City of Pickering

Dorsay Community & Heritage Centre: Advancing Zero-Carbon Infrastructure Through Sustainable Design and Heritage Conservation

Durham Greener Buildings

Description

The City of Pickering's Dorsay Community & Heritage Centre (DCHC) achieved Canada Green Building Council Zero Carbon Building – Design Version 3 certification. Its high-performance envelope, air-to-water heat pumps, energy recovery ventilation and advanced controls reduce operational carbon; mass timber, low-carbon concrete and recycled-content steel reduce embodied carbon. Bird-friendly glazing supports biodiversity.

The accessible, resilient community facility conserves Harvey House and Log School House, with support from the federal Green and Inclusive Community Buildings Program and Canada Cultural Spaces Fund.

Long-term Vision and Sustainability Commitment

The City of Pickering envisions DCHC as a high-performing, low-carbon civic facility advancing climate action, community wellbeing and heritage conservation for future generations. Its long-term commitments include:

- **Operational efficiency**: Maintain performance through commissioning, preventive maintenance, automation and monitoring.
- **Carbon tracking:** Monitor energy use and emissions to guide improvements and measure progress against reduction targets.
- **Future application:** Apply efficiency, electrification and low-carbon material lessons to future facilities, construction, procurement and asset management.
- **Emissions reduction:** Establish annual targets to guide efficiency upgrades, heat pump electrification, renewable energy and major retrofits.
- **Knowledge sharing:** Share performance data and asset management lessons to inform future municipal projects.

Dorsay Community and Heritage Centre – Mass Timber



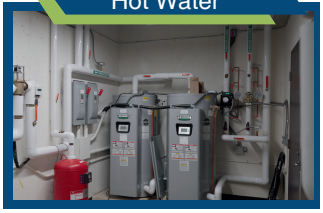
Triple-Pane and Bird-Friendly Glazing



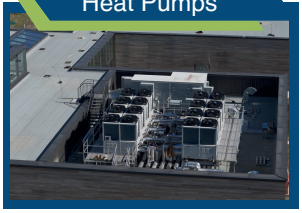
EV Charging Stations - Level 3 EV charging stations



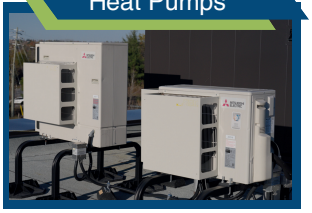
Electric Domestic Hot Water



Inverter Chiller Heat Pumps



Mini Split Heat Pumps



Desired Outcomes

DCHC combines low-carbon design and heritage conservation to support climate action and a healthy, resilient community. Key outcomes include:

- Reduce energy use, fossil-fuel reliance and emissions through electrification, an insulated, airtight envelope, high-performance glazing and energy recovery.
- Lower lifecycle embodied carbon using mass timber, low-carbon concrete, recycled-content steel and other lower-carbon materials.
- Conserve Harvey House and Log School House, extending their use and reducing demolition and replacement impacts.
- Model low-carbon municipal construction and raise awareness, advancing Pickering's carbon reduction objectives, Strategic Plan, Corporate Energy Management Plan, Corporate Building Standard and Durham Community Energy Plan (endorsed by Council in 2019).

Progress to Date

DCHC achieved Canada Green Building Council Zero Carbon Building – Design Version 3 certification, supported by energy modelling throughout design and construction. Key achievements include:

- **Energy efficiency:** high-performance envelope, triple-pane glazing, air-to-water heat pumps, energy recovery ventilation and advanced controls.
- **Performance assurance**: stringent airtightness requirements, envelope inspections, thermography, blower door testing and building systems commissioning.
- **Low-carbon materials:** mass timber, lower-carbon concrete using Portland Limestone Cement and supplementary cementitious materials, recycled-content steel and lower-global-warming-potential insulation.
- **Heritage and biodiversity:** relocated and conserved Harvey House and Log School House; bird-friendly glazing.
- **Sustainable transportation:** Level 2 and 3 EV charging and bicycle racks.
- **Next step:** document operational energy use and greenhouse gas emissions to demonstrate long-term impact.

DURHAM REGION

Windfall ecology centre

City of PICKERING