City of Branford Net-Zero Building Standard and Checklist

SECTION 1: VISION AND PRINCIPLES

Net-zero buildings are strategically designed with a combination of energy efficiency, renewable energy generation, and either eliminating or offsetting carbon emissions. Net-zero ready buildings are built to the same efficiency standards as net-zero buildings but the renewable energy system (i.e. solar panels) have not yet been installed. The City of Brantford is aiming to construct net-zero buildings because they produce as much energy as they consume, experience larger operational savings, and see higher greenhouse gas (GHG) emissions reductions.

This document will help designers and consultants understand and implement the Net-Zero Building Strategy for municipally-owned buildings. Included in this document are the Net-Zero Building Standard and the Net-Zero Building Checklist that should be referred to when contemplating which performance measures are to be implemented and filling out the respective checklist.

1.1 Overview of the City of Brantford Net-Zero Building Standard

The Standard defines sustainability expectations for all new Corporate development in Brantford and includes a Checklist to be used by designers and consultants.

The Standard and Checklist is organized into seven sustainable principles with corresponding performance measures that promote sustainable site and building design. All measures outlined are recommended best practices to help buildings be net-zero or net-zero ready.

All new Corporate buildings are expected to be built to net-zero standards but if it is found that it is not economically feasible and the payback period is not within one-third of the building's operational lifespan, then buildings will proceed with net-zero ready which incorporates the same efficiency standards as net-zero buildings but does not include the renewable energy system. Net-zero ready buildings have been designed and constructed to put in the renewable energy system in the future when more economically feasible.

The Checklist will be provided to designers and consultants to examine and evaluate the measures and report back on the items that will have the largest GHG savings and cost implications. If the decision is made to not proceed with a measure, reasoning must be provided about why not.

*Please note: Any measures that are not incorporated into the new building design plans now will have to be in place by 2050. Please refer to the Building Retrofit Strategy for more information.

1.2 City of Brantford Net-Zero Building Standard Principles

Location and Transportation	Reducing the need for gas-fueled vehicles and encouraging walking, cycling, and low carbon transport

Climate Change	Making building reduce the urban heat island effect and consider future climate change
Energy Efficiency	Making buildings reduce energy demand, improve energy efficiency, and consider renewable energy
Water Efficiency	Using water efficiently, protecting local water sources, and reducing flooding and drought
Materials and Resources	Using materials from sustainable sources, reducing waste, reducing energy demand, and making buildings more resilient to climate change
Ecology	Protecting and restoring land for the benefit of people, wildlife, and the planet
Indoor Environmental Quality	Promoting a healthy indoor environment and reducing energy demand

SECTION 2: USING THE CITY OF BRANTFORD NET-ZERO BUILDING STANDARD

The Net-Zero Building Standard is a flexible, living document designed to respond to current and emerging climate change challenges, industry best practices, and technologies. All measures outlined in the Net-Zero Building Components section are recommended to be implemented in the buildings to achieve net-zero standards. The Sustainability Features section includes additional features for the buildings to be more sustainable and protect the surrounding environment.

When using the Checklist, designers and consultants indicate which measures are being pursued. For any measures not being proceeded with, reasoning as to why not must be provided.

As part of the design process and before construction can proceed, the designer and consultant is expected to submit the Checklist and a Sustainability Report. The intent of the Sustainability Report is to provide an overview of the designer and consultant's sustainability and net-zero commitment and how that commitment has been achieved. The following components should be included in the Sustainability Report:

- Executive Summary: Overview of the project and declaration of performance commitment.
- Purpose: Detailed description of the project.
- Sustainability Overview: Summary of project's sustainability vision and objectives.
- Accepted Performance Measures: List all performance measures being pursued and their related energy and GHG savings and cost implications.
- Declined Performance Measures: List all performance measures not being pursued and the reasoning about why not.
- Cost/Benefit Analysis: Analysis of cost of net-zero features being included in building design and corresponding operational savings. Include expected payback period for any additional capital costs.

Net-Zero Building Components

Development Feature	Recommended Measures
Climate Change	

Urban Heat Island Reduction: At Grade – reduce surface temperatures, and provide shade for human health and comfort	• Choose one of the following options or a combination:
	  ○ Treat at least 50% of the site's non-roof hardscape (driveways, walkways, courtyards, surface parking areas, artificial turf, and other onsite hard surfaces)
	  ▪ High albedo surface materials with an initial reflectance of at least 0.3 or SRI of 29
	  ▪ Open grid pavement with at least 50% perviousness
	  ▪ Shade from existing tree canopy or within 5 years of landscape installation
	  ▪ Shade from structures covered by solar panels
	  ○ Place a minimum of 50% of required parking spaces under cover
	  ▪ Parking structure must have an SRI of at least 29, be a green roof, or be covered by solar panels.

Urban Heat Island Reduction: Roof – reduce surface temperature on or from roofs	• Install a white or cool roof for 100% of available roof space • Install a green roof with native vegetation if feasible and maintenance is low
Exterior Living Green Wall – to sequester carbon and help cool the building	• Install a living green wall in a well-lit area or a north-facing wall where plants can get adequate sun ○ Vines can be used for the living green wall on building exteriors.
Future Weather – to consider future weather implications on building's ability to maintain comfort and zero carbon operations	• Complete a sensitivity analysis to evaluate the building's ability to maintain comfort and zero carbon operations during extreme weather events such as extreme heat and cold, high winds, and flooding. Use a 2050 and 2080 timelines to correspond with a building's mid-life and end-of-life. ○ Project teams must understand that the weather of today may not be an accurate way to model a building's performance in the future.
Embodied Carbon – minimize embodied carbon emissions	• Complete the ZCB v3 Embodied Carbon Reporting Template from CaGBC ○ Buildings must meet a minimum achievement threshold for embodied carbon. Project teams must demonstrate that their embodied carbon intensity is at or below an established target.
Energy Efficiency	
Commissioning and Verification – to support the design, construction, and eventual operation of a project	• Complete commissioning of new equipment and systems to ensure they are installed properly and functioning as designed ○ Equipment and systems should be commissioned either by the equipment/ system provider or by an accredited independent third party following installation. • Complete a recommissioning policy to ensure equipment will be recommissioned every 5 years to ensure equipment is performing optimally. This goes beyond regular preventative maintenance.
Minimum Energy	One of the following three approaches can be taken:

Development Feature	Recommended Measures

Performance – minimize energy consumption through efficient building design ad encourage renewable energy supply	• Flexible Approach
	  ○ Thermal energy demand intensity (TEDI) target – four paths that can be taken:
	  ▪ No onsite combustion
	  ▪ CaGBC ZCB-Design TEDI target
	  ▪ Adjusted TEDI target (for projects with unique heating and ventilation requirements)
	  ▪ Detailed TEDI analysis (for projects with unique heating and ventilation requirements)
	  ○ Energy use intensity target
	• Passive Design Approach
	  ○ Aggressive thermal energy demand intensity target
	• Renewable Energy Approach
	  ○ Thermal energy demand intensity target
	  ○ Zero carbon balance for operational carbon achieved without green power products or carbon offsets

Airtightness – minimize energy consumption through reduced air leakage	• Follow CaGBC Zero Carbon Standard – Design and ZCB-Design v3 Energy Modelling Guidelines for airtightness • Perform airtightness testing
Energy Metering – to support energy management and tracking building-level energy use	• Install building-level energy meters or sub-meters that can be aggregated to provide building-level data representing total building energy consumption ○ Commit to sharing the resulting energy consumption data and electrical demand data. At a minimum, energy consumption must be tracked at one-month intervals. • Install sub-meters in tenant spaces and major mechanical equipment to track energy usage and identify anomalies.

Building Automation System – to control building systems and lighting to reduce energy consumption	• Install a direct digital controls building automation system (BAS) to automate major building components (e.g. HVAC, lighting, etc.) to assist in operating equipment more effectively based on certain set points.
	• BAS must incorporate the following components, wherever feasible:
	  ○ Unoccupied setback
	  ○ Outdoor air temperature reset
	  ○ Demand control ventilation
	  ○ Scheduling (for HVAC and lighting)
	  ○ Economizer control

Lighting and Lighting Control – to reduce energy consumption	• Install ENERGY STAR or DesignLight Consortium (DLC) approved LED lighting lamps and ballasts in all building areas including common areas, service areas, offices, corridors, exterior, etc. • Install occupancy sensors, motion sensors, photocells, etc. on all lighting. Where appropriate, these sensors can be incorporated with a BAS.
Variable Speed/ Frequency Drives – to match load requirements and	• Install variable speed drives (VSD) or variable frequency drives (VFD) on all pump and fan motors. • Units cannot be manually locked to 100% or run at 100% consistently.

Development Feature	Recommended Measures
reduce energy consumption	
Central Heating Equipment – to reduce energy needed to heat the building	• Install electric boilers to reduce natural gas use • Install electric heat pumps (air source or ground source) ○ Leverage the outside or underground ambient temperature to balance indoor air or water temperature
Rooftop Package Units – to reduce energy needed to heat/cool the building	• Rooftop air handling units are required to have a higher energy efficiency ratio to utilize their fuel more effectively • Efficient rooftop package units must have an Energy Efficiency Ratio (EER) of 11.5 or greater.
Chillers and Air Conditioning Systems – to reduce energy needed to cool the building	• Chillers and air conditioning systems must have a higher Coefficient of Performance (COP) to utilize their energy more effectively. • Efficient chillers and air conditioning systems must have a COP of 2.8 or greater for air-cooled systems or 5.1 or greater for water-cooled systems.
Domestic Hot Water Heating – to reduce energy needed to heat domestic water	• Efficient domestic water equipment must be compliant with ENERGY STAR or AHRI certified. ○ ENERGY STAR-compliant water heating equipment include (but are not limited to) condensing, tankless, and solar water heaters.
Refrigerant Management – to reduce stratospheric ozone depletion	• Do not use CFC-based refrigerants in new HVAC&R systems • No Refrigerants or Low-Impact Refrigerants: do not use refrigerants or use only refrigerants (naturally occurring or synthetic) that have an ODP of 0 and a GWP of less than 50

Renewable Energy Production – to reduce the harms associated with fossil fuel energy by increasing self-supply of renewable energy	• Use renewable energy systems to offset building energy costs
	  ○ The use of solar gardens or community renewable energy systems is allowed if both of the following requirements are met:
	  ▪ The project owns the system or has signed a lease agreement for a period at least 10 years
	  ▪ The system is located with the same utility service area as the facility claiming the use

Green Power and Carbon Offsets – to encourage the reduction of GHG emissions through the use of grid-source, renewable energy technologies and carbon mitigation projects	• Engage in a contract for qualified resources to be delivered annually. Contract must specify the provision of at least 50% or 100% of the project's energy from green power, carbon offsets, or renewable energy certificates (REC)
	  ○ Green power and RECs must be Green-e Energy certified or the equivalent. REC can only be used to mitigate the effects of Scope 2, electricity use.
	  ○ Carbon offsets may be used to mitigate Scope 1 and 2 emissions on a metric ton of carbon dioxide-equivalent basis and must be Green-e Climate certified or the equivalent.

Energy Storage – to maximize energy generated from onsite renewable energy	• Install battery energy storage systems to maximize renewable energy.
	  ○ Lithium ion battery
	  ○ Vanadium redox flow battery
	  ○ VisBlue vanadium redox flow battery

Heat Recovery – to recover heat-energy	• Install thermal heat recovery technologies to recover waste heat and reintegrate it back into the building.

Development Feature	Recommended Measures
or waste-heat energy released from building processes	○ Boiler flue economizers ○ Heat recovery wheel ○ Plate heat recuperator technology ○ Underground thermal energy storage
Water Efficiency	
Water Use Reduction – to reduce outdoor and indoor water consumption	• Reduce outdoor water use through one of the following options: ○ No irrigation required ○ Reduced irrigation – reduce by at least 30% from the calculated baseline for the site's peak watering month • Reduce indoor water consumption by at least 20%. All water fixtures must be WaterSense labeled where applicable and meet the following flow rates: ○ Toilets: 4.8 LPF or less ○ Urinals: 1.9 LPF or less ○ Faucets: 5.7 LPM or less ○ Showers: 7.6 LPM or less
Water Metering – to support water management and track water consumption	• Install permanent water meters that measure the total potable water use for the building and associated grounds. • Install submeters on all water consuming features to track consumption and anomalies. ○ Water consuming features include irrigation, washrooms, cooling towers, etc.
Rainwater Harvesting – to reduce the amount of potable water used in the building	• Collect condensate or rainwater to be used as greywater. ○ Greywater can be used to flush water in urinals and toilets or for irrigation purposes.
Materials and Resources	
Insulation – to reduce heat loss and improve the building envelope	• Install insulation materials with high R-values to the walls, ceilings, and floors to ensure maximum heat retention of the building ○ Wall insulation R-values vary from R-20 to R-60 ○ Ceiling insulation R-values vary from R-30 to R-80 ○ Floor insulation R-values vary from R-20 to R-60
Indoor Environmental Quality	
Passive Solar Orientation – take advantage of sunlight for daylighting and heating	• Where feasible, 50% or more of the development blocks have one axis with 15 degrees of the West-West plane. East-West lengths of those blocks are at least as long as the North-South lengths of blocks. ○ Install overhangs or operable window shades over the south facing windows to reduce solar heat gain in the summer months. • Install windows facing south to have a higher solar heat gain in the winter months. Install windows facing east and west to have a lower solar heat gain in the summer months and maximize daylighting.
Windows – to increase insulation and indoor thermal comfort	• Where feasible, install triple-paned windows. ○ Triple-paned windows with a U-factor of U-0.2.

Development Feature	Recommended Measures

Ventilation – to promote occupants' comfort, well-being, and productivity	• Provide either of the following:
	  o Mechanically Ventilated
	  ▪ Determine the minimum outdoor air intake flow for mechanical ventilation systems using the ventilation rate procedure from ASHRAE 62.1
	  o Naturally Ventilated
	  ▪ Determine the minimum outdoor air opening and space configuration requirements using the natural ventilation procedure from ASHRAE 62.1
	  o Combination
	  ▪ Follow both procedures

Sustainability Features

Development Feature	Recommended Measures
Location and Transportation	

Green Vehicles – to reduce pollution by promoting alternatives to conventionally fueled vehicles	• Install charging stations
	  o Provide a Level 2 charging capacity or greater for at least 20% of parking spaces
	• Designate parking spaces for green vehicles
	  o Designate 5% of all parking spaces used by the project as preferred parking for green vehicles. Spaces can be located closer to building entrances to further incentivize green vehicle use.

Access to Quality Transit – to encourage development in locations shown to have multimodal transportation choices or otherwise reduced motor vehicle use	• Construct building in a location that is near existing or planned public transportation stops o Locate any functional entry of the project with a 400-meter walking distance of existing or planned bus or rideshare stops, or within an 800-meter walking distance of existing or planned light or heavy rail stations or commuter rail stations.

Bicycle Infrastructure – to promote bicycling and transportation efficiency and reduce vehicle distance travelled	• Provide both short- and long-term bicycle storage
	  o Provide short-term bicycle storage for at least 2.5% of all peak visitors, but no fewer than four storage spaces per building.
	  o Provide long-term bicycle storage for at least 5% of all regular building occupants but no fewer than four storage spaces per building in addition to the short-term bicycle storage spaces.
	• Design or locate the project such that a functional entry or bicycle storage is within walking or bicycling distance from a bicycle network
	  o Project must be within 180 meters of bicycle network and connects to at least one of the following:
	  ▪ At least 5 diverse uses
	  ▪ A transit stop
	  o Must be within a 4.8km bicycling distance of project boundary
	• Provide shower and changing facilities
	  o Provide at least one on-site shower with changing facility for the

Development Feature	Recommended Measures
	first 100 regular building occupants and one additional shower for every 150 regular building occupants.
Water Efficiency	

Rainwater Management – to reduce runoff volume and improve water quality	• Use low impact development and green infrastructure to reduce stormwater runoff for the 95th percentile of regional or local rainfall events.
	  ○ Green roofs
	  ○ Rainwater harvesting
	  ○ Permeable concrete
	  ○ Stormwater management ponds
	  ○ Bioswales
	  ○ Infiltration trenches
	  ○ Rain gardens
	  ○ Vegetated filter strips
	  ○ Sediment traps
	  ○ Oil/grit separators
	• Retain rainwater from rainfall events through rainwater reuse, on-site infiltration, and evapotranspiration.

Materials and Resources	

Storage and Collection of Recycling and Organic Waste – facilitate waste sorting and reduction	• Provide dedicated areas accessible to waste haulers and building occupants for the collection and storage of recyclable materials and organics for the entire building.
	  ○ Recyclable materials include mixed paper, corrugated cardboard, glass, plastics, and metals.
	  ○ Take appropriate measures for the safe collection, storage, and disposal of batteries and electronic waste.

Construction Waste Management – recycle and/or salvage non-hazardous construction and demolition debris	• Recycle at least 65% of non-hazardous construction and demolition debris.

Regional Materials – increase demand for building materials and products extracted, processed, and manufactured in the region	• Ensure that at least 20% of a project's building materials or products have been extracted, harvested, recovered, or processed within 800km (2400km if moved by rail or water) of the final project site.
	• Ensure the materials are third-party certified.
	  ○ FSC-certified wood
	  ○ Contain recycled content
	  ○ Natural insulation
	  ○ Bio-based materials

Ecology	
Urban Forest: Tree Protection – preserve the existing urban forest	• Adhere to the tree cutting by-law, if available. • Protect and retain all trees that are 30 cm or more DBH (diameter at breast height) from injury or removal. • Protect and retain trees of all diameters adjacent to City of Brantford streets and roadways and City-owned parks.

Development Feature	Recommended Measures
	• If trees do need to be cut, then look at replacing them elsewhere in the City.
Urban Forest: Increase Tree Canopy – make space for trees, enhance urban forest	• Provide tree canopy cover distributed across the site area and public boulevard at a minimum rate of: 1 tree for every 66m2 of 40% of the site area. • Plant large growing shade trees at the equivalent of 8 to 10 m intervals along all street frontages. • If surface parking is permitted and provided, plant shade trees throughout the parking lot interior at a minimum ratio of one tree planted fir every 5 parking spaces provided. • Enhanced tree planting: plant one three every 3 parking spaces

Bird Collision Deterrence – design buildings to reduce bird collisions and mortality	• Incorporate bird-friendly glazing on a minimum of 85% of all exterior glazing within the first 12 m of the building above grade.
	• A combination of the following strategies can be used:
	  ○ Low reflectance, opaque materials
	  ▪ Exterior screens, shutters, grilles, and louvres to shield glass surfaces
	  ○ Visual markers applied to glass with a maximum spacing of 100 mm x 100 mm
	  ▪ Etched glass, fritted glass, films, decals, mullions
	  ○ Building integrated structures to mute reflections on glass surfaces
	  ▪ Shadows from opaque overhangs, awnings, exterior sunshades

Native Vegetation – to support the needs of local wildlife	• Maximize the use of native and drought tolerant plant species. ○ Flowers, grasses, shrubs, trees, etc.
Light Pollution – reduce nighttime glare and light trespass	• Shield all exterior light fixtures to meet the IESNA Full Cutoff Classification r an Uplight rating of 0, to prevent glare and/or light trespass onto any neighbouring properties. • Use warmer coloured temperature lighting • Any rooftop architectural illumination must be directed downward and turned off between the hours of 11 p.m. and 6 a.m. • Encourage building occupants to keep blinds down at night to keep the light glow indoors.
Indoor Environmental Quality	
Interior Living Green Wall – to improve indoor air quality	• Install a living green wall within the building.

City of Brantford Net-Zero Building Checklist

GENERAL BUILDING INFORMATION

Building Type:	
Building Location:	
Building Size:	
Number of Floors:	
City of Brantford Department:	

SUBMISSION REQUIREMENTS

All information must be submitted electronically, via file-sharing website or USB memory stick, in PDF format.

All measures outlined are recommended to be implemented in the buildings to achieve net-zero standards. Please indicate which measures are being pursued. For any measures not being proceeded with, reasoning as to why not must be provided.

The designer and consultant is expected to submit the Checklist and a Sustainability Report. The intent of the Sustainability Report is to provide an overview of the designer and consultant's sustainability and net-zero commitment and how that commitment has been achieved. The following components should be included in the Sustainability Report:

- Executive Summary: Overview of the project and declaration of performance commitment.
- Purpose: Detailed description of the project.
- Sustainability Overview: Summary of project's sustainability vision and objectives.
- Accepted Performance Measures: List all performance measures being pursued and their related energy and GHG savings and cost implications.
- Declined Performance Measures: List all performance measures not being pursued and the reasoning about why not.
- Cost/Benefit Analysis: Analysis of cost of net-zero features being included in building design and corresponding operational savings. Include expected payback period for any additional capital costs.

Net-Zero Building Components

1. Climate Change

☐ Choose one of the following options or a combination:

- Treat at least 50% of the site's non-roof hardscape with:
  - High albedo surface materials
  - Open grid pavement
  - Shade from tree canopy
  - Shade from structures covered by solar panels

- Place a minimum of 50% if required parking under cover

☐ Install a white or cool roof for 100% of available roof space
☐ Completed a sensitivity analysis to evaluate the building's ability to maintain comfort and zero carbon operations during extreme weather events using 2050 and 2080 timelines
☐ Complete the ZCB v3 Embodied Carbon Reporting Template from CaGBC
☐ Install a green roof with native vegetation
☐ Install a living green wall in a well-lit area or a north-facing wall

Explanation for why measures are not being pursued:

2. Energy Efficiency

☐ Complete commissioning of new equipment and systems to ensure they are installed properly and functioning as designed
☐ One of the following three approaches can be taken for minimum energy performance:

- Flexible Approach
- Passive Design Approach
- Renewable Energy Approach

☐ Follow CaGBC Zero Carbon Standard – Deisgn and ZCB v3 Energy Modelling Guidelines for airtightness
☐ Install building-level energy meters or sub-meters that can be aggregated
☐ Install a direct digital controls BAS that incorporates unoccupied setback, outdoor air temperature reset, demand control ventilation, scheduling, and economizer control
☐ Install ENERGY STAR or DLC approved LED lighting in all building areas including the exterior
☐ Install occupancy sensors, motion sensors, photocells, etc. on all lighting
☐ Install VSDs or VFDs on all pump and fan motors
☐ Install electric heating equipment such as electric boilers, air source heat pumps, or ground source heat pumps
☐ Install efficient rooftop units that have an EER of 11.5 or greater
☐ Install efficient chillers and air conditioning systems that have a COP of 2.8 or greater for air-cooled systems or 5.1 or greater for water-cooled systems
☐ Install ENERGY STAR or AHRI-certified hot water heating equipment
☐ No CFC-based refrigerants are used onsite
☐ Use only refrigerants that have an ODP of 0 and a GWP of 50
☐ Use renewable energy systems to generate energy onsite (solar gardens and community renewable energy systems are also allowed)
☐ Install thermal heat recovery technologies to recover waste heat and reintegrate it back into the building
☐ Prepared a recommissioning policy to ensure equipment will be recommissioned every 5 years
☐ Perform airtightness testing

☐ Install sub-meters in tenant spaces and major mechanical equipment
☐ Engage in a contract for qualified resources to be delivered annually. Contract must specify the provision of at least 50% or 100% of the project's energy from green power, carbon offsets, or renewable energy certificates (REC)
☐ Install battery energy storage systems to maximize renewable energy generation

Explanation for why measures are not being pursued:

3. Water Efficiency

☐ Reduce outdoor water use through either no irrigation or reduced irrigation
☐ Reduce indoor water consumption by at least 20% through low-flow fixtures
☐ Install permanent water meters that measure total potable water use for the building and associated grounds
☐ Install sub-meters on all water consuming features
☐ Retain rainwater from rainfall events
☐ Collect condensate or rainwater to be used as greywater

Explanation for why measures are not being pursued:

4. Materials and Resources

☐ Install insulation materials with high R-values to the walls, ceilings, and floors

Explanation for why measures are not being pursued:

5. Indoor Environmental Quality

☐ Where feasible, 50% or more of the development blocks have one axis with 15 degrees of the West-West plane. East-West lengths of those blocks are at least as long as the North-South lengths of blocks

☐ Where feasible, install triple-paned windows

☐ Provide either mechanical ventilation, natural ventilation, or a combination

☐ Install windows facing south to have a higher solar heat gain in the winter months. Install windows facing east and west to have a lower solar heat gain in the summer months and maximize daylighting

Explanation for why measures are not being pursued:

Sustainability Features

1. Location and Transportation

☐ Install Level 2 charging stations for at least 20% of parking spaces

☐ Provide short-term bicycle storage for 2.5% of all peak visitors, no fewer than 4 spaces

☐ Provide long-term bicycle storage for 5% of all regular building occupants, no fewer than 4 spaces in addition to the short-term spaces

☐ Designate 5% of all parking spaces as preferred parking for green vehicles

☐ Construct building in a location that is near existing or planned public transportation stops

☐ Design or locate the project such that a functional entry or bicycle storage is within walking or bicycling distance from a bicycle network

☐ Provide shower and changing facilities

Explanation for why measures are not being pursued:

2. Water Efficiency

☐ Use low impact development and green infrastructure to reduce stormwater runoff

Explanation for why measures are not being pursued:

3. Materials and Resources

☐ Provide dedicated areas accessible to waste haulers and building occupants for the collection and storage of recyclable materials and organics for the entire building

☐ Recycle at least 65% of non-hazardous construction and demolition debris

☐ Ensure that at least 20% of a project's building materials or products have been extracted, harvested, recovered, or processed within 800km (2400km if moved by rail or water) of the final project site

☐ Use materials that are third-party certified

Explanation for why measures are not being pursued:

4. Ecology

☐ Adhere to tree cutting by-law, if available

☐ Protect and retain all trees that are 30cm or more DBH from injury or removal

☐ Protect and retain trees of all diameters adjacent to City of Brantford streets and roadways and City-owned parks

☐ If trees do need to be cut, then look at replacing them elsewhere in the City

☐ Provide tree canopy cover distributed across the site area and public boulevard at a minimum rate of: 1 tree for every 66m2 of 40% of the site area

☐ Plant large growing shade trees at the equivalent of 8 to 10 m intervals along all street frontages

☐ If surface parking is permitted and provided, plant shade trees throughout the parking lot interior at a minimum ratio of one tree planted fir every 5 parking spaces provided

☐ Incorporate bird-friendly glazing on a minimum of 85% of all exterior glazing within the first 12 m of the building above grade

☐ Maximize the use of native and drought tolerant plant species

☐ Shield exterior lighting to prevent glare and light trespass

☐ Use warmer coloured temperature lighting

☐ Enhanced tree planting: plant one three every 3 parking spaces

☐ Any rooftop architectural illumination must be directed downward

☐ Encourage building occupants to turn lights off at night and keep blinds down

Explanation for why measures are not being pursued:

5. Indoor Environmental Quality

☐ Install a living green wall within the building

Explanation for why measures are not being pursued: