	Subject to client's discretion	No
Procurement options	Documents already developed for procurement, client involvement as they wish, client picks contractor and best value solution for the project. Contractor selected is fully open book pricing	Requires full procurement, developed and managed by the client. Client picks the contractor. Pricing is not fully open book	Requires full procurement, developed and managed by the client. Client picks the contractor. Pricing is not fully open book	Direct solution with vendor. Client can run a competition but usually negotiated service
Agnostic technology solution	Yes	Depends on ESCO selected	Depends on Contractor selected	No
Document development	Already completed by SOFIAC, can be added to include specific client requirements (RFP, contracts)	Client develops procurement and contract documentation	Client develops procurement and contract documentation	Negotiation required of providers contract

Performance-based Approach

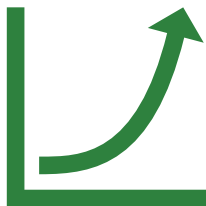
Projects paid only through a share of the demonstrated savings

- **No client investment** needed
- **Turnkey projects** to reduce GHG emissions or energy consumption by a minimum of 25%
- Technically and financially **risk-free**
- **10+ year** contractual arrangements
- **Low internal return rate** by investors
- Available to all facilities **across Canada**
- Client **retains control** of all assets at every project stage



To achieve ESG goals at no cost

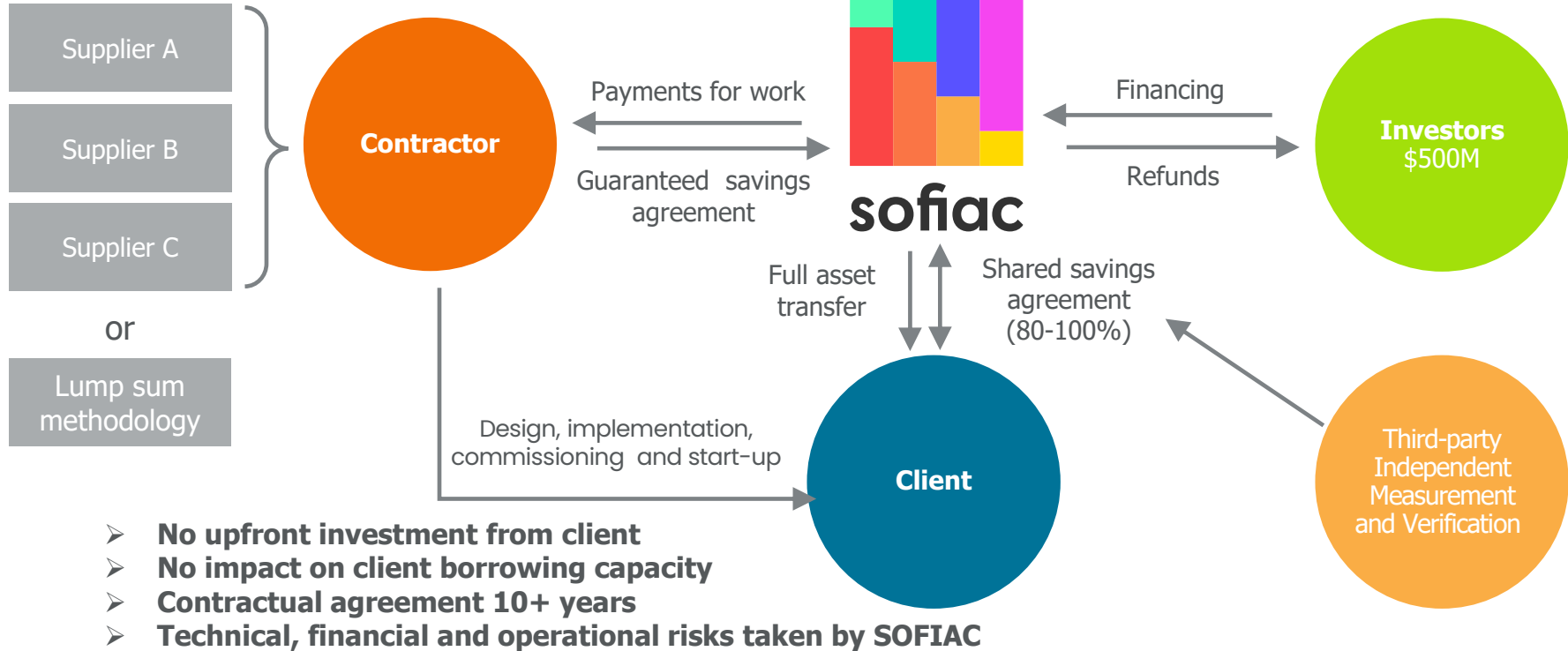
Positive Financial Impacts for Clients



- **Optimization of all available subsidies**
- **No impact on corporate financing operations**
 - Client shared savings agreement
 - SOFIAC incurs the debt
- **All amortization benefits to the client** (not public sector)
 - All implemented assets transferred to client as of day one
 - Accelerated depreciation of most investments
- Reduced future CAPEX needs
 - Acceleration of replaced assets without any investments

Positive (free) cash flows from day one and for the duration of the contract

Positive Financial Impacts for Clients



Client Control

Client retains control of all assets at every project stage

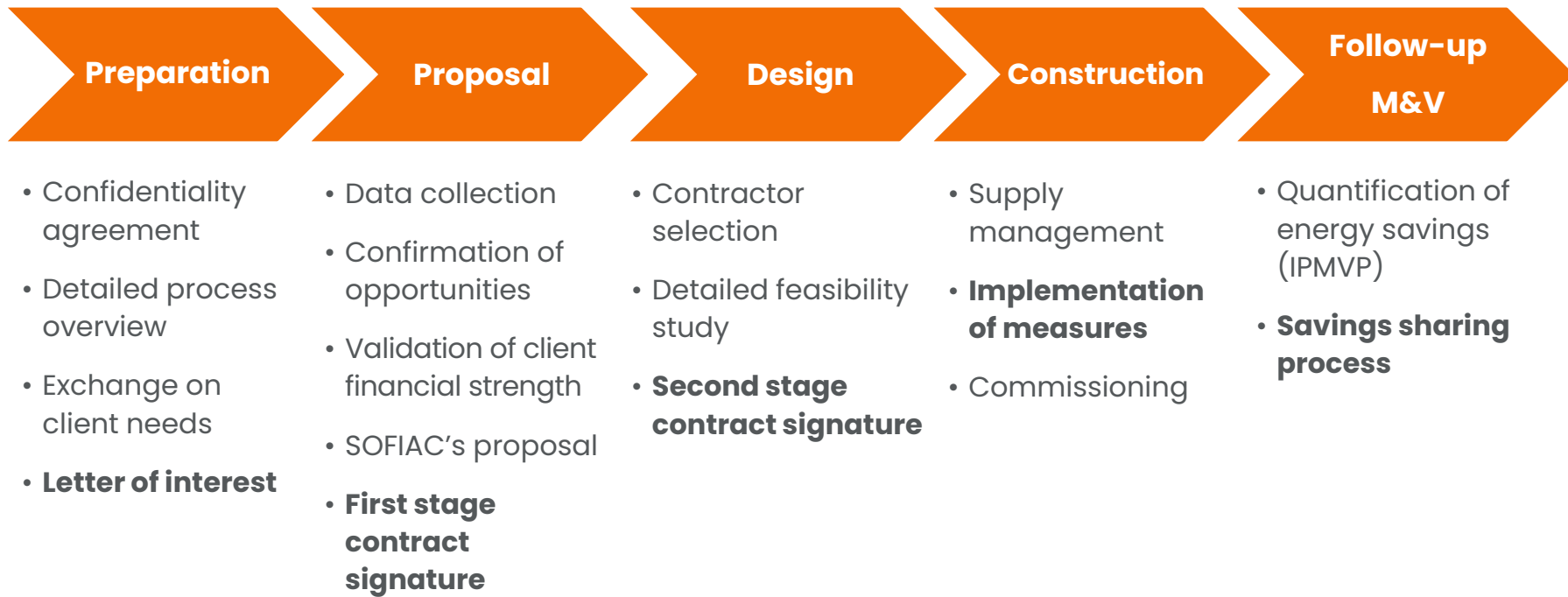


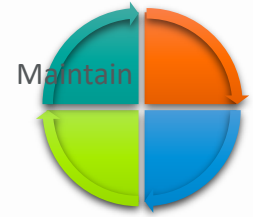
By keeping control of what should or shouldn't be included in the project



By getting full asset ownership and operational control once installed

Development and implementation process





4. Maintain

Commissioning, Handoff, Training, Ongoing Optimization and Monitoring

Training – Before, During and After Retrofits

- Up to 75% support available for training
- Customizable to your needs and facility
- Hands-on and practical
- Certifications



For Your Home

For Your Small Business

For Business & Contractors

First Nations Energy Programs

Training and Support

[Home](#) > [Training and Support](#) > Commercial



Commercial

Energy-efficient buildings are an important part of the transition to a low-carbon economy. Save on Energy's training and support resources can help you reduce costs through improved energy efficiency in commercial and multi-unit residential buildings.

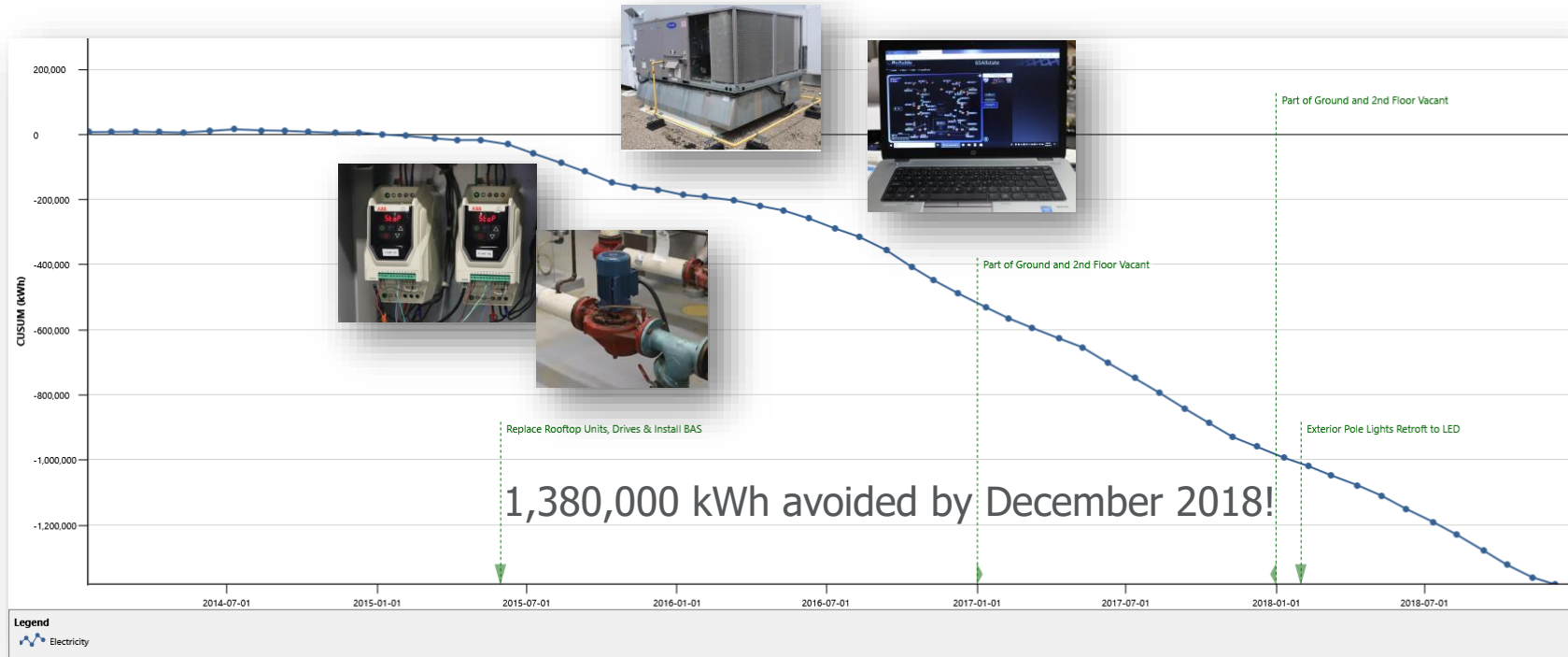
<https://saveonenergy.ca/Training-and-Support/Commercial>

Monitoring to Show/Ensure the Results

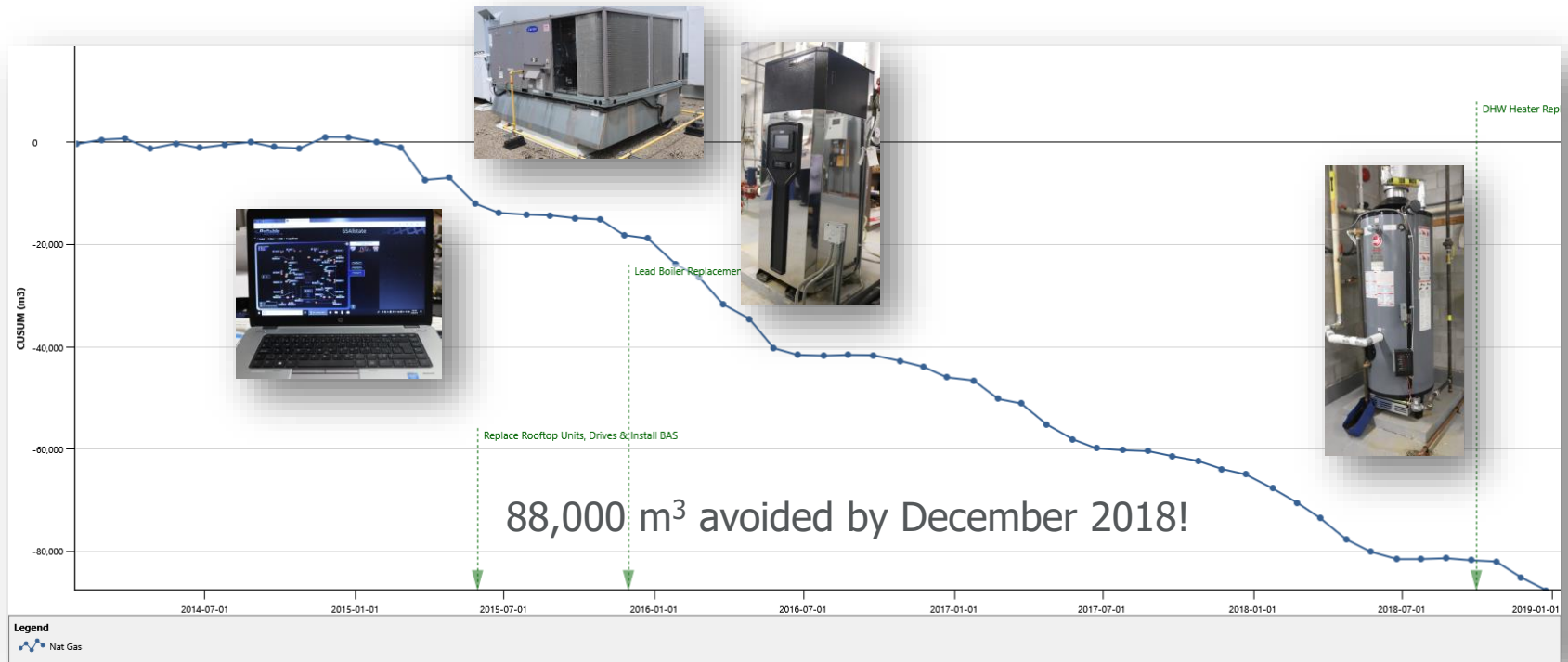
- 3 floors, 48,000 sq. ft.
- Energy reduced by 37% from 2014 to 2018
 - 2014: 47.3 kWh/ft²**
 - 2018 29.8 kWh/ft²**
- Actions linked to asset renewal
- Measures include:
 - New rooftop heating ventilation & air conditioning units
 - Variable frequency drives on circulator pumps
 - Building automation system
 - One of two boilers, domestic hot water heater
 - Exterior lighting
 - Commissioning



Electricity Improvement



Natural Gas Improvement



A Retrofit Strategy – a Roadmap to Savings and a Roadmap to the Future!

1. Assess

- Establishing commitment
- Benchmarking with Portfolio Manager
- Identifying opportunities

2. Plan

- Staging project measures
- Determining timing
- Creating the business case

3. Implement

- Managing your project
- Selecting a contractor
- Commissioning and project hand-off

4. Maintain

- Training staff
- Ongoing building optimization
- Monitoring and tracking



Questions and Answers

Thank You



Stay in the Know!

Sign up for *Power
What's Next* newsletter



[Twitter.com/SaveonEnergyOnt](https://twitter.com/SaveonEnergyOnt)



facebook.com/SaveOnEnergyOntario



linkedin.com/showcase/SaveOnEnergy-Ontario



Instagram.com/saveonenergy/