COLLEGES ONTARIO | COLLÈGES ONTARIO

MOVING TO NET ZERO:
Colleges leading the way

2016 Sustainability Report

Contents

Introduction

Climate change is one of the most significant challenges today. Throughout the world, countries are taking bold steps to create a healthier and sustainable planet.

Colleges have developed and implemented broad and significant measures to reduce carbon emissions and combat climate change, in everything from the development of new programs in renewable energy and sustainable construction practices, to facility and building upgrades that have cut energy use and emissions.

The following report features highlights from all 24 colleges of initiatives and projects that put Ontario on the path towards a profound transformation to greater sustainability.

In Ontario, the **24 colleges** are established **leaders in driving sustainability**.

"Throughout the province, colleges have been pivotal to Ontario's efforts to reduce man-made emissions."

– Linda Franklin, President and CEO, Colleges Ontario

New research improves businesses' sustainability

Colleges throughout Ontario are national leaders in post-secondary research, including leading-edge research that promotes a cleaner economy.

- The applied research division at **Cambrian College** in Sudbury – Cambrian Innovates – has partnered with Helios Whitefish River First Nation and Ontario Centres of Excellence to design, build and test an all-season greenhouse using energy-efficient techniques and materials. The student-built greenhouse delivers fresh, low-cost produce to aboriginal families during cold northern winters.
- Opened in 2014, the OPG BioEnergy Learning and Research Centre at **Confederation College** includes a fully functional "living lab" located within the Thunder Bay campus' main boiler house. It offers opportunities to faculty, students, industry partners and others for demonstration, training and applied research. Through the centre, the college is committed to developing a market for biomass in northwestern Ontario and other farther-reaching markets.
- **Lambton College** in Sarnia has partnered with Celestica to develop a simple, reliable and cost-effective thermo-mechanical technique for recycling field-aged and defective solar panels. In addition to its environmental benefits, the technology under development will significantly lower both capital and operational costs compared with conventional recycling techniques that require harmful chemicals.

- Researchers in the Centre for Smart Manufacturing at **Conestoga College** in Kitchener have partnered with Greentec International to develop innovative technologies and processes to improve the productivity and sustainability of recycling waste electrical and electronic equipment. The research will result in new products that can be commercialized by local equipment manufacturers and support increased e-waste recycling.

Community leadership

Colleges play a leading role in promoting a greater awareness of the environmental challenges facing Ontario today. This includes initiatives undertaken in partnership with municipalities, industry and community organizations.

- The Canada Green Building Council has selected the Centre for Partnership and Innovation at **Mohawk College** in Hamilton as a pilot project to demonstrate its new net-zero carbon standard and validation process. The project will show the public how buildings can be transformed to reduce carbon emissions.
- **Georgian College's** Barrie and Owen Sound campuses are home to solar-powered electric vehicle (EV) charging bays used by staff, students and the general public. The stations help reduce Georgian's carbon footprint while providing research and learning opportunities for students – including a field study about the advantages and challenges of operating EVs in rural settings. Community partners Ford, PowerStream and Direct Energy helped make the stations possible.
- As part of the Water and Wastewater Systems Operations Program at **Northern College** in Kirkland Lake, a fully functioning mini-water treatment plant has been built on campus within one of the college's teaching labs. This unique plant provides a superior student learning environment, supports applied research projects in the community affecting water supply and treatment, and allows for the controlled experimentation of various drinking water treatment regimens in a way that is not possible with actual municipal drinking water plants.
- **Niagara College** has built partnerships in the community that provide students with work-integrated learning opportunities with industries and organizations that are working to reduce emissions. This includes work with the Niagara Sustainability Initiative on the Carbon Project, which helps local businesses implement sustainability strategies.
- **Collège La Cité** in Ottawa is a partner in the ecoLarose project, which promotes the resources of the Larose Forest in Prescott Russell in a sustainable manner. The project maximizes the enjoyment and educational attributes for residents and visitors.

College graduates: The next wave of green leaders

Across Ontario, colleges offer more than 300 programs that prepare graduates to work in sectors that directly impact emission reductions, conservation and renewable energy.

Graduates are entering fields that are central to the success of Ontario's Climate Change Action Plan.

- **Fleming College** is well-known for its focus on environmental training, with an entire campus dedicated to producing environmental and natural resources graduates. Its School of Environmental and Natural Resource Sciences at Frost Campus in Lindsay offers over 30 full-time programs.
- The sustainable energy and building technology diploma program at **Humber College** in Toronto teaches students how to become skilled at providing integrated solutions with knowledge of energy efficiency, green building practices, and renewable energy sources. The curriculum is designed with industry collaboration, ensuring the program is current and relevant.
- The environmental technician protection and compliance program at **Canadore College** in North Bay helps students prepare for careers in land restoration, water conservation, water management and other fields. Students learn everything from applied geomatics to practical laboratory skills, plant identification and microbiology and toxicology.
- **Sheridan College's** chemical engineering technology-environmental program in Brampton teaches students how to use applied chemical engineering to ensure industrial operations are environmentally friendly, to clean up polluted sites and to help enforce environmental regulations.

In 2015-16, more than **20,000 students** were enrolled in such programs – an increase of **more than 20% in the last five years.**

Environmentally friendly transportation

Colleges have implemented many strategies to reduce the carbon footprint caused by transportation. For example, the rapid expansion of online programs/courses has significantly reduced the amount of time students spend commuting.

Colleges have also found other clean-transportation solutions.

- **Durham College** was named a 2016 Smart Commute Silver Workplace in recognition of its ongoing effort to support and promote sustainable travel options for getting to and from campus, such as EV charging stations located at both the Oshawa and Whitby campuses, as well as 30 designated carpooling spots. The designation was awarded by Smart Commute, a program of Metrolinx and the municipalities in the Greater Toronto and Hamilton Area.
- A new carpooling program at **Loyalist College** in Belleville encourages students and staff to save money and reduce their carbon footprint. One of Loyalist's buildings is currently home to 24 designated carpool parking spots. Each day, the first 24 carpool groups (vehicles with two or more people) that register with the front gate are given one-day carpooling parking privileges.

Green from the ground up

Integrating sustainability principles in the design of new facilities and the retrofitting of existing facilities has been a high priority for all colleges. Colleges have tackled energy consumption challenges through lighting upgrades, weatherization initiatives, energy and greenhouse gas audits and the implementation of reusable energy supplies.

There are many examples from across the province of colleges finding innovative ways to green their grounds.

- **Collège Boréal** in Sudbury is now using a hybrid vehicle for both student and staff travel at its Sudbury campus.
- The green roof on the **Algonquin College** Centre for Construction Excellence building in Ottawa is a visible manifestation of sustainability. It consists of drought-resistant plants, requiring little maintenance or irrigation once established, and is part of a high-performance "building envelope." The growing vegetation also absorbs and controls rainwater runoff, which creates less strain on the building's storm sewer drainage systems.
- In 2014-15, staff, faculty and students established pollinator gardens at two of the campuses at **Centennial College** in Toronto. Native plants were installed that appeal to bees and other pollinators and thus will encourage their populations to grow and flourish.
- New construction over the last few years at **Fanshawe College** in London has included many sustainability features that have become standard process for the college's facilities department. This includes using locally sourced construction materials, implementing a comprehensive construction waste management plan, using recycled content materials, using native/drought resistant landscaping, and building green rooftops and living walls.
- **George Brown College** in Toronto has entered into an energy and facility renewal program with Honeywell. The first phase of the project involved an assessment of the building portfolio of the Casa Loma campus systems, with upgrade opportunities identified. The $4.8-million retrofit program has guaranteed annual savings of more than $420,000. In addition, greenhouse gas emissions will be reduced by 700 metric tonnes per year, equivalent to removing 240 cars from local roads.

- **Sault College** has a wind turbine on campus that offers academic and research possibilities for students in various programs while powering the college's Student Life Centre. It acts as a teaching tool as well as an alternative fuel source.
- The new Academic and Student Centre Building at the **Seneca College's** King campus in Toronto is being designed with sustainability and efficiency in mind. Building design is targeting LEED Gold certification and will have numerous sustainability initiatives embedded in the design, including high-efficiency LED lighting systems, energy efficient HVAC systems, storm water management controls, rainwater harvesting, and electric vehicle charging outlets in the parking lots.
- **St. Lawrence College** has the largest post-secondary rooftop solar installation, with 1,600 solar rooftop panels installed at the college's Kingston and Brockville campuses. This infrastructure contributes to the province's renewable electricity mix and contributes over $300,000 in annual revenue to the college.
- **St. Clair College** in Windsor harvests light when it undertakes new construction and renovations. This involves capturing natural sunlight whenever possible to reduce the amount of electricity consumed.

Colleges have invested **millions in new facilities and retrofits** that ensure greater energy **efficiency**.

Leading the way

Ontario's Climate Change Strategy outlines a comprehensive vision for combating climate change and dramatically reducing greenhouse gas emissions.

The province's 24 colleges will continue to make significant contributions to support that goal. In everything from new programs and curriculum to leading-edge retrofits and other physical-plant improvements, colleges can help Ontario get to a net-zero economy.