

February 16, 2022

## ENERGY STRATEGY

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### 81-85 Bridgeport Rd. E

The purpose of this report is to provide a brief summary of energy strategies being considered for the subject property, municipally known as 81-85 Bridgeport Rd. E, Waterloo. The proposal is to redevelop the subject lands with a multi-building, mixed-use development, generally oriented to Bridgeport Road East, with access to the lands on the easterly and westerly portions of the site. The design includes 3 towers sitting atop a shared podium, with ground floor commercial uses along Bridgeport Road East. Parking is proposed within the podium structure and will be shared by all of the uses on the site.

This Energy Strategy outlines the key principles of energy conservation and sustainability in the proposed development, highlighting opportunities to improve energy efficiency with the objective of reducing greenhouse gas emissions and overall energy consumption.

#### **1) Opportunities for the buildings to achieve at least a 15% improvement in energy efficiency above the Ontario Building Code, SB-10, Division 3 (2017).**

- An integrated design team including an energy modeler and building envelope engineer will be considered.
- All units are provided with operable windows for natural ventilation/cooling when possible.
- Enhanced building envelope will be considered, with above average standards for insulation, windows and air tightness.
- Reduced window to wall ratio will also be considered, while ensuring the window design maintains daylight penetration into all residential units.
- Window assembly with a high U-value will be considered to minimize heat energy loss.
- A hot water drain recovery system will be considered so less energy is required to heat water to desired temperatures.
- An energy recovery ventilator system (ERV) will be considered to recover heat and recuperate energy trapped in moisture, which greatly improves overall recovery efficiency.
- LED light fixtures will be installed in common areas. Exterior fixtures will be LED with built-in daylight sensors.
- Smart building technologies and high-efficiency equipment will be considered.
- Sub-metering of all utilities including water, electricity, gas and BTUs will be considered.

#### **2) Opportunities for designing the buildings and the site to be Solar Ready.**

- The various tower roofs and expansive podium roof will be designed to be solar ready for future potential installation of photovoltaic panels to maximise solar gains and produce clean energy.
- Solar thermal for DHW, solar thermal for air heating on MUA, and solar exterior pole lighting will also be considered.
- A solar consultant will be considered to maximize solar potentials, ensure quality components, and implement industry leading operations and maintenance solutions.

**3) Opportunities for partial or full replacement of conventional natural gas heating with low carbon alternatives.**

- Opportunities for partial or full replacement of conventional natural gas heating with low carbon alternatives such as electric systems, VRF and ERV systems, and hydronic systems will be evaluated.
- It is our understanding that geothermal systems are not feasible at this development since the new Zoning By-law has a clause (3.W.1) that states the following:
  - Notwithstanding anything to the contrary, GEOTHERMAL WELLS shall be not be permitted on lands west of Weber Street in Waterloo.

**4) Identify and evaluate opportunities for maximizing low-carbon transportation measures within the buildings and the site**

- In order to maximize low-carbon transportation measures within the buildings and the site, the development will include electric vehicle charging stations and/or readiness to enable future charging station installation. All structured parking spaces will be EV Ready as specified in the City's Zoning Bylaw.

**5) Identify and evaluate opportunities for backup power systems that will improve the resilience of the buildings to power outages.**

- Buildings with solar photovoltaic (PV) generation and a battery energy storage system may self-sustain electricity supply during power outages and will therefore be considered.
- System resilience increases when there are more energy supply options rather than only using a standalone generator. Multiple energy production methods will be considered to optimize the development's resilience to power outages in the long term (i.e., combinations of diesel or propane with battery and PV).

**6) If the total gross floor area is proposed to be 50,000 m<sup>2</sup> or more, identify and evaluate opportunities for district or shared energy.**

- With the development being greater than 50,000sq.m., district energy systems will be reviewed and considered once appropriate specialists are engaged. Acknowledging that district energy systems are suitable for many multi-tower, dense developments, this project may be a suitable candidate.

As the project advances, and the team and expertise expand, these strategies will be revisited to ensure optimal energy efficiency. The cost-benefit of each option will be considered through the lens of reducing energy usage and greenhouse gas emissions, while considering upfront costs, energy costs, and maintenance costs. Cost evaluation is a significant task that requires expertise and in-depth analysis by mechanical and electrical engineers and design assist energy modelling.