

# GUARANTEED ENERGY SAVINGS

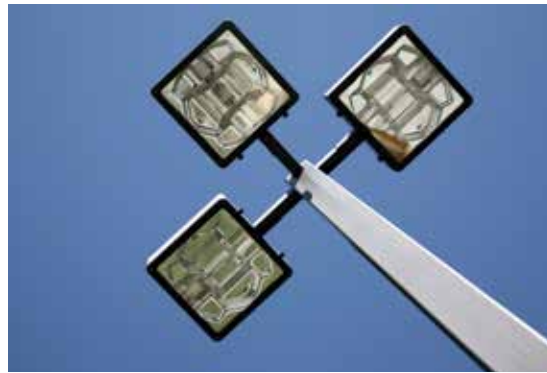
THE OFFICIAL PUBLICATION OF THE ENERGY SERVICES ASSOCIATION OF CANADA Premier Issue, 2017



PERFORMANCE-  
BASED  
SOLUTIONS



GUARANTEED  
SAVINGS



ENVIRONMENTALLY  
RESPONSIBLE  
OUTCOMES

**THE OPPORTUNITIES ARE ENDLESS!**



## Your Trusted Sustainability Partner.

Ameresco helps customers overcome complex energy management challenges with an integrated approach to energy efficiency and renewable energy. Our holistic method produces valued, single-sourced, and efficient solutions that are delivered with expertise and teamwork.



Call Your Representative Today.  
1 888.483.7267 | [www.ameresco.com](http://www.ameresco.com)

## OPTIMUM EFFICIENCY & ENERGY SAVINGS ACROSS ALL BUILDING LOADS

---

### Design Envelope pump

---

Lowest installed cost

---

Rapid installation & commissioning

---

Reduce space requirements



### Design Envelope Intelligent fluid management system

---

Compact footprint

---

Lowest life cycle cost

---

Catalogue-based pre-engineered  
solutions or custom-designed  
to specification



**DESIGN  
ENVELOPE**

## THE ENERGY SOLUTION EXPERTS

custom solutions for grid independence



### (1) Residential

- 100% Off-Grid Solar
- Net Metering
- Hybrid systems



### (2) Commercial

- (1) + Lithium-Ion power for mission critical projects
- + co-generation (up to 92% efficiency)



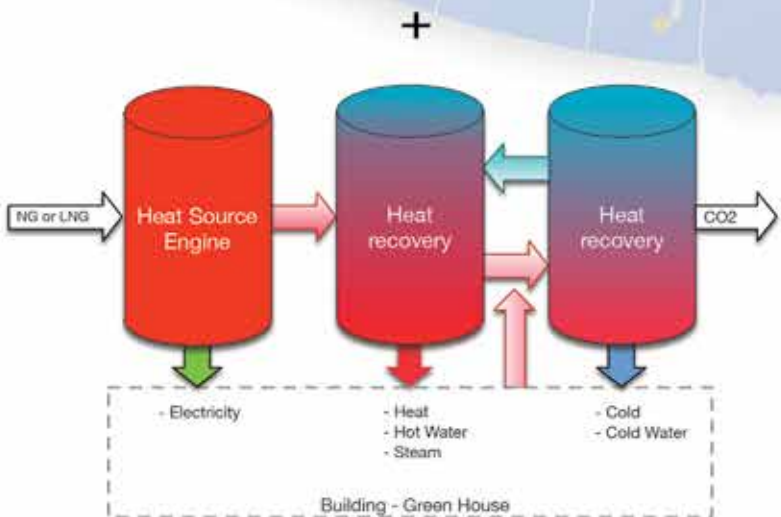
### (3) Industrial

- (2) + 100% uptime "UPS like" solutions for critical path, 0% power interruption
- + co-generation = electricity, heat, cooling

Today energy is expensive and it is costing more every year. DNM is in a unique position to offer solutions that will reduce your dependency on the grid in a 3 step process.

- 1 - Analyze and recommend Smart Technologies to reduce the power demand.
- 2 - For a small to medium scale properties, design solutions based on Smart & Solar PV.
- 3 - For large scale properties, solutions will include, Smart and Solar and may include CoGen technologies.

Engineering - Distribution - Management - Financing - R & D



tri-generation



increased savings

TABLE OF

# CONTENTS



30



28

## ESAC INTRODUCTIONS

- 07** Welcome to the First Edition of *Guaranteed Energy Savings!*
- 09** Promoting Performance-based Solutions
- 11** ESPC Projects: Guaranteed Savings, Canada Wide

## FEATURES

- 16** Federal Buildings Initiative Helps Canada Get Greener
- 22** Putting a Price on Carbon: Understanding Canada's Carbon Pricing Plan

## CASE STUDIES

### FEDERAL

- 24** Place du Portage IV  
*Federal ESPC Opportunities Flourish*

### PROVINCIAL/TERRITORIAL

- 26** The Government of Nunavut  
*Performance-based Solutions Present Obvious Opportunities for Provinces and Territories*

### MUNICIPAL

- 28** The Town of Newmarket  
*Taking the Risk out of Municipal Retrofits*

### UNIVERSITIES/COLLEGES

- 30** Algonquin College of Applied Arts and Technology  
*ESPC Comes out on Top for Canadian Universities and Colleges*

### SCHOOL BOARDS

- 33** Lester B. Pearson School Board  
*School Boards Employ ESPCs to Provide Energy Savings Solutions*

### HEALTHCARE

- 35** The Institut Philippe-Pinel de Montréal  
*Increase Patient Comfort, Decrease Operating Costs*

### BUYER'S GUIDE

PUBLISHED FOR:  
**ENERGY SERVICES ASSOCIATION OF CANADA**  
30 Commercial Road  
Toronto, Ontario M4G 1Z4  
**Contact:** Peter Love, President  
**Telephone:** (416) 644-1788  
**Fax:** (416) 323-9460  
**Email:** peter@energyservicesassociation.ca  
**Web:** www.energyservicesassociation.ca

PUBLISHED BY:  
**MATRIX GROUP PUBLISHING INC.**  
Return all undeliverable addresses to:  
309 Youville Street  
Winnipeg, Manitoba R2H 2S9  
Toll-Free: (866) 999-1299  
Toll-Free Fax: (866) 244-2544  
www.matrixgroupinc.net

Canada Post Mail Publications Agreement  
Number: 40609661

**President & CEO**  
Jack Andress

**Operations Manager**  
Shoshana Weinberg  
sweinberg@matrixgroupinc.net

**Publishers**  
Jessica Potter  
Peter Schulz

**Editor-in-Chief**  
Shannon Savory  
ssavory@matrixgroupinc.net

**Senior Editor**  
Alexandra Walld  
awalld@matrixgroupinc.net

**Finance/Administration**  
Pat Andress, Nathan Redekop, Lloyd Weinberg  
accounting@matrixgroupinc.net

**Director of Circulation & Distribution**  
Lloyd Weinberg  
distribution@matrixgroupinc.net

**Sales Manager**  
Neil Gottfred

**Matrix Group Publishing Inc. Account Executives**  
Andrew Lee, Ashley Jenkins, Bonnie Petrovsky, Brian MacIntyre, Cheryl Klassen, Colleen Bell,

Dan Brennan, David MacDonald, Devyn Taylor, Frank Kenyeres, Jeff Cash, Jim Hamilton, Kallie Herod, Kevin Harris, Krystal Miller, Matt Potts, Renée Kent, Rob Gibson, Roxanne LaForme, Sandra Kirby, Thomas Watson

**Advertising Design**  
James Robinson

**Layout & Design**  
Cody Chomiak

©2017 Matrix Group Publishing Inc. All rights reserved. Contents may not be reproduced by any means, in whole or in part, without the prior written permission of the publisher. The opinions expressed in this publication are not necessarily those of Matrix Group Publishing Inc. Printed in Canada.



**SIEMENS**

## Unique spirit of partnership binds Siemens and Algonquin College

Siemens a trusted advisor in extraordinary energy services contract

Algonquin College of Applied Arts in Technology, the largest college in Eastern Ontario, is on an ambitious journey to becoming a sustainable institution of the future.

The college was looking for a company it could team up with – an organization willing to go far beyond the normal boundaries of a traditional energy services contract.

John Tattersall, Director of Physical Resources at Algonquin, says he wanted a strategic partner able to “go to the very heart and purpose of what our college is all about.”

Only one bidder – Siemens – was able to deliver on that.

### **Siemens goes above and beyond**

Siemens proposed a far-reaching, 20-year relationship in which the two organizations would collaborate closely together.

In addition to all the technical energy infrastructure requirements being addressed, Algonquin would serve as a showcase

and “living laboratory” of Siemens’ leading-edge green technologies, while Siemens would help educate students and faculty on sustainability, and be a catalyst for environmentally-conscious behaviour.

In January of 2014, Siemens and Algonquin announced their agreement to work as one big integrated team to usher in a new era for the college.

It’s all thanks to what Tattersall refers to as a special “spirit of partnership.”

“Traditional contracts are limited to the ‘what’ and the ‘how,’” he says. “And many firms that bid for our contracts deliver solid proposals using that approach. Siemens, though, went well beyond the traditional proposal and got into the heart of the ‘why.’ We’ve got a strategic partner who ‘gets’ us, from the president and CEO, right down to the people I deal with on almost a daily basis.”

[siemens.ca/trustedpartner](http://siemens.ca/trustedpartner)

# WELCOME TO THE FIRST EDITION OF GUARANTEED ENERGY SAVINGS!



## DIRECTORS AND OFFICERS

### Peter Love

President

[peter@energyservicesassociation.ca](mailto:peter@energyservicesassociation.ca)

### Luis Rodrigues

Honeywell (Chair)

### Colin Rabnett

MCW Custom Energy Solutions  
(Treasurer)

### Jeff Weir

Siemens

### Hassaan Khan

Johnson Controls

### Dave Seymour

Ameresco

### Leon Hawkins

Trane

## FOUNDING MEMBERS

Ameresco

Honeywell

Johnson Controls

MCW Custom Energy Solutions

Siemens

Trane

## MEMBERS

Ainsworth

Armstrong Fluid Technology

Blackstone Energy Services

Énergère

Great Northern Insulation

Sylvania Lighting Solutions

The Energy Services Association of Canada (ESAC) is very proud of the tremendous contribution that guaranteed Energy Service

Performance Contracts (ESPCs) have made to the environment, the economy and employment in Canada over the last 30 years. This first edition of *Guaranteed Energy Savings* highlights just a few of the success stories attributed to ESPCs over the last 10 years.

It is clear that the majority of Canadians understand that climate change is a very important issue and that energy use is somehow related to this. In fact, fully 81 per cent of Canada's man-made green house gas (GHG) emissions come from the production and use of energy. The potential for energy conservation to address this challenge is huge as more than two thirds of energy is lost during conversion to useful purposes. The International Energy Agency recently concluded that energy efficiency could assist with almost 40 per cent of the GHG emission reductions that are required to avoid global warming above two degrees Celsius.

As the third largest source of GHG in Canada (after oil and gas, and transportation), buildings represent a critical opportunity to reduce these emissions. And while it is important that new buildings be as energy efficient as possible, it is even more important that major improvements be made to the energy efficiency of existing buildings. It is estimated that 75 per cent of the buildings in Canada come 2030 have already been built.

This magazine will focus on how guaranteed ESPCs have been used for the past 30 years to cost effectively reduce the costs and GHG emissions from existing buildings. These contracts guarantee that the energy savings achieved by the improvements will cover the initial costs of the



*“Because these savings are guaranteed, this transfers the technical and financial risk associated with these projects to the private sector.”*

project. Because these savings are guaranteed, this transfers the technical and financial risk associated with these projects to the private sector. Other important features of these contracts is they tend to be more comprehensive than projects undertaken in-house or by individual contractors and thus the energy and costs savings are much greater. What's more, because the private companies are guaranteeing the results, there is a focus on properly commissioning the project and providing on-site training for the building operators.

The major components and benefits of these contracts can be found next in the magazine, on page 9 and 10. This is followed by a map with the locations and sector of ESPC projects that have been completed over the last

*Continued on page 9*



**TRANE** BUILDING  
**ADVANTAGE**<sup>™</sup>

## EVERY BUILDING HAS POTENTIAL... TO PERFORM BETTER.

We are Trane<sup>®</sup> Building Advantage<sup>™</sup> energy solutions. Your complete building solutions provider, dedicated to helping you reach your goals. With forward-thinking expertise and cutting-edge technology, we're impacting your business in ways never before imagined. And as the industry leader in controls, services, and equipment, we're ready to help ensure you're prepared to handle the challenges of today, as well as those of tomorrow. It's time to **Think Beyond.**

Learn more at [Trane.com/Canada/TBA](http://Trane.com/Canada/TBA)



**TRANE**<sup>®</sup>



Continued from page 7

10 years. More than 275 projects were completed over this period; you can see the breakdown by sector on the map on pages 12 and 13. We have also pinpointed projects in the following categories: federal government, provincial/territorial government, municipalities, universities/colleges, school boards and healthcare, as well as commercial, industrial, apartments/condos, and "other."

The federal government realized the benefits of guaranteed ESPCs decades ago and began a program in 1991 to promote the use of these contracts in federal buildings. Their experience with these projects led them to conclude that once all the managerial and administrative costs of traditional contracting are taken into account, using ESPCs are not more expensive. This edition of *Guaranteed Energy Savings* includes a feature article on this, on page 16.

The magazine also contains a feature article on the importance of carbon pricing, with a summary of provincial carbon pricing plans. Make sure to read this timely article, which is found on page 22.

Last, but certainly not least, this issue of the magazine includes six case studies that showcase the major types of buildings that have successfully used ESPCs over the last 30 years. Each article includes an introduction that highlights a number of successful projects, and then delves in-depth into one specific project for that particular sector.

I would like to thank the companies who supported this initial edition and Matrix Group Publishing Inc., who published it. A particular thank you to the six founding members of ESAC for the leading role they have played in improving the environment and economy in Canada: Ameresco, Honeywell, Johnson Controls, MCW Custom Energy Solutions, Siemens and Trane.

Wishing you the best,

**PETER LOVE**

President  
Energy Services Association of Canada

# PROMOTING PERFORMANCE-BASED SOLUTIONS

- › *End users transfer all financial risk to the Energy Service Company (ESCO).*
- › *Contracts guarantee energy savings achieved will pay for the entire contract (over the term of the contract).*
- › *Use ESPCs to finance projects without additional tax payer support.*
- › *Government funding stemming from the most recent Federal Budget presents a major opportunity to have budgets matched through various programs.*



**F**or 30 years now, guaranteed Energy Service Performance Contracts (ESPCs) have been used in Canada as a guaranteed method to capture future energy savings from a retrofit project in order to finance the

initial capital cost. Doing this ensures that the end users are able to remove all technical and financial risks when undertaking an energy efficiency retrofit project, instead transferring those risks to a private Energy Service Company (ESCO).

## Plainly Put: What is an ESPC?

*A guaranteed Energy Service Performance Contract (ESPC), signed between the end user and an Energy Service Company, guarantees that the savings from a retrofit project will finance the initial capital cost over the course of the contract.*

In other words, the retrofit work completed eliminates inefficient energy use and the savings generated from this pays for the initial project cost. What's more, at the end of the contract, the end user pays reduced energy bills for the remainder of the life of the equipment. As the illustration below shows, inefficient energy use can be turned around with retrofits that are funded by energy savings.

In the last few years, ESPCs have started to be used to finance non-energy related deferred maintenance priorities by extending the term of the contract. The additional capital for non-energy related projects is generated by extending the loan period beyond the simple payback of the energy aspects. In this way, energy savings are being used to finance projects such as roof repair/replacement, elevator/washroom upgrades, parking lots, etc., without the need for additional tax payer support.

### THE BUSINESS CASE FOR ESPCS

There are three main benefits to ESPCs, referred to as the Three E's:

**1. Employment:** Energy efficiency projects are labour intensive, unlike

many energy supply technologies that are capital intensive. As many of these jobs are construction-related, they occur at a very local level.

**2. Economy:** Energy efficiency is cost effective; an NRCan study estimated a potential increase in GDP of over \$500 billion by 2030.

**3. Environment:** As 81 per cent of Canada's greenhouse gas emissions come from the production and use of energy, energy efficiency has been widely recognized as a key to reducing these emissions. A recent example is the Canadian Energy Strategy developed by the Council of the Federation which identified energy efficiency as the first of 10 initiatives that need to be undertaken.

Of course, there are many other benefits to ESPCs, including: a comprehensive approach (ESPCs look at an entire asset, or portfolio of assets, in order to create greater efficiencies); simplicity (under ESPCs there is one contract with one ESCo, which is responsible for managing all the capital work); a release of pressure on capital (as ESPCs can use private funding sources, limited capital resources can

be used for other priorities); ESPCs address existing buildings (they were created specifically to improve the energy efficiency of existing buildings; and last, but definitely not least, ESPCs ensure guaranteed savings (all ESPCs come with a performance guarantee!).

While the initial purpose of these contracts was to reduce costs, they are now being used to also improve the environmental performance of existing buildings, particularly by reducing the direct and indirect greenhouse gas emissions (GHG) of the facility. The federal government and most provinces have set GHG reduction targets for 2020, 2030 and 2050, and it is clear that these targets will not be met with current measures. It is obvious though, that ESPCs can help Canada achieve its GHG reduction goals.

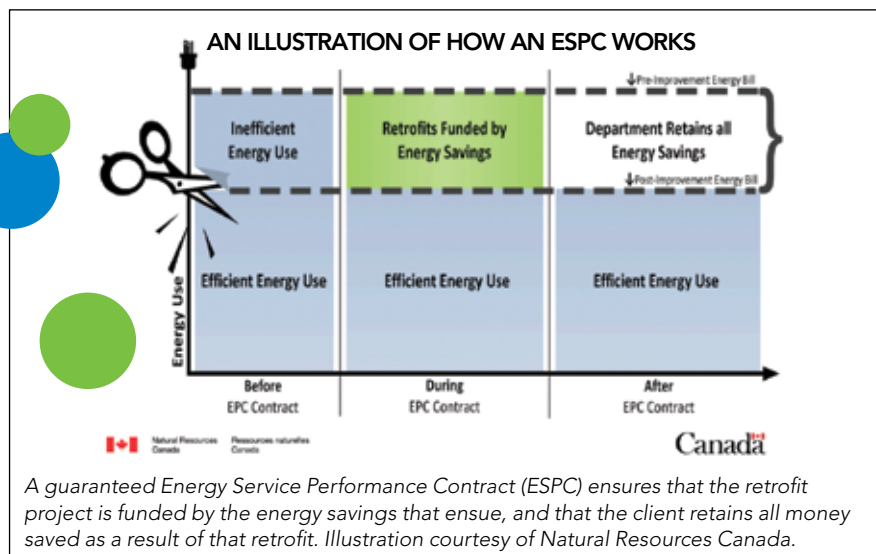
### DON'T PASS ON THIS OPPORTUNITY

In the most recent Federal Budget, the Liberal Government committed to invest \$120 billion over the next 10 years, to be spent equally on transit, green infrastructure and social housing, with the condition that provinces provide the remaining funding. That budget also included \$574 million over two years for energy and water efficiency retrofits, and renovations to existing social housing units; and up to \$2 billion over three years to post-secondary schools to reduce GHG emissions as well as funding for First Nations communities, all of which require provincial matching funds.

This funding presents a great opportunity to use ESPCs to provide the matching provincial funds for these various programs. Even if these contracts are treated as debt, they are guaranteed by the ESCo and thus represent "good debt!"

### TO LEARN MORE

If you are interested in learning more, contact Peter Love, President of the Energy Services Association of Canada, or visit [www.energyservicescanada.ca](http://www.energyservicescanada.ca). Here you'll find great case study examples of just what's possible through the use of an Energy Service Performance Contract. 🌱



*A guaranteed Energy Service Performance Contract (ESPC) ensures that the retrofit project is funded by the energy savings that ensue, and that the client retains all money saved as a result of that retrofit. Illustration courtesy of Natural Resources Canada.*

# ESPC PROJECTS:

## GUARANTEED SAVINGS, CANADA WIDE

The following is a breakdown of guaranteed Energy Service Performance Contract (ESPC) projects completed in Canada, by location, in the past 10 years. Flipping the page will bring you to a colour-coded map which visually illustrates where projects have successfully been undertaken across Canada.

**As far north as Nunavut, to the West, to the East, and everywhere in between, ESPCs are possible!**

### NUNAVUT

#### 1 PROJECT COMPLETED

Provincial/Territorial Government, Iqaluit

### BRITISH COLUMBIA

#### 5 PROJECTS COMPLETED

Apartments/Condos, Burnaby  
Municipal, Chilliwack  
Municipal, Vancouver  
Other, Osoyoos  
School Boards, Vancouver

### ALBERTA

#### 5 PROJECTS COMPLETED

Commercial, Calgary  
Government, Banff  
Government, Cold Lake  
Government, Edmonton  
Healthcare, Peace Country

### SASKATCHEWAN

#### 13 PROJECTS COMPLETED

Government, Regina (3 Projects)  
Healthcare, Estevan  
Healthcare, Lloydminster  
Healthcare, Prince Albert  
Healthcare, Rosetown  
Healthcare, Tisdale  
Healthcare, Weyburn  
Healthcare, Yorkton (2 Projects)  
Municipal, Regina  
Other, Regina

### MANITOBA

#### 4 PROJECTS COMPLETED

Government, Winnipeg  
Municipal, Winnipeg  
School Boards, Lorette  
School Boards, Winnipeg

### ONTARIO

#### 185 PROJECTS COMPLETED

Apartments/Condos, Bruce County  
Apartments/Condos, Toronto (94 Projects)

Commercial, Multiple Cities  
Commercial, Ottawa (2 Projects)  
Commercial, Toronto (2 Projects)  
Government, Chalk River  
Government, Kingston  
Government, Ottawa (6 Projects)  
Government, Petawawa  
Healthcare, Ajax/Pickering  
Healthcare, Kawartha Lakes  
Healthcare, Alliston  
Healthcare, Belleville  
Healthcare, Cambridge  
Healthcare, Chatham, Kent  
Healthcare, Durham Region (Oshawa/Whitby/Bowmanville/Port Perry)  
Healthcare, Guelph  
Healthcare, Haliburton/Minden  
Healthcare, Hamilton (2 Projects)  
Healthcare, Kingston (2 Projects)  
Healthcare, London (2 Projects)  
Healthcare, Milton/Oakville/Halton Hills  
Healthcare, Mississauga  
Healthcare, Ottawa (3 Projects)  
Healthcare, Perth/Smiths Falls  
Healthcare, Red Lake  
Healthcare, Renfrew  
Healthcare, Sarnia/Petrolia  
Healthcare, St. Thomas  
Healthcare, Thunder Bay (2 Projects)  
Healthcare, Toronto (4 Projects)  
Healthcare, Wallaceburg  
Industrial, Toronto  
Municipal, Bradford  
Municipal, County of Simcoe  
Municipal, Hamilton  
Municipal, Kingston  
Municipal, London  
Municipal, Newmarket (2 Projects)  
Municipal, Orangeville  
Municipal, Thunder Bay  
Municipal, Timmins  
Municipal, Toronto (2 Projects)  
Municipal, Windsor  
Other, Ottawa (2 Projects)

School Boards, Fort Frances (3 Projects)  
School Boards, Hastings/Prince Edward Country  
School Boards, Kenora  
School Boards, Nepean  
School Boards, Northeastern Ontario (2 Projects)  
School Boards, Ottawa  
School Boards, Peterborough (2 Projects)  
School Boards, The Cochrane and Temiskaming Districts (2 Projects)  
School Boards, Thunder Bay (5 Projects)  
School Boards, Timmins (2 Projects)  
School Boards, Toronto (2 Projects)  
Universities/Colleges, North Bay  
Universities/Colleges, Ottawa (3 Projects)  
Universities/Colleges, Sudbury  
Universities/Colleges, Thunder Bay

### QUÉBEC

#### 56 PROJECTS COMPLETED

Apartments/Condos, Montréal (2 Projects)  
Commercial, Montréal (9 Projects)  
Commercial, Québec Municipal  
Government, Bagotville  
Government, Gatineau (2 Projects)  
Government, Municipality of Saint-Gabriel-de-Valcartier  
Government, Saint-Jean-sur-Richelieu  
Healthcare, Drummond  
Healthcare, Gatineau  
Healthcare, Montréal (7 Projects)  
Healthcare, Region of Lanaudière  
Healthcare, Québec City  
Healthcare, Region of Chaudière-Appalaches  
Healthcare, Trois-Rivières  
Industrial, Entrepôts Henri-Bourassa/Boucherville/Sainte-Julie/Vanier/Godin/Ducharme  
Industrial, LaChine  
Industrial, Laval  
Industrial, Montréal

Industrial, Sainte Martine  
Municipal, Blainville (2 Projects)  
Municipal, Montréal (3 Projects)  
Municipal, Shawnigan  
Other, Montréal  
Other, Québec City  
Other, Saint-Félix-de-Valois  
Other, Terrebonne  
School Boards, Granby  
School Boards, Lévis  
School Boards, Montréal (4 Projects)  
School Boards, Québec, Municipal  
School Boards, Saint-Jean-sur-Richelieu  
School Boards, Trois-Rivières (2 Projects)  
Universities/Colleges, Longueuil

### NEWFOUNDLAND

#### 6 PROJECTS COMPLETED

Government, Gander  
Government, St. John's  
Healthcare, Corner Brook  
Municipal, Corner Brook  
Municipal, Gander  
Universities/Colleges, St. John's

### NOVA SCOTIA

#### 2 PROJECTS COMPLETED

Government, Dartmouth  
Government, Halifax

### NEW BRUNSWICK

#### 2 PROJECTS COMPLETED

Government, Gagetown  
Other, Lameque

### INTERNATIONAL

#### 1 PROJECT COMPLETED

Government, Washington (Not shown on map)

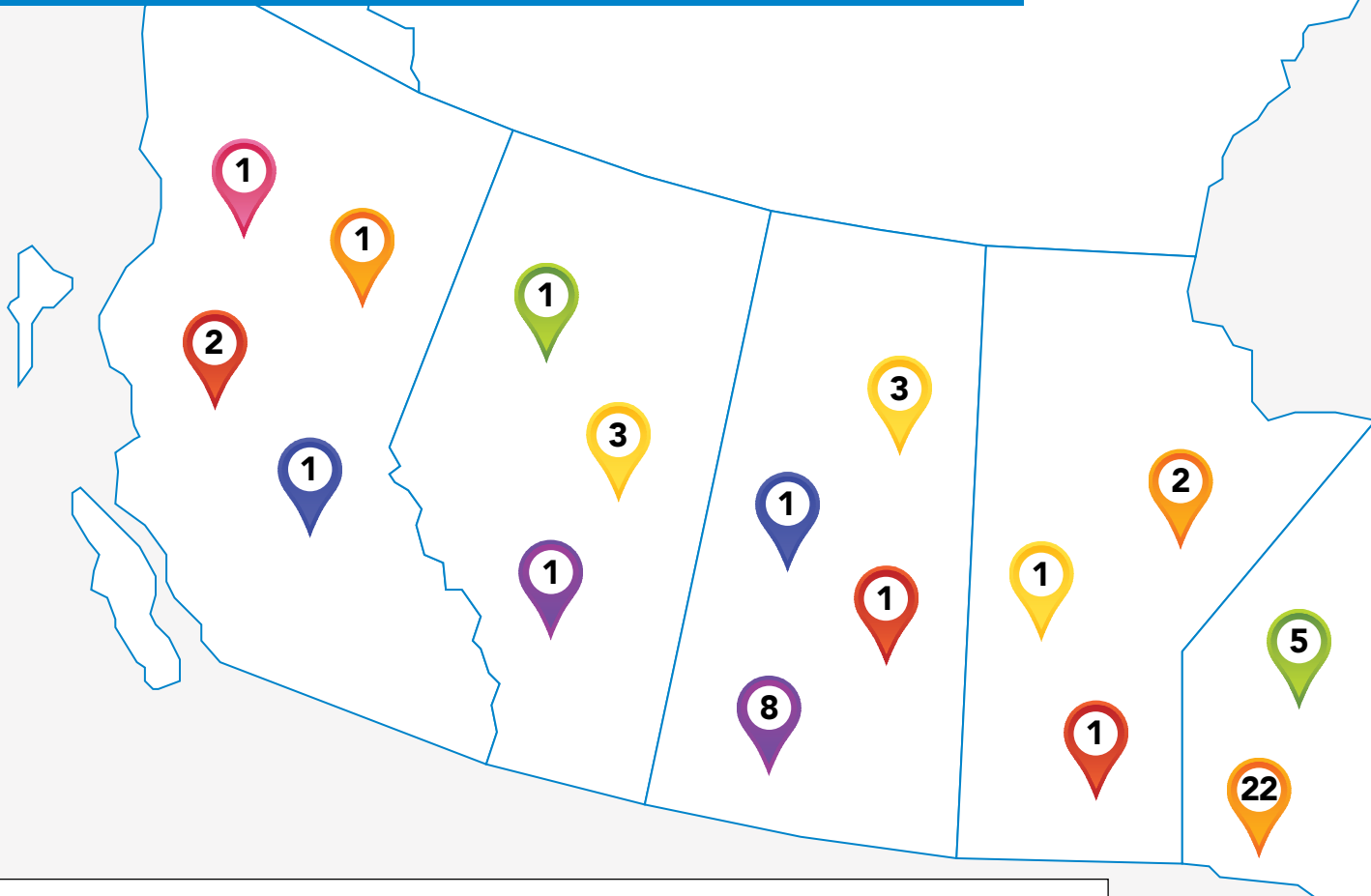
#### TOTAL: 280 PROJECTS COMPLETED

Turn the page to view a map of ESPC projects in Canada!

# ESPC PROJECTS: GUARANTEED SAVINGS, CANADA WIDE

PROJECTS COMPLETED IN CANADA OVER THE PAST 10 YEARS. FOR MORE INFORMATION, PLEASE CONTACT THE ENERGY SERVICE ASSOCIATION OF CANADA.

*Please note: The location of the pins indicates territory/province only, not the specific region the project was completed. If you are interested in those specifics, please get in touch with Peter Love, peter@energyservicesassociation.ca / (416) 644-1788.*



## TOTAL CANADIAN ESPC PROJECTS PER SECTOR



## TOTAL ESPC PROJECTS PER REGION

NUNAVUT: 1 PROJECT COMPLETED  
 BRITISH COLUMBIA: 5 PROJECTS COMPLETED  
 ALBERTA: 5 PROJECTS COMPLETED  
 SASKATCHEWAN: 13 PROJECTS COMPLETED  
 MANITOBA: 4 PROJECTS COMPLETED  
 ONTARIO: 185 PROJECTS COMPLETED  
 QUÉBEC: 56 PROJECTS COMPLETED  
 NEWFOUNDLAND: 6 PROJECTS COMPLETED  
 NOVA SCOTIA: 2 PROJECTS COMPLETED  
 NEW BRUNSWICK: 2 PROJECTS COMPLETED  
 INTERNATIONAL: 1 PROJECT COMPLETED  
 (NOT SHOWN ON MAP)

**TOTAL: 280 PROJECTS COMPLETED**

## TOTAL ESPC PROJECTS PER SECTOR

FEDERAL/PROVINCIAL - 26 PROJECTS COMPLETED  
 PROVINCIAL/TERRITORIAL GOVERNMENT - 1 PROJECT COMPLETED  
 MUNICIPAL - 25 PROJECTS COMPLETED  
 UNIVERSITIES/COLLEGES - 8 PROJECTS COMPLETED  
 SCHOOL BOARDS - 35 PROJECTS COMPLETED  
 HEALTHCARE - 55 PROJECTS COMPLETED  
 INDUSTRIAL - 6 PROJECTS COMPLETED  
 COMMERCIAL - 16 PROJECTS COMPLETED  
 APARTMENTS/CONDOS - 98 PROJECTS COMPLETED  
 OTHER - 9 PROJECTS COMPLETED  
 INTERNATIONAL - 1 PROJECT COMPLETED (NOT SHOWN ON MAP)

**TOTAL: 280 PROJECTS COMPLETED**



*\*Note, on page 11 you will find a full list of all the project types completed, by region.*

# BLODGETT

# MARKET FORGE

# MARSAL

**Blodgett Oven has the most ENERGY STAR Qualified ovens on the market!**  
Contact your Blodgett/Market Forge Representative, W.D. Colledge Co. Ltd., at (905) 677-4428



*Sirius II Gas Convection Steamer has the lowest water use of ANY steamer!*

*All 5 capacities are ENERGY STAR Qualified; 4, 6, 8, 10, and 12.*



*From Economy to Premium, our Gas Convection Ovens smash the qualifying energy standard of 46% with 54% Efficiency.*



*The industry's first ENERGY STAR Qualified steamer! Eco-Tech Plus® is a 10-pan steamer with built-in water filter and water management systems. SAVE 80 to 100 gallons of water per hour over other convection steamers.*



*Cook with humidity in a split-door, convection oven footprint. All HydroVection Ovens meet ENERGY STAR Qualification standards with 48% Cooking Efficiency.*





# One Call, One Solution to modernize your lighting

## Philips lighting's end-to-end solutions portfolio

harnesses the power of lighting technology, meeting your sustainability objectives and creating a better future.



Right Lighting & Innovative System



Professional Assessment Services



Advisory Services



Financial Services



Lifecycle Services



Managed Operations

- ✓ Sustainability
- ✓ Flexibility & scalability
- ✓ Operational efficiency

“

*We are replacing our 13,000 inefficient parking garage lighting in 25 parking facilities with new LED lighting and an innovative connected lighting system. The system will save \$2M annually through energy and maintenance savings, improve safety for our riders and empower us to redeploy our resources where needed.”*

– WMATA Metro USA\*

For more info visit us at [lighting.philips.com/main/services](https://lighting.philips.com/main/services)  
or email us [lighting.solutions@philips.com](mailto:lighting.solutions@philips.com)

\*WMATA Metro Press release: [wmata.com/about\\_metro/news/PressReleaseDetail.cfm?ReleaseID=5613](https://wmata.com/about_metro/news/PressReleaseDetail.cfm?ReleaseID=5613)

**PHILIPS**



# FEDERAL BUILDINGS INITIATIVE HELPS CANADA GET GREENER

By Holli Moncrieff

**A**n initiative of Natural Resources Canada (NRCan), the Federal Buildings Initiative—or FBI for short—facilitates energy efficiency retrofit projects in buildings owned and managed by the federal government.

Federal buildings currently produce 88 per cent of the Government of Canada’s greenhouse gas emissions (GHGs). Improving energy efficiency is a proven strategy to lower emissions while reducing energy use and costs. Despite this, many federal building managers and operators have not taken advantage of the gains to be made by becoming more energy-efficient.

That’s where this initiative comes in, as the program has the resources to guide managers and operators through the complicated process of extensive energy retrofits.

“We help federal buildings meet their GHG targets of reducing their footprint by 40 per cent by 2030—or, ideally, by 2025. We help define and develop projects that will save energy,” says Marie Lyne Tremblay,

*“It makes a lot of sense to reduce operational costs that are related to energy use. No one can afford to pay for wasted energy.”*

Deputy Director. “There’s a target of a 30 per cent reduction by 2030 for all Canadians, so the federal government wants to show leadership by exceeding those targets, proving they are achievable.”

The FBI has been working on this for some time. The initiative was started back in 1991, and since then, it has facilitated the completion of 87 major retrofit projects.

“I believe the creation of the FBI was triggered by the energy crisis in the early ‘90s, when people first realized they needed to reduce their energy consumption,” Tremblay says. “It makes a lot of sense to reduce operational costs that are related to energy use. No one can afford to pay for wasted energy.”

Energy-efficient technologies, know-how and processes provide significant opportunities to reduce costs, improve operating performance, and increase

occupant comfort while contributing to a cleaner environment.

The Federal Sustainable Development Strategy’s latest report shows federal operations had reduced their footprint by only 4.6 per cent, but Tremblay explains that result is misleading.

“The 4.6 reading assumes the energy grid is the same now as it was in 2005. If we take into account that the electricity grid is much greener, our actual reduction is more like 15 per cent,” she says. “We still need to do quite a bit, but our government is firmly supportive of this initiative. It has set its targets, so people have more motivation than ever to reduce their energy consumption.”

NRCan supports federal departments in a number of different ways.

It helps federal organizations enter into third-party guaranteed Energy Service Performance Contracts (ESPCs) that allow major retrofits to be self-financing.



Flip to page 24 for an in-depth Case Study that showcases a very successful federal ESPC project that will achieve payback in 7.3 years!



No upfront financing is required since future energy savings pay for the investment. This low-risk, turnkey approach delivers guaranteed energy savings and can lead to an overall reduction of operating costs for the organization.

"When buildings are in need of an energy retrofit, it requires a lot of money. We can help with establishing an energy-performance contract," says Tremblay. "We have a qualified-bidders list of energy-service companies who can provide this work to the federal government. It's also an opportunity to appropriately renew and resize equipment and find energy-efficient options through our partnerships with the private sector."

A cumulative savings of \$0.5 billion has been reinvested into programs for Canadians while reducing the impact of government operations on the environment.

"Often this is the only way to implement these large, multi-million dollar

projects," Tremblay says. "The departments need staff, they need information, and they need a way to finance the project."


NRCan offers support to conduct preliminary audits of federal buildings, and help start retrofit projects. This process includes consultation about developing projects, project-financing options, tendering and awarding of contracts, and project monitoring.

"We guide them in establishing processes in the organization, starting with buy-in from senior management. We assess how much energy they're using and make sure everything is working at the optimum level," Tremblay explains. "We help them set a list of priorities, and we can help them meet those priorities every step of the way."

NRCan can assist each department in its efforts to increase employee awareness by providing celebration and recognition opportunities through

case studies and the *Heads Up Energy Efficiency* newsletter.

"We can assess the building's energy use and compare it to similar buildings in the same industry using the ENERGY STAR Portfolio Manager. We set up a preliminary energy plan, but it must be managed and people must see that the savings from reduced energy consumption are real," says Tremblay. "All these steps can be very complex, but there is a lot of training available."

As a new level of service, NRCan established a Community of Practice networking group on energy-efficiency best practices. The group brings together property and environmental managers from federal buildings to share knowledge about energy efficiency strategies, products, and tactics. 

Turn the page to learn about Real Property Institute of Canada's (RPIC) Energy Efficiency Awards.



[www.lawsonprojects.com](http://www.lawsonprojects.com)

## Customized Energy Savings Solutions

Partnering with clients across Canada to achieve their energy savings objectives

WILLIAMS  
ENGINEERING  
CANADA



[www.williamsengineering.com](http://www.williamsengineering.com)

# Real Property Institute of Canada (RPIC) Energy Efficiency Awards

The Real Property Institute of Canada (RPIC) Energy Efficiency Awards promote and recognize the best energy-efficiency project and the most energy-efficient building in the federal government.

Since the beginning of the RPIC Award, ESAC members have worked closely with federal departments to achieve the greatest possible reduction of energy consumption.

The awards recognize projects that have effectively managed energy consumption and achieved the following objectives:

- Significant reduction in energy consumption;
- Reduction of the GHG emissions; and
- Improvement of the work environment.

The RPIC prizes are awarded in two different categories. Category 1 highlights the greatest reduction of energy consumption in one or several facilities within the federal government, while Category 2 recognizes the office building demonstrating the lowest energy intensity.

All projects submitted for the awards need to demonstrate results and provide at least two years of energy-consumption data.

The 2016 Category 1 winner was the Department of National Defence (DND)-Energy Performance Contract Project at Montréal Garrison (DND). The goal of this project was reducing the energy consumption and lowering the GHG emissions of the Longue-Pointe garrison.

DND submitted buildings to a guaranteed Energy Service Performance Contract (ESPC), and in 2012, they awarded the contract to Direct Energy (now called Airtron Canada). The resulting project included modernizing the facility's lighting systems, optimizing its building envelope, modifying its regulation sequences and controls, and optimizing the building's ventilation systems.

The total value of the work completed in 2014 was \$4.2 million. The facility's annual energy savings amounts to \$502,173, representing a global-energy reduction of 18.56 per cent. Subsidies totalling \$337,500 were obtained from utilities for the project.

The total CO<sub>2</sub>-equivalent reduction since the beginning of the construction period was 791.3 tons. This CO<sub>2</sub>

reduction equals the planting of 279 acres of trees or taking 112 vehicles off the road.

The 2016 Category 2 winner was the Public Services and Procurement Canada (PSPC) Office building in Québec City at D'Estimauville Avenue. The key to the success of this project was getting all parties involved, from inception to execution. More than just an office building, it is a model for green design. The project aimed to strike a balance between the wellbeing of the occupants, the efficient management of resources, and environmental responsibility.

The main energy-efficiency measures of this modern high-performance building include:

- Heat recovery from air conditioning for space heating;
- Use of a geothermal heat pump;
- Superior thermal insulation for the envelope;
- White and green roofs, which reduce the need for air conditioning and heat islands;
- Use of condensing boilers for auxiliary heating;
- Use of variable frequency drive (VFD) for pumps and fans;
- Effective lighting;
- Occupancy detection for the operation of ventilation and lighting;
- Domestic hot water condensing; and
- Use of low-flow domestic hot water appliances.

The energy intensity for this building is 380 MJ / m<sup>2</sup>. This consumption is well under the average for office buildings in Québec, which is 1046 MJ / m<sup>2</sup>. The building received an ENERGY STAR rating of 100.

---

*The Real Property Institute of Canada (RPIC) Energy Efficiency Awards Committee is comprised of Peter Love, President of the Energy Services Association of Canada; Jean-Patrick Burafuta, Senior Officer, Federal Buildings Initiative, Office of Energy Efficiency, Natural Resources Canada; Mylène Carrière, Program Officer, Federal Buildings Initiative, Office of Energy Efficiency, Natural Resources Canada; and Mark Hutchinson, Canada Green Building Council (CAGBC), Vice President, Green Building Programs, CAGBC.*

## Give New Life to Your Old Lights

**We Specialize In Retrofitting Your Existing Light Fixtures With LED Conversion Kits.**

We replace all components except the housing and give a 5 year warranty on parts and labour. Typical return on investment is under 2 years.

If you are looking for the greenest solution, the best value, and the shortest ROI, then contact us. We will provide you with a free, no obligation analysis.



**IronGate**  
Automation Systems Inc.  
Toronto, Ontario / 416-759-7010 / [emsinfo@IronGateAutomation.com](mailto:emsinfo@IronGateAutomation.com)



## Let's Future Proof® Canada!

By: Shane Wolffe, P.Eng., LEED AP BD+C, CEA, Level 1 Thermographer

Do you understand energy? Do you feel the people around you—your colleagues, students, family and friends—understand how our society functions because of the way we consume energy? For the most part, I've realized people are quite oblivious as to the fact that we can survive, let alone thrive and live comfortable lives in a country as cold as Canada. It takes serious energy to live here, especially considering how we have built our society around energy consumption.

Reading literature about the reinsurance industry helped me understand that climate change is a major threat to the stability of our society from an economic, social and environmental standpoint. As a relatively young engineer, I asked myself how I could use my engineering background to make an impact.

From that question and research, I realize buildings use the most energy of any sector across North America, yet they are the only system that humans truly need that can be built in a way that they actually produce more energy than they consume. Rather than being the biggest part of the climate change problem, buildings can be a big part of the solution.

Stop for a moment and think of how backwards that is!!

Now stop for a moment and think of how large an opportunity this is.

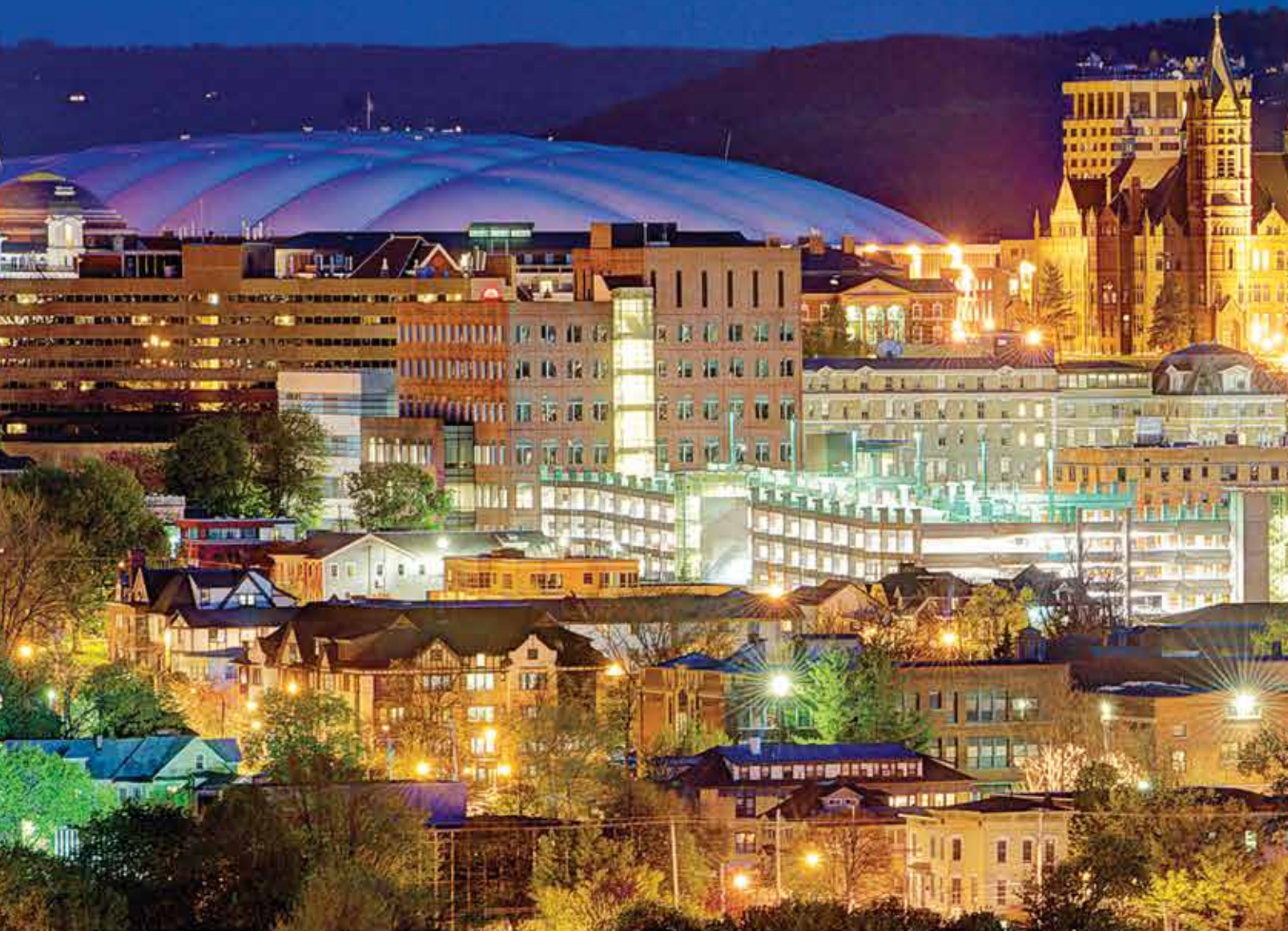
But how does one explain upgrading our society to operate without polluting our planet is not as simple as putting solar panels everywhere? As a consultant who works in commissioning, I realized I couldn't do this on my own. I became very aware that there are so many different products and services required to make a transition to a clean energy future. But it must start with our awareness and our attitudes.

I realized that the public needs to be educated and engaged, and it must be easy for them to use the information in their own lives, homes and businesses. This is where the concept of Future Proof® came from. We can Future Proof® our society by having Future Proofers install Future Proof® products. There are lots of Future Proofers out there, and they need help reaching customers.

I realized the energy efficiency industry needs a "Dr. Phil" of sustainability to educate the public about this important subject. We also need a means for people to easily connect with the proper contractors and products while having the ability to finance the work. Creating an online service that makes this simple for the public has been my vision since 2011.

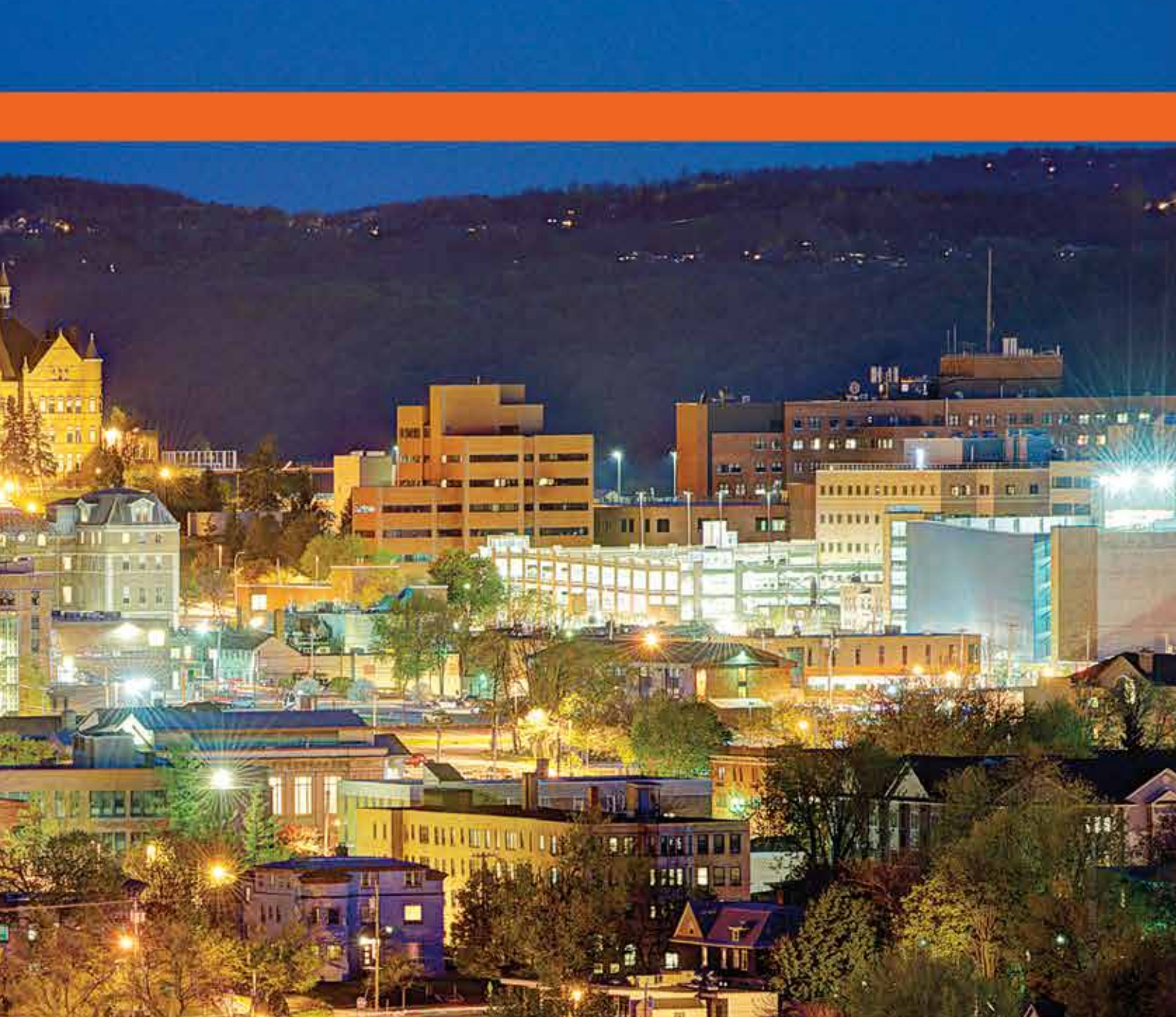
In 2011, I trademarked "Future Proof" and began my entrepreneurial journey, offering consulting services while writing my book "How to Future Proof Your Home" in 2012 to simplify the principles of building science for home owners. Since then, I have worked to create my vision of an online service while giving presentations and workshops as well as working with clients performing commissioning, retro-commissioning, energy auditing, and thermal graphic imaging services.

I can help both you and your audience understand what you can do to make the world a better place and how it benefits you individually and as a business. To learn more, visit my website [FutureProofMyBuilding.com](http://FutureProofMyBuilding.com) or call 306-261-8846.



Light is a smart investment  
Turnkey solutions for energy-efficient  
lighting upgrades

**SYLVANIA LIGHTING SOLUTIONS**  
AN OSRAM BUSINESS



SYLVANIA Lighting Solutions is a global leader in energy efficiency for today's high-performance buildings, streets and urban landscapes. For almost 50 years, we've managed large turnkey lighting projects across North America, helping local and national governments, universities, schools and hospitals drive down energy costs and boost efficiency, while improving sustainability and quality of life.

Working directly with your facility managers or through ESCO relationships, we perform energy audits, engineer lighting and control system upgrades, complete installations, recycle waste, manage warranties and document energy performance. And we offer access to a full array of lighting and control products from a broad range of manufacturers. So we can always deliver the right mix of products to meet your energy needs and fulfill your mission.

Unmatched expertise. Full-service solutions.

**OSRAM**

# PUTTING A PRICE ON CARBON:

## UNDERSTANDING CANADA'S CARBON PRICING PLAN

By Paul Adair

Canadians from coast to coast to coast intuitively know that maintaining a sustainable, clean growth economy is necessary to better protect our environment and to grow future prosperity; just as they know going to the dentist is necessary to ensure good dental health.

But, in like going to the dentist knowing that you've neglected to floss, taking those first steps towards the goal of a sustainable, clean growth economy can be intimidating.

Last October, the Government of Canada made official its plans for a pan-Canadian approach to pricing carbon and greenhouse gas (GHG) emissions, demonstrating its strong commitment to creating a cleaner, more innovative economy for the future. Under this plan, all Canadian provinces and territories will guarantee to have carbon pricing by 2018 with a price based on GHG emissions and applied to a common and broad set of sources to be more effective.

In order to accomplish this, the Trudeau government established a benchmark for pricing carbon emissions at a level to help the country meet its GHG emission targets, while also providing greater certainty and predictability for Canadian businesses. The government has set a price that begins at a minimum of \$10 per tonne in 2018, rising by \$10 each year until 2022, at which point it has reached \$50 per tonne.

"Putting a price on carbon is good public policy and makes sense to a lot of Canadians," says Peter Love, President of Energy Services Association of Canada. "It's a real chance for Canada to be seen as a world leader in how it attacks the carbon issue and it's going to be interesting to see the contrast between what we do and what happens—or does not happen—elsewhere around the world."

In the Federal government's plan, the provinces and territories will ultimately retain some flexibility in deciding how they implement carbon pricing, either obtained through the collection of a carbon tax or by adopting a cap-and-trade system.

A carbon tax can be seen as reasonably clear-cut, where a tax is set on carbon producers for each and every tonne of GHG emissions they emit. That tax will then be passed on to the consumer in the form of an increase in price for things such as natural gas, hydro or fuel.

In many ways, a carbon tax is an easier system to implement since provinces already have mechanisms in place for the collection of tax dollars; this simply being one more. A downside to the carbon tax system is that it is more difficult to link to the pricing systems of other jurisdictions, such as Ontario's cap-and-trade system.

The cap-and-trade system is different in that the markets and not government ultimately decide on the price to be set on carbon before the cost trickles down to consumers.

In this system, the government establishes a quota on the level of emissions

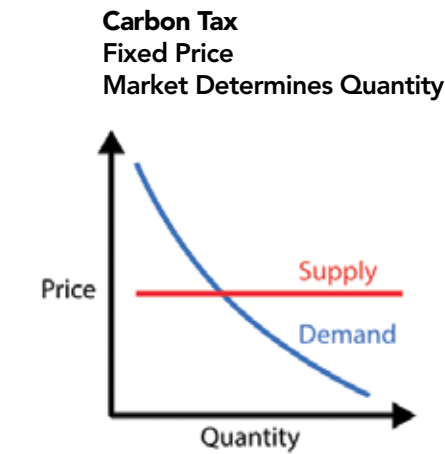
*“It’s a real chance for Canada to be seen as a world leader in how it attacks the carbon issue and it’s going to be interesting to see the contrast between what we do and what happens—or does not happen—elsewhere around the world.”*

that it will allow before issuing permits for the allowed emissions. Since there will be a limit to the number of permits issued, they will have a set value in the market that is based on the economic principle of supply and demand as companies trade them back and forth. The end value of these permits hinge on how strict the government’s quota on emissions turns out to be. The lower the cap on emissions, the fewer permits issued and the higher their value on the market.

Furthermore, provinces and territories that choose a cap-and-trade system are going to be asked to reduce the number of GHG emission permits they make available to businesses, decreasing each year and based on both emission cuts through to 2022 and a 2030 target equal to or greater than the Government of Canada’s.

“But neither system is ‘better’ than the other,” says Chris Ragan, Chair, Canada’s Ecofiscal Commission. “Whichever system you choose, they both put a price on carbon, they both create incentives to reduce emissions, and they both generate revenue that can be recycled back into the economy. When you look at both systems, they are actually more similar than they are different.”

The revenue that is raised from either a carbon tax or a cap-and-trade system is intended to remain within the provinces and territories, and those jurisdictions will be able to earmark the revenues as they see fit; whether it is to give it back to consumers in the form of tax relief, to support their workers and their families through programs and initiatives, or to invest into businesses that innovate and create jobs for the future.



Although it would prefer that the provinces and territories take up the cause and design a system that works for them, the Federal government is adamant that it will provide a pricing system for those jurisdictions that refuse to adopt either carbon pricing system by 2018.

So far, there have been different responses by the different provinces on the imposed carbon pricing, for very different reasons.

For some, such as Ontario and Québec, which have already been working with a cap-and-trade system, and British Columbia, which has had a revenue-neutral, cleanly-designed carbon tax since 2008, carbon pricing is a non-issue and this new Federal policy will not necessarily have an effect.

For other provinces that rely heavily on fossil fuels, such as Saskatchewan, the idea of imposing a price on carbon has been met with staunch opposition.

“What strikes me as being odd about the opposition to this policy is that every jurisdiction in this country has already stated an objective that sets targets for reducing GHG emissions by 2020,” says Ragan. “That being said, if current provincial policies aren’t scheduled to meet these targets—and that’s true in almost every case—then a new policy is clearly needed and we have illustrated that carbon pricing is the lowest cost method of meeting those stated targets. Why would a jurisdiction ever agree to lower GHG emissions but choose to do it in a way that costs more?”

Governments, both Federal and provincial, still have a great deal of work

left before them in terms of educating the public as to why carbon pricing is the best way to reduce emissions or to make the case as to why emissions even need to be reduced in the first place.

“Only then can there be a constructive discussion on important issues, such as how GHG emission reduction can be achieved without jeopardizing our overall competitiveness or without adding more stress to vulnerable households,” says Ragan.

Putting a price on carbon is meant to give Canada a competitive edge in building a clean-growth economy and to bring new and exciting job prospects for middle class Canadians; while also reducing the pollution that threatens our clean Canadian environment.

“I have heard from Canadians from across our country, and their message is clear; climate change is one of the defining issues of this century and they expect their governments to lead the way and take action,” said Catherine McKenna, Federal Minister of Environment and Climate Change in October. “To make sure the next 50 years are better than the last 50 years, we need to reduce our greenhouse gas emissions and transition to a low-carbon economy that works for everyone.”

The Federal government’s approach to pricing carbon is to be reviewed at the end of 2022 to ensure that it remains effective without damaging Canadian competitiveness, and to also confirm any future price increases. The review will also take into account the actions of other countries. 🌱

# FEDERAL ESPC OPPORTUNITIES FLOURISH

## WHAT ARE THE OPPORTUNITIES?

*The Royal Canadian Mint in Ottawa, Ontario, is saving \$1 million each year. Banff National Park of Canada, in Alberta, invested \$500,000 in a 10-year project that reaps \$70,000 annually in savings. A \$9.5 million investment into 130 buildings is guaranteeing \$1.4 million in annual savings for the Canadian Forces Base in Halifax, Nova Scotia. Federal projects across Canada have benefited from energy performance contracts.*

**During the past 10 years, there have been 27 successful government-related ESPCs in Canada.**

*What follows is an in-depth example that showcases how Place du Portage, in Gatineau, Québec, is saving \$973,000 per year, and will achieve payback of their investment in 7.3 years.*

**B**uilt in four stages during the 1970s, Place du Portage is a four-building complex in the heart of Gatineau, Québec, housing a number of different groups and government departments, and employing about 10,000 federal employees.

With a floor area of 83,219 square metres, Place du Portage Phase IV (Portage IV) was showing an unusually high energy consumption for a building its size so, in 2010, Ameresco Canada Inc. was contracted to implement a facility renewal and comprehensive energy program to address those energy consumption issues as part of the Federal Buildings Initiative (read more about this initiative starting on page 16).

“Ameresco has had hands-on experience with difficult implementation scenarios where the coordination of the recommended measures and the various occupancies must be carefully considered,” says Dave Seymour, Vice-President, Eastern Region at Ameresco Canada Inc. “We take pride in our ability to successfully coordinate these complex solutions and provide energy efficiency, operating savings and infrastructure renewal, while maintaining our focus on customer service and satisfaction.”



*The \$8,599,000 Portage 4 project will see payback in just over seven years. Photo courtesy of Ameresco.*

Ameresco began the process by performing a review of Portage IV’s systems to better identify measures that could ultimately reduce energy costs. Their recommended program significantly upgraded the building’s infrastructure, addressed specific building operational issues, and also reduced energy use alongside facility operation and maintenance costs.

The initial scope of this \$8.6 million project contained a number of factors, including:

- The replacement of two existing chillers (each at 1,200 tons), which utilized a type of CFC refrigerant

that was being phased out because of its ozone-depletion potential with new equipment that conformed to more modern regulatory requirements.

- A conversion of the older constant volume, dual duct HVAC systems used throughout the building to a variable air volume (VAV) system that can vary the volume of air to better maintain zone temperatures while also reducing electrical power requirements and eliminating simultaneous heating and cooling.
- Prior to the retrofit, the heating for Portage IV was supplied exclusively



*“We take pride in our ability to successfully coordinate these complex solutions and provide energy efficiency, operating savings and infrastructure renewal, while maintaining our focus on customer service and satisfaction.”*



#### PROJECT HIGHLIGHTS

**Start Date:** September, 2010

**Completion Date:** December 2012

#### List of Primary Measures Completed:

- Two chiller replacements
- BAS replacement and upgrade
- Lighting controls system
- Building envelope
- Operator training
- Cooling tower renewal
- Electric boiler operation
- Lighting retrofit
- Complete VAV conversion
- HVAC re-commissioning

**Project Cost:** \$8,599,000

**Project Size:** 83,219 square metres

#### Savings:

\$973,000 per year with a simple pay-back of 7.3 years

#### Environmental Benefits:

The annual green benefit from this program would see a reduction of:

- 9,491,400 kWh per year in electricity
- 589,300 square metres per year of equivalent natural gas
- 1,150 tonnes per year of greenhouse gas emission

through steam generated at the Portage III building in spite of there being two existing electric boilers at Portage IV, initially intended to provide heat during colder seasons. Ameresco upgraded the control systems for these boilers so that they would automatically switch on during off-peak periods, when consumption billing rates were lower or when the total electrical demand was below Portage IV's peak demand level.

- The building automation system (BAS) was also upgraded with a more efficient control system that boasted expanded functionality, including extending BAS control to the individual VAV box level.

- Ameresco determined that the control system in place before the retrofit project was limited in its capabilities and was becoming obsolete, with replacement parts for the system becoming difficult to procure. A new control system was put into place that allowed for greater and more precise control of HVAC and lighting systems, while also having enhanced reporting and monitoring capabilities that enable building operators to anticipate and troubleshoot problems more effectively.

“With all of the measures that were implemented as part of this comprehensive program, there was hardly a square foot that wasn't touched within the facility,” says Seymour. “A focus on good planning and concern for occupant comfort was a necessary part of the team consideration throughout the entire program.”

**More Case Studies can be found on our website at [www.energyservicesassociation.ca](http://www.energyservicesassociation.ca), under the Case Studies and Industry Profiles tab.**

## Your Team for Green Buildings

LEED, BOMA, & Built Green Consulting,  
Net Zero, Energy Modeling, Commissioning



**3 POINT ENVIRONMENTAL**  
Sustainable Building Project Management

414 Memorial Dr NE Calgary • 403-606-5849  
[www.3pointenvironmental.com](http://www.3pointenvironmental.com)

# PERFORMANCE-BASED SOLUTIONS PRESENT OBVIOUS OPPORTUNITIES FOR PROVINCES AND TERRITORIES

## WHAT ARE THE OPPORTUNITIES?

*Provincial and Territorial governments are always looking for ways to do more with less. As Nunavut discovered, creating significant savings is possible when industry experts create a project blueprint that covers everything from harsh climate conditions to supply access to training at the local level to operate and maintain the work once complete.*

**During the past 10 years, there have been 27 successful government-related ESPCs in Canada.**

*What follows is an in-depth example that showcases how Nunavut is saving \$2 million each year following a \$15.6 million project that transformed government buildings amidst some of the country's harshest climates.*



*Inukshuk High School's SolarWall is one of numerous clean energy solutions implemented by MCW.*

Nunavut is home to some of the most remote communities in all of Canada, and its residents face some of the nation's harshest winters. To meet the many economic challenges presented in the Arctic, the Government of Nunavut set out to make more efficient use of its available energy resources by integrating both traditional and innovative technologies to achieve maximum energy savings.

With this in mind, the Government of Nunavut contracted MCW Custom Energy Solutions in 2008 to initially provide a comprehensive Investment Grade Feasibility Study | Energy Audit for 39 Government of Nunavut (GN) facilities. GN then contracted MCW to implement the comprehensive set of retrofit and renewable measures, and guarantee the contracted long term energy savings through a turn-key guaranteed Energy Service Performance Contract (ESPC). MCW worked with GN to satisfy the Territory's financing considerations by structuring third-party financing for the total project costs.

MCW's Iqaluit Pilot Project included energy conservation measures in a number of government building types, from hospitals to schools to Nunavut's Legislative

building; while also considering the difficulty in operating in the far North.

"Effective project and construction management factored in the inherent logistical challenges of working in the Arctic; such as limited shipping windows, weather delays and materials management," says Colin Rabnett, Executive Partner at MCW Custom Energy Solutions. "By doing so, we ensured that these challenges would have a minimal impact on our overall project schedule, retrofit measure selection, compatibility with local contracting skills and traditions, and long-term durability of the solutions."

LED lighting retrofits were implemented from the onset of this project. Based on their performance, LED retrofits were expanded to include more buildings, along with occupancy sensors and additional upgrades, to lighting control systems. Exterior LED lighting has proved to be particularly effective in the harsh northern climate, providing high quality lighting performance and a substantial maintenance holiday for GN building operators.

HVAC retrofits were completed in several Government of Nunavut facilities to better counter Iqaluit's arctic environment. These retrofits included VAV conversions and VSD installations in facilities, such as in the Inukshuk High School, Nakasuk School, Joamie School, and the Nunavut Justice Centre.

The project included extensive upgrades to existing controls systems for some of the smaller facilities, and an implementation of a new DDC system in larger facilities, such as in Nakasuk School, Nanook School, and the Correctional Centre, among others.

Building energy efficiency was supported by the adoption of SolarWall solar air pre-heating systems and solar hot water heating arrays for preheating domestic hot water. These systems promoted greater energy independence and also helped to reduce the load on already established heating systems that are fueled by expensive imported fuel oil.

Extensive building envelopment sealing and weather-stripping was



Iqaluit's remote arctic location presents a unique challenge in terms of solutions that can perform in its climate and logistical restraints on construction and materials management.



Baffin Regional Hospital serves as an early demonstration of the effectiveness of LED lighting solutions.



### PROJECT HIGHLIGHTS

Start Date: 2008

Current Status: Savings Verification Phase, Year 4

#### List of Buildings Completed:

- A regional hospital and health centre
- Legislature
- Territorial community college
- Secondary and primary schools
- Justice and correctional facilities
- Residences
- Offices
- Maintenance and storage facilities

**Project Value:** \$15.6 million

**Project Size:** 780,000 square feet, across 39 buildings include in scope

#### Energy Savings:

- \$2 million in reconciled annual energy costs savings (versus the \$1.5 million annual savings guaranteed)
- 958 tonnes eCO<sub>2</sub> in annual GHG emissions reductions

#### Energy Consumption Numbers:

**Pre-Project:** 2.62 GJ/square metre

**Post-Project:** 2.14 GJ/square metre

considered by MCW, a measure that had extra importance in Nunavut's Arctic climate because of its triple impact on improved insulation, occupant comfort, and energy cost saving contributions.

Key to the long-term persistence of energy savings in GN was the development of a robust operator training program, involving Building Environmental Systems course accreditation through MCW delivered at GN's Arctic College. A series of community engagement initiatives were conceived as well that continue to be undertaken in an attempt to move GN from a "consumption-based subsidy" mentality to a "conservation-based" mind-set. Recent climate change events in the north have substantially raised the importance of this issue locally.

MCW's success with the Iqaluit Pilot Project has led to an ongoing partnership with the Government of Nunavut, where the company is currently moving forward subsequent ESPCs within the Nunavut Energy Management Plan (NEMP) for government facilities located in remote communities through Nunavut's Kivalliq and South Baffin regions.

"These ongoing projects are natural extensions of MCW's partnership with Nunavut as they build on our knowledge of the facility mix, the environmental challenges and opportunities, and the efforts, creativity and local skill sets that are required to undertake retrofit projects in Nunavut," says Rabnett.

**More Case Studies can be found on our website at [www.energyservicesassociation.ca](http://www.energyservicesassociation.ca), under the Case Studies and Industry Profiles tab.**



**JOIN TODAY... AND SAVE...**

**10% OFF**

**ON YOUR FIRST YEAR MEMBERSHIP!**

**REASONS FOR JOINING**

- 1) CREDIBILITY
- 2) INDUSTRY ADVOCATE
- 3) EDUCATION & NETWORKING
- 4) RENOPLAN FINANCING
- 5) WINDOW WISE
- 6) DISCOUNT PROGRAMS

VISIT [WWW.SAWDAC.COM](http://WWW.SAWDAC.COM) OR CALL 800-813-9616

Mention this AD to save 10%



**10% OFF**



# TAKING THE RISK OUT OF MUNICIPAL RETROFITS

## WHAT ARE THE OPPORTUNITIES?

*The City of London, Ontario, spent \$2.3 million to retrofit 19 city buildings; the resulting greenhouse gas savings are the equivalent of taking 3,500 cars off the road. The Town of Orangeville, Ontario, spent \$1.7 million to upgrade seven facilities, and are guaranteed payback within seven years. And the City of Windsor paid \$3.6 million to upgrade 48 facilities; they were guaranteed \$386,000 in annual savings, but now that the work is done, the city is actually saving \$665,000 per year. If your municipality's facilities are in need of an upgrade, a guaranteed energy performance contract will take the risk out of the equation.*

**During the past 10 years, there have been 25 successful municipal-related ESPCs in Canada.**

*What follows is an in-depth example that showcases how the town of Newmarket, Ontario, undertook an Energy and Facility Renewal Program. Phase one's annual energy savings was estimated to be \$157,532 annual, but in reality the number has far exceed expectations, coming in at \$205,622 per year!*

Located just south of beautiful Lake Simcoe, the town of Newmarket, Ontario, has set a goal of establishing a greater energy sustainability for itself—now and into the future. Newmarket took steps more than a decade ago to work alongside Honeywell in order to upgrade its facilities, lower its greenhouse gas emissions, and to reduce the town's overall impact on the environment through Honeywell's Comprehensive Municipal Solutions facility and asset renewal program.

Honeywell initially met with town officials in 2006 to perform an extensive audit of Newmarket's municipal buildings where it identified key areas in which to focus its efforts to reduce energy consumption and find cost savings.

"Honeywell was selected based on our ability to find more cost saving measures than our competitors," says Michael Pringle, Senior Business Consultant at Honeywell. "In Phase 1, Newmarket provided a building to tour for the RFP and Honeywell presented both the most measures and the best business case for Newmarket."

Based on this audit, Phase 1 of Newmarket's Honeywell Retrofit Program was initiated and the company proceeded to replace aging



**TOP:** Honeywell expanded on Newmarket's Andover control and automation system that manages lighting and HVAC to allow for greater temperature control at numerous locations, including Gorham Pool.

**BOTTOM:** The town of Bradford West Gwillimbury, near Newmarket, replaced more than 1,500 high-pressure sodium and mercury vapour streetlight fixtures with more energy-efficient LED lighting options.

plumbing fixtures with low-flow equipment to reduce water waste and also weather-seal facility doors and windows to prevent the loss of warm and cool air throughout the year. In one case, a window was installed to provide daylighting to an occupied space.

Honeywell also expanded on Newmarket's automation system that manages lighting and HVAC to allow for greater temperature control at Newmarket's Municipal Offices, Ray Twinney Complex, Seniors' Meeting Place, the Newmarket Youth & Recreation Centre and Kinsmen Sk8Park, and the Gorham Pool and Lion's Park Rink. Honeywell technicians also installed a low-emissivity ceiling above the rink to better reduce heat loss and to improve on ice quality.

As a Phase 2 component, in 2014 Newmarket replaced more than 7,500 high-pressure sodium and mercury vapour streetlight fixtures with more energy-efficient LED lighting options. This newer LED technology consumes less electricity, requires less maintenance, and has a longer life compared to

the older lighting technology it replaced; resulting in overall energy and cost savings for the town. Neighbouring town of Bradford West Gwillimbury also carried out a retrofit of 1,700 street lights; for this energy saving measure Honeywell chose a different cobra head LED streetlight. Included in the Newmarket Phase 2 EPC, a lighting retrofit and other measures were also carried out in the Magna Centre.

These upgrades all combined to significantly reduce the town's electricity, natural gas and water consumption, and provided better than expected cost savings.

In 2007, with an initial cost for Newmarket of just over \$1.6 million, the anticipated annual energy savings guaranteed by Honeywell for this project was \$157,532, resulting in a payback period of about 10 years. The actual savings for Phase 1 were much higher than the guaranteed savings, resulting in a shorter payback. As of December 2014, the utility savings achieved was more than \$1.12 million annually once Newmarket Phase 2 savings were included.

By 2015, the cumulative savings achieved by Newmarket were \$2,127,401; significantly higher than anticipated at the beginning of the project. In addition, the town has been able to lower its carbon emissions by an estimated 563 tonnes per year; the equivalent to removing more than 80 cars from the city's roadways.

**More Case Studies can be found on our website at [www.energyservicesassociation.ca](http://www.energyservicesassociation.ca), under the Case Studies and Industry Profiles tab.**



## PROJECT HIGHLIGHTS

### PHASE 1, START DATE: 2007

#### List of Primary Measures Completed:

- Redesigned lighting
- Installed water conservation measures
- Installed heat pump system
- Building automation control optimization
- Low-emissive ceiling installed in community rink

**Project Value:** \$1,551,545, with a guarantee period of 10 years

#### Savings:

**Estimated annual energy savings:** \$157,532 per year

**Actual average annual energy savings:** \$205,622 per year

#### Environmental Benefits:

GHG emission reduced by an estimated 563 tonnes of CO<sub>2</sub> per year; equivalent to removing 80 cars from Newmarket roadways

### PHASE 2 & 3

#### List of primary measures included in Phase 2 & 3:

- Town-wide LED streetlight retrofit
- Redesigned ice rink lighting
- Replacement of pool humidity sensor
- Installed variable frequency drives
- Upgrades to building automation system
- Installed carbon dioxide controls

**Project Cost:** \$8,138,688

**Estimated Annual Energy Savings:** \$812,109, with a guarantee period of 10 years

**Actual Annual Savings (Year One):** In progress

# ESPC COMES OUT ON TOP FOR CANADIAN UNIVERSITIES AND COLLEGES

## WHAT ARE THE OPPORTUNITIES?

*In St. John's, the Memorial University of Newfoundland embarked on a 14-year, \$13 million Energy and Facilities Renewal Program. The work has resulted in more than \$1.5 million in energy savings. On the other side of the country, at the University of British Columbia, in Vancouver, a \$37.5 Energy Services Performance Contract (ESPC) is generating \$3.4 million in savings each year, and payback was achieved four years ahead of schedule. In Ontario's northern city of Thunder Bay, a \$23 million ESPC at Lakehead University is exceeding its guaranteed savings by 45 per cent!*

**During the past 10 years, there have been eight successful university/college-related ESPCs in Canada.**

**What follows is an in-depth example that shows how campus-wide improvements at Algonquin College in Ottawa, Ontario, are reducing GHG emissions and saving \$3.7 million each year for this educational institution.**

**W**ith 18,000 full-time students, 36,000 part-time students and offering more than 180 programs, Ottawa's Algonquin College of Applied Arts and Technology is the largest college in eastern Ontario, not to mention one of Canada's most environmentally aware post-secondary schools. Algonquin College is committed to its vision of a clean energy future in which all contribute to the reduction of the institution's impact on the environment.

Siemens Canada, who has developed a working relationship with Algonquin College for over 25 years, was awarded a Guaranteed Energy Performance Contract by the college following a competitive submission process. Siemens had advanced an aggressive \$51 million proposal that addressed Algonquin's technical energy infrastructure and laid out plans for a far-reaching, 20-year relationship in which both Siemens and Algonquin



College would also commit to working together on applied research initiatives and supporting education of students on sustainability issues.

The first step to Algonquin College's sustainability platform began with

significantly reducing the overall usage of electricity, water and natural gas throughout the campus buildings. By doing so, the college demonstrated that lowering consumption not only lowers the college's operating costs, it also delivers major green house gas reductions and its commitment to improving the living environment we all share. The initial phases of Siemens' proposed energy efficiency renovations, which encompassed seven main areas at Algonquin College, are already paying dividends. By 2015, Algonquin benefited from an operating cost savings of more than \$1 million per year, a reduction in infrastructure renewal costs of \$10 million, and an annual reduction of CO2 emissions of more than 1,200 tons.

The seven main areas of concern addressed by Siemens in the initial phase of this project were: water efficiency improvements, a major HVAC retrofit, cooling tower replacement, chiller plant optimization, building automation control optimization, intelligent lighting controls, and modernizing the kitchen equipment.

In April of 2016, Algonquin College and Siemens proudly announced the launch of the college's new two mega-watt co-generation plant, which is able to generate enough energy to handle the baseline power needs of the entire Ottawa campus. This plant provides multiple benefits for Algonquin College, such as reducing the overall energy expenses and allowing Algonquin to continue to operate during a potential electrical outage. In addition, the heat generated by the plant is used to heat and cool the College buildings, further reducing Algonquin's overall energy expense.

Recognizing the growing demand for expertise in the field of energy, Algonquin College also announced a new Energy Management Graduate Certificate Program that debuted in January 2017, aimed at students with existing credentials who are looking to further their careers in the fast growing energy sector.

The latest phase of the collaboration between Siemens and Algonquin College has focused on innovation and expands the new Energy Centre to a high efficiency four mega-watt co-generation, a scaled

Solar PV and Power Storage solution, and an Electric Vehicle Charging solution, all managed by a state-of-the-art Siemens Microgrid Energy Management Solution. The new Energy Centre, when fully complete in 2017, will deliver over \$1.7 million in operating cost savings for Algonquin College.

As impressive as this seems, the ability to leverage this new Energy Centre as a "Living Laboratory" to advance the quality of the student's learning experience will further establish Algonquin College as a recognized model institution for Energy Management and Sustainability.

"Canada's energy landscape is changing dramatically and the industry innovation needs to happen in a real-world setting," said Robert Hardt, CEO, Siemens Canada last April. "Today's students are tomorrow's skilled workforce and strong private-public partnerships like the one between Siemens and Algonquin are vital to enhancing education and research in the energy space, ensuring Canada remains competitive and sustainable." 

**More Case Studies can be found on our website at [www.energyservicesassociation.ca](http://www.energyservicesassociation.ca), under the Case Studies and Industry Profiles tab.**



## PROJECT HIGHLIGHTS

**Project Start:** 2013

**Completion Date:** Currently expected summer of 2017 for all phases

### List of Primary Measures:

- 4MW Cogeneration
- Campus-wide water efficiency improvements
- Five major HVAC upgrades
- New cooling tower
- Chiller plant optimization
- Building automation control optimization
- Indoor and outdoor lighting and automated controls

- Kitchen equipment modernization

**Project Value:** \$52 million

### Savings:

\$3.7 million in annual savings (60 per cent)  
\$4.6 million in incentives

### Environmental Benefits:

Net reductions of 12.6 per cent in GHG emissions

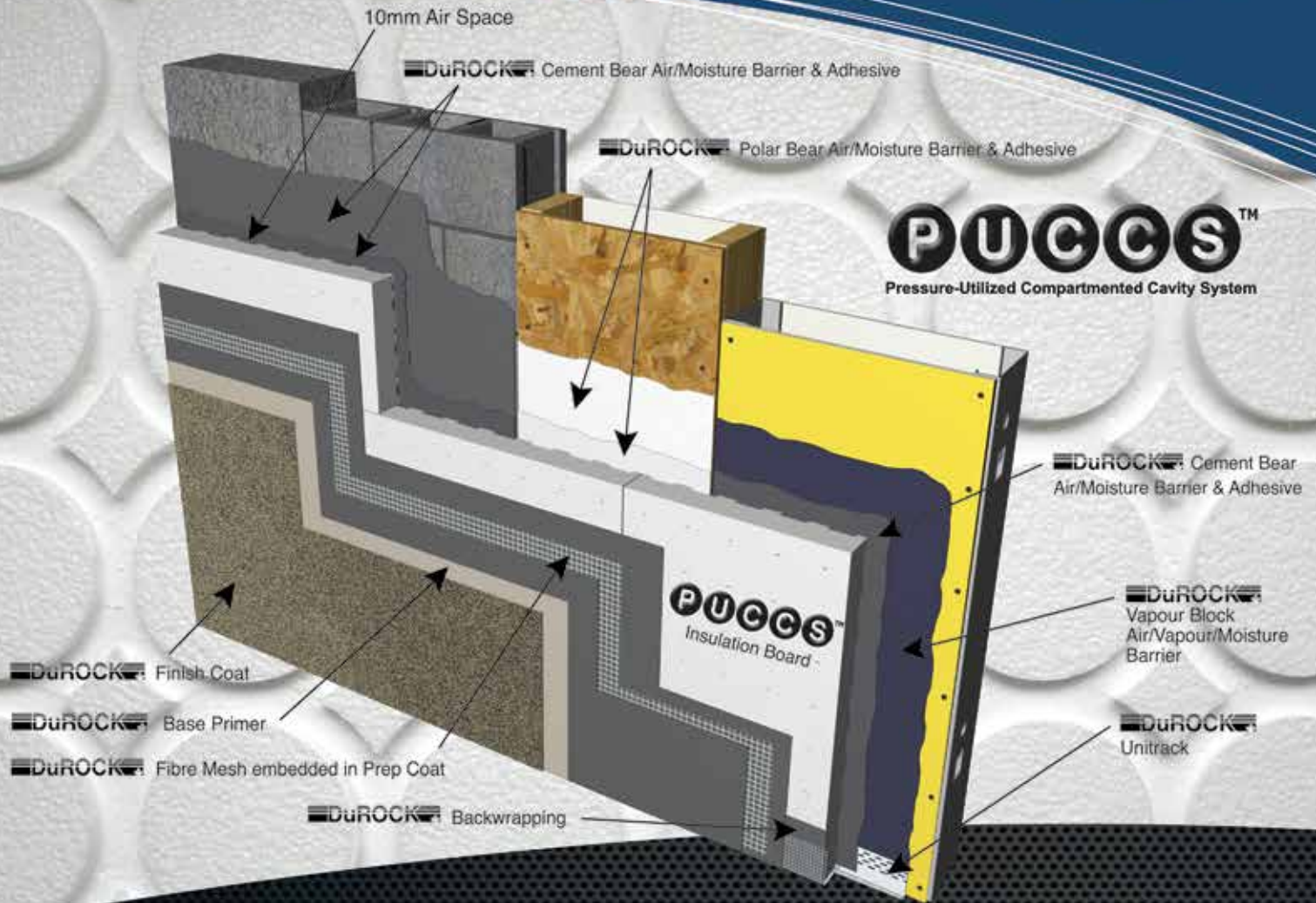
**MECHEL SERVICES INC.**

*Quality Service You Can Depend On*

- Alternative Energy Sales, Engineering, Installations, Services
- Electrical PV Systems
- Wind Generation Systems
- Hot Water Systems

826 Cynthia Street  
Saskatoon  
SK, Canada  
S7L 5J7

Ph: 306-956-0177  
Fx: 306-956-0144  
Email: [pierre@mechelservices.com](mailto:pierre@mechelservices.com)



## THE ULTIMATE EXTERIOR INSULATION RAINSCREEN FINISH SYSTEM

The DuROCK PUCCS series of Exterior Insulation Finish Systems is the ultimate in insulated rainscreen technology! The patented circular drainage pattern of the PUCCS insulation board provides unparalleled moisture drainage and drying capability. The thermal resistance of the insulation, combined with the air barrier property of the various moisture barriers, greatly enhances the energy efficiency of any commercial and high rise building clad or retrofit with PUCCS.

PUCCS EIFS for Commercial and High Rise construction has been evaluated by CCMC for compliance to the Technical Guide for EIFS, and is certified for use on buildings required to be of non-combustible construction and on buildings over three storeys in height. This system incorporates a trowel-applied air/moisture barrier, and dependent upon the configuration of the wall assembly, may also provide the necessary condensation control.

PUCCS EIFS for Residential and Low Rise construction is the first EIF System in Canada to be evaluated by CCMC for use over wood substrates. This system incorporates a trowel-applied air/moisture barrier and is intended for use on wood-sheathed buildings.

Please visit our website for most up-to-date Specifications and 3D details on the DuROCK PUCCS series of Exterior Insulation Finish Systems.



# SCHOOL BOARDS EMPLOY ESPCS TO PROVIDE ENERGY SAVINGS SOLUTIONS



## WHAT ARE THE OPPORTUNITIES?

*The guaranteed Energy Service Performance Contract (ESPC) opportunities available to Canadian school boards are limitless, and can provide big return on investment. For example, the Ottawa-Carleton District School Board in Ontario has had work completed on all 152 of its schools, which has resulted in \$4.4 million per year in energy savings. In Regina, Saskatchewan, the Regina School Board started with nine schools and then expanded that number to 17, after seeing actual savings exceeding the initial guaranteed amount. In Manitoba, a \$5.6 million project that covers 16 schools in the Winnipeg School Division is projected to result in \$450,000 projected annual savings.*

**During the past 10 years, there have been 35 successful school board-related ESPCs in Canada.**

*What follows is an in-depth example that illustrates how a \$14 million investment from the Lester B. Pearson School Board, in Montréal, Québec, is guaranteed to generate \$1.1 million in energy savings per year.*

**T**he Lester B. Pearson School Board is one of the largest English school boards in Québec, stretching from Verdun (including Nun's Island) on the east to Hudson and St. Lazare on the west. Its leaders strongly believe that the building of better facilities is directly related to ensuring better learning experiences which will—in turn—produce better overall results.

In 2009, the school board was coming to grips with aging building envelopes at its facilities and outdated electromechanical systems that were requiring either complete overhauls or replacement. As a result, the school board partnered with Johnson Controls on Phase 2 of a two-phase guaranteed Energy Service Performance Contracting (ESPC) project; tasked with the mission to explore and further enhance potential energy savings, while also providing a better



education experience for the school board's students.

This was not the first time that the school board had collaborated with Johnson Controls—a company well-regarded in the industry for its dedication in efficiently providing solutions for operating buildings—having previously worked with them only a couple years earlier on the initial phase of the ESPC Project. The work that Johnson Controls did for Phase 1 was deemed to be a tremendous success for the

school board, reducing the environmental impact of five high schools and an adult education centre, and leading to an annual energy cost savings of over \$1.2 million.

Wanting to build on this record of success, Phase 2 was given a larger scope—seeking improvements to a total of 27 buildings—which included the board's head office and 26 additional schools. For Phase 2, Johnson Controls was able to guarantee energy and operational savings of \$1.1 million

per year throughout the 15-year contract term.

"We offered to the Lester B. Pearson School Board a long-term vision that incorporated the operation of the buildings to our various energy conservation measures," says Louis-Michel Raby, Senior Account Manager at Johnson Controls. "They felt that we could fully understand the challenges of operating such a large portfolio of old schools and that we would support their team in upgrading major equipment while also training their staff on how to operate it properly."

For Phase 2, Johnson Controls identified and implemented over 320 energy cost saving measures, including lighting system upgrades, the complete modernization of heating systems in most of the schools, HVAC enhancements, adoption of high efficiency boilers, and installation of the Metasys™ building automation system to centrally operate facilities.

Johnson Controls was able to offer these improvements through a comprehensive energy performance contract and the schools that were affected were kept operational during the extensive renovations.

When combining the efforts of Phase 2 with those of Phase 1, the school board's carbon footprint was shown to be significantly decreased, having lowered its annual emissions of greenhouse gas by approximately 5,500 tons of CO<sub>2</sub>; the equivalent of removing 2,300 cars from Canadian roads and highways every year.

The School Board has also implemented the Green Schools Educational program for high school students, allowing them to participate in achieving even greater energy efficiencies and to have a continuing stake in the environmental direction of their schools. This program allows the students to make the most of their science and technology knowledge to better communicate their ideas and to consider innovative, real-world design solutions.

**More Case Studies can be found on our website at [www.energyservicesassociation.ca](http://www.energyservicesassociation.ca), under the Case Studies and Industry Profiles tab.**



## PROJECT HIGHLIGHTS

### LESTER B. PEARSON SCHOOL BOARD PHASE 1:

EcoEnergy project in six major schools

#### Results:

- \$12 million investment implemented in only 10 months with all schools being kept operational
- Guaranteed energy and operational savings of \$1.1 million per year throughout 10-year contract term
- Improved comfort in classes

- Over 320 energy cost saving measures implemented

#### Results:

- Improvements in Head Office and 26 schools
- \$14 million investment
- Guaranteed energy of \$1.1 million per year throughout 15-year contract term
- Guaranteed project performances

#### Environmental Benefits:

Reduction of GHG emissions by 5,500 tons of CO<sub>2</sub> per year (equivalent to removing 2,300 cars annually)

### LESTER B. PEARSON SCHOOL BOARD PHASE 2:

Enhanced Learning Environment



**rFOIL® BIG 8**  
Reflective Bubble Duct Insulation



R-8.0 Reflective duct insulation is now ICC-ES listed (ESL-1044) and evaluated (ESR-1236)



Comes Complete with Spacer Strips

rFOIL® BIG-8 is the first R-8 reflective bubble insulation. It is specially designed to reduce radiant heat gain/loss in all commercial and institutional duct applications. It also helps control condensation by providing an airtight thermal break around duct work.

rFOIL® BIG-8 Reflective Duct Insulation increases system efficiency, lowers stress on HVAC equipment, reduces energy usage and utility bills. The first R-8.0 without a mineral fiber / fiber glass core. It will NOT harbor mold, mildew or other fungi.



Call Toll Free: 1-800-837-8961 or 416-798-1340  
Email: [sales@rfoil.com](mailto:sales@rfoil.com) Website: [www.rfoil.com](http://www.rfoil.com)

Come see us at the AHR Expo in Las Vegas (JAN 30 - FEB 01 2017) Booth# N11029

# INCREASE PATIENT COMFORT, DECREASE OPERATING COSTS

## WHAT ARE THE OPPORTUNITIES?

Hospitals across Canada provide care to loved ones during life's hardest moments. Conducting upgrades amidst patients, families and staff requires a solid action plan, but is possible...and is worth the investment. Hamilton Health Sciences, in Hamilton, Ontario, serves more than 2.3 million residents. Its guaranteed Energy Performance Contract (ESPC) is projected to save \$55 million over 10 years. The Ottawa Hospital, in Ottawa, Ontario, plans to re-invest its guaranteed savings (\$2.6 million per year!) in patient care. This facility invested \$17 million in a 15-year performance contract. Finally, London Health Sciences Center, in London, Ontario, embarked on a multi-phase project covering 3.5 million square feet of property. Completion of the 5th phase is expected to reach \$3 million in annual savings!

**During the past 10 years, there have been 55 successful healthcare-related ESPCs in Canada.**

What follows is an in-depth example that underscores how the Institut Philippe-Pinel de Montréal, located in Montréal, Québec, invested \$1,828,864 in a plan to reduce energy consumption and increase patient comfort, and is now saving \$272,428 per year as a result.

**F**ounded more than 45 years ago, the Institut Philippe-Pinel de Montréal is one of the very first forensic psychiatric hospitals built in Québec; developed to discover new methods of managing cases that were, at the time, deemed difficult to treat. The Institute is now a 292-bed facility which offers a wide range of specialized treatments for psychiatric patients with severe mental issues; often having violent histories or criminal records.

In 2008, the Québec government set itself a bold, forward-thinking goal of reducing energy consumption by 14 per cent below 2003 levels, over a 10-year period. As a government-funded and operated facility, the Institut Philippe-Pinel desired to meet this aggressive environmental objective while also ensuring greater comfort for patients and staff, reducing their carbon footprint, and curtailing the increasing cost of maintenance and repairs.



The cooling tower.

Once Trane was selected for the Institut Philippe-Pinel upgrade project, a detailed energy assessment was conducted and a wide assortment of energy conservation measures were implemented; particularly those that would allow the Institut Philippe-Pinel to take advantage of special funding from the Québec Ministry of Health, offered to sustainability projects with a payback period of less than seven years.



The central heating plant boiler.

Prior to the upgrades, the Institut Philippe-Pinel's centrifugal chiller was often started to help support the deficiencies of a leaking cooling tower and to meet the facility's cooling demands. Rather than pursuing costly repairs,

Trane recommended a cooling tower replacement and further optimization of the chiller sequence. In doing this, the company was able to eliminate the frequent start-ups of the second chiller. The newly installed 1,000-ton cooling tower

increased cooling tower heat rejection capacity and provided enough chilled water to allow the Institut Philippe-Pinel to run a single chiller at a time, a solution that ultimately led to less energy consumption.

During the warmth of summer, the demands for steam at the Institut Philippe-Pinel drops, essentially making one of the facility's three large boilers wasteful. Trane installed a new steam line and energy efficient boiler to better meet the summer demand and to also minimize steam production. As part of this upgrade, the boiler sequence was redesigned to include one electrical boiler that only operates during off-peak hours, further reducing greenhouse gas emissions by slashing the Institut Philippe-Pinel's natural gas consumption.

Under Trane's direction, 3,800 T-12 fluorescent light fixtures with magnetic ballasts (65 per cent of the facility's total lighting) were also replaced. These fixtures were upgraded to 28 W T-8 lamps and electronic ballasts to reduce energy use.

"Projects that happen in a medical setting can prove to be challenging, in that you cannot shut down any part of the facility while you are working," says Angelo Lazaris, Comprehensive Solutions Advisor, Ingersoll Rand/Trane. "You can just imagine changing out a unit that's a critical care area that's operating 24/7 and, while you are doing that, you need to maintain clean air for vulnerable patients and also promise uninterrupted services for the duration of the project. It's a challenge—but it's what we do."

The energy conservation measures brought in by Trane at the Institut Philippe-Pinel de Montréal resulted in more than \$329,670 in first-year energy savings and a reduction in equipment maintenance costs of more than \$8,800. These energy conservation measures also met the goal of increasing the comfort of staff and patients, allowing the Institut Philippe-Pinel to invest a greater degree of funding into patient care and research.

**More Case Studies can be found on our website at [www.energyservicesassociation.ca](http://www.energyservicesassociation.ca), under the Case Studies and Industry Profiles tab.**



## PROJECT HIGHLIGHTS

Start Date: 2008

Completion Date: 2010

### List of Primary Measures Completed:

- Cooling tower replacement
- Optimization of the chiller sequence
- Lighting upgrades
- Energy efficient boiler installation
- New steam line upgrade

**Project Value:** \$1,828,864

### Project Term:

2010 – 2017 (guarantee period)

### Annual Guaranteed Savings:

\$272,428 (savings exceeded by a minimum of 25 per cent)

### Special Recognition:

Institut Philippe-Pinel de Montréal was nominated for the "Prix Innovation" for their energy performance initiative. They were also nominated for the AQME's Best Energy Savings project for existing buildings in the Institutional Sector.

**Rely on Ainsworth to support all your facility requirements.**

- Drive Cost Savings
- 24/7 Emergency Service
- Preventative Maintenance

**AINSWORTH**  
Service You Can See™

A GDI COMPANY

Ainsworth.com | 1-866 GoACTION (462-2846) | Sales@ainsworth.com

**COMMERCIAL FOOD SERVICE EQUIPMENT**

Blodgett Corp./Market Forge ..... 14

**CONSTRUCTION CONSULTANTS**

Lawson Projects ..... 17

**CONSULTING AND SALES OF LIGHTING PRODUCTS**

Intact Lighting Group Inc. .... 29

**E.I.F.S. PRODUCTS**

DuROCK ..... 32

**ELECTRICAL AND MECHANICAL CONTRACTORS**

Ainsworth ..... 36

**ENERGY CONSULTANT**

Futureproof My Building Consulting ..... 19

**ENERGY EFFICIENT HVAC PRODUCTS**

Armstrong Fluid Technology ..... 3

**ENERGY MANAGEMENT AND CONSULTANTS**

Iron Gate Automation Systems Inc. .... 18

**ENERGY SERVICE COMPANIES (ESCOs)**

Ameresco ..... IFC

Honeywell ..... 28

Johnson Controls L.P. .... OBC

MCW Custom Energy Solutions ..... IBC

Siemens ..... 6

Trane Canada ..... 8

**ENGINEERING AND ENVIRONMENTAL CONSULTING**

R. J. Burnside & Associates ..... 37

**LED ENERGY LIGHTING**

Mid Canada Asset Management Corp. .... 38

**LIGHTING SOLUTIONS**

OSRAM/Sylvania Lighting Solutions ..... 20-21

Philips Lighting Canada ..... 15

**RELLECTIVE INSULATION**

CoverTech Fabrication Inc. .... 34

**SOLAR PANEL SPECIALISTS**

Mech-El Services Inc. .... 31

**SOLAR POWER PANELS/ENERGY SOLUTIONS**

DNM Solar Solutions Inc. .... 4

**SUSTAINABLE BUILDING PROJECT MANAGEMENT**

3 Point Environmental ..... 25

**THERMAL SOLUTIONS**

Solar UV Solutions ..... 37

**WINDOW DEALER ASSOCIATION**

S.A.W.D.A.C. & Renovation Canada ..... 27



**A new "Game Changing" Solar Thermal Product**

The SunQuest 250 solar thermal collectors harness the power of the sun to deliver clean, renewable energy. This solar heat could be used for many applications, like heating a building, providing hot water, solar cooling or for many other commercial or industrial processes. *Customers typically save 50% or more in energy costs.*

Solar UV Solutions is committed to providing the most cost effective, energy efficient solution for all commercial heating and hot water needs. We will personally work with you to size, engineer, price, and determine system payback. We also have a number of financing options available to help you save money and get your project off the ground more quickly.



**Solar Thermal Solutions That Consistently Deliver!**

- ROI within 5 years or less
- Significantly reduce greenhouse gas emissions and your carbon footprint
- Average daily output up to 300,000 BTUs per collector
- Output water temperatures over 150 degrees C or over 300 degrees F



For a free assessment call us at **317.418.0059**

[www.SolarUVSolutions.com](http://www.SolarUVSolutions.com)



**Engineers and Environmental Consultants**

*... sustaining a green earth for tomorrow*

[www.rjburnside.com](http://www.rjburnside.com)

# REDUCE YOUR INDOOR AND OUTDOOR LIGHTING COSTS BY UP TO 75%



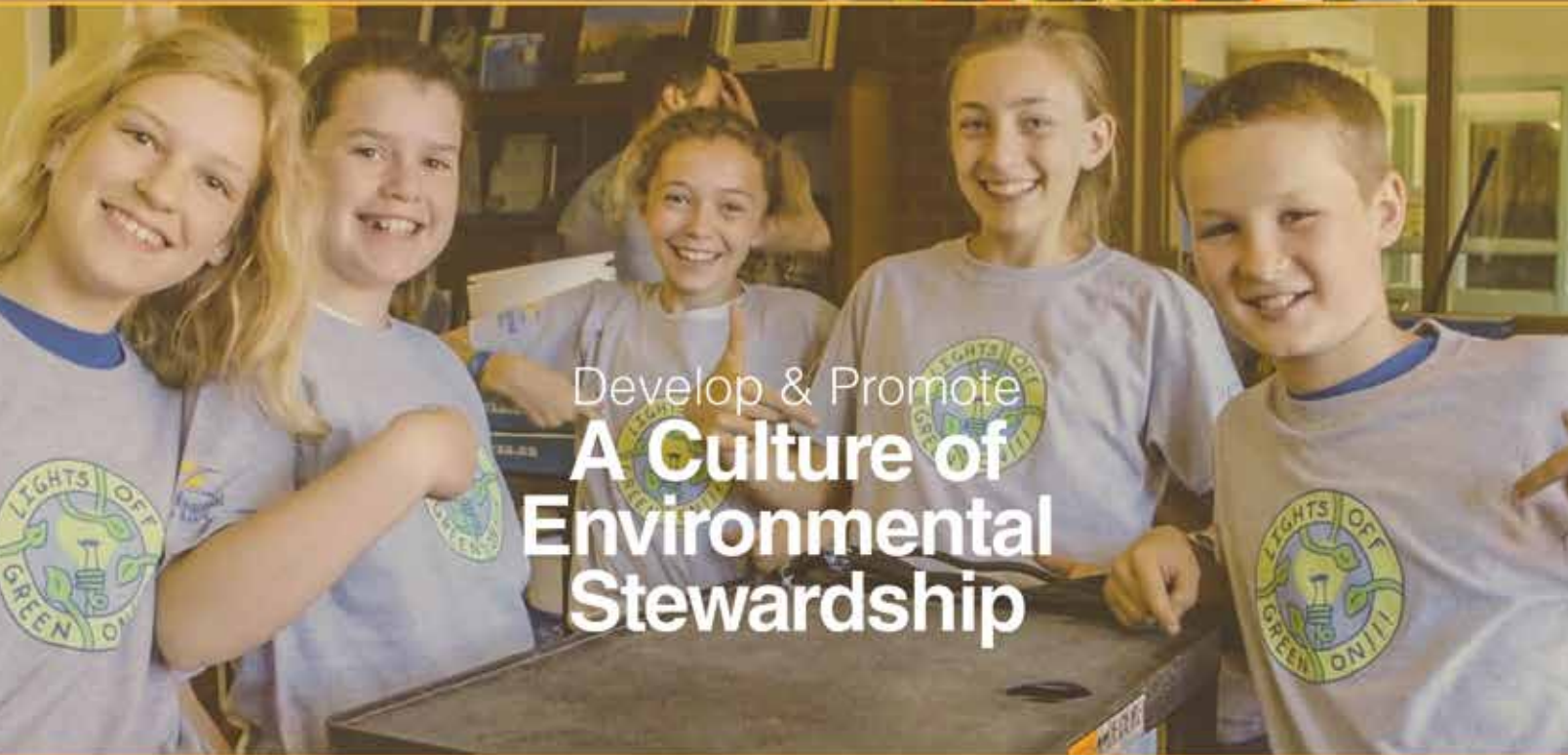
DISCOVER HOW YOU CAN UNDERTAKE AN  
LED RETROFIT WITH NO INVESTMENT UP FRONT.



GET STARTED TODAY!

Call us today at 705.677.9090  
[brent@midcanadaassetmanagement.com](mailto:brent@midcanadaassetmanagement.com)  
[corey@midcanadaassetmanagement.com](mailto:corey@midcanadaassetmanagement.com)

Develop, Design & Implement  
**Innovative  
Energy  
Efficiency  
Solutions**



Develop & Promote  
**A Culture of  
Environmental  
Stewardship**



*Custom Energy Solutions Ltd.*

Reducing Our Clients' Environmental Footprint through  
Engineered, Single-Source Performance Contracting

Founding Member of the Energy Services Association of Canada

[www.mcw.com](http://www.mcw.com)

# SELF-FUNDED INFRASTRUCTURE RENEWAL AND MICROGRID SOLUTIONS...GUARANTEED.



Deal with your aging infrastructure.

Prepare for severe weather events, brownouts and extended power outages.

Fight back against increasing energy costs.

## **Integrated Performance Contracting Solutions**

By leveraging your utility bill, we create capital to fund solutions that reduce your building's energy consumption and synchronize your utility assets through a microgrid.

With Johnson Controls' smart microgrid technologies, you can generate, store, control and distribute power on-site, providing your campus or facility with:

- a reliable energy supply, independent of your local utility's grid
- the ability to hedge against unpredictable utility rate structures
- substantially lower consumption costs
- significant reduction of your carbon footprint

By addressing your power needs with a smart microgrid solution, you can then focus on your core mission...educating students, healing patients or satisfying tenants.

Contact a Johnson Controls smart microgrid expert at 905-730-9726 to learn more.