

Transportation Association of Canada Environmental Award Submission Market Parkade – City of Guelph

Executive Summary

The City of Guelph has opened an industry leading new parking garage powered entirely by renewable energy sources, making it Guelph's first energy self-sufficient and self-sustaining parking facility. This new facility supports the City of Guelph's commitment to its corporate 100RE target through which all City facilities and operations will use 100 per cent renewable energy by 2050. The new garage has 496 stalls, EV charging, accessible stalls and secure bicycle parking. The facility is a Net Zero Energy site with over five hundred solar panels installed on the roof, generating nearly 240,000 kWh/year.

As the first parking garage built in the City of Guelph in over thirty years, the new Market Parkade is positioned to address the emerging issues posed by climate change by depending entirely on renewable energy sources to power its EV charging stations, lights, security and parking access and revenue control equipment. The facility starts with four EV charging stations and has the infrastructure to expand to eighty EV charging stations as consumers' usage patterns change. Moreover, the facility was built using the CANADACAR Parking Structure System: a pre-engineered, prefabricated building system that utilizes the most advanced, innovative technique of construction resulting in free span modular parking bays. The CANADACAR Parking Structure System offers the following benefits: cost efficient, reduced maintenance costs, driver/pedestrian safe, reduced construction time, increased longevity, greater flexibility and increased volume, all components in reducing the initial and ongoing carbon footprint of the facility and its operation.

About the project

The Market Parkade project includes the following components:

1. Building a parkade in the Wilson Street parking lot, located at the southwest corner of Wilson Street and Carden Street. The parkade will have 496 parking spaces, be a maximum of six levels tall and include bicycle-parking facilities, electric vehicle charging stations and elevators for improved access, including access to the Norfolk pedestrian bridge.
2. Upgrading Wilson Street from Gordon /Norfolk Street to Macdonell Street. This work is being implemented as a Schedule B Municipal Class Environmental Assessment, and will include:
 - a) Traffic studies and a possible change in the traffic direction (e.g. one-way moving north from Gordon /Norfolk Street to Northumberland Street)
 - b) Road repaving;
 - c) Sidewalk upgrades;
 - d) Adding bike lane(s);
 - e) Landscaping;
 - f) Water main, sanitary and storm sewers replacement;

- g) Potential redesign of on-street parking along Wilson Street (from Northumberland Street to Macdonell Street); and
 - h) Creating a pedestrian island on Macdonell Street across from Wilson Street
3. Replacing the aging pedestrian bridge over Norfolk Street, located between Waterloo Avenue/Wilson Street and Macdonell Street.

Project Approach

Project Partners

Owner / operator: City of Guelph, contact Jamie Zettle, Jamie.zettle@guelph.ca, Anna Marie O’Connell Annamarie.oconnell@guelph.ca

Consulting engineers: Walter Fedy

Design / build contractor: The Newton Group

Problem Addressed

The new parking garage has delivered solutions to many issues confronting the parking operation in the City of Guelph. As the first new garage in thirty years, the facility adds much needed supply to the system, contributing thirty percent more parkade parking in the downtown. The facility delivers the first municipally owned EV charging stations as well as the first secure bicycle parking facility in Guelph. The facility was built to reduce future costs by employing innovative construction techniques and processes. Importantly, the facility was built as the first step in realizing the City of Guelph’s goal of using only 100% renewable energy sources by 2050.

Measured Benefit of Operation

The new garage will produce significant cost savings in its ongoing operation and maintenance. From an energy perspective, the facility has a 188kW electrical generation capacity expected to produce 240,000 kWh/year from renewable energy sources. The electricity produced will meet the needs of the facility as well as the annual electricity required to power the four EV charging stations. The City will return any excess electricity to the grid for use in other facilities. This self-sufficiency will save ~\$35,000 annually in operating expenses alone.

Moreover, the CANADACAR construction techniques will reduce ongoing maintenance costs significantly due to its increased durability, low maintenance requirements and patented sealing and waterproofing processes. The City expects to see a reduction in regular on-going maintenance costs of ~\$50,000 annually. The parking garage is an excellent example of using the newest technologies to lower costs while reducing the carbon footprint of the structure.

Timeline and cost

Project schedule

- Hire consultant team to assist with the project: March-April 2016
- Develop Wilson Street reconstruction design: April-July 2016
- Confirm parkade design details and next steps with Council: July 2016
- Issue the design-build RFP for the parkade: July-August 2016
- Recommend design-build team to Council for approval: July 2017
- Phase 1 of Wilson Street construction: (underground utilities from Northumberland Street to Gordon Street): October-December 2016
- Phase 2 of Wilson Street construction (surface and underground work from Northumberland Street to Macdonell Street): Summer/Fall 2017
- Start Wilson Street parkade construction: February 2018
- Complete Market parkade construction: September 2019

Cost

Council approved the design-build contract of \$22 million for the design and construction of the Market Parkade and related street work, including replacing the pedestrian bridge over Norfolk Street.

Environmental innovations

The City of Guelph is committed to an environmentally aware, low carbon impact approach to the construction, operation and maintenance of our municipal facilities. The Market Parkade is an important example of the City of Guelph delivering on its corporate 100RE target to be a net carbon community by 2050 using only 100% energy from renewable sources. The City of Guelph has incorporated a number of environmental initiatives in this project to demonstrate its commitment to adapting to climate change including energy self-sufficiency, electric vehicle charging, LED lighting, sustainability and active transportation, environmentally aware operational maintenance and public art integration.

Energy self-sufficiency

The City of Guelph delivered on its commitment to 100% renewable energy sources by installing over one hundred (100) photovoltaic solar panels on the roof of the Market Parkade. The installation of solar panels in the Parkade has resulted in the facility being completely energy self-sufficient. The city will return any excess energy to the provincial grid, further expanding the amount of energy produced from renewable sources.

Highlights

- Over 100 photovoltaic solar panels installed, with an energy generation rating of 188kW (DC)
- Approximately 240,000 kWh / year of electricity generated per year
- This installation will reduce greenhouse gas emissions by approximately 4,000 kg CO₂e / year
- This installation will save the City approximately \$35,000 / year in operational electricity costs

- Excess energy will be returned to the provincial grid
- This installation will power all electrical requirements in the facility including EV charging

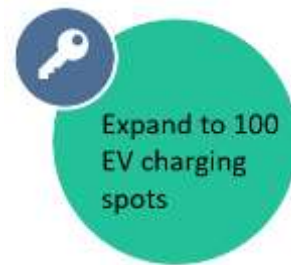


Electric vehicle charging

The Market Parkade is the first City of Guelph municipal facility to provide electric vehicle charging capabilities.

Highlights

- First municipal EV charging stations
- The City of Guelph installed four (4) electric vehicle charging stations
- The Market Parkade is positioned to expand the electric vehicle charging stations in the facility to 100 spots or 20% of all parking stalls
- The charging stations are powered by 100% renewal energy from our energy self-sufficient solar panels
- The City of Guelph is active in promoting the transition to electric vehicles
- The City of Guelph partnered with operator FLO for service provision



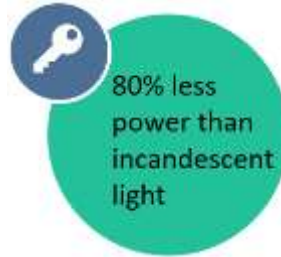
LED lighting

This lighting in the Market Parkade exploits the newest technologies in LED lighting. The installation of LED lighting improves visual acuity, provides better illumination which reducing and conserving energy.

Highlights

- All six levels of the Parkade are equipped with LED lighting on the main parking levels, within the elevator lobbies and on its exterior

- The LED lights have occupancy sensors, only illuminating when needed, further conserving energy
- The exterior LED lights have street motion sensors, only illuminating when needed, resulting in more energy conservation
- The LED lights use 80% less power than incandescent lighting
- All LED lights in the Parkade are dark sky compliant



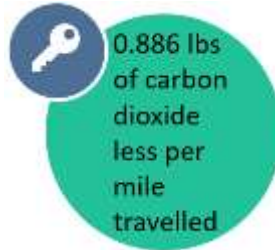
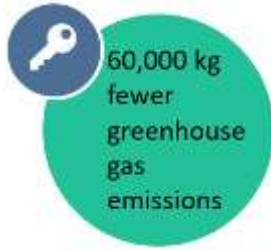
Sustainability and active transportation

The Market Parkade, Wilson Street and the Norfolk pedestrian bridge were designed to encourage people to use sustainable and active transportation when visiting downtown Guelph. The Market Parkade is home to the City's first secure bicycle storage facility with spaces for forty (40) bikes. The parkade also houses the first City-owned electric vehicle charging stations.

Highlights

- First secure bicycle storage facility with HID card access control
- Parking for forty (40) bicycles and four (4) mobility-assisted cycles
- Dedicated cycling lanes in each direction on Wilson Street
- First protected, counter-flow bike lane installed
- Pedestrian bridge upgraded to support active transportation, accessibility and walking





The City of Guelph added dedicated bike lanes on both sides of Wilson Street between Northumberland and Gordon/Norfolk Streets, and more bike boxes were installed at the intersection of Wilson Street and Gordon/Norfolk Street to further improve cyclist safety. The City of Guelph's installed its first counter-flow dedicated and protected bike lane on Wilson Street.

The City of Guelph installed a pedestrian crossover on Wilson Street between the Market Parkade entrance and Market Square to ensure pedestrian safety. The new Norfolk Street pedestrian bridge reconnects Northumberland and Wilson Streets. The City dedicated this new bridge publicly as the Veterans Memorial Bridge.

Operational maintenance

The City of Guelph structured the operations of the Market Parkade to reduce the on-going environmental impact of the facility. Through a partnership between our maintenance staff, climate change office and parking operations, the City of Guelph has developed a lower-impact maintenance plan in line with the City's commitment to protecting the environment.

Highlights

- Winter maintenance is 100% salt free in the facility and its adjacent areas
- The City of Guelph has eliminated the use of 1,000 kg of salt per winter season
- The City of Guelph is SmartSalt certified
- This reduction in salt has many effects including
 - Reduced salinity in our storm water systems
 - Reduced sodium and chloride levels in our urban streams
 - Reduced oxygen depletion in nearby bodies of water
- The City of Guelph has replaced salt with sand for winter clearance
- A commitment to only environmentally-friendly cleaners



The Wilson Street public art project and Main Street mural project

The City of Guelph is committed to promoting walkability, activating public space and encouraging patrons to dine shop and work in our downtown. In an effort to fully integrate the new Market Parkade into the urban landscape and activate the space for pedestrians, the City of Guelph collaborated with local arts groups to perform an act of city building.

In May 2018, the City commissioned artists Robert Cram and Eldon Garnet to create the Wilson Street public art project—a permanent, outdoor art installation at the corner of Wilson and Gordon streets. The installation, entitled Sudden Garden, features four polished bronze deer sculptures contrasted against urban downtown Guelph. The deer are embedded with simple architectural shapes that reference the Basilica of Our Lady, the historic Priory residence, Guelph Farmers’ Market and the former Carnegie Library. As explained in Cram and Garnet’s proposal, the four deer represent a community living together, both in the wilderness of the past and the present urban moment.

In December 2018, the City launched the Main Street mural project after receiving funding from Ontario’s Main Street Revitalization Initiative to support the rejuvenation and revitalization of main streets. The City selected four finalists, Pellvetica, Cheka Creative Inc., Kenneth Lavallee and Emmanuel Jarus to create murals along Wilson Street, which were unveiled on October 26, 2019.

Highlights

- Public art has been shown to reduce social isolation
- Studies have demonstrated that public art decreases stress and strengthens immune systems
- Transforms public spaces by encouraging people to gather, connect and be present
- Public art reinforces community identity and cultural value

