



# 2024-2029 Mohawk College Energy Conservation & Demand Management Plan

Date: July 1, 2024

To: Ministry of Energy and Electrification

From: Henry Colyn  
Chief Building & Facilities Officer, Mohawk College

Subject: Mohawk College's 2024-2029 Energy Conservation & Demand Management Plan

---

The following report is Mohawk College's 2024-2029 Energy Conservation & Demand Management Plan (CDM). This Plan is in accordance with Ontario Regulation 25/23, under the Electricity Act, 1998.

This Plan outlines:

- Information on the College's energy consumption and its demand for energy
- The College's goals and objectives for conserving and otherwise reducing energy consumption
- The College's proposed measures to reduce its energy consumption
- Sources of renewable energy operated at the College
- Cost and savings estimates for the major proposed energy efficiency measures

This plan will act as a roadmap, along with other College guiding documents, to achieve meaningful and significant reductions in the College's energy consumption and demand over the next five-year period and beyond.

Sincerely,

Henry Colyn

Chief Building & Facilities Officer  
Mohawk College  
135 Fennell Avenue West  
Hamilton, Ontario L9C 0E5  
[henry.colyn@mohawkcollege.ca](mailto:henry.colyn@mohawkcollege.ca)



# Table of Contents

- 1.0 Executive Summary ..... 4
- 2.0 Introduction and Reporting Requirements ..... 5
- 3.0 Measured Success: 2019-2024..... 7
  - 3.1 How is success measured?..... 7
  - 3.2 How were these reductions achieved? ..... 9
  - 3.3 Enhanced culture of sustainability ..... 10
- 4.0 2023 Energy Consumption Data (Baseline Year) .....11
- 5.0 Energy Use Intensity Reduction Target for 2024-2029 .....13
- 6.0 Current & Proposed Energy Efficiency Measures .....14
- 7.0 Costs and Savings Estimates Of Proposed Energy Efficiency Measures.....20
- 8.0 Sources of Alternative Energy .....21
- 9.0 Implementation & Next Steps.....22

# 1.0 Executive Summary

---

This Energy Conservation and Demand Management (CDM) Plan is in accordance with Ontario Regulation 25/23, under the Electricity Act, 1998. This CDM plan will guide Mohawk College's efforts to reduce the College's demand for energy over the next five years.

This CDM plan is supported by Mohawk College's Climate Action Plan.

Mohawk College is an industry leader in sustainability and continues to set ambitious sustainability targets. Mohawk's previous 2019-2024 CDM Plan set a target to reduce Mohawk's overall energy use intensity (EUI) (ekWh/m<sup>2</sup>/HDD) by 10% over 5 years, by the end of calendar year 2023, using calendar year 2018 as the baseline year. As of the end of calendar year 2023, Mohawk has successfully reduced its energy use intensity (ekWh/m<sup>2</sup>/HDD) by 10.7%, bettering our 2019-2024 CDM Plan target by 7%.

With this new 2024-2029 CDM plan, Mohawk's goal is to reduce our overall energy use intensity (ekWh/m<sup>2</sup>/HDD) by 12% over the next five years (January 2024 through January 2029)<sup>1</sup>, using calendar year 2023 as the baseline year.

This goal will be accomplished through a number of strategies including:

- Execution of our recently released Climate Action Plan
- Stakeholder engagement, awareness and participation
- On-site energy generation through renewable energy sources
- Facility and operational improvements
- Efficiencies through future development and renovations
- Effective space planning

In implementation, Mohawk's focus will be on continuing to build a culture of sustainability at Mohawk College. Guided by this CDM plan, the Facility Services team will apply an "energy conservation lens" on all new capital and maintenance projects. The Sustainability team will continue to promote engagement and education opportunities to create awareness of sound energy conservation habits.

This CDM plan is a living document that will be updated by Facility Services staff as new opportunities become available.

---

<sup>1</sup> Energy use intensity as measured in ekWh/m<sup>2</sup>/HDD – equivalent kilowatt-hours per square metre of building area per annual heating degree days with a balance point temperature of 18 degrees Celsius. HDD stands for "heating degree days", which provides a means to indicate how the weather impacts energy use in a particular timeframe. When used along with building area (and the changes to building area over time), this ensures a fair comparison of energy usage year-over-year.



## 2.0 Introduction and Reporting Requirements

Mohawk College is widely regarded as a leader in sustainability. Since 2008, Mohawk has undertaken hundreds of initiatives to reduce the College's impact on the environment and in turn, its energy consumption. In September 2018, Mohawk opened the region's first and Canada's largest institutional net zero building, The Joyce Centre for Partnership and Innovation. In spring 2019, Mohawk became the first college in Ontario to receive the AASHE STARS Gold rating in recognition of its achievements in sustainability.

In order to quantify its environmental impact, Mohawk has been measuring its greenhouse gas (GHG) emissions since 2007. Reported GHG emissions act as a consistent, measurable indicator of the College's environmental impact. Mohawk's current goal is to reduce operational building GHG emissions (Scope 1 & 2 emissions) by 85% by 2030 (2007 baseline year). To reduce its GHG emissions, Mohawk has set reduction targets that require effort and cooperation from all areas of the College. This plan will focus on Mohawk's energy reduction targets, under O. Reg. 25/23, which are necessary to achieve operational efficiencies and comply with provincial legislation.



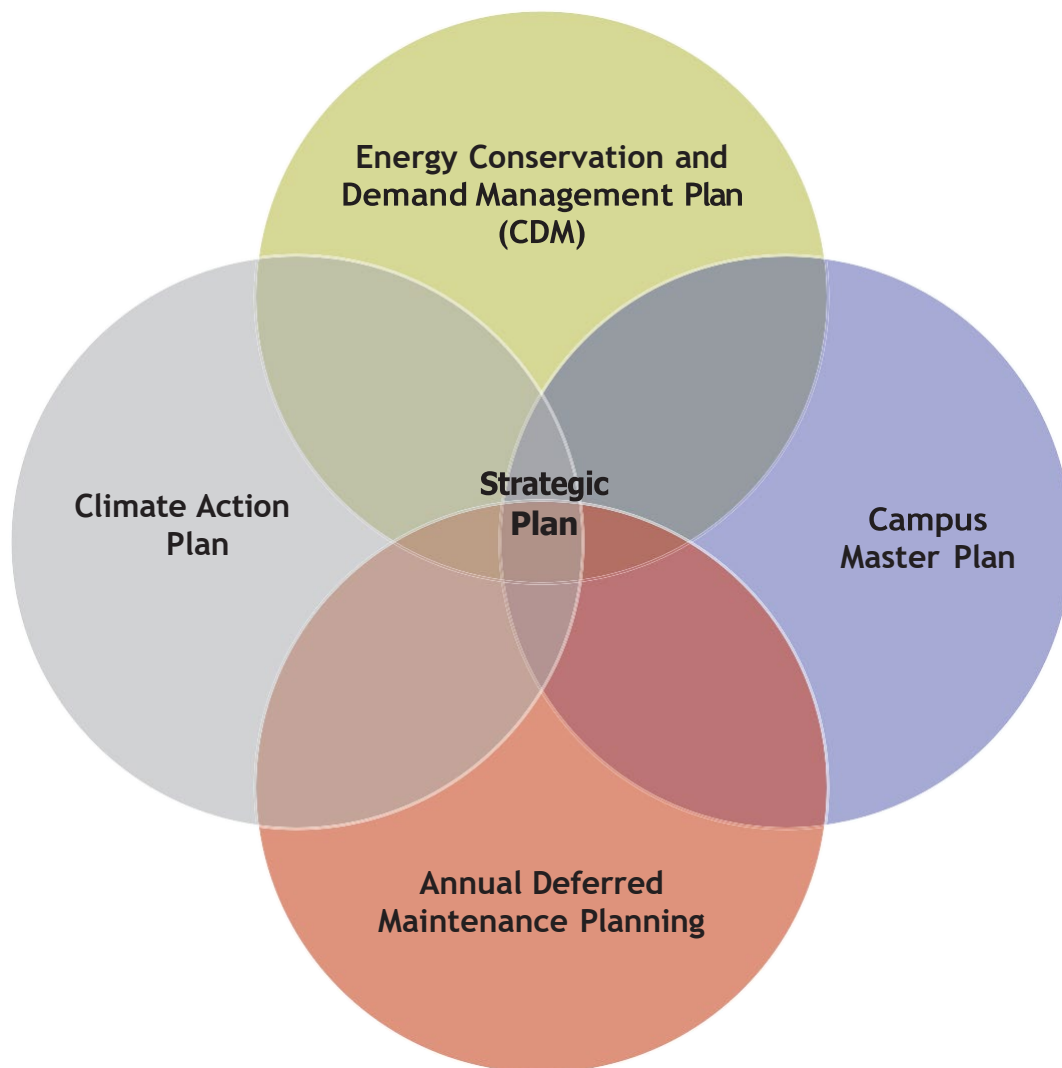
Under the Electricity Act of 1998, O. Reg. 25/23 requires public agencies, such as municipalities, municipal service boards, school boards, universities, colleges and hospitals, to report their energy consumption and direct GHG emissions annually. The regulation also requires institutions to develop and implement an Energy Conservation and Demand Management (CDM) plan every five years, starting in 2014. This new CDM plan covers the 2024-2029 period.

This CDM Plan outlines:

- Information on the College's energy consumption and its demand for energy
- The College's goals and objectives for conserving and otherwise reducing energy consumption
- Cost and savings estimates for the proposed measures

To reduce the College's demand for energy and its environmental impact, this CDM plan aligns with Mohawk College's Strategic Plan, Campus Master Plan, Climate Action Plan, and Essential Deferred Maintenance Plan. Each of these plans applies an "energy conservation and sustainability lens" to capital planning, space management and engagement programs that help to a create culture of sustainability on campus.

## Campus plans supporting energy conservation and demand management on campus



## 3.0 Measured Success: 2019-2024

---

### 3.1 HOW IS SUCCESS MEASURED?

Mohawk College is an industry leader in sustainability and continues to set ambitious sustainability targets. Mohawk's previous 2019-2024 CDM Plan target was to reduce Mohawk's overall energy use intensity (EUI) (ekWh/m<sup>2</sup>/HDD) by 10% by 2024, using calendar year 2018 as the baseline year.

As of the end of calendar year 2023, Mohawk has successfully reduced its energy use intensity (ekWh/m<sup>2</sup>/ HDD) by 10.7%, bettering our 2019-2024 CDM Plan target by 7%.

Table 1. Mohawk College 2019-2024 Overall Emissions Data & Energy Use Intensity (2018 Baseline Year)

Calendar Year	Building Area (m²)	Overall Scope 1 & 2 Emissions (tCO₂)	Overall Scope 1 & 2 Emissions (tCO₂) Year-Over-Year % Difference	Electricity Consumption (kWh)	Natural Gas Consumption (m³)	Overall Energy Use Intensity (ekWh/m²)	Overall Energy Use Intensity (ekWh/m²) Year-Over-Year % Difference	Annual Heating Degree Days (HDD) with balance point of 18 deg C (deg C-d)	Overall Energy Use Intensity (ekWh/m²/HDD)	Overall Energy Use Intensity (ekWh/m²/HDD) Year-Over-Year % Difference
CY2018 (Baseline Year)	116,399	3,454		18,123,287	1,543,921	293.58		3,765	0.07798	
CY2019	116,399	3,078	-10.91%	16,829,199	1,478,633	276.63	-5.77%	3,834	0.07215	-7.48%
CY2020	111,229	2,067	-32.83%	14,886,867	913,773	219.24	-20.75%	3,461	0.06335	-12.21%
CY2021	111,223	1,942	-6.09%	16,358,456	786,497	220.58	0.61%	3,271	0.06744	6.46%
CY2022	112,974	2,229	14.79%	15,993,976	947,883	228.79	3.72%	3,692	0.06197	-8.11%
CY2023	112,949	2,265	1.61%	15,394,703	963,994	225.02	-1.65%	3,232	0.06962	12.35%
Overall Results (CY2023 vs. CY2018)			-34.44%				-23.35%			-10.72%



### 3.2 HOW WERE THESE REDUCTIONS ACHIEVED?

The success of these reductions is due in large part to the commitment of the Facility Services team to drive energy reduction and sustainability interventions. Mohawk is also dedicated to increasing the culture of sustainability among Mohawk College students and staff through sustainability programs and services. Some examples of the previous initiatives are given below.

#### SPACE PLANNING

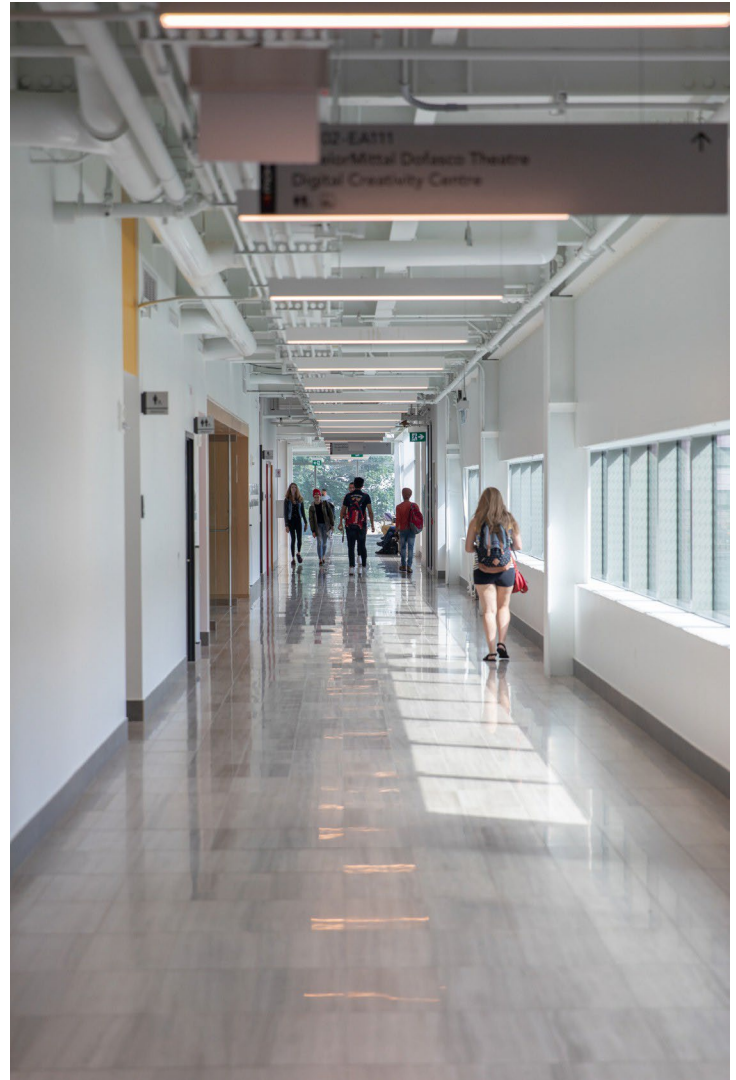
Effective space planning is a means through which Mohawk continues to reduce energy use intensity while serving a growing student population. Campus spaces are carefully designed and managed to maximize efficiency. Increasingly, space is designed with flexible furniture and technology to allow increased use.

#### ZERO CARBON AND LEED® DEVELOPMENT

Mohawk has been a leader in sustainable building design since it embarked on its Fennell Renewal Project in 2009 with sustainability as one of its guiding principles.

The Joyce Centre for Partnership and Innovation is located at Mohawk's Fennell Campus. At 96,000 square feet, it is the region's first and Canada's largest Net Zero building. The building is designed to be highly energy efficient. The building envelope and triple-paned glazed windows provide powerful insulation while still allowing the building to take advantage of passive solar energy and shading. An advanced building automation system (BAS) ensures optimal operation of the HVAC system and lighting system. Heating and cooling is supplied by a geothermal system.

Additionally, Mohawk has two LEED® Gold buildings at the Fennell campus – the David Braley Athletic & Recreation Centre and the Learning Exchange & Cummings Library.



## **FACILITY AND INFRASTRUCTURE UPGRADES**

A long-standing commitment from the facility services team has allowed Mohawk to implement many infrastructure upgrades aimed at reducing the College's demand for energy. By replacing or upgrading older, inefficient equipment, the college was able to increase its energy efficiency and reduce its environmental impact. Some of the major facility upgrades are listed below.

- Efficient LED lighting and controls upgrades across all campuses
- Extension of Building Automation System (BAS) and addition of control sensors throughout the campuses
- Addition of a 330 kW-ac-peak solar carport
- Addition of a 1 MWh battery energy storage system
- Replacing boilers and generators with more efficient and cleaner natural gas burning equipment
- Replacement of one natural gas boiler with a 1 MW electric boiler
- Replacement of another natural gas boiler with a 500 kW electric boiler
- Updated HVAC equipment, including the installation of hybrid air-source heat pump rooftop units

### **3.3 ENHANCED CULTURE OF SUSTAINABILITY**

With the support of leaders from all levels within the College including the Board of Governors, Mohawk Students Association and the Mohawk Executive Group, a strong culture of sustainability has been established. This culture of sustainability has been accomplished through the following:

- Educating individuals on their environmental impact
- Events and incentives that encourage sustainable habits and decision making in everyday life
- Creating a social shift towards sustainability both at the College and in the surrounding community
- Enhanced programs and services
- Hosting the Centre for Climate Change Management at Mohawk College, which acts as a catalyst to support climate change action in the cities of Hamilton and Burlington

Mohawk is also on track to achieve an 85% reduction in operational building GHG emissions – Scope 1 & 2 emissions - (from 2007 baseline) by the year 2030. Our recently released Climate Action Plan re-affirms Mohawk's commitment to sustainability and broaden efforts to grow sustainability learning opportunities, move towards a net zero campus, and continue to lead in sustainability initiatives – in the sector and in the community.

## 4.0 2023 Energy Consumption Data (Baseline Year)

Mohawk College will use the 2023 calendar year as the baseline year for our 2024-2029 energy use intensity (EUI) reduction target.

The following is a summary of energy consumption, in both natural gas and electricity, for the baseline 2023 calendar year.

The data below is reported on a total consumption basis by campus, as well as consumption per m<sup>2</sup> of building space and, finally, consumption per m<sup>2</sup> of building space per heating degree day. Calculating the consumption data on a per m<sup>2</sup> per heating degree day basis provides the most meaningful indication of our energy conservation progress from year to year, as this metric accounts for changes to building area and changes in weather and climate from year to year. The resulting year-over-year EUI numbers then reflect the decrease or increase in energy use intensity based solely on actions by our staff and students. Using this metric helps the College to better understand the operational efficiencies of each campus and create targeted interventions to continue to create demand management and efficiency strategies.

The Institute of Applied Health Sciences (IAHS) campus and the Centre for Aviation Technology at Hamilton International Airport campus are not included in this CDM plan.



Table 2. 2023 Energy Use Data by Campus (2024-2029 CDM Plan Baseline Year)

Campus	CY2023 Building Area (m <sup>2</sup> )	CY2023 Electricity Consumption (kWh)	CY2023 Electricity Use Intensity (kWh/m <sup>2</sup> )	CY2023 Natural Gas Consumption (m <sup>3</sup> )
Fennell	87,700	12,692,617	144.73	690,438
Stoney Creek	25,249	2,702,086	107.02	273,556
<b>TOTAL</b>	<b>112,949</b>	<b>15,394,703</b>	<b>136.30</b>	<b>963,994</b>

Campus	CY2023 Natural Gas Use Intensity (ekWh/m <sup>2</sup> )	CY2023 Overall Energy Use Intensity (ekWh/m <sup>2</sup> )	Annual Heating Degree Days (HDD) with Balance Point of 18 deg C taken from NASA weather database for Hamilton ON (deg C-d)	CY2023 Overall Energy Intensity (ekWh/m <sup>2</sup> /HDD)
Fennell	81.84	226.56	3,232	0.07010
Stoney Creek	112.62	219.64	3,232	0.06796
<b>TOTAL</b>	<b>88.72</b>	<b>225.02</b>	<b>3,232</b>	<b>0.06962</b>



## 5.0 Energy Use Intensity Reduction Target for 2024-2029

Mohawk College's target for the period from January 2024 through January 2029 will be to reduce the College's overall energy use intensity (ekWh/m<sup>2</sup>/HDD) by 12%, as measured against the calendar year 2023 baseline.<sup>2</sup> This goal will support Mohawk's sustainability and climate change management goals.

**12% REDUCTION IN ENERGY USE INTENSITY  
(ekWh/m<sup>2</sup>/HDD) OVER THE 2024-2029 PERIOD  
(2023 BASELINE)**



<sup>2</sup> Energy intensity will be measured in ekWh/m<sup>2</sup>/HDD – equivalent kilowatt-hours per square metre of building area per annual heating degree days, using a balance point temperature of 18 degrees Celsius



## 6.0 Current & Proposed Energy Efficiency Measures

To further reduce the College's energy use intensity, Mohawk will focus its energy conservation strategies on weaving energy conservation and demand management strategies into operational efficiencies, future development, and investments in renewable energy. To meet our targets, college staff will have to apply an "energy conservation lens" to every day operations and future planning. Mohawk must also respond to rising energy and operational costs to ensure long-term environmental, social and fiscal resiliency.

### 6.1 HOW WILL WE DO IT?

In order to achieve these goals, the College will use a set of supporting strategies. These strategies will be implemented through a set of actions that will help to reduce the College's demand for energy.

Over the past five years (January 2019 through January 2024), Mohawk focused on building staff capacity, upgrading facilities, and looking at new opportunities to invest in renewable energy systems. The combination of these strategies has led to a 10.7% reduction in Mohawk's overall energy use intensity (ekWh/m<sup>2</sup>/HDD) during that period.

Over the next five year period (January 2024 through January 2029), Mohawk will continue to focus on building staff capacity, upgrading current facilities to increase efficiency, and investing in smart technologies and renewable energy systems. This will maximize gains and resource use.



## CLASS A GLOBAL ADJUSTMENT SYSTEM

In response to rising energy costs, in 2018, Mohawk became an Industrial Conservation Initiative (ICI) Program Class A customer with Alectra Utilities. As a Class A customer, the College's annual Global Adjustment costs are based on Mohawk's electricity consumption during the top five peak demand hours in Ontario during the year. Global Adjustment costs can represent up to 70% of annual total electricity costs. This means that if Mohawk is able to reduce its demand for grid-supplied electricity during these top five peak demand hours, the College's annual cost of electricity can be substantially decreased.

The Global Adjustment Class A system encourages industrial and institutional customers to reduce their energy consumption on days when the demand on Ontario's electricity grid is very high. Peak demand days usually happen on the hottest or coldest days of the year. This kind of demand strains the electrical grid and increases the chances of service disruptions like "brown-outs" or "black-outs". Therefore, by becoming a Class A customer, Mohawk College is not only able to avoid energy costs through better energy demand management, but it can also help increase our community's resilience.

Being a Class A customer, it is particularly important for Mohawk to manage energy demand consciously. During peak times, Mohawk is planning on using solar energy from The Joyce Centre and the Fennell Campus P4 parking lot solar carport, the battery storage system and HVAC equipment demand curtailment strategies to help manage our electrical demand at Fennell Campus. Facilities staff will also use the BAS system to reduce our grid-provided electricity demand on campus and reduce the power load in offices, classrooms and other essential spaces. Additional opportunities for using space optimization in the summer months will also be pursued as time goes on.



## SUPPORTING PLANS

To reduce the College's demand for energy and its environmental impact, this CDM plan aligns with the Campus Master Plan, the Climate Action Plan, and the Essential Deferred Maintenance Plan. Each of these plans applies an "energy conservation and sustainability lens" to capital planning, space management and engagement programs that help to create a culture of sustainability on campus.

## STAFF CAPACITY BUILDING

This plan also focuses on growing staff capacity in energy conservation. Over the last five years, Mohawk Facility Services staff have been growing their expertise in our building automation system and developing strategies that enable staff to identify and correct energy waste and inefficiencies.

The following is a work plan that provides a list of actions that Mohawk plans to undertake to achieve, and hopefully surpass, its target of a 12% reduction in energy use intensity (ekWh/m<sup>2</sup>/HDD) by January 2029.



## CURRENTLY IMPLEMENTED ENERGY EFFICIENCY MEASURES TO HELP ACHIEVE MOHAWK'S ENERGY USE INTENSITY REDUCTION TARGET

- Upgrades to Fennell Campus Central Hot Water Heating System
  - We have installed a 1MW electric boiler and a 500kW electric boiler within our central hot water plant to increase energy efficiency and reduce GHG emissions
- Campus-Wide LED Lighting Retrofits
  - We are in the midst of our campus-wide LED lighting and controls retrofit projects at Fennell Campus and Stoney Creek Campus, and are hoping to complete this project in 2025
  - Upgrade existing fluorescent lighting throughout our Fennell Campus and our Stoney Creek Campus to LED lighting
  - Upgrade controls for new LED lighting so all lighting is controlled via the existing central lighting control system; this will allow occupancy sensors from the central lighting control system to control HVAC system operation as well as the lighting
- Building Systems Control Optimization at Fennell Campus
  - Building system controls for ventilation, heating and cooling have been reprogrammed via our building automation system and optimized to meet ASHRAE Guideline 36 “High-Performance Sequences of Operation for HVAC Systems”



## PROPOSED ENERGY EFFICIENCY MEASURES TO HELP ACHIEVE MOHAWK'S ENERGY USE INTENSITY REDUCTION TARGET

### Central Plant Heat Pump System Investigation

- Explore the opportunity to install heat pump technologies at the Fennell Campus to improve energy efficiency and reduce GHG emissions, with the possibility of increasing our geo-exchange system capacity as well

### Thermal Energy Storage System

- Explore the opportunity to install a new thermal energy storage system at the Fennell Campus to shift campus energy demand from daytime to nighttime; this will help balance Mohawk's energy load profile
- Use our electric boilers in tandem with the thermal energy storage to maximize benefits and savings

### Campus-Wide Thermal Comfort Guideline Policy

- Create a campus-wide thermal comfort guideline policy, which will result in consistently comfortable learning/working environments for our students and staff
- Policy will reduce energy consumption and carbon footprint, by eliminating overheating, overcooling and overventilation

### Completion of Campus-Wide Energy Management Information System (EMIS)

- Continue to install energy submeters to measure real-time consumption of electricity, natural gas and water in all areas across the campuses
- Full-coverage EMIS will allow access to our energy consumption at a granular level; this data granularity will allow building operators to uncover, investigate and correct consumption anomalies in real-time, which will ensure that energy consumption is as efficient as possible
- Connect EMIS real-time energy consumption to campus dashboard monitors, allowing students and staff access to the data



## **Fennell Campus Central Chilled Water System Investigation & Optimization**

- Perform an audit of Fennell Campus central chilled water system to uncover operational inefficiencies
- Put a plan in place to correct any uncovered system inefficiencies

## **Ventilation Air Improvements**

- Evaluate areas of the campuses which are currently over-ventilated; over-ventilation increases heating and cooling loads unnecessarily and can contribute to less than optimal space conditions
- Use space planning optimization methods and install new technologies to reduce wasted energy consumption due to conditioning of this excess ventilation air

## **Expanded Installation of Smart Energy Control Valves**

- Continue to install smart energy control valves across the Fennell Campus for both hot and chilled water system control valves.
- Enhanced data and insights into the operation of our hot water and chilled water systems from these smart energy control valves will allow facilities staff to correct inefficiencies (i.e., flow issues, temperature differential issues)

## **Building Pressurization Improvements**

- Develop a plan to identify and correct building pressurization issues that lead to unwanted infiltration and exfiltration of air through the building envelope, leading to wasted energy consumption and drafts

## **Expanded Automation of Fennell Campus Electricity Demand Curtailment Strategy**

- Automating electricity demand curtailment strategy via campus-wide building automation system will ensure that Mohawk is able to optimize demand curtailment during any potential top five Ontario provincial electricity demand hours

## **Facility Operations**

- Develop energy and water conservation targets
- Include sustainability and efficiency metrics into the capital planning process
- Continue to improve Building Automation System capabilities to optimize building operations
- Continue to employ an energy specialist to maintain focus on energy management and building automation systems initiatives
- Manage energy through monitoring, tracking, trending and reporting



## **Future Development and Renovations**

- Investigate opportunities to design new buildings and existing building renovations so that energy performance is 50% better than ASHRAE Standard 90.1-2004 (Energy Standard for Buildings Except Low-Rise Residential Buildings)
- Investigate opportunity to build all new buildings and deep retrofits with Passive House and/or Zero Carbon designation
- Use the campus as a living lab to provide students with on-site learning opportunities in renewable energy and energy conservation
- Align energy conservation goals with Climate Action Plan and Deferred Maintenance Plan

## **Stakeholder Engagement and Awareness**

- Hold workshops, outreach events and information kiosks
- Give classroom presentations
- Develop digital, print and social media communication strategies
- Develop academic partnerships
- Hold on-campus events with local sustainability leaders, organizations and businesses
- Support student groups on campus
- Develop staff leadership opportunities, committees and networks
- Enhance programs and services
- Develop co-curricular credits that encourage sustainable living

## **Space Planning Optimization**

- Increase the number of faculty, staff and students that can be served by existing areas through adaptive reuse of space
- Maintain effective and efficient space planning standards

## 7.0 Costs and Savings Estimates Of Proposed Energy Efficiency Measures

---

Mohawk College is currently investigating several options to help us improve energy efficiency and reduce our Scope 1 & 2 GHG emissions from our operations.

One of these options being investigated is electrifying and decarbonizing our central hot water plants, by adding heat pump and geo-exchange technologies, along with thermal energy storage, to these systems.

Estimated costs, as well as energy consumption and GHG emissions reductions, are currently being investigated for these options. This CDM Plan will be updated in the future, when these estimated costs and savings have been calculated.

## 8.0 Sources of Alternative Energy

---

### SOLAR PHOTOVOLTAIC (PV) ENERGY SYSTEMS

Mohawk will continue to investigate opportunities to maximize the use of our existing solar PV systems and investigate opportunities to invest in more solar PV technologies.

The Joyce Centre for Partnership and Innovation's (JCPI) solar photovoltaic system at the Fennell Campus (including JCPI, A-Wing, J-Wing & H-Wing rooftop systems) consists of 1,980 solar panels, capable of generating roughly 721,000 kilowatt-hours (kWh) of clean, renewable electricity on an annual basis. The system is capable of generating up to 500 kilowatts (kW) of AC power.

The Fennell Campus P4 parking lot carport solar photovoltaic system consists of 1,316 solar panels, capable of generating roughly 505,000 kilowatt-hours (kWh) of clean, renewable electricity on an annual basis. The system is capable of generating up to 300 kilowatts (kW) of AC power.

The rooftop of the David Braley Athletic and Recreation Centre (DBARC) at our Fennell Campus is solar photovoltaic ready, allowing our campus solar photovoltaic system to be expanded without additional structural upgrades at that facility.

### SOLAR THERMAL WATER ENERGY SYSTEMS

The David Braley Athletic and Recreation Centre (DBARC) rooftop houses 14 flat-plate solar collectors that use collected energy to preheat domestic hot water for showers and sinks throughout the building, reducing the amount of non-renewable energy required.

The Joyce Centre has five solar collectors for heating of domestic hot water for the building.

### SOLAR THERMAL AIR ENERGY SYSTEMS

The ventilation air provided to the E-Wing is preheated in the winter months via a solar thermal air energy "solar wall" system. This system helps reduce Mohawk's natural gas consumption and GHG emissions by first using the sun's energy to heat the air.

### GROUND SOURCE HEAT PUMP SYSTEMS

JCPI has a ground source heat pump system, which provides heating and cooling to the building year-round. This system consists of 28 geothermal wells, which extend 185 metres below the ground surface. This system allows us to store heat in the ground when it is not required by the building, and draw that heat back when it is required by the building.

### DEMONSTRATION FACILITIES

The College is equipped with a renewable energy lab as a part of the Electrical Engineering Technology Department. This lab consists of thin film laminate PV, building integrated PV, and standard solar PV panels with micro inverters. The lab also has the latest in off-grid lighting technology featuring solar and wind powered LED street lighting.

## 9.0 Implementation & Next Steps

---

Mohawk College's target for the 2024-2029 CDM Plan is to reduce our overall energy use intensity (ekWh/m<sup>2</sup>/HDD) by 12% over the next five years, from 2024 to 2029. This will be measured by using Mohawk's energy use intensity for the 2023 calendar year as the baseline.

In implementation, the focus remains on continuing to build a culture of sustainability at Mohawk College. Guided by this CDM plan, the Facilities Services team will apply an "energy conservation lens" on all new capital and maintenance projects. The Sustainability team will continue to promote engagement and education opportunities to create awareness of sound energy conservation habits.

This CDM plan is a living document that will be updated on an ongoing basis by Facility Services staff as new opportunities become available.

This CDM plan is not just an opportunity to reduce energy waste and improve the efficiency of campus operations. All of the initiatives listed in this plan have co-benefits – improving the campus environment, reducing costs and investing in new technologies that will lead us to a cleaner, greener future.

Mohawk will continue to foster an environment where all students and staff are able to learn, live and lead in energy efficiency and sustainability. This CDM plan will support Mohawk's continued sustainability mission and leader in the college sector.

