WATERLOO REGION

GREEN DEVELOPMENT STANDARD PHASE 1 SUMMARY REPORT

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1 Purpose of the Phase 1 Report

The purpose of this report is to identify the key building blocks to support the creation of a leading Green Development Standard (GDS) to the Regional and area-municipal Councils, councils, utilities, and other municipal partners. By helping build consensus from community leaders and other relevant parties, the report will serve as a tool to facilitate the creation of community-wide standards that are compatible with leading GDS across the country. To this end, the Phase 1 report completes foundational work needed to enable the next phase of the project through the following building blocks:

- Understanding best practices across leading municipalities
- Understanding how policies can support green development standards
- Collection of baseline information to secure next phases of work
- Engagement and education approaches to effectively foster partner buy-in
- An overview of anticipated next phases of work

It is important to acknowledge that a GDS is one of many tools and policies available to cities to address climate change and build sustainable communities. Consequently, this report can also identify complementary needs to meet the Region's ambition and goals.

Waterloo Region's GDS Subcommittee hired Urban Equation and The Planning Partnership to conduct the Phase 1 work of this project based on their successful work developing GDS with the Town of Whitby and the City of Pickering. These projects were successful because of the upfront planning and visioning sessions. Drawing from these experiences and an understanding of Waterloo Region's context and needs, the work was completed in three parts: Policy Review, Best Practice Review and Engagement. The following sections outline the findings and capture key considerations for Waterloo Region moving forward.

2 Policy Review

The intent of this section is to first, provide an overview of examples of existing official plan policy language that enables green development standards and sustainable design, secondly to understand the official plan policy frameworks in the Region of Waterloo and where there are opportunities to incorporate supportive policy for green development standards, and finally, to offer suggested policy for Municipal level green development standards and their implementation.

2.1 Upper and Lower Tier Official Plan Policies and Standards

A review of upper and lower tier policy frameworks in Ontario was undertaken to identify existing policy language that enables the development and implementation of green development standards. The review also looked at measures that advance sustainable site and building design; the mitigation of the impacts of a changing climate by supporting energy conservation, efficient land use and development patterns, sustainable transportation, and the use of green infrastructure and natural areas for water infiltration, among others.

The following examples highlight how other regions and municipalities are supporting green development standards to facilitate sustainable community planning and efficient building design.

2.1.1 Upper Tier Official Plans

York Region

York Region completed a Municipal Comprehensive Review (MCR), with the proposed York Region Official Plan (YROP) adopted by Council in June 2022. The existing 2010 YROP policies were reviewed along with the Council adopted YROP for policy frameworks that support compact development, sustainable communities, energy conservation, climate change, planning and development tools, and best practices.

York Region Official Plan, 2010

York Region developed the policies of the Official Plan (YROP) under a sustainability lens to support the initiative of creating a Sustainable Region. It is the intent of the Region to work with local municipalities, agencies, and stakeholders on the development and implementation of clean air initiatives and to identify the links between climate change, community planning, and public health. The Region will also work with other levels of government, agencies, and stakeholders to develop climate change adaptation measures that address such issues as urban heat island effect, infrastructure resiliency, emergency preparedness, vector-borne diseases, and extreme weather event responses.

The Region will work with local municipalities and the development community *to achieve energy efficiency levels that exceed the Ontario Building Code for residential buildings, and the Model National Energy Code for non-residential buildings,* as well as to *achieve 20 per cent greater water conservation than the Ontario Building Code* for all new buildings (Policies 5.2.20, 5.2.23).

The YROP states that development s*hall include a solar design strategy which identifies approaches that maximize solar gains and facilitate future solar installations* (i.e., solar ready). Further, the Region encourages the retrofitting of existing buildings within the Urban Area for increased water/energy conservation and the inclusion in new buildings of *on-site renewable or alternative energy systems which produce 25 per cent of building energy use*. W*here on-site renewable or alternative energy systems are not feasible, consideration of purchasing grid-source renewable energy is encouraged*. (Policies 5.2.26, 5.2.27, 5.2.28)

In support of the sustainable policies of the YROP, the Region requires *local municipalities to develop programs to ensure the successful implementation of the sustainable building policies of the Plan* and will support local *initiatives in sustainable community planning and sustainable building policy* that are greater than the YROP policies and the Ontario Building Code (Policies 5.2.40, 5.2.41)

Adopted York Region Official Plan, 2022

One of the Key Guiding Planning Principles under Section 1.4.6 of the proposed Official Plan is:

Standards that advance requirements for sustainable communities and buildings, water and energy conservation and management, low or no carbon energy systems, waste reduction, compact and mixed-use development, green building, and urban design in order to mitigate and adapt to climate change including striving towards net-zero greenhouse gas emissions.

Under Section 2.0, incorporating green development standards in communities continues the commitment to sustainability and climate change resiliency in the Region. Further, the Region encourages local municipalities to develop and integrate health supportive tools as part of the development review process, such as healthy development checklist, scorecard, health development assessment, or integrated sustainable development policy framework or guidelines.

Sustainable and resilient communities' policies under Section 2.3 define the Region's role and direction to local municipalities on net zero emissions, climate change, green development, programs and initiatives, and include the following:

2.3.25 To encourage and work with local municipalities, Indigenous communities, agencies, and stakeholders to integrate climate change mitigation and adaptation strategies into municipal, planning and development tools including but not limited to pilot programs, bylaws, *development* guidelines and incentive programs.

2.3.31 To work with local municipalities and the building industry to develop and adopt best practices in construction to mitigate climate change impacts and to reduce airborne pollutants.

2.3.32 To work with local municipalities and agencies to develop tools and strategies to mitigate and prevent potential impacts of climate change that may increase risks associated with natural hazards.

2.3.34 To work with local municipalities and agencies to support development of programs and initiatives that facilitate energy efficiency retrofits for existing buildings

2.3.35 To encourage new *developments* to achieve water efficiency and conservation targets that exceed Ontario Building Code requirements

2.3.36 That York Region and local municipalities develop, implement and periodically update sustainable *development* programs to achieve:

a) *Climate change mitigation and adaptation;*
b) *Energy efficiency and water conservation levels beyond the Ontario Building Code;*
c) *Mitigation of heat island effects, including but not limited to green/white roofs, light coloured paving material, locating trees or other landscaping to provide shading;*
d) *Increases in the use of renewable energy;*
e) *Low impact development and green infrastructure;*

f) *Dark sky or light pollution abatement;*
g) *Reduction of construction waste;*
h) *Recycling and adaptive reuse of construction materials;*
i) *Enhanced indoor air quality; and*
j) *Other sustainability measures*.

Durham Regional Official Plan, Office Consolidation 2020

The Durham Regional Official Plan (ROP), currently subject to a Municipal Comprehensive Review, advances the intent of Regional Council regarding growth and development, with a time horizon of 2031. The current ROP is rooted in a desire to improve quality of life, secure present and future residents' health, safety, convenience, and well-being, and establish the future development pattern of the Region.

The policies of the ROP, while not specifically stating the requirement for a green development standard, support energy efficiency and include the following:

Section 2.1.2 which states that it is the Region's goal to *"incorporate good community planning and design that enhances the Regional landscape and minimizes pollution of air, water and land resources"*.

Under Section 2.3.45, the ROP states that energy efficiency and improving air quality shall be considered in the planning and development of the region.

Section 2.3.47 outlines policy directions for Regional Council, as follow:

- *"Promote tree planting for the purposes of improving air quality, health and reducing energy use through shading and sheltering;*
- *Support alternative, renewable energy sources and green technology;*
- *Recognize the potential implications of climate change and will continue to investigate and implement mitigation measures where appropriate; and,*
- *Promote more energy efficient buildings and infrastructure including retrofitting existing development to more energy efficient standards [..]".*

Durham Region has created the Durham Community Energy Plan (DCEP) in association with all eight (8) local municipalities, utilities, and the regional government of Durham. The objective of the Report is to "*accelerate the transition to a clean energy economy in Durham while simultaneously achieving multiple economic, environmental and social benefits".* The report highlights Energy Use by Sector in the Region: 36% transportation, 30% residential, and 19% industrial. The report also discusses how the Region is going to reduce energy and GHG emissions by the year 2050 across all sectors. Six programs are outlined including the development of a Durham Green Standard that would use the Toronto Green Stand (TGS) as a model program for adaptation for Durham.

City of Toronto Official Plan, Office Consolidation March 2022

The City of Toronto Official Plan (OP) contains general policies related to growth, land use, housing, transportation, and employment, as well as more specific policies regarding built form, urban design, public realm, and individual land use designations within the City. The OP is structured around a vision for an attractive and safe city that includes complete communities; affordable housing; tree lined streets; a healthy environment including clean air, soil, energy, and water; infrastructure resilient to climate change, connected system of natural features; recreational opportunities to support health wellness; and a comprehensive transit system. This vision is supported by four principles for a successful city which include diversity and opportunity, beauty, connections, and leaders and stewards.

Chapter 2 of the OP establishes the City's principles for "shaping the City." It outlines a series of policies that address the changing nature of Toronto and establishes directions to create a more successful, livable and urbanized region. The strategy set forth by the OP places importance on rebuilding and reurbanizing existing areas that have or can utilize existing transit connections and services or where future infrastructure investment is to take place. This process allows for a sustainable approach to growth management, reducing urban sprawl and our dependence on private vehicles.

Chapter 3, Section 3.1 of the OP introduces policies for the Built Environment, Public Realm, Built Form and Tall Buildings. Collectively, these policies serve to provide detailed guidance and direction to support the creation of good, high quality urban design. The OP "*demands that both the public and private sectors commit to high quality architecture, landscape architecture and urban design, consistent with energy efficiency standards."*

Under Section 3.3 Policy 1, the OP outlines the requirements for a comprehensive planning framework for new neighbourhoods. The framework should include strategies to ensure that neighbourhoods function as communities with a mix of uses and parkland. Further, strategies should address energy conservation, peak demand reduction, resilience to power disruptions and small local integrated energy solutions that incorporate renewables, district energy, combined heat and power or energy storage; stormwater management and water conservation; and waste management.

Section 3.4 promotes a healthy natural environment which in turn supports the health and well-being of residents. Policy 1 c) speaks to addressing environmental stresses caused by the consumption of natural resources and supports reducing: solid waste, consumption of water and energy, greenhouse gas emissions, and reliance on carbon-based fuels. Further, under 3.4 policies protect the urban forest, quality of water, promote green infrastructure, and restrict development in floodplains.

Policy 19 under Section 3.4 supports energy producing options, sustainable design and construction practices, and green industry in new developments and building renovation. The following are encouraged:

a) *the use of innovative green spaces such as green roofs and designs that reduce the urban heat island effect and enhance urban ecology;*
b) *innovative methods of stormwater management including stormwater attenuation and re-use and use of green infrastructure;*
c) *advanced water conservation and efficiency methods;*
d) *advanced energy conservation and efficiency technologies and processes that contribute towards an energy neutral built environment including:*
    i. *establishing and extending district heating and cooling facilities and connections;*
    ii. *renewable energy systems including wind and solar power*
    iii. *small local integrated energy solutions such as combined heat and power and energy storage;*
    iv. *active and passive design measures that conserve energy and reduce peak demand; and*
    v. *back-up power systems to improve resiliency to power interruptions; and*
e) *designs that facilitate waste reduction, recycling and other innovative management technologies and practices.*

Chapter 4 includes detailed policies for the various land use designations in the City. The development criteria for the land use designations include a number of recurring policies related to energy, green infrastructure, and water efficiency and include:

"…opportunities for energy conservation, peak demand reduction; resilience to power disruptions; and small local integrated energy solutions that incorporate renewables, district energy, combined heat and power or energy storage; "
"…opportunities for green infrastructure including tree planting, stormwater management systems and green roofs, and"
"improved energy and water efficiency in existing buildings through renovation and retrofits "

The entire City of Toronto is a Site Plan Control Area. Under Chapter 5 Implementation of the Official Plan, Policy 3 states that "*To help achieve environmentally sustainable development, the City may use subsection 114(5)(2)(iv) and (v) of the City of Toronto Act, 2006 to secure the following sustainable design features in development that address exterior building and site matters in Tier 1 of the Toronto Green Standard:*

a) *weather-protected on-site bicycle areas and pedestrian-friendly infrastructure to encourage cycling and walking as clean-air alternatives;*
b) *high-albedo surface materials, open grid paving, shade trees, green and cool roofs to reduce ambient surface temperature to minimize the urban heat island effect;*
c) *building orientation to take advantage of passive solar heating, shading for cooling and natural light; and energy efficient exterior cladding and window treatments, which may be required to meet the Standard, to improve energy efficiency and reduce greenhouse gas emissions;*
d) *rainwater harvesting facilities, bio-retention swales, permeable paving and water efficient plant material to manage stormwater and reduce demand for potable water;*

e) *trees to enhance the urban forest and use of native species to protect, restore and enhance the natural heritage system;*
f) *bird friendly glass treatment to ensure that risk for migratory bird collisions is minimized:*
g) *energy efficient, shielded exterior lighting to reduce night time glare and light trespass; and*
h) *dedicated areas for collection and storage of recycling and organic waste to reduce solid waste."*

The Toronto Green Standard implements the environmental policies of the City of Toronto Official Plan. Tier 1 is required through the planning approval process.

The *City of Toronto Act* came into force in 2007. For land use planning, the Act gives the City the authority to regulate appearance and design features and exterior sustainable design of buildings.

City of Ottawa Official Plan, November 2021

Ottawa Council adopted a new Official Plan for the City in November of 2021. The City received a Notice of Decision by the Ministry of Municipal Affairs and Housing on Nov. 4, 2022 to approve, with thirty (30) modifications, the new City of Ottawa Official Plan (OP).

The City is expected to reach 2 million people by 2046 and the OP will be the guiding document to ensure the City is resilient to a changing climate and able to respond to health, economic, and environmental issues. The OP is directed by five big policy moves that include intensification, sustainable transportation, urban and community design, environmental, climate and health resiliency and energy, and economic development. Policies are embedded throughout the OP that implement health, energy, and climate change objectives.

Section 2.2.3 Energy and Climate Change sets forth a number of policies of intent that are related to what the City wants to achieve in response to climate change. The City aims to achieve a compact and connected City, with sustainable and resilient site and building design; energy efficient transportation modes and the use of local renewable energy sources; a reduction of the urban heat island effect; resilience to future flood risks, tree canopy protection and enhancement; protection of the natural environment; and support for sustainable local food production.

Section 3.3 of the OP prioritizes the 15-minute neighbourhood which is a direction found in many updated Official Plans across Ontario, ensuring that the urban area is planned as complete 15-minute neighbourhoods offering residents access to a mix of uses and housing and options for sustainable transportation. Detailed policies are provided under Section 4.1.2 outlining walking times to services and amenities, safe and convenient pedestrian and cycling routes, and access to transit along corridors and in hubs. Sustainable transportation is a priority for the City and policy direction is provided under Section 4.1.4 through reduced or eliminated surface parking, improving road safety through dedicated transit lanes, traffic calming, and street trees.

The entire City of Ottawa is a Site Plan Control Area, and as such site planning and building design are to be innovative, sustainable, and resilient. Section 4.6.4 identifies that site planning and building design will be supported by a High Performance Development Standard, which will apply to site plans, draft plans of subdivision, and local plans. The OP states that the *"Standard addresses matters of exterior sustainable design and will align urban design with climate change mitigation and adaptation goals and objectives."* Section 11.1 (3) states that the City may adopt a High Performance Development Standard to achieve environmentally sustainable development to secure sustainable and resilient design features in development that address exterior building and site matters. Sustainable design features include:

a) *Weather-protected on-site bicycle areas and pedestrian-friendly infrastructure to encourage cycling and walking and to reduce emissions from transportation;*
b) *High reflective materials, shade trees, and green and cool roofs to reduce ambient surface temperature to minimize the urban heat island effect;*
c) *Active and passive design measures to improve energy efficiency and reduce peak demand such as building orientation to take advantage of passive solar heating, shading for cooling and natural light and energy efficient exterior cladding and window treatments;*
d) *Renewable energy production and supply to provide clean, local energy reducing greenhouse gas emissions and improving resiliency to power outages*
e) *Low Impact Development and other nature-based approaches to manage stormwater and mitigate flood risks where feasible, and reduce demand for potable water;*
f) *Trees to enhance the urban forest and use of native species to protect, restore and enhance the natural heritage system;*
g) *Bird-safe glass treatment to minimize the risk for bird collisions and energy efficient, shielded exterior lighting to reduce nighttime glare and light trespass;*
h) *Dedicated areas for collection and storage of recycling and organic waste to increase waste diversion; and*
i) *Enhanced human health by increasing opportunities for physical activity, mitigating impacts of air pollution, requiring passive cooling strategies such as operable windows and shade to mitigate against extreme heat and promoting access to food. (11.1 (3)).*

Further the City supports opportunities to conserve energy through local integrated energy solutions that incorporate renewable energy such as district energy, geothermal, and waste heat energy capturing systems and energy storage. Photovoltaic panels on expansive roof structures are also encouraged, as well as green roofs or rooftop gardens (4.6.4.2) and 3)).

Supporting resilient infrastructure that can mitigate the impacts of extreme weather events is supported under Section 4.7.1. To mitigate the impacts of development and climate change on drainage systems, low impact development requirements are to be established in environmental management plans or master servicing studies.

The OP includes policies to support energy conservation, a changing climate, compact development through 15-minute neighbourhoods, sustainable site and building design, and resilient infrastructure. To realize the OP's objectives of sustainable and resilient design, and through enabling policy for High Performance Development Standards, City Council approved a

High Performance Development Standard in April 2022. The High Performance Development Standards, discussed in more detail under Section 4 of this report, include metric requirements for Site Plan and Plan of Subdivision and include draft Terms of Reference for a Community Energy Plan and Energy Model Report.

The standard will come into effect as the date that Section 11.1. Policy 3 of the OP comes into force. Currently, the High Performance Development Standard is part of the pre-application process.

2.1.2 Lower Tier Official Plans

Town of East Gwillimbury Official Plan, 2010. Office Consolidation 2018.

The Town of East Gwillimbury has had Thinking Green! Development Standards (TGDS) in place since 2012. The TGDS have evolved since the sustainable strategy was introduced in 2007 and the first iteration of the standards applied to the development application process in 2012.

To support the development of sustainable communities and meet the objectives of Environmental, Economic, and Social Sustainability, the Town's 2010 Official Plan (OP) directed the development of the TGDS, with the standards used to ensure the sustainability goals and policies of the Plan are addressed through development applications (Section 2.4).

The TGDS were directed to include standards for:

1. Energy efficiency
2. Renewable/Alternative energy generation
3. Water conservation
4. Waste reduction
5. Active transportation and sustainable transportation management
6. Diverse and mixed-use communities
7. Green building materials
8. Stormwater management
9. Green infrastructure

The OP policy imperative for adhering to the Town's TGDS was set out under Policy 2.4.3 and required that all development address the minimum standards necessary to satisfy the applicable elements outlined in the TGDS to the satisfaction of the Town. To demonstrate compliance, applicants are expected to fill out and submit the Application Information Form and the Pre-Consultation TGDS Checklist as part of the Pre-Consultation Application Package, and fill out the Application Information Form and TGDS Assessment during application preparation.

The Town completed an Official Plan Review with Council adopting the Updated OP in June 2022. The Adopted OP has been submitted to York Region for approval. The Adopted OP continues to support green standards and practices under Section 3.6 A Sustainable and Resilient Community. Policies include the continued promotion of a broad range of practices associated with resilient and sustainable development including its TGDS and the Town taking a leadership role in

sustainable built form and encouraging private sector green building design and construction to implement the Town's TGDS (3.6.2).

Town of Whitby Official Plan, Office Consolidation August 2021.

The Town of Whitby Official Plan (OP) provides policies that support the creation of healthy, complete, sustainable communities that support optimal quality of life, health, safety, convenience, and welfare for the present and future residents of the Municipality. The OP provides the policy language required to initiate the Sustainable Development Guidelines and the performance checklists.

3.2.4.4 The Municipality may prepare comprehensive sustainable development standards, guidelines, and by-laws, in consultation with the community and other stakeholders. These standards, guidelines, and by-laws are intended to support sustainable site design for development and redevelopment on public and private property, which will further enhance the natural heritage, economic vitality, cultural heritage, and social aspects of the Municipality.

3.2.4.5 Sustainable development standards, guidelines, and by-laws may address, but not be limited to, such issues as:

- *a) energy efficient building and site design;*
- *b) water conservation, on-site water management techniques, and other low impact development techniques for stormwater management;*
- *c) green infrastructure;*
- *d) building materials;*
- *e) waste reduction;*
- *f) on-site renewable energy generation and recovery;*
- *g) natural heritage preservation and enhancement;*
- *h) active transportation and sustainable transportation management;*
- *i) community programs and facilities;*
- *j) cultural heritage and the provision of cultural amenities;*
- *k) land use compatibility to ensure public health, safety, and economic viability; and*
- *l) measures for climate change adaptation.*

3.2.4.6 The Municipality will prepare sustainability performance checklists as part of sustainable development standards. Such checklists shall be used in the development review process to assess the level at which new development and redevelopment achieve the sustainable development standards and other sustainability objectives.

Vaughan Official Plan, 2010. Office Consolidation 2020.

Building on the standards provided in the 2010 York Region Official Plan, the City of Vaughan Official Plan (VOP) contains both general targets on energy and water efficiency and a commitment to provide work with the building and construction industry to provide a more specific set of standards on a broader set of sustainable criteria. Following on the recommendations

contained in Green Directions – Vaughan's Sustainability Master Plan – a Sustainable Development Report will be submitted as part of applications for new developments to gauge how well we are doing at addressing these issues.

It is the policy of Council:

9.1.3.1. To develop Green Development Standards, in consultation with the building and construction industry, and, where appropriate, specific and feasible standards may be established to:

a) provide a high-level of efficiency in energy consumption;
b) maximize solar gains and be constructed in a manner that facilitates future solar energy installations;
c) include or facilitate future on-site renewable energy systems;
d) provide a high-level of efficiency in water consumption, including rainwater harvesting and recirculation for irrigation purposes;
e) enhance indoor air quality;
f) contain or facilitate the future installation of plug-ins for electric vehicles;
g) use environmentally preferable building materials, high-renewable and recycled content building products, and certified sustainably harvested lumber;
h) provide water efficient and drought resistant landscaping, which should include the use of native plants and xeriscaping;
i) maximize permeable surfaces, including the provision of permeable driveways;
j) incorporate green roofs into building design; and
k) reduce construction waste and divert construction waste from landfill; and, promote Energy Star qualified development.

9.1.3.2. *That in developing the Green Development Standards outlined in policy 9.1.3.1, the policies related to sustainable buildings in the York Region Official Plan will be applied.*

During 2014 to 2015, the City of Vaughan, along with the City of Brampton and Town of Richmond Hill undertook a process to develop sustainable development performance measures.

The City of Vaughan is updating its Official Plan through an Official Plan Review process to better meet the needs of current and future residents and businesses. The review process is focused on planning for complete communities through environmental sustainability, social responsibility, and economic development.

City of Brampton Official Plan, 2008. Office Consolidation 2020.

The City of Brampton Official Plan (OP) includes a section called the Sustainable City Concept, that represents the foundation for the Official Plan and a holistic approach to planning to meet economic, social, environmental, and cultural needs of the community.

Under Section 3.1 Sustainable Planning Framework, the planning framework is built on a number of objectives, and includes *"The preparation and management of strategic documents that guide development and/or operational decisions, such as environmental master plans and sustainable*

development guidelines, to ensure that the City's land use planning and corporate management programs are sustainable."

With this enabling policy in the Official Plan, the City undertook a process to prepare Sustainable Community Development Guidelines and a Sustainability Assessment Tool to assist with the review and evaluation of development applications. The Sustainability Assessment Tool was developed in partnership with the City of Vaughan and the Town of Richmond Hill.

Following the preparation of the Sustainable Community Development Guidelines and the Sustainability Assessment Tool, the OP was amended to add Section 3.4 Sustainable Community Development Guidelines that provides direction on the applicability of the guidelines and the application of the Sustainability Assessment Tool.

Policy 3.4.1 states *"The Sustainability Assessment Tool offers the applicant and the City a means to evaluate the sustainability performance of development applications. In addition, it helps the City to:*

- *Inform, track, and rank the sustainability performance of a development proposal;*
- *Identify opportunities to improve the sustainability performance of a development proposal;*
- *Acknowledge developments that achieve a high sustainability score; and,*
- *Qualify an acceptable minimum sustainability performance.*

Further detail is provided under the Implementation Section of the OP, specifically Policy 4.11.4.9, which outlines the mandatory requirements for the "Sustainability Score and Sustainability Summary" and its requirement as a component of a complete development application.

"…Development applications must achieve a Sustainability Score within the Bronze (minimum) Threshold. Achievement of a Sustainability Score within the Silver (good) or Gold (excellent) Thresholds is strongly encouraged. The scores are determined using the Sustainability Assessment Tool and considers site elements including, but not limited to:

- *Compact Development*
- *Land Use Mix and Diversity*
- *Green Buildings*
- *Site Accessibility*
- *Landscape and Street Tree Plantation/Preservation*
- *Housing Unit Mix*
- *Community Form*
- *Natural Heritage*
- *Parking*
- *Pedestrian Connections*
- *Cultural Heritage*
- *Street Networks and Blocks*
- *Site Permeability*
- *Transit Supportiveness*

- *Active Transportation*
- *Walkability*
- *Stormwater Management*
- *Park Accessibility*
- *Soil Restoration/Enhancement*
- *Energy Conservation*
- *Potable Water Conservation*
- *Lighting*
- *Bird Friendly Design*
- *Materials and Solid Waste Management*
- *Reduction of Heat Island*

Along with the Sustainability Score, applicants must also submit a Sustainability Summary."

Town of Richmond Hill Official Plan, 2010. Office Consolidation August 2021.

A guiding principle of the Town of Richmond Hill Official Plan (OP) is to *"incorporate and promote sustainable development practices and initiatives."*

The OP includes enabling policy for sustainable standards under Section 3.2.3 Sustainable Design, providing that minimum sustainable design performance will enhance the built and natural environments and promote energy and water conservation, healthier community, and sustainable building and site design. The following are two policy statements in the OP that reference sustainable design criteria:

1. *The Town shall develop Sustainable Design Criteria that are consistent with and implement the sustainable design policies of this Plan. ...*

4. *The Sustainable Design Criteria may be reviewed and revised by the Town from time to time to respond to technology advancement and design innovation.*

Town of Halton Hills Official Plan, Office Consolidation 2020.

In 2014, the Town of Halton Hills incorporated language into the Town of Halton Hills Official Plan (OP) to require the submittal of the Green Development Standards Checklist under Section G12.3 Supplementary Information Requirements for a complete application and to be consistent with Section C19 Green Development.

Specifically, under Section C19, the OP ensures that sustainable development practices are addressed through development applications by requiring that all development applications promote the following goals: energy conservation, water conservation, natural environment, air quality, water management, communication, and transportation and/community design. To further direct green development, Policy C.19.1 states *that a development application will be deemed to*

have met the goals of *C19 if it meets the requirements of the Green Development Standards, adopted by Council*.

2.2 Existing Official Plans in Waterloo Region

The intent of this section is to review the current official plans of the Region of Waterloo and the local area municipalities of Waterloo, Cambridge, and Kitchener to identify existing policies that support energy efficiency, sustainable design, and climate change mitigation and identify opportunities for the inclusion of enabling policy language to support the preparation and implementation of green development standards.

2.2.1 Region of Waterloo

Waterloo Regional Official Plan, 2015.

The Region of Waterloo's 2015 Regional Official Plan (ROP) supports the achievement of balanced growth through directing development to existing built up areas and the creation of complete communities. The overarching vision and central concepts for the ROP are that of a sustainable and liveable region. Three foundational themes direct the policies of the Plan and include social equity, a thriving community, and environmental sustainability. To support the connections between these theme areas, the ROP is organized under sections that address liveability, an innovative and competitive economy, cost effective infrastructure, strong and prosperous rural communities, the conservation and enhancement of the natural environment, source water protection, and the management of aggregate resources.

The lens of sustainability is applied throughout the document to support future growth in a compact urban form with a mix of uses and access to mobility options through the principles of Transit Oriented Development.

Specific reference to energy conservation is found under Section 2 Urban Area Development Policies, Policy 2.D.1. Urban Areas will accommodate the majority of the Region's future growth and development and will be planned to "promote building designs and orientations that incorporate energy conservation features and the use of *alternative and/or renewable energy systems*."

Under Policies 2.D.20 and 2E.9 Area Municipalities are encouraged to prepare urban design guidelines to provide more detailed direction for development within Urban Designated Greenfield Areas and Township Designated Greenfield Areas. Although not green development standards, urban design guidelines offer the opportunity to guide development in the public and private realms. The layout of roads to support the integration of transit, the orientation of buildings, stormwater management, park design, among others, are all components of guideline documents that can contribute to complete, sustainable neighbourhoods.

Under Section 3 Liveability in Waterloo Region a number of objectives are set forth such as reducing reliance on gas-powered vehicles, promoting the use of alternative and/or renewable

energy systems, improving air quality and reducing the potential for climate change by conserving energy, and reducing emissions of air pollutants and greenhouse gases, and supporting the development of an environmentally sustainable and economically viable regional food system. (Policy 3.3, 3.4, 3.5, 3.6)

Section 3.D Energy Conservation supports using less energy, reducing greenhouse gases and other air emissions, and promoting compact, mixed-use, transit-oriented communities. Further, under Policy 3.D.1 the ROP supports policies to maximize production of alternative and/or renewable energy systems, promote green roofs to reduce the urban heat island effect, support water efficiency, promote building designs and orientation that incorporate energy conservation, and the use of locally sourced materials.

The Region directs local area municipalities to establish policies to permit *alternative and/or renewable energy systems* in all designations, including appropriate separation distances and land use compatibility (3.D.6).

Policy 4.D.1 identifies collaboration with the business community, other levels of government and post-secondary institutions, to promote research and innovation in areas such as adaptation to climate change, water supply, efficient water use and re-use, air quality improvement, energy conservation, waste reduction and management, and ecological restoration. Under Policy 4.D.5 the Region encourages *new and renovated residential, office, industrial and commercial buildings and site design be constructed to progressive environmental certification standards.*

Although the 2015 ROP does not explicitly state that a Green Development Standard should be prepared, the policy framework promotes many of the requirements that would be included in green development standards. The framework to support green development standards exists in the ROP but the missing component is the policy language to encourage or require the preparation of green development standards. This needs to be ingrained in policy documents to provide credibility and validity for the development of these standards. The Amendment to the Regional Official Plan, released in adopted in August, and discussed below, addresses this item.

Amendment No. 6 to the Waterloo Regional Official Plan, August 2022.

On August 18, 2022, Regional Council adopted Amendment No. 6 to the Regional Official Plan (ROP). This amendment establishes the planning framework in the ROP to accommodate Waterloo Region's forecasted population and employment growth to 2051, in conformity with the Provincial Growth Plan. The Region is expecting to add approximately 300,000 new residents and 178,000 new jobs over the next 30 years, reaching a population of 923,000 people and 470,000 jobs by the year 2051.

The amendment will support the Region's long-term growth and vision for an inclusive, thriving, and sustainable region of connected rural and urban communities with global reach, fostering opportunities for current and future generations.

Key policy changes were included for Climate Action, such as supporting the 15-minute neighbourhood, mobility networks, urban agriculture, green infrastructure and LID to manage stormwater run-off, resilient communities and infrastructure, and requirement for Neighbourhood Energy Plans. These policy changes support a number of the policy directions set forth in the Climate Change Policy Direction Paper to address how residents of the Region move, live, work, and build.

One of the foundational themes of the ROP is Building a Thriving Community. Key components of a thriving community include creating compact neighbourhoods with a high standard of living, a unique sense of place that conserves cultural heritage, access to services and amenities, and buildings that "*incorporate the highest urban design and green development standards that foster social connections, minimize energy use, and reduce greenhouse gas emissions."*

The Region included a key policy change that directs the area municipalities to develop a High Performance Development Standard to support energy efficiency and net-zero operational buildings. This direction is found under Chapter 2, Where and How to Grow, for site plan approval and plans of subdivision.

2.B.1.2 Area municipalities will develop a High Performance Development Standard to be applied to applications for site plan approval and plans of subdivision to address climate change mitigation and energy performance consistent with the following minimum criteria:

a) *a tiered approach with a mix of mandatory and voluntary energy performance measures that would be secured during site plan and plan of subdivision application approval processes, with the use of plans, reports and agreements;*

b) *a requirement for the submission of an Energy Modelling Report as part of the submission package for applications for site plan approval or plans of condominium proposing larger buildings. The Energy Modelling Report will be based on hourly energy usage, and will identify the energy conservation measures proposed and any applicable assumptions made in modelling the energy performance of the building; and*

c) *where an application for site plan approval is within an approved secondary plan area, plan of subdivision, or vacant land plan of condominium with an associated Neighbourhood Energy Plan, the Energy Modelling Report required in subsection (b) will reference and be consistent with the Neighbourhood Energy Plan.*

Beyond the direction for municipalities to develop High Performance Development Standards, a separate process and requirement is for area municipalities to request supporting documents for large scale development that address mobility and energy.

2.B.1.3 Area municipalities will require proposals for large-scale development proceeding by way of a secondary plan, plan of subdivision, vacant land plan of condominium or site plan to be supported by the following supporting plans:

a) a Mobility Plan demonstrating how the neighborhood will be built to accommodate the long-term modal shift to most trips being made by walking, cycling, and rolling, and to enable the provision of frequent, direct, and convenient transit service; and

b) a Neighbourhood Energy Plan, which will include consideration of energy generation, distribution, and storage.

2.2.2 Area Municipalities

City of Waterloo Official Plan, Office Consolidation 2020.

The 2020 City of Waterloo Official Plan (OP) is based on the desire to achieve a healthy and sustainable community. The four overarching principles of the OP that direct the objectives and policies of the plan include diversity and adaptability; accessibility and equity; connectivity; and health and vitality. As with the Region's Official Plan, the City will be planned as a complete community, providing a range of housing and services, a mix of jobs, community infrastructure, cultural facilities, and public transit and active transportation networks.

A factor that has a significant influence on the land use policies of the OP is that of the Environment and Energy. Under 2.3 (21) the OP notes *the supply and efficient use of energy is critically important to the future of all residents, businesses and other institutions within Waterloo. Policies in the Plan encourage the efficient use of energy resources through community and site design as well as building techniques designed to conserve energy.*

The Plan specifically refers to energy and building techniques under Section 3.9.2 Neighbourhoods, policy 2. h) stating that the City will plan for healthy and safe neighbourhoods by *Planning for development that incorporates energy efficiency into transportation infrastructure, neighbourhood and building design. Plans of subdivision, Zoning By-law amendments, and site plans will be evaluated on the basis of this and other considerations;*

Sustainable design is promoted as an urban design objective under Section 3.11. Under Policy 3.11.1 (24) a number of sustainable design strategies for the public and private realm are set forth including: the adaptive re-use of existing buildings; incorporation of permeable paving materials; building and street orientation for passive solar gains; reduction of adverse impacts such as urban heat island effect, shadowing, wind and noise; use of drought tolerant, salt tolerant and native vegetation species; alternative transportation choices; and, creation of healthy, livable spaces.

Chapter 8 Environment and Energy provides policy direction supporting the sustainable production and use of energy, improving air quality and reducing contributions to climate change, and encouraging sustainable design standards and the application of sustainable management practices. Policies under Section 8.5 Energy support renewable or alternative energy systems,

compact built form through intensification, a mix of uses, increased use of transit and active transportation, reduction of the urban heat island, street and building orientation to maximize passive solar gain, water reduction, and adaptive reuse of existing buildings.

Under Section 8.6, air quality and climate are recognized as having significant impact on human and ecosystem health. Policies promote sustainable design and construction standards and the use of renewable energy systems to improve air quality, tree planting to improve the urban forest, and City collaboration with other levels of government, other municipalities, institutions, community groups, and local industries to develop programs to reduce air pollutants and greenhouse gas emissions.

The City encourages sustainable design standards and requires, where appropriate that a Sustainable Development Report be submitted as part of an application for an Official Plan Amendment, Zoning by-law Amendment, Plan of Subdivision, and Site Plan. The Sustainable Development Report will describe the sustainable initiatives being implemented in the development such as energy and water efficiency, building materials, and stormwater management (Policy 8.7.3.5). Further, Policy 8.7.6.6 states that City may implement programs to encourage and/or require environmentally sustainable development.

The City of Waterloo is currently engaged in a review of its OP. In the interim, in the interest of promoting environmentally responsible development, the City recently launched a pilot project to test out a requirement for an Energy Strategy as part of a Complete Application for Official Plan Amendment, Zoning Bylaw Amendment, Draft Plan of Subdivision, and Draft Plan of Condominium requests. The Energy Strategy is to identify and evaluate options and design considerations for increasing the energy and carbon performance of a proposed development.
The City also uses Urban Design Guidelines as a way to support sustainable developments. Supplemental direction on matters related to sustainability can be found in the City's Urban Design Manual. The City uses this guidance in addition to their OP to further encourage innovation and sustainable design practices. Under Part 2 General City Design Guidelines, Section '2.5 Sustainable Design' includes guidance for sustainable design in the public and private realms, specifically for site design, landscape design, and building design and construction. Part 5 Appendices includes 'Appendix sub-section (M) Sustainable Design Criteria' which provides supporting background for the design guidelines with a list of select sustainable design features that should be considered to promote sustainable design through the site plan development process.

The OP includes language that encourages and promotes sustainable design standards and sustainable management practices. The policies of the OP provide the framework and support for green development standards and should follow the lead of Waterloo Region and provide an enabling policy that requires the preparation of a Green Development Standard (or High Performance Development Standard) to ensure development in the City meets the sustainable building requirements and direction of the OP.

City of Cambridge Official Plan, Office Consolidation September 2018.

The City of Cambridge is located within one of the fastest growing economic areas and is facing growth pressures while protecting and preserving the rural, agricultural and natural heritage areas from urban development. To ensure balanced and environmentally sustainable growth, the City of Cambridge Official Plan (OP) establishes objectives for growth management under Section 2.1, directing growth to the urban areas, with a significant portion directed to the built-up area.

Objectives include planning for compact development, continued development of the community core areas, supporting key transportation corridors such as the rapid transit system, and promoting the principles of conservation and sustainability, including the efficient use of energy and water, intensification, and the protection of the natural environment.

The urban design policies of the OP support healthy and livable communities, transit-oriented development, a high quality public realm, and sustainable design. Objectives to support these policies is to create a safe and healthy built environment, encourage the incorporation of sustainable design features into the built environment, and prepare and use urban design guidelines and standards.

Energy efficiency and sustainable design are addressed under Section 5.8 of the OP, encouraging neighbourhood, site and building design to utilize renewable energy systems and practices and low impact development, the integration of green building technologies, and building adaptation and reuse.

Under the urban design guidelines in Section 5.14, the City will prepare and approve urban design guidelines to address elements related to site design and building placement, compact urban form and efficient use of energy and infrastructure, sustainable public and private services and facilities, transit-oriented development standards, and low impact development stormwater management techniques.

The OP uses urban design policies and the requirement for development proponents to prepare an urban design study to encourage and address sustainable development and energy efficiency. An enabling policy is required to support the development of a Green Development Standard (or High Performance Development Standard) to address the areas of concern for the City such as energy efficiency, renewable energy, water conservation, stormwater management, and protection of the City's natural features.

City of Kitchener Official Plan, 2014

The City of Kitchener Official Plan (OP) is guided by the vision for a complete and healthy community and supported by nine goals that include environmental viability and sustainability, enhanced high quality of life, mix of land uses, and good planning, among others. The urban growth structure for Kitchener is composed of priority areas for intensification that include the Urban Growth Centre, Major Transit Station Areas, City Nodes, Community Nodes, Neighbourhood Nodes, and Urban and Arterial Corridors.

The City, in collaboration with Waterloo Region, will prepare Station Area Plans for each Major Transit Station Area to provide direction on how each should be planned, designed, and phased over time. The Station Area plans will be comprehensive plans and will include design guidelines and development standards to achieve transit supportive development. (Policy 3.C.2.19 b).

Under Policy 5.C.1.1, the OP supports a strong and healthy economy by promoting development that features sustainable design. The reference to sustainable design is in accordance with the policies in Section 7.C.4 which outline how the City is committed to accommodating growth in a sustainable manner. The objectives are to promote sustainable development through conservation, efficiency, and design; to manage resources wisely; and to require site development and building design to utilize sustainable development practices.

The City will use City developed strategies, plans, and design manuals to guide development and redevelopment to be more sustainable. The City will review and update the existing Urban Design Manual periodically to consider the inclusion of guidelines or briefs related to sustainable development design standards and a Sustainability Report/Checklist (7.C.4.3). Further, development applications are required to complete a Sustainability Report/Checklist to address how the proposal meets the *sustainable development* policies of the Plan and that *sustainable development* design standards are achieved.

Section 7.C.5 speaks to water conservation and the reduction of water consumption levels through the promotion of the efficient use of water and the implementation of water saving technologies, the use of rain water harvesting and grey water reuse in all new development, and low water use landscaping alternatives.

The City also encourages and supports alternative and/or renewable energy systems, and district energy. Section 7.C.6 of the Official Plan outlines the City's commitment to energy conservation and generation through reduction in energy demand and consumption, use of public transit and active transportation, alternative and/or renewable energy systems, and energy efficient site and building design. The City requires that development applications include studies, such as Energy Conservation Efficiency Study, a Feasibility Study for Renewable or Alternative Energy Systems, District Heating Feasibility Study, and the completion of a Sustainability Report/Checklist to demonstrate how energy is being conserved (Policy 7.C.6.8). The requirement for studies is determined at a Pre-Consultation Meeting.

In support of energy conservation, the City will work with other levels of government and the private sector to encourage innovative energy conserving measures, support initiatives and educational programs that promote the benefits of reducing energy use, and continue to pursue energy conservation strategies.

To support clean air and improved air quality, policies under Section 7.C.7 support the development of compact, mixed use, transit-supportive, cycling and pedestrian-friendly communities; the establishment of rapid transit; the promotion of sustainable development and construction standards; and the use of alternative or renewable energy systems as a means of improving air quality.

Waste reduction and management policies under Section 7.C.8 support recycling, composting, and waste diversion programs. The City also promotes the reuse and recycling of construction materials.

The OP supports and encourages sustainable community development through a policy framework that promotes compact urban form, directs growth to intensification areas, encourages complete communities, promotes energy efficient building design, and supports transit and active transportation. The existing requirement for a Sustainability Report/Checklist should be supported by green development standards that outline the mandatory standards for sustainable development. An enabling policy directing the preparation of a Green Development Standard (or High Performance Development Standard) would support the goals and objectives of the City.

The Sustainability Report will continue be a requirement for submission and will support the green development standard. The components of the report will be defined to assist with providing an overview of the Applicant's sustainability commitment and how that commitment has been achieved.

2.3 Municipal Official Plan Language Considerations

To implement and support a Municipal level Green Development Standard (or High Performance Development Standard, as identified in the adopted Waterloo Region OP) policy language is required in the local area municipal Official Plans and incorporated through an Official Plan Amendment or the Official Plan review process.

Consider the following policy language for inclusion in local area municipal Official Plans, under an applicable section that supports energy conservation, environmental sustainability, or sustainable development.

"To support the sustainable goals and policies of this Plan, and the Region's direction for energy efficiency and net-zero operational buildings, Green Development Standards (or High Performance Development Standards) will be prepared in consultation with the building and construction industry to ensure Regional and Municipal policies are addressed through development applications. Green Development Standards (or High Performance Development Standards) shall include standards for, but not be limited to:

- *Energy efficiency*
- *Renewable energy generation*
- *Water conservation*
- *Waste reduction*
- *Active transportation*
- *Diverse and mixed-use communities*
- *Green building materials*
- *Stormwater management*
- *Green infrastructure"*

Implementation and Administration – Complete Application Requirements

Under the Implementation Section of a local area municipal Official Plan, include Green Development Standards (or High Performance Development Standards) as part of a Complete Application, to be determined through pre-consultation with City Staff and public agencies. It is suggested that Green Development Standards (or High Performance Development Standards) be included in the information and material required to be submitted as part of any application for a draft plan of subdivision, draft plan of condominium, or site plan.

It will be important to also provide a definition for Green Development Standards (or High Performance Development Standards) that is consistent across all area municipalities. In the Official Plan, it should be noted that the standards are required as part of a complete application. Applicants must also be aware that Green Development Standards (or High Performance Development Standards) will be used as a tool for evaluating development applications.

Include under Glossary of Terms or Definitions.
"The Green Development Standard (*or High Performance Development Standard) defines sustainability expectations for all new development in (add Municipality name), including Checklists for new development and re-development. The Checklists will be used as a component of the development review process to assess the sustainability of new development."*

2.4 City Enforcement and Legal Concerns

The authority for municipalities to implement green development standards is outlined in both the *Planning Act* and the *Municipal Act.*

2.4.1 Uncertainties with Bill 23, More Homes Built Faster Act

The Province of Ontario has introduced changes to the land use approvals system with the goal of increasing housing supply and the construction of 1.5 million new homes by 2031.

A number of changes are proposed that would limit or remove the ability of a municipality to regulate development. The following is a summary of some of the proposed changes and their potential impacts to the applicability of Green Development Standards.

Site Plan – Limit Scope of Site Plan

Section 41 of the *Planning Act* is proposed to be amended and that exterior design is no longer a matter that is subject to site plan control. This means that the municipal ability to regulate architectural details, which currently include the character, scale, and appearance of buildings; sustainable design features; and landscape design aesthetics will be removed from site plan control. Further, residential development of 10 units or less is also proposed to be excluded from site plan control. The intent is to reduce the number of required approvals for small housing projects - speeding up housing proposals. As a matter of safety, building permits and building and fire code requirements would continue to apply.

Removing these matters from site plan control impacts the exterior design features of buildings, as well as landscaping and drainage. This may restrict a municipality's ability to implement sustainable design initiatives, such as energy performance, requirements for green roofs, green infrastructure, site drainage, among others.

Section 41 of the *Planning Act* is what allows municipalities to affect change for building design and regulate matters related to building and site development. This would remove a municipality's ability to ensure proposed development is appropriate for the site, could create negative impacts with surrounding uses, impact cultural heritage, and health and safety objectives.

Streamlining Municipal Planning Responsibilities

The Province is also proposing to remove planning decision-making from specific upper-tier municipalities (Halton, Peel, York, Durham, Waterloo, and Simcoe). Impacts include that lower tier official plans and amendments in these regions would be approved by MMAH and the approval authority for subdivisions and consents would be automatically assigned to lower tier municipalities.

There is concern about resourcing to manage the increased number of matters that lower-tiers (or MMAH) would now be responsible for approving. This may lead to misalignment between capital investments in infrastructure by upper tiers and areas where growth is targeted by lower tiers. Upper tiers would continue to be responsible for servicing with upper tiers typically responsible for sewer/water, transit, and other matters tied to land use planning.

2.4.2 Current Provincial Policy Framework – Subject to Change upon Proclamation of Bill 23

The Planning Act

Section 2 of the *Planning Act* sets out interests, which include

- The conservation of natural resources;
- The supply, efficient use, and conservation of energy and water;
- The minimization of waste;
- The orderly development of safe and healthy communities;
- The promotion of development that is designed to be sustainable, to support public transit and to be oriented to pedestrians;
- the mitigation of greenhouse gas emissions and adaptation to a changing climate.

Section 41 permits municipalities to regulate matters related to building and site development. Section 41(4)2(d) of the Planning Act states:

(d) matters relating to exterior design, including without limitation the character, scale, appearance and design features of buildings, and their sustainable design, but only to the extent that it is a matter of exterior design, if an official plan and a by-law passed under subsection (2) that both contain provisions relating to such matters are in effect in the municipality;

A municipality may pass a Site Plan Control By-law which can be used to ensure that any development meets certain standards and regulations. Site Plan Control allows municipalities to create functional streets and landscapes.

Subsection. 51(24), of the *Planning Act*, states that municipalities must have "regard to" energy efficiency when considering draft plans of subdivision. Subsection 51(24) of the *Planning Act* provides:

51. (24) In considering a draft plan of subdivision, regard shall be had, among other matters, to the health, safety, convenience, accessibility for persons with disabilities and welfare of the present and future inhabitants of the municipality and to,

> ***(l)*** *the extent to which the plan's design optimizes the available supply, means of supplying, efficient use and conservation of energy...*

Municipal Act, 2001

The *Municipal Act* is the primary piece of legislation that sets out the roles and responsibilities of Ontario's municipal governments. The *Municipal Act* recognizes municipalities as a responsible and accountable level of government, giving municipalities a broad range of powers. Recent updates to the *Municipal Act,* through the *Modernizing Ontario's Municipal Legislation Act*, added the ability of a municipality to pass by-laws around environmental well-being including respecting climate change (S.11(2)) and provided additional clarity on a municipality's ability to develop green roofs or alternative roof surfaces that achieve similar levels of performance to green roofs., (e.g., S 97.1).

Finally, municipalities may provide for, or participate, in long-term energy planning for energy use in the municipality, and influence the design of development sites, including considering external building design details.

Ontario Building Code and National Construction Code

The Ontario Building Code (OBC), a regulation under the *Building Code Act*,1992, establishes technical requirements and minimum standards for building construction. The OBC defines the level of performance buildings are required to meet through the Supplementary Standard SB-10 and SB-12, which address environmental sustainability related to the construction of buildings, with the goal of increasing efficiency over time. The OBC's main purpose is to ensure public safety by requiring uniform building standards.

Bill 132, *Better for People, Smarter for Business Act*, 2019 repealed subsections 34 (6) and (7) of the *Building Code Act* to remove the requirement for the Minister of Municipal Affairs and Housing to initiate a review of the energy and water conservation provisions of the building code every five years. Further legislative changes were made to the *Building Code Act* as part of the *COVID-19*

Economic Recovery Act, 2020 that identified the importance of incorporating the National Construction Codes into the OBC (Subsection 34(1.1)).

It is expected that the next edition of Ontario's Building Code is proposed that Ontario adopts the 2020 National Energy Code of Canada for Buildings (NECB) to ensure greater harmonization with the National Construction Codes and the technical requirements in construction codes across Canada.

One of the changes in the 2020 National Construction Code included energy performance tiers to provide a framework for achieving higher levels of energy efficiency in housing and small buildings. The draft 2022 National Construction Code is proposing *tiered energy efficiency standards* that include a *pathway to requiring net zero ready construction in new buildings.*

Environmental Goals

Many municipalities have argued that they cannot rely solely on OBC minimum requirements to achieve their environmental goals. Incentives are a critical component of achieving performance beyond what is already mandated by policies, standards, and the building code. Incentives would work in tandem with the Green Development Standard and would not necessarily be integrated into the document.

Incentives that are available to municipalities to incent the development community to pursue higher tiers of performance beyond the mandatory requirements include the following options for consideration:

- Development Charge Refund Program - The City of Toronto provides a partial development charge refund to verified Tier 2, 3 or 4 sustainable and high performance development projects. In August 2022, City Council approved an increase in the Development Charge Refund Incentive to assist with reaching net zero emissions goals.

- Community Improvement Plans (CIP) - For a CIP to be an appropriate incentive tool for a green development standard, municipalities may need to identify a CIP for all lands in the urban area with priority areas for development or redevelopment. Only owners of properties within the Community Improvement Project Area that meet the program eligibility requirements may apply. CIPs can provide incentives or loans to developers in order to affect the desired outcome, or they can include changes to land-use and zoning regulations. CIPs could target brownfield redevelopment, densification and intensification, increased support for public transit, or the development of alternative energy systems.

- Utility Based Funding - The Enbridge Gas and Union Gas Savings by Design Program offers support / financial incentives to encourage builders of commercial and multi-residential developments to design their projects to achieve energy and environmental performance enhancements beyond the minimum requirements of the building code.

- Non-financially based incentives include accelerated approvals process or a recognition program such as Sustainable Design Awards/Green Development Champion.

The actual viability of implementing incentives within the partner municipalities may require additional study.

3 Best Practice Review

The following sections describe, at a high level, the various features of leading Green Development Standards across Canada. The aim is to, provide the Region key insights for developing its own GDS in future phases of this project.

3.1 Green Development Standards

This subsection provides a general overview of the leading green development standards across municipalities in Ontario. It also summarizes what types of sustainable performance criteria are addressed in each municipality.

While Vancouver has a robust community building policy, it is not contained in a comprehensive, stand-alone green development standard. Instead, the City of Vancouver implemented a Zero Emissions Building plan to transition to zero emissions buildings in all new construction by 2030, in addition to several development bylaws, policies, and guidelines, including:

- Green Buildings Policy for Rezonings
- Rezoning Policy for Large Sustainable Developments
- Higher Buildings Policy
- Low-Carbon Energy Systems Policy
- Zero Emissions Building Catalyst Policy

For this reason, Vancouver has been excluded from this sub-section of the report.

The table below (Table 1) provides a general overview of the leading green development standards in Ontario.

Of the five standards surveyed, only two (Sustainability Metrics Program and Halton Hills GDS) are points-based, as opposed to tier-based. Points-based systems allocate points for each metric and recommend compliance thresholds and minimum requirements. Tiered systems typically include a baseline of mandatory requirements and often have voluntary tiers or performance levels. In terms of the planning process, all five require GDS submissions at site plan, four require GDS submissions at plan of subdivision, and two require GDS submissions at rezoning.

Table 1: Overview of Municipal Green Development Standards

Municipal Standard	**Toronto Green Standard**	**The Sustainability Metrics Program**	**Ottawa High Performance Development Standard**	**Whitby Green Standard**	**Halton Hills Green Development Standards**
Location	Toronto, ON	Vaughan/Brampton, Richmond Hill/ Markham, ON	Ottawa, ON	Whitby, ON	Halton Hills, ON
Population (#)	**2.8M**	**1.4M** Vaughan: 323,000 Brampton: 655,000 Richmond Hill: 114,000 Markham: 339,000	**1.0M**	**0.14M**	**0.06M**
Population (% WR – W/K/C)	565%	299%	201%	27%	12%
Year Published (V1)	2010	2018	2022	2020	2014
Latest Version (Year)	2022	2021	2022	2020	2021
Number of Versions	3	2	1	1	3

Table 1 (continued): Overview of Municipal Green Development Standards

Municipal Standard	**Toronto Green Standard**	**The Sustainability Metrics Program**	**Ottawa High Performance Development Standard**	**Whitby Green Standard**	**Halton Hills Green Development Standards**
Point-Based vs. Tier System	Tier-based: 4 tiers, the first being mandatory.	Point-based: 3 levels related to the sustainability score achieved. Minimum score varies by municipality.	Tier-based: 3 tiers, the first being mandatory.	Tier-based: 4 tiers, the first being mandatory.	Point-based: must meet a minimum required point threshold (~40% of total points).
Planning Process Applicability	• Site Plan Application • Rezoning	• Site Plan • Plan of Subdivision • Block Plan	• Site Plan • Plan of Subdivision	• Site Plan • Draft Plan of Subdivision	• Site Plan Control • Plan of Subdivision • Rezoning
Development Types Covered	• Low-rise residential • Mid- to high-rise residential and non-residential • City agency, corporation and division-owned facilities	• Low rise • Multi-unit buildings • Non-residential	All new development and re-development in Ottawa	All new development and re-development in Whitby	• New low-rise residential • Low- rise non-residential • Mid to high-rise development

Table 2 below provides a breakdown of the various performance criteria evaluated by each of the five municipalities studied.

Overall, there is a wide a range in the number of performance categories (none – 10) and development features (11 – 50) covered by the standards. Note that the development features listed in the table reflect all of the checklists within each standard – i.e. all of the listed features may not be required for all building types or at all stages of the planning process.

Table 2: Performance Criteria Across Municipal Green Development Standards

Municipal Standard	Performance Categories (#)	Performance Categories (List)	Development Features (#)	Development Features (List)	Unique Features
Toronto Green Standard	5	• Air quality • Energy efficiency • Water efficiency • Ecological design • Solid waste	16	• Low emissions transportation • Pedestrian infrastructure • Operational emissions reductions • Renewable energy • Embodied emissions in materials • Managing stormwater • Water efficiency • Tree canopy • Landscape and biodiversity • Natural heritage protection • Climate positive landscapes • Bird collision deterrence • Waste collection and storage • Building material reuse • Sourcing of raw materials • Construction waste management	Large buildings (>2000 m² GFA) are required to submit a Design Development Stage Energy Modelling Report as proof of compliance. Applications have the option of pursuing the voluntary Development Charge Refund Program.

Table 2 (continued): Performance Criteria Across Municipal Green Development Standards

Municipal Standard	Performance Categories (#)	Performance Categories (List)	Development Features (#)	Development Features (List)	Unique Features
The Sustainability Metrics Program (Vaughan/Brampton, Richmond Hill/ Markham, ON)	4	• Built environment • Mobility • Natural environment and open space • Infrastructure and buildings	50	• Proximity to amenities • Providing mixed-use development • Design for life cycle housing • Community and neighborhood scale • Cultural heritage conservation • Enhancing urban tree canopy and shaded walkways and sidewalks • Salt management • Carshare and carpool parking • Surface parking footprint • EV charging stations • Block length • School proximity to transit routes, cycling networks, and walkways • Intersection density • Promote walkable streets • Pedestrian amenities • Bicycle parking • Implementing trails and cycling Infrastructure • Proximity to active transportation network • Distance to public transit • Traffic calming • Preserve existing healthy trees • Soil quantity and quality for new trees • Healthy soils • Connection to natural heritage • Natural heritage system enhancements • Supporting pollinators • Dedicated fruit/vegetable garden space • Access to public parks • Stormwater quantity and quality	Joint program across the three municipalities. The Sustainability Metrics Program includes a menu of metrics that applicants can select from in order to make their development more sustainable, with each metric worth a certain number of points.

Table 2 (continued): Performance Criteria Across Municipal Green Development Standards

Municipal Standard	Performance Categories (#)	Performance Categories (List)	Development Features (#)	Development Features (List)	Unique Features
				• Rainwater and greywater use • Multi-purpose stormwater management • Buildings designed and/or certified under an accredited “green” rating system • Universal design • Building accessibility • Embodied carbon of building materials • Reduce Heat Island • Passive solar alignment • Controlling solar gain • Solar readiness • Energy strategy • Building energy efficiency and emissions • Reduce potable water use • Back-up power • Extreme wind protection • Sub-metering of thermal energy and water • Reduce light pollution • Bird-friendly design • Solid waste • Innovation	

Table 2 (continued): Performance Criteria Across Municipal Green Development Standards

Municipal Standard	Performance Categories (#)	Performance Categories (List)	Development Features (#)	Development Features (List)	Unique Features
Ottawa High Performance Development Standard	0	N/A	34	• Building energy efficiency • Site plan accessibility • Fresh air intake • Tree planting • Plant species • Exterior lighting • Bird-safe design • Sustainable roofing • Cool landscape and paving • Common area waste storage • Building energy efficiency • Airtightness testing • Operational energy • Renewable energy • District energy • Embodied carbon • Health supportive amenities • Operable windows • Interior room temperature • Refuge area • Resiliency plan • In suite waste storing • Construction waste management plan • Parking • Micro mobility • EV parking • Bicycle access and storage • Enhanced bicycle facilities • Transit access • Enhanced transit facilities • Community energy plan • Extreme wind and snow loading • Waste storage	

Table 2 (continued): Performance Criteria Across Municipal Green Development Standards

Municipal Standard	Performance Categories (#)	Performance Categories (List)	Development Features (#)	Development Features (List)	Unique Features
Whitby Green Standard	10	• Health and happiness • Equity and local economy • Culture and community • Zero waste • Products and materials • Zero carbon energy • Sustainable water • Land use and wildlife • Local and sustainable food • Travel and transportation	47	• Public or boulevard trees • Access to parks and open space • Parkland and open space provision • Affordable housing • Accessible design • Housing types and size • Community safety • Art (within the site) • Outdoor amenity space • Cultural heritage resources • Public art (within public property) • Sustainable culture • Private street lights • Ecological functions • Ecological integrity • Tree canopy • Invasive species • Heat island effect • Bird and bat friendly glazing • Parks and opens spaces • Invasive species • Key natural heritage features • Stormwater management • Native, drought tolerant plants • Stormwater management quality and quantity • Irrigation for lots/units • Water balance • Household hazardous waste • Construction waste construction • Local food production • Accessible pedestrian infrastructure • Active transportation plan • Transit supportive compact built form	

Table 2 (continued): Performance Criteria Across Municipal Green Development Standards

Municipal Standard	Performance Categories (#)	Performance Categories (List)	Development Features (#)	Development Features (List)	Unique Features
				• Traffic control • Off-street surface parking • Walkways • Access to transit • Street networks and blocks • Functional entry to the urban mobility network • Complete street design • EV charging stations • District energy systems • Building commissioning • Renewable energy • Passive solar orientation • Energy efficient appliances • Building energy performance	
Halton Hills Green Development Standards	5	• Energy and water • Ecology • Resiliency • Transportation • Innovation	11	• Energy use reduction • Low carbon energy • Water use reduction • Energy and water reporting • Minimum soil depth • Minimum planter soil volume • Native and drought resistant vegetation • Stormwater quantity and quality • Resiliency checklist • Transportation demand management plan • Innovation	Using a LEED-like approach, criteria are rated on the significance of the environmental benefits and the difficulty or cost of implementation. The Town provides checklists for low-rise residential, low-rise non- residential, and mid to high-rise (any use) projects.

3.2 Building Energy Performance Targets and Tiers

In this sub-section, a general overview of energy specific requirements across different municipalities is provided. It also includes an overview of mandatory low-rise residential energy performance requirements.

The table below summarizes energy-related development features for all building types. Specific mandates often vary by building type (e.g. low rise residential vs. commercial). Overall, except for the Halton Hills Green Development Standard, each standard:

- Allows alternative compliance paths through third party certification.
- Includes building energy performance in their energy-related development features and;
- Requires varying degrees of energy modelling and reporting.

Table 3: General Overview of Energy Requirements by Municipal Standard

Municipal Standard	**Toronto Green Standard**	**The Sustainability Metrics Program**	**Ottawa High Performance Development Standard**	**Whitby Green Standard**	**Halton Hills Green Development Standards**
Energy-Related Development Features	• Building Energy Performance • Renewable energy • Benchmarking and Reporting • Enhanced Commissioning • Operational emissions reductions **Less common features*:** • Whole Building Lifecycle Assessment • GHG Emissions Limits • Material Emissions Assessment	• Building energy efficiency and emissions • Solar readiness • Sub-metering of thermal energy and water • Embodied carbon of building materials • Buildings designed and/or certified under an accredited “green” rating system **Less common features*:** • Energy strategy	• Building energy efficiency • Renewable energy • Airtightness testing • District energy • Embodied carbon • Operational energy	• Building energy performance • Renewable energy • Building commissioning • District energy systems* **Less common features*:** • Energy efficient appliances • Passive solar orientation*	• Energy use reduction • Low carbon energy • Energy and water reporting

***Less common features** are development features that are not typically seen in other GDS.

Table 3 (continued): General Overview of Energy Requirements by Municipal Standard

Municipal Standard	**Toronto Green Standard**	**The Sustainability Metrics Program**	**Ottawa High Performance Development Standard**	**Whitby Green Standard**	**Halton Hills Green Development Standards**
Energy-Related Development Features	• Whole Building Air Leakage Testing (WBALT)	• Passive solar alignment • Controlling solar gain • Back-up power			
Performance Metric Type	• Absolute energy use intensity • Absolute GHG intensity • Percentage above baseline • Certification • Commissioning • Life cycle assessment + GHG reduction • Whole building air leakage test	• Percentage above baseline • Certification • Commissioning • Percentage of total energy on site generated by renewable sources • Block orientation • EnerGuide rating • Sub-meter installation	• Absolute energy use intensity • Absolute GHG intensity • Percentage above baseline • Certification • Embodied carbon target and tracking	• Absolute energy use intensity • Absolute GHG intensity • Percentage above baseline • Certification • Exploration and feasibility	• Absolute energy use intensity • Absolute GHG intensity • Percentage above baseline
Required Documentation	• Energy (Modelling) Report • As-constructed stage energy model report • Design Stage Energy (Modelling) Report • Energy Workbook • Energy Efficiency Design Summary	• Energy Report • Letter of Intent • Roof Plan • Site Plan • Urban Design Submission	• Preliminary Energy Model • Final Energy Model • Community Energy Plan Report • ENERGYSTAR Portfolio Manager registration • Metering single line diagram	Not specified.	• Energy Performance Report • Simulation files and external calculations • Building Envelope Design Brief • Mechanical and Electrical Design Brief(s)

Table 3 (continued): General Overview of Energy Requirements by Municipal Standard

Municipal Standard	**Toronto Green Standard**	**The Sustainability Metrics Program**	**Ottawa High Performance Development Standard**	**Whitby Green Standard**	**Halton Hills Green Development Standards**
Required Documentation	• BOP/HOT2000 Report • Registration and certification documentation from other approved standards • Embodied Carbon Report Template • Commissioning Plan and Report • Air Leakage Testing Report		• High Performance Development Standard Checklist		• Signed letter approving public sharing of data points

Note: *Section in development. In next draft of the report, a summary of the Vancouver Building By-law (VBBL) will be provided.*

The table below (Table 4) compares energy performance requirements for low-rise residential development across the five standards surveyed as well as the Vancouver Building By-law.

Table 4: Overview of Mandatory Low-Rise Residential Energy Performance Requirements by Municipal Standard

Municipal Standard	Development Feature	Requirement	Required Documentation
Toronto Green Standard	Building Energy Performance	Design, construct and label the building to achieve ENERGY STAR for New Homes, version 17.1 or R-2000.	• Energy Efficiency Design Summary prior to NOAC • BOP or HOT2000 Report

Table 4 (continued): Overview of Mandatory Low-Rise Residential Energy Performance Requirements by Municipal Standard

Municipal Standard	Development Feature	Requirement	Required Documentation
The Sustainability Metrics Program	Building Energy Efficiency	Design all buildings in accordance with OBC. **Note**: while mandatory performance levels above the Ontario Building Code (OBC) are not required, the proponent would most realistically need to perform better than code to receive sufficient points for approval due to the weighting assigned to energy credits in this points-based program.	
Ottawa High Performance Development Standard	Building Energy Efficiency	Using exterior elements, buildings shall be designed to meet or exceed one of the following (projects may opt to factor in interior measures into the proposed design): • Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI) and GHG Emission Intensity (GHGI) targets by building type per Table 1 Below. OR • 25% carbon emission reduction beyond the OBS, SB-10, Division 3 (2017) OR • Commitment to pursue certification program such as Energy Star for MURBS; LEED, or BOMA Best with a minimum number of energy pointes, or equivalent.	Compliance with this metric is proven through a preliminary energy model report submitted prior to approval; (not required at submission). Project proponents are encouraged to engage an energy modeller as early as possible to maximize energy efficiency design opportunities. Energy Modelling is performance as per the guidelines in the Energy Modelling Report Terms of Reference. It is understood as this is a preliminary energy model there will be a number of assumptions required, and energy estimates will not exactly reflect future models if completed for future phases of the project.
Whitby Green Standard	Building Energy Performance	Design the buildings(s) to achieve at least ENERGY STAR for New Homes, version 17, R-2000 requirements, or equivalent.	

Table 4 (continued): Overview of Mandatory Low-Rise Residential Energy Performance Requirements by Municipal Standard

Municipal Standard	Development Feature	Requirement	Required Documentation

Halton Hills Green Development Standards	Energy Use Reduction	Part 9 buildings (i.e. low-rise residential) shall be designed to meet or exceed the minimum energy performance level of at least the percent show below, better than that of the OBC's 2017 Supplementary Standard SB-12.
		
		Threshold:
		• 10% (5 points)
		• 20% (8 points)
		• 40% (11 points)
		• Net-zero Energy (14 points)
		
		Compliance with this pathway shall be demonstrated using the computer simulation software HOT2000 (v10.51 or later). Other software allowed under SectionA-2.1.2.1 of SB-12 may be accepted at the discretion of the Town's Administration. The energy model must be completed using industry best practices and in accordance with the requirements of SB-12, except for the following exception: once the 10% minimum threshold is demonstrated, onsite renewable energy can be used to reach higher thresholds.
			• Energy performance report that includes at a minimum:
			  • Summary of key energy model inputs and building characteristic;
			  • Annual building energy usage broken down by end-uses and fuel-type; and
			  • Explanation of any externally calculated energy performance or modelling software limitations.
			• Simulation files and any external calculations.
			• Building Envelope Design Brief on designer's letterhead.
			• Mechanical and Electrical Design Brief(s) on designer's letterhead.

Table 4 (continued): Overview of Mandatory Low-Rise Residential Energy Performance Requirements by Municipal Standard

Municipal Standard	Development Feature	Requirement	Required Documentation
Vancouver Building By-law (VBBL)	Overall Requirements/ Building Energy and Emissions (Performance and PH Path Only)	**Compliance Path #1: Prescriptive** The building envelope assemblies, mechanical appliances and airtightness must all meet or exceed the VBBL minimum prescribed requirements. **Compliance Path #2: Performance** The building's overall modeled energy use and emissions must meet the VBBL performance requirements, while also meeting or exceeding the minimum prescribed envelope requirements. **Compliance Path #3: Passive House** Buildings designed and constructed according to version 9 of the Passive House Package. Additionally, regardless of compliance path, proponents must: • Provide heat recovery ventilators • Provide control systems for HRV and • heat pump systems • Provide sub-metering of building hot water and gas usage for heating/hot water • Conduct air leakage testing	**Compliance Path #1: Prescriptive** • Minimum building assembly R-values • Maximum building glazing U-values • Minimum building mechanical appliance performance • Maximum building air leakage rate • Energy model for documentation **Compliance Path #2: Performance** • Minimum building assembly R-values • Maximum building glazing U-values • Minimum building mechanical appliance performance • Maximum building air leakage rate • Energy and emissions modelling to show compliance **Compliance Path #3: Passive House** • Passive House Certification

3.3 Technological Solutions

The following section provides a menu of technological solutions actively being considered across Ontario municipalities. Split between energy and carbon-related technologies and other sustainability technologies, such as transportation or water-related technologies. Note that most of these technologies have been implemented on various development projects in the past decades, with varying levels of familiarity within the development community.

3.3.1 Energy and Carbon Technologies

To optimize building performance, passive design improvements (such as building orientation and window to wall ratios) should be prioritized to reduce the heating and cooling loads within the building. Once loads are reduced, the mechanical systems can then be designed to minimize the energy needed to meet those loads. Finally, renewable technology and carbon offsets can then be used to strive towards net zero performance. For this report, we have focused on active strategies that contribute to GHG reductions and drive towards zero carbon buildings including both mechanical systems and renewable technologies.

Mechanical Systems:

- **Fuel switching** (shift in heating source from natural gas to electric HVAC systems)
    - **Air source heat pump / VRF HVAC system:** a high efficiency fully electric HVAC system that can operate at wider temperature ranges than a typical air source heat pump and utilize electric heating as a back-up source when required.

- **District energy system:** District energy is a thermal energy production system (heating, cooling, or both), and possibly from electricity, from a connected source that is supplied through a distribution piping network to multiple buildings. For a DES to be energy and carbon efficient it must have a low carbon supply source (e.g., geothermal).

Renewables and Storage:

- **Photovoltaic panels:** composite panels that convert solar energy into electricity, can be used to supply electricity to the building or exported to the grid.

- **Biogas systems:** fuel cells that use biogas to convert hydrogen and oxygen into electricity.

- **Biofuel systems:** fuels produced directly or indirectly from organic material and combusted to produce thermal energy or electricity.

- **Wind systems:** building- or site-integrated wind turbines that convert wind energy to electricity.

- **Geoexchange systems:** the use of ground source heat pumps that use electricity to harness heat from the ground under and/or surrounding a building.

- **Sewage / drain water heat recovery:** is a specialized water-to-water heat pump that recovers energy directly from wastewater and uses this energy to preheat domestic hot water.

- **Solar thermal:** rooftop mounted solar collector for thermal energy which is typically used to offset heating of domestic hot water loads in residential buildings.

- **Earth tubes:** Work by drawing incoming air through tubing in the ground for pre-heating and cooling, reducing ventilation loads.

- **Battery storage:** can be utilized in buildings to provide zero carbon backup power and empower owners to draw from the grid at off-peak times. Paired with renewable energy, can extend the utilization of renewables promoting a renewable, resilient grid.

3.3.2 Other Sustainability Technologies

Electric vehicle charging: involves the connection of an electric vehicle to a source of electricity to recharge the vehicle battery. The following outlines components involved with electric vehicle charging.

- **Electric vehicle charging infrastructure plan:** consists of electrical drawings and electrical load calculations indicating the EV charging infrastructure and sufficient capacity.

- **Electric vehicle ready parking:** a parking space that has an energized electrical outlet that is capable of charging an EV when a charging station is installed in the future, or an installed a multi-coupler charging station serving adjoining parking spaces.

- **Electric vehicle rough-in:** a resident parking space that:
    - has a trade-size conduit with pull-string, installed at the time of construction to allow for the later installation of EV charging station(s), terminating at either the resident electrical panel or the dedicated common electrical panelboard.
    - has a single trade size conduit with pull-string, from the common point of adjoining parking spaces.

E-bikes: E-Bikes are electric bicycles with an electric motor of 500 watts or less and functioning pedals that are limited to a top speed of 32 km/h without pedaling.

Intensive green roof: intensive green roofs have deeper substrates that can support a greater variety of habitats and biodiversity.

Extensive green roof: extensive green roofs generally have shallow, well drained substrates and hot dry conditions that are typically only suitable for a few drought tolerant species and minimal biodiversity.

WaterSense® labeled fixtures: an Environmental Protection Agency (EPA) program designed to encourage water efficiency through the use of a special label on consumer products. For more information, visit the WaterSense® website.

Stormwater management: the planning, design and implementation of systems that mitigate and control the impacts of man-made changes to the runoff and other components of the hydrologic cycle.

- **Permeable pavement:** also known as pervious or porous paving, is a type of hard surfacing that allows rainfall to percolate to an underlying reservoir base where rainfall is either infiltrated to underlying soils or removed by a subsurface drain.

- **Bioswales:** bioswales are vegetated open channels specifically designed to attenuate and treat stormwater runoff for a defined water volume.

- **Soakaway:** a soakaway is a hole dug into the ground that is filled with coarse stone and rubble or plastic crates. It allows water to filter through it, and literally soak into the ground (away).

- **Rain gardens:** rain gardens are landscape features designed to treat stormwater runoff from hard surface areas such as roofs, roads and parking lots. They consist of sunken garden spaces where runoff can pond and infiltrate into deep constructed soils.

- **Filter strips:** Filter strips are uniformly graded, gently sloping, vegetated strips of land that provide opportunities for slow conveyance and (commonly) infiltration. They accept runoff as overland sheet flow from upstream development.

- **Infiltration trenches:** Infiltration trenches are linear ditches that collect rain water from adjacent surfaces, and their highly permeable soils allow the water to quickly seep into the ground.

Cool roof: A cool roof is made of a material or has a coating that can lower the roof surface temperature, decreasing the amount of heat transferred into a residential or commercial building.

Tri sorter waste chutes: a specialized garbage chute extension that uses the building's existing waste equipment. The system directs residents' materials into one of three recycling, organic or waste containers located in the garbage room.

Dark sky compliant lighting: International Dark-Sky Association (IDA)'s Fixture Seal of Approval program certifies outdoor lighting fixtures as being Dark Sky Friendly, meaning that they minimize glare while reducing light trespass and skyglow.

3.4 Communicating GDS: Tools and Resources

Communicating the GDS project to partners, updating and reviewing internal planning application review processes, and training staff and applicants are essential in ensuring successful GDS implementation.

The following tools are used to support the team in this process:

Tool	Audience
Green Development Standard Guide	Development community
Green Development Standard Checklist	Development community
Webpage on the municipality website:	Development community and public
Training Guide	Internal staff

a. Green Development Standard Reference Guide:

A GDS guide is a tool used to help guide sustainable development within the municipality. The purpose is to increase action on sustainability measures for new development within the community to improve environmental, social, and economic performance. This ultimately helps to mitigate greenhouse gas emissions and increase green responsibility and resiliency. Note that some municipalities, such as the city of Toronto, do not have a reference guide.

b. Green Development Standard Checklist:

Green development standard checklists provide mandatory criteria that must be met within the new development application. The goal of this is to help developers achieve a high-performance, sustainable development.

c. Webpage on the municipality website:

A municipality webpage is intended to be a primary source of information, tools and resources for the community and developers to use to gain access to the information and knowledge required to meet the terms of the GDS guidelines and checklist items. The aim is to ensure new developments are constructed with sustainable measures in mind, providing resources for developers to meet the required criteria.

d. Training Guide:

Staff training guides are geared towards internal staff in order to facilitate implementation. They typically contain more details on internal processes and can also include overlapping content with the guides tailored for developers (i.e glossary, etc.). To accompany this guide, there typically are staff training sessions, webinars, workshops, etc., to train staff on the GDS.

Table 5: Community GDS in Ontario with Links to Tools and Resources

Location	Municipal Standard	Link to Tools and Resources
Toronto	Toronto Green Standard	Webpage Checklists & Templates GDS v4 Low Rise Res. Dev. GDS v4 High Perform. Checklist Zero Emissions Buildings Framework
Ottawa	The Sustainability Metrics Program	Webpage Site Plan Metrics HPDS Draft of Subdivision HPDS Final Report
Brampton / Vaughn / Richmond Hill / Markham	Ottawa High Performance Development Standard	Webpage BSDG
Whitby	Whitby Green Standard	Webpage WGS Checklist
Halton Hills	Halton Hills Green Development Standards	Webpage GDS v3 Checklists Low Rise Residential Checklist

4 Engagement

The following sections summarize the engagement plan and feedback from the engagement sessions for Phase 1 of the GDS project. A section summarizing typical feedback that can be anticipated from different partner groups is also included.

4.1 Phase 1 Engagement Plan

The intent of the Phase 1 engagement was to promote and educate partners on a community-wide Green Development Standard. The goal is to create a region-wide and province-leading development standard to help address climate change and the energy transition. Virtual sessions were held to obtain feedback from participants from the Region of Waterloo, the cities of Cambridge; Kitchener; and Waterloo, utilities, and other impacted agencies.

Three sessions were held on:

- Wednesday, August 31, 2022 from 9:30-11:00 am
- Thursday, September 8, 2022 from 1:00-2:30 pm
- Wednesday, September 14, 2022 from 10:00-11:30 pm

The sessions provided the opportunity for the consulting team to hear perspectives on existing initiatives and the challenges and opportunities for realizing green development in Waterloo Region.

A contact list was circulated prior to the sessions to assemble a list of participants and to ensure that all interested parties were included in the discussion. Each contact was sent an invite to an Eventbrite page to allow participants to register for one of the three sessions.

To ensure consistency in messaging, each event included the same presentation (see Appendix 4) followed by a discussion and opportunities to ask questions.

Agenda:

1. Introduction (WR Community Energy)
    - Agenda and expectations
    - Overview of the project, process, and goal
2. Presentation (Urban Equation)
    - Purpose of this session
        - What are Green Development Standards
        - Why are Green Development Standards important, the benefits, and the components
        - Precedent examples
    - Frequently Asked Questions
3. Discussion and Questions
4. Next Steps

Following the virtual sessions, a summary of the discussion, comments, questions, and responses was prepared in a data collection matrix (see Appendix 2). For participants unable to attend the sessions, materials were available for comment and inclusion in the matrix.

4.2 Phase 1 Engagement Sessions Feedback

In total, 47 individuals registered to and 40 attended the three virtual engagement sessions, including numerous municipal and utility representatives. The three sessions generated productive discussions and solicited many, often technical, questions and ideas to be further explored in Phase 2 of the project.

The sessions posed the following discussion questions to the attendees:

- General questions about the content that was presented?
- What are some opportunities you would like to explore as part of this project?
- Are there any other ways we can help you succeed?
- Do you have any additional needs (ex. training) we should be aware of?
- Are there any specific challenges, barriers, or obstacles you are most concerned about?
- Are there additional topics we should include in the Phase 1 Report?

At a high level, key themes emerged in response to these questions include the desire to reward performance and ensure follow through, the need for simplicity and clarity, and the need to consider additional constraints. Note that detailed feedback from the engagement sessions is captured in Appendix 2.

Theme #1: Rewarding Performance and Ensuring Follow-Through
The groups highlighted the importance of going beyond design to ensure projects are actually performing in line with the GDS' objectives. To this end, some ideas that emerged in the sessions include performance-based incentives and opportunities for collaboration between municipalities and utility providers.

Theme #2: Need for Simplicity and Clarity
Some attendees voiced a need for clear communication and streamlined processes, both to ensure involvement of developers less familiar with GDS, but also to ensure planners are equipped (but not overwhelmed) with the necessary tools and knowledge to enforce the GDS.

Theme #3: Additional Constraints to Consider
In addition to some common GDS constraints presented during the sessions, some participants expressed a need to explore constraints such as water sourcing and limits to EV infrastructure in further phases of the project.

While these themes capture common responses coming out of the three sessions, other feedback mostly comprised of technical inquiries and ideas related to specific sustainability strategies. Discussions to further explore and assess these questions and ideas will take place in Phase 2.

4.3 Typical Feedback from the Community

The following section overviews typical community responses to GDS development and implementation. It includes typical feedback and suggested approaches for engaging the development community, public, planning staff, and other partners considered key actors for successful implementation. It is based on Urban Equations' experience facilitating municipal engagement across Ontario, including the feedback received during the engagement sessions held as part of this project.

4.3.1 Development Community

Typical Feedback

- **Interest in GDS**: The response typically varies by municipality and the extent to which the development community is already experienced with green buildings. In municipalities where there are at least a few developers implementing green buildings**,** the development community has expressed openness and interest in in working with municipalities to develop GDS as well as a willingness to pursue more sustainability measures on a diversified range of topics.
- **Reluctance to implement more progressive measures:** While generally open to GDS, developers tend to express dis-ease around implementing bleeding edge technologies and overly prescriptive requirements. Specifically, progressive energy and carbon related requirements and stormwater management (particularly in high density sites) tend to be most contested.
- **Importance of clarity:** Overall, the key concern we have heard from developers is a lack of clarity. We have heard that developers appreciate:
    - Performance requirements over prescriptive or solution specific requirements. While there is openness to meet the intent of a performance-based requirements, developers prefer the room to be creative and come up with solutions that meet both performance and economic viability.
    - Proactive articulation of requirements. The City of Toronto set a helpful precedent with their tiered approach. We have heard numerous times, that this approach gives the development community time to plan for progressing requirements. .
    - Reporting and documentation – the provision of clear, simple, reporting requirements greatly eases the developer's effort to prepare a compliant submission.

Suggested Engagement Approaches

- **Building Advisory Panel (BAP):** Early in the project, organize a panel of representative volunteers from the development community and building associations so that development community representatives can assist staff by providing feedback at different project stages. To ensure clarity, invite the BAP to engagement sessions that:
    - Provide information on the project's goals and objectives
    - Provide updates on the project's progress
    - Present summary results from surveys

    - Collect and respond to any questions or comments
- **Knowledge sharing sessions:** Host knowledge sharing sessions with developers of varying levels of familiarity with GDS. Hearing directly from leading industry peers will mitigate concern around more ambitious sustainability strategies.
- **Avoid detailed surveys:** In our experience, developers tend to be less responsive to detailed surveys (i.e. commenting on a checklist) compared to meetings. Aim to set up live sessions, calls and interviews instead and keep surveys high-level.

4.3.2 Planning Staff

Typical Feedback

- **Capacity concerns:** Sustainability may be seen as an added workload to existing processes by planning staff. Actual daily implications on team capacity and workload are typically key concerns and should be addressed as early as possible.
- **Resistance to change:** Planning staff are familiar with existing approvals processes and may be hesitant to embracing a GDS due to a lack of familiarity and perceived complexity.
- **Not in favour of rushed approvals as an incentive:** Planning staff have voiced reluctance to speed approvals as a performance incentive as this would exacerbate capacity issues teams may already be facing.

Suggested Engagement Approaches

- **Internal training:** Hold multiple training sessions for all departments and staff involved in reviewing development applications to ensure their familiarity with the GDS.
- **Review process:** Dedicate time and a session with the broader team to review the application process that will be included in the staff training guide.

4.3.3 Public

Typical Feedback

- **Ambitious measures for key priorities:** The public generally favors higher performance sustainability measures in their community. Themes like nature, parks and open spaces, as well as affordability, are often clear priorities. These can help inform subjects where the municipality should invest more energy and consider including higher performance criteria that demonstrates leadership.

Suggested Engagement Approaches

- **Surveys, forums and polls:** Unlike the development industry, the public tends to be more responsive to polls and surveys. Live engagement sessions (in person or virtual) can generate weak turnout as GDS can be very technical for many. It is recommended that additional creative engagement methods, including but not limited to online forums, surveys, polling and in person events be explored and included in the engagement strategy early on.

4.3.4 Other Partners

The following section captures high level feedback from other partners including, but not limited to, local organizations, utility providers, The Atmospheric Fund (TAF), and other municipalities that may be consulted in the development of the GDS.

Typical Feedback

- **Open to innovation and collaboration:** Often experts in their respective fields, partners are eager to share best practice and collaborate in the GDS creation process.
- **Sharing experience:** Other cities or municipalities that have implemented GDS are generally very open to sharing the lessons learned along the way.

Suggested Engagement Approaches

- **Review Process:** it is highly recommended to tap into other partners' expertise by asking them to review and comment on draft documents make.

Learning from other municipalities: Engage early in the project with other municipalities so they can share their experience and answer questions. A 90 min workshop or consultation format can be very productive and useful for the project team and is highly recommended.

5 Conclusion

Creating a GDS is a considerable task that concerns various municipal policies and areas of expertise. It requires clear communication and efficient coordination between all parties involved, both internally and externally. With this in mind, the review of municipal standards and their key building blocks provided in this report can be used to shape and orient next phases of this project.

While putting together a GDS is a major step towards sustainable community building for each municipality, it is important to remember that it is the tip of the iceberg in the assortment of sustainable policies that will need to be developed to address climate emergency.

Lastly, it is important to note that the standards are living documents that will be reviewed and adapted to reflect evolving best practices. In the coming years, staff will need to monitor and collect any feedback useful for reviewing the next versions of the standard. The positive impact of GDS will be felt the most when it is treated as a long-term commitment.

Waterloo Region is very well positioned for success in moving forward with a GDS. The Region has many reasons for optimism, including strong interdisciplinary partnerships and opportunities for collaboration, the involvement of utility providers, drawing on experiences from other communities, and leveraging the local business landscape to innovate and stretch past the limits of current best practice.

Appendix 1: Recommended Phase 2 Work Plan

The following recommended Phase 2 work plan and budget is based on our experience working on GDS projects with various municipalities. It also considers the added level of complexity involved in coordinating the different municipalities within the Waterloo Region. The budget below covers the fees for the base project as mapped out in the work plan.

Phase 1: Project Launch and Engagement Round 1	$ 45,000
Phase 2: First Drafts	$ 25,000
Phase 3: Second Drafts and Engagement Round 2	$ 35,000
Phase 4: Final GDS and Presentations	$ 35,000
Phase 5: Other Tools and Staff Training	$ 25,000
Total Base Budget	**$165,000**

Depending on the needs, fees for additional reports and studies (in Phase 5) could range between $20,000 – $100,000. Note that these fees will be minimized by procuring these studies and reports together rather than completing them independently. The list of studies and reports below summarizes interests already suggested by the Region and would be covered in addition to the base budget as stated above:

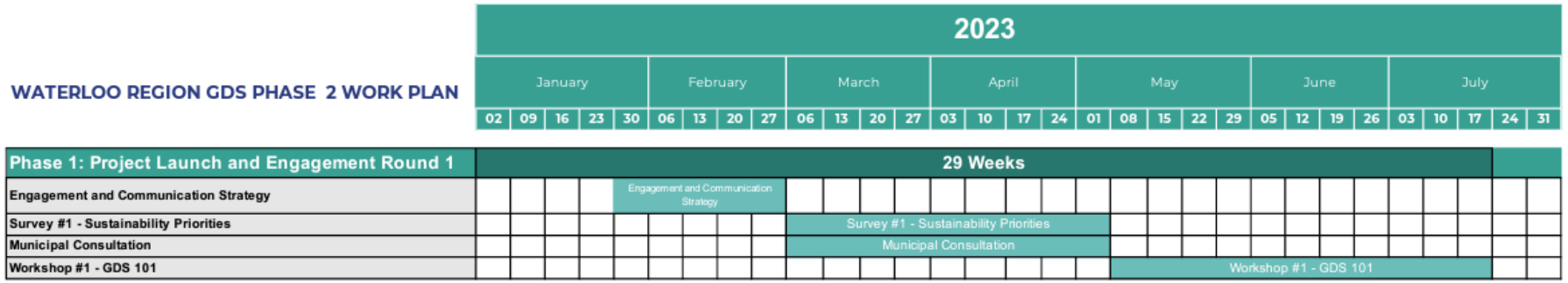
- Business Case Methodology & Briefing Note
- Business Case Report and Recommendations
- Incentives Briefing Note
- Monitoring Strategy
- Impact and Opportunities Report on Development Industry and Planning Process
- Impact Report on By-laws, and Other Processes
- GDS FAQ (e.g. response to feedback - codification of commenting matrix, industry impacts)

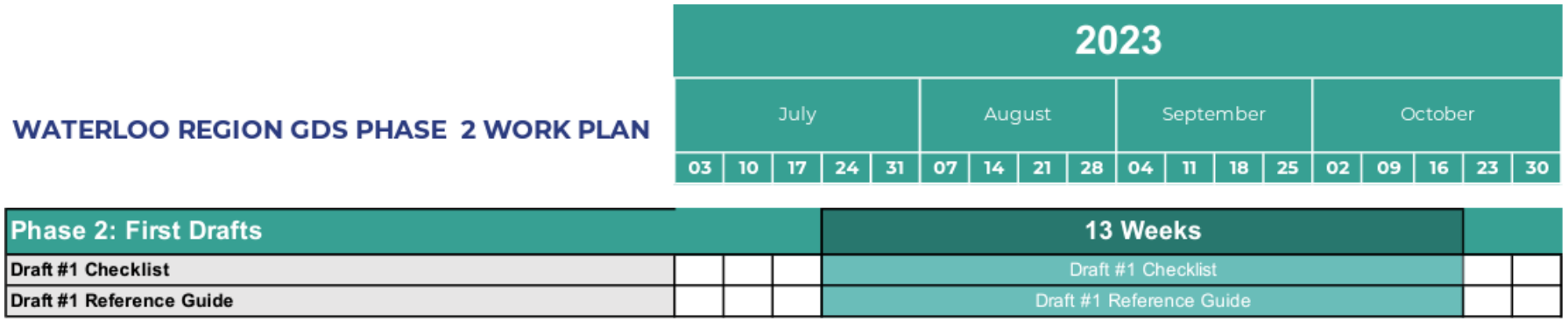
Note and Assumptions:

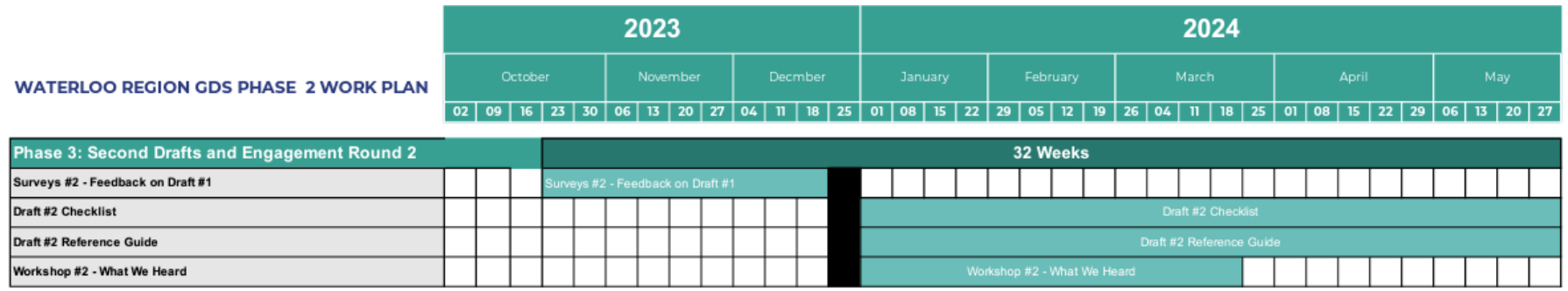
- Components of this work plan can be adjusted with further input from the Region's project team to fit needs and internal capacity.
- A hypothetical starting date of January 2023 has been suggested to simplify the work plan.
- The fee is dependent of completing the project within 24 months.
- All workshops are assumed to be online
- All workshops are set up within 1 month of project award
- A total review time of four weeks has been assumed for all key deliverables. One consolidated set of comments will be compiled by the Region.
- An individual within the Region team is responsible to coordinate amongst the municipalities

URBAN EQUATION

Phase 2 Work Plan







Phase 2 Work Plan (continued)

WATERLOO REGION GDS PHASE 2 WORK PLAN

	2024																														
	June				July					August					September					October					November				December				
	03	10	17	24	01	08	15	22	29	05	12	19	26	02	09	16	23	30	07	14	21	28	04	11	18	25	02	09	16	23	30
Phase 4: Final GDS and Presentations																															
Workshop #3 - Checklist and Reference Guide Input		Workshop #3 - Checklist and Reference Guide Input																													
Final Checklist							Final Checklist																								
Final Reference Guide							Final Reference Guide																								
Final Presentation							Final Presentation																								
Phase 5: Other Tools and Staff Training																															
Staff Training Guide																	Staff Training Guide														
Staff Educational Webinar																										Staff Educational Webinar					
Reports and Studies (TBD if needed)					Reports and Studies (TBD if needed)																										

URBAN EQUATION

Appendix 2: Detailed Feedback from Phase 1 Engagement Sessions

#	Comment	Question/ Suggestion	Comment Type/ Group/Category	Department/ Group	Date	Transmitted Via	Response (UE/WR)
1	Waterloo Region has a different level of maturity around understanding GDS than what you would see in the GTA. We need to make sure we're bringing in information in a very broad way to different groups – making things clear, highlighting some developers who are doing great things, figuring out how we communicate this going forward, and bringing in less experienced developers.	Suggestion	Engagement	City of Cambridge	2022-08-31	Internal Engagement Session #1	To consider breadth of audiences in more depth in early Phase 2 work.
2	Some folks are very receptive to GDS, but many are still asking questions. There has been very little pushback from developers, but more hesitancy from planners. How can we talk to planners in particular about this topic/how do we collaborate?	Suggestion	Engagement	WR Community Energy	2022-08-31	Internal Engagement Session #1	Typical feedback from planners will be covered in the Phase 1 report. Recommended communication/ collaboration approach will be covered in early Phase 2.
3	Not a lover of point system – prefer tiered because it establishes strong performance expectation as baseline, very clearly. Would like to have good discussion on this at later point. Has developed GDS as	Suggestion	Implementation	City of Cambridge	2022-08-31	Internal Engagement Session #1	To consider in Phase 2 of the project.

#	Comment	Question/ Suggestion	Comment Type/ Group/Category	Department/ Group	Date	Transmitted Via	Response (UE/WR)
3	consultant in previous job – for Aurora – they ended up using a hybrid approach.						
4	I suggest removing the incentive related to faster approvals. The City of Kitchener has undertaken a Development Review and with the resulting process improvements we are moving as fast as we can.	Suggestion	Implementation	City of Cambridge	2022-09-08	Internal Engagement Session #2	To consider removing this incentive from potential options in Phase 2
5	Unsure how school boards, and other large site owners are involved. Big opportunities are usually on large sites; not sure if they should be left out of the process.	Suggestion	Engagement	City of Cambridge	2022-08-31	Internal Engagement Session #1	To explore further in Phase 2 of the project.
6	Want to see how we're dealing with First Nations engagement/involvement. Interest across watershed could be an important aspect in establishing themes/priorities.	Suggestion	Engagement	City of Cambridge	2022-08-31	Internal Engagement Session #1	To explore further in Phase 2 of the project.

#	Comment	Question/ Suggestion	Comment Type/ Group/Category	Department/ Group	Date	Transmitted Via	Response (UE/WR)
7	Developed performance standard for the City of Mississauga buildings in which points were awarded on energy savings. This is a hybrid system with points and levels, based on performance (beyond just design). Will this approach be considered on this project?	Suggestion	Implementation	City of Kitchener	2022-08-31	Internal Engagement Session #1	To explore further in Phase 2 of the project.
8	Important to set up the tools to allow for standardization. Could be monitored by a third party.	Suggestion	Implementation	City of Kitchener	2022-08-31	Internal Engagement Session #1	To explore further in Phase 2 of the project.
9	Is there a way for tax-based incentives to reward actual performance?	Suggestion	Implementation	WR Community Energy	2022-08-31	Internal Engagement Session #1	To explore further in Phase 2 of the project.
10	If we implement a performance-based incentive program (ex. deferred tax), could the utilities monitor if design savings are met? Could we use utilities to channel those savings to reduce administrative burden?	Suggestion	Implementation	WR Community Energy	2022-08-31	Internal Engagement Session #1	To explore further in Phase 2 of the project.

#	Comment	Question/ Suggestion	Comment Type/ Group/Category	Department/ Group	Date	Transmitted Via	Response (UE/WR)
11	Planners need to know how to sign off on GDS - this is usually the biggest challenge. They want to know what they need, what is being submitted, who has the responsibility to approve this, "how can you make this simple for me?". Planners need to know who is involved and how the process will work; Lisa's experience is that this process needs to be very iterative, steering committee focused.	Suggestion	Engagement	City of Cambridge	2022-08-31	Internal Engagement Session #1	To consider breadth of audiences in more depth in Phase 1 recommendation.
12	How do we ensure "follow through" on any potential post-occupancy commitments? This is something we've encountered at the regional and area municipal level re: TDM/TIS checklist and guidelines.	Question	Engagement	Region of Waterloo	2022-09-08	Internal Engagement Session #2	To explore further in Phase 2 of the project.

#	Comment	Question/ Suggestion	Comment Type/ Group/Category	Department/ Group	Date	Transmitted Via	Response (UE/WR)
13	Collaboration between municipalities and utility providers could start where GDS stops. Something like a tax rebate could be triggered when targets have been met. Some avenues exist, but would be innovative. Waterloo could be the pioneer.	Suggestion	Engagement	WR Community Energy	2022-09-08	Internal Engagement Session #2	To explore further in Phase 2 of the project.
14	I worry about the potential impact on resourcing for municipal operations where new design requirements get passed on to municipalities to maintain. It will be important that capital impacts are well understood and explained to senior decision makers and councils.	Suggestion	Engagement	City of Cambridge	2022-09-08	Internal Engagement Session #2	To explore further in Phase 2 of the project.
15	Brown outs have been a local challenge, losing industries $10M/hr. This would be a useful narrative in developing our case.	Suggestion	Engagement	WR Community Energy	2022-09-08	Internal Engagement Session #2	To explore further in Phase 2 of the project.

#	Comment	Question/ Suggestion	Comment Type/ Group/Category	Department/ Group	Date	Transmitted Via	Response (UE/WR)
16	Are these standards also intended to apply to public buildings? If so, how do we factor location into the standard which is critical for public buildings (e.g. transit and active transport network)?	Question	Engagement	Region of Waterloo	2022-09-08	Internal Engagement Session #2	To explore further in Phase 2 of the project.
17	Transportation, TIS guidelines could be uploaded into a GDS. When looking at public facilities (e.g. recreation centres), land is always a consideration, but sustainable transport access an afterthought. How do we factor this into the GDS?	Question	Engagement	Region of Waterloo	2022-09-08	Internal Engagement Session #2	To explore further in Phase 2 of the project.
18	Other green guidelines are quite weak on parking. Is there a way to have parking maximums/over-ride parking minimums depending on location (e.g. close to transit and active transportation)?	Question	Implementation	Region of Waterloo	2022-09-08	Internal Engagement Session #2	To explore further in Phase 2 of the project.

#	Comment	Question/ Suggestion	Comment Type/ Group/Category	Department/ Group	Date	Transmitted Via	Response (UE/WR)
19	How do municipalities include energy standards? We need to figure out how to raise the standard above the National Building Code. Getting a group of developers to form a subdivision would be a good idea. We should look into subdivisions where developers are willing to market how successful that can be.	Suggestion	Engagement	City of Kitchener	2022-09-08	Internal Engagement Session #2	To explore further in Phase 2 of the project.
20	I think there are existing and fairly robust standards / requirements for stormwater and natural features, which a GDS could incorporate. If the goal is to build better and get some GHG reductions and other green benefits, I personally think the question is where and how to go over and above that. Additional green space, naturalization of underused space, SWM functions to compensate for off-site issues, etc.	Suggestion	Implementation	Grand River Conservation Authority	2022-09-08	Internal Engagement Session #2	To explore further in Phase 2 of the project.

#	Comment	Question/ Suggestion	Comment Type/ Group/Category	Department/ Group	Date	Transmitted Via	Response (UE/WR)
21	Another GDS barrier to consider is infrastructure capacity. For example, if there's a mandate for EV chargers, electrical feeder capacity/wire sizes/ transformer sizes need to be considered.	Suggestion	Implementation	Enova Power	2022-09-14	Internal Engagement Session #3	To explore further in Phase 2 of the project.
	Waterloo is landlocked and the regions discussed have lake-based sources of water. Waterloo is reliant on groundwater. Waterloo is growing significantly in future years, and must have a plan to deal with waste water discharge (currently discharging into smaller bodies of water, i.e. Grand River and Speed River). The ecosystem has to be more closely monitored.						

#	Comment	Question/ Suggestion	Comment Type/ Group/Category	Department/ Group	Date	Transmitted Via	Response (UE/WR)
22	Moving forward, getting a way for developers to use low res/high res standards would be of interest to the Region of Waterloo Water Division.	Suggestion	Implementation	Region of Waterloo - Water Services Division	2022-09-14	Internal Engagement Session #3	To explore further in Phase 2 of the project.
23	The objectives for Waterloo Region are to make this an innovative and leading GDS. How can Waterloo Region differentiate from others and show leadership?	Question	Implementation	City of Cambridge	10/17/2022	Final Presentation	To explore further in Phase 2 of the project.
24	What are your thoughts on the point / tiered approach for the GDS?	Question	Implementation	City of Cambridge	10/17/2022	Final Presentation	To explore further in Phase 2 of the project.
25	The maturity of the market varies. Those who are less experienced sometimes look for points-based to make it very clear on what they need to do to achieve the standards.	Suggestion	Engagement	City of Cambridge	10/17/2022	Final Presentation	To explore further in Phase 2 of the project.

#	Comment	Question/ Suggestion	Comment Type/ Group/Category	Department/ Group	Date	Transmitted Via	Response (UE/WR)
26	Need to focus on creating a GDS that is workable with those developers who are not as knowledgeable with these pieces and who aren't as progressive	Suggestion	Implementation	City of Waterloo	10/17/2022	Final Presentation	To explore further in Phase 2 of the project.
27	Do other GDS programs have awards programs that go along with the GDS?	Question	Engagement	City of Waterloo	10/17/2022	Final Presentation	To explore further in Phase 2 of the project.
28	One thing that could set Waterloo apart is having the infrastructure to support GDS or innovative tech to allow tracking of energy usage	Suggestion	Engagement	Enova Power	10/17/2022	Final Presentation	To explore further in Phase 2 of the project.
29	Checklist of questions to be considered while developing 'ambitious' GDS: 1. Confirm if this standard will get us to net zero 2. If so, what year will we get to net zero? 3. Tiered or point system? 4. Performance categories? Which do we want to 'lean into' to really innovate? 5. What are our building types?	Question	Implementation	WR Community Energy	10/17/2022	Final Presentation	To explore further in Phase 2 of the project.

#	Comment	Question/ Suggestion	Comment Type/ Group/Category	Department/ Group	By (Name)	Date	Transmitted Via
29	6. At what point will we be requiring these standards? 7. What innovation requirements can we use?						

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Appendix 4: Engagement Presentation

WATERLOO REGION GREEN DEVELOPMENT STANDARD

Education Workshop

September 14, 2022

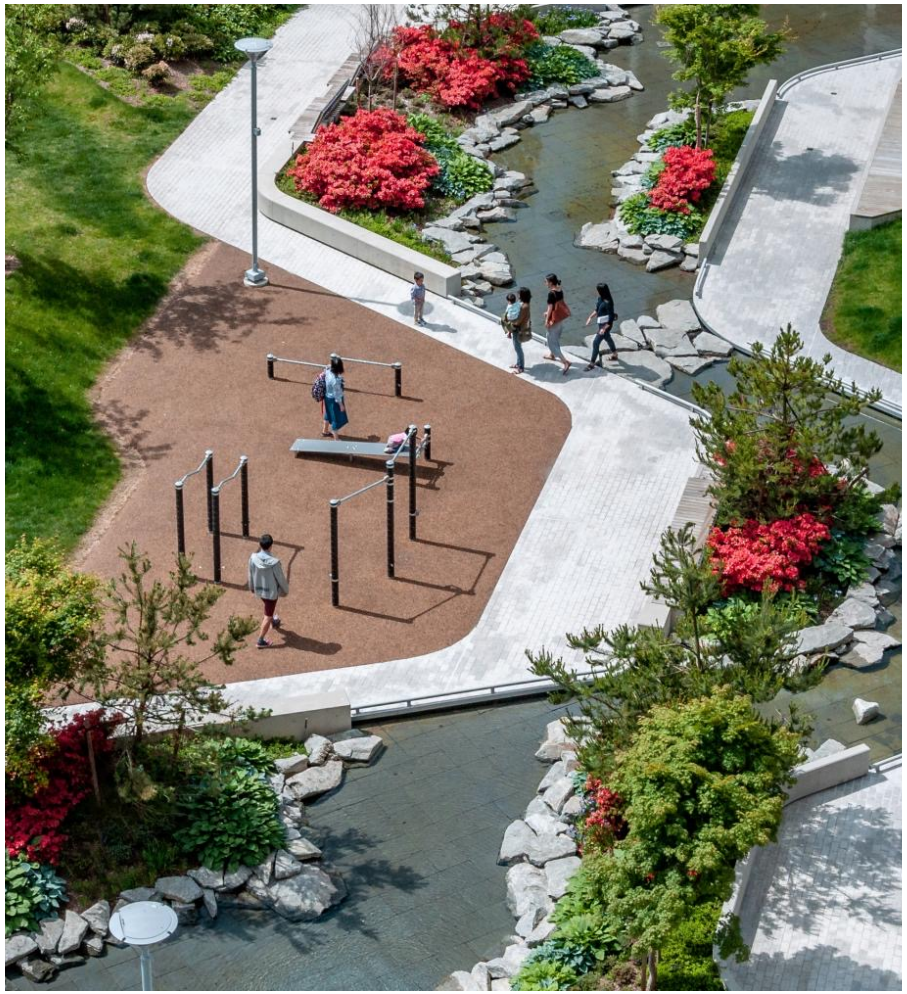
WR COMMUNITY ENERGY

URBAN EQUATION

The Planning Partnership

Purpose of This Session

- Today's session is one of three engagement sessions for Phase 1 of the Waterloo Region Green Development Standard (GDS) project
- It aims to:
    - Provide an overview of what GDS are and their benefits
    - Review and compare leading GDS across Canada
    - Answer any general questions you may have about GDS and collect your feedback



Sharing Comments

- Today's session will be **recorded**. It will allow us to:
  - Capture all your comments and feedback
  - Share with partners who could not attend a scheduled session

- **During the session**: share feedback and questions in the chat box

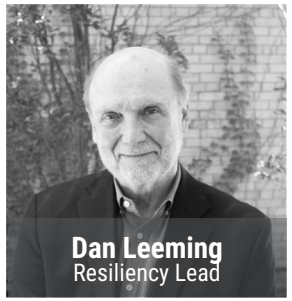
- **At the end of this session**: share feedback and questions during the discussion period

- **After this session**: Should you have any additional feedback or questions after today's presentation, please email them to:
  - Matthew Day (mday@wrcommunityenergy.ca)

Introductions

URBAN EQUATION

The Planning Partnership



Our role on this project:

Deliver a compelling Sustainable Design Standard that drives impact, achieves the overarching established goals, and provides compelling branding and storytelling language.

Overview

1. Purpose of This Session and Introductions
2. Green Development Standards Basics
   a. What are they?
   b. Why are they important?
   c. What are their benefits?
   d. What are the typical components?
   e. How is a GDS created?
3. Precedents in Other Municipalities
4. Frequently Asked Questions
5. Questions and Discussion
6. Next Steps

Green Development Standards Basics

What are GDS?

Green Development Standards (GDS) are:

- Voluntary and/or mandatory measures developed by municipalities to **encourage developers and builders** to create thoughtful and innovative developments using **sustainable design**
- Comprehensive **principles** to guide development at a level of **planning and design** that focuses on the community as a whole
- Critical **policy tool** for municipalities to achieve their GHG reduction targets, their Official Plan goals, and their goals in many areas of sustainability

Adapted from: Clean Air Partnership

Why are GDS Important?

- Municipalities are witnessing **rising climate impacts**: increased temperatures, increased severe weather events, threats to agriculture, and impacts to health.
- The majority of Canadians lead **high carbon lifestyles**. Municipalities play a **key role** in tackling climate change in their jurisdictions.
- Municipalities now have the opportunity to put **cost-effective** policies in place that will **benefit** their **taxpayers** in the future.
- With GDS in place, they can ensure that buildings and infrastructure are constructed to be more **resilient** to disruptions from extreme weather events.

Adapted from: Clean Air Partnership

What are the Benefits of GDS?

GDS can provide **Environmental, Social,** and **Economic** benefits to the Region of Waterloo.

Environmental Benefits

- Reduces energy consumption
- Reduces vehicle dependency
- Reduces heat island effect
- Improves water management
- Increases green space and biodiversity
- Increases climate resilience

Social Benefits

- Improves air quality
- Promotes healthier more active lifestyles
- Increases access to outdoor greenspace
- Promotes the development of affordable and mixed-used housing
- Promotes community design that embraces heritage and culture

Economic Benefits

- Increases property values
- Reduces municipal infrastructure costs
- Longer lasting building stock
- Reduces energy costs
- Job creation

What are the Typical Components of GDS?

Checklists
Tool used by developers to organize and demonstrate performance measures and for the city to review compliance.

Reference Guide
Tool to help inform developers how to use the standards.

Engagement
Internal and external feedback on priorities and feasibility of the standard. Provide project updates.

Staff Training
Tools to support municipal staff in implementing the standards.

How is a GDS Created?

We are here

Milestone 1	Milestone 2	Milestone 3	Milestone 4
Declaration Phase	Metric Development & Consultation	Implementation	Monitoring & Reviewing
• Establish a working team and roles to **build the business case** • Identify objectives and current practices; ensure **alignment**	• Develop **metrics** • Create **resources and tools** for applicants • Develop and implement internal and external **engagement** plan • Conduct **analysis**	• **Adopt** and **publish** new standards • Update and review internal **planning** application review **processes** • **Training** for staff and applicants	• Develop a continuous process to **track and monitor** the uptake pf sustainability metrics • **Refine** GDS as needed to address legislative and provincial policy changes • Provide **additional** guidance**, support** and training to City staff and external partners

Partner engagement & communication

Adapted from: Clean Air Partnership

Precedents in Other Municipalities

Municipal GDS Overview

	Toronto	Brampton / Richmond Hill / Vaughan / Markham	Ottawa	Whitby	Town of Halton Hills
Population	2.8M	1.4M	995K	136K	61K
Population as % of WR	565%	299%	201%	27%	12%
Year Published (V1)	2010	2018	2022*	2020	2014
Last Updated	2022	2021	2022	2020	2021
Number of Versions	4	2	1	1	3

Scoring: Point-Based vs Tiered?

- **Tier-based approach:** includes a number of levels, or tiers, across performance categories. Typically, municipalities will make the lowest performance tier mandatory, and the higher tiers voluntary.
- **Point-based approach:** includes a menu of metrics that applicants can select from to make their development more sustainable, with each metric worth a certain number of points. Typically, applicants are required to achieve a minimum points threshold for their application.

	Toronto	Brampton / Richmond Hill / Vaughan / Markham	Ottawa	Whitby	Halton Hills
Tier-based	✓		✓	✓	
Point-based		✓			✓

Planning: Which Stages do GDS Apply to?

Municipalities may require documentation at various stages of the planning process. Most often, this includes **site plan, block plan, draft plan of subdivision, plan of subdivision,** and **rezoning**.

	Toronto	Brampton / Richmond Hill / Vaughan / Markham	Ottawa	Whitby	Town of Halton Hills
Site Plan	✓	✓	✓	✓	✓
Block Plan		✓			
Draft Plan of Subdivision				✓	
Plan of Subdivision		✓	✓		✓
Rezoning	✓				✓

Development Types: Which Projects do GDS Cover?

Municipalities can decide to focus on specific types of development projects, as well as differentiate between the types by mandating varied requirements and/or levels of stringency.

	Toronto	Brampton / Richmond Hill / Vaughan / Markham	Ottawa	Whitby	Town of Halton Hills
Low-rise Residential	✓	✓	✓	✓	✓
Mid/high-rise Residential	✓	✓	✓	✓	✓
Low-rise non-residential	✓	✓	✓	✓	✓
Mid/high-rise non-resid.	✓	✓	✓	✓	
City facilities	✓		✓	✓	

Performance: Which Categories do GDS Cover?

Municipalities may decide to cover a wide or narrow array of sustainability performance categories in their GDS.

	Toronto	Brampton, Richmond Hill, Vaughan, Markham	Ottawa	Whitby	Halton Hills
Performance Categories (#)	5	4	0	10	5
Performance Categories (List)	• Air quality • Energy efficiency • Water efficiency • Ecological design • Solid waste	• Built environment • Mobility • Natural environment and open space • Infrastructure and buildings	-	• Health & happiness • Equity & local economy • Culture & community • Zero waste • Products & materials • Zero carbon energy • Sustainable water • Land use & wildlife • Local & sustainable food • Travel & transportation	• Energy & water • Ecology • Resiliency • Transportation • Innovation

Examples of Typical Development Features

- Energy efficiency
- Stormwater management
- Green space/parks
- Mixed-use development
- Renewable energy
- Electric vehicle charging
- Active transportation
- Proximity to transit
- Waste management
- Native and drought tolerant vegetation
- Tree canopy
- Healthy soil
- Bird friendly design

Vancouver

- The City of Vancouver's green building policy is **covered in several policies** – not one comprehensive green development standard
- Implemented a **Zero Emissions Building plan** to transition to zero emissions buildings in all new construction by 2030
- Additional development bylaws, policies, and guidelines, include:
    - Green Buildings Policy for Rezonings
    - Rezoning Policy for Large Sustainable Developments
    - Higher Buildings Policy
    - Low-Carbon Energy Systems Policy
    - Zero Emissions Building Catalyst Policy

Frequently Asked Questions

FAQ: GDS Implementation

- What gives municipalities the **legal authority** to implement GDS?
  - Section 41 of the Planning Act provides powers for site control
  - Allows to regulate matters related to building and site development

- What kinds of **incentives** (financial and non-financial) can be used as part of GDS?
  - Development charge discounts
  - Density bonuses
  - Fast-tracking approval process
  - Awards and recognition programs
  - Community improvement plans
  - Tax increment-based grants (TIBG)

- What are some **barriers** to implementing GDS?
  - Funding to create GDS
  - Developers' perception
  - Internal capacity

FAQ: GDS Features

- What features typically get the most **reactions**?
  - Developers: energy requirements, anything costly beyond code, stormwater management.
  - Public: access to parks and greenspace, trees in public spaces, off-road bicycle and multi-use trails, accessibility measures.

- How have other cities implemented **more stringent measures** (beyond building code)?
  - Establishing smaller builder working groups to initiate open conversation
  - Round-table discussions for collaboration
  - Using Energy Star certification requirements to phase in sustainability
  - Engaging with the public to gain insights into their perspectives towards sustainability issues

Questions and Discussion

Discussion Questions

- General questions about the content that was presented?
- What are some opportunities you would like to explore as part of this project?
- Are there any other ways we can help you succeed?
- Do you have any additional needs (ex. training) we should be aware of?
- Are there any specific challenges, barriers, or obstacles you are most concerned about?
- Are there additional topics we should include in the Phase 1 Report?

Next Steps

Next Steps

Preliminary Summary Report:

Receive comments from GDS working group (Mid-September)

Draft Summary Report:

Address feedback in a revised version of the report (Mid-October)

Senior Leadership Presentation:

(Mid-October)

Final Summary Report:

(Mid-November)