Energy Strategy

Purpose:

The purpose of the Energy Strategy is the early identification of opportunities to integrate local energy solutions that are efficient, low carbon and resilient. When implemented, the Energy Strategy can contribute to achieving the City's objectives to reduce energy consumption and GHG emissions and increase resiliency. Undertaking an Energy Strategy during a development application stage facilitates the following key outcomes:

- *Opportunity to site buildings to take advantage of existing or proposed energy infrastructure, energy capture and/or solar orientation at the conceptual design stage.*
- *Consideration of potential energy sharing for multi-building development and/or neighbouring existing/proposed developments.*
- *Consideration of opportunities to increase resiliency such as strategic back-up power capacity (for multi-unit residential buildings).*
- *Identification of innovative solutions to reduce energy consumption in new construction and retrofit of existing buildings (if part of new development).*
- *Exploration of potential to attract private investment in energy sharing systems.*

An Energy Strategy, under this Terms of Reference, will be considered fulfilling the requirements of any Federal, Provincial and local municipal policy.

Energy Strategies may vary in scope depending on the size, nature and intent of the development proposal, or the Planning Act application applicable.

Where an Energy Strategy is required, it shall:

1. Calculate energy and emissions for the proposed development using the following scenarios:
    I. **Baseline –** Current Ontario Building Code.
    II. **Higher Performance –** New Homes: LEED Silver, Built Green Gold, EnerGuide 65 or less; New Buildings: LEED Silver, Built Green Gold, BOMA Best Gold, EUI 20%<building code.
    III. **Near Zero Emissions –** New Homes: LEED Platinum, Passive House, EnerGuide 25 or less; New Buildings: LEED Platinum, BOMA Net Zero Challenge, EUI 50%<building code.

    The scenarios should include opportunities for efficient building envelopes and building-scale renewables, as well as opportunities for shared energy services (i.e. low-carbon thermal energy networks).

2. Identify and evaluate opportunities to achieve **low energy use intensities (EUIs)** and **reduced energy demands**, through
    I. Building orientation and solar controls; thermal effectiveness of the building envelope; daylighting design strategies.
    II. High efficiency mechanical systems (e.g. efficient HVAC systems, heat recovery, lighting solutions).

3. Identify and evaluate opportunities for low-carbon energy solutions **on-site** (i.e. within the proposed development site), and **off-site** through connection to nearby existing or planned buildings and infrastructure. This can include, but is not limited to:
    I. Renewables, such as rooftop solar PV, geo-exchange in a nearby park, and heat recovery from sewer lines.
    II. Connection to a proposed or existing thermal network (district energy).
    III. Rough-in for a future connection to nearby existing/in-development thermal energy networks (i.e. "district energy-ready").
    IV. A new thermal network connecting several planned developments in an area.

4. For **multi-building** (i.e. campus-type) proposals, identify and evaluate opportunities for shared energy solutions that include, but are not limited to:
    I. Thermal energy distribution networks (i.e. piping) to connect buildings.
    II. Shared mechanical room(s) for heating and cooling equipment.
    III. Large-scale renewables such as biomass, sewer heat and other means of waste heat recovery.
    IV. Thermal energy storage.
    V. Shared backup power system(s) for multiple buildings.
    VI. Micro-grid(s) with the ability to island from the electrical grid.

5. Identify and evaluate opportunities to incorporate EV charging stations into residential and commercial developments.

6. Identify and evaluate opportunities for **backup power systems** that will improve the resilience of buildings to area-wide power outages, especially for multi-unit residential buildings. This includes meeting all emergency power (life safety) requirements, as well as providing for 72 hours (at a minimum):
    I. Domestic water (hot and cold).
    II. Elevator service.
    III. Space heating, cooling, lighting and receptacle power to the central common area/amenity space/lobby, where applicable.

7. Calculate energy consumption, demand, and emissions for the proposed development according to the three scenarios. Include in calculations the energy performance of existing buildings (if any are part of the development site) using available utility data.

8. Calculate the future cost of energy for the proposed development according to the three scenarios projected to 2040.

9. Estimate the contribution(s) of the identified on-site and off-site low-carbon solutions towards achieving reduced emissions.

10. Based on the completed analysis, state the preferred scenario and conclude with recommendations and next steps to facilitate implementation. Establish the overall value proposition(s).

Qualifications:

An Energy Strategy must be completed by a qualified professional with expertise in the appropriate area of study (i.e. energy modelling), to the satisfaction of the City.
