



2018 - 2019



# Sustainability Report

Learning. Living. Leading.™ Sustainability at Mohawk



# Table of Contents

3



## By The Numbers

4



## Letter from the President

5



## Our Timeline

6

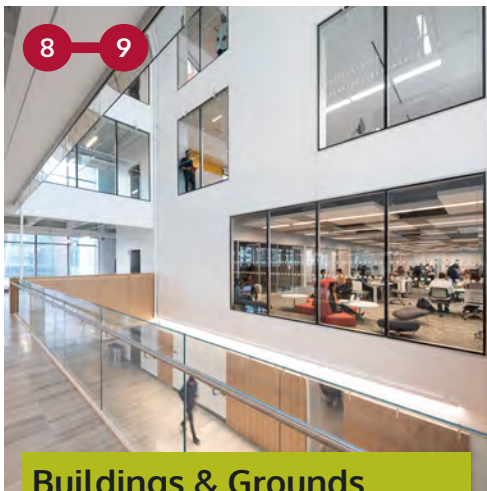
7



## Climate & Energy

8

9



## Buildings & Grounds

10



## Transportation

11



## Waste

13



## Food Systems

12



## Participation

14

15



## Academics & Applied Research

# By The Numbers

 **2,000+**

2,000+ annual participants in local food programs

 **167,705**

167,705 square feet of LEED® and Zero Carbon certified green buildings

 **63%**

63% diversion of waste from landfill

 **18**

18 campus sustainability initiatives implemented from student ideas

 **100%**

100% of academic departments offer sustainability courses

 **65%**

65% of trips by sustainable modes of transportation

 **63%**

63% reduction in absolute greenhouse gas emissions (Scopes 1 & 2) since 2007

 **1st**

1st college in Ontario to receive AASHE STARS® Gold rating for sustainability





# Letter from the President

**Mohawk College committed to being a leader in environmental sustainability when we adopted our first comprehensive Environmental Management Plan (EMP) in 2011.**

The plan was the first of its kind for an Ontario college. It was a plan that set bold targets for energy and waste reduction, and included a call for a 20% reduction in 2007 baseline carbon emissions by 2020. We exceeded this target in 2014, six years ahead of schedule. A second plan, EMP 2.0, followed in 2015 and committed the college to a 30% reduction in 2007 baseline emissions by 2020.

We've come a long way since then. Today, we have reduced carbon emissions by 63%, more than double our 2015 target. At the same time, we have taken aggressive action to reduce waste and introduce policies and initiatives that encourage sustainable practices among students, employees and the community. We also built Canada's largest and the region's first zero carbon institutional building, The Joyce Centre for Partnership & Innovation.

These successes have established Mohawk as a climate change leader and innovator within the community and the education sector, and have helped to develop strong connections with government and industry that are leading to new and exciting opportunities for our students and community.

The following report highlights the work that has been done to improve the sustainability of our campuses and the success of EMP 2.0, with a special focus on 2018 and 2019. It was during these years that Mohawk celebrated a number of key milestones, including becoming the first college in Ontario to achieve a Gold rating through the Sustainability Tracking, Assessment & Rating System (STARS®) of the Association for the Advancement of Sustainability in Higher Education (AASHE).

One of the achievements that contributed to the STARS® Gold rating was the opening of The Joyce Centre for Partnership & Innovation. At 96,000 square feet, The Joyce Centre is an example of what can be done to fight climate change. It is also a unique living lab for our students, faculty and staff. In its first year of operation, the building exceeded its design goals, generating 115% of the energy it needed to operate through renewable sources, and quickly becoming a case study in zero carbon building operations.

The report also provides a snapshot of sustainability initiatives and progress in campus operations, student engagement, and curriculum and research. While we've made great progress, we know that much work remains to be done, and new challenges present themselves each day. That's why we're continuing our mission to ensure students have the opportunity to Learn. Live. Lead.™ in sustainability at Mohawk College.



**Ron J. McKerlie**

President, Mohawk College



# Our Timeline

**2008**

Mohawk establishes the Sustainability Office and the Go Green Committee (GGC).

1

**2010**

The Sustainability Steering Committee (SSC) is formed.

Baseline greenhouse gas inventory commissioned for the 2007 calendar year.

2

**2011**

Mohawk publishes its first Environmental Management Plan, 2011-2014.

3

**2012**

Mohawk achieves 24% reduction in carbon footprint (CO<sub>2</sub>e) against the 2007 baseline.

4

**2014**

New, five-year Environmental Management Plan (EMP 2.0) is published.

5

**2016**

Completion of first AASHE STARS® rating, achieving Silver.

6

**2017**

Centre for Climate Change Management at Mohawk (CCCM) launches as a regional hub for collaboration on climate action.

7

**2018**

The Joyce Centre opens as a national pilot project demonstrating the Canada Green Building Council's new Zero Carbon Building Standard.

8

**2019**

Mohawk achieves Gold rating in AASHE STARS®.

IDEAWORKS Research Chair in Sustainability is established.

9





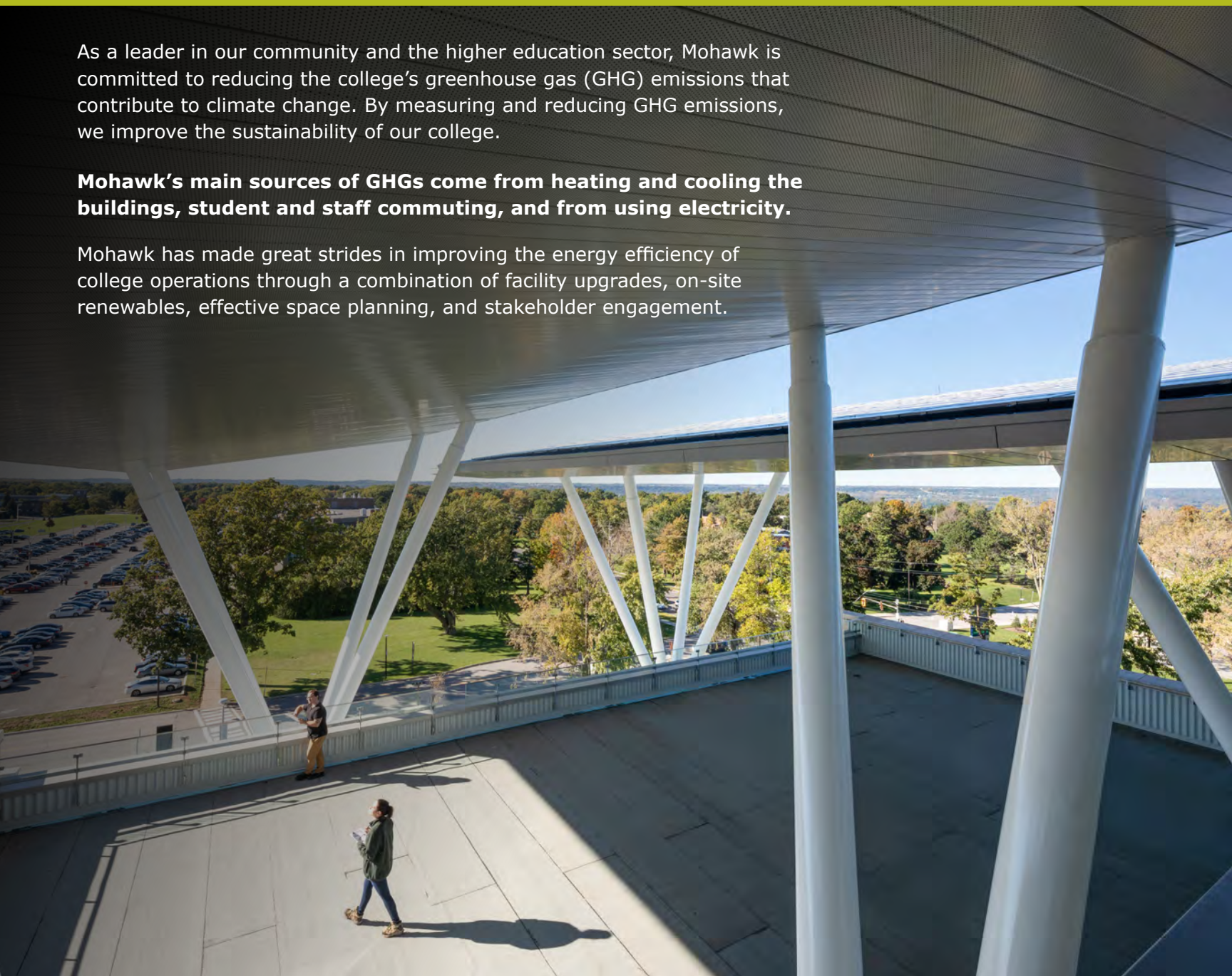
# Climate & Energy



As a leader in our community and the higher education sector, Mohawk is committed to reducing the college's greenhouse gas (GHG) emissions that contribute to climate change. By measuring and reducing GHG emissions, we improve the sustainability of our college.

**Mohawk's main sources of GHGs come from heating and cooling the buildings, student and staff commuting, and from using electricity.**

Mohawk has made great strides in improving the energy efficiency of college operations through a combination of facility upgrades, on-site renewables, effective space planning, and stakeholder engagement.



## Key Energy Initiatives

- Installation of 3,296 solar panels, enough to power 130 homes
- Efficient lighting upgrades
- Updated heating, cooling and ventilation equipment
- Forming of a new Energy Conservation Committee to lead energy conservation initiatives
- Extension of Building Automation System (BAS)
- Replacement of one natural gas boiler with a 1 MW electric boiler and 1 MW battery storage
- Replacement of boilers and generators with more efficient and cleaner natural gas burning equipment

# GHG Inventory Results



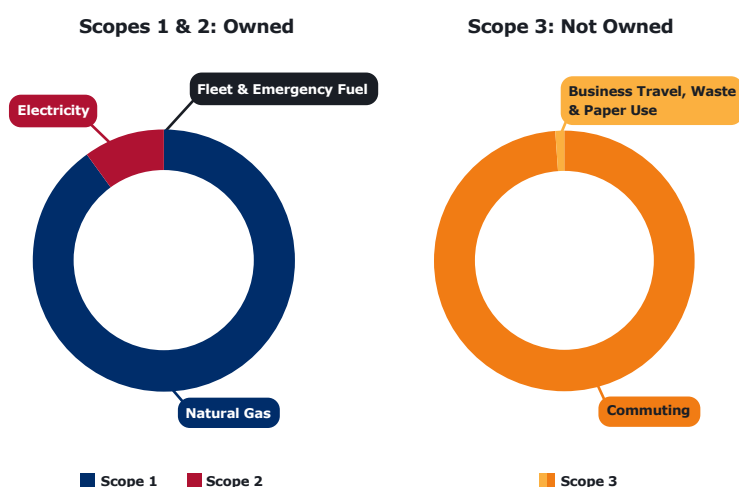
Mohawk has made significant progress in reducing our GHG emissions. Since 2007, the college has reduced Scope 1 & 2 emissions by 63%.

These emissions result directly from college operations (e.g. heating, cooling, electricity and fleet fuel). This reduction demonstrates that the college's investments in green initiatives are working to create a more sustainable campus.

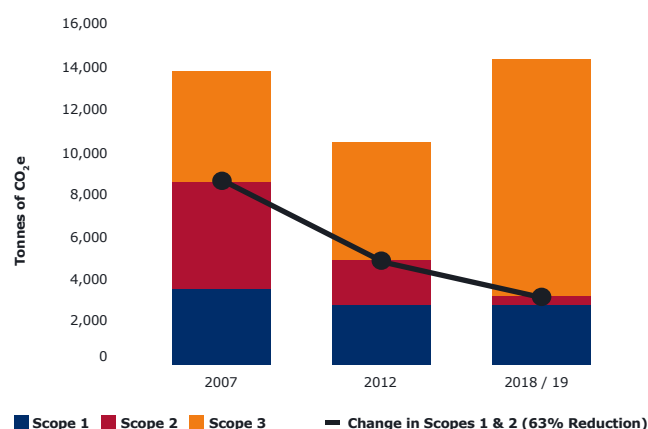
Since 2012, the campus' population has grown significantly. While Mohawk has continued to reduce its GHG emissions on campus, the quantity and share of emissions from student and staff commuting has risen sharply. This is because the number, length and frequency of commutes has grown.

Although transportation is outside the direct control of the college, Mohawk is committed to measuring, reporting and supporting programs to reduce Scope 3 emissions caused by commuting.

**GHG Emissions by Source: 2018/2019**



**GHG Emissions over Time: All Sources**



## Spotlight on

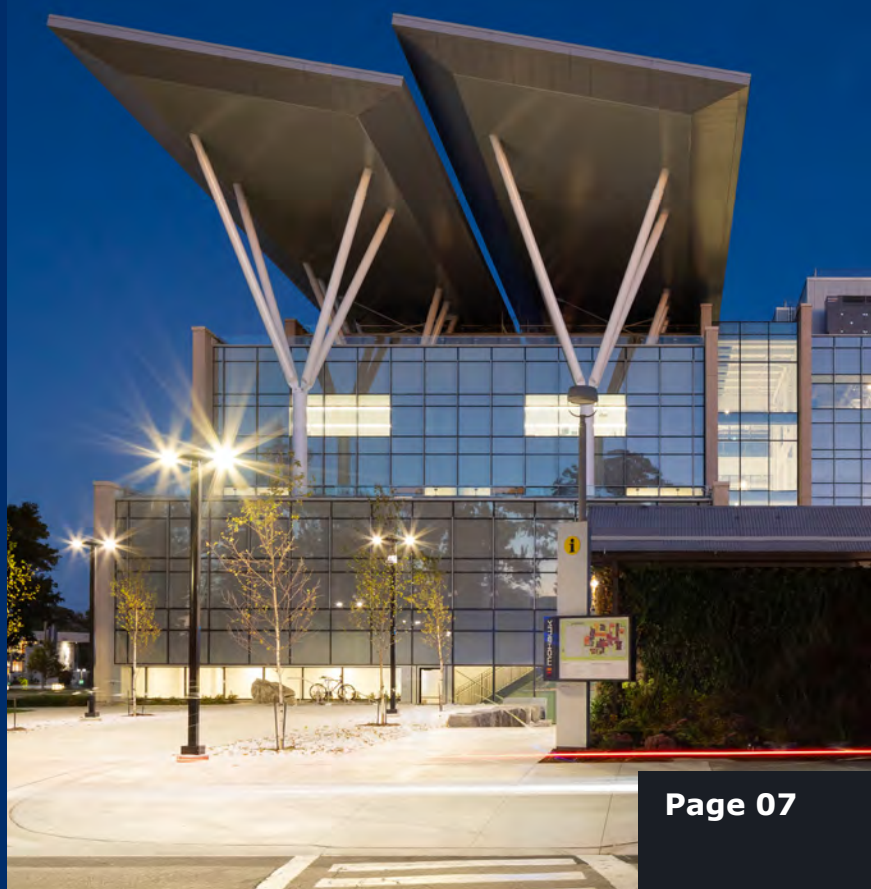
## Centre for Climate Change Management at Mohawk College

**Supporting the transition to a thriving, low-carbon economy in the greater Hamilton-Burlington area**

Addressing climate change requires unprecedented levels of collaboration and partnership. Mohawk launched the Centre for Climate Change Management in late 2017 to connect industry, community and public sector organizations to co-create community-centered climate solutions.

The Centre brings together partners to collaborate and design climate change and sustainability solutions that improve our neighbourhoods, businesses and public institutions.

The Centre is uniquely situated at Mohawk College, enabling connections to applied research, training solutions, award-winning project managers, experiential learning programs, and a campus that acts as a living lab where solutions are piloted and studied on campus.





# Buildings & Grounds







Mohawk is committed to providing state-of-the-art equipment and modern facilities that accommodate growth without increasing our carbon footprint. Since 2009, both the Fennell and Stoney Creek campuses have undergone significant renewal and growth.

**Redesigned as a welcoming place to live and learn, this renewal has created modernized spaces while enhancing energy efficiency, barrier-free access and more.**

Facilities like The Joyce Centre for Partnership & Innovation at Mohawk's Fennell Campus provide opportunities for students and researchers to learn from leading-edge technologies and building design. The grounds incorporate native planting and climate-resilient design.

## Key Initiatives

-  High performance Zero Carbon and LEED® buildings
-  College-wide facility and infrastructure upgrades
-  New 20–30 year Campus Master Plan (2019) which supports net zero and low carbon development
-  Sustainable Landscape Plan (2016) for enhancing and developing outdoor spaces in accordance with the principles of sustainability and climate adaptation

**96,700 ft<sup>2</sup>**  
Zero Carbon  
certified building

**2.25** acres of  
grounds managed with  
and organic approach

**1<sup>st</sup>** building in  
Canada to achieve  
dual-certification in  
Zero Carbon

**71,705 ft<sup>2</sup>**  
of LEED® certified  
buildings



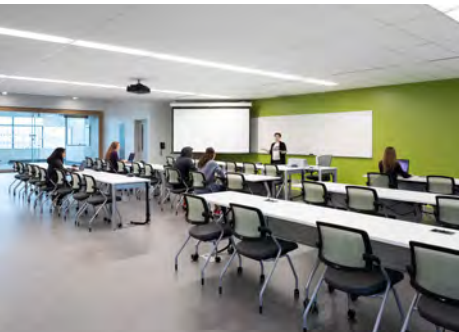
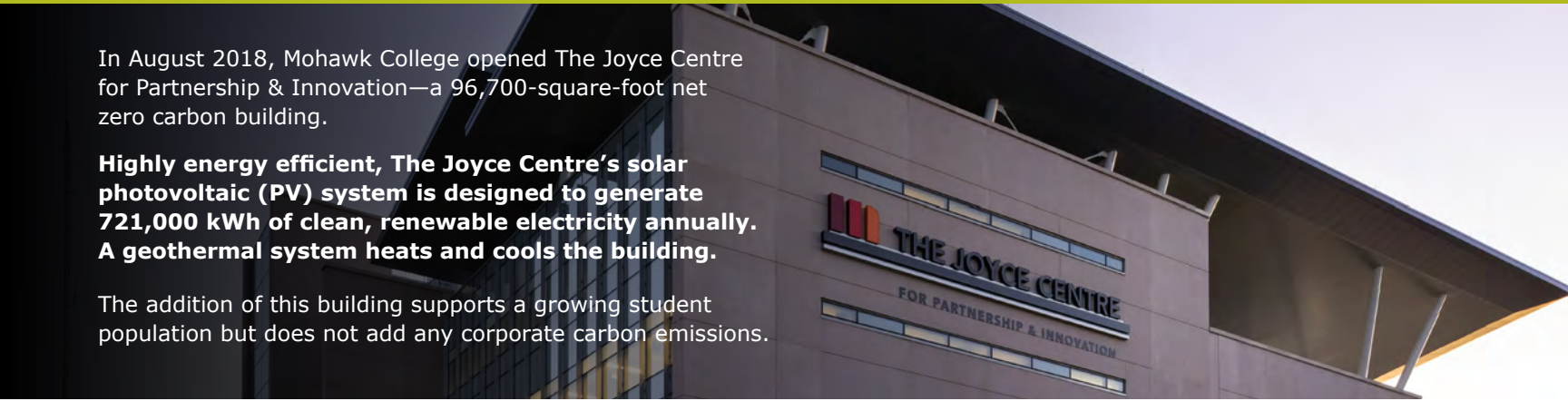
# The Joyce Centre for Partnership & Innovation



In August 2018, Mohawk College opened The Joyce Centre for Partnership & Innovation—a 96,700-square-foot net zero carbon building.

**Highly energy efficient, The Joyce Centre's solar photovoltaic (PV) system is designed to generate 721,000 kWh of clean, renewable electricity annually. A geothermal system heats and cools the building.**

The addition of this building supports a growing student population but does not add any corporate carbon emissions.



## 1,980

solar panels installed as part of this project

## 730,00

kWh generated annually through solar PV

## 28 ft

geothermal wells dug to a depth of 605 ft for heating and cooling

## 228,000

liters of rainwater runoff collected through underground cisterns

## 115%

of energy needed to operate generated in the first year of operations

## 460

sensor-controlled LED lights to reduce energy demand



# Transportation






Transportation, particularly staff and student commuting, accounts for a significant proportion of Mohawk's carbon footprint.

Mohawk partners with Smart Commute Hamilton to provide Transportation Demand Management (TDM) programs that reduce single-occupant vehicle travel to campus.

The college actively promotes carpooling, bussing, cycling and walking. The Mohawk Students' Association (MSA) provides a universal transit pass to full-time students.



## Key Initiatives

-  Continuation of the Universal Bus Pass for full-time students
-  Expansion of the Bike Loan Program to 13 bikes
-  Parking pass sharing for carpoolers
-  Addition of 16 Electric Vehicle (EV) charging stations at Fennell and Stoney Creek campuses
-  Mohawk College Transit Terminal
-  Green Fleet Strategy for fleet vehicles

**65%** of trips  
by sustainable modes  
of transportation

**200+** annual  
participants in campus  
cycling programs

**24%** of fleet  
vehicles electric or  
hybrid

**187** unique users  
of EV charging  
stations in 2019

## Green Fleet Strategy

In 2019, Mohawk College implemented a five-year Green Fleet Strategy to reduce greenhouse gas emissions and operating costs associated with fleet vehicles.

By 2024, Mohawk aims to improve fleet fuel efficiency by 20%, reduce fleet associated greenhouse gas emissions by 20%, ensure 75% of fleet vehicles targeted for replacement will be a hybrid or electric vehicle, reduce annual fleet kilometres driven by 10%, and reduce number of total fleet vehicles by 10%.





# Waste





Reducing waste on campus helps us lower our environmental impact. Benefits include lower GHG emissions, less plastic pollution, less waste to landfill, cost savings and less use of natural resources.

Waste is also one of the more visible dimensions of sustainability, making it a major concern to students, employees and the community.

Mohawk is addressing waste across campus operations through collaboration, behaviour change programs, and reduction and recycling initiatives.



## Key Initiatives

-  Continuation of the Single Use Plastics Policy (2013) banning the sale of plastic bags and most bottled water
-  Continuation and expansion of water bottle refill stations
-  New centralized waste sorting stations at Fennell and Stoney Creek campuses
-  Continuation of electronic waste recycling program
-  Introduction of PaperCut™ software to reduce paper waste
-  Partnering with Chartwells to replace foodservice packaging with recyclable and compostable materials
-  Waste outreach program, anchored by Waste Reduction Week

**63%**  
diversion of waste  
from landfills in 2019

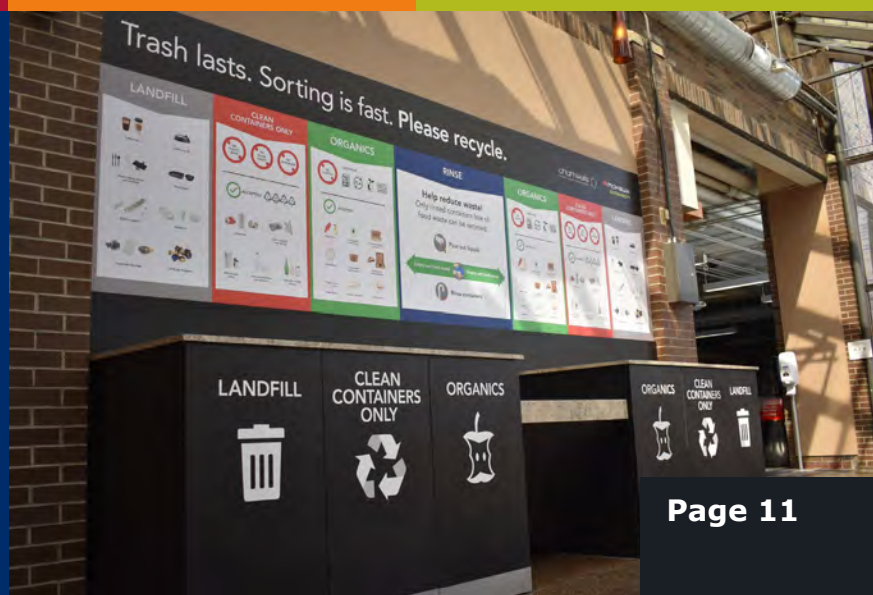
**50,000+**  
pounds of electronic  
waste diverted since  
2012

**7 million+**  
plastic bottles saved  
from use of water refill  
stations since 2016

**500,000+**  
plastic bags saved  
through campus-wide  
ban since 2013

## Centralized Waste Stations

New centralized waste stations were opened at the Fennell and Stoney Creek campuses in 2019, creating a single collection point for waste in the cafeterias. The new stations place a greater emphasis on sorting and provide organics bins and rinsing stations to help reduce contamination in the recycling streams. The opening of the stations was coupled with an education program and the introduction of new compostable packaging in the cafeterias.





# Participation









As a college, Mohawk helps prepare Future Ready students by emphasizing hands-on learning. Mohawk offers a wide range of opportunities for students to gain experience in sustainability and support climate action.

**This includes providing volunteering, work placements, and on-campus employment opportunities, as well as special events, training workshops and conferences.**

Student and employee participation helps integrate sustainability into the campus culture and encourages behaviour change. Volunteering, work placements and other forms of participation give Mohawk students the ability to deepen and apply their understanding of sustainability principles.



## Key Initiatives

-  “Greening Orientation” activities to engage new and returning students on Day One
-  Annual Sustainability Initiatives Fund (SIF) Idea Bank campaign encourages students to share their campus sustainability ideas
-  Partnership with WWF-Canada’s Living Planet @ Campus program to support student leaders
-  Co-curricular and volunteer opportunities offered through Campus to Community
-  Capstone projects and experiential learning, using the campus as a living lab
-  Student co-op placements and employment with sustainability-focused companies

**6,000+**  
people engaged through  
events, talks, tours and  
outreach in 2019

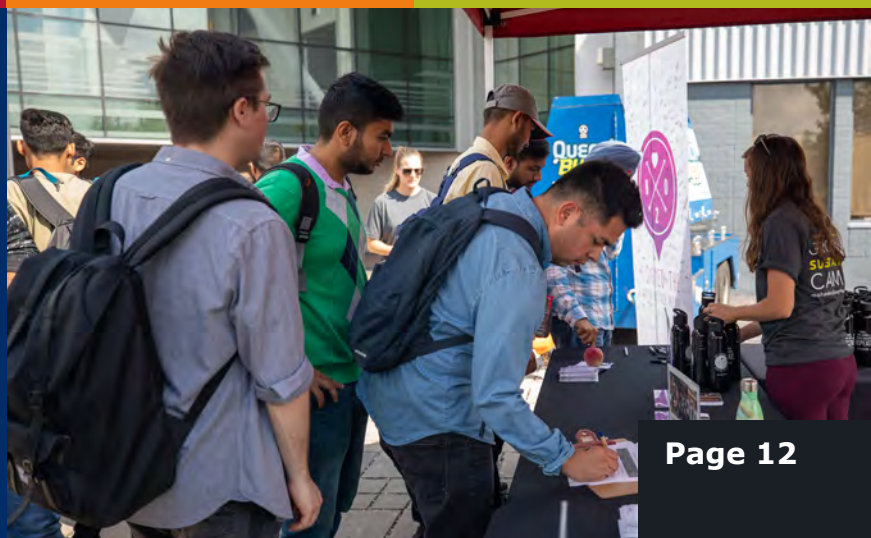
**75** pounds of  
electronic waste  
diverted since 2012

**150+** youth  
attended the Bay Area  
Climate Change Youth  
Summit in March 2019

**18** campus  
sustainability initiatives  
implemented from  
student ideas since 2015

## Greening Orientation

Orientation is among the first experiences Mohawk students have on campus, setting the stage for future sustainable behaviours. More than 1,000 incoming students are provided with a reusable water bottle and sign the “plastic-free” pledge, committing to reduce single-use plastics. A waste sorting tent was introduced at the 2019 orientation, improving waste diversion at the event and providing an opportunity for incoming students to learn the habit of sorting their waste.





# Food Systems



A sustainable food system strengthens local production and distribution infrastructures, and makes nutritious food accessible and affordable to all.

Mohawk supports sustainable food systems by working to expand access to local food on campus, supporting pollinator populations, promoting the health and environmental impacts of everyday food choices, and developing knowledge through hands-on learning.

## Key Initiatives

- Expansion of the Community Garden to forty-nine plots
- Thirty-six tree fruit orchard established in honour of Fennell Campus' agricultural heritage
- Annual Thanksgiving at the Farm Stand event to build awareness and celebrate local food
- Local food Farm Stand and Bounty Bag programs established
- New six-hive honey bee apiary at Fennell Campus

**300+** annual Community Garden participants learn to grow their own food

**10,000 lbs** of local food purchased from the Farm Stand in 2019

**354** Bounty Bags and Eat Better Bags purchased in 2019

**300** lbs of food donated to local food banks in 2019

## Local Food Framework for Ontario Colleges

Increasing the amount of local food served on Ontario college campuses is an important opportunity for colleges to better serve their students and communities. "Increasing Local Food Procurement at Ontario's 24 Colleges" was a multi-stakeholder project led by Mohawk College in partnership with the Greenbelt Fund and the Government of Ontario.

The resulting Framework is a step-by-step guide to increasing local food procurement at Ontario's 24 colleges, providing templates, tools and resources to help college and foodservice staff procure, prepare and promote more local food on campus.





# Academics & Applied Research






Mohawk offers students in every discipline the opportunity to integrate sustainability into their studies through coursework, applied research and experiential learning programs. Many students work on sustainability-focused applied research projects as part of their capstone courses, co-ops and part-time jobs.

IDEAWORKS, Mohawk's applied research hub, supports innovative research that provides expertise and support to companies to develop solutions that improve efficiency and resilience.



## Key Initiatives

-  Energy and Power Innovation Centre
-  Establishment of Natural Sciences and Establishment of NSERC Industrial Research Chair for Internet of Things (IoT)
-  Additive Manufacturing Innovation Centre
-  Establishment of IDEAWORKS Research Chair in Sustainability
-  Launch of Climate Change Management for Business, a free micro-course available to all students

**100%**

of academic departments offer sustainability courses

**78%**

of research-producing departments engaged in sustainability research

**15**

industry applied research projects with a sustainability focus through IDEAWORKS

**340+**

students participated in sustainability-focused capstone projects in 2018/2019

## Validating the Effectiveness of an Energy-Efficient LED Light

LED lighting is a standard feature in Canadian buildings due to their energy efficiency and lower operating costs. However, as LEDs are DC devices, energy is still lost when AC power from the grid is used to power the lights. Burlington-based iLLUMA-Drive developed an innovative low voltage smart control system (CENSE) that can reduce the energy that is lost during the AC/DC power conversion.

iLLUMA-Drive asked Mohawk College's Energy and Power Innovation Centre to conduct the validation and testing of their system. The project results confirmed that powering LEDs using the CENSE unit provided lower losses and higher light quality than conventional LEDs.

### Research Area

Energy and Power Innovation Centre

### Funder

Ontario Centres of Excellence





# Using the Internet of Things (IoT) to create a modern smart farm



Smart farming is key for the future of agriculture, as it provides the agricultural industry with the infrastructure to leverage advanced technology—including big data, the cloud and the internet of things (IoT)—for tracking, monitoring, automating and analyzing operations.

**As champions of sustainable agriculture, Schuyler Farms Limited in Simcoe, ON invest heavily in a number of environmentally friendly, sustainable farming operations, such as strip tilling and rotational grazing.**

The owners of the farm were interested in exploring if technology could make their farm more sustainable, by preventing the spread of fungal disease in their apples and reducing crop waste and pesticide usage.

**The research team at Mohawk College's Sensor Systems and Internet of Things (IoT) lab developed a software system that could be used in conjunction with a number of small, localized weather stations at the farm.**

These weather stations are able to monitor the moisture levels on the leaves of the apple, calculating the risk of a fungal infection and alerting the farm where and when localized spraying is necessary.

**The collaboration with Mohawk College has helped Schuyler Farms Limited improve the quality of their apples, reduce food waste, and lower their maintenance and monitoring costs.**

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## Research Area

Energy and Power Innovation Centre

## Funder

Ontario Centres of Excellence



# About Mohawk

Mohawk College has been providing a quality, higher education experience to students in Hamilton, Ontario and the surrounding area since 1967. The college educates and serves more than 31,700 full-time, part-time, apprenticeship and international students at three main campuses, and at learning hubs across Hamilton.

Mohawk is among the leading colleges in Canada for applied research. It has been named one of Canada's greenest employers for six years in a row, and is also home to the country's largest net zero energy institutional building. More than 120,000 people have graduated from Mohawk since it was founded.

## Land Acknowledgment

Mohawk College derives its name from the Mohawk Nation, one of the Six Nations of the Haudenosaunee Confederacy. The Confederacy marks a union of peace and friendship, and Mohawk College honours that union by recognizing the Six Nations of the Grand River and the Mississaugas of the Credit First Nation.

We acknowledge that the territories on which Mohawk College and its campuses are situated are governed by the Between the Lakes Treaty, the Dish with One Spoon Wampum Agreement, and the Upper Canada Treaty Agreement. These agreements are binding to this day and represent our mutual commitment to maintain healthy, reciprocal and respectful relationships with the many Indigenous nations and peoples of this area. We acknowledge this and iterate our dedication to inclusivity, to friendship and to valuing the ongoing contributions of Indigenous peoples and communities.

**Learning. Living. Leading.™ Sustainability at Mohawk**

[mohawkcollege.ca/sustainability](https://mohawkcollege.ca/sustainability)



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