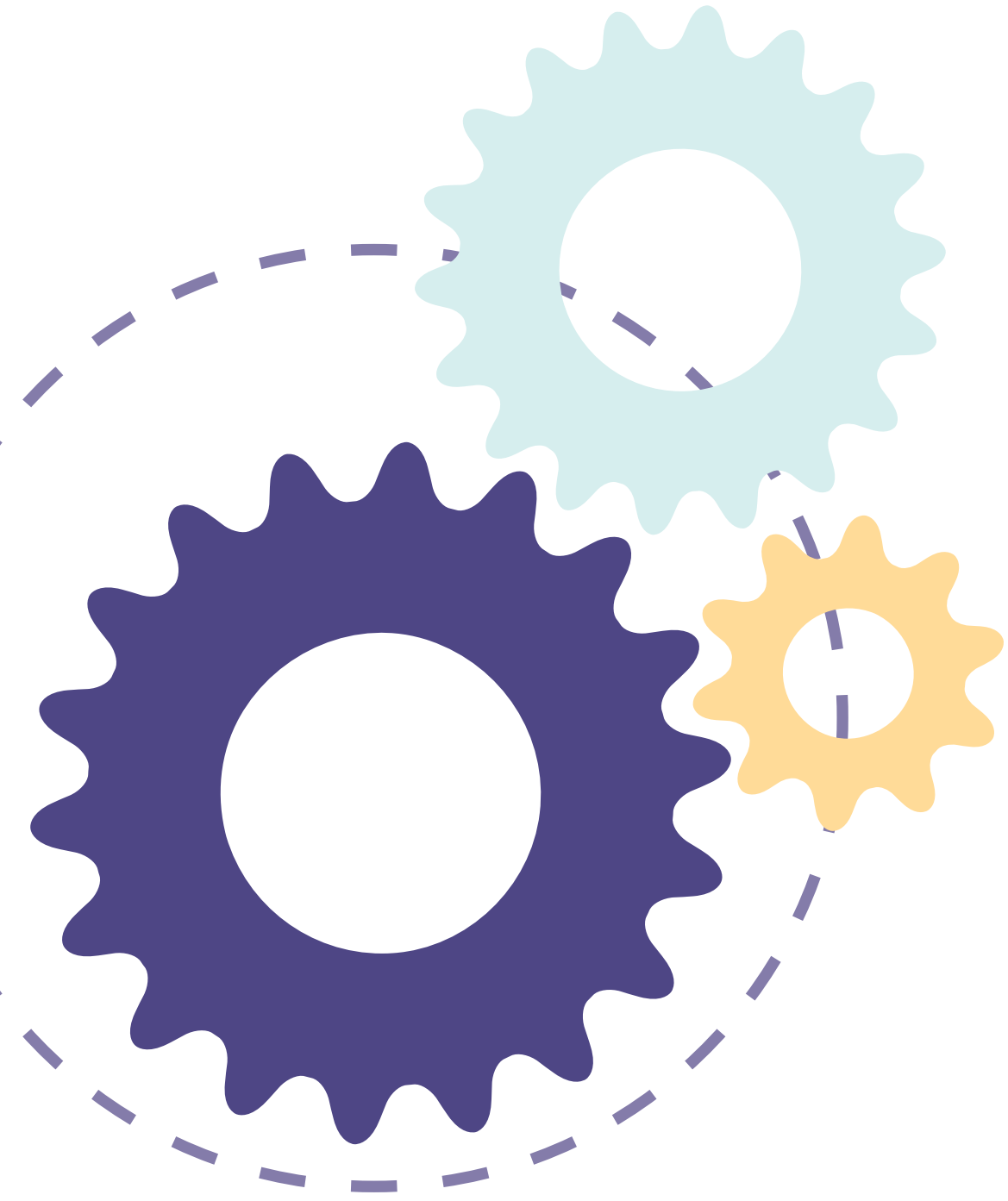
LEED® IN MOTION:
CANADA



GREEN BUSINESS™
CERTIFICATION INC.

Table of Contents

Foreword

I am happy to introduce this update to ***LEED in Motion: Canada***, a report that highlights the strong growth and innovation that is taking place in Canada's green building sector. Fourteen years ago, Canada became the first country outside of the United States to adopt LEED. Since then, the Canadian building industry has embraced the LEED rating system and created what is now a strong base of almost 3,000 LEED certified projects, and over 1 billion square feet of LEED registered space, across the country.

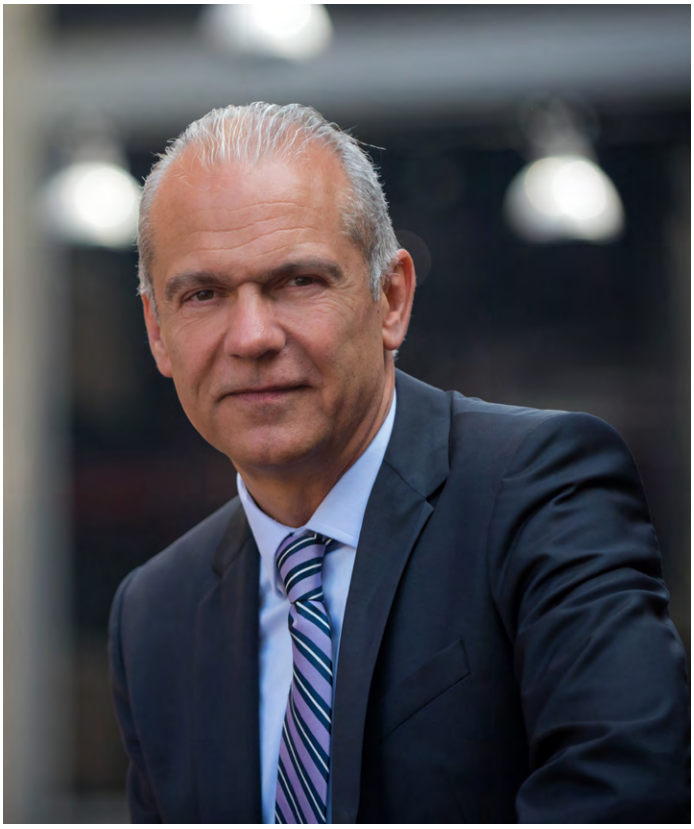
Together, we have made great strides to change the way buildings are designed, built and operated. Our strength always was and continues to be that green buildings not only save energy, water and waste and reduce GHG emissions; they also make good business sense. Individual buildings also save operational resources and have widespread impacts in terms of spurring innovation, trade, economic activity and jobs. Canada is a global leader in this field, boasting the world's highest number of LEED certified buildings per capita.

In 2014, we reached a 30 and 22 per cent penetration rate in newly constructed institutional and commercial buildings respectively. In doing so, we've eliminated over 1.2 million tonnes of GHGs, generated $23 billion in GDP and supported 300,000 direct green building jobs in 2014 alone.

This is just the tip of iceberg, with a much larger potential for green buildings and LEED to act as a climate change solution. Our recommendations to the federal government provide a path to achieve up to a 44 per cent reduction of GHG emission from 2005 levels by 2030 through energy efficiency upgrades to existing buildings over 25,000 square feet. These upgrades are estimated to contribute $32.5 billion in total GDP impacts by 2030 and reduce GHG emissions by 19.4 million tonnes.

Additionally, innovating new building construction to achieve net zero carbon performance will achieve a further 17 per cent reduction in emissions. Collectively, Canadian building owners stand to save over $6.2 billion in energy costs by improving building energy performance by 2030.

With federal and provincial governments committing to action on climate change mitigation, we will continue to build on the success of LEED's stringent performance requirements and



push the industry forward through LEED v4 and a Canadian path toward net zero carbon buildings.

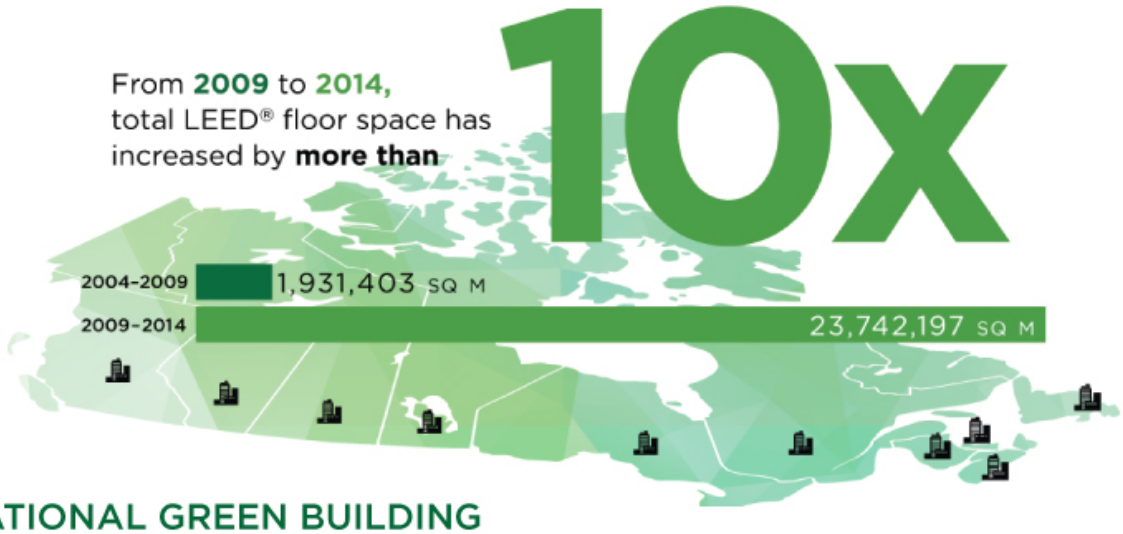
By embarking on advancing energy and carbon performance in new and existing buildings, the CaGBC continues to provide the market with state-of -the-art standards, third-party verification and support required to make low carbon buildings a reality.

As you read this update to the excellent *LEED in Motion* series by the U.S. Green Building Council, we hope you come away inspired to start or continue your own work in establishing LEED as one of the key tools in the fight against climate change. As always, the CaGBC pledges to lead Canadians in this mission, and work with industry, government and institutions alike to ensure a future where every building is greener.

Thomas Mueller
President and CEO of Canada Green Building Council

Green Building in Canada

GROWTH OF NEW LEED® CERTIFIED FLOORSPACE



NATIONAL GREEN BUILDING ECONOMIC IMPACT

The portfolio of LEED buildings in Canada certified between 2005-2015 will:

GENERATE
$62.3
BILLION IN TOTAL GDP
over their lifetime
(direct, indirect, and induced)

CREATE
701,700
JOBS
over their lifetime
(direct, indirect, and induced)

PROVIDE
$128.0
BILLION IN GROSS OUTPUT
(direct, indirect, and induced)

In 2014, Canada's green building industry:

GENERATED
$23.45
BILLION IN GDP

SUPPORTED
297,890
DIRECT JOBS

SOURCE: GREEN BUILDING IN CANADA: ASSESSING THE MARKET IMPACTS & OPPORTUNITIES, CAGBC 2016

Green Building in Canada

Green Building Market Impacts

In February 2016, the CaGBC released a market impact report titled Green Building in Canada: Assessing the Market Impacts & Opportunities. This report clearly demonstrates that green buildings are an engine of economic growth and details the broad impact that the green building industry has had in Canada over the past decade. Among its many findings, the report identifies that when indirect and induced contributions are included, the overall economic impact of Canada's LEED projects certified from 2005 – 2015 will lead to $128 billion in gross output over their lifetime, $62.3 billion in total GDP, and create 701,700 jobs.

The report also details the market penetration of LEED certified buildings showing 22 per cent all new commercial buildings, and approximately 30 per cent of all new institutional buildings constructed in Canada in 2014 were LEED certified.

CANADA SURPASSES 1 BILLION SQUARE FEET OF LEED REGISTERED SPACE IN 2016

Green building in Canada has reached a significant milestone, with Canadian LEED projects surpassing 1 billion square feet of registered space. Representing nearly 7,000 LEED buildings, homes and communities since 2004, this growth can be attributed to the successful and widespread adoption of LEED by Canada's industry, leading to significant innovation and economic development.

As the Canadian federal government plans for the Pan-Canadian Framework on Clean Growth and Climate Change – which recognizes the building sector as an area critical to the reduction of emissions – the building industry's widespread LEED experience will be crucial to its success.

CANADA GREEN BUILDING COUNCIL™ (CaGBC)

The Canada Green Building Council (CaGBC) is a non-profit, national organization that has been working since 2002 to advance green building and sustainable community development practices in Canada. With a membership of over 1,290 industry organizations involved in designing, building and operating buildings, homes and communities, the CaGBC has made excellent inroads toward achieving their mission of reducing the environmental impact of the built world.

The CaGBC has three key goals for advancing green building:

1. Lead the building industry in meeting national climate change target of 30% reduction by 2030. This includes releasing Canada's first Zero Carbon Building Standard in the spring of 2017.

2. Accelerate innovation and industry engagement to broaden market uptake and impact. The CaGBC works to improve market knowledge of green building by supporting the market and members through advocacy, policy and research.

LEED

Every story about LEED
is a story about leaders –
and leaders are choosing LEED.

Total LEED projects in Canada:

2,900+

Gross square meters of LEED space:

39,300,000+

SOURCE: GBCI, 2017

LEED AND FORTUNE 200 COMPANIES

A 2015 survey of building operations and corporate sustainability executives from 48 Fortune 200 companies:

82%

are likely to continue using LEED for new construction or retrofits

60%

believe LEED positively impacts their return on investment (ROI)

70%

pursue LEED as a means to save money by being more energy efficient

96%

use LEED to support corporate sustainability efforts

80%

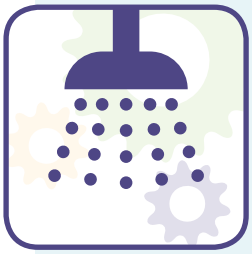
agree that LEED is a key way to communicate sustainability to stakeholders

SOURCE: LEED AND THE CORPORATE BUILT ENVIRONMENT, KEYBRIDGE LLC AND USGBC RESEARCH, APRIL 2015

**Since 2005,
LEED in Canada has led to:**

Energy savings of **6,503,647 eMWh**, enough to power **220,702 homes** in Canada for a full year.

A **1,261,016 CO2e** tonne reduction in greenhouse gas emissions that equates to taking **238,377 cars** off the road for a year.



Water savings totaling over **12.8 billion liters**, the equivalent of **5,131 Olympic-sized swimming pools**.

Recycling over **1.6 million tons** of construction and demolition waste that represents **491,174** garbage trucks.

The installation of **231,608 square meters** of green roofs, an area the size of **153 NHL hockey rinks**, to reduce the urban heat island effect and mitigate storm water flows in urban areas.

Three Reasons Why LEED is Successful Around the World

1

Building professionals worldwide developed LEED. Its strategies integrate industry thinking, and it continues to evolve based on the industry's input and guidance. Because of this business-oriented approach, governments and corporations endorse LEED, investors support it, and owners and occupants place a premium value on it.

2

LEED is extremely flexible. Through five distinct rating systems, it accommodates all building and project types.

LEED: Building Design and Construction
New construction and major renovation

LEED: Interior Design and Construction
Interior spaces requiring a complete fit-out

LEED: Building Operations and Maintenance
Existing buildings that are undergoing improvement work or little-to-no construction

LEED: Homes
Single family, low-rise multi-family (one to three stories), or mid-rise multi-family (four to six stories) homes

LEED: Neighborhood Development
New land development or redevelopment projects of scale

3

LEED projects are comprehensive. Through an integrative process that focuses on a comprehensive approach to building systems and equipment, LEED certification is based on points earned in several key areas. (Additionally, projects can earn points for *Innovation in Design* and for addressing *Regional Priority* needs.)

Sustainable Sites promotes strategies to minimize impact on ecosystems

Water Efficiency accounts for water use inside & outside of a building

Energy and Atmosphere emphasizes improved building performance

Materials and Resources encourages use of sustainable building materials & reduced waste

Indoor Environmental Quality promotes healthy indoor air quality, access to better acoustics and lighting, and overall occupant comfort

Location and Transportation includes credits that encourage compact development, alternative transportation, and connection with amenities, such as restaurants and parks.

LEED Professional Credentials

With employers specifying the need for green building expertise, earning a LEED professional credential signifies that you are an industry leader who actively participates in the green building movement. It also shows a clear commitment to professional growth, while underscoring your value to LEED project teams and sustainability-focused organizations.

LEED AP

A LEED AP credential arms you with advanced knowledge in green building, as well as expertise in a particular LEED rating system. Which LEED specialty best fits you?

LEED AP Building Design + Construction (LEED AP BD+C)
Promotes expertise in the design and construction phases of green buildings.

LEED AP Operations + Maintenance (LEED AP O+M)
Learn to implement sustainable practices, improve performance, heighten efficiency and reduce environmental impact in existing buildings through enhanced operations and maintenance.

LEED AP Interior Design + Construction (LEED AP ID+C)
Emphasizes the design, construction and improvement of commercial interiors and tenant spaces that offer a healthy, sustainable and productive work environment.

LEED AP Neighborhood Development (LEED AP ND)
Applies to the planning, design and development of walkable, neighborhoods and communities.

LEED AP Homes
For those involved in the design and construction of healthy, durable homes that use fewer resources and produce less waste.

LEED GREEN ASSOCIATE

LEED Green Associate (GA) is an entry-level credential for individuals interested in a basic understanding of LEED and sustainable building.

GBCI develops, designs and maintains all LEED credentialing exams. Exams are administered by Prometric, GBCI's test development partner. The Credential Maintenance Program (CMP) is also overseen by GBCI. Continuing education keeps LEED professionals at the forefront of the green building industry, driving ongoing excellence in the marketplace and ensuring that LEED professionals are the most qualified in the field.

Learn more LEED Professional Credentials at GBCI.org/Credentialing.

11,646

LEED PROFESSIONALS IN CANADA

As Canada's commitment to sustainability continues to evolve and grow, more of its building professionals are earning their LEED professional credentials.

SOURCE: GBCI, 2017

Regional Solutions for Canada

LEED is the only globally consistent green building rating system. This consistency provides a platform to share best practices in buildings around the world. But because environmental and climate conditions, codes, standards and laws vary in different places, we have developed Alternative Compliance Paths (ACPs) to recognize those differences while achieving the same credit intent and requirements. These credit options are available for commercial projects pursuing LEED v4.

ACPs increase the applicability of LEED for projects around the world by providing additional pathways to demonstrate compliance with the LEED credits that are traditionally more challenging for projects outside of the U.S. By focusing on global and regional standards and solutions, these ACPs make LEED increasingly applicable in Canada and ensure a common language for all green buildings.

REGIONAL PRIORITY CREDITS

Regional Priority credits are not new LEED credits; rather they are existing credits that have been designated as particularly important for specific geographic areas or zones within a country. The goal is to incentivize achievement of credits that address regional environmental priorities. Each project may choose up to four credits from a list of six, and may earn one additional point if the selected credit is achieved.

In their capacity on the LEED International Roundtable, the CaGBC was instrumental in determining the issues Canada's Regional Priority credits should address, as well as selecting the specific LEED credits that accomplished those goals.

Environmental Issues Identified for Canada in LEED v4

- Greenhouse Gas Emissions Reduction from Building Operations Energy Use (nationwide)
- Greenhouse Gas Emissions Reduction from Transportation Energy Use (nationwide)
- Greenhouse Gas Emissions Reduction from a Cleaner Energy Supply (localized)
- Water Conservation (nationwide)
- Reduce Negative Environmental Impacts Throughout the Materials Life-Cycle (nationwide)

ALTERNATIVE COMPLIANCE PATHS (ACPS)

To develop the current generation of LEED, it was necessary to take what has been learned collectively by the industry and use this to re-evaluate not only where to set the bar, but also to reconsider how the bar is actually measured. LEED v4 introduces a global approach under which project teams the world over will be able to apply the same rating systems and compare results. The globally consistent rating systems will recognize local references, such as national standards, where equivalency can be shown.

The CaGBC's LEED Canada Steering Committee and its three Technical Advisory Groups led to Canada becoming the first country to develop Alternative Compliance Paths (ACPs) for LEED v4, and that its experience is helping to identify ACPs that can be of assistance, not just to projects in Canada, but around the world.

Canada Green Building Council® Vancouver Office and LEED v4

The Canada Green Building Council is growing and has relocated its Vancouver office to a newly constructed office building (MNP Tower at 1021 W. Hastings St). In keeping with its leadership position in the industry, the CaGBC is pursuing a LEED v4 for Commercial Interiors certification and targeting Gold certification with Platinum as a stretch target.

PROJECT VISION AND GUIDING PRINCIPLES

As Canada's leading not-for-profit, national organization working to advance green building and sustainable community development practices in Canada, the goal of this new office is to provide a truly sustainable space, one that reflects the innovation and growth that CaGBC has fostered over the past decade.

This project has not only served as a learning tool for CaGBC staff and our design team – being one of the first projects to pursue LEED v4 certification in Canada – but its collaborative process has helped us engage the industry and prepare for the higher sustainability thresholds in LEED v4 and beyond.

WORKING WITH THE INDUSTRY

The CaGBC was very pleased to work with DIALOG as the Designer for the CaGBC project, which brought the firm's best practices, innovative thinking, and experts in sustainable design to participate in the engagement and discovery phases. In addition, Ledcor was been selected as the contractor for the project and Integral Group will assume the mechanical, and electrical engineering for the new office space.

KEY FEATURES OF THE PROJECT

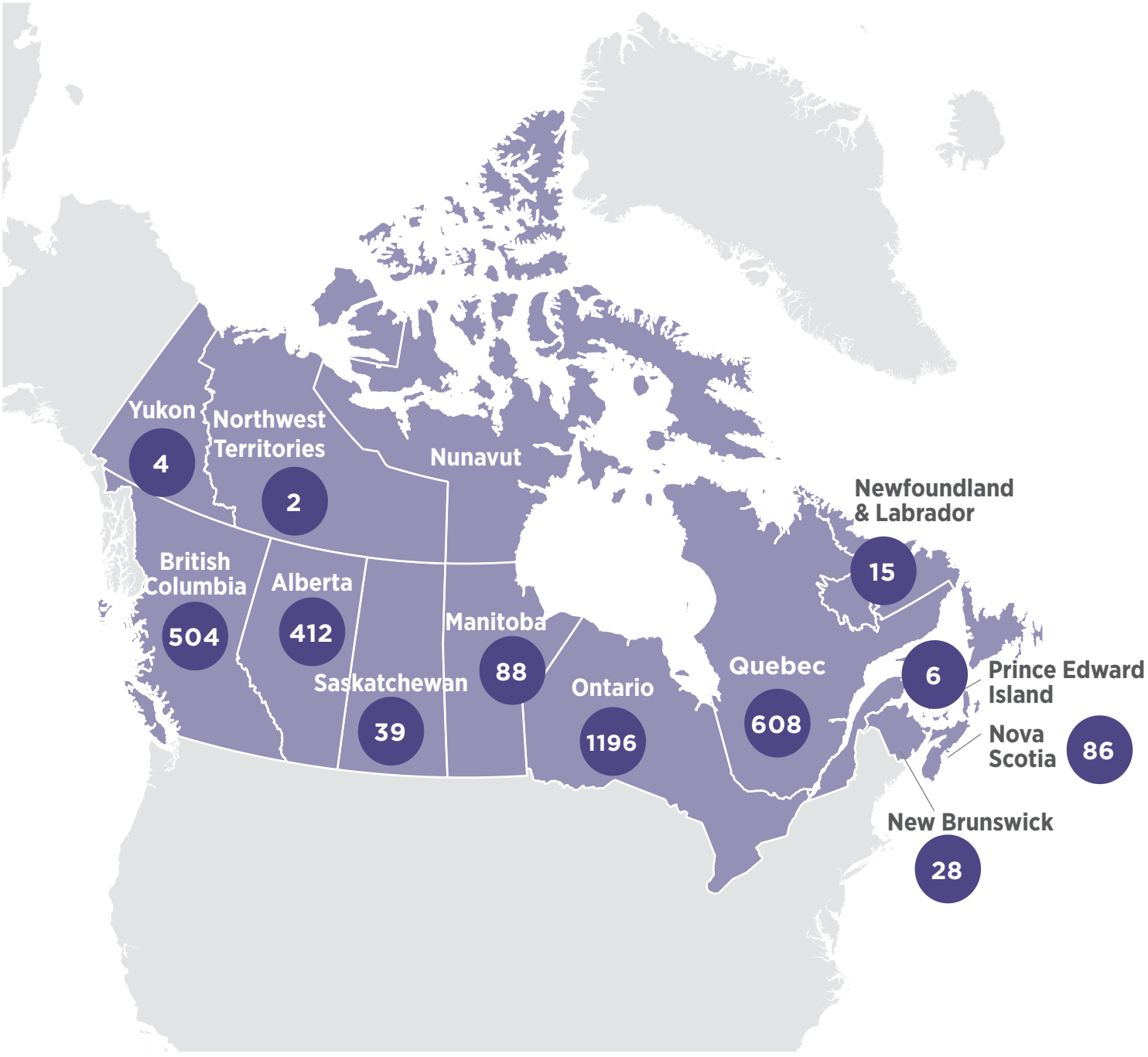
- The project is 3,100 sq.ft. in the newly constructed MNP tower and was completed in September 2015.
- Goal: LEED v4 ID+C Gold certification (Platinum as a stretch target) under the new LEED v4 rating system.
- Incorporation of 'Living lab' space in order to showcase the latest sustainability innovations and technologies, including those used within the office.

LEED AND SUSTAINABILITY GOALS

- Project is to showcase LEED v4, and how it can be accomplished in a professional space
- Prioritize health and wellbeing for staff through ergonomics, thermal comfort, superior indoor air quality and natural daylight.
- Material choices reflect regional characteristics and consider life-cycle assessment and health impacts.

Where is LEED Being Used in Canada?

LEED-Certified Projects by Provinces/Territories



LEED v4 Expert Series

DIALOG and Ledcor talk about the CaGBC's new Vancouver office and what they learned about v4 in the process.

EARLY MATERIAL RESEARCH KEY TO SUCCESS FOR DIALOG TEAM

DIALOG was selected as the Designer for the CaGBC project and brought the firm's best practices, innovative thinking, and experts in sustainable design to participate in the engagement and discovery phases.

Chani Joseph Richie and Lindsay Dru Nelson discuss their experience with the new rating system and how it affected their approach to the project.

Chani Joseph Richie, Dialog

Lindsay Dru Nelson, Dialog

What was done differently for this v4 project?

This was a fast-paced project, with only six months from the award of contract to occupancy. The DIALOG Interiors team has extensive experience working within tight timelines, but the LEED v4 goals of this project meant a new approach was required from the start.

One key change was that much more time was allocated to materials research. Much of this research was completed during schematic design as it was acknowledged early on that the availability of materials which met both the suite of LEED v4 credits targeted on this project, as well as budget criteria, would be limited. Securing sponsorships for materials and products was integral to the success of this project, and also required early planning and coordination. The combination of these factors led to a detailed, prescriptive project specification that ultimately reduced research required later in the project schedule.

One aspect that remained consistent with other DIALOG projects was the emphasis placed on early, integrated design. While this was key for this project and is rewarded by the LEED v4 rating system, it is typically how DIALOG approaches projects and therefore did not require a great shift. That being said, the value of a deeply engaged project team and integrated approach was perhaps felt more so on this particular project where many LEED v4 project goals were contingent on early consideration and incorporation into the design process.

LEED v4 Expert Series

LEED TOOLS HELP LEDCOR IN TRACKING MATERIALS FOR PROJECT

Ledcor was selected as the contractor for the CaGBC Vancouver office project. As the Materials Coordinator for the project, Marsha Gentile discusses how v4 presented challenges, as far as material selection and sourcing, but is a leap in the right direction.

Marsha Gentile,
Ledcor

What was done differently for this v4 project?
The CaGBC project, my first v4 project, was different from the get-go. The Integrated Design Process (IDP) was more inclusive than I have experienced previously and the advantage of having everyone at the table was notable.

In the Materials & Resources category, obtaining the necessary Environmental Product Declarations (EPDs) and Health Product Declarations (HPDs) was challenging but doable. While some suppliers and manufacturers were already prepared for v4, a number of our Subtrades had to source alternate suppliers to find compliant products.

Materials tracking overall was more time consuming but having the use of the Building Product Disclosure & Optimization (BPDO) Tracking Table and Low-Emitting Materials Calculator was helpful.

The General Emissions Evaluation requirement was again challenging but doable. Low VOC products are (now) easy to source but not many had CDPH v1.1 2010 testing, so some research had to be done to find compliant products. We also found that we received fewer points for Low-Emitting Materials than in previous versions due to a reduction in the number of points allocated to low-emitting categories.

The BPDO requirements make sense; let's find out what's really in our products and then work on doing better. There will be a big learning curve with v4, but I think it's a leap in the right direction!

EARLY ONBOARDING OF SUBCONTRACTORS KEEP PROJECT TIMELINES ON TRACK FOR LEDCOR

Logan VanderVelde worked on the CaGBC Vancouver office project as the Ledcor Project Manager overseeing the construction, schedule and budget of the entire project. Logan talks about the importance of balancing the project schedule and sourcing materials that meet v4 requirements.

Logan VanderVelde,
Ledcor

What was done differently for this v4 project?
Right at the outset of this project, we focused on the schedule, and the impacts that the new requirements of v4 would have on the final completion date. We tried to get our subcontractors on board right away so that they could in turn order their materials as soon as possible. This turned out to be a good strategy as there were many materials that came from across the country and eastern United States. Despite this early planning, there were still a few items that were being built out of sequence because something as simple as duct sealant was still shipping from New Jersey.

Overall, it was a learning process for our whole team, but in the end I believe the project was a huge success. Ledcor is very happy to have had the opportunity to work on such a cutting edge project, and we have much more confidence moving forward on future V4 projects.

First LEED v4 Project in Canada

Edelweiss House, Wakefield, Quebec

In October 2015, Ecohome's Edelweiss House project, a passively heated, cold climate demonstration home located in Wakefield, Quebec, became the first project in Canada to earn LEED v4 certification. Notably, Edelweiss was not only the first project in Canada to be certified under LEED v4, but it also earned the highest level possible – Platinum – making it the second LEED v4 home in the world to reach LEED's most rigorous level.

A super-efficient home that sets the bar high for LEED v4 projects to follow

The Edelweiss House is a super-insulated, passively heated, single story slab-on-grade home of 1,450 interior square feet. Energy modeling says the heating demand should be about one tenth that of other homes its size and it was built for less than the average square footage cost.

In terms of targeting specific performance standards, passive heating and cooling define the project teams design philosophy and performance goals. "We wanted to build a house that would get most of its heat from the sun, and this one does. The laws of diminishing returns say that at some point you'll not recoup the energy or money needed to produce and add more insulation, we wanted to find that sweet spot. It is impossible to identify exactly, but we are very happy with the balance we arrived in terms of how much we invested in heat retention and how much in heat generation. We won't know for sure until we run it for a winter, but energy modeling says we should be heating this house for under $150 annually," says Mike Reynolds, co-designer and co-builder of the project.

SHOWCASING LEED V4

Choosing LEED and specifically LEED v4 made the most sense to the project team. "We wanted to build something really noteworthy and the new v4 system was a good way to showcase it. Getting platinum is no easy feat; especially away from the city where there are more points to be had. We hit Passive House levels of thermal performance, which brought a lot of LEED points but it wasn't going to get us Platinum. In order to do that we needed to knock the energy consumption way down, which we did. So in a way it was the most realistic, but also the most challenging," says Reynolds.

Edelweiss House, Wakefield, Quebec, LEED v4 Platinum

They also decided to try LEED v4 because they had extensive experience in LEED 2009 and figured "someone had to get the ball rolling; it might as well have been us. We were quite confident we could get Platinum, and the fact that it had yet to be achieved in Canada made us even more motivated."

WHY ECOHOME BUILDS GREEN

Ecohome provides education to many Canadian builders and saw this project as an opportunity to teach others. Ecohome focuses on teaching others how to build green and showcasing projects on their website (ecohome.net). It was natural then that they determined there was no better way to teach others how to build green than to put into practice the kind of performance they have been talking about in their courses. Ecohome and its French partner, Écohabitation, have long

First LEED v4 Project in Canada

believed that houses can be built to a much greater standard of performance and still be kept within an average budget.

"As a society, we need to address building performance for energy and climate concerns, and the first step to making that happen is proving to homeowners that it is in their financial best interest – this house proves that without a doubt," says Reynolds. "It's hard to convince someone to do something if they've never seen it happen successfully, so building a super efficient home and achieving LEED v4 Platinum was important for Ecohome because it shows that these houses are within reach, even with a moderate budget. On a larger scale, rating systems make people take notice that there is something better available, and when the market demands it, change will come."

HOME BUILT WITH OCCUPANT HEALTH TOP OF MIND

While the Edelweiss project doesn't yet have specific metrics on how the house is performing, largely due to the fact that no one is currently living in the home full-time, they say the health benefits that were built into the design of the home are clear.

"It's all above grade with huge windows facing south, so it's very good for mental health in winter. We specifically sourced non-toxic building materials like formaldehyde-free cabinets, Zero VOC paints, natural stone and wood products, so the air quality is top notch. And one thing people don't often realize with a high performance house is they are much more comfortable. Better thermal performance means you don't get cold sitting by exterior walls and windows, and the house never feels drafty no matter where you are," says Reynolds.

BUILDING GREEN HELPS DISPEL MYTHS FOR POTENTIAL GREENHOMEBUYERS

The project team of Edelweiss hopes that this project will help show skeptics that green building has a far distant payback

Edelweiss House, Wakefield, Quebec, LEED v4 Platinum

period for building better houses, because they believe that just isn't the case.

"Added money on a building mortgage can be offset instantly by lower utility bills, so it doesn't actually cost more to live in a house like this. With some foresight in design, it can be cheaper from the moment you move in. As for the long term big picture, its more durable and therefore more valuable, it will also save home owners tens of thousands of dollars over even a moderate life cycle. Building better houses would be good for everyone - home owners would actually save money, more money goes into the local economy for product and labour, and it would help us meet provincial and national emission targets."

PROJECT TEAM:
Project Owner: Emmanuel Cosgrove
Architect: Designed by the Ecohome team
Mechanical Engineer: Denis Boyer
Structural Engineer: Kott Lumber
Project Manager: Mike Reynolds
Contractor/Builder: Emmanuel Cosgrove

Advocacy in Canada

The challenge for green buildings in Canada continues to be the need to set energy conservation and GHG reductions as a priority for all commercial, institutional and multi-residential building owners across Canada, and not just the leaders in the industry. This is crucial due to the urgency around meeting Canada's target to reduce 30 percent of GHGs from the 2005 levels by 2030.

As such, CaGBC is dedicated to engaging in advocacy initiatives that accelerate market transformation to a more sustainable built environment. In 2016, CaGBC worked to advance LEED and related green building policies through a combination of research, government relations and industry outreach. The Council has engaged government stakeholders at the federal, provincial, and municipal levels to achieve significant progress for the building sector by demonstrating and supporting the role that improving building performance can play to achieve Canada's climate change target.

In 2016, CaGBC undertook crucial market research to quantify the direct economic benefits LEED and other green buildings have contributed to Canada's economy in terms of jobs, GDP, and energy and GHG savings. The Council charted a path forward for reducing GHGs from existing buildings by encouraging provincial and municipal governments to introduce energy benchmarking regulations as a first step to understanding building performance by collecting and comparing energy consumption data to determine where improvements must be made.

CaGBC met with government officials and developed a comprehensive set of recommendations to support the development of the Pan-Canadian Framework on Clean Growth and Climate Change, which now clearly demonstrates the potential of green buildings to act not only as a tool for emissions reduction and resiliency, but also as a driver of innovation in the new low carbon economy.

CaGBC has also been working hard to advance green building through a new Net Zero Carbon Buildings Initiative and leading-edge research on the role buildings play on health and wellbeing in Canada. The Council commits to continued support of government and industry to refine and implement policies and programs at a pace that will achieve the emissions reductions needed by 2030. The evolution of the building sector is near and we are excited to make all buildings greener for decades to come.

Green buildings have led the way for conserving energy and lowering GHGs for over a decade in Canada.

LEED buildings...

... make up over **23.7 million square metres** of floor space in Canada.

... have saved over **1.2 million GHGe tonnes, 6.5 million eMWh of electricity, 12.8 billion litres of water.**

... recycled over **1.6 million tonnes of waste.**

... installed over **230,000 square metres** of green roofs since 2005.

Yet even with almost **7,000 registered and certified LEED projects** in Canada, we realize that voluntary building certification alone will not be enough to help Canada achieve its climate change targets.

LEED Requirements for City-Owned and/or Funded Projects in Canada

Calgary, AB
Cambridge, ON
Edmonton, AB
Hamilton, ON
Kitchener, ON
Montreal, QC
New Westminster, BC
North Vancouver, BC
Regional Municipality of Wood Buffalo (Fort McMurray), AB
Richmond, BC
Vancouver, BC

Aurora, ON
Banff, AB
Burlington, ON
East Gwillimbury, ON
Halifax, NS
Mississauga, ON
Newmarket, ON
Oakville, ON
Region of Waterloo, ON
Region of York, ON
Richmond Hill, ON
Saanich, BC
Thompson, MB
Victoria, BC

(Required: LEED Silver, Goal: LEED Gold)
Winnipeg, MB
Yellowknife, NWT

Burnaby, BC
Grand Prairie, AB
Moncton, NB
Ottawa, ON

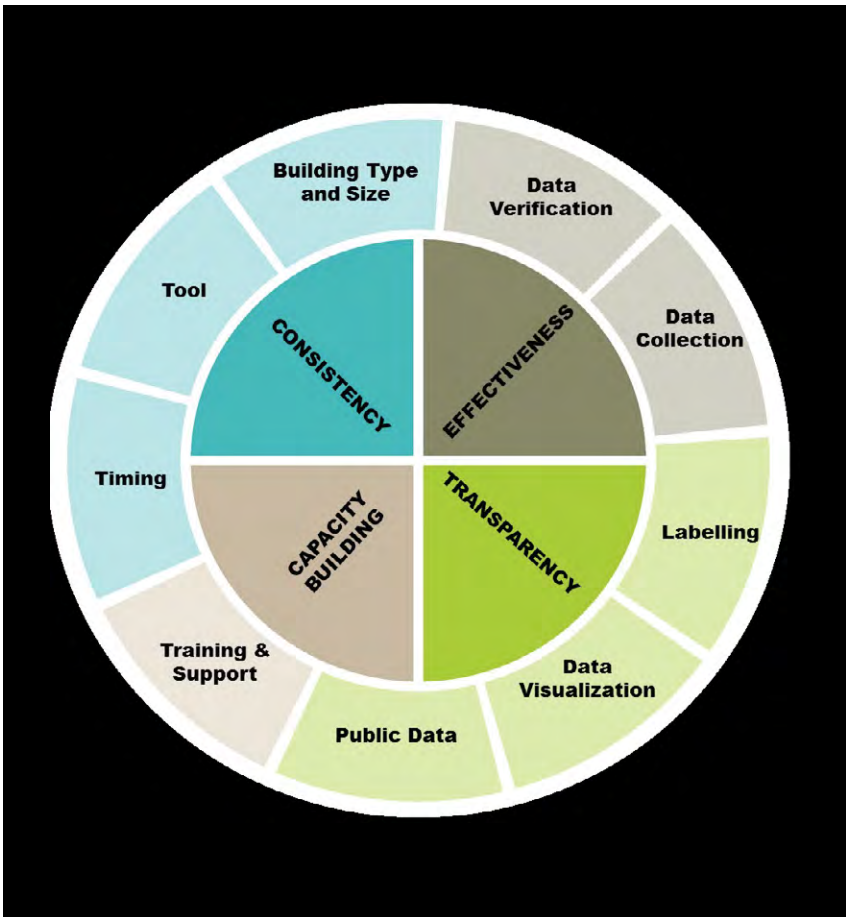
(Required: LEED Certified, Goal: LEED Silver)
Spruce Grove, AB
St. Catherines, ON
Vaughan, ON

Energy Benchmarking

ENERGY BENCHMARKING, REPORTING AND DISCLOSURE

The CaGBC has a longstanding interest and commitment to energy benchmarking to engage building owners. Energy performance measurement is a key requirement of LEED EB:O&M and a prerequisite for certified projects under LEED v4. To drive the uptake of policies across Canada, the CaGBC initiated a national energy benchmarking, reporting and disclosure initiative to engage building owners reducing carbon emissions; and provide a template for provinces and cities to develop policies guiding or mandating energy benchmarking programs.

The work culminated in the publication of a white paper in April 2016, guiding the development of energy benchmarking policies and programs across Canada titled, Energy Benchmarking, Reporting & Disclosure in Canada: A Guide to a Common Framework.

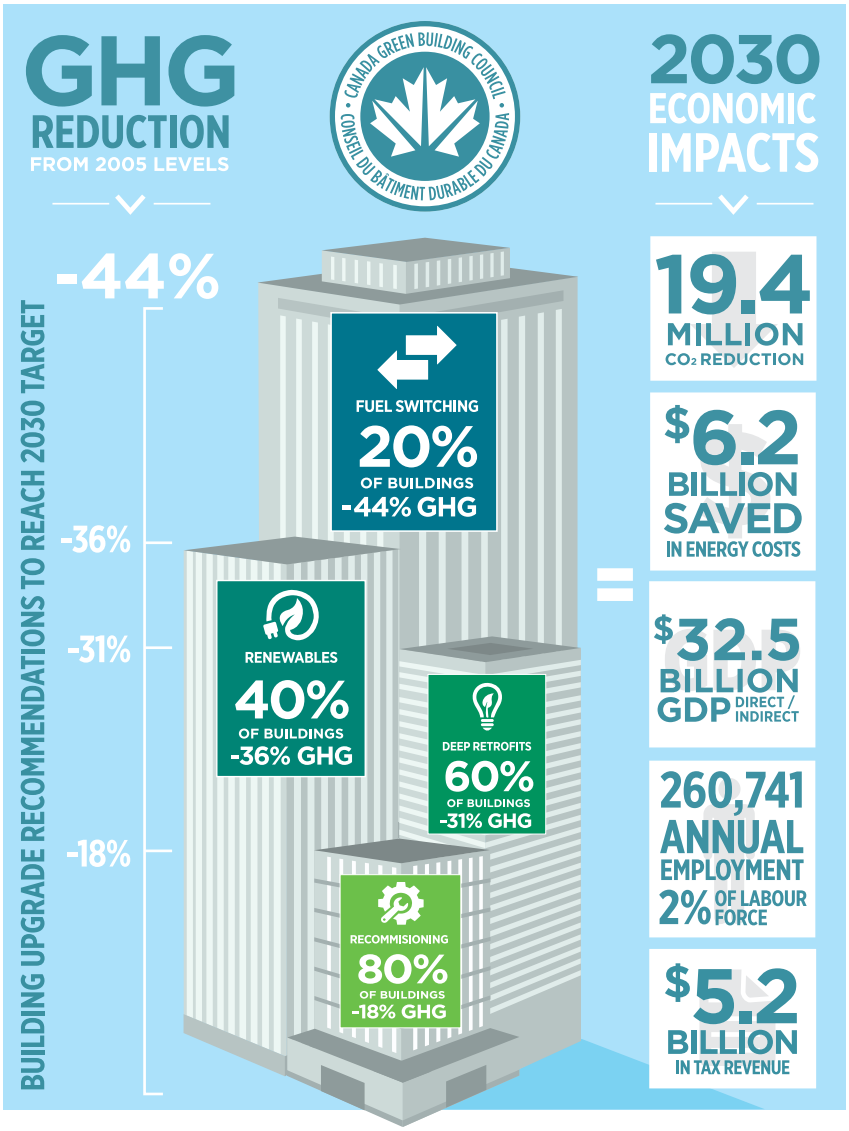


Existing Buildings

EXISTING BUILDINGS

In September 2016, the CaGBC released a new report, Building Solutions to Climate Change: How Green Buildings Can Help Meet Canada's 2030 Emissions Targets. This report details the CaGBC's recommendations to the federal government on how reducing greenhouse gas emissions from the building sector will help meet Canada's climate change targets while fueling growth in Canada's economy. These recommendations examine the carbon savings potential of existing buildings and net zero buildings, and also to analyze the required investment and economic benefits.

The report finds that by investing in energy efficiency improvements in existing commercial, institutional and high-rise residential buildings over 25,000 sq.ft; Canada could reduce GHG emissions by 19.4 million CO2e tonnes (or 44 percent) from the 2005 baseline, with energy-related cost savings of $6.2 billion and direct and indirect GDP impacts of $32.5 billion.



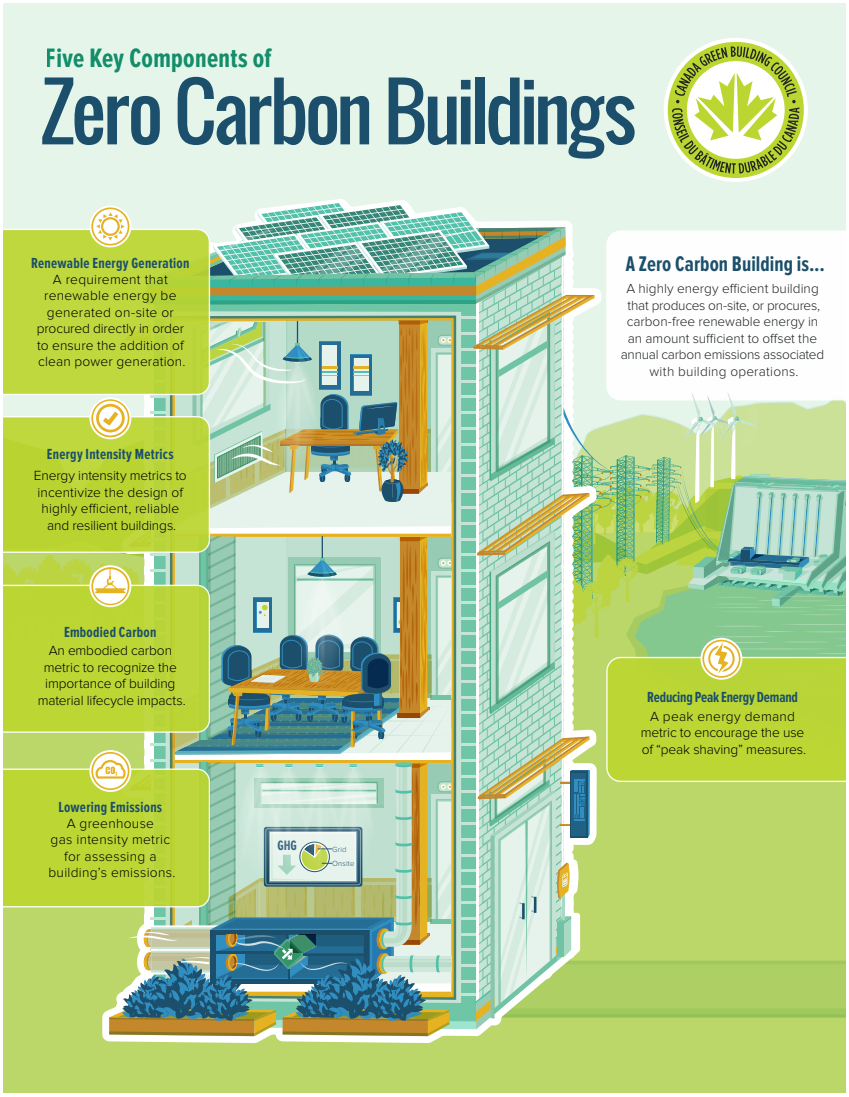
Zero Carbon Initiative

ZERO CARBON BUILDINGS FRAMEWORK

The LEED standard continues to provide the rigour and guidance critical to propelling the Canadian building industry towards a low carbon future. The federal government of Canada has acknowledged the role that net zero buildings will play in meeting climate change obligations and GHG emission targets.

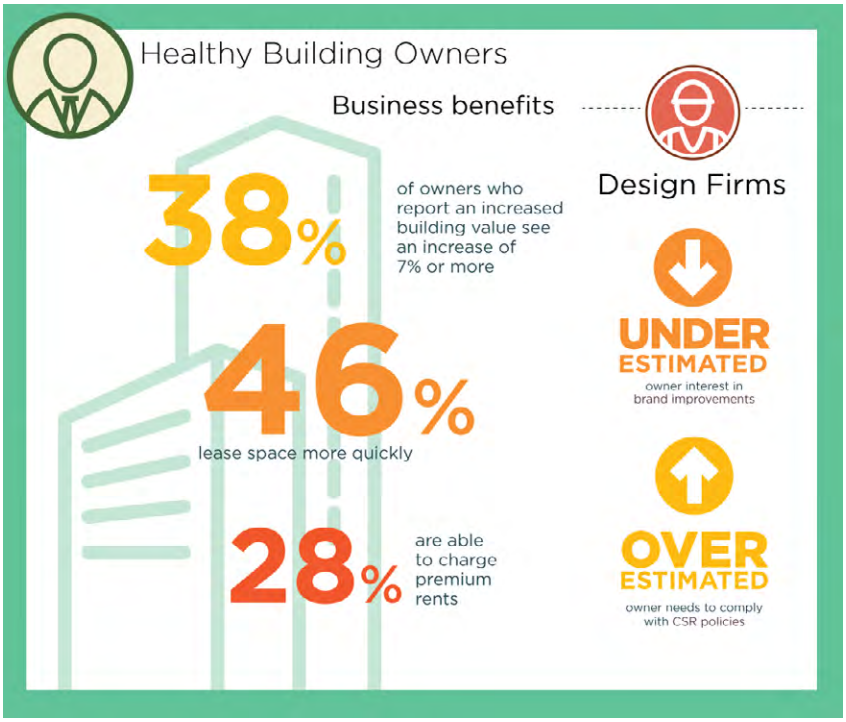
To support and champion the move to lower-carbon commercial, institutional and high-rise residential buildings, the CaGBC developed a Zero Carbon Buildings Framework. A key part of the initiative was a framework published in November 2016. This Framework facilitates broad participation across a range of building types and sizes, provides a clear definition for zero carbon buildings, and establishes five key components for a zero carbon building.

The next phases of the Zero Carbon Initiative include the identification of specific pathways to zero carbon, a zero carbon building pilot program, and the development of a verification program to be completed and launched by CaGBC by the end of the second quarter of 2017.



Health and Wellbeing

HEALTH AND WELLBEING IN THE BUILT ENVIRONMENT



Since the introduction of the Leadership in Energy and Environmental Design (LEED®) program in Canada, green building proponents have considered how buildings impact the health and well-being of their occupants. The CaGBC and Dodge Data & Analytics released Healthier Buildings in Canada 2016: Transforming Building Design and Construction in September 2016. The new report reveals new information about the factors influencing Canada's building owners, architects, designers, contractors and public health professionals in their decisions for adopting healthier building practices and features.

Among its key findings, the report shows that business benefits are driving investments in healthier buildings. Nearly half of the Canadian commercial building owners surveyed (46 per cent) say they are able to lease space more quickly in buildings with healthy features, and of the owners that report they see a positive impact on the value of their buildings with healthier practices, over one third (38 per cent) see an increase of seven per cent or more.

With this report, CaGBC has uncovered opportunities for the building construction industry to pursue even healthier, more sustainable options through LEED and complimentary standards such as WELL. The TD Centre in Toronto, Canada is featured in the report as an example of a building renovation that achieved both LEED and the WELL standard simultaneously.

Arc

In 2016, GBCI launched a new technology company, Arc Skoru Inc. This new venture will be the official host for Arc, a state-of-the-art digital platform available at arcskoru.com. Arc allows any project — whether a single building, a community or an entire city — to measure improvements and benchmark against itself and projects around it.

The goal of Arc is to support the missions of USGBC and GBCI. LEED-certified buildings can use Arc to improve and benchmark against other certified buildings around them. Existing buildings that have not certified can use Arc to make incremental sustainability improvements to eventually achieve LEED certification.

Today more than ever before, the green building movement relies on technology and data, and the future of green buildings is focused on performance. Arc represents a new era for green building; the platform takes LEED to the next level through the shared use of technology, feedback and recognition of excellence.

The CaGBC will support the rollout of Arc in Canada.

ABOUT THE ARC PLATFORM:

- Arc is a simple digital platform for all projects pursuing LEED certification and will eventually include other green building rating systems, standards protocols and guidelines.
- Arc is inclusive of all projects, even those not pursuing certification, so that all buildings can measure performance and make incremental improvements.
- Arc facilitates connections to people and projects globally. It encourages innovation, enabling informed decisions on building design, operations and maintenance.

FEATURES OF THE CURRENT ARC PLATFORM INCLUDE:

- Existing buildings can use Arc to earn LEED Operations + Maintenance certification and precertification using the O+M performance path.
- Projects that are currently pursuing and planning to register for the LEED for Existing Buildings standard path can also use Arc for performance data reporting.
- Cities, communities and districts can use Arc to start tracking data and earn LEED pre-certification.
- All registered and previously certified LEED projects have access to Arc to keep their LEED certification up to date. Project leads can also use Arc for performance data tracking and reporting as per the initial requirements in LEED for data sharing.
- Projects previously using the LEED Dynamic Plaque will be included in Arc.
- Material choices will reflect regional characteristics and consider life-cycle assessment and health impacts.

Resources

LEED helps to identify connections. From the built environment to the site it occupies, between people and the buildings where they live, work and learn and also connections between one building and another.

CaGBC provides a wide range of support for project teams and owners.

Start your journey with CaGBC membership, access to first-in-class green building education through CaGBC Education and online access to the LEED rating system and information on LEED v4.

LEED professional credential

Connect with Canada Green Building Council at www.cagbc.org.

Register your project at LEED Online: USGBC.org/leedonline/

As you work through projects you may find technical support through our knowledgeable and seasoned technical solutions and LEED coach staff. To learn more, please visit www.cagbc.com/LEED.

For more information about CaGBC and its offerings,, or to be considered for the next LEED in Motion: Canada report, please email Renée Rietveld at rrietveld@cagbc.org.