



Sustainability Standards

Generation Park Waterloo

November 2022



Photo Credit: EQ Mag Pro – Indonesian Green Industrial Park

Generation Park Waterloo Sustainable Development Standards

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Background and Vision

We've established Generation Park Waterloo (Generation Park) in an ideal location for the purpose of creating a community of businesses with their eyes on the future.

Generation Park is a 36-hectare business and industrial park aiming to attract companies that share our commitment to the planet and future generations. Generation Park is surrounded by greenspace, new residential communities, diverse retail and protected farmland and forest.

The City of Waterloo City Council has declared a climate emergency. In addition, the City of Waterloo has endorsed Transform Waterloo Region (TransformWR) a community climate action plan – undertaken in partnership with the Region of Waterloo and Cities of Cambridge and Kitchener, REEP Green Solutions and Sustainable WR. TransformWR specifies a goal to reduce emissions 50% below 2010 levels by 2030 and a further long-term goal to achieve an 80% reduction in greenhouse gas emissions below 2010 levels by 2050.

The Generation Park Sustainable Development Standards (SDS) were developed to demonstrate the City's commitment to leadership in attracting businesses who embrace technology, innovation and creativity as a means to establish market leadership but also those with a leadership practices rooted in responsibility and positive impact. The goal of this document is to help achieve these goals identified as priorities by the City of Waterloo by setting the stage to attract companies with a commitment to the future health of our planet. It aims to work toward meeting the City's goals by focusing on the buildings. Buildings are estimated by the World GBC to account for 40% of global carbon emissions, but in cities this proportion is closer to 60%.¹

This document is intended to augment the Private Realm requirements within the City of Waterloo Urban Design Guidelines for Generation Park Waterloo (Map 1) and City of Waterloo Urban Design Manual.

¹ JLL Decarbonizing Cities and Real Estate 2020

The SDS establishes design and building criteria in support of energy efficiency, greenhouse gas emissions reduction, sustainable transportation options, heat island reduction, water efficiency, as well as sustainable building products and materials.

The intent of these standards is to encourage site plan and building design that will reduce the environmental footprint of development, as well as to anticipate and plan for future innovations by improving energy efficiency, shifting toward clean energy sources, reducing single occupant vehicle trips, reducing carbon emissions, reducing light pollution, mitigating heat island effect and encouraging water conservation. Projects are encouraged to expand beyond the requirements outlined in the SDS to consider additional building and site design enhancements that will further enhance energy efficiency, reduce embodied carbon, utilize sustainable building products and that implement design or processes to improve resiliency and reduce potential impacts from severe climate events.

Implementation of the Sustainable Development Standards

Any new building construction or major expansions within Generation Park Waterloo will be required to comply with all Tier 1 Mandatory Requirements in the SDS. Advanced Tier 2 Requirements are recommended for implementation. Eligibility for any benefits associated with implementing Advanced Tier 2 Requirements will be contingent on achieving **all** Advanced Tier Requirements listed in the SDS.² This document must be utilized in conjunction with the [LEED Building Construction and Design](#) and CAGBC [Zero Carbon Building - Design Standard](#).³

How to Demonstrate Compliance with the SDS

Applicants shall demonstrate compliance with the SDS. Applicants will be required to demonstrate design compliance to obtain Site Plan Approval (SPA), with SDS measures also clearly shown on the documents forming the Building Permit and Site

² This does not apply to buildings less than 1,000 square feet (sq m) constructed by public utilities or municipal government.

³ At the time of writing Version 3, however it is expected compliance with the most up to date standard is required

Plan applications. Compliance will be determined on a development specific basis. Full compliance will be required to be demonstrated prior to the release of financial securities.

All information required to demonstrate design compliance shall be submitted to the satisfaction of the City as part of the Site Plan Application. Prior to the release of any financial securities for the project, all information required to demonstrate compliance shall be submitted to the satisfaction of the City, including applications and approvals through CAGBC Zero Carbon Building Standard Certification and LEED certification processes.

Documentation of compliance requirements for each phase of the project are listed for each element in the SDS. Documentation must be prepared by a qualified professional who is licensed to complete such works, at the developer/owner's expense. Please complete the SDS Checklist and submit it, along with all supporting documentation and affidavit by the lead engineer/architect stating compliance with the SDS, to the City of Waterloo's Planning Division as part of the site plan process.

Confirmation of LEED Certification and Zero Carbon Building Standard Certification from the Canada Green Building Council (CAGBC) is to be submitted to the City as soon as they are obtained and within the timeframe specified by the City, and prior to the release of financial securities. With the exception of LEED certification, for building related SDS elements, the developer/owner shall demonstrate SDS compliance prior to occupancy, and the developer/owner shall have 14 months post occupancy authorization to demonstrate LEED certification, unless otherwise agreed to by the City in writing.

Final demonstration of compliance with the SDS shall be the responsibility and cost of the developer/owner and verified to satisfaction of the City's Director of Planning. The Director of Planning may retain a third-party project evaluator at the developer/owners' expense to review and confirm compliance with the SDS on one or more technical matters, and/or require written certifications from the developer/owner's

engineer/architect/landscape architect on SDS technical matters, the form and content of which shall be to the satisfaction of the Director of Planning.

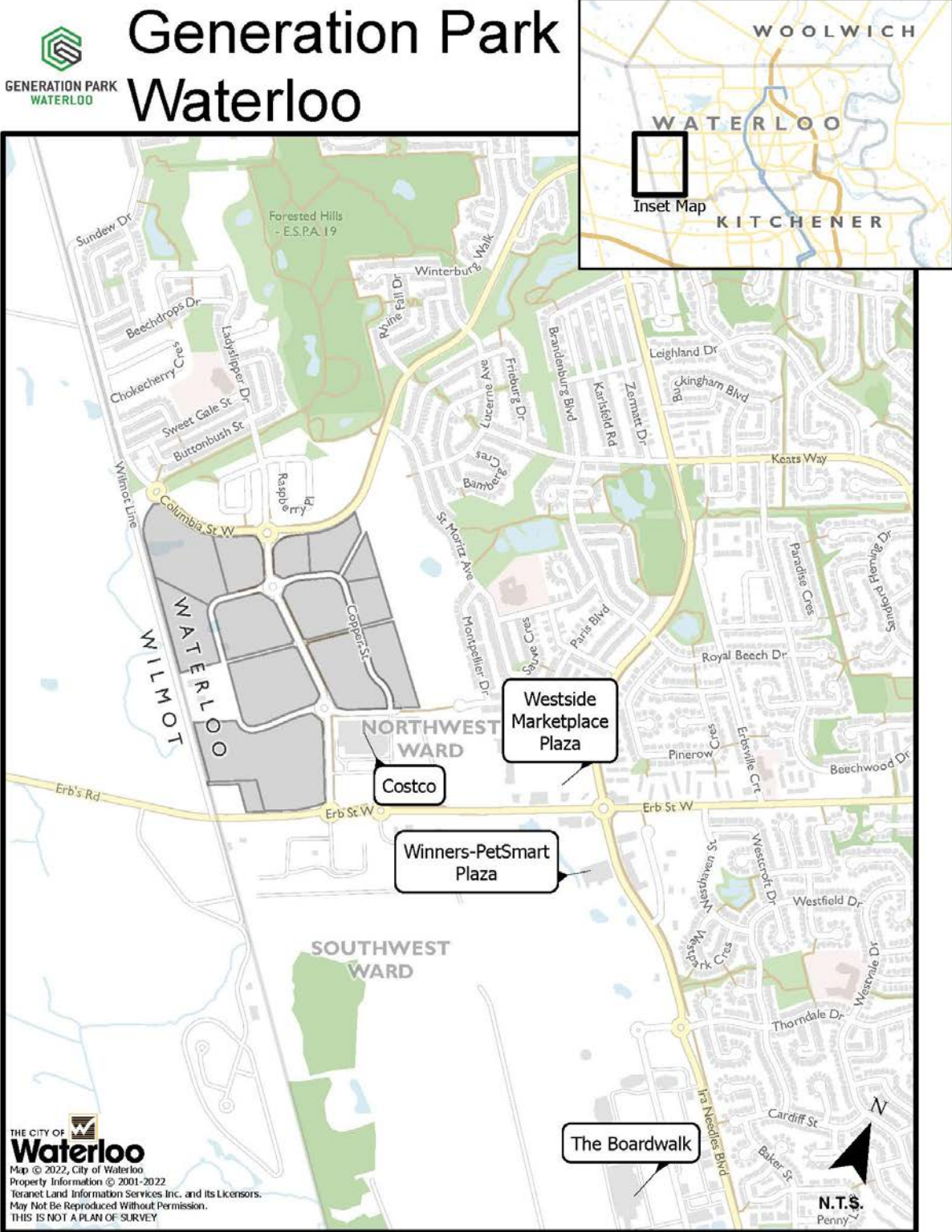
Any variance from the requirements of the SDS shall be requested at the design stage by submission of justification by a qualified professional opinion acceptable to the City identifying proposed alternative solutions aimed at achieving key SDS objectives and maintaining the intent and Guiding Principles outlined herein. Final discretion shall rest with the Director of Planning as granted through delegation By-law #2017-082.

Guiding Principles

Where stated requirements identified in this standard may conflict with legislated requirements, legislated requirements shall take precedence, however a justification by a qualified professional deemed acceptable to the City must be provided to the City to outline proposed solutions aimed at upholding the intent of this document. The following guiding principles shall dictate priority of measures:

1. Reduce carbon emissions from new building construction to meet targets of TransformWR.
2. Eliminate heating, cooling or heating water for building use from carbon-based sources (e.g. natural gas).
3. Increase energy efficiency of buildings
4. Protect and conserve water
5. Encourage the use of renewable and clean energy or heat sources
6. Employ integrated design principles
7. Reduce heat island effect
8. Reduce environmental impact of materials, construction and building on environment or species (such as birds)
9. Make buildings more resilient
10. Encourage alternative means of transportation such as transit, active transportation, electric vehicles or carpooling

Map 1: Location of Generation Park Waterloo



Part 01 Green Building Certification

The intent of this section is to encourage implementation of broad sustainable design measures through certification of building(s) by recognized, third-party verified green building rating system. This is intended to encourage the adoption of widely recognized standard for leadership in energy and building design and provide consistency across the park with respect to the design, construction, and future performance. The green building framework referenced in this section is LEED. Zero Carbon Building Standard certification requirements are outlined in Part 02.

1.1 LEED

Reference: WSEL Urban Design Guidelines Reference: Section 4.1.2 Building and Massing Guideline 17)

Tier 1 - Mandatory Requirement

1. Achieve at minimum LEED Silver Certification under LEED for New Construction or Core & Shell rating systems, version 4 or 4.1. Follow the Split Review process.
2. If the Core & Shell rating system is pursued, and the shelled space will be leased out, lease agreements requiring tenants to implement LEED compliant design measures within tenant fit-up spaces is required for buildings that will be tenanted. (See Part 08 Requirements for Tenanted Buildings.)
3. This Standard requires achievement of specific LEED credits. The credits required as part of Tier 1 are summarized in the table titled “LEED Summary Table” at the end of this section, and further described in later sections of this Standard.

Tier 2 - Advanced Requirements (Recommended)

1. Achieve LEED Gold or Platinum certification under LEED for New Construction or Core & Shell rating systems, version 4 or 4.1. Follow the Split Review process.

2. This Standard requires achievement of specific LEED credits. The credits required as part of Tier 2 are summarized in the table titled “LEED Summary Table” at the end of this section, and further described in later sections of this Standard.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> • Provide proof of LEED project registration with CAGBC. • Provide an annotated LEED scorecard showing all credits identified for pursuit for Silver certification (Tier 1) or Gold or Platinum certification (Tier 2).
Prior to Occupancy	<ul style="list-style-type: none"> • Provide the design-stage review report from the CAGBC for all credits submitted for review as part of the design submission. • Provide owner declaration of occupancy to demonstrate exemption from Tier 1 requirement 2 for buildings that will not be tenanted.
Within 14 months of Occupancy	<ul style="list-style-type: none"> • Provide the final LEED certification review report from the CAGBC, showing achievement of all mandatory credits described in other sections of the SDS.

1.2 Integrative Process

Tier 1 - Mandatory Requirement

1. As part of the building’s LEED certification, achieve LEED Integrative Process Credit Integrative Process.

Documentation of Compliance

Stage of Compliance	Documentation
Prior to Occupancy	<ul style="list-style-type: none">• Provide the design-stage review report from the CAGBC showing review comments for LEED Integrative Process Credit Integrative Process.
Within 14 months Post-Occupancy	<ul style="list-style-type: none">• Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Integrative Process Credit Integrative Process.

LEED Summary Table

	Points Required	Points Required
LEED Credit (v4 or v4.1)	Tier 1: Mandatory Requirements	Tier 2: Advanced Requirement (Recommended)
Integrative Process Credit Integrative Process	1	1
Location and Transportation Credit Bicycle Facilities	1	1
Location and Transportation Credit Green Vehicles / Electric Vehicles	1	1
Sustainable Sites Credit Light Pollution	1	1
Sustainable Sites Credit Heat Island Reduction	2	2
Water Efficiency Credit Outdoor Water Use Reduction	1	2
Water Efficiency Credit Indoor Water Use Reduction	4	5
Energy & Atmosphere Credit Enhanced Commissioning	3	6
Energy & Atmosphere Credit Advanced Energy Metering	1	1
Materials and Resources Credit Environmental Product Declarations	0	1
Materials and Resources Credit Sourcing of Raw Materials	0	1
Materials and Resources Credit Material Ingredients	0	1

	Points Required	Points Required
LEED Credit (v4 or v4.1)	Tier 1: Mandatory Requirements	Tier 2: Advanced Requirement (Recommended)
Materials & Resources Credit Building Life-Cycle Impact Reduction	0	3
Indoor Environmental Quality Credit Low-Emitting Materials	2	3
Innovation Credit Bird Collision Deterrence	0	1
Innovation Credit Assessment and Planning for Resilience (Pilot)	0	1
Innovation Credit Design for Enhanced Resilience (Pilot)	0	2
Total	17	33
LEED Certification Level Required	Silver (50 points)	Gold (60 points)
Balance of points required:	33	27

Part 02 Energy and Carbon

In support of TransformWR, the intent of this section is to set a minimum standard to reduce building carbon emissions, enhance energy efficiency, and encourage use of renewable energy and non-fossil fuel heat sources. The goal is also to promote carbon literacy and promote reductions in embodied carbon including upfront carbon from construction.

2.1 Energy Efficiency and Zero Carbon Emissions

Reference: WSEL Urban Design Guidelines Reference: Section 4.1.1 Site Organization & Design Guideline 21

Tier 1 - Mandatory Requirement

1. Design and build a highly energy efficient, zero carbon building by achieving CAGBC Zero Carbon Building Standard: Design Certification, including the standard's requirements for building energy efficiency.
2. Do not use fossil fuels for building heating/cooling, humidification, service water heating, cooking, or managing peak loads. Fossil fuel usage for process energy, emergency or back-up generator usage is permitted.
3. Report building energy consumption to Ontario's Energy and Water Reporting and Benchmarking (EWRB) initiative with copies provided to the City, even if the building is smaller than the threshold required for mandatory reporting under O. Reg. 506/18: Reporting Of Energy Consumption And Water Use.
4. Industrial processes shall be designed and planned with the goal to support a future transition to zero carbon emissions. A zero carbon transition plan for industrial processes is required.
5. Provide a sufficient easement between the mechanical room and property line to facilitate potential future connection to community energy system / district energy system.

Geo Exchange Heating/Cooling

6. If designing the building to integrate ground source geo exchange as a non-carbon source for space heating and cooling (either closed loop horizontal or open loop vertical subject to approvals) the following shall be achieved:
 - a. Verify regional and municipal approvals are in place to permit geothermal energy system
 - b. Design building with mechanical room, equipment and infrastructure to facilitate efficient operation of geo-exchange system.
 - c. Properly size and route piping to minimize electricity demands.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> • Provide proof of Zero Carbon Building Standard: Design registration with CAGBC. • Provide an energy modelling report that demonstrates zero use of fossil fuels for building heating/cooling, humidification and service water heating. • Indicate notations on plans to include conduits/infrastructure and future conversion plan for industrial processes. • Indicate notations on plans to include energy source for space heating, cooling, service water heating, cooking and managing peak loads (if any).
Prior to Occupancy	<ul style="list-style-type: none"> • Provide documentation of Zero Carbon Building Standard: Design project certification from CAGBC.

Stage of Compliance	Documentation
	<ul style="list-style-type: none"> • Provide the zero carbon transition plan for industrial processes using fossil fuels.
Within 14 months Post-Occupancy	<ul style="list-style-type: none"> • Provide a copy of the first submission of building energy consumption reporting to Ontario's Energy and Water Reporting and Benchmarking (EWRB) initiative, even if the building is smaller than the threshold required for mandatory reporting under O. Reg. 506/18: Reporting Of Energy Consumption And Water Use.

2.2 Energy Submetering

Tier 1 - Mandatory Requirement

1. As part of the building's LEED certification, achieve LEED Energy and Atmosphere Credit Enhanced Advanced Energy Metering.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> • Provide a brief narrative describing how the design will meet requirements.
Prior to Occupancy	<ul style="list-style-type: none"> • Provide the design-stage review report from the CAGBC showing review comments for LEED Energy and Atmosphere Credit Advanced Energy Metering.
Within 14 months Post-Occupancy	<ul style="list-style-type: none"> • Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Energy and Atmosphere Credit Advanced Energy Metering.

2.3 Renewable Energy

Reference: WSEL Urban Design Guidelines Reference: Section 4.1.1 Site Organization & Design Guideline 21

Renewable energy systems shall be considered and may include:

- Solar Photovoltaic (PV), including Building Integrated PV (BIPV)
- Solar thermal air heating
- Solar thermal water heating
- Wind

Tier 1 - Mandatory Requirement

1. Meet the following minimum requirements to ensure that the building is future-ready for solar or other renewable source. The building should be designed in a way that will accommodate future renewable energy installation.
2. Designate ground floor electrical and mechanical rooms sized to accommodate future renewable energy infrastructure including storage tanks (meters, monitors, etc.) controls and connections, conduit/raceways, electrical panel, circuit breakers, transformers and required clearances.
3. Determine the maximum generation capacity for the future system based on available space on site (including the proposed building design), utility interconnection requirements and all other applicable standards including structural loading.

4. Ensure an easement is provided between the mechanical room and/or electrical room and property line to allow for future connection potential to a community energy system / district energy system.
5. Integrate solar systems using principles from Solar Ready Buildings Planning Guide.
6. If renewable energy is provided via solar PV:
 - Use maximum generation capacity calculations to size the electrical distribution to accommodate future solar installation and plan for net metering (if desired).
 - Provide space in the appropriate electrical panel, switchboard, or switchgear for circuit breaker to connect the future solar PV system to the building electrical distribution system.
 - Size the electrical distribution to accommodate the power generated by the future solar PV system plus the size of the building's incoming transformer/ main breaker / overcurrent protection.
 - Design for and allocate appropriate space to accommodate future solar equipment and controls, including appropriate electrical panel, switchboard or switchgear for circuit breaker, inverter, electrical distribution equipment, conduit and raceways to connect the future solar PV system to the electrical distribution system, and ensure clearances in accordance with the Ontario Electrical Safety Code.
 - Designate an area of the roof and/or parking lot for future solar PV and design the structure for roof loading that includes an allowance for the future system.
 - Ensure unobstructed south-facing area for installation of solar (do not locate equipment, penthouses, etc., such that they limit the space available for solar).
 - If planning a green roof as part of Heat Island Reduction, consider design and plans that enable coexistence of solar infrastructure to maximize viability of solar and green roof installations.

7. If renewable energy is provided via solar thermal technologies, meet the following requirements:
 - Use the maximum generation capacity to size the distribution to accommodate future equipment associated with future solar thermal installation.
 - Provide space for future storage tanks, heat exchangers and associated piping and equipment in the mechanical room for future solar thermal. Ensure that there is space to run pipes in the future.

For other forms of renewable energy generation:

- Ensure that the building systems are sufficiently designed including consideration for mechanical equipment, rooms, hydro requirements and ensuring the provision of other building infrastructure required to enable future connection to planned renewable energy source.

Tier 2 - Advanced Requirement (Recommended)

1. Meet the Tier 1 Mandatory Requirements and provide a renewable energy system with capacity equivalent to a minimum 50% of the maximum generation capacity of the site determined as part of the Mandatory Requirement.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> • Provide a brief narrative and plan notations describing how the design will meet requirements.
Prior to Occupancy	<ul style="list-style-type: none"> • Provide plans marked-up to highlight measures noted above required to ensure capacity for future installation of renewable energy system(s) and/or renewable energy installation(s).

Stage of Compliance	Documentation
	<ul style="list-style-type: none"> For Tier 2, provide calculations showing that the renewable energy system(s) have been sized to a minimum of 50% of the maximum generation capacity on the site.

2.4 Embodied Carbon

Tier 1 - Mandatory Requirement

1. Undertake an embodied carbon analysis in compliance with the requirements of the Zero Carbon Building Standard.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> Provide the embodied carbon analysis prepared for the Zero Carbon Building standard to the satisfaction of the City describing how the design will meet requirements. Provide documentation of Zero Carbon Building Standard: Design project certification from CAGBC.

2.5 Carbon Offsets

Tier 2 - Advanced Requirement (Recommended)

1. Purchase carbon offsets in sufficient quantity to offset the building’s total embodied carbon.

Documentation of Compliance

Stage of Compliance	Documentation
Prior to Occupancy	<ul style="list-style-type: none">• Provide proof of purchase of carbon offsets in sufficient quantity to offset building's calculated embodied carbon.

2.6 Refrigerants

While there is no Tier 1 requirement in this section, applicants are strongly encouraged to select low-GWP refrigerants for their designs whenever possible.

Tier 2 - Advanced Requirement (Recommended)

1. For building HVAC systems, do not use refrigerants that are hydrofluorocarbons (HFCs) or are subject to global phase down under the Kigali Amendment to the Montreal Protocol (or future Amendments that are more stringent than Kigali).

Documentation of Compliance

Stage of Compliance	Documentation
At Site Plan Approval Submission	<ul style="list-style-type: none">• Provide mechanical schedules and notations indicating make and model of proposed HVAC system and refrigerants used.• Provide a brief narrative describing how the design will meet requirements.
Prior to Occupancy	<ul style="list-style-type: none">• Provide drawings and associated project equipment schedules, noting refrigerants used.

Part 03 Low Impact Building Products and Materials

The intent of this section is to encourage decisions that will reduce environmental impacts associated with building equipment, products and materials, and construction waste.

3.1 Low Impact Building Products and Materials

Reference: WSEL Urban Design Guidelines Reference: Section 4.1.2 Building and Massing Guideline 14

Tier 2 - Advanced Requirement (Recommended)

1. As part of the building's LEED Certification, achieve at minimum 1 point under each of the following three LEED Materials & Resources Credits:
 - Building Product Disclosure & Optimization: Environmental Product Declarations
 - Building Product Disclosure & Optimization: Sourcing of Raw Materials
 - Building Product Disclosure & Optimization: Material Ingredients
2. As part of the building's LEED Certification, achieve at minimum 3 points under LEED Materials & Resources Credit Building Life-Cycle Impact Reduction.

Documentation of Compliance

Stage of Compliance	Documentation
Prior to Occupancy	<ul style="list-style-type: none">• Provide the design-stage review report from the CAGBC showing review comments for LEED Materials & Resources Credit Building Life-Cycle Impact Reduction. (Tier 2)

Stage of Compliance	Documentation
Within 14 months Post-Occupancy	<ul style="list-style-type: none"> Provide the final LEED certification review report from the CAGBC, showing achievement of the three LEED Materials & Resources Building Product Disclosure & Optimization Credits, and the Materials & Resources Credit Building Life-Cycle Impact Reduction. (Tier 2)

3.2 Low Volatile Organic Compound (VOC) Emissions

Tier 1 - Mandatory Requirement

- As part of the building's LEED Certification, achieve a minimum of 2 points under LEED Indoor Environmental Quality Credit Low-Emitting Materials.

Tier 2 - Advanced Requirement (Recommended)

- As part of the building's LEED Certification, achieve a minimum of 3 points under LEED Indoor Environmental Quality Credit Low-Emitting Materials.

Documentation of Compliance

Stage of Compliance	Documentation
Within 14 months Post-Occupancy	<ul style="list-style-type: none"> Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Indoor Environmental Quality Credit Low-Emitting Materials and number of points required.

Part 04 Sustainable Transportation Options

The intent of this section is to reduce single occupant vehicle commuting and to encourage low-emission and active transportation, shared vehicle trips and to future-proof buildings for wider adoption of electric bicycles and automobiles by providing facilities that are safe, convenient, and secure.

4.1 Bicycle Storage, Showers and Change Facilities

Reference: WSEL Urban Design Guidelines References: Section 4.1.8 Active Transportation Facilities Guidelines 1 & 5.

Tier 1 - Mandatory Requirement

1. As part of the building's LEED Certification, design and locate bicycle facilities to achieve LEED Location and Transportation Credit Bicycle Facilities.
2. Provide 50% of bicycle parking spaces with electrical bicycle charging infrastructure (120 V outlet) at a maximum distance of 110 cm from bicycle rack.
3. All bicycle storage facilities shall be located in an accessible area that is well-lit, highly visible and secure. Lighting fixtures must be tamper-proof. Bicycle storage facilities shall reflect best practices in design and installation. The bicycle rack should support the bicycle in at least two places, to keep it from falling over, and allow the owner to lock both the bicycle frame and one or both wheels with a U-lock. The rack must be securely anchored and resistant to cutting, rusting, bending, and other deformation. Video security monitoring is required for areas where bicycles are being stored.

Tier 2 - Advanced Requirement (Recommended)

1. Implement Mandatory Requirements but provide individual, enclosed, secured bicycle lockers for long-term bicycle storage, or locate this storage inside the building.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> • Provide bicycle parking requirements calculations and indicate bicycle parking spaces on site and building plans ensuring compliance with City of Waterloo Zoning By-law and LEED (whichever is the more stringent). • Identify electrical supply required for electric bicycle infrastructure on site plans.
Prior to Occupancy	<ul style="list-style-type: none"> • Provide the design-stage review report from the CAGBC showing review comments for LEED Location and Transportation Credit Bicycle Facilities.
Within 14 months Post-Occupancy	<ul style="list-style-type: none"> • Provide the final LEED certification review report from the CAGBC, showing achievement of the LEED Location and Transportation Credit Bicycle Facilities.

4.2 Priority Parking for Carpooling

Reference: WSEL Urban Design Guidelines Reference: Section 4.1.1 Site Organization & Design Guideline 11

Tier 1 - Mandatory Requirement

1. Designate at least 2.5% of all parking spaces as priority parking for building occupants who carpool, but no fewer than 1 parking space per building. Calculations of carpool spaces shall be rounded up to the nearest whole number. The priority parking spaces shall be clearly identified with permanent signage and should be located in a preferred location on the site (within close proximity to

a building entrance.) For the purpose of calculations, parking spaces equipped with EVSE shall not be used as carpooling spaces.

2. Develop an internal carpool policy to promote ridesharing and reduce vehicle dependence. Becoming a member of Sustainable Waterloo Region TravelWise program is encouraged.

Tier 2 - Advanced Requirement (Recommended)

1. Implement Tier 1 Mandatory Requirements but designate at least 5% of all parking spaces as priority parking for building occupants who carpool.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> • Identify and provide notations including carpool space calculations and indicate the priority parking spaces for carpool on site plan(s) and provide details including location of on-site signage.
Prior to Occupancy	<ul style="list-style-type: none"> • Demonstrate carpool program / policy (or membership in TravelWise).

4.3 Electric Vehicle (EV) Chargers

Reference: WSEL Urban Design Guidelines Reference: Section 4.1.1 Site Organization & Design Guideline 11

Tier 1 - Mandatory Requirement

1. As part of the building’s LEED Certification, achieve LEED Location and Transportation Credit Green Vehicles / Electric Vehicles.

2. Provide Electric Vehicle Supply Equipment (ESVE) for a minimum of 5% of parking spaces or as per zoning or building code (whichever is more stringent). A load management system is recommended.
3. In addition, at least 50% of the remaining parking spaces shall be EVSE-ready. A parking space which is EVSE-ready includes a dedicated electrical circuit with sufficient capacity to accommodate vehicle charging. The conduit shall be sized to accommodate future wiring sufficient to provide Level 2 charging (or greater) and space to provide an electrical box or enclosure near the required space.
4. Parking spaces equipped with EVSE shall not be included in the calculations for designated carpool spaces.
5. Calculations of EVSE-ready parking spaces shall be rounded up to the nearest whole number.

Tier 2 - Advanced Requirement (Recommended)

1. In addition to Tier 1 Mandatory Requirements provide EVSE for a minimum of 10% of parking spaces and a minimum of 50% of remaining parking spaces shall be EVSE-ready.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> • Provide EVSE calculations and indicate EVSEs on site plans. • Provide EVSE-ready parking calculations and indicate EVSE-ready parking spaces on site plans

Stage of Compliance	Documentation
Prior to Occupancy	<ul style="list-style-type: none"> • Provide electrical plans signed by a certified professional identifying electrical conduit, connections and infrastructure to support ESVE and EVSE-ready spaces. • Provide the design-stage review report from the CAGBC showing review comments for LEED Location and Transportation Credit Green Vehicles / Electric Vehicles.
Within 14 months Post-Occupancy	<ul style="list-style-type: none"> • Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Location and Transportation Credit Green Vehicles / Electric Vehicles.

Part 05 Ecology and Microclimate

The goal of this section is to integrate design strategies to mitigate heat islands, reduce urban light pollution, support habitat and eliminate risk to birds. The intent of this section is to augment the City of Waterloo's existing Urban Design Manual and the Urban Design Guidelines for the business park.

5.1 Heat Island Reduction

Reference: WSEL Urban Design Guidelines Reference: Section 4.1.1 Site Organization & Design Guideline 10; Section 4.1.2 Building and Massing Guideline 16, WSEL Urban Design Guidelines Reference: Section 4.1.3 Landscape Design Guidelines.

Tier 1 - Mandatory Requirement

1. As part of the building's LEED Certification, achieve LEED Sustainable Sites Credit Heat Island Reduction.
2. If a green roof is pursued for all or part of the heat island abatement strategy, prepare and implement for the life of the building a maintenance plan for the green roof. The maintenance plan is to include recommendations for both vegetation health and structural integrity, and frequency of inspection sufficient to ensure that the green roof components perform as designed and in accordance with their required functions. Green roof plantings shall be installed prior to the occupancy of the building or any part thereof. Note: Artificial turf is not an accepted product for use on any green roofs. Green roof plantings that are combined with Solar PV shall be designed and planted to maximize viability of both solar and green roof installations
3. In addition to trees required by the City of Waterloo Urban Design guidelines, provide at least one large canopy growing shade tree for every five above-ground (unstructured) parking spaces to reduce urban heat island effects. Calculations resulting in fractions shall be rounded up to the nearest whole number and

include ALL non-structured surface parking stalls (even if covered by solar installations).

4. Parking spaces covered by solar installations or covering geo-exchange fields under parking lots, must be included in the above tree calculation, although final determination of the location of trees shall be at the discretion of the Director of Planning as determined through site plan process.
5. Select resilient, fast growing species known for longevity, carbon capture as well as being low-maintenance and disease-resistant. Utilize best practices for tree planting, including avoiding monocultures, and ensure adequate soil volume and planting conditions to foster full growth, health, and improved survival. For soil volumes, comply with the City of Waterloo Development Engineering Manual.
6. If a tree is removed, is in significant decline, becomes unsafe, or dies for any reason, it shall be replaced with a like species and measures taken to foster full growth, health, and improved survival of the new tree planting.

Tier 2 - Advanced Requirement (Recommended)

1. In addition to Tier 1 Mandatory requirements, as part of the building’s LEED Certification, achieve LEED Sustainable Sites Credit Heat Island Reduction using a green roof as one of the strategies.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> • Provide relevant notations and calculations on site plan demonstrating how the design will meet LEED requirements. • Provide calculations of hardscape areas and portions treated with non-roof measures listed.

Stage of Compliance	Documentation
	<ul style="list-style-type: none"> • Provide tree count and soil volume calculations and indicate planting and species list on landscape plans. • Provide details of tree planting and methods used to maximize tree survival and health.
Prior to Occupancy	<ul style="list-style-type: none"> • Provide the design-stage review report from the CAGBC showing review comments for LEED Location and Transportation Credit Heat Island Reduction.
Within 14 months Post-Occupancy	<ul style="list-style-type: none"> • Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Location and Transportation Credit Heat Island Reduction.

5.2 Exterior Lighting

Reference: WSEL Urban Design Guidelines Reference: Section 4.1.7 Lighting & Signage Guidelines.

Tier 1 - Mandatory Requirement

1. As part of the building’s LEED Certification, achieve LEED Sustainable Sites Credit Light Pollution.
2. All exterior lighting fixtures shall bear the Dark Sky Fixture Seal of Approval. If Dark Sky compliant fixtures are not available, the fixtures shall be full-cutoff and with a maximum correlated color temperature (CCT) of 3000K.
3. Exterior and landscape lighting shall be powered by solar powered panels (allowable wired in back up).

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> • Provide notations on site plan describing how the design will meet requirements. Indicate compliance for each fixture on building exterior lighting fixture schedules. • Provide schedules of exterior lighting fixtures, noting BUG ratings and Dark Sky Fixture Seal of Approval.
Prior to Occupancy	<ul style="list-style-type: none"> • Provide the design-stage review report from the CAGBC showing review comments for LEED Location and Transportation Credit Light Pollution Reduction.
Within 14 months Post-Occupancy	<ul style="list-style-type: none"> • Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Location and Transportation Credit Light Pollution Reduction.

5.3 Bird Friendly Design

Tier 1 - Mandatory Requirement

1. Implement design strategies to reduce bird collisions with the buildings on site:
 - Eliminate fly-through conditions (where there is a direct line of sight to trees / habitat on the other side of transparent glass)
 - Add permanent, high contrast visual markers (i.e., frit or acid-etched patterns) on the exterior glass surface of all transparent glazing. Minimum diameter of frit shall be 5 mm, and the maximum spacing shall be 50 mm x 50 mm. Add visual markers to all glass surfaces above grade to the height of the mature tree canopy (minimum 22m), as well as all glass surfaces adjacent to green roofs and walls.

- Do not use mirrored glass. Glass reflectivity shall be less than 15%.
2. Ensure ground level ventilation grates have a porosity of less than 20 mm X 20 mm (or 40 mm x 10 mm).

Tier 2 - Recommended Requirement

1. In addition to Tier 1 Mandatory Requirements, as part of the building’s LEED Certification, achieve LEED Innovation Credit Bird Collision Deterrence.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> • Indicate bird friendly design measures on site plans and include notations demonstrating compliance with requirements.
Prior to Occupancy	<ul style="list-style-type: none"> • Provide the design-stage review report from the CAGBC showing review comments for LEED Innovation Credit Bird Collision Deterrence. (Tier 2)
Within 14 months Post-Occupancy	<ul style="list-style-type: none"> • Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Innovation Credit Bird Collision Deterrence. (Tier 2)

Part 06 Water Efficiency

The intent of this section is to set minimum standards for indoor and outdoor water use efficiency.

6.1 Outdoor Water Efficiency

Reference: WSEL Urban Design Guidelines Reference: Section 4.1.1 Site Organization & Design Guideline 9, 20; Section 4.1.3 Landscape Design Guideline 8, 21, 22

Tier 1 - Mandatory Requirement

1. As part of the building's LEED Certification, achieve at minimum 1 point under LEED Water Efficiency Credit Outdoor Water Use Reduction.

Tier 2 - Advanced Requirement (Recommended)

1. As part of the building's LEED Certification, achieve at minimum 2 points under LEED Water Efficiency Credit Outdoor Water Use Reduction.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none">• Provide site plan with notations to indicate outdoor water use reduction measures being utilized.
Prior to Occupancy	<ul style="list-style-type: none">• Provide the design-stage review report from the CAGBC showing review comments for LEED Water Efficiency Credit Outdoor Water Use Reduction.
Within 14 months Post-Occupancy	<ul style="list-style-type: none">• Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Water Efficiency Credit Outdoor Water Use Reduction and number of points achieved.

6.2 Indoor Water Efficiency

Reference: WSEL Urban Design Guidelines Reference: Section 4.1.1 Site Organization & Design Guideline 20.

Tier 1- Mandatory Requirement

1. As part of the building's LEED Certification, achieve at minimum 4 points under LEED Water Efficiency Credit Indoor Water Use Reduction.
2. Report building water consumption to Ontario's Energy and Water Reporting and Benchmarking (EWRB) initiative and copy to Director of Planning at the City of Waterloo, even if the building is smaller than the threshold required for mandatory reporting under O. Reg. 506/18: Reporting Of Energy Consumption And Water Use.

Tier 2 - Advanced Requirement (Recommended)

1. In addition to Tier 1 Mandatory Requirements, achieve a minimum 5 points under LEED Water Efficiency Credit Indoor Water Use Reduction.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none">• Provide a brief narrative describing how the design will meet requirements.
Prior to Occupancy	<ul style="list-style-type: none">• Provide the design-stage review report from the CAGBC showing review comments for LEED Water Efficiency Credit Indoor Water Use Reduction.
Within 14 months Post-Occupancy	<ul style="list-style-type: none">• Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Water Efficiency

Stage of Compliance	Documentation
	<p data-bbox="597 279 1338 373">Credit Outdoor Water Use Reduction and number of points achieved.</p> <ul data-bbox="548 426 1401 737" style="list-style-type: none"> <li data-bbox="548 426 1401 737">• Provide a copy of the first submission of building energy consumption reporting to Ontario’s Energy and Water Reporting and Benchmarking (EWRB) initiative, even if the building is smaller than the threshold required for mandatory reporting under O. Reg. 506/18: Reporting Of Energy Consumption And Water Use.

Part 07 Building Commissioning

The intent of this section is to set a minimum standard for building commissioning. Commissioning ensures that the project meets the design intent as well as the owner's requirements. Buildings that are properly commissioned tend to have fewer change orders, are more energy efficient and have lower operation and maintenance costs.

7.1 Enhanced Commissioning

Tier 1 - Mandatory Requirement

1. As part of the building's LEED Certification, achieve at minimum 3 points under LEED Energy & Atmosphere Credit Enhanced Commissioning

Tier 2 - Advanced Requirement (Recommended)

1. As part of the building's LEED Certification, achieve at minimum 6 points under LEED Energy & Atmosphere Credit Enhanced Commissioning

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none">• Provide a brief narrative describing how the requirements will be met.
Within 14 months Post-Occupancy	<ul style="list-style-type: none">• Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Energy & Atmosphere Credit Enhanced Commissioning and number of points achieved.

Part 08 Requirements for Tenanted Buildings

The intent of this section is to encourage property owners of multi-tenant facilities to enter into a green lease that incorporates clauses in which the landlord and the tenant undertake specific responsibilities or commitments relating to the sustainable operation or occupation of a building.

8.1 Tenant Design and Construction Guidelines

Tier 1 - Mandatory Requirement

1. For projects that follow the LEED BD+C Core and Shell pathway and that will be leasing out more than 40% of the total floor area, achieve LEED Sustainable Sites Credit Tenant Design and Construction Guidelines.

Documentation of Compliance

Stage of Compliance	Documentation
Prior to Occupancy	<ul style="list-style-type: none">• Provide the design-stage review report from the CAGBC showing review comments for LEED Sustainable Sites credit Tenant Design and Construction Guidelines.
Within 14 months Post-Occupancy	<ul style="list-style-type: none">• Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Sustainable Sites credit Tenant Design and Construction Guidelines.

8.2 Green Lease

Tier 1 - Mandatory Requirement

1. For tenanted buildings, provide a copy of the lease to be used for any future tenants identifying Green Lease components that are intended to address sustainability and efficient operations of the building, such as but not limited to:

- a. Sustainability Goals and Management Plan
- b. Onsite energy generation
- c. Parking, Carpooling, Transportation Management, Bicycle Facilities
- d. Information Sharing (metrics and energy use information)
- e. Building Improvements
- f. Waste

Documentation of Compliance

Stage of Compliance	Documentation
Prior to Occupancy	<ul style="list-style-type: none"> • Provide a copy of the Green Lease for any tenants.

8.3 Energy and Water Submetering

Tier 1 - Mandatory Requirement

1. Provide energy and water submetering such that each tenant can accurately track the total water and energy consumed within their space.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none"> • Provide a brief narrative describing how the requirements will be met.
Prior to Occupancy	<ul style="list-style-type: none"> • Provide plumbing, electrical and mechanical drawings with annotations indicating locations of water and energy submeters.

Part 09 Building Resilience

The intent of this section is to encourage property owners to design buildings which are resilient to the effects of climate change.

9.1 Building Resilience

Tier 2 - Advanced Requirement (Recommended)

1. As part of the building's LEED Certification, achieve LEED Pilot Credit Assessment and Planning for Resilience and LEED Pilot Credit Design for Enhanced Resilience.

Documentation of Compliance

Stage of Compliance	Documentation
At SPA Submission	<ul style="list-style-type: none">• Provide a brief narrative describing how the requirements will be met.
Prior to Occupancy	<ul style="list-style-type: none">• Provide design-stage review feedback from the CAGBC for LEED Pilot Credit Assessment and Planning for Resilience and LEED Pilot Credit Design for Enhanced Resilience.
Within 14 months Post-Occupancy	<ul style="list-style-type: none">• Provide the final LEED certification review report from the CAGBC, showing achievement of LEED Pilot Credit Assessment and Planning for Resilience and LEED Pilot Credit Design for Enhanced Resilience.

Definitions

Building energy modelling report: An energy modelling report is a document that details energy modelling inputs, a description of the envelope, mechanical and electrical systems, as well as annual energy consumption for each building energy end use and fuel type.

Canada Green Building Council (CAGBC): is a Canadian organization that champions green buildings with a goal of transforming communities with zero carbon green buildings. They provide high-quality rigorous third-party certifications such as Zero Carbon Building Standard, LEED, Investor Ready Energy Efficiency and TRUE.

Clean energy source: is energy that comes from renewable, zero emission sources that do not pollute the atmosphere or create carbon emissions and generally refers to wind and solar. Geo-exchange systems do not create energy but are a clean source of heating and cooling for buildings.

Community Energy: Community Energy Planning (CEP) is a process that considers opportunities to integrate local energy solutions at a building or neighborhood scale, often renewable low-carbon systems.

District Energy System: are also often called low-carbon thermal energy networks. These are systems that distribute thermal energy to multiple buildings in a neighborhood or area and typically consist of heating and cooling center and thermal network of pipes connected to a group of buildings.

Electric Vehicle Supply Equipment (ESVE) is commonly referred to as a charging station or charging dock, provided to supply power to electric and hybrid-electric vehicles

EVSE-ready parking space: A parking space which is EVSE-ready includes a dedicated electrical circuit with sufficient capacity to accommodate vehicle charging. The conduit shall be sized to accommodate future wiring sufficient to provide Level 2

charging (or greater) and space to provide an electrical box or enclosure near the required space.

Geo-exchange: Also referred to as geothermal heat pumps (GHPs) or ground source heat pumps (GSHPs), geo-exchange systems are safe, reliable, efficient, and environmentally friendly alternative to conventional fossil fuel powered heating, ventilation and air-conditioning (HVAC) systems.

LEED Rating System: LEED (Leadership in Energy and Environmental Design) is a third-party green building certification program and the globally recognized standard for the design, construction and operation of high-performance green buildings. In Canada LEED certification is through the Canada Green Building Council (CaGBC).

Hydrofluorocarbons (HFCs): HFCs are compounds containing hydrogen, fluorine and carbon and used commonly in refrigeration and air conditioning. These are being phased down under the Kigali Amendment to the Montreal Protocol due to their high global warming potential (GWP) and impact on climate change.

Service Water Heating: Service water heating equipment refers to the collection of building components that generate, store, distribute, and dispense hot water used for applications other than space heating or industrial processes for general building occupant use e.g., showers, taps, kitchenettes etc.

Solar-Ready Buildings: Solar-ready buildings are designed and constructed to facilitate and optimize installation of a rooftop solar photovoltaic (PV) system and/or solar thermal system at some point after the building has been constructed.

Renewable Energy: Renewable energy sources are those that are derived from natural processes and replenished at a rate that is equal to or faster than the rate at which they are consumed. There are various forms of renewable energy including: energy generated from solar, wind, hydropower, biogas, liquid biofuels.

Volatile Organic Compounds (VOCs): are human-made chemicals emitted as gasses from certain solids or liquids and are commonly used in the manufacture of paints,

pharmaceuticals, refrigerants, hydraulic fluids, paint thinners, cleaners and dry-cleaning agents.

Zero Carbon Building Standard (ZCB): Is a made-in Canada framework that recognizes the importance of building emissions in reaching national climate commitments through two pathways for building projects: Zero Carbon Building Standard – Design and/or Performance.

Zero Carbon Building Standard – Design: guides the design of new buildings or retrofits of existing ones. It offers a pathway to ensure buildings can achieve zero carbon once in operation.

Zero carbon emissions operation: Zero use of fossil fuels on site, with only highly efficient grid electricity and/or on-site-generated renewable energy used. Within this standard, this does not apply to emergency use or any processes related to the business of the building occupant (process loads).

Resources

Canada Green Building Council

The Canada Green Building Council is a not-for-profit, national organization that has been working since 2002 to advance green building and sustainable community development practices in Canada. The CaGBC is the Canadian license holder for the [LEED green building rating system](#) and supports the [WELL Building Standard](#) in Canada.

<https://www.cagbc.org/Default.aspx>

City of Waterloo Development Engineering Manual

The City of Waterloo Development Engineering Manual details requirements for obtaining city approval related to the design, construction and maintenance of developments in Waterloo. Compliance with the most current version of this manual is required.

<https://www.waterloo.ca/en/government/development-engineering-manual.aspx>

Green Lease Resources

There are a number of guides and resources available that may be utilized for crafting a green lease will help you solve your sustainability challenges and build stronger working relationships with your tenants.

<https://www.boma.org/GreenLeaseGuide>

<https://www.imt.org/resources/green-lease-leaders-how-industrial-buildings-owners-use-the-lease-to-optimize-sustainable-business-practices/>

<https://realpac.ca/product/realpac-office-green-lease-national-standard-lease-for-single-building-projects/>

Kigali Amendment to the Montreal Protocol

Adopted in 2016, the Kigali Amendment to the Montreal Protocol was an agreement between 196 countries (including Canada) to phase down use of hydrofluorocarbons (HFCs), which have high global warming potential (GWP).

<https://www.canada.ca/en/services/environment/weather/climatechange/canada-international-action/montreal-protocol.html>

LEED Certification Process

LEED certification provides independent, third-party verification that a building, home or community was designed and built using strategies aimed at achieving high performance in key areas of human and environmental health: location and transportation, sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

https://www.cagbc.org/CAGBC/LEED/Certification_Process/CAGBC/Programs/LEED/LEED_Certification_Process.aspx?hkey=1ccc60d7-7815-428d-a7e3-cf78786a1902

Region of Waterloo TravelWise program

TravelWise is an internationally recognized workplace program available to employers across Waterloo Region. TravelWise aims to encourage employees to take transit, cycle, walk and carpool to work instead of driving alone. As a TravelWise member, your employees have access to carpool matching software, GRT's Corporate Transit Pass, and reimbursement for emergency rides home. TravelWise will also host promotional events and orientation sessions at your workplace to promote its services to your employees. Park businesses are encouraged to join the TravelWise program.

<https://www.regionofwaterloo.ca/en/doing-business/travelwise.aspx>

Sustainable Waterloo Region

Sustainable Waterloo Region is a social enterprise non-profit that helps the local business community, and Waterloo region as a whole, become more environmentally and economically sustainable, and therefore stronger and support members of the Waterloo Region community in a variety of ways to help find the intersection of financial and environmental sustainability.

Their mission is to catalyze transformation to sustainable systems of energy, mobility and buildings to build a cleaner, more diverse economy. All park residents will be encouraged to join Sustainable Waterloo Region's Regional Sustainability Initiative as a pledging member.

www.sustainablewaterlooregion.ca

Waterloo Region Community Energy

Waterloo Region Community Energy is a partnership between the Region of Waterloo, Cities of Waterloo, Kitchener and Cambridge, Enbridge, and local hydro utilities. Its goal is to improve and sustain Waterloo Region's economic competitiveness and quality of life through the coordination of targeted energy investments.

<https://wrcommunityenergy.ca>

Zero Carbon Building Standard (ZCB)

Zero Carbon Building Standard is a new measure of Green Building Innovation administered by the Canada Green Building Council. The ZCB Standard provides pathways for new and existing buildings to reach zero carbon and certification offers recognition for industry leaders.

https://www.cagbc.org/wp-content/uploads/2022/06/CAGBC_Zero_Carbon_Building-Design_Standard_v3.pdf