

Spotlight on an architect

Veteran **Savings by Design** participant **Michelle Xuereb** has completed the program more than a dozen times as part of project teams involved in the multi-residential and commercial building sectors.



Michelle Xuereb
Director of Innovation
BDP Quadrangle
bdpquadrangle.com

“The real value comes from the integrated discussions. The **Savings by Design program** brings together a diverse group of stakeholders, including the client, their design team, subject-matter experts and energy modellers provided by Enbridge Gas. We spend the day together, outside our day-to-day environment, which allows us to focus our attention on solving complex design issues informed by real-time energy modelling.”



Contact Venoth Jeganmohan, Energy Solutions Advisor, to get the most out of your next project.



enbridgegas.com/SBD-commercial



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FPO

To qualify for the program, your project must be located in the Enbridge Gas service area. City of Toronto and City of Ottawa projects will target the achievement of higher energy performance. Participants must agree to all program terms and conditions, fully participate in all stages of the program and meet all program requirements. HST is not applicable and will not be added to incentive payments. Visit enbridgegas.com/SBD-commercial for details.
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Savings by Design | Commercial & Multi-Residential Case Studies

Collaborate with sustainable building design experts — all at no cost

- Efficient
- Sustainable
- Resilient



Inspiring ideas to build smarter

9 success stories

Why is energy modelling so important?

How to get started



Plan for performance

Building design requirements are evolving

This booklet will help guide you through the essentials of the **Savings by Design Commercial program**. As a participant, you'll receive free expertise and technical tools to help you meet the growing need for sustainable, resilient commercial buildings.

Vision

Start with a complimentary **visioning session** to help define and prioritize project requirements.

Action

Take advantage of a no-cost **integrated design process workshop** with energy modellers and sustainable design experts.

Results

Benefit from creating a more sustainable, resilient building with higher energy performance.

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Designed by women, built for everyone



9-storey
mid-rise tower

197
residential suites

Projected annual GHG reduction*
75,127 kg CO₂e

2 levels
of underground parking

Projected annual energy cost savings
\$36,084/year

From construction management to engineering to architecture, the entire leadership team behind Reina Condos is women-led—a first in the Canadian condo development industry. This unique group is rethinking the typical condo with its mixed-use residential building in South Etobicoke, part of an emerging family-friendly neighbourhood: the Queensway Improvement Area.

Raising the bar

Urban Capital and Spotlight Development Inc. followed the City of Toronto's *Growing Up Guidelines for Urban Design* to support the needs of families in new vertical communities, incorporating stroller storage on each floor, a large play area and an accessible green roof, among other amenities.

Comparing design options

The project team participated in Savings by Design's full-day, no-cost integrated design process workshop to explore strategies for optimizing the building's design. Using premium energy simulation software, they compared the annual energy use and costs of different options for the building envelope, mechanical systems and lighting systems.

Key project enhancements

- High-efficiency condensing boiler.
- Energy recovery ventilator (ERV).
- Demand control ventilation.
- Low-flow water fixtures.
- High-performance heat pumps.
- ENERGY STAR® appliances.
- Lighting controls.
- Higher-efficiency fixtures.

“We’re passionate about buildings that work for everyone and the experts we met through the program provided solutions for bringing our vision to life.”

Taya Cook
Director of Development
Urban Capital

* Projected savings based on energy modelling simulations from the Savings by Design integrated design process workshop.

A healthy boost for a growing town



Total project cost
\$27 million

Projected annual energy cost savings
\$22,656

Projected annual GHG reduction*
63,000 kg CO₂e

8 acre site

To keep its rapidly growing population active and healthy, the Town of Caledon invested in a new 65,000-square-foot community centre.

A vibrant and sustainable community hub

Recognizing that buildings represent the largest source of the Town of Caledon's corporate greenhouse gas (GHG) emissions (54 percent), the town developed a Corporate Green Building Standard to ensure that all new buildings are built to be energy efficient and reduce GHG emissions.

Located at Kennedy Road and Dougall Avenue, the Southfields Community Centre was designed and constructed to this standard. Providing both recreation and

opportunities to meet the broader social needs of residents, the centre offers many amenities, including a two-tank swimming pool, community hub spaces, an EarlyON Centre, a public library, fitness facilities and an OPP community policing office.

A holistic approach to building design

The project team participated in Savings by Design's full-day, no-cost integrated design process workshop to explore alternative designs and technologies to improve the building's energy and environmental performance.

"All the parties came together to share information about construction best practices and energy-efficient technologies," says Katelyn McFadyen, Manager, Energy and Environment, Corporate Strategy and Innovation.

Key project enhancements

- Energy recovery ventilators (ERV).
- Heat recovery ventilators (HRV).
- High-efficiency fans and motors.
- Enhanced glazing and shading.
- Optimized window-to-wall ratio.
- High-performance windows.
- Pool drain water heat recovery.

* Projected savings based on energy modelling simulations from the Savings by Design integrated design process workshop.

"It provided a valuable learning opportunity for town staff and the project consulting team."

Katelyn McFadyen
Manager
Energy and Environment
Corporate Strategy and Innovation

Sustainable educational spaces

\$30+ million
in avoided energy costs since 2004

Average annual
electricity
savings **30%**

Average annual
natural gas
savings **25%**

A three-time Savings by Design participant, Ottawa Catholic School Board (OCSB) was recently named one of Ontario's Top Energy Performing Boards by Sustainable Schools, ranking third out of 72 boards.

Energy-smart schools

Participating in Savings by Design has been a key part of OCSB's long-term energy-management strategy. The three schools that have completed the program are now a model for the board's other new construction projects, setting a green standard in line with OCSB's sustainability vision.

As builder, developer and fiscally responsible board, OCSB is in a unique position: their design decisions are directly correlated to their annual operating budgets.

Introducing innovative technologies

During the Savings by Design workshops, the costs and energy-saving potential of different HVAC systems, exterior wall and roof insulation options, windows, lighting, demand control ventilation and other technologies were compared.

"The Savings by Design program provided a risk-free environment for exploring sustainability innovation as well as an opportunity to test concepts through energy modelling," said Gerry Sancartier, Property and Operations Officer, OCSB.

Key project enhancements

- Improved boiler thermal efficiency to 85 percent.
- Enhanced wall and roof insulation.
- Replaced windows with a Solar Heat Gain Coefficient from 0.54 and U-value of 0.30.
- Upgraded rooftop unit furnace from staged to modulating burner.

"The best part of Savings by Design is that the money saved through energy efficiencies can be spent on school resources and, ultimately, directed back to the classroom."

Gerry Sancartier
Property and Operations Officer
OCSB

Greener care is better care



Projected energy performance
32% better than Ontario
Building Code

Projected annual GHG reduction*
5,187,199 kg CO₂e

50
acre site

108
square metres

The new South Niagara Hospital is aiming to become Canada's first WELL®-certified health care facility, integrating energy-saving strategies with innovative features that help improve patient care, staff productivity and overall health.

Where well-being and efficiency align

With an aging population and 14 million visitors a year, Niagara has a critical need for a modern facility that provides both 24-hour emergency services and complex and continuing care.

"There's direct correlation between building design and occupant health," said Cliff Harvey, Niagara Health's Chief Planning Officer. "Savings by Design is helping us achieve our goal of becoming a WELL®-certified facility, where well-being, sustainability and efficiency align."

Projected to achieve 32% better than OBC

During the Savings by Design workshop a range of design alternatives were explored, such as adding energy recovery ventilators (ERV) to make the ventilation system (one of the most energy-intensive areas) more efficient. Energy modelling showed that the hospital's energy performance is expected to be 32.1 percent better than the Ontario Building Code.

Bottom-line benefits

Designing a healthier, more sustainable environment helps hospitals achieve the "Triple Aim": improving health outcomes, enhancing the patient and staff experience and lowering operational costs, which allows more resources to be directed to patient care.

Potential project enhancements

- Condensing boiler with 96 percent efficiency.
- Heat recovery chiller to reheat spaces.
- Energy recovery ventilators (ERV) in patient rooms, offices, lobby.
- Fan static pressure reduced by 50 percent.

* Projected savings based on energy modelling simulations from the Savings by Design integrated design process workshop.

"Savings by Design is helping us achieve our goal of becoming a WELL®-certified facility, where well-being, sustainability and efficiency align."

Cliff Harvey
Chief Planning Officer
Niagara Health

Deep roots in sustainability



Projected annual energy cost savings
\$86,812

Projected energy performance
37% better than Ontario
Building Code

Projected annual GHG reduction*
49,249 kg CO₂e

Family-owned fruit and vegetable wholesaler Koornneef Produce Ltd. was growing — they needed more space to store, package and ship products. A new 60,000-square-foot facility was the answer.

Ripe for expansion

With 19,000 square feet of refrigerated space, the new hybrid warehouse/office building was a prime candidate for energy savings (refrigeration typically accounts for up to 60 percent of the electricity used for cold storage warehouses).

During the full-day Savings by Design workshop, the project team explored design techniques to address the building's overall thermal performance.

Preparing today for tomorrow

Industry experts presented insulation best practices at ice rinks, a relevant comparison because of the need for year-round refrigeration, along with approaches for greater mechanical-system efficiency.

“We’re focused on tomorrow. We wanted to consider factors outside of our control, like rising electricity prices,” said Brad Koornneef, Warehouse Manager. “Savings by Design helped us design and build for that.”

Key project enhancements

- Condensing domestic hot water heater.
- Refrigeration system controls.
- Electronically commutated motors (ECM) on evaporator and condenser fans.
- High-efficiency LED lighting and sensors.
- Variable refrigerant flow (VRF) mechanical system.
- Fast roll-up doors on cooler entrances.

“We quickly came on board after learning about the expert help and 3D energy modelling.”

Brad Koornneef
Warehouse Manager
Koornneef Produce Ltd.

* Projected savings based on energy modelling simulations from the Savings by Design integrated design process workshop.

Lakefront luxury made greener



Projected annual energy cost savings
\$17,359/year

Projected energy performance
28.2% better than Ontario
Building Code

Projected annual GHG reduction*
85,499 kg CO₂e

8-storey
mid-rise tower

52
upscale suites

3
penthouses

Royal Port condos are transforming a historic site into high-efficiency waterfront homes.

Revitalizing a heritage area

The Port Dalhousie Heritage District of St. Catharines is one of Canada's best-preserved nineteenth century canal villages. The condos are a key part of Port Dalhousie's ambitious revitalization plan, bringing the past and future together in one efficient, resilient, sustainable building.

Committed to sustainable design

Architectural firm Raimondo + Associates (RAAI) participated in Savings by Design to make Royal Port more energy efficient.

They engaged in a full-day workshop with live energy modelling to identify clear, cost-effective strategies to achieve their sustainability goals.

Healthier, more comfortable homes

As a result of the workshop, RAAI made design changes to include best-in-class exterior wall assemblies for energy savings and quieter suites, high-performance ventilation systems for improved air quality and a higher-efficiency centralized heating and cooling system to enhance resident comfort.

"Our clients' expectations for quality have increased and expanded the minimum requirements for greater improvements," said Emilio Raimondo, President of RAAI.

Key project enhancements

- Centralized energy recovery ventilators (ERV) and heat recovery ventilators (HRV).
- Centralized, high-efficiency HVAC equipment.
- High-performance exterior wall assemblies.

"The cost savings and efficiencies are beneficial to all stakeholders involved in the project."

Emilio Raimondo
President
Raimondo + Associates Architects Inc.

* Projected savings based on energy modelling simulations from the Savings by Design integrated design process workshop.

Purpose-built, sustainable rentals



Projected annual energy cost savings
\$23,021

Projected annual GHG reduction*
176,396 kg CO₂e

302
one- and two-bedroom suites

With a vacancy rate below two percent and a population boom, this high-rise rental tower is a welcome, green addition to the Brampton skyline.

Commuter-friendly apartments

Mount Pleasant Village apartments are aimed at young professionals and those who are downsizing. The project is a joint venture between The Daniels Corporation, one of Canada's largest developers, and Choice Properties, one of Canada's largest REITs. The tower has 302 energy-efficient one- and two-bedroom suites. Three additional buildings are planned for the site.

Brampton's booming double-digit growth

One of the most diverse and fastest-growing communities in Canada, Brampton is struggling to keep up with demand for affordable housing. While the city does have an Environmental Master Plan, no specific targets are included for builders.

At the full-day workshop provided by Savings by Design, building science experts led discussions on opaque assembly, fenestration considerations, mechanical systems' design and more.

Key project enhancements

- Improved spandrel panel insulation.
- Geothermal system for heating and cooling.
- Optimized ventilation rates.

"Savings by Design helped us to build the business case for geothermal heating and cooling as an innovative solution to reduce the carbon footprint of our buildings."

Adam Molson, LEED AP
Director of Project Implementation
The Daniels Corporation

* Projected savings based on energy modelling simulations from the Savings by Design integrated design process workshop.

Luxury meets
efficiency



Projected annual energy cost savings
\$121,673

Projected energy performance
26.5% better than Ontario
Building Code

Projected annual GHG reduction*
285,349 kg CO₂e

Just off Highway 7 and South Park Road, these twin towers in Markham are at the centre of Canada's second-largest tech cluster: a high concentration of head offices (from IBM to Toshiba and 1,500+ more) that call the area home.

Welcoming back a returning participant

Pavilia Towers marked the Times Group Corporation's first time building to OBC 2017 B-10 code requirements, but not their first time participating in Savings by Design. One of the largest developers in Canada, the family-run company is deeply committed to sustainability and has already incorporated many energy-efficiency best practices in their developments, including ERVs, demand control ventilation, ECMs, heat pumps and other upgrades.

* Projected savings based on energy modelling simulations from the Savings by Design integrated design process workshop.

Key project enhancements

- High-efficiency make-up air units.
- In-suite ERVs.
- Drainwater heat recovery.
- VFDs on parking.
- Double-pane, triple-glazed windows.

"Our goal is to create modern, sustainable and quality communities."

Shadi Aghaei, Vice President,
Times Group Corporation

Next-generation
green apartments



Projected annual energy cost savings
\$98,033

Projected energy performance
30% better than Ontario
Building Code

Projected annual GHG reduction*
128,879 kg CO₂e

Up-and-coming professionals and empty nesters in the Ottawa area have a new luxury rental apartment option at 1024 McGarry Terrace in Barrhaven.

Getting Green Globe® certified

Developer-owner-landlord Lépine Corporation specializes in resort-style apartment buildings. The family-owned company manages more than 600 rental apartments from Kanata Lakes to Renfrew. As part of their commitment to sustainability, Lépine pursued Green Globe® certification (comparable to LEED®) for Howard Grant Terrace, with a little help from Savings by Design.

* Projected savings based on energy modelling simulations from the Savings by Design integrated design process workshop.

Key project enhancements

- In-suite energy recovery ventilators (ERV) with 65 percent effectiveness.
- Heat pumps with DX cooling and hot water coils.
- Pre-cast walls with sprayed insulation.
- Double-glazed Low-E Argon windows.

"When you build quality, you build a solid investment. Our buildings are meant to last for generations to come."

Francis Lépine, President
Lépine Corporation

Ask

Mike Singleton

Sustainable Building Expert

Through the Savings by Design program, Enbridge Gas and Sustainable Buildings Canada (SBC), a not-for-profit NGO, facilitate no-cost workshops that help project teams push the boundaries of conventional building design. Here, SBC Executive Director Mike Singleton explains why builders and their teams should join the program.

Q: How did you get involved in sustainable building?

A: I started my career in energy forecasting for Ontario Hydro. That's where I noticed a tremendous need for education about high-performance buildings, so I founded my own non-profit consultancy in 2003. We've been working with Enbridge Gas for about nine years as part of the Savings by Design program.

Q: Why should builders, architects and other design decision-makers participate in Savings by Design?

A: Savings by Design is all about educating project teams on the latest and greatest green-building techniques and technologies. It's an opportunity to learn about high-performance building with no risk: we provide a group of highly skilled sustainability experts and the project team gets to have an open dialogue with them. What we've seen is that once people start building high performance, they don't go back.

Q: Walk us through the program. What's involved?

A: We start with a pre-planning session, where we identify the key parameters and establish the goals of the project. Then, we assign subject-matter experts (SMEs) and perform initial energy modelling based on the building's basic design. The SMEs and energy modeller review the results and then we send out the workshop invite, which can also be held virtually to accommodate physical distancing requirements.

During the workshop, we explore the team's interests, tell them how the program works and provide an opportunity to brainstorm solutions to make the building design better, everything from storm-water management to energy-conservation measures, solar solutions, acoustics and more. We do live energy modelling during the workshop so teams can see actual impact right away.

The estimated value of the workshop is \$30,000 worth of free project consulting—your whole team gets exposed to inspiration and knowledge in one easy stop.



"We have 100 to 200 experts we can call on to bring your team up to speed on the latest in green building. The strength of the program is this roster of experts—you'd never have access to all these people."

Mike Singleton
Executive Director
Sustainable Buildings Canada

sbcCanada.org

Q: After the workshop, you deliver a summary report to participants. What does the report contain?

A: The summary report includes highlights of the workshop and details what project teams need to get to 25 percent better than code. It's not the final solution; it represents the foundation for next steps.

Q: What are some common design changes teams make after going through the program?

A: Every project is different and many factors affect building performance, but among the top three are improving wall assemblies, balancing the window-to-wall ratio and upgrading window technologies, such as glazing. On the mechanical side, we often see teams upgrade to high-efficiency boilers, lighting and HRVs, which are probably the biggest bang for the buck.

Q: How does the workshop help build consensus for these design alternatives?

A: By showing the savings. With live energy modelling, we can show that if you make windows really tight, you can avoid leakage and have a smaller boiler or chiller, which saves costs. And we can show you how much more efficient it is to have

smaller rather than larger pipes due to air pressure, allowing for smaller bulk heads, less drywall and more square footage in the space.

Q: What's the number one mistake you see project teams make?

A: In a typical commercial design build, the owner is relying on different professionals to get the job done, and those people may use the solutions they're comfortable with. When you go through the program, everyone on the team gets exposed to different ideas, different ways of accomplishing the project goals. We offer a rare opportunity for structural and mechanical professionals to sit down together and talk to sustainability experts. That way, everyone can bring their A game.

Q: How does the program help firms prepare for what's next?

A: As anyone in the industry knows, Ontario already has one of the best building codes in Canada. It's comparable to California's. But net zero is what's ahead and getting to net-zero energy isn't easy: all the components of a building need to be high performance to get there. We're here to help move the industry forward.

Turn vision **into results**



The **Savings by Design Commercial and Multi-Residential program** gives your project team free access to industry experts and technical tools to help you build high-performance, sustainable and resilient buildings.

To participate, your project must be:

- Commercial or multi-residential new construction.
- 25,000 sq. ft. or larger.
- In the Enbridge Gas service area.
- At the design phase or earlier.
- Intending to achieve a 25 percent higher efficiency performance than required by code.

Expert help from design to construction

1 Visioning session 1 – 2 hours | Complimentary

We'll meet with your project lead, sustainability manager and design team members to:

- Discuss project requirements and sustainability priorities.
- Determine which team members and external experts should attend the integrated design process (IDP) workshop.

2 Integrated design process workshop 1 day | Complimentary

Your team will explore sustainable design strategies, best practices and more with industry experts to maximize your building's energy and environmental performance.

- Real-time energy modelling will show how different design choices, such as geothermal, solar or hybrid heating, impact your building's performance.
- You'll receive a final report that summarizes energy-saving recommendations and key outcomes.
- Facilitated by Sustainable Buildings Canada.

3 Evaluation of final design choices Complimentary

Share the final designs that are being submitted to the municipality for permitting with your Energy Solutions Advisor to find out if the final design is likely to achieve the IDP efficiency performance targets.

This also helps support continuous improvement of the program.

Rewards for building beyond code

Contact us to determine whether your building is eligible to receive additional incentives.