Leading the way
Policies + programs that drive higher performance
Pushing the envelope
Innovative companies accelerating our green economy
Producing results
27 local projects + their leading designs
As mayor of the City of Toronto, I am delighted to welcome you to Toronto for the Greenbuild International Conference and Expo and introduce you to the Toronto Green Building Guide.

This Guide gives you an opportunity to learn about and explore Toronto’s green construction industry and buildings that are world leading examples of sustainable development.

With the conference being held at Metro Toronto Convention Centre, I encourage you to visit many of the green buildings and the sustainable developments that are within the vicinity. The green roof atop City Hall, the first urban wind generator in North America at Exhibition Place, and the recently opened Sherbourne Commons Park and water treatment plant are examples of the thriving green building sector in Toronto.

Green buildings are also not just about new buildings. We have conducted extensive energy-efficient retrofits on our public buildings, saving taxpayers millions of dollars on energy costs. Recently we have connected City Hall to Toronto’s Deep Lake Water Cooling system and have sought further reduction in costs to the heating and cooling of our City’s seat of government by undertaking a major window replacement project.

The efforts of our municipal government, our business community and our residents not only help the environment but keep taxpayer dollars here in Toronto, and make Toronto a great place to work and live in.

Yours truly,

Mayor Rob Ford
City of Toronto
Message from the Greater Toronto Chapter of the CaGBC

Dear Green Builders,

It is with great pride that we launch this first ever Toronto Green Building Guide in partnership with our colleagues at the City of Toronto.

As we welcome building professionals from around the world to Toronto for this autumn’s GreenBuild conference, we’re delighted to showcase some of the most inspiring green building success stories in and around our City. From the innovative deep lake water cooling system to over 135 green roofs to a LEED Neighbourhood Development Pilot site on our waterfront, Toronto has it all.

Not only have we packed this inaugural Toronto Green Building Guide with the essential info you need about some of Toronto’s most influential, forward-thinking and exciting Green Building Projects, we’ve also showcased the great strides the City of Toronto has made in advancing sustainable policies and practices that encourage green building development. And just in case you might want to locate the featured projects, we’ve provided a map that highlights not only the projects listed here, but also the ones you can tour as part of GreenBuild 2011.

We hope you’ll take the time to explore this guide and learn more about our many successes right here in Toronto. And if the Guide leaves you wanting more, join the Greater Toronto Chapter and our members at our many events, tours and training opportunities throughout the year.

Lyle Shipley
Executive Director
Greater Toronto Chapter
Canada Green Building Council

Shawn Vanderheyden
Manager of Sustainable Construction
PCL Constructors Canada inc.
Chair, Greater Toronto Chapter
Canada Green Building Council
Engineering Fresh Sustainable Solutions

Morrison Hershfield is a North American leader in sustainability for the built environment and is committed to innovative ideas and solutions that will help our clients achieve their sustainability goals.

Morrison Hershfield is a proud supporting sponsor of Canada House Pavilion 2011:

Bundled Sustainability Services
- Expert LEED® Certification
- Energy Modeling and Simulation
- Building Commissioning Authority
- Envelope and Materials Durability Analysis
- Code and Life Safety
- Emerging Specialties
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ATHENA® Impact Estimator for Buildings
LCA Software

Morrison Hershfield and Athena Institute have collaborated to develop the only North American software tool that evaluates whole buildings and assemblies based on internationally recognized life cycle assessment (LCA) methodology.

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The Greater Toronto Chapter helps you connect with Ontario’s green building movers and shakers, as well as access the cutting-edge information you need to accelerate your LEED credentials and stay at the forefront of the green building industry. Here’s a highlight of upcoming Chapter events and workshops:

**EARN CE HOURS**
Maintaining your LEED professional credential through continuing education.

**EMERGING GREEN BUILDERS ENVIRONMENTAL SCULPTURE COMPETITION**
The GTC’s Emerging Green Builders (EGB) is launching a competition for sculptures of the built environment, made from salvaged and natural materials. Check out our Facebook and LinkedIn pages for details.

Congratulations! EGB Toronto has grown to over 100 members!
Are you:
- A full-time student?
- A young professional within 5 years of graduation?
- Or, under 30 years of age?

Then you are eligible for membership as an EGB! EGBs are the future of the green building industry. To get a 70% discount on Chapter membership, great rates on events and education, and more, visit: http://www.greenbuildingontario.ca/cagbc-toronto/egb

**WE’RE TAKING IT TO THE NEXT LEVEL**
Here at the CaGBC, we’re consistently offering new workshops, webinars and other interactive learning opportunities, such as:
- Green Building Economics: Best of Green Building Case Studies; Effective Commissioning.
- Green Building Core Concepts; + more!
Check www.greenbuildingontario.ca for the complete list.

**BUILDING TOWARDS A LOW CARBON FUTURE**
GALA 2011:
Royal Conservatory TELUS Centre for Performance and Learning – November 23rd

Join us for an evening of live music, local cuisine and networking with 350 industry professionals in support of the Greater Toronto Chapter’s continuing education and training programs. The event will feature keynote speaker Tom Rand, Senior Advisor, Cleantech, MaRS Discovery District, with festivities hosted by the Co-Chairs of Greening Greater Toronto’s Commercial Building Energy Leadership Council, which launched the Race to Reduce this spring - Linda Mantia, RBC and Michael Thornburrow, BMO.

Tickets on sale at: www.greenbuildingontario.ca

**HEARTFELT THANK YOU TO CHAPTER MEMBERS**
A big thank you to our volunteer Chapter Members who made huge contributions to the Greenbuild National Host Committee. You played an integral part in welcoming our international friends and colleagues to Toronto and we couldn’t have done it without you!

**THANK YOU TO OUR GENEROUS CHAPTER SPONSORS**

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**Education**

**Event**

**Issue 2**

**Toronto FOCUS**

**ISSUE 2 | Toronto FOCUS**
City of Toronto Green Policies

Policies

**Bird Friendly Development Guidelines**
The Bird-Friendly Development Guidelines offer a comprehensive list of development strategies to make new and existing buildings less dangerous to migratory birds. Light pollution as well as the transparency and reflective properties of glass in urban environments confuse and disorient migratory birds, often resulting in fatalities of threatened or endangered species. The Bird Friendly Development Guidelines outline options to implement the required bird-friendly performance measures of Tier 1 of the Toronto Green Standard. The final product is an innovative document that is being employed by other municipalities throughout North America to mitigate the danger the urban environment poses to birds.

**Green Roof Bylaw**

Toronto was the first city in North America to adopt a bylaw that requires and governs the construction of green roofs. The bylaw applies to all new development applications made after January 31, 2010 with a gross floor area of 2000 m² or greater, with the exception of industrial buildings. To date there are over 160 green roofs in the City of Toronto with an additional 71 in the planning stages as required by the Green Roof Bylaw.

**Renewable Energy Bylaw**

In March 2008, Toronto City Council passed the Renewable Energy Bylaw which permits as-of-right the use of renewable energy and co-generation devices on every property, subject to zone regulations, and permits the distribution of energy produced by those devices beyond property boundaries. This stand-alone zoning bylaw was a significant step in encouraging the broader use of renewable energy in Toronto and has been used as a template for other municipalities across Canada.
**Sustainable Energy Funds**

The Sustainable Energy Funds (SEFs) were established in 2008 and are comprised of two different funds – The Toronto Energy Conservation Fund and the Toronto Green Energy Fund.

The Funds provide zero-interest financing to help overcome the barrier created by high upfront costs for energy efficiency measures in buildings (new or retrofitted) and renewable energy projects. Financing is available to the Municipal, Academic, Social Service, Healthcare (MASH) sectors, and other not-for-profit organizations. Privately owned multi-family residential buildings are also eligible for total of $10 Million in funding.

**Eco-Roof Incentive Program**

Toronto’s Eco-Roof Incentive Program, launched in March of 2009, is designed to promote the use of green and cool roofs on Toronto’s existing industrial, commercial and institutional (ICI) buildings, and to help Toronto’s business community take action on climate change.

Green roofs are eligible for a grant of $50 per square metre up to $100,000 per project. Cool roofs, which feature a membrane or coating that reflects the sun’s rays, are eligible for $5 per square metre to a maximum of $50,000. Grants for the Eco-Roof Incentive Program are awarded twice a year.

**Tower Renewal**

The Tower Renewal project, initiated by the City of Toronto, provides a framework to improve the performance of apartment buildings in Toronto.

Retrofit projects will substantially reduce energy and water usage and increase recycling rates. The livability of the buildings will also be addressed through community improvement initiatives. As the buildings are found in clusters, improvements will benefit entire neighbourhoods. These investments also contribute to the creation of thousands of local job opportunities.

**Partners in Project Green**

Partners in Project Green is a growing community of businesses working together to green their bottom line by creating an internationally-recognized ‘eco-business zone’ around Toronto Pearson.

Through new forms of business-to-business collaboration, Partners in Project Green delivers programming that helps businesses reduce energy and resource costs, uncover new business opportunities, and address everyday operational challenges in a green and cost-effective manner.

**Better Building Partnership [BBP]**

The Better Building Partnership (BBP) program is a city-to-business initiative that provides expertise, resources and financial assistance to building owners, managers and developers to implement energy efficiency measures in new construction and existing buildings.

The BBP’s New Construction (BBP-NC) program offers incentives to promote the design and construction of energy-efficient new buildings. The BBP program also offers assistance for energy retrofit projects in existing buildings across the city. Over 2,000 projects have been completed through the BBP program since its inception in 1996.

**Energy Retrofit Program**

The Energy and Waste Management Office has funded over $40 million for energy efficiency retrofits on over 200 City of Toronto buildings since 2004, saving the City over $4 million and reducing emissions by over 15,000 tonnes of CO₂ per year.

The City of Toronto has installed more solar projects than any other municipality in Canada. Renewable energy projects completed under the Energy Retrofit Program include:
- Solar photovoltaic systems on 6 City buildings
- Solar water heating on 3 fire stations
- Solar pool heating on 4 indoor pools and 4 outdoor pools
- Solar air heating on 3 City buildings

**Tower Wise**

This page contains a list of grants and programs available for businesses in Toronto, including the Toronto Atmospheric Fund, the Toronto Energy Conservation Fund, and the Toronto Green Energy Fund. These programs offer financial assistance to building owners, managers, and developers to implement energy efficiency measures in new construction and existing buildings. The programs also support community groups seeking funding to establish and develop ideas that reduce greenhouse gas emissions and help adapt to climate change. The programs are designed to promote the design and construction of energy-efficient new buildings, and to offer assistance for energy retrofit projects in existing buildings across the city. Over 2,000 projects have been completed through the Better Building Partnership program since its inception in 1996.


**REGEN ENERGY**

Energy’s EnviroGrid automated demand management, demand response and load scheduling controller can be installed onto any electrical heating, cooling or discretionary electrical load. The controllers dramatically reduce peak electrical demand by up to 30% in commercial properties and allow for effective scheduling of electrical loads, including electric vehicle chargers. EnviroGrid wireless technology allows for effective scheduling of electrical loads, in-demand by up to 30% in commercial properties and help to create a cleaner world.

**Bullfrog Power**

Bullfrog Power, Canada’s 100% green energy provider, offers homes and businesses clean, renewable energy solutions. Bullfrog’s generators inject 100% green electricity or 100% green natural gas onto the respective energy system to match the amount of electricity or natural gas that a home or business uses. By choosing Bullfrog Power’s green energy, you can reduce your environmental impact, support the development of new renewable generation in Canada and help to create a cleaner world.

**TREMCO**

Since it’s founding in 1928, Tremco Canada’s Roofing Division has provided roofing and waterproofing systems and services to building owners and managers, architects, and other facility professionals. Tremco offers vegetated, photovoltaic and white, reflective roofing systems to meet the ever-growing demands for sustainable solutions. These roofs help lower energy costs since they absorb little of the sun’s heat; vegetated roofs can manage storm water as well, while photovoltaic roofs convert heat into electricity.

**Whale Power**

Inspired by the flippers of Humpback Whales, WhalePower has developed the patented Tubercle Technology. Tubercle Technology is a fundamental advance in fluid dynamics which will transform wind turbines, compressors, pumps and fans. WhalePower’s first Tubercle Technology is an industrial fan which is 20% more efficient than current technologies. WhalePower has licensed an Ontario company, Envira-North System’s Ltd., to manufacture the first generation of fully optimized HVL’s (high volume low speed) fans.

**Conserval Engineering**

Conserval Engineering is the inventor of the SolarWall technology and has been delivering custom engineered energy solutions throughout the world for over 30 years. The SolarWall technology is a solar air heating system that heats building ventilation air which offsets traditional heating load. Solar wall is being used in commercial, industrial, institutional, multi-residential applications.

**Wireless Technologies**

UV Pure Technologies was founded in 1998 and manufacturer Ultra-Violet (UV) water purification systems for residential, municipal and commercial applications, with systems for up to 5,000 households. The water purification systems are sold world wide.

**Cleanfield Energy Corp.**

Cleanfield makes a 3kW Vertical Axis Wind Turbine (VAWT) called the V3 which has been installed in Canada, the US, Europe and Asia. It features three-metre-long vertical blades that rotate around a central axis. The turbine is designed for both ground-mounted and roof-top-mounted installations. It can produce clean renewable energy for commercial, industrial, institutional and agricultural customers.

**Morgan Solar Inc.**

Morgan Solar Inc. was founded in 2007 to develop next generation solar power technologies that will make solar energy significantly less expensive. Based in Toronto, Morgan Solar has pioneered a whole new approach to designing and manufacturing solar modules. The result is the highly efficient and low cost Sun Simba HCPV concentrated photovoltaic solar module.

For information on other Toronto innovative green building suppliers and services please download a copy of the Toronto Directory of Green Building Products and Services at www.toronto.ca/greenbuildingdirectory
MEMBERSHIP

10 reasons why you should be a CaGBC Greater Toronto Chapter member

#1 Discounts of up to 40% on workshops and Chapter & partner events

#2 Complimentary subscriptions to one of three green design & build magazines

#3 Member-only networking, knowledge exchange and career development opportunities

#4 Subscription to Chapter newsletter, covering green building Ontario news and events

#5 Savings up to $250 on CaGBC National Conference

#6 Exclusive access to career opportunities, resume bank, membership directory, company profiles, case studies and more through the member-only portal on the Chapter website

#7 Eligibility to run for Chapter Board of Directors

#8 Eligibility to sit on Chapter committees, meetings and other Chapter initiatives

#9 Use of our Chapter logo on your business card and emails

#10 Recognition as a green building industry leader

www.greenbuildingontario.ca
ArtScape

Wychwood Barns

76 Wychwood Ave. 

ArtScape Wychwood Barns is a mixed-use centre for artists and environmental organizations, realized through the conversion of an early 20th century streetcar repair and maintenance facility in a dense residential neighbourhood in downtown Toronto.

The 5600 m² program consists of 26 live/work housing units, 15 work studios for local artists, a series of community spaces for arts and environmental groups, and a greenhouse and sheltered garden, all adjacent to a newly developed City park.

Included in the design is a ground source heat pump HVAC system supporting high-efficiency mechanical equipment, and a 90 m³ cistern to collect roof water for irrigation and use in all washrooms in the facility. All the lighting in the building is high efficiency, and extensive day lighting is provided throughout the building through perimeter glazing and skylights. This glazing also provides a passive ventilation circuit in all of the residential units.

Thermal insulation was added to the interior face of all of the existing perimeter masonry walls, improving the performance of the enclosure while protecting the brick from the adverse effects of freeze-thaw cycles.

Site remediation focused on the removal of contaminated soil, the introduction of planted areas on the previously paved site, and the establishment of a community greenhouse and demonstration composting facility within the shell of Barn 4. The rainwater captured from the roof and stored within the building’s cistern is used for irrigation throughout the project.

The ground source heat pump reduces dependence on fossil fuels by meeting the heating and cooling needs of the building using the earth’s thermal mass. Individual check meters were installed within the residential and office units, allowing the building owners to monitor electricity consumption and to optimize building performance.

Materials are chosen for durability – including recycled plastic. The plastic siding panels, manufactured from industrial scrap, are waterproof, UV resistant, contain no asbestos, fiberglass or toxic resins, and in this installation alone, diverted more than 4000 kg of plastic from landfill.

The oldest barn, built in 1913, is converted into a covered street used for markets, exhibitions and large public gatherings.[3,4]
The Archetype Sustainable house is a semi-detached duplex, one side showcasing state-of-the-art practices and technologies, while the other house demonstrates more innovative technologies and building practices. These LEED Platinum buildings were built in partnership with the Builders Industry and Land Developers Association and over 700 volunteers.

On the other side of the property is the Restoration Services Centre. It was the first LEED Platinum certified building in Ontario and houses TRCA’s Resource Management, Archaeology, Regional Monitoring and Parks and Culture support services. The building received all ten LEED energy credits, and performance verification is ongoing.

Finally, the LEED Gold Earth Rangers Centre is a showcase of building systems integration. It is focused on the integration of lighting, security, energy metering, generation, and building automation. Targeting Platinum status for LEED EB, the ERC has been able to reduce energy consumption since construction, resulting in a current energy star rating of 95.

The Living City Campus at Kortright is home to Canada’s largest green building demonstration centre that includes; the Earth Rangers Centre (photo 1), the Restoration Services Centre (photo 2) and the Archetype Sustainable House (photo 3). Owned by the Toronto and Region Conservation Authority (TRCA), the Living City Campus’ goal is to initiate, inspire, support and monitor change toward sustainable living.

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The Living City Campus is dedicated to education and demonstration of leading edge sustainable technology, and these buildings are only the beginning.
Given the size and scope of this undertaking, Waterfront Toronto has divided the area into several key project areas to facilitate planning and construction. Built on former industrial sites, these new mixed-use neighbourhoods will deliver an exciting new kind of downtown, sustainable urban living.

The East Bayfront will be known for its lakes and Stage 1 LEED ND Gold neighbourhoods. Home to many leading-edge, knowledge and creative-based industries, East Bayfront is a community with state-of-the-art technological infrastructure.

The West Don Lands Project, which is also LEED ND Gold certified, will concentrate on creating a family and people-focused atmosphere with residences, day care centres, commercial spaces, public parks and spaces.

Developing new sustainable communities is not the only agenda. The Central Waterfront will link major waterfront destinations, providing citizens and tourists a spectacular view of the Toronto lakefront.

Revitalizing the former industrial waterfront is changing the face of Toronto. It is an exceptional city-building undertaking from which future generations will benefit.
Established as part of the Waterfront Toronto soil management strategy, the 20-acre soil recycling facility processed 20,000 cubic metres of soil during a three-month pilot period. The pilot’s goal was to find an alternative to traditional “dig-and-dump” disposal of brownfield soil. Soil washing and other innovative technologies were used to treat contaminated soil so it could be reused. The long-term goal is to treat contaminated soil to an environmental condition for reuse in residential, parkland and commercial areas. The soil remediation approach and facility won the 2010 Canadian Urban Institute Brownie award.

Built in 1913, this 20,627 sf facility was recently renovated, restored and expanded. The new glass addition increased street presence and maximized public space. Other features include: updated energy efficient mechanical systems and lighting; two green roof systems; reduction in city storm water demand; permeable paving along exit paths; significant planting of domestic shrubs, grasses and trees; and low VOC materials. Large expanses of energy efficient glazing deliver natural light throughout. The City of Toronto provided funding through the Better Building Partnership.

This solar PV rooftop installation is 380 kW and is part of the Green Building Tours. As part of their ongoing sustainability efforts, Atlantic Packaging is participating in the solar PV rooftop program via the Ontario Feed-in Tariff (FiT) Program. The 350 Midwest Road location is the first of eight Atlantic Packaging facilities that will implement the solar PV panels. Each installation will occupy about a half a Mega Watt per location. This project will provide carbon offset and green energy output.

Established as part of the Waterfront Toronto soil recycling facility, this 3.63 acre park is the first in Canada to integrate a UV facility for stormwater treatment into its design. The UV facility for East Bayfront’s stormwater management system is located in the basement of the park’s Pavilion. Collected stormwater is treated in the UV facility and released from three art features into a 240 metre long urban river and then into Lake Ontario. The park is close to public transportation and has bicycle storage, water efficient landscaping and renewable energy sources for the Pavilion.

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The original Enwave district cooling system was commissioned in 1997 following the construction of the Simcoe Street Cooling Plant. The original plant contained two absorption chillers with a capacity of 3,000 Tons refrigeration (Tr). With the transformation of the Toronto District Heating Corporation into Enwave District Energy in 1999, the concept of providing cooling through a Deep Lake Water Cooling (DLWC) project was on its way to becoming a reality. Instead of traditional cooling equipment – chillers and cooling towers in individual buildings – the district cooling system uses the inherently cool water at the bottom of Lake Ontario to cool the buildings connected to the network. In winter, the surface of Lake Ontario cools to about 4°C. The cold water at the surface has increased density which causes it to sink. Conversely in summer, the water near the surface remains warm and less dense and will not sink. No matter how hot the summer, the deeper water remains very cold. Over millennia, this phenomenon has created a permanent reservoir of cold water on the bottom of Lake Ontario.

Enwave positioned three high-density polyethylene (HDPE) pipes along the natural slope of the lake bottom to pump water from a depth of 83 meters and transport it to the Toronto Island Filtration Plant. There, the cold water is processed, then directed to Enwave’s Energy Transfer Station at the city’s John Street Pumping Station. At this stage, heat exchangers facilitate an energy transfer between the cold lake water and Enwave’s closed chilled water supply loop. Once the energy transfer process is complete, the lake water continues on its path to the city’s potable water system. The system is simpler, more efficient, with fewer environmental impacts than the many mechanical systems it supplants.

Only the thermal capacity of the lake water is utilized, rather than the water itself. Thus, DLWC provides a truly unique, 75,000 Ton capacity green alternative to conventional air conditioning.
TREC established the first renewable energy co-op in Ontario when over 400 citizens pooled their funds to build the iconic WindShare turbine at Exhibition Place. The 30-storey, 750 kW wind turbine is the first urban-sited turbine to be constructed in North America, first community-owned power project in Ontario and it is made in Ontario. The turbine’s output is approximately 1 million kWh per year that is fed into the local electricity grid. The Toronto Atmospheric Fund provided funding for project development.

This Police Services Garage has a 50kW photovoltaic grid connected system installed on its roof covering 332 m². The project was part of the SolarCity Partnership and was funded by the City of Toronto and the Toronto Atmospheric Fund. The system was installed to reduce electricity costs, demonstrate the City’s environmental leadership and take advantage of the Ontario Power Authority’s FIT program. The system is monitored to track status, power production and environmental variables to ensure optimal operation. Estimated emission reductions are 13.6 tonnes CO₂ per year.

This 30-storey, 786,000 sf commercial building focused on energy and water efficiency. Enwave Deep Lake Water Cooling and District Heating are utilized with advanced raised floor heating and cooling distribution system resulting in a 47% savings on costs. 10’8” floor to ceiling glass allows light in, while high efficiency automatic lighting and shade systems reduce energy consumption. Water efficient washroom fixtures include low consumption, auto valve controls, aerators on water faucets and regular water audits. Energy sub-metering installed on every office floor allows tenants to log in, view and manage their specific energy use.

From scrap tires to…

Sustainability…Innovation…Commitment

Proud partner in greenbuilding projects with our industry leading lighting portfolio
Evergreen, a national charity, and its team of partners, reclaimed the derelict buildings with a focus on adaptive reuse that would utilize the embodied energy contained in the original structures.

The Centre for Green Cities, the site’s only new building, houses Evergreen’s head office and includes the old brick-pressing shed that now serves as the Welcome Centre. The building contains offices for other like-minded organizations, rooms for workshops, events, and a new café.

On target to attain LEED Platinum status, the project reduces energy consumption and environmental footprint through: a computerized network that controls all lighting, heating, ventilation and air conditioning systems, a highly insulated envelope, CO2 sensors to regulate fresh air intake, high-efficiency chillers that use collected rainwater to help cool the air, and a greenway system of grasses and shrubs that filter sediments from rainwater.

Other features include a green roof, radiant floors, heat recovery from kitchen exhaust and ventilation air, solar (thermal) chimneys for natural ventilation, low-flush toilets, waterless urinals, and cisterns to collect rainwater for the cooling tower and irrigation.

Located in Toronto’s Don Valley ravine system, Evergreen Brick Works is a revitalization of a 4.9-hectare, century-old brick factory that closed its doors 20 years ago. The site has been transformed into Canada’s first large-scale community environmental centre: an international showcase for green design and innovation, and a vibrant public space that hosts a farmers’ market and retail garden market, plus learning spaces for youth and adults.

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DISTILLERY DISTRICT

55 Mill Street

All but one of the 47 original industrial buildings that form part of the Distillery District were saved and put to new productive use to create this unique pedestrian based, arts, culture and entertainment district – which now includes a growing number of permanent residents in the new LEED-designed “Clear Spirit” and “Gooderham” condominiums.

All of the existing buildings at this National Historic Site have been updated with efficient electrical and mechanical plants, and many have been fitted with heat pump systems which may be adapted to use Lake Ontario for heating and cooling.

Most windows and doors were repaired helping to maintain the authenticity, but with the subtle addition of double-glazed units to increase thermal performance.

The condominiums incorporate two of the historic buildings to preserve the historic streetscape. Each residential unit incorporates an ERV (Energy Recovery Ventilator) that provides fresh outdoor air directly to living units.

The rehabilitation of a former sock factory into a 4,925 m² office achieved LEED-CI Gold certification partly through a raised floor system with under floor air distribution that maximizes efficiency, under floor electrical distribution that accommodates changing technology, automated solar shades along the west facade, water efficiency achieved through the use of low-flow fixtures, and reclaimed wood for interior decorative screens. The original retail entrance is a public contemporary art gallery in support of public art in the city.

OWNER/DEVELOPER Lipson Doran Group
ARCHITECTS Stantec Architects Ltd.
ELECTRICAL CONTRACTOR Mapleview Electric
SULTANT Fluent Engineering
GENERAL CONTRACTOR Tucker Hi-Rise

The goals of the 100,000m², 42-storey RBC Centre centred on: Improved Human Comfort, Spatial Flexibility, Energy Efficiency, Water Conservation and Sustainable Site Development. Exterior sunshades, computer-controlled light shades and motorized roller shades control daylighting. Under-floor displacement ventilation minimizes the mixing of stale air with new air, and can be easily reconfigured for changing needs in HVAC and plug-and-play components. Deep Lake geothermal cooling provides chilled water to the building, eliminating the need for a dedicated mechanical plant.

OWNER/DEVELOPER: The Cadillac Fairview Corporation Ltd.
ARCHITECTS: Studio Korita, DBOX
CONSTRUCTION MANAGER: Castle Contracting
GENERAL CONTRACTOR: J.Fry Corporation Ltd.
ELECTRICAL CONTRACTOR: Blackgoat Electric
MECHANICAL CONTRACTOR: Mechanical Buildings Inc.
ARCHITECTS Kohn Pedersen Fox Associates PC
OWNER/DEVELOPER: Urbanspace Property Group
ARCHITECTS: Jettler Partnership Architects

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OWNER/DEVELOPER: Urbanspace Property Group
ARCHITECTS: Jettler Partnership Architects

The goals of the 100,000m², 42-storey RBC Centre centred on: Improved Human Comfort, Spatial Flexibility, Energy Efficiency, Water Conservation and Sustainable Site Development. Exterior sunshades, computer-controlled light shades and motorized roller shades control daylighting. Under-floor displacement ventilation minimizes the mixing of stale air with new air, and can be easily reconfigured for changing needs in HVAC and plug-and-play components. Deep Lake geothermal cooling provides chilled water to the building, eliminating the need for a dedicated mechanical plant.

OWNER/DEVELOPER: The Cadillac Fairview Corporation Ltd.
ARCHITECTS: Studio Korita, DBOX
CONSTRUCTION MANAGER: Castle Contracting
GENERAL CONTRACTOR: J.Fry Corporation Ltd.
ELECTRICAL CONTRACTOR: Blackgoat Electric
MECHANICAL CONTRACTOR: Mechanical Buildings Inc.
ARCHITECTS Kohn Pedersen Fox Associates PC
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Physical connection to the community is reinforced by the extension of pedestrian routes into the site through a network of green walkways, ramps and vertical circulation spaces.

The building envelope is a customized window wall system with a 50:50 ratio of glazing to solid wall. Each unit has operable windows and direct/continuous ventilation to the exterior. All of the building materials were sourced locally and can be recycled for future use.

Airtight suite design and an airtight building envelope reduce air movement between suites, and reduce overall energy consumption. HRVs recover heat from bathroom and kitchen fans and from exhaust ventilation air. A centralized heat exchanger in the mechanical penthouse delivers make-up air directly to units, allowing for 60-75% increased energy efficiency, resulting in energy savings of 42%.

The project incorporates a containerized roof planting system on more than half the roof area, and a stormwater cistern sized to meet irrigation requirements. Run-off and stormwater retention is achieved with a series of underground permeable containers, linked together and placed near the tree roots, and connected to the roof drains.

The redevelopment of Regent Park, Canada’s largest and oldest public housing project, on 70 acres east of the downtown, centres on mixed housing and income, safety, and sustainable design. The first phase consists of a 75-unit mid-rise and a 150-unit high-rise for seniors resting on a low podium and facing a future neighbourhood park.
Building type | Multi-Unit Residential

The 16-storey building is Canada’s first LEED Gold multi-unit residential building. All-off switch turns overhead lights and ventilation system off when residents leave their suite. Renewable passive solar energy uses daylight to preheat corridor air. Electricity and domestic hot and cold water are individually metered in each suite helping residents control their energy costs. Dual flush toilets reduce water consumption by 32%. Heat recovery ventilation units in every suite provide filtered fresh air and energy savings. Rainwater harvesting is used to irrigate landscaping.

Minto Roehampton

The two towers were constructed in tandem with the LEED-Gold school, North Toronto Collegiate Institute. Each suite has thermal sub-metering for allocating electrical and thermal energy consumption based on individual use, all-off electrical switches, dual flush toilets and Energy Star appliances. 100% of dwelling unit ventilation provided in-suite with individual energy recovery ventilators and individualized control of air flow rates. Dedicated locations for car share program plus free start-up membership for all residents.

OWNER/DEVELOPER Minto Developments Inc.
ARCHITECT Page + Steele Incorporated Architects and Ferris & Associates Inc.
[landscape]
The site, located in midtown Toronto, is close to local amenities including public transit, a vibrant main street, and an established residential neighbourhood. The project includes a four-storey, 156,000sf school facility, two residential buildings with a total of 450 units, a playfield, and a tree-lined public pedestrian walkway as a new through block access.

Each of the three major buildings on the site have a unique identity and face to the community, and together create a unified development. The extensive community participation in the design of both the school and the residential buildings has set a precedent for similar integrated developments in the City.

The high performance school building is targeting LEED Gold. Advanced strategies are used to increase energy efficiency by 30-40% over the Model National Energy Code for Buildings (MNECB), reducing GHG by 1400 tonnes. A high-performance building envelope, radiant floor heating, displacement ventilation, heat recovery, best practice commissioning, monitoring, and green education promote long-term sustainability and improved indoor environment.

To achieve water savings, lavatory water sensors, dual flush toilets, and waterless urinals were utilized for a 30% reduction. An extensive green roof over the school promotes storm water management and thermal performance. For a healthy indoor environment the project includes CO2 monitoring, thermal comfort, and low-emitting materials.

Significant heritage components of the original Gothic Collegiate school have been salvaged and integrated into the design of the courtyard, conceptually embedding the original school and reinforcing its symbolic presence as the heart of the new building.

Daylighting is a design feature for the project, thus affecting orientation and building layout. The school incorporates translucent insulated glazing into the classroom windows, which maximizes radiance within the classroom while reducing levels of artificial lighting, cooling, and heating. The school is designed to accommodate future flexibility of use and expansion.

Innovative green loan financing based on utility payback and life cycle costs offset cost premiums associated with sustainable design features and energy savings targets.

Construction on the project started in November 2008, and was occupied in September 2010. The track and field component is to be finished fall 2011.

OWNERS/CLIENT Toronto District School Board ARCHITECT CS&P Architects Inc. HERITAGE ARCHITECT William N. Greer STRUCTURAL ENGINEER Adrian A. Rubelli Ltd. LANDSCAPE CONSULTANT NAK Design MECHANICAL AND ELECTRICAL ENGINEER HCM Consultants Ltd. THEATRE CONSULTANT Novista LEED CONSULTANT Provident Energy Management COMMISSIONING Vertical Start Up Commissioning Group Inc. BUILDER Deltera Inc.
<table>
<thead>
<tr>
<th>Building type</th>
<th>Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toronto City Hall</td>
<td>100 Queen St. West</td>
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</tbody>
</table>

The completed Podium Green Roof at Toronto City Hall is part of the Nathan Phillips Square Revitalization Project currently under construction for completion at the end of 2012. About 3,250 m² of concrete was transformed into living vegetation. The green and white roof consists of landscaped gardens, courtyards, terraces, furniture and walkways. FSC-Certified IPE wood was used for the furniture and railing. In addition, all floodlights were replaced with more energy efficient LEDs.

<table>
<thead>
<tr>
<th>Building type</th>
<th>Institutional</th>
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<tbody>
<tr>
<td>St. Gabriel’s Passionist Parish</td>
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</table>

St. Gabriel’s LEED Gold status was achieved by reducing dependency on non-renewable energy resources through high insulation, efficient mechanical systems incorporating heat recovery, maximizing natural ventilation and daylighting, and using room occupancy and daylight sensors. Use of re-cycled steel, substituting a percentage of the cement with slag, and reclaimed and re-furbished pews represent good stewardship of resources. Underground parking allows much of the surface to remain as garden. The glazed south facade of the worship space harnesses the winter sun.

<table>
<thead>
<tr>
<th>Single Family Residential</th>
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<tbody>
<tr>
<td>Archetype Sustainable House</td>
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</table>

The goal of building the semi-detached duplex consisting of House A and House B was to influence how future communities are built, planned, constructed and occupied to minimize ecological footprints and improve people’s quality of life. House A uses current state-of-the-art practices for sustainable house design and House B uses innovative technologies not in common practice. Flexible design with building block modules. 90% FSC certified wood. 80% improvement in thermal efficiency over MNEC. 20% reduction in material resources. Zero runoff strategies (rain water collection, green roof, landscaping). Integrated renewable technologies. Multiple integrated heating/distribution systems.
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