Hamilton Green Building Standards

Building Energy Performance Refinement Technical Memorandum

April 1st, 2025

Introduction

Project Background and Context

From Q3 2023 to Q4 2024, WSP collaborated with the City of Hamilton to develop its Green Building Standards (GBS). The final GBS were presented to the City of Hamilton Planning Committee on October 1, 2024, following this presentation, Planning Committee issued a motion directing staff to further consult on the Green Building Standards with the Climate Change Advisory Committee including its Technical and Governance Working Group and Building Working Group, on the Energy and Carbon performance metrics and report back to Planning Committee. Additionally, the City's Climate Change Advisory Committee (CCAC) provided a set of recommendations to revise certain energy-related performance metrics for Part 3 and Part 9 buildings.

In response to the Planning Committee's motion, and further feedback from the CCAC, the Project Team undertook additional engagement to finalize the building energy performance metrics within the GBS. In collaboration with City staff, the WSP project Team reviewed all depositions to council and the subsequent council discussion that led to the aforementioned motion. The WSP Project Team sought to understand the differences between the Climate Change Advisory Committee's (CCAC) recommendations and the previous proposal for operational energy metrics. The review included analyzing energy performance and capital cost data from various sources, such as the Canada Green Building Council (CaGBC), the City of Toronto, and the City of Vancouver, which have conducted relevant studies over the past five to seven years. Additionally, the Project Team conducted in-person engagements with both a scoped group of interested parties and completed direct engagement with staff from the City of Toronto and the Town of Caledon, focusing on the operational energy metrics within their respective Green Building Standards.

Figure 1 below shows the phases of developing Hamilton's GBS, with this memo summarizing outputs from the 'Refinement Phase' of the process.

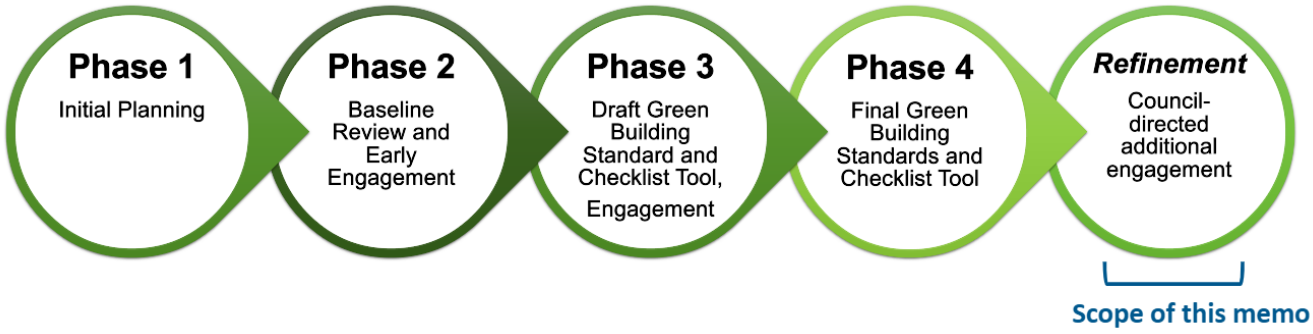


Figure 1: Hamilton GBS Project Phases

Summary of CCAC Recommendations

The CCAC recommendations set limits on both Part 3 and Part 9 buildings for Total Energy Use Intensity (TEUI kWh/m2 /yr), Thermal Energy Demand Intensity (TEDI kWh/m2 /yr), and GHG Emission

Intensity (GHGI kgCO2 /m2/ yr). There are alternative compliance paths for Part 9 buildings which require either partial fuel switching for heating (Tier 1) or full heating and hot water fuel switching (Tier 2).

Part 9 buildings

<table>
<tr><th></th><th>Previous Metrics & Targets</th><th colspan="4">CCAC Metrics & Targets</th></tr>
<tr><td>Tier 1</td><td>Design, construct, and label the building(s) to meet the ENERGY STAR® for New Homes, version 17.1 or R-2000 requirements.</td><td colspan="4"><table><tr><td>Building Type</td><td>TEUI</td><td>TEDI</td><td>GHGI</td></tr><tr><td>Low-rise residential</td><td>100</td><td>25</td><td>10</td></tr></table></td></tr>
<tr><td>Tier 1 Alternative Compliance Pathway</td><td>N/A</td><td colspan="4">Design and construct to the current version of the Ontario Building Code (OBC) (or minimum Tier 3 energy performance under the National Building Code (NBC) 2020 section 9.36) and install a hybrid heating system (minimum three-season air-source heat pump with gas furnace or combination hybrid heating system).</td></tr>
<tr><td>Tier 2</td><td>Design the building(s) to meet CHBA Net Zero Home Labelling Program or Passive House Classic Standard.</td><td colspan="4"><table><tr><td>Building Type</td><td>TEUI</td><td>TEDI</td><td>GHGI</td></tr><tr><td>Low-rise residential</td><td>70</td><td>15</td><td>5</td></tr></table></td></tr>
<tr><td>Tier 2 Alternative Compliance Pathway</td><td>N/A</td><td colspan="4">Design and construct to the current version of the Ontario Building Code (OBC) (or minimum Tier 3 energy performance under the National Building Code (NBC) 2020 section 9.36) and install an all electric cold-climate air source heat pump and an all-electric hot water heater.</td></tr>
</table>

Part 3 buildings

<table>
<tr><th></th><th colspan="2">Previous Metrics & Targets</th><th colspan="2">CCAC Metrics & Targets</th></tr>
<tr><td>Tier 1</td><td><table><tr><td>Building Type</td><td>TEUI</td><td>TEDI</td><td>GHGI</td></tr><tr><td>MURB (≥ 6 Storeys)</td><td>135</td><td>50</td><td>15</td></tr><tr><td>MURB (≤ 6 Storeys)</td><td>130</td><td>40</td><td>15</td></tr><tr><td>Commercial Office</td><td>130</td><td>30</td><td>15</td></tr><tr><td>Commercial Retail</td><td>120</td><td>40</td><td>10</td></tr></table>
For all other Part 3 buildings: develop a whole-building energy model, and design and construct the building to meet the National Energy Code of Canada for Buildings (NECB) 2020 Tier 1.</td><td colspan="2"><table><tr><td>Building Type</td><td>TEUI</td><td>TEDI</td><td>GHGI</td></tr><tr><td>MURB (≥ 6 Storeys)</td><td>100</td><td>30</td><td>10</td></tr><tr><td>MURB (≤ 6 Storeys)</td><td>100</td><td>25</td><td>10</td></tr><tr><td>Commercial Office</td><td>100</td><td>22</td><td>8</td></tr><tr><td>Commercial Retail</td><td>90</td><td>25</td><td>5</td></tr></table></td></tr>
</table>

<table>
<tr>
<td>Tier 2</td>
<td>
<table>
<tr><th>Building Type</th><th>TEUI</th><th>TEDI</th><th>GHGI</th></tr>
<tr><td>MURB (≥ 6 Storeys)</td><td>100</td><td>30</td><td>10</td></tr>
<tr><td>MURB (≤ 6 Storeys)</td><td>100</td><td>25</td><td>10</td></tr>
<tr><td>Commercial Office</td><td>100</td><td>22</td><td>8</td></tr>
<tr><td>Commercial Retail</td><td>90</td><td>25</td><td>5</td></tr>
</table>
For all other Part 3 buildings: Develop a whole-building energy model, and design and construct the building to meet the National Energy Code of Canada for Buildings (NECB) 2020 Tier 2.
</td>
<td>
<table>
<tr><th>Building Type</th><th>TEUI</th><th>TEDI</th><th>GHGI</th></tr>
<tr><td>MURB (≥ 6 Storeys)</td><td>75</td><td>15</td><td>5</td></tr>
<tr><td>MURB (≤ 6 Storeys)</td><td>70</td><td>15</td><td>5</td></tr>
<tr><td>Commercial Office</td><td>65</td><td>15</td><td>4</td></tr>
<tr><td>Commercial Retail</td><td>70</td><td>15</td><td>3</td></tr>
</table>
</td>
</tr>
<tr>
<td>Tier 2 Alternative Compliance Pathway</td>
<td>Achieve Zero Carbon Building (ZCB) Design Standard Certification.</td>
<td>N/A</td>
</tr>
</table>

The CACC outlined several key motivations for the proposed changes. These motivations are aimed at enhancing the city's commitment to sustainable development and aligning with regional standards. They include:

- Alignment with the City of Toronto's Metrics and Targets: Introducing a standard that aligns with the City of Toronto's established metrics and targets reflects the current capabilities of low emissions building technology in the region.
- Consistent Development Expectations: Committing to a 2-year cycle between successive Tiers of the standard, with sufficient visibility of upcoming requirements, which will allow the City of Hamilton to match the pace of change in Toronto by 2028. This will offer more consistent expectations for developers across the Greater Toronto and Hamilton Area (GTHA).
- Applicability of Metrics and Targets: It is suggested that the key metrics and targets for low-rise Part 3 Multi-Unit Residential Buildings (MURBs) under 6 storeys could also be effectively applied to larger Part 9 developments, such as 3-storey or 4-storey townhouses.
- Incentivizing Fuel-Switching: Alternative Compliance Pathways (ACPs) for fuel-switching in Part 9 developments are designed to incentivize these developments to avoid fossil fuel lock-in. This is particularly important for greenfield areas that would otherwise require the expansion of fossil fuel infrastructure.

These changes are intended to drive sustainable development and ensure that Hamilton keeps pace with advancements in low emissions building technology.

Methods

This section outlines the methods that the Project Team took in the Refinement Phase regarding the energy performance metrics of the GBS and recommendations from the CCAC.

Consultation

Initial CCAC Scoping Meeting

A one-hour virtual scoping meeting was held with the CCAC and Bay Area Climate Change Implementation Team (BACCIT) members on the evening of December 10th, 2024. City of Hamilton Planning and Climate Change Initiatives Staff, the WSP Project Team, three (3) members of the CCAC and one (1) member of the BACCIT were in attendance. The objectives of this meeting were to:

- Introduce members of the CCAC and BACCIT to the Project Team;
- Summarize the project status and kick off the additional Refinement Phase; and,
- Discuss each of the CCAC Recommendations to ensure Project Team understanding.

The scoping meeting provided valuable insight into the CCAC recommendations which informed the subsequent consultation activities.

Interviews

As CCAC recommendations are based on future tiers of the Toronto Green Standard and recent and future changes to Caledon's Green Building Standards, two (2) one-hour interviews were conducted by the Project Team with GBS-focused staff at these municipalities. The objectives of these interviews were to discuss the metrics, targets and implementation approach of current and future GBSs and to understand motivations for decisions and direction, current study work and opportunities for alignment.

A one-hour, virtual interview with the City of Toronto took place on Friday, February 14, 2025. The interview was attended by two WSP Project Team staff, City of Hamilton staff, and several City of Toronto staff.

A one-hour, virtual interview with the Town of Caledon took place on March 12th, 2025. The interview was attended by two WSP Project Team staff, City of Hamilton staff, and one Town of Caledon staff.

Although the full meeting notes cannot be shared, the result of these interviews is reflected in the final recommendations and implementation considerations. These interviews assisted the project team in understanding the background methodology of Toronto and Caledon's Green Building Standards, implementation considerations and challenges they have faced, and feedback from citizens and industry.

Energy Performance Metrics Workshop

A three-hour in-person Energy Performance Metrics Workshop was held on February 19th, 2025, from 6:00 to 9:00pm. In addition to the WSP Project Team, a total of 16 people attended, including representatives from the City of Hamilton's Planning and Economic Development Department, Office of Climate Change Initiatives, Building Division, and Climate Change Advisory Committee, Bay Area Climate Change Council, West End Home Builders Association, Hamilton Industrial Environmental Association and Hamilton Community Enterprises.

The objective of the Workshop was to introduce the CCAC recommendations and leverage the variety of perspectives to review and refine their implementation.

The Workshop included an opportunity for dinner and networking, a presentation from the Project Team (refer to Appendix D for presentation slides) and a World Café where attendees participated in rotating facilitated discussion focused on the following three (3) key topics:

- Offering simpler or more flexible pathways;
- Reducing the cost of development and submissions; and,
- Supporting the value proposition for decarbonized new construction.

Figure 2: Photos from the Energy Performance Metrics Workshop

The transcribed comments for the presentation boards, organized by topic, are included as Appendix E.

Following the facilitated discussions and Q&A session, participants were notified of next steps and given one (1) week to provide additional written feedback, refer to Appendix F for comment letters. Feedback from these letters have been summarized throughout the memo.

Additional CCAC Follow Up Meetings

Following the Energy Performance Metrics Workshop, two staff from the WSP Project team, alongside City Staff, attended a scheduled, virtual CCAC Committee Meeting on Friday, February 25th, 2025, to discuss the key outputs from the workshop. Attendees were able to ask follow up-questions. Consequently, an additional one-hour, virtual follow-up meeting with members of the CCAC and BACCIT and City of Hamilton's Planning and Economic Development Department and Office of Climate

Change Initiatives staff was held on Wednesday, March 12th. The purpose of the meeting was for attendees to ask the Project Team any remaining questions regarding the outputs from the Refinement Phase and to understand next steps for the GBS.

Technical Review

In addition to the engagement sessions. WSP also conducted a technical review of the capital and life-cycle cost implications of investing in achievement of holistic GHGI, TEUI, TEDI targets. The review included a list of private and public sources[1], including:

- City of Toronto's *Zero Emissions Buildings Framework* (2017)[2]
- CaGBC's *Making the Case for Zero Carbon Buildings* (2019)[3]
- The City of Vancouver's recent review for *Allowing Gas Heating and Hot Water in New Construction* (2024)[4]
- Recent WSP projects in City of Toronto to support TGS v4 Tier 2/3 compliance
- West End Home Builders' Association (WEHBA) provided anecdotal cost implications from members[5] [REF]

Outputs of this exercise were used to help frame some of the CCAC's recommendation for GHGI, TEU, and TEDI targets and were used as a foundation for discussion during the Energy Performance Metrics workshop. Outputs of this technical review are summarized throughout the Advisory & Consultations Findings section.

Advisory & Consultation Findings – Updates to GBS Metrics and Pathways

This section summarized the advisory and consultation findings from the project, specifically as it related to updating the GBS Metrics and Pathways. It includes a summary of the suggested change, including related research findings from the WSP Project Team, a 'What We Heard' summary, and outcomes related to that topic area.

Ultimately, the outcomes of this consultation and advisory process are an update to the metrics and pathways within the GBS. The revised GBS Guidebook and the revised GBS Checklist can be found in Appendix A and Appendix B, respectively. They are also summarized in 'Conclusion & Next Steps' within this memo.

Input regarding future implementation of the GBS has also been captured in the same format in Appendix C.

---

[1] Note: When comparing capital and life-cycle costs from different sources, inflation adjustments to CAD2024 were applied.
[2] As found here: www.toronto.ca/wp-content/uploads/2017/11/9875-Zero-Emissions-Buildings-Framework-Report.pdf
[3] As found here: www.cagbc.org/wp-content/uploads/2022/01/Making_the_Case_for_Building_to_Zero_Carbon_2019_EN.pdf
[4] As found here: https://council.vancouver.ca/20241126/documents/r1.pdf
[5] Per e-mail provided to City of Hamilton from WEHBA on February 14th, 2025

#1 – Relaxing TEDI & TEUI targets if Tier 2 GHGI target is met

Overview & Research Findings

Relaxing TEDI and TEUI targets if Tier 2 GHG targets are met would allow for greater flexibility in building design and construction while still achieving significant reductions in greenhouse gas emissions. This approach acknowledges that meeting stringent GHG targets can offset the need for equally stringent energy performance metrics, thereby encouraging innovative solutions and potentially reducing costs. It also ensures that the primary goal of reducing overall carbon footprint is prioritized within Hamilton's GBS.

This means that as long as buildings meet the high standards for reducing greenhouse gases, they have more leeway in how they manage their energy efficiency.

The WSP Project Team conducted research to understand what other municipalities, such as Toronto and Caledon, were doing as it relates to TEDI and TEUI targets. Key findings included:

- Toronto has not yet released the details of their TGS v5. The report to council and the recommended v5 targets is anticipated in the spring of 2025. Consequently, matching Toronto's previously anticipated targets, especially for TEDI and TEUI, may not align with the city's actual targets when v5 is released.
- While the planned v5 target for GHGI appears to have minimal incremental cost (less than 1%), achieving the holistic set of targets for TEDI, TEUI, and GHGI may incur increased costs (approximately 4-5%). This is particularly true for MURBs that use window walls (i.e., concrete slabs with windows in between them) as their primary approach for wall construction.
- The requirements for TEDI performance in MURBs are crucial for achieving climate resilience, such as passive survivability, and grid stewardship benefits, like peak electrical load reduction. However, the benefit of a lower TEDI in commercial buildings seems less directly connected to achieving these broader benefits.
- In Caledon, a relaxation of targets was implemented as an alternative compliance approach for Part 3 buildings. In contrast, Toronto is more likely to set less stringent targets for TEDI and TEUI, using Tier 2 (and its associated incentives) to achieve better results.

What We Heard

The following summarized key feedback that was received through the consultation sessions regarding this topic:

- Prioritize GHGI targets over TEDI and TEUI targets. A key objective is to encourage fuel switching to avoid locked-in emissions. Multiple interested parties expressed support for the relaxation of the TEDI and TEUI targets in tier 2 if GHGI is achieved.
- Interested parties commented on the merit of working with local utilities to determine potential increasing energy usage of buildings that were built with a lower TEDI/TEUI, and any potential or anticipated impacts on local/regional electrical grids.
- Interested parties expressed that there have been issues securing electrical transmission capacity from Alectra, a condition that could exacerbate fuel-switching-focused approaches.

Outcomes

The following summarizes the outcomes from the research and consultation findings as it relates to relaxing certain metrics if GHGI targets are met:

- An approach which promotes full fuel-switching, but which relaxes other targets, is supported for Part 3 buildings, particularly since performance-based approaches are already potentially preferred by this part of the sector.
- To achieve effective harmonization (as intended with the CCAC recommendation) the Tier 2 GHGI target for each archetype (e.g. 5 kgCO2e/m²/year for larger MURBs) should be updated to reflect those proposed by Toronto when TGS v5 is released.
- Careful relaxation of TEDI targets for MURBs is recommended, since TEDI compliance is likely the most expensive to achieve in this sub-sector but has the most benefit to broader goals.
- Careful relaxation of TEUI targets for commercial is recommended, since this is the metric most correlated with higher cost of operation for this sub-sector.
- City staff should follow-up with Alectra to confirm if issues related to electrical capacity for residential buildings which are fully fuel-switching using heat pumps would be challenging. Further study may be required and could leverage work done by City of Toronto in their up-coming report.
- It is recommended that support programs for demand reduction (as discussed below) focus on avoiding the need to relax targets by advocating for and connecting builders with provincial incentives for demand-side management. To avoid builders seeking relaxation while also getting incentives, work with the province will be required to set electricity demand reduction targets in line with the same technology approaches which achieve the proposed TEDI and TEUI targets.

#2 – Include prescriptive pathways

Overview & Research Findings

A prescriptive pathway refers to a set of specific criteria that individual building components must meet. This approach provides a straightforward "recipe" for compliance, detailing requirements such as minimum R-values for insulation, maximum U-factors for windows, and specific standards for HVAC systems, etc. By following these predefined criteria, builders can ensure their projects meet energy efficiency standards without needing to perform energy modeling or simulations.

Offering prescriptive pathways may simplify implementation for developers by providing step-by-step guidelines that are easy to follow. This approach may allow for faster decision-making, as developers have predefined strategies to meet performance targets, leading to predictable outcomes from these efforts. Additionally, there is a perceived lower risk of non-compliance for buildings that use a prescriptive path. The relative complexity of the energy modeling process may be more uncertain than specific system performance and equipment efficiency, particularly for builders who do not regularly undertake energy modeling work to determine their facility performance.

Moreover, prescriptive pathways may reduce the cost of reviews for planning officials, as energy model submissions can be more complex and likely require more external costs to meet auditing thresholds. Harmonizing with the NBC-9.36/NECB-2025 presents a good opportunity and could align with a future state where the OBC also aligns with these standards, becoming a basis for showing compliance for both code and GBS operational performance, as is the case in BC.

However, allowing prescriptive pathways that focus only on fuel-switching and otherwise match the OBC carries the risk of offering an alternative compliance pathway that is generally less stringent than the core pathway. This approach may differ from relaxing TEDI and/or TEUI targets, as the proposed targets are considered more stringent than what is currently required in the code.

What We Heard

The following summarized key feedback that was received through the consultation sessions regarding this topic:

- Adding in flexible or several prescriptive paths/packages may allow for easier approvals process and less effort for developers to think of design features or how to hit targets. Having multiple alternative compliance pathways will add flexibility and may help drive innovation.
- Harmonizing with other standards/codes (such as NECB or TGS) could allow for better quality control of new home constructions and modular home designs and enhance affordability. Would allow for better harmonization in buildings across Ontario/Canada.
- City Staff expressed support for the CCAC recommendation of allowing for a prescriptive and/or alternative for Part 9 buildings whereby they are allowed to build an Ontario Building Code compliant building and commit to fuel switching to a Heat Pump.
- Interested parties from the development industry expressed support for the concept of having more flexible and prescriptive pathways.
- In Caledon, a simple prescriptive path which focuses on fuel-switching was proposed by the development sector and is likely considered a preferred path by Part 9 builders especially.

Outcomes

The following summarizes the outcomes from the research and consultation findings as it relates to providing prescriptive pathway(s) in the GBS:

- For Part 9 buildings especially, a set of prescriptive alternative compliance pathways would likely streamline and simplify the submission process.
- To ensure prescriptive pathways are not simply an *easier* pathway (i.e. the intent behind the three-core metrics and targets is preserved) it is recommended that several compliance packages be tested across all the metrics. Work, to this effect, has already been functionally completed as part of the NBC/NECB-2025 development process led by the Canadian Board for Harmonized Construction Codes (CBHCC). Engaging with those who are part of the CBHCC energy technical committee for the development of that work - to gain access to this analysis - would speed up the process of developing these packages for use by City of Hamilton and other municipalities interested in similar prescriptive options. This work should happen soon and be aligned with the next update of the GBS.
- Recognizing that this recommendation to use NBC/NECB-2025 pathways may delay the process of releasing the standard, it is recommended to move ahead now with the CCAC's proposed "partial fuel-switch" ACP with revisions as follows:
    - Applies to all MURBs instead of just Part 9 MURBs
    - Requires a significant amount (e.g. >80% of peak load) of fuel-switching for *all heating energy* (i.e. be explicit on the amount of heating permitted by secondary equipment)
    - Includes a heat pump as the energy source of >80% of the facility heating peak energy demand (i.e. other *electric* heating equipment such as electric boilers or electric resistance could make up the last 20%)

#3 – Allow a District Energy System (DES)-connection equivalency path

Overview & Research Findings

The Hamilton Community Enterprise (HCE) system stands as the most significant example of district energy in Hamilton, serving a substantial number of downtown facilities, most of which are owned by the City of Hamilton. Notably, HCE is 100% owned by the City, reinforcing its integral role in the community's energy infrastructure.

Currently, HCE relies almost entirely on natural gas to meet the heating needs of its clients. However, as a City agency, HCE has an implicit commitment to decarbonize. The HCE team is actively developing a decarbonization pathway for the facility, which includes strategies such as energy conservation, waste heat capture, network expansion, and the decarbonization of gas-fired equipment.

Despite these efforts, HCE has not yet released the timing or specific details of their decarbonization pathway. The pace and approach to achieving these goals are dependent on various factors, including regulation, customer demand, the growth of their customer base, and the City's direct oversight.

Although the current performance metrics for heating and cooling (COPs) of HCE are known, the WSP Project Team was unable to review the equivalency of the system to other heating energy types within the scope of their work. This leaves some uncertainty regarding how HCE's performance compares to alternative energy solutions.

What We Heard

The following summarized key feedback that was received through the consultation sessions regarding this topic:

- An exploration of adding a district energy compliance pathway was encouraged by most interested parties.
- The Office of Climate Change Initiatives (OCCI) at the City supports connection to HCE as a prescriptive compliance path for the energy performance requirements of the GBS (EC1.3 & 1.4) with the exception of Retail facilities. This acceptance is conditional on HCE developing a credible plan to decarbonize fully along a timeline that aligns with the City's goals.
- OCCI recommends that HCE (and presumably other DE providers) could also classify their energy as renewable if it was fully decarbonized (or funded to become so). Classification as renewable would help to achieve additional credits within the standard.
- Some concerns were raised about the use of natural gas in the short-/medium-term in any DES and how that message is received by the public and developers. For example, how would allowing connection to a gas-fired system now be seen as equivalent (in terms of GHG reduction) to installing a heat pump system? Effective communication of equivalence would require HCE's (or any DE provider's) confirmed and funded commitment to decarbonizing along the same, science-based pathway as the City's overall decarbonization goals.
- Investment in the DES will ensure that it has the capital to replace the natural gas boilers when either they reach their end of life, or natural gas assets start being categorized as stranded assets.

Outcomes

The following summarizes the outcomes from the research and consultation findings as it relates to allowing a DES-connectivity equivalent path:

- Given the broad support for a DES-connected alternative compliance pathway, it is recommended that HCE, OCCI and Planning staff work together to define the specific requirements that would need to be met to demonstrate equivalency between the GBS operational energy metrics and the short-, medium- and long-term performance of the HCE system. Examples of questions to answer include:
    - ***When will HCE deliver equivalent performance for GHGI?*** What is the emission factor (kgCO2-equivalent/MWh-supplied) of the energy currently supplied by HCE to connected buildings? What is the plan - with clear timelines and funding certainty - which allows the system to support all connected buildings to achieve Tier 1 GHGI performance? Similarly, what is the timeline to achieve Tier 2 GHGI performance? Will there be a difference in timeline for new buildings vs. those that are already connected? If so, why?
    - ***When will HCE achieve zero carbon performance?*** The long-term goal of the City is to run all connected facilities on zero emissions energy. ***To what extent will HCE offer a path to connected buildings to achieve similar benefits as other facilities for going to Tier 2?*** For example, will HCE allow newly connected MURBs >6 storeys to sign long-term contract to achieve an equivalent 5 kgCO2e/m²/year (i.e. the Tier 2 threshold)? How long does such a contract need to be for it count as achieving Tier 2 (and therefore triggering associated benefits).
    - ***To what extent will HCE facilitate the connection of additional buildings to their network while not eroding their plan for achieving zero emissions?*** Can new buildings that connect count on HCE offering them decarbonized energy at a reliable price, even if a significant number of facilities (both new and existing) join the network? To what extent will new and existing facilities be encouraged or rewarded by HCE to reduce their TEDI to support new facilities being added?
- The City will need to contemplate if special rules should be in place for HCE-connecting buildings, or if other buildings connecting to different District Energy systems will be allowed to follow the same alternative compliance path.
- Given the work outlined above to develop a process of equivalency for the HCE (and other DESs) prescriptive path, it is likely that this option will not be fully available until after the 1-year monitoring period (i.e. in 2027). Assuming progress is moving well in developing this ACP, City staff may consider conditionally approving the ACP for the few buildings which would seek to follow it between now and when the full details are finalized. Conditional approval might involve a fall-back plan which requires the developer to verify compliance with the GHGI target through the purchase of renewable energy for a minimum period of time (e.g. 5-10 years).

#4 – Other refinements of the CCAC proposed targets

Overview & Research Findings

For Part 9 buildings, no Ontario jurisdiction reviewed has implemented specific TEDI, TEUI, or GHGI targets. As such, more effort may be required to understand the equivalency between current approaches for measuring Part 9 performance, such as Energy Star, R2000, and CHBA certification, and specific TEDI, TEUI, and GHGI targets for these buildings.

Given the relatively higher cost of achieving TEDI and TEUI metrics but still desiring to achieve significant grid stewardship and climate resilience goals, an alternative metric specifically suited to promote peak demand reduction, such as Peak Electrical Demand Intensity (PEDI), may be appropriate for future versions of the standard.

Measures to help reduce PEDI, in addition to those that also help reduce TEDI and TEUI, could include:

- Connection with district energy,
- Connection with neighbourhood or multi-facility energy sharing options (e.g. between data centres and heated warehouses),
- Renewable electricity (e.g. solar PV) combined with modest electricity storage,
- Demand-side management technologies (e.g. micro grid controllers, battery storage, EV feed-back-to-grid),
- Combined Heat and Power (CHP), when fueled by renewable heating fuels (e.g. RNG, hydrogen, sustainably sourced biofuels),
- Thermal storage technologies.

The capital costs associated with meeting Tier 2 TEDI and TEUI targets may be in the 5-10% incremental cost range for Part 3 buildings compared to the current OBC. For example, achieving Tier 2 EUI performance often leads to the use of geo-exchange as a preferred technology for many MURB facilities. While geo-exchange can be cost-effective over time, it has a higher upfront capital cost than most air-source heat pump approaches.

Data on the associated capital costs for Part 9 buildings to comply with Tier 2 performance was not readily available during the course of WSP's study. However, anecdotal discussions with leaders in the Part 9 energy space suggest similar cost increases as with Part 3 buildings.

In contrast to data showing higher capital costs, there seems to be a trend where fully fuel-switched and low-energy buildings, especially those that include cost-effective on-site renewable energy generation, can have a lower life-cycle cost than their mixed-fuel counterparts with poorer overall EUIs. In other words, Tier 1 buildings may not perform as well as Tier 2 buildings over time. This trend may not be true in all sub-sectors but seems valid for most residential and office buildings.

What We Heard

The following summarized key feedback that was received through the consultation sessions regarding this topic:

- Multiple interested parties expressed concern about the proposed 2028 targets being difficult to achieve.
- A third GHGI tier of 0 kgCO2e/m²/year was recommended to be established with a timeline of 2030 to align with Hamilton's overall community decarbonization goals.

Outcomes

The following summarizes the outcomes from the research and consultation findings as it relates to other refinements of the CCAC proposed targets:

- Given the perceived higher cost and lack of clarity on EUI and TEDI targets for Toronto's up-coming Tier 2 performance (i.e. the future TGS v6) it is recommended that the City of Hamilton consider the following course of action for its own Tier 2 requirements:

    - Work closely with the City of Toronto to learn more about what Tier 2 EUI and TEDI targets will look like in TGS v5 and potentially withhold releasing those targets until Toronto does as well.
    - Engage with the CBHCC technical committee to acquire details on how they have set expected “next level” absolute energy targets for the NBC/NECB-2025.
- Consider starting work now to determine the most appropriate prescriptive packages for Tier 2 performance (i.e. for when Tier 2 becomes Tier 1 and to allow incentives for prescriptive approaches under the first version of the standard). This work would extend from the recommendation to work with the CBHCC technical committee as discussed above.
- Set a future (Tier 3) zero emissions target for 2030 and consider requiring new City of Hamilton facilities to follow it. This is a similar approach to what is followed at the City of Toronto and would promote effective coordination within the City (between Planning & Operations staff) to understand the challenges associated with purchasing renewable energy to zero out emissions associated with grid electricity and residual gas use (i.e. through the purchase of renewable natural gas).
- Consider allowing buildings to meet the Tier 3 requirement (therefore triggering associated incentives/supports) by pursuing the CaGBC Zero Carbon Building - Design[6] *and* Zero Carbon Building - Performance[7] certifications with a minimum number of commitment years (e.g. 5 years). Though these standards may not exactly match future expectations, they represent the current voluntary leadership position in Canada and are an effective way to promote action beyond minimum requirements that is in line with the CCAC recommendations.

Conclusion & Next Steps

The Refinement Phase necessitated further consultation with a scoped group of interested parties from the City of Hamilton, Climate Change Advisory Committee, development industry and comparable municipalities. As part of this consultation, the Project Team held meetings with the conducted interviews and hosted a Workshop. What we heard in these sessions and how it has impacted the outcome, has been summarised herein.

Summary of Consultation Outcomes

- Engagement with key interested parties and the CCAC found that there is generally an agreement with setting GHGI, TEDI and TEUI targets, but the aggressiveness and timeline of these targets could be a concern, particularly for TEDI and TEUI targets set for 2028 as recommended by the CCAC.
- Integration with the upcoming NBC-9.36/NECB-2025 is a topic of interest and could allow for easier submission and review for City staff. Having multiple prescriptive pathways with an additional flexible alternative compliance pathway would allow for more harmonization between buildings while still allowing for some innovation in design.
- There is agreement that relaxing the TEDI and TEUI targets if GHGI is met beyond Tier 2 is viable as GHGI is most important.

[6] As available here: www.cagbc.org/our-work/certification/zero-carbon-building-standard/zcb-design-resources/
[7] As available here: www.cagbc.org/our-work/certification/zero-carbon-building-standard/zero-carbon-building-standard-performance-resources/

- There is some interest in adding a DES connection pathway but also concerns about the use of natural gas in the system and the unknown timeline of decarbonization.
- Financial incentives such as development charge reductions or deferrals, along with a resource hub for incentives are supported. Engagement with the IESO should be explored with some urgency due to recent changes in their mandate to support new buildings with demand-side management.
- Further engaging and working towards harmonization is recommended with other large Ontario municipalities around key opportunities such as: (a) a shared modeling review process, (b) building labeling, and (c) moving towards future existing building regulations.

Summary of Proposed Changes to Energy Performance Metrics:

See tables on following pages

Part 9 Buildings:

Item #	Tier - Pathway	Applicability	2024-10 Draft Metrics & Targets	CCAC Recommended Changes	2025-03 Draft Final Metrics & Targets	Rationale	Implementation Notes
EC1.1 a	Tier 1 - Performance	Part 9	Design, construct, and label the building(s) to meet the ENERGY STAR® for New Homes, version 17.1 or R-2000 requirements.	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the **Tier 1 performance limits per Table EC1 version 2**	Same as CCAC recommendation.	CCAC recommendation to align metrics and targets for low-rise residential buildings improves harmonization of requirements.	Work with CBHCC NBC-9.36 technical committee (and other municipalities) to confirm GHGI, TEUI & TEDI alignment for Part 9 buildings.
EC1.1 b	Tier 1 - Prescriptive	Part 9	N/A	Install a hybrid heating system (minimum three-season air-source heat pump with gas furnace or combination hybrid heating system).	Revise to: "Provide heat pumps to deliver 80% of facility peak heating load. Commission system to use heat pump as first stage of heating."	Aligning with the Caledon approach to offer a prescriptive path supports the request for one from Part 9 builders. Additional detail ensuring a heat-pump of adequate size and operating approach is important for effective fuel-switching.	Set future Tier 1 packages based on discussions and review with CCBFC NBC-9.36 technical committee. Work with other municipalities (e.g. Caledon) to agree on list of acceptable heat pump performance curves.
EC1.2 a	Tier 2 - Performance	Part 9	Design the building(s) to meet CHBA Net Zero Home Labelling Program4 or Passive House Classic Standard	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the **Tier 2 performance limits per Table EC1 version 2**	Same as CCAC recommendation	CCAC recommendation to align metrics and targets for low-rise residential buildings improves harmonization of requirements.	Revise targets based on insights from CBHCC NBC-9.36 technical committee discussions and further engagement with other municipalities.
EC1.2 b	Tier 2 - Prescriptive	Part 9	N/A	Install an all electric cold-climate air source heat pump and an all-electric hot water heater	Revise to: "Provide 100% of heating and 100% of domestic hot water using heat pump systems. Heat pumps may be sized for 80% of peak load."	Aligning with the Caledon approach to offer a prescriptive path supports the request for one from Part 9 builders. Additional detail ensuring a heat-pump of adequate size and operating approach is important for effective fuel-switching.	Set future Tier 2 packages based on discussions and review with CBHCC NBC-9.36 technical committee.

Part 3 Buildings:

Item #	Tier - Pathway	Applicability	2024-10 Draft Metrics & Targets	CCAC Recommended Changes	2025-03 Draft Final Metrics & Targets	Rationale	Implementation Notes
EC1.3 a	Tier 1 - Performance	Part 3	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the Tier 2 performance limits per ***Table EC1 Version 1*** For all other Part 3 buildings: develop a whole-building energy model, and design and construct the building to meet the **National Energy Code of Canada for Building**s ***(NECB) 2020 Tier 1.***	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the **Tier 1** performance limits per ***Table EC1 Version 2***	Same as CCAC recommendation for MURBs, Office & Retail. For all other Part 3 buildings: develop a whole-building energy model, and design and construct the building to meet the **National Energy Code of Canada for Buildings *(NECB) 2020 Tier 2 + GHG Reduction of >80% vs. NECB reference case.***	CCAC rationale was to algin with direction of Toronto (by 2026), Caledon (by 2027) and other municipalities which are expected to move to similar performance levels soon. WSP developed a recommended "for all other Part 3" which aligns with the CCAC recommendation and the original approach to use NECB-2020.	Review and align targets for Tier 1 TEDI & TEUI with Toronto Green Standard v5.
EC1.3 b	Tier 1 - Prescriptive	Part 3 - MURBs Only	N/A	N/A	Provide a heat pump to deliver 80% of facility peak heating load. Commission system to use heat pump as first stage of heating.	Out of respect for equity across MURB builders, and a general desire for multiple pathways, offer a similar prescriptive approach to all MURB builders (not just Part 9).	Set future Tier 1 packages based on discussions and review with CCBFC NBC-9.36 technical committee. Work with other municipalities (e.g. Caledon) to agree on list of acceptable heat pump performance curves.
EC1.3c	Tier 1 - Trade-off ACP	Part 3	N/A	N/A	If facility **pursues Tier 2 target for GHGI from Table EC1 Version 2**, then **relax TEDI and TEUI targets** as follows: MURBs - TEDI relaxed to 35, TEUI relaxed to 125 Office & Retail - TEDI relaxed to 35, TEUI relaxed to 115.	Offer a performance-based flexible approach modeled on the Caledon GBS and as agreed-to and supported by CCAC and others during engagement.	Review and align targets for Tier 2 with Toronto Green Standard v5. Consider requiring as-built models and commissioning for Tier 2 compliance.

Item #	Tier - Pathway	Applicability	2024-10 Draft Metrics & Targets	CCAC Recommended Changes	2025-03 Draft Final Metrics & Targets	Rationale	Implementation Notes
EC1.4 a	Tier 2 - Performance	Part 3	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the **Tier 2** performance limits per **Table EC1 Version 1.** For all other Part 3 buildings: Develop a whole-building energy model, and design and construct the building to meet the **National Energy Code of Canada for Buildings (NECB) 2020 Tier 2**. Alternative Compliance Path (ACP): Achieve Zero Carbon Building (ZCB) Design Standard Certification.	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the **Tier 2** performance limits per **Table EC1 Version 2.**	Same as CCAC recommendation for MURBs, Office & Retail. For all other Part 3 buildings: develop a whole-building energy model, and design and construct the building to meet the **National Energy Code of Canada for Buildings *(NECB) 2020 Tier 3 + zero on-site fossil fuel emissions (i.e. Scope 2 emissions need not be zero).***	CCAC rationale was to algin with direction of Toronto (by 2028), Caledon (by 2030) and other municipalities which are expected to move to similar performance levels soon. WSP developed a recommended "for all other Part 3" which aligns with the CCAC recommendation and the original approach to use NECB-2020.	Revise targets based on insights from CBHCC NBC-9.36 technical committee discussions and further engagement with other municipalities.
EC1.4 b	Tier 2 - Prescriptive	Part 3 - MURBs Only	N/A	N/A	Provide a fully electrified system for heating and domestic hot water using heat pumps as a first stage. Heat pumps may be sized for 80% of peak load.	Offer a performance-based flexible approach modeled on the Caledon GBS and as agreed-to and supported by CCAC and others during engagement.	Set future Tier 2 packages based on discussions and review with CBHCC NBC-9.36 technical committee.
EC 1.5	Tier 3 - Performance	All Buildings	N/A	N/A	***Commitment is to zero on-site emissions from fossil fuels and zero on-site emissions from electricity for a 5-year period.*** Compliance is demonstrated by EC1.2a/b, EC1.4a/b/c or Achievement of CaGBC Zero Carbon Building (ZCB) Design Standard Certification + Commitment to five (5) years of CaGBC Zero Carbon Building (ZCB) Performance Standard Certification	As suggested by Hamilton's Office of Climate Change Initiatives and interpreted by WSP in a similar manner to approaches on offer in other municipalities (e.g. Toronto).	Engage City of Hamilton departments and other local public sector organization (e.g. School Boards, Hospitals, University/Colleges, Social Housing) to commit to this performance level.

EC1 Tables referenced above

TABLE EC1 Version 1 - October 2024				
Building Type	**Tier**	**TEUI**	**TEDI**	**GHGI***
		(kWh/m²/yr)	**(kWh/m²/yr)**	**(kgCO2/m²/yr)**
Part 3 MURB (< 6 Storeys)	**1**	130	40	15
	2	100	25	10
Part 3 MURB (≥ 6 Storeys)	**1**	135	50	15
	2	100	30	10
Commercial Office	**1**	130	30	15
	2	100	22	8
Commercial Retail	**1**	120	40	10
	2	90	25	5

TABLE EC1 Version 2 - March 2025				
Building Type	**Tier**	**TEUI**	**TEDI**	**GHGI***
		(kWh/m²/yr)	**(kWh/m²/yr)**	**(kgCO2/m²/yr)**
Part 9 & Part 3 MURB (< 6 Storeys)	**1**	100	25	10
	2	70	15	5
Part 3 MURB (≥ 6 Storeys)	**1**	100	30	10
	2	75	15	5
Commercial Office	**1**	100	22	8
	2	65	15	4
Commercial Retail	**1**	90	25	5
	2	70	15	3

* Tables assume GHG emission factor for electricity of 30 kg CO2e emissions per MWh of electricity.

Appendix A

Revised City of Hamilton Green Building Standards Guidebook

City of Hamilton
Green Building Standards
GUIDEBOOK

INTRODUCTION

Green building standards are an essential tool used by municipalities to guide new development in a manner that integrates economic, social, and environmental sustainability principles. The City of Hamilton has implemented its own Green Building Standards to elevate the sustainability performance of new developments and ensure alignment with sustainable building and development best practices.

On March 27, 2019, Hamilton City Council declared a Climate Change Emergency, reinforcing the city's commitment to achieving net-zero greenhouse gas emissions by 2050 and preparing for the unavoidable impacts of climate change. Key milestones leading up to the City Council's Climate Emergency Declaration can be found in Figure 1 below. This declaration has shaped the Green Building Standards, aligning them with the community-wide net-zero carbon goals.

Figure 1: City of Hamilton's Climate Change Work (1994 - 2019)

Green Building Standards, used across Canada, guide professionals in achieving high sustainability standards for new urban buildings. These standards help evaluate new development applications based on sustainability, energy efficiency, and climate resilience.

The City of Hamilton's Green Building Standards (GBS) align with the city's current climate action initiatives, targets, and policies, and are informed by relevant provincial and municipal land use planning, sustainability, and climate action goals. The GBS is designed to be beneficial for the City's environmental goals in promoting sustainable development and enhancing community resilience and will be regularly evaluated and updated to ensure it stays effective and relevant in addressing evolving climate and sustainability challenges.

APPLICATION OF GREEN BUILDING STANDARDS

Applicable Applications

The Green Building Standards (GBS) is intended to apply to the following development applications within the City of Hamilton urban area:

- Site Plan
- Draft Plan of Subdivision

Development Types

The GBS applies to the Part 3 and Part 9 building types which are described below. For clarity, applicants must refer to the in-effect Official Plan and Zoning By-law at the time of application to confirm how the GBS may apply to the development proposal.

Part 3 Buildings

This refers to all mid to high-rise residential and all non-residential developments and refers to buildings that are subject to Part 3 of Division B of the Ontario Building Code, per Article 1.1.2 O.Reg. 332/12: Building Code. This includes buildings exceeding 600 m^2 in building area or exceeding three storeys in height. These include the following:

- Medium and High-Density Residential Development: High and medium-density residential uses are characterized in the Urban Hamilton Official Plan as multiple dwelling forms containing five or more dwelling units. Examples include block townhouse dwellings, stacked townhouse dwellings, street townhouse dwellings fronting onto a condominium road, and multiple dwellings.

- Mixed-Use Development: A development or area made up of mixed land uses either in the same building or in separate buildings. The mix of land uses may include commercial, industrial or institutional uses but must include residential units (*defined in the UHOP*).

- Institutional Development: A development or area comprised of public or non-public institutions in individual buildings or groups of buildings. The uses may include but are not limited to educational facilities, religious facilities, cultural facilities, health care facilities, or daycare facilities (*not defined in the UHOP, but a land use designation with permitted uses, development policies, etc. in Section E.6.0*.).

- Industrial Development: A development or area that permits for a range of employment activity, including offices, business parks, and industrial uses including but not limited to manufacturing and warehousing. (*Employment Areas are defined in the UHOP, the description is also based on policies for the Employment Area – Industrial Land designation in Section E.5.0).*

- Commercial Development: A development or area that are primarily located in mixed-use areas and accommodates a range of uses, including but not limited to retail, restaurants, and other similar service commercial uses (*not defined in the UHOP, but described based on policies for the Commercial and Mixed Use Designations in Section E.4.0).*

APPLICATION OF GREEN BUILDING STANDARDS

Part 9 Buildings

This refers to low-rise residential developments and refers to buildings that are subject to Part 9 of Division B of the Ontario Building Code, per Article 1.1.2 O.Reg. 332/12: Building Code. This includes buildings of three or fewer storeys in height or with a building area not exceeding 600 m^2. These include:

- Low-Density Residential Development: Low-density residential uses generally include single-detached, semi-detached, duplex, triplex, fourplex, and street townhouse dwellings.

Application Process

The GBS is designed to be integrated into the City of Hamilton's existing development application process. Figure 2 below outlines the development application process steps, including GBS submission requirements and review procedures.

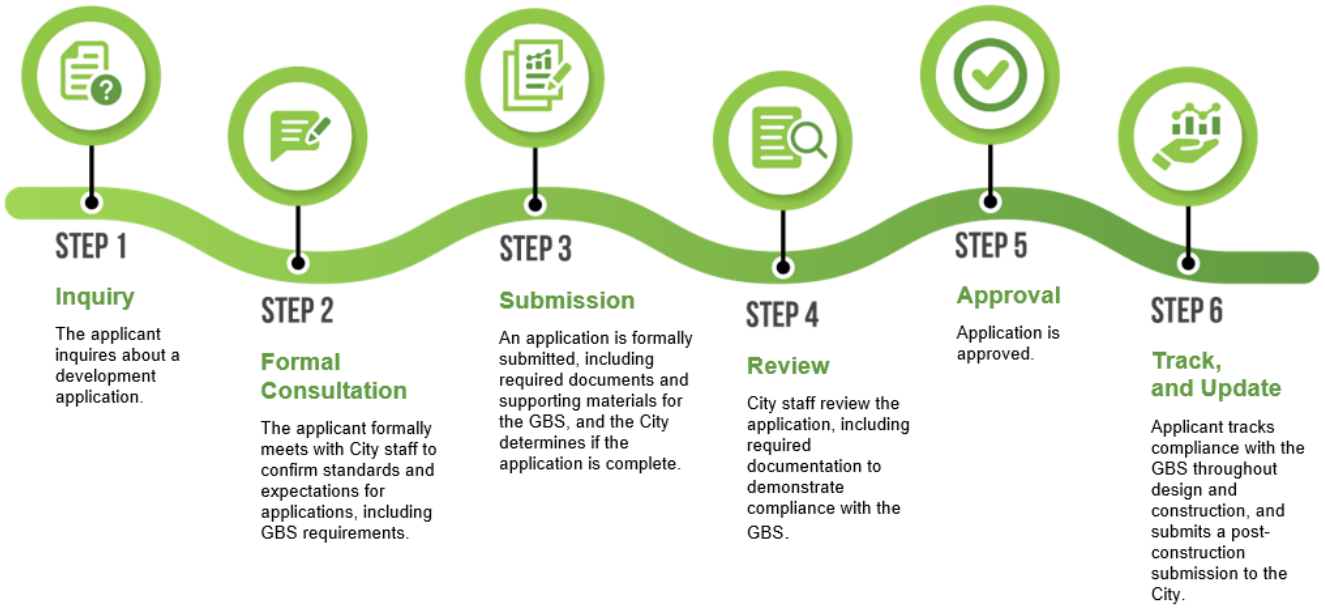


Figure 2: Development Application Process

IMPACT CATEGORIES

The GBS comprises five (5) Impact Categories, each focusing on a sustainability concept relevant to the City of Hamilton's sustainability and climate goals and objectives are described below:

Energy and Carbon

Focuses on improving energy performance and reducing carbon emissions during building operations and links greenhouse gas (GHG) reduction goals with energy efficiency, highlighting their role in eco-friendly building practices. Refer to **pages 7 to 17** of this document for the Energy and Carbon Impact Category.

Ecology and Biodiversity

Focuses on the preservation, restoration, and enhancement of the natural environment within the development area. Refer to **pages 19 to 22** of this document for the Ecology and Biodiversity Impact Category.

Water

Focuses on reducing potable water use for indoor and outdoor water uses, water metering, as well as stormwater management. Refer to **pages 24 to 26** of this document for the Water Impact Category.

Waste Management and Materials

Focuses on reducing waste generation during construction and the operational phases of development. Reducing waste can contribute to the reuse of existing materials and decrease demand for raw materials. Refer to **pages 28 to 30** of this document for the Waste Management and Materials Impact Category.

Community and Urban Design

Focuses on the design elements that promote a sense of place in the community by emphasizing the importance of preserving heritage and cultural features, raising awareness of local food production, promoting healthy practices and inclusion, as well as educating residents on sustainability features in their community and ultimately creating communities that are healthy and resilient. Refer to **pages 32 to 37** of this document for the Community and Urban Design Impact Category.

STRUCTURE OF THE GBS

Outlined within each of the Impact Categories identified above are a number of Performance Requirements that support the intent of the Impact Category. Each Performance Requirement will have one or more Metric that quantifies or qualifies achievement.

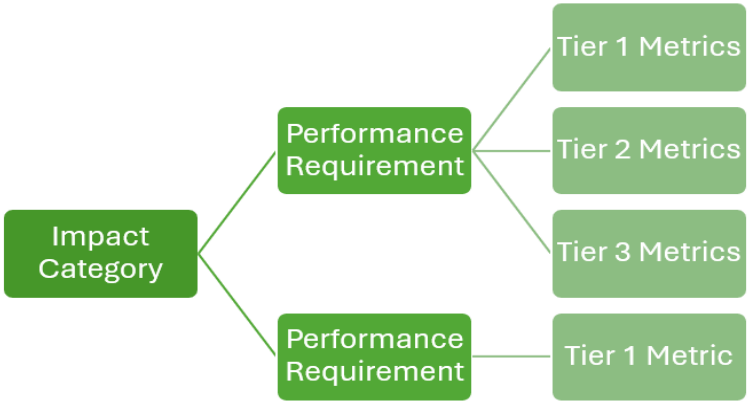


Figure 3: GBS Structure

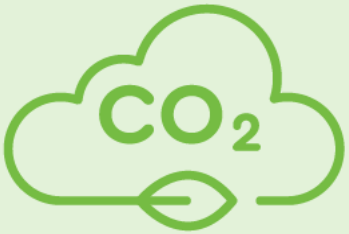
Metrics are classified as **Tier 1**, which is mandatory for all applicable development applications, or **Tier 2**, which are currently optional.

- Tier 1 Metrics mandate a minimum level of sustainability performance for all new development in the urban area subject to the applicable Planning Act application in the City of Hamilton and support the achievement of municipal sustainability goals and objectives. The Tier 1 Metrics align with the related City of Hamilton by-laws, guidelines, and strategies.

- Tier 2 & Tier 3 Metrics allow applicants to demonstrate an enhanced level of sustainability performance. Future versions of the GBS may consider adopting current Tier 2 Metrics as Tier 1 mandatory requirements to drive further sustainability performance. There is only one Tier 3 metric – for EC1 - Energy Performance.

For each Tier 1 and Tier 2 metric, applicants must provide documentation demonstrating compliance during their Site Plan Application or Draft Plan of Subdivision submission. In some cases, additional documentation is required post-construction, particularly when the relevant documentation is not available at the Site Plan Application submission stage. Several Tier 2 specifically require compliance documentation to be submitted only after construction is completed. This ensures that all necessary compliance information is thoroughly reviewed and verified by the City.

Further details on each Impact Category, Performance Requirement and Metric can be found in this Guidebook. Details and resources can be found in the Details column for each Performance Requirement.



ENERGY AND CARBON

This Impact Category focuses on improving energy performance and reducing carbon emissions during building operations. This Impact Category links greenhouse gas (GHG) reduction goals with energy efficiency, highlighting their role in eco-friendly building practices. By setting strict benchmarks for energy use, establishing goals for operational efficiency, encouraging the use of renewable energy and conducting embodied carbon assessment, this category aims to lessen buildings' environmental impact.

Performance Requirements

EC1 Energy Performance

EC2 Embodied Carbon

EC3 Refrigerant Leakage

EC4 Building Resilience

EC5 On-Site Renewables

EC6 District Energy

EC7 Building Systems Commissioning

EC8 Air Tightness Testing

EC9 Energy Metering

EC10 Benchmarking and Reporting

EC11 Electric Vehicle Charging Infrastructure

EC12 Electric Bicycle Charging Infrastructure

EC1 ENERGY PERFORMANCE

Intent: Promote energy-efficient buildings that lower operating costs, reduce greenhouse gas emissions, and improve building resilience.

For Part 9 Buildings, compliance involves following ***one*** of the provided pathways: EC1.1a, EC1.1b, EC1.2a, EC1.2b, or EC1.5. Likewise, for Part 3 Buildings, compliance requires following ***one*** of the provided pathways – EC1.3a, EC1.3b, EC1.3c, EC1.4a, EC1.4b or EC1.5.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC1.1a	Tier 1	Part 9 - Performance	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the Tier 1 performance limits per Table EC1 below.	**Site Plan Application Submission** Energy Model Report summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional (Energy Modeller), and demonstrating compliance with the applicable target[1,2,3].	1. For guidance on calculating TEUI, TEDI, and GHGI, refer to the City of Toronto's Energy Modelling Guidelines Version 4. 2. For guidance on submission requirements, refer to the City of Toronto's Energy Efficiency Report Submission & Modelling Guidelines. 3. An approach for estimating the three metrics using the modeling approach outlined in the NBC Section 9.36 is forthcoming and may also be approved for submission by the City if prepared by an appropriate Service Organization[4]. 4. Service Organizations are licensed by NRCan to deliver ENERGY STAR® qualified home labels or R-2000 certification. For a list of authorized service organizations see Natural Resources Canada. Certified Energy Advisors are independent contractors licensed by NRCan who perform the testing and final inspection and report. They submit their report documentation for compliance to the NRCan Authorized Service Organization.
EC1.1b	Tier 1	Part 9 - Prescriptive	Provide a heat pump system to deliver 80% of facility peak heating load. Commission system to use heat pump as first stage of heating.	**Site Plan Application Submission** Confirmation of make and model of heat-pump to be installed as well as an outline of the commissioning process to be followed by the installer. **Post Construction** A Letter of Certification signed by an accredited professional (Architect, Electrical Engineer, or Mechanical Engineer) post-construction that a heat pump system has been installed and commissioned as required.	
EC1.2a	Tier 2	Part 9 - Performance	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the Tier 2 performance limits per Table EC1, below.	**Site Plan Application Submission** Energy Model Report summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional (Energy Modeller), and demonstrating compliance with the applicable target[1,2,3].	
EC1.2b	Tier 2	Part 9 - Prescriptive	Provide 100% of heating and 100% of domestic hot water using heat pump systems. Heat pumps may be sized for 80% of peak load.	**Site Plan Application Submission** Confirmation of make and model of heat-pumps to be installed, back-up heating type (if any) as well as an outline of the commissioning process to be followed by the installer. **Post Construction** A Letter of Certification signed by an accredited professional (Architect, Electrical Engineer, or Mechanical Engineer) post-construction that the facility has an all-electric operation for heating and that the appropriate heat pump systems has been installed and commissioned as required.	

Item #	Tier	Applicability	Metrics	Documentation	Details
EC1.3a	Tier 1	Part 3 - **Performance**	• Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the applicable Tier 1 performance limits[1] per Table EC1, below. • For all other Part 3 buildings: develop a whole-building energy model, and design and construct the building to meet the National Energy Code of Canada for Buildings (NECB) 2020[2] Tier 2 + GHG Reduction of >80% vs. NECB reference case.	**Site Plan Application Submission** Energy Model Report summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional (Energy Modeller), and demonstrating compliance with the applicable target[3,4].	1. Identify the applicable building archetype and meet the archetype-specific performance limits. Mixed use buildings can apply a weighted average of the applicable performance limits. 2. Applicable to building types that do not apply to any of the building archetypes listed in Table EC1, below. Refer to the National Energy Code of Canada for Buildings (NECB) 2020 3. For guidance on calculating TEUI, TEDI, and GHGI, refer to the City of Toronto's Energy Modelling Guidelines Version 4. 4. For guidance on submission requirements, refer to the City of Toronto's Energy Efficiency Report Submission & Modelling Guidelines. 5. Zero emissions for on-site fossil fuel use are evaluated by having no natural gas or other fossil fuel combustion for normal operation of the facility (i.e. fossil fuels may still be used to meet back-up heating and power requirements, if any).
EC1.3b	Tier 1	Part 3 – **Prescriptive** – ***MURBs Only***	• Provide a heat pump system to deliver 80% of facility peak heating load. Commission system to use heat pump as first stage of heating. • This pathway only applies to Multi-Unit Residential Buildings (MURBs).	**Site Plan Application Submission** Confirmation of equipment make and model of heat-pump system to be installed, a schematic design of the proposed system, as well as an outline of the commissioning process to be followed by the installer. **Post Construction** A Letter of Certification signed by an accredited professional (Architect, Electrical Engineer, or Mechanical Engineer) post-construction that a heat pump system has been installed and commissioned as required.	

Item #	Tier	Applicability	Metrics	Documentation	Details
EC1.3c	Tier 1	Part 3 – ***Trade-Off Path***	• Using whole-building energy modelling, demonstrate an annual GHG Emission Intensity (GHGI) that meets the applicable ***Tier-1 Trade-off*** performance limits[1] per Table EC1, below. • This pathway is not available for other building types other then Part 3 building types listed in Table EC1.	**Site Plan Application Submission** Energy Model Report summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional (Energy Modeller), and demonstrating compliance with the applicable target[3,4].	
EC1.4a	Tier 2	Part 3 - **Performance**	• Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the applicable Tier 2 performance limits[1] per Table EC1, below. • For all other Part 3 buildings: develop a whole-building energy model, and design and construct the building to meet the National Energy Code of Canada for Buildings (NECB) 2020[2] Tier 3 + zero (0) on-site fossil fuel emissions (i.e. Scope 2 emissions need not be zero)[5].	**Site Plan Application Submission** Energy Model Report summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional (Energy Modeller), and demonstrating compliance with the applicable target[3,4]. **Post Construction Submission** • Energy Modelling Report or other documentation demonstrating compliance with the targeted standard summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional. • Updated Energy Model Report[3]	
EC1.4b	Tier 2	Part 3 – **Prescriptive** – ***MURBs Only***	• Provide a fully electrified system for heating and domestic hot water using heat pumps as a first stage. Heat pumps must be sized for 80% of peak load. This pathway only applies to Multi-Unit Residential Buildings (MURBs).	**Site Plan Application Submission** Confirmation of equipment make and model of heat-pump system to be installed, a schematic design of the proposed system, as well as an outline of the commissioning process to be followed by the installer. **Post Construction** A Letter of Certification signed by an accredited professional (Architect, Electrical Engineer, or Mechanical Engineer) post-construction that a heat pump system has been installed and commissioned as required.	
EC1.5	Tier 3	All Buildings	• Commitment is to zero on-site emissions from fossil fuels and zero on-site emissions	**Site Plan Application Submission** • Follows expected pathway above	1. CaGBC Zero Carbon Building-Design Certification is an acceptable alternative compliance

Item #	Tier	Applicability	Metrics	Documentation	Details
			from electricity for a 5-year period. • Demonstrate on-site near-zero operations by complying with EC1.2a/b, EC1.4a/b/c OR Achievement of CaGBC Zero Carbon Building (ZCB) Design Standard Certification[1] + • Commit to five (5) years of CaGBC Zero Carbon Building (ZCB) Performance Standard Certification	• **For ZCB only**: Confirmation of registration for ZCB-Design Standard certification. **Post Construction Submission** • Follows expected pathway above • **For ZCB only**: CAGBC ZCB-Design Standard certification and complete workbook. • ZCB Carbon Building-Performance Certification for year 1 of operations[2] and written letter from the building owner to continue the certification for an additional four (4) year period.	for all buildings, including those identified in Table EC1. 2. CaGBC Zero Carbon Building-Performance Certification is a separate standard which must be met by all buildings, including those that pursue CaGBC ZCB – Design certification.

TABLE EC1 - TEUI, TEDI and GHGI PERFORMANCE TARGETS

Building Type	Tier	TEUI (kWh/m²/yr)	TEDI (kWh/m²/yr)	GHGI* (kgCO2/m²/yr)
Part 9 & Part 3 MURB (< 6 Storeys)	**1**	100	25	10
	1 – Trade-off	125	35	5
	2	70	15	5
Part 3 MURB (≥ 6 Storeys)	**1**	100	30	10
	1 – Trade-off	125	35	5
	2	75	15	5
Commercial Office	**1**	100	22	8
	1 – Trade-off	115	35	4
	2	65	15	4
Commercial Retail	**1**	90	25	5
	1 – Trade-off	115	35	3
	2	70	15	3

*** - Tables assume GHG emission factor for electricity of 30 kg CO2e emissions per MWh of electricity**

EC2 EMBODIED CARBON

Intent: Promote embodied carbon reductions to reduce total life cycle carbon emissions.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC2.1	Tier 1	Part 9	• Conduct a Materials Emissions Assessment using BEAM (Building Emissions Accounting for Materials tool), or an equivalent tool[1], to measure A1-A3, stage emissions for all structural, enclosure, and major finishes (cladding, flooring, ceilings, interior wall sheathing).	**Site Plan Application Submission** • An Embodied Carbon report declaring the materials that are anticipated to be used and the estimated total embodied carbon emissions of these materials.	1. Examples of acceptable lifecycle assessment software for **low-rise residential** buildings include: BEAM and NRCAN MC2. 2. Refer to the current version of the Zero Carbon Building Standard for further guidance on Embodied Carbon assessments. 3. Examples of acceptable lifecycle assessment software include: Athena Impact Estimator for Buildings Life Cycle Assessment (LCA) and OneClick LCA. 4. Refer to the Zero Carbon Building v3 Guidebook Appendix I for guidance on preparing a Baseline.
EC2.2	Tier 1	Part 3	• Conduct a whole building life cycle assessment (LCA) of the building's structure and envelope in accordance with the CaGBC Zero Carbon Building Standard v3 methodology[2,3]. Report embodied carbon for the following life cycle stages: A1-A5, B1-B5, and C1-C4.		
EC2.3	Tier 2	All	• Demonstrate a minimum 5% reduction in embodied carbon compared to a baseline building[4].		

EC3 REFRIGERANT LEAKAGE

Intent: Promote awareness and reporting of refrigerant leakage in HVAC equipment to support total carbon reductions.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC3.1	Tier 1	Part 3	• Develop a Refrigerant Leakage Plan describing the ongoing refrigerant leakage tracking process and corrective action plan to address refrigerant leaks should they occur in any base building HVAC systems. The Plan should list the total quantity, type, and the Global Warming Potential (GWP) of each refrigerant contained in HVAC systems with a capacity greater than 19 kW (5.4 tons)[1,2].	**Site Plan Application Submission** • Provide a Letter of Commitment signed by a qualified professional (Mechanical Engineer) and the owner/developer/builder that includes confirmation that the requirements of this metric will be met. **Post Construction Submission** • Refrigerant Leakage Plan.	1. Refer to the current version of the Zero Carbon Building - Performance Standard for further guidance on refrigerant leakage. 2. Refrigerants that do not have a GWP do not need to be reported.

EC4 BUILDING RESILIENCE

Intent: Encourage back-up power to essential building systems and refuge area for occupants during power failures resulting from extreme weather events.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC4.1	Tier 2	Part 3	• **MHR Residential only:** Provide a refuge area with heating, cooling, lighting, potable water. Provide back-up power to essential building systems for 72 hours[1,2,3,4,5].	**Post Construction Submission** • Drawings, plans, or other documentation demonstrating that the project incorporates resilient measures.	1. Ensure power is provided to the refuge area, building security systems, domestic water pumps, sump pumps, at least one elevator, boilers, and hot water pumps to enable access and egress and essential building functions during a prolonged power outage. 2. A refuge area should be a minimum size of 93 sq.m. and/or 0.5 sq.m. per occupant and may act as building amenity space during normal operations. 3. This requirement applies to multi-unit residential high-rise buildings that contain central amenity, lobby or gym space, to be able to act as a temporary shelter for vulnerable residents of the building. 4. Common refuge areas are temporarily shared, lit spaces where vulnerable residents can gather to stay warm or cool, charge cell phones and access the internet, safely store medicine, refrigerate basic food necessities, access potable water and toilets, and perhaps prepare food. 5. It is recommended to provide back-up power using a low or no-carbon form of back-up power. 6. Refer to the City of Toronto Minimum Backup Power Guidelines for MURBs, Voluntary Performance Standards for Existing and New Buildings (2016) for guidance.

EC5 ON-SITE RENEWABLES

Intent: Encourage cost-effective renewable energy solutions for climate change mitigation and boost local renewable energy adoption to reduce on-site carbon footprint.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC5.1	Tier 1	Part 9	**Plan of Subdivision only:** Complete a Community Energy Plan demonstrating energy emissions and resiliency targets on a community scale[6].	**Plan of Subdivision Submission** • Provide a Community Energy Plan	1. Strategies to design a building for solar readiness may include the following: ○ Designate an area of the roof for future solar PV and/or solar thermal. ○ Install one or two conduits from the roof to the main electrical or mechanical room (size of conduit to be determined based on maximum potential solar PV or solar thermal system size). ○ Ensure that the building structure has adequate structural capacity to accommodate future installation of renewable energy systems. ○ Ensure that sufficient area is allocated for the future installation of renewable energy systems. ○ Designate a 2x2 meter wall area in the electrical and mechanical rooms for future solar electrical/thermal equipment controls and connections (e.g. meters, monitors). ○ Where possible place the HVAC or other rooftop equipment on the north side of the roof to prevent future shading. 2. Consult with NRCan Solar Ready Guidelines for more guidance on solar readiness, or to access a Solar Readiness Checklist. Also, consult the National Renewable Energy Laboratory's Solar Ready Buildings Planning Guide for additional considerations for PV-ready provisions. 3. Promotion of solar PV and renewables aligns with the City of Hamilton's Climate Action Strategy, specifically the target for all new homes to have 30% annual load coverage by solar PV by 2031 and the target for all new commercial buildings to include rooftop solar PV panels by 2026.
EC5.2	Tier 1	All	• Design all new buildings for solar readiness[1]. Where applicable, include an opt-in for new owners to install solar PV or thermal systems at the new owner's expense[1,2,3,4].	**Site Plan Application Submission** • Drawings, plans, specifications, or other documentation demonstrating that is project is solar-ready.	
EC5.3	Tier 2	Part 9	• Design and install on-site renewable energy systems to supply at least 10% of the building's total energy load from one or a combination of energy source(s)[3,4,5]. *OR* • Design and install on-site renewable energy systems to supply at least 20% of the building's total energy load from geo-exchange (geothermal or ground source heat pumps)[4].	**Site Plan Application Submission** • Drawings, plans, specifications, or other documentation demonstrating the project's on-site renewable sources. • Energy Modelling Report or other documentation demonstrating the percentage of the project's energy needs provided by on-site renewable sources.	
	Tier 2	Part 3	• Design and install on-site renewable energy systems to supply at least 5% of the building's total energy load from one or a combination of energy source(s)[3,4,5,6]. *OR* • Design and install on-site renewable energy systems to supply at least 20% of the building's total energy load from geo-exchange (geothermal or ground source heat pumps)[4].		

Item #	Tier	Applicability	Metrics	Documentation	Details
					4. The percent (%) of renewable energy generated can be quantified by the following steps: ○ Determine the total building annual energy use for the site. ○ List the renewable energy technologies being considered for the site. ○ Determine the expected annual energy generated from renewable technologies and the percent (%) of annual energy generated on-site, relative to the total energy consumed. 5. Allowable forms of renewable energy systems include the following: ○ Solar photovoltaics (PV) technologies (e.g. solar panels, solar shingles) ○ Solar thermal ○ Biogas and biofuel ○ Wind-based systems 6. Refer to the City of Ottawa Community Energy Plan Terms of Reference for guidance on community energy planning.

EC6 DISTRICT ENERGY

Intent: Encourage district energy to reduce environmental and economic impacts associated with fossil fuel energy use.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC6.1	Tier 1	All	• Investigate the feasibility of shared energy solutions, such as the development of low carbon thermal energy networks or connection to planned or existing district energy systems and identify the required provisions to be district energy ready[1,2,3,4].	**Plan of Subdivision and Site Plan Application Submission** • Provide a Letter signed by a qualified professional (Mechanical Engineer) and the owner/developer/builder that describes how opportunities for district energy have been explored.	1. Connecting to an existing low carbon district energy system is strongly encouraged to significantly reduce or avoid carbon emissions and to meet the GHGI limits. 2. For guidance on designing a building to be district energy-ready, please refer to: ○ The City of Toronto's Design Guideline for District Energy-Ready Buildings Guide

Item #	Tier	Applicability	Metrics	Documentation	Details
EC6.2	Tier 2	All	• Connect to a district energy system where one exists or design for future connection where a future district energy system is slated for development[3,4].	**Post Construction Submission** • Drawings, plans, or other documentation demonstrating connection, or design will accommodate future connections.	○ The City of Ottawa Community Energy Plan Terms of Reference 3. Refer to the City of Hamilton's Climate Change Action Strategy for more information. 4. Refer to the Action 19 - Decarbonize and Expand District Energy within the City of Hamilton's Community Energy and Emissions Plan for more information.

EC7 BUILDING SYSTEMS COMMISSIONING

Intent: To promote buildings that are designed to be energy-efficient with reduced operating costs and greenhouse gas emissions associated with building operations.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC7.1	Tier 2	All	• Conduct best practice commissioning, per the requirements referenced in LEED BD+C v4.1 Fundamental Commissioning and Verification pre-requisite[1,2,3].	**Site Plan Application Submission** • Provide a Letter of Commitment signed by the owner/developer/builder that best practice commissioning will be performed; OR proof a commissioning agent retained. **Post Construction Submission** • Commissioning Plan & Report.	1. Commissioning of a building is a systematic process that documents and verifies that all the facility's energy-related systems perform interactively in accordance with the design documentation and intent, and according to the owner's operational requirements from the design phase through to at least one-year post construction. 2. Commissioning process should be in accordance with ASHRAE Guideline 0–2013 and ASHRAE Guideline 1.1–2007 for HVAC&R systems, as they relate to energy, water, indoor environmental quality, and durability for mechanical, electrical, plumbing, and renewable energy systems and assemblies. 3. Refer to LEED BD+C (v4.1) EA: Fundamental Commissioning and Verification for more information on building systems commissioning.

EC8 AIR TIGHTNESS TESTING

Intent: To reduce air leakage, while improving the greenhouse gas emission associated with building operations and thermal comfort of occupants.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC8.1	Tier 1	All	• Design and construct the building to improve the quality and airtightness of the building envelope[1].	**Site Plan Application Submission** • Provide a letter signed by a qualified professional (Building Envelope Engineer or Building Science Engineer) and the owner/developer/builder that describes the project's approach to achieving air tightness, and the process for any planning testing.	1. The letter should indicate the line of air tightness (including air barrier materials, systems and transitions). Submission of drawings and indicative details to support the letter is encouraged.
EC8.2	Tier 2	All	• Conduct a whole-building air leakage test to improve the quality and airtightness of the building envelope and report the performance achieved[1,2].	**Post Construction Submission** • Air Leakage Testing Report.	1. The practice of Whole Building Air Leakage Testing (WBALT) involves sealing all building openings (e.g. operable windows) and pressurizing a building to determine its resistance to air leakage through the envelope. 2. For guidance on Whole Building Air Leakage Testing, please refer to the City of Toronto Whole Building Air Leakage Testing Protocol or the ASTM E3158-18 Standard Test Method for Measuring the Air Leakage Rate of a Large or Multizone Building.

EC9 ENERGY METERING

Intent: Promote energy awareness to drive energy-conscious behavior and reduce usage. Continuous consumption tracking and benchmarking ensure design goals are met.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC9.1	Tier 1	All	• Install electricity and/or thermal sub-meters for all energy end-uses that represent more than 10% of the building's total energy consumption[1,2].	**Site Plan Application Submission** • Provide a Letter of Commitment signed by a qualified professional (Electrical Engineer and Mechanical Engineer) and the owner/developer/builder that includes confirmation that the requirements of this metric will be met.	1. Refer to LEED BD+C (v4.1) EA: Advanced Energy Metering for more information on electricity and thermal sub-metering. 2. The advanced energy metering must have the following characteristics: ○ Meters must be permanently installed, and record at intervals of one hour or less. ○ Electricity meters must record both consumption and demand.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC9.2	Tier 2	All	• For buildings with multiple tenants, provide energy submetering for each commercial/institutional tenant, or in each residential suite[1,2,3].	**Post Construction Submission** • Electrical and mechanical single-line diagrams that indicate the provision of electricity and thermal sub-meters. • A metering plan listing all meters along with type, energy source metered, diagrams, and/or references to design documentation.	○ The data collection system must use a local area network, building automation system, or wireless network. ○ The system must be capable of storing all meter data for at least 36 months. ○ The data must be remotely accessible. ○ All meters in the system must be capable of reporting hourly, daily, monthly, and annual energy use. 3. Single room–occupancy units, transitional and temporary housing, and designated supportive housing buildings do not need an electricity meter in each unit.

EC10 BENCHMARKING & REPORTING

Intent: Promote energy and water conservation through ongoing monitoring and reporting, and increased visibility for the City of Hamilton to track emissions of new developments.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC10.1	Tier 1	Part 3	• **Buildings 50,000 square feet (≈ 4645 m²), or larger:** Enroll the project in ENERGYSTAR® Portfolio Manager to track energy and water consumption of the new development during operations in accordance with O. Reg. 506/18[1,2].	**Site Plan Application Submission** • Provide a Letter of Commitment signed by the owner/developer/builder that includes confirmation that the requirements of this metric will be met. **Post Construction Submission** • Confirmation of Registration.	1. Benchmarking of private buildings annual energy consumption is required in accordance with Ontario Regulation 506/18. Building energy benchmarking is a process through which building owners and/or managers can track and report their building's operational energy over time. Refer to the ENERGY STAR® Portfolio Manager website. 2. Provide the City of Hamilton's account with read-only access to the project.
EC10.2	Tier 2	All	• Enroll the project in ENERGYSTAR® Portfolio Manager[1] to track energy and water consumption of the new development during operations[1,2].		

EC11 ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

Intent: Promote the use of electric cars by providing electric vehicle (EV) charging stations to support GHG targets and improved air quality.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC11.1	Tier 1	Part 3 & Part 9 (Residential)	• Ensure 100% of all parking spaces are EV-ready[1,2,3].	**Site Plan Application Submission** • On the Site Plan Drawing, Traffic Plan, or Parking Study identify: ○ The number of total parking spaces included per building on the site. ○ The number of total parking spaces that will be provided with rough-in provisions. ○ The percentage of parking spaces that will be EV-ready.	1. Refer to the City of Hamilton Zoning By-law No. 05-200. 2. In order to achieve zoning compliance, at minimum, each Electric Vehicle Parking Space shall have an adjacent electrical outlet at which an electric vehicle charger can be installed in the future. The electrical outlet shall be capable of providing Level 2 electric vehicle charging, which generally means a voltage of 208V to 240V. 3. Electric vehicle supply equipment (EVSE) is defined by the Ontario Electrical Safety Code as the complete assembly consisting of cables, connectors, devices, apparatus, and fittings installed for the purpose of power transfer and information exchange between the branch circuit and the electric vehicle, commonly referred to as an EV charging station or EV charger. 4. Provide EVSE capable of supplying Level 2 charging capability or a higher level of charging. 5. EVSE parking spaces shall be labelled for the intended use of electric vehicle charging. 6. Refer to the Electric Vehicle Charging Infrastructure Costing Study for more information about EV Ready design options and costing analysis for residential development archetypes to comply with this standard.
	Tier 1	Part 9 (Non-Residential)	• Ensure at least 50% of all parking spaces are EV-ready[1,2].		
EC11.2	Tier 2	Part 3 & Part 9 (Residential)	• Provide at least 20% of all parking spaces with Electric Vehicle Supply Equipment (EVSE) [3,4,5,6].	**Site Plan Application Submission** • Parking plan(s) indicating the location and number of EV chargers.	
	Tier 2	Part 9 (Non-Residential)	• Provide at least 10% of all parking spaces with Electric Vehicle Supply Equipment (EVSE) [3,4,5,6].		

EC12 ELECTRIC BICYCLE CHARGING INFRASTRUCTURE

Intent: Reduce air pollution and GHG emissions related to car use by promoting active transportation. Active transportation also reduces fuel dependency, traffic congestion, noise pollution, and infrastructure.

Item #	Tier	Applicability	Metrics	Documentation	Details
EC12.1	Tier 1	Part 3 & Part 9 (Residential)	• Provide Energized Outlets for 15% of the bicycle parking spaces for electric bicycle charging[1,2].	**Site Plan Application Submission** • Parking plan(s) indicating the location of electric bicycle charging.	1. The number of electric bicycle parking spaces is included as part of the total required bicycle parking spaces. 2. Energized Outlets are capable of supplying 120V, and are located at a maximum distance of 1100 mm from the bike rack to accommodate the typical manufacturer-supplied power cord. 3. Applies only to long-term bicycle parking spaces which are to be located in a secure enclosed bicycle parking area within the building.

ECOLOGY AND BIODIVERSITY

This Impact Category focuses on the preservation, restoration, and enhancement of the natural environment within the development area. Common requirements within this topic include native species and tree planting, prohibiting invasive species, and bird-friendly design. The performance requirements within this impact category foster ecological health and biodiversity, and also significantly contribute to the enhancement of urban forests, elevate biodiversity levels, and mitigate urban heat islands. By prioritizing these measures, developments can achieve a balance between urban expansion and environmental preservation, ensuring sustainable habitats for both wildlife and human communities. Refer to pages 14 to 17 of this document for the Ecology and Biodiversity Impact Category.

Performance Requirements

EB1 Native Species Planting

EB2 Tree Planting

EB3 Bird-Friendly Design

EB4 Light Pollution

EB5 Climate Positive Landscape Design

EB1 NATIVE SPECIES PLANTING

Intent: To preserve the long-term health of landscape design and minimize effects on broader natural systems.

Item #	Tier	Applicability	Metrics	Documentation	Details
EB1.1	Tier 1	All	• Use native or adapted species for 50% of the new landscaping planted areas (including grassed areas), i.e. 50% of the total landscaped area should be covered by native or adapted plant species. Select drought-tolerant species from colder climate zones wherever possible[1,2,3,6].	**Plan of Subdivision and Site Plan Application Submission** • Landscape Plan with planting schedule demonstrating that plant species do not include invasive species, and indicating where species will be native or adapted.	1. Native plant species are defined as plants that are indigenous to Southern Ontario; they are adapted to local conditions and occur naturally in the region. Refer to Credit Valley Conservation resources for definitions of native, nativar, pollinator, and drought-friendly species. 2. Adapted vegetation is vegetation that is not native to the particular region it was introduced to but has evolved or maintained characteristics conducive for healthy growth and requires no additional resources or maintenance, such as water for irrigation, in comparison to similar species native to the area. An adapted species is non-aggressive; it is not disruptive to native plant communities. 3. For resources on native species selection, refer to the following: ○ Natives Plants Database ○ The Trees Atlas ○ Plant Paradise Toolkit 4. Please refer to the Ontario Invasive Species Act for a list of Invasive Species. 5. Refer to the City of Hamilton Urban Official Plan Chapter C: City Wide Systems and Designations for additional details on vegetated protection zones. 6. For more information on how the metrics of this performance requirement align with the City of Hamilton guidelines and strategies, refer to the following: ○ Hamilton Urban Forest Strategy ○ Hamilton Climate Change Impact Adaptation Plan ○ City of Hamilton Biodiversity Action Plan 7. For resources on planting lists for pollinator gardens, refer to the following: ○ Hamilton Conservation Authority ○ City of Hamilton – Environmental Stewardships Pollinator
EB1.2	Tier 1	All	• Per the Ontario Invasive Species Act, do not plant invasive species[4,6].		
EB1.3	Tier 1	All	**For sites adjacent to Agricultural lands, Natural Heritage features, Environmentally Significant Areas (ESAs), and any other areas that are restricted from development[1,3,5]:** • Provide vegetated protection zones • Vegetated protective zones must include 100% native vegetation, with a preference for drought-tolerant species.		
EB1.4	Tier 2	All	• Use native or adapted species for 75% of the new landscaping planted areas (including grassed areas), i.e. 75% of the total landscaped area should be covered by native or adapted plant species[1,2,3,6]. • Include permanent signage highlighting the native species planted on site[1,2,3,6].	**Site Plan Application Submission** • Landscape Plan with planting schedule demonstrating the plant species that will be planted, and indicating where species will be native or adapted. • Drawings or plans with details on signage highlighting species planted on site.	
EB1.5	Tier 2	All	• Support the City's "Bee City" designation by restoring or protecting a minimum of 30% of the site with native vegetation that includes at least two native flowering species that bloom at different periods over the growing season[1,3,6,7].	**Site Plan Application Submission** • Landscape Plan with planting schedule demonstrating the plant species that will be planted, indicating where species will be native, and indicating at least two native flowering species that bloom at different periods over the growing season.	

Item #	Tier	Applicability	Metrics	Documentation	Details
					8. Restoration refers to any project whose purpose is to re-create a natural vegetation community for any purpose using indigenous plants. It can include reforestation, reclamation, habitat creation, and should also include landscaping near natural areas.

EB2 TREE PLANTING

Intent: To preserve and enhance our natural heritage for biodiversity, heat island mitigation, and stormwater management.

Item #	Tier	Applicability	Metrics	Documentation	Details
EB2.1	Tier 1	All	• Protect healthy, mature trees that exist within the project boundary. Comply with the requirements of the City of Hamilton Tree Protection Guidelines[1,2,3].	**Plan of Subdivision and Site Plan Application Submission** • A Tree Inventory Report and Preservation Plan. **Site Plan Application Submission** • Plan(s) or drawings demonstrating the volume of soil provided for each tree. • Plan(s) or drawings indicating the locations of all trees and parking spaces within the surface parking area. • Canopy Cover Plan(s) or drawings demonstrating walkway/sidewalk area shaded.	1. For more information on street planting protocols, please refer to the City of Hamilton Street Tree Planting Policy. 2. Where applicable, comply with the requirements of the City of Hamilton Tree Protection Guidelines and City of Hamilton Private Tree Protection By-Law 3. Promotion of healthy trees and planting aligns with the City of Hamilton Urban Forest Strategy canopy cover target of 40%. 4. Calculations can assumed a mature tree canopy width. 5. Trees should be spaced appropriately, having regard to site conditions, and ensure that space is provided to accommodate mature trunk and root flare growth of each tree.
EB2.2	Tier 1	All	• Provide each tree planted with access to 21 m^3 of soil per tree. Where trees share soil, such as in a continuous planting trench, a reduction to 16m^3 per tree may be permitted.		
EB2.3	Tier 1	All	• Where surface parking is provided, plant 1 shade tree for every 5 parking spaces.		
EB2.4	Tier 1	All	• Plant trees to shade at least 50% of the bike paths and walkway/sidewalk lengths [3,4,5].		
EB2.5	Tier 1	All	• Provide a watering and maintenance program for trees for at least the first 4 years after planting. The maintenance programs should include measures to reduce the impact of de-icing salt on vegetation.	**Site Plan Application Submission** • A Letter of Commitment signed by an accredited professional (Landscape Architect) and the owner/developer that describes the watering and maintenance program for trees. **Post Construction Submission** • Operating and Maintenance plan or other documentation detailing the maintenance program for trees.	
EB2.6	Tier 2	All	• Plant trees to achieve a 40% tree canopy cover for the site, excluding the building footprint [1,2,3,4,5].	**Site Plan Application Submission** • Landscape Plan(s) and supporting calculations demonstrating compliance. • Canopy Cover Plan(s).	

EB3 BIRD-FRIENDLY DESIGN

Intent: To prevent fatal collisions of birds with buildings.

Item #	Tier	Applicability	Metrics	Documentation	Details
EB3.1	Tier 1	All	• Design in accordance with the guidelines laid out in the Canadian Standards Association's (CSA) Bird-Friendly Building Design Standard A460[1]. • Use a combination of Bird-Friendly Design strategies to treat at least 90% of the exterior glazing including transparent railings and barriers) located within the first 16 metres of the building above grade or to the height of the mature tree canopy, whichever is greater. Visual markers on the glass must meet the CSA Bird-Friendly Building Design Standard A460 guidelines[1,2]. • Where there is glazing adjacent to green roofs and/or other rooftop vegetation, the bird collision mitigation strategy shall be applied to a height of 4 m from the surface of the green roof or the height of the adjacent mature vegetation, whichever is greater. • Eliminate all fly-through effects (e.g., glass corners, parallel glass) and other traps from building design or use specified bird-safe glass or integrated protection measures.	**Site Plan Application Submission** • Elevation drawings demonstrating the location of bird-friendly strategies and calculations demonstrating metric requirements will be achieved. • Details or specifications and drawings indicating treated area, type of treatment, density of visual markers, etc.	1. Refer to the CSA Bird-Friendly Design Standard A460 for detailed requirements. 2. Bird-Friendly Design Strategies may include: ○ Visual patterns on glass ○ Visual markers provided on the glass of proposed buildings with spacing no greater than 50 millimeters by 50 millimeters ○ Window films ○ Fenestration patterns 3. In April 2022, the City of Hamilton became the 6th certified Bird Friendly City in Canada. As part of this commitment, the City has as taken steps to reduce threats to wild birds, conserve bird habitat, and educate the public about birds.
EB3.2	Tier 1	All	• Ground-level ventilation grates have a porosity of less than 20 mm X 20 mm (or 10 mm X 40 mm).	**Site Plan Application Submission** • Site plan, or other documentation indicating the location and porosity of any ground-level ventilation grates.	

EB4 LIGHT POLLUTION

Intent: To minimize nighttime glare, light trespass, and light pollution, acknowledging their adverse effects on energy efficiency, nearby residents, and nocturnal wildlife.

Item #	Tier	Applicability	Metrics	Documentation	Details
EB4.1	Tier 1	All	• All exterior fixtures must be Dark Sky compliant[1,2].	**Site Plan Application Submission** • Site plan, or other documentation indicating lighting type, orientation, location, and controls.	1. Refer to the Canadian Standards Association's (CSA) Bird-Friendly Building Design Standard A460 for more information on light pollution requirements. 2. Refer to Dark Sky Feature Seal of Approval for more information on Dark Sky compliance requirements.
EB4.2	Tier 1	All	• Rooftop and exterior façade architectural illumination must be directed downward and turned off between the hours of 10 p.m. and 6 a.m.		
EB4.3	Tier 1	All	• Implement lighting controls in non-residential spaces that reduce nighttime spillage of light by 50% from 11 p.m. to 5 a.m.	**Site Plan Application Submission** • A Letter of Commitment from a qualified professional (Architect or Electrical Engineer), and the owner/developer/builder describing how metric requirements will be met.	

EB5 CLIMATE POSITIVE DESIGN

Intent: Promote GHG reductions and increase carbon sequestration through the landscape design.

Item #	Tier	Applicability	Metrics	Documentation	Details
EB5.1	Tier 2	All	• Use the Climate Positive Design's Pathfinder: Landscape Carbon Calculator to calculate the embodied carbon and the carbon sequestration potential within landscape designs[1,2].	**Site Plan Application Submission** • Climate Positive Design Scorecard reporting the Net Project Impact • Site plan and/or landscape plans aligning with the information input in the Landscape Carbon Calculator	1. The Climate Positive Design Challenge provides guidance for improving the impact of site design projects on the environment. The goal is for all site design projects going forward to collectively sequester more CO_2 than they emit by 2030, with a target of removing one gigaton of CO2 from the atmosphere by 2050. 2. Please refer to the Climate Positive Design for more information on how to use the Pathfinder Tool.

WATER

This Impact Category focuses on reducing potable water use for indoor and outdoor water uses, water metering, as well as stormwater management. Reducing potable water use, harvesting and re-using stormwater, and managing the quantity and quality of stormwater are all common themes in this topic. Each of the municipal standards reviewed during Phase 2 includes requirements that address one or more of these themes.

Performance Requirements

W1 Reduced Water Use

W2 Benchmarking and Reporting

W3 Water Metering

W4 Stormwater Management

W1 REDUCED WATER USE

Intent: Promotes water conservation by using efficient water fixtures, balanced irrigation practices and reducing overall water consumption.

Item #	Tier	Applicability	Metrics	Documentation	Details
W1.1	Tier 1	All	• Water-consuming fixtures do not exceed the following maximum flow requirements and are WaterSense® labeled:[1,2]: ○ High-efficiency toilets: 4.0 L/flush OR 3 and 6 L/flush (dual flush toilets); and ○ Low flow lavatory faucets: 5.7 L/min.	**Site Plan Application Submission** • A Letter of Commitment signed by a qualified professional (Mechanical Engineer) and the owner/developer that includes confirmation that requirements of this metric will be met. **Post Construction Submission** • Plumbing fixture specifications or other documentation demonstrating WaterSense® labelling and flush/flow rates.	1. Potential strategies for indoor water use reduction include the use of dual flush toilets and waterless urinals. 2. Refer to the EPA WaterSense site for a list of WaterSense labeled products.
W1.2	Tier 2	All	• Reduce indoor potable water consumption by 40% over the baseline fixture (per LEED BD+C v4 guidance)[1,2].	**Site Plan Application Submission** • Credit calculations demonstrating compliance with the metric requirements. **Post Construction Submission** • Plumbing fixture specifications or other documentation demonstrating flush/flow rates, and updated credit calculations (if necessary).	1. Potential strategies for enhanced indoor water use reduction include low-flow plumbing fixtures, and greywater and/or rainwater re-use systems to capture and reuse for indoor flushing fixtures. 2. Refer to the LEED BD+C v4: Indoor water use reduction for more information on indoor water use reduction.
W1.3	Tier 2	All	• **Outdoor**: Reduce potable water used for irrigation by 60% (per LEED BD+C v4 guidance)[1,2].	**Site Plan Application Submission** • Credit calculations demonstrating compliance with the metric requirements. **Post Construction Submission** • Irrigation specifications or other documentation demonstrating irrigation system, and updated credit calculations (if necessary).	1. Potential strategies for outdoor potable water use reduction include the use of drought-tolerant native species, water-efficient plant species, rain sensors for irrigation systems, and non-potable water for irrigation (e.g. rainwater cistern collection and re-use system, or rain collection barrels). 2. Refer to the LEED BD+C v4: Outdoor water use reduction for more information on outdoor water use reduction.

W2 BENCHMARKING AND REPORTING

Intent: Promote energy and water conservation through ongoing monitoring and reporting, and increased visibility for the City of Hamilton to track water consumption of new developments.

Item #	Tier	Applicability	Metrics	Documentation	Details
W2.1	Tier 1	Part 9	• **Buildings 50,000 square feet (≈ 4645 m²), or larger:** Enroll the project in ENERGYSTAR® Portfolio Manager to track energy and water consumption of the new development during operations in accordance with O. Reg. 506/18[1].	**Site Plan Application Submission** • Provide a Letter of Commitment signed by the owner/developer/builder that includes confirmation that the requirements of this metric will be met. **Post Construction Submission** • Confirmation of Registration	1. Benchmarking of private buildings annual energy consumption is required in accordance with Ontario Regulation 506/18. Building energy benchmarking is a process through which building owners and/or managers can track and report their building's operational energy and water use over time. Refer to the ENERGY STAR® Portfolio Manager website. 2. Provide the City of Hamilton's account with read-only access to the project.
W2.2	Tier 2	All	• Enroll the project in ENERGYSTAR® Portfolio Manager to track energy and water consumption of the new development during operations[1].	**Post Construction Submission** • Confirmation of Registration	

W3 WATER METERING

Intent: Promotes awareness for water consumption to reduce usage, and supports monitoring and benchmarking water use over time.

Item #	Tier	Applicability	Metrics	Documentation	Details
W3.1	Tier 2	All	• For buildings with multiple tenants, provide water submetering for each commercial/institutional tenant and per residential suite[1,2].	**Site Plan Application Submission** • Plans, drawings, or other documentation indicating individual water meters in building.	1. Refer to LEED BD+C: Multifamily Midrise - Water metering for guidance on water metering. 2. Single room–occupancy units, transitional and temporary housing, and designated supportive housing buildings do not need a water meter in each unit.

W4 STORMWATER MANAGEMENT

Intent: Enhance stormwater and watershed management to minimize the impact of polluted runoff flowing into water streams and to alleviate the strain that stormwater places on municipal infrastructure.

Item #	Tier	Applicability	Metrics	Documentation	Details
W4.1	Tier 1	All	• Provide long-term controls for Erosion and Sediment Control (ESC) in conformance with the Erosion and Sediment Control Guide for Urban Construction (2019)[1,2,4,5]. • Demonstrate compliance with the Green Standards and Guidelines for Low Impact Development[3].	**Site Plan Application Submission** • Stormwater Management Report, Plan(s), and drawing(s) to verify compliance.	1. Refer to the Erosion and Sediment Control Guide for Urban Construction (2019) for details. 2. Potential erosion control strategies may include erosion and sediment control plans, silt fencing, sediment traps, and sediment basins. 3. Green Standards and Guidelines for Low Impact Development outline the process meeting City of Hamilton stormwater quantity and quality requirements. 4. Stormwater retention can be met through infiltration, evaporation/evapotranspiration or through greywater reuse. For greywater reuse applications, ensure greywater volume is consumed prior to the next subsequent retention design rainfall event. 5. Filtration will be credited on constrained sites that are limited in their retention or reuse capabilities. Refer to the Green Standards and Guidelines for Low-Impact Development.
W4.2	Tier 2	All	• Design for future rainfall data instead of historical rainfall data to account for future climate change[1].	**Site Plan Application Submission** • Stormwater Management Report, Plan(s), and drawing(s) to verify compliance.	1. Examples of acceptable pathways include: ○ Provide control for the 100-year rainfall event down to the current control requirement using the Future 100-year modified rainfall intensity. Use the University of Western Ontario and the Canadian Water Institute IDF CC Tool for deriving rainfall Intensity-Duration-Frequency Curves. ○ Using the current IDF curves from the City of Hamilton, apply an additional 25% to the rainfall amount for the 100-year 24-hour storm event, to be distributed equally over the duration.

WASTE MANAGEMENT AND MATERIALS

This Impact Category focuses on reducing waste generation during construction and the operational phases of development. Reducing waste can contribute to the reuse of existing materials and decrease demand for raw materials. In addition, managing operational waste facilitates waste recycling and decomposing practices, contributing to waste diversion and material reuse and ultimately positively impacting the environment and natural resources. In each of the peer municipal standards reviewed in Phase 2, waste management has been observed to be an integral focus area and has been addressed through a combination of mandatory and voluntary performance requirements.

Performance Requirements

WM1 Construction Waste Reduction and Management

WM2 Operational Waste Reduction and Management

WM3 Material Reuse

WM1 CONSTRUCTION WASTE REDUCTION AND MANAGEMENT

Intent: Facilitate the reduction of waste and the safe and proper disposal of waste generated during building construction. Diverting waste from landfills reduces the extraction of virgin natural resources and minimize land, water, and air pollution.

Item #	Tier	Applicability	Metrics	Documentation	Details
WM1.1	Tier 1	All	• Manage construction and demolition waste in accordance with O. Reg. 103/94, as amended: Industrial, Commercial and Institutional Source Separation Programs [1].	**Site Plan Application Submission** • Construction and Demolition Waste Management Plan.	1. Refer to O. Reg. 103/94 for more details.
WM1.2	Tier 1	All	• Develop and implement a Construction and Demolition Waste Management Plan, and demonstrate a diversion rate of 50% or more from landfill[1,2,3,4].	**Site Plan Application Submission** • Construction and Demolition Waste Management Plan. **Post Construction Submission** • Waste Diversion Report indicating total Construction and Demolition Waste diversion rate of the project.	1. Construction Waste Management Plan should: ○ Identify strategies to reduce the generation of waste during project design and construction. ○ Establish waste diversion goals for the project by identifying the materials targeted for diversion. ○ Describe the diversion strategies planned for the project. ○ Describe where materials will be taken including expected diversion rates for each material. 2. Track all waste removed from site and update a Waste Diversion Report at least monthly. 3. Calculations can be by weight or volume but must be consistent throughout construction. 4. Exclude hazardous waste, excavated soil and land-clearing debris from calculations.
WM1.3	Tier 2	All	• Demonstrate a waste diversion rate of 75% or more from landfill[2,3,4].		

WM2 OPERATIONAL WASTE REDUCTION AND MANAGEMENT

Intent: Facilitate the reduction of waste generated and the safe and proper disposal of waste generated during building operations.

Item #	Tier	Applicability	Metrics	Documentation	Details
WM2.1	Tier 1	Part 9 (Residential)	• Design and construct the building(s) to meet section 3.5 of the City of Hamilton's waste design requirements for new developments[1,2,3].	**Site Plan Application Submission** • Drawings or plans indicating the type, floor area and location of the waste storage and sorting system.	1. Refer to the City of Hamilton Waste Requirements for Design of New Developments and Collection (2021), where applicable. 2. Comply with O. Reg 103/94 where applicable. 3. Refer to the City of Hamilton Solid Waste Master Plan, where applicable.
WM2.2	Tier 1	Part 3 & Part 9 (Residential)	• Design kitchen cabinets to accommodate space for the separate collection of recycling, organics and garbage[1,2,3].	**Site Plan Application Submission** • A Letter of Commitment signed by a qualified professional (Architect) and the owner/developer/builder that includes confirmation that requirements of this metric will be met. **Post Construction Submission** • Drawings or plans indicating the designated space.	1. Provide "built-in" storage including at least three separate storage containers for segregated storage and collection. 2. Minimum dimensions for storage bins: 8.5L each bin for garbage and organics and 18L bin for recycled materials. 3. Refer to O. Reg. 103/94, where applicable.

WM3 MATERIAL REUSE

Intent: Encourage reuse of existing materials to support total carbon reductions and reduce demolition and construction waste.

Item #	Tier	Applicability	Metrics	Documentation	Details
WM3.1	Tier 2	All	• Maintain the existing building structure and envelope[1] for 30% of the existing floor area OR use existing interior non-structural elements for at least 30% of the entire completed building, including additions[2,3].	**Site Plan Application Submission** • A Letter of Commitment signed by a qualified professional (Architect, Structural Engineer) and the owner/developer/builder that includes confirmation that requirements of this metric will be met. • Calculations completed by a qualified professional (Architect, Structural Engineer) demonstrating this metric can be met. **Post Construction Submission** • Report/ drawings/ plans demonstrating the preserved and new components of the building, • Calculations completed by a qualified professional (Architect, Structural Engineer) demonstrating this metric has been met.	1. Envelope components include: exterior skin and framing, and exclude window assemblies and non-structural roofing material. 2. Hazardous materials are excluded. 3. Refer to LEED BD+C v4: Building life-cycle impact reduction for details.

COMMUNITY AND URBAN DESIGN

This Impact Category focuses on the design elements that promote a sense of place in the community by emphasizing the importance of preserving heritage and cultural features, raising awareness of local food production, promoting healthy practices and inclusion, as well as educating residents on sustainability features in their community and ultimately creating communities that are healthy and resilient.

Performance Requirements

CD1 Promotion of Public and Active Transportation

CD2 Services within Walking Distance

CD3 Bicycle Facilities

CD4 Accessible Design

CD5 Urban Agriculture

CD6 Heat Island Effect

CD7 Community Sustainability Outreach

CD8 Celebration of Heritage and Culture

CD1 PROMOTION OF PUBLIC AND ACTIVE TRANSPORTATION

Intent: Reduce air pollution and GHG emissions related to car use by promoting active transportation. Active transportation also reduces fuel-dependency, traffic congestion, noise pollution, and infrastructure.

Item #	Tier	Applicability	Metrics	Documentation	Details
CD1.1	Tier 1	All	• Develop a Transportation Demand Management (TDM) Plan and demonstrate a 25% reduction in single occupancy auto vehicle trips generated by the proposed development[1,2].	**Site Plan Application Submission** • Transportation Demand Management Plan demonstrating a 25% reduction.	1. Transportation Demand Management manages the demands placed on transportation infrastructure. It is the use of policies, programs, infrastructure improvements, and/or services to influence travel behaviour. TDM encourages sustainable travel choices by supporting alternatives options over the convention of frequently driving alone. 2. Refer to City of Hamilton Cycling Master Plan, where applicable.
CD1.2	Tier 1	All	• Construct a network of suitable cycling facilities and multi-use paths within the development which also connects to the bicycle network and implement recommendations of the City's Transportation Master Plan and/or Cycling Master Plan (where applicable)[1,2,4].	**Plan of Subdivision and Site Plan Application Submission** • Plan(s) indicating network of cycling facilities and multi-use paths.	1. Refer to the City of Hamilton Transportation Master Plan, where applicable. 2. Refer to City of Hamilton Cycling Master Plan, where applicable. 3. Refer to the City of Hamilton's Zoning By-Law, where applicable. 4. Refer to LEED BD+C v4.1: Bicycle Facilities, where applicable.
CD1.3	Tier 1	All	• Provide safe and direct routes that encourage the use of active transportation modes and connect to transit, commercial areas, community facilities, and parks[1,3].	**Plan of Subdivision and Site Plan Application Submission** • Plan(s) indicating safe and direct active transportation routes.	
CD1.4	Tier 1	All	• Locate transit stops in accessible and safe areas[1,3].	**Plan of Subdivision and Site Plan Application Submission** • Plan(s) indicating transit stops.	

CD2 SERVICES WITHIN WALKING DISTANCE

Intent: Promotes healthy practices among occupants and encourages a more active lifestyle

Item #	Tier	Applicability	Metrics	Documentation	Details
CD2.1	Tier 2	All	• **Draft Plan of Subdivision only:** Locate the building(s) within 800m of at least one of the following: ○ Transit station or stop; ○ Three amenities or services; or ○ Public park or recreational trail.	**Site Plan Application Submission** • Site plan(s) highlighting walking distance to selection option	1. Refer to LEED v4 Appendix 1 for examples of amenities categories and use types.

CD3 BICYCLE FACILITIES

Intent: Reduce air pollution and GHG emissions related to car use, and encourages a more active lifestyle.

Item #	Tier	Applicability	Metrics	Documentation	Details
CD3.1	Tier 1	All	Provide long-term and short-term bicycle parking spaces that meet or exceed the following minimum rates:[1,2,3,4,5,6.] • **Multiple Dwelling and Dwelling Unit and Mixed Use**: ○ **Short-term**: 0.1 parking space per unit (for Parking Rate Area 1 & 2), 0.05 parking space per unit (for all other areas). ○ **Long-term:** 0.7 parking space per unit (for Parking Rate Area 1 & 2), 0.5 parking space per unit (for all other areas). • **Commercial and Institutional Uses**: ○ **Short-term:** 0.2 for each 100 square metres of gross floor area (for Parking Rate Area 1 & 2), 0.15 for each 100 square metres of gross floor area (for all other areas). ○ **Long-term:** 0.15 for each 100 square metres of gross floor area (for Parking Rate Area 1 & 2), 0.1 for each 100 square metres of gross floor area (for all other areas). • **Industrial Uses:** ○ **Short-term:** 0.2 for each 100 square metres of gross floor area (for Parking Rate Area 1 & 2), 0.15 for each 100 square metres of gross floor area (for all other area). ○ **Long-term:** 0.15 for each 100 square metres of gross floor area (for Parking Rate Area 1 & 2), 0.1 for each 100 square metres of gross floor area (for all other areas). • **University, College:** ○ **Short-term**:1.2 parking space for each 100 square metres of gross floor area. ○ **Long-term:** 1 parking space for each 100 square metres of gross floor area.	**Site Plan Application Submission** • Plan(s) indicating location, number, and type (long-term/short-term) of bicycle parking spaces.	1. Bicycles include adaptive bikes, trikes, and scooters for people with disabilities. 2. Long-term bicycle parking spaces are bicycle parking spaces for use by the occupants or tenants of a building. Short-term bicycle parking spaces are bicycle parking spaces for use by visitors to a building. 3. Short-term Bicycle parking spaces shall be publicly accessible and located within a bicycle parking area at grade, which includes the first floor of a building or an exterior surface area. Spaces should be visible and easily accessible location in close proximity to main building entrances. 4. Long-term Bicycle parking Spaces shall be located weather protected, and in a secure enclosed bicycle parking area within a building. 5. Refer to the City of Hamilton Zoning By-law No. 05-200 for more information on Parking Areas. 6. Refer to City of Hamilton Transportation Master Plan and Cycling Master Plan, where applicable.

Item #	Tier	Applicability	Metrics	Documentation	Details
CD3.2	Tier 2	All	• Provide an additional 20% long-term and short-term bicycle parking spaces, beyond the Tier 1 minimum parking space requirements[1,2,3,4].	**Site Plan Application Submission** • Plan(s) indicating location, number, and type (long-term/short-term) of bicycle parking spaces.	
CD3.3	Tier 2	Part 9 (Residential)	• Include dedicated bike share location onsite and engage in contract with Hamilton Bike Share program[1]. • **Alternative Compliance Path:** Provide at least 10 additional publicly accessible, short-term bicycle parking spaces, at-grade on the site or within the public boulevard. Spaces should be in addition to bicycle parking required under CD6.1 and CD6.2.	**Site Plan Application Submission** • Site plan(s) highlighting the location of planned bike share location or publicly accessible spaces. **Post Construction Submission** • Documentation demonstrating enrollment in Hamilton Bike Share Program.	1. Hamilton Bike Share Inc. is the local not-for-profit organization that operates the City of Hamilton's bike share system. 2. Alternative Compliance Path can be pursued where the site is located outside of the Hamilton Bike Share coverage area.

CD4 ACCESSIBLE DESIGN

Intent: Design to support persons with disabilities.

Item #	Tier	Applicability	Metrics	Documentation	Details
CD4.1	Tier 1	All	• Meet the Accessibility for Ontarians with Disabilities Act (AODA) Integrated Accessibility Standards, sections 80.16 to 80.31 inclusive, for pedestrian infrastructure[1].	**Site Plan Application Submission** • Plan(s), drawing(s), or other documentation demonstrating compliance.	1. When providing pedestrian crossings, consider curb ramps and depressed curbs (designed according to AODA standards).

CD5 URBAN AGRICULTURE

Intent: Promote urban agriculture to raise awareness around local food, reduce environmental and economic impact from transport of food, and increase green space.

Item #	Tier	Applicability	Metrics	Documentation	Details
CD5.1	Tier 1	All (Excluding Commercial and Industrial)	• Residential buildings: Provide 0.5 sq.m. per dwelling unit of garden space[1,2]. • Institutional Buildings: Provide space for urban agriculture and/or community garden.	**Site Plan Application Submission** • Landscape Plans indicating dedicated garden area.	1. Garden space is defined as land and/or an alternative mechanism with a growing medium that will be used to cultivate plants for food. 2. Supports Recommendation #6 of the City of Hamilton's Food Strategy.

CD6 HEAT ISLAND EFFECT

Intent: To reduce ambient surface temperatures and reduce the urban heat island effect.

Item #	Tier	Applicability	Metrics	Documentation	Details
CD6.1	Tier 1	All	• Use one or a combination of a green roof, cool roof and solar PV installed for at least 75% of available roof space[1,2,3,6,].	**Site Plan Application Submission** • Roof plan(s) indicating the heat island reduction measures, including the SRI values(s) of roof materials (if applicable).	1. Available roof space is the total roof area excluding areas designed for renewable energy, private terraces, residential amenity, skylights, and rooftop equipment. 2. Cool roofs must have an initial SRI of 82 or an aged SRI of 64 (for low-sloped roofs <2:12) or an initial SRI of 39 and an aged SRI of 32 (for steep-sloped roofs >2:12). 3. Solar Reflectance Index (SRI) is a measure of a surface's ability to reflect solar heat. The SRI for a given material is calculated using both the reflectance value and the emittance value of the material. Black asphalt has an SRI of 0, a standard white surface is 100, and gray concrete is 35. 4. Non-roof hardscape includes driveways, walkways, courtyards, surface parking areas, artificial turf, and other on-site hard surfaces. 5. Examples of non-roof heat island reduction measures include: ○ Paving materials with an SRI of 29 or greater; ○ Shade from existing tree canopy or new 10-year tree canopy; ○ Shade from architectural structures that are vegetated or have an SRI of 29 or greater; ○ Shade from structures with energy generation (i.e. PV, solar thermal). ○ Shade cast by buildings is not an eligible strategy. 6. Where applicable, refer to the following resources for guidance: ○ City of Hamilton Biodiversity Action Plan ○ Hamilton Urban Forest Strategy ○ Hamilton Climate Change Impact Adaptation Plan ○ Hamilton Community Energy & Emissions Plan
CD6.2	Tier 1	All	• Use one or a combination of the heat island reduction strategies to treat at least 50% of the site's non-roof hardscape[3,4,5,6].	**Site Plan Application Submission** • Site plan or landscape plan indicating the non-roof heat island reduction measures.	
CD6.3	Tier 2	All	• Use one or a combination of the heat island reduction strategies to treat at least 75% of the site's non-roof hardscape [3,4,5,6].		

CD7 COMMUNITY SUSTAINABILITY OUTREACH

Intent: Promotes green building features and supports the continued involvement of tenants/homeowners.

Item #	Tier	Applicability	Metrics	Documentation	Details
CD7.1	Tier 1	All (Excluding Institutional and Industrial)	• Distribute a building-specific sustainability handout to all homeowners and tenants, outlining sustainability features, such as green building materials, native and invasive plant species, waste management programs, bicycle facilities, transit stop locations, and encouraging other activities (low-water gardening, green cleaning materials, alternate pest control measures, purchasing green power)[1]. • Familiarize tenants and homeowners with the building's green building feature with an on-site review[1].	**Site Plan Application Submission** • A Letter of Commitment signed by the developer/owner that includes confirmation that the requirements of this metric will be met. **Post Construction Submission** • Educational package or other educational materials demonstrating compliance.	1. Handout and on-site review can be completed by a representative from the developer, condo-board or property management. 2. Maintain a copy of the education package or other materials during operation and provide to new tenants.

CD8 CELEBRATION OF HERITAGE AND CULTURE

Intent: Contributes to a sense of place in the community and amplifies shared values.

Item #	Tier	Applicability	Metrics	Documentation	Details
CD8.1	Tier 1	All	• Where new developments are located near natural heritage features[1,2], locate amenities and green spaces nearby to provide a buffer. Where trails occur or are planned, provide a connection to the broader community.	**Site Plan Application Submission** • Plan(s), drawing(s), or other documentation demonstrating targeted feature(s).	1. A natural heritage feature is a significant aspect of the natural environment, valued for its ecological, geological, biological, or cultural importance. This may include unique ecosystems, rare species, geological formations, landscapes, or culturally significant areas, which contribute to biodiversity and overall regional heritage. Conservation efforts should aim to protect and preserve these features. 2. Refer to Hamilton Conservation Authority Natural Areas, Grand River Conservation Authority, Conservation Halton, and Niagara Peninsula Conservation, where applicable.

Item #	Tier	Applicability	Metrics	Documentation	Details
CD8.2	Tier 1	All	• Significant cultural heritage resources[1], including heritage buildings and structures, shall be conserved in accordance with provincial and municipal policies. These resources should be retained in situ and integrated into compatible and sympathetic new development[2,3,4]. • For development projects that may impact on-site or adjacent cultural heritage resources, a Cultural Heritage Impact Assessment may be required and would guide the strategy for conservation, ranging from adaptive reuse, relocation to documentation and salvage[2,3,4].	**Site Plan Application Submission** • Cultural Heritage Impact Assessment, including any subsequent plans or studies recommended in the assessment (Conservation Plan, Vibration Study, etc.).	1. Cultural heritage resources include archaeological resources, built heritage resources and cultural heritage landscapes. They can include tangible features, structures, sites, or landscapes that, either individually or as part of a whole, are of historical, architectural, archaeological, or scenic value. Cultural heritage resources also represent intangible heritage, such as customs, ways-of-life, values, and activities. Cultural heritage links communities to their roots and contributes to our image and cultural identity. Cultural Heritage should be protected and enhanced. 2. If the property is Designated, a Heritage Permit will be required for any alteration, demolition or relocation that directly impacts the reasons for designation or heritage attribute listed in the Designation By-law. 3. Contact Cultural Heritage staff to confirm the Heritage Permit process and timing in conjunction with the Development Approval process.
CD8.3	Tier 1	All	• Incorporate public art[1] into publicly accessible and visible spaces or into building designs as an architectural element, where feasible, which celebrates the culture or history of the area.	**Site Plan Application Submission** • Plan(s), drawing(s), or other documentation demonstrating targeted feature(s).	1. Examples of public art include sculptures, murals, interpretive signage, and architectural elements.
CD8.4	Tier 2	All	• Introduce beautification measures/amenities[1] that beautify stormwater management features, such as ponds.	**Site Plan Application Submission** • Plan(s), drawing(s), or other documentation demonstrating targeted feature(s).	1. Examples of beautification include public art or interpretive signage.

Appendix B

Revised City of Hamilton Green Building Standards Checklist

City of Hamilton
Green Building Standards
CHECKLIST

City of Hamilton Green Building Standards

Energy and Carbon	Ecology and Biodiversity	Water	Waste Management and Materials	Community and Urban Design
Energy Performance	Native Species Planting	Reduced Water Use	Construction Waste Reduction and Management	Promotion of Public and Active Transportation
Embodied Carbon	Tree Planting	Benchmarking and Reporting	Operational Waste Reduction and Management	Services within Walking Distance
Refrigerant Leakage	Bird-Friendly Design	Water Metering	Material Reuse	Bicycle Facilities
Building Energy Resilience	Light Pollution	Stormwater Management		Accessible Design
On-Site Renewables	Climate Positive Landscape Design			Urban Agriculture
District Energy				Heat Island Effect
Building Systems Commissioning				Community Sustainability Outreach
Air Tightness Testing				Celebration of Heritage and Culture
Energy Metering				
Benchmarking and Reporting				
Electric Vehicle Charging Infrastructure				
Electric Bicycle Charging Infrastructure				

Instructions

The City of Hamilton's Green Building Standards (GBS) applies to all Part 3 and Part 9 building types in the urban area subject to a Site Plan or Draft Plan of Subdivision application. **Refer to the GBS Guidebook for details.**

A completed copy of this GBS Checklist and any supporting documentation must be included as part of your complete development application. Tier 1 metrics are required by the City of Hamilton. Tier 2 metrics are optional but encouraged.

Applicant Information:

Applicant/Agent:	
Name (First, Last Name):	
Email:	

Project Information: **Site Plan** **Draft Plan of Subdivision**

Project Name:	
Address of Subject Land (Street Number and Name):	
Registered Owner (First, Last Name):	
Telephone Number:	
Date Checklist Completed (yyyy-mm-dd):	
Is this checklist revised from an earlier submission (Yes/No):	
Gross Floor Area (square metres):	
Number of Units:	
Number of Storeys:	
Non-Residential Gross Floor Area (square metres):	

Proposal Description (narrative of your project):

Glossary

- Part 3 Buildings: This refers to all mid to high-rise residential and all non-residential developments and refers to buildings that are subject to Part 3 of Division B of the Ontario Building Code, per Article 1.1.2 O.Reg. 332/12: Building Code. This includes buildings exceeding 600 m^2 in building area or exceeding three storeys in height.

- Part 9 Buildings: This refers to low-rise residential developments and refers to buildings that are subject to Part 9 of Division B of the Ontario Building Code, per Article 1.1.2 O.Reg. 332/12: Building Code. This includes buildings of three or fewer storeys in height or with a building area not exceeding 600 m^2.

- Low-Density Residential Development: Low-density residential uses generally include single-detached, semi-detached, duplex, triplex, fourplex, and street townhouse dwellings.

- Medium and High-Density Residential Development: High and medium-density residential uses are characterized in the Urban Hamilton Official Plan as multiple dwelling forms containing five or more dwelling units. Examples include block townhouse dwellings, stacked townhouse dwellings, street townhouse dwellings fronting onto a condominium road, and apartment dwellings.

- Mixed-Use Development: A development or area made up of mixed land uses either in the same building or in separate buildings. The mix of land uses may include commercial, industrial or institutional uses but must include residential units (*defined in the UHOP*).

- Institutional Development: A development or area comprised of public or non-public institutions in individual buildings or groups of buildings. The uses may include but are not limited to educational facilities, religious facilities, cultural facilities, health care facilities, or daycare facilities (*not defined in the UHOP, but a land use designation with permitted uses, development policies, etc. in Section E.6.0.*).

- Industrial Development: A development or area that permits for a range of employment activity, including offices, business parks, and industrial uses including but not limited to manufacturing and warehousing. (*Employment Areas are defined in the UHOP, the description is also based on policies for the Employment Area – Industrial Land designation in Section E.5.0).*

- Commercial Development: A development or area that are primarily located in mixed-use areas and accommodates a range of uses, including but not limited to retail, restaurants, and other similar service commercial uses (*not defined in the UHOP, but described based on policies for the Commercial and Mixed Use Designations in Section E.4.0).*

EC1 ENERGY PERFORMANCE

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC1.1a	Tier 1	Part 9 - Performance	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the Tier 1 performance limits.		Energy Model Report summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional (Energy Modeller), and demonstrating compliance with the applicable target.		
EC1.1b	Tier 1	Part 9 - Prescriptive	Provide a heat pump system to deliver 80% of facility peak heating load. Commission system to use heat pump as first stage of heating.		Confirmation of make and model of heat-pump to be installed as well as an outline of the commissioning process to be followed by the installer.	A Letter of Certification signed by an accredited professional (Architect, Electrical Engineer, or Mechanical Engineer) post-construction that a heat pump system has been installed and commissioned as required.	
EC1.2a	Tier 2	Part 9 - Performance	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the Tier 2 performance limits.		Energy Model Report summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional (Energy Modeller), and demonstrating compliance with the applicable target		
EC1.2b	Tier 2	Part 9 - Prescriptive	Provide 100% of heating and 100% of domestic hot water using heat pump systems. Heat pumps may be sized for 80% of peak load.		Confirmation of make and model of heat-pumps to be installed, back-up heating type (if any) as well as an outline of the commissioning process to be followed by the installer.		
EC1.3a	Tier 1	Part 3 - Performance	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the applicable Tier 1 performance limits		Energy Model Report summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional (Energy Modeller), and demonstrating		

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
			For all other Part 3 buildings: develop a whole-building energy model, and design and construct the building to meet the National Energy Code of Canada for Buildings (NECB) 2020[2] Tier 2 + GHG Reduction of >80% vs. NECB reference case.		compliance with the applicable target.		
EC1.3b	Tier 1	Part 3 – Prescriptive – *MURBs Only*	Provide a heat pump system to deliver 80% of facility peak heating load. Commission system to use heat pump as first stage of heating.		Confirmation of equipment make and model of heat-pump system to be installed, a schematic design of the proposed system, as well as an outline of the commissioning process to be followed by the installer.	A Letter of Certification signed by an accredited professional (Architect, Electrical Engineer, or Mechanical Engineer) post-construction that a heat pump system has been installed and commissioned as required.	
EC1.3c	Tier 1	Part 3 – *Trade-Off Path*	If facility pursues Tier 2 target for GHGI, then relax TEDI and TEUI targets as follows: MURBs - TEDI relaxed to 35, TEUI relaxed to 125 Office & Retail - TEDI relaxed to 35, TEUI relaxed to 115.		Energy Model Report summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional (Energy Modeller), and demonstrating compliance with the applicable target		
EC1.4a	Tier 2	Part 3 - Performance	Using whole-building energy modelling, demonstrate an annual Total Energy Use Intensity (TEUI), Thermal Energy Demand Intensity (TEDI), and GHG Emission Intensity (GHGI) that meets the Tier 2 performance limits. For all other Part 3 buildings: develop a whole-building energy model, and design and construct the building to meet the National Energy Code of Canada for Buildings (NECB) 2020 Tier 3 + zero (0) on-site fossil fuel emissions (i.e. Scope 2 emissions need not be zero)		Energy Model Report summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional (Energy Modeller), and demonstrating compliance with the applicable target.	Energy Modelling Report or other documentation demonstrating compliance with the targeted standard summarizing key modelling inputs, outputs, and assumptions, signed by a licensed professional. Updated Energy Model Report.	

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC1.4b	Tier 2	Part 3 – **Prescriptive** – ***MURBs Only***	Provide a fully electrified system for heating and domestic hot water using heat pumps as a first stage. Heat pumps must be sized for 80% of peak load.		Confirmation of equipment make and model of heat-pump system to be installed, a schematic design of the proposed system, as well as an outline of the commissioning process to be followed by the installer.	A Letter of Certification signed by an accredited professional (Architect, Electrical Engineer, or Mechanical Engineer) post-construction that a heat pump system has been installed and commissioned as required.	
EC1.5	Tier 3	All Buildings	Demonstrate on-site near-zero operations by complying with EC1.2a/b, EC1.4a/b/c ***OR*** Achievement of CaGBC Zero Carbon Building (ZCB) Design Standard Certification. Commit to five (5) years of CaGBC Zero Carbon Building (ZCB) Performance Standard Certification.		Follows expected pathway above **For ZCB only**: Confirmation of registration for ZCB-Design Standard certification.	Follows expected pathway above **For ZCB only**: CAGBC ZCB-Design Standard certification and complete workbook. ZCB Carbon Building-Performance ZCB Carbon Building-Performance Certification for year 1 of operations and written letter from the building owner to continue the certification for an additional four (4) year period.	

EC2 EMBODIED CARBON

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC2.1	Tier 1	Part 9	• Conduct a Materials Emissions Assessment using BEAM (Building Emissions Accounting for Materials tool), or an equivalent tool, to measure A1-A3, stage emissions for all structural, enclosure, and major finishes (cladding, flooring, ceilings, interior wall sheathing).		An Embodied Carbon report declaring the materials that are anticipated to be used and the estimated total embodied carbon emissions of these materials.		
EC2.2	Tier 1	Part 3	• Conduct a whole building life cycle assessment (LCA) of the building's structure and envelope in accordance with the CaGBC Zero Carbon Building Standard v3 methodology. Report embodied carbon for the following life cycle stages: A1-A5, B1-B5, and C1-C4.		An Embodied Carbon report declaring the materials that are anticipated to be used and the estimated total embodied carbon emissions of these materials.		
EC2.3	Tier 2	All	• Demonstrate a minimum 5% reduction in embodied carbon compared to a baseline building.		An Embodied Carbon report declaring the materials that are anticipated to be used, the estimated total embodied carbon emissions of these materials, and the achieved embodied reduction compared to a baseline building.		

EC3 REFRIGERANT LEAKAGE

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC3.1	Tier 1	Part 3.	• Develop a Refrigerant Leakage Plan describing the ongoing refrigerant leakage tracking process and corrective action plan to address refrigerant leaks should they occur in any base building HVAC systems. The Plan should list the total quantity, type, and the Global Warming Potential (GWP) of each refrigerant contained in HVAC systems with a capacity greater than 19 kW (5.4 tons).		Provide a Letter of Commitment signed by a qualified professional (Mechanical Engineer) and the owner/developer/builder that includes confirmation that the requirements of this metric will be met.	Refrigerant Leakage Plan	

EC4 BUILDING RESILIENCE

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC4.1	Tier 2	Part 3	• **Mid and High-Density Residential only:** Provide a refuge area with heating, cooling, lighting, potable water. Provide back-up power to essential building systems for 72 hours.			Drawings, plans, or other documentation demonstrating that the project incorporates resilient measures.	

EC5 ON-SITE RENEWABLES

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application / Plan of Subdivision Submission	Post Construction Submission	
EC5.1	Tier 1	Part 9	• **Plan of Subdivision only:** Complete a Community Energy Plan demonstrating energy emissions and resiliency targets on a community scale.		**Plan of Subdivision only:** Provide a Community Energy Plan.		
EC5.2	Tier 1	All	• Design all new buildings for solar readiness. Where applicable, include an opt-in for new owners to install solar PV or thermal systems at the new owner's expense.		**Site Plan Application only:** Drawings, plans, specifications, or other documentation demonstrating that is project is solar-ready.		
EC5.3	Tier 2	Part 9	• Design and install on-site renewable energy systems to supply at least 10% of the building's total energy load from one or a combination of energy source(s). *OR* • Design and install on-site renewable energy systems to supply at least 20% of the building's total energy load from geo-exchange (geothermal or ground source heat pumps).		**Site Plan Application only:** Drawings, plans, specifications, or other documentation demonstrating the project's on-site renewable sources. Energy Modelling Report or other documentation demonstrating the percentage of the project's energy needs provided by on-site renewable sources.		
	Tier 2	Part 3	• Design and install on-site renewable energy systems to supply at least 5% of the building's total energy load from one or a combination of energy source(s). *OR* • Design and install on-site renewable energy systems to supply at least 20% of the building's total energy load from geo-exchange (geothermal or ground source heat pumps).		**Site Plan Application only:** Drawings, plans, specifications, or other documentation demonstrating the project's on-site renewable sources. Energy Modelling Report or other documentation demonstrating the percentage of the project's energy needs provided by on-site renewable sources.		

EC6 DISTRICT ENERGY

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application / Plan of Subdivision Submission	Post Construction Submission	
EC6.1	Tier 1	All	• Investigate the feasibility of shared energy solutions, such as the development of low carbon thermal energy networks or connection to planned or existing district energy systems and identify the required provisions to be district energy ready.		**Site Plan Application and Plan of Subdivision:** Provide a Letter signed by a qualified professional (Mechanical Engineer) and the owner/developer/builder that describes how opportunities for district energy have been explored.		
EC6.2	Tier 2	All	• Connect to a district energy system where one exists or design for future connection where a future district energy system is slated for development.			Drawings, plans, or other documentation demonstrating connection, or design will accommodate future connections.	

EC7 BUILDING SYSTEMS COMMISSIONING

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC7.1	Tier 2	All	• Conduct best practice commissioning, per the requirements referenced in LEED BD+C v4.1 Fundamental Commissioning and Verification pre-requisite.		Provide a Letter of Commitment signed by the owner/developer/builder that best practice commissioning will be performed *OR* Proof a commissioning agent is retained.	Commissioning Plan & Report.	

EC8 AIR TIGHTNESS TESTING

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC8.1	Tier 1	All	• Conduct best practice commissioning, per the requirements referenced in LEED BD+C v4.1 Fundamental Commissioning and Verification pre-requisite.		Provide a letter signed by a qualified professional (Building Envelope Engineer or Building Science Engineer) and the owner/developer/builder that describes the project's approach to achieving air tightness, and the process for any planned testing.		
EC8.2	Tier 2	All	• Conduct a whole-building air leakage test to improve the quality and airtightness of the building envelope and report the performance achieved.			Air Leakage Testing Report.	

EC9 ENERGY METERING

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC9.1	Tier 1	All	• Install electricity and/or thermal sub-meters for all energy end-uses that represent more than 10% of the building's total energy consumption.		Provide a Letter of Commitment signed by a qualified professional (Electrical Engineer and Mechanical Engineer) and the owner/developer/builder that includes confirmation that the requirements of this metric will be met.	Electrical and mechanical single-line diagrams that indicate the provision of electricity and thermal sub-meters. A metering plan listing all meters along with type, energy source metered, diagrams, and/or references to design documentation.	

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC4.2	Tier 2	All	• For buildings with multiple tenants, provide energy submetering for each commercial/institutional tenant, or in each residential suite[1].		Provide a Letter of Commitment signed by a qualified professional (Electrical Engineer and Mechanical Engineer) and the owner/developer/builder that includes confirmation that the requirements of this metric will be met.	Electrical and mechanical single-line diagrams that indicate the provision of electricity and thermal sub-meters. A metering plan listing all meters along with type, energy source metered, diagrams, and/or references to design documentation.	

EC10 BENCHMARKING & REPORTING

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC10.1	Tier 1	Part 3	• **Buildings 50,000 square feet (≈ 4645 m^2), or larger:** Enroll the project in ENERGYSTAR® Portfolio Manager to track energy and water consumption of the new development during operations in accordance with O. Reg. 506/18.		Provide a Letter of Commitment signed by the owner/developer/builder that includes confirmation that the requirements of this metric will be met.	Confirmation of Registration.	
EC10.2	Tier 2	All	• Enroll the project in ENERGYSTAR® Portfolio Manager[1] to track energy and water consumption of the new development during operations.		Provide a Letter of Commitment signed by a qualified professional (Electrical Engineer or Mechanical Engineer) and the owner/developer/builder that includes confirmation	Confirmation of Registration.	

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
					that the requirements of this metric will be met.		

EC11 ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC11.1	Tier 1	Part 3 & Part 9 (Residential)	• Ensure 100% of all parking spaces are EV-ready.		On the Site Plan Drawing, Traffic Plan, or Parking Study.		
	Tier 1	Part 9 (Non-Residential)	• Ensure at least 50% of all parking spaces are EV-ready.		On the Site Plan Drawing, Traffic Plan, or Parking Study.		
EC11.2	Tier 2	Part 3 & Part 9 (Residential)	• Provide at least 20% of all parking spaces with Electric Vehicle Supply Equipment (EVSE).		Parking plan(s) indicating the location and number of EV chargers.		
	Tier 2	Part 9 (Non-Residential)	• Provide at least 10% of all parking spaces with Electric Vehicle Supply Equipment (EVSE).		Parking plan(s) indicating the location and number of EV chargers.		

EC12 ELECTRIC BICYCLE CHARGING INFRASTRUCTURE

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EC12.1	Tier 1	Part 3 & Part 9 (Residential)	• Provide Energized Outlets for 15% of the bicycle parking spaces for electric bicycle charging.		Parking plan(s) indicating the location of electric bicycle charging.		

EB1 NATIVE SPECIES PLANTING

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application / Plan of Subdivision Submission	Post Construction Submission	
EB1.1	Tier 1	All	• Use native or adapted species for 50% of the new landscaping planted areas (including grassed areas). Select drought-tolerant species from colder climate zones wherever possible.		Landscape Plan with planting schedule demonstrating where species will be native or adapted.		
EB1.2	Tier 1	All	• Per the Ontario Invasive Species Act, do not plant invasive species.		Landscape Plan with planting schedule demonstrating that plant species do not include invasive species.		
EB1.3	Tier 1	All	**For sites adjacent to Agricultural lands, Natural Heritage features, Environmentally Significant Areas, and any other areas that are restricted from development:** • Provide vegetated protection zones. • Vegetated protective zones must include 100% native vegetation, with a preference for drought-tolerant species.		Landscape Plan with planting schedule.		
EB1.4	Tier 2	All	• Use native or adapted species for 75% of the new landscaping planted areas (including grassed areas), i.e. 75% of the total landscaped area should be covered by native or adapted plant species. • Include permanent signage highlighting the native species planted on site.		**Site Plan Application only:** Landscape Plan with planting schedule demonstrating where species will be native or adapted. Drawings or plans with signage details highlighting species planted on site.		

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application / Plan of Subdivision Submission	Post Construction Submission	
EB1.5	Tier 2	All	• Support the City's "Bee City" designation by restoring or protecting a minimum of 30% of the site with native vegetation that includes at least two native flowering species that bloom at different periods over the growing season.		**Site Plan Application only:** Landscape Plan with planting schedule demonstrating where species will be native, and indicating at least two native flowering species that bloom at different periods over the growing season.		

EB2 TREE PLANTING

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application / Plan of Subdivision Submission	Post Construction Submission	
EB2.1	Tier 1	All	• Protect healthy, mature trees that exist within the project boundary. Comply with the requirements of the City of Hamilton Tree Protection Guidelines.		**Site Plan Application and Plan of Subdivision:** A Tree Inventory Report and Preservation Plan.		
EB2.2	Tier 1	All	• Provide each tree planted with access to 21 m^3 of soil per tree. Where trees share soil, such as in a continuous planting trench, a reduction to 16 m^3 per tree may be permitted.		**Site Plan Application only:** Plan(s) or drawings demonstrating the volume of soil provided for each tree.		
EB2.3	Tier 1	All	• Where surface parking is provided, plant 1 shade tree for every 5 parking spaces.		**Site Plan Application only:** Plan(s) or drawings indicating the locations of all trees and parking spaces within the surface parking area.		

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application / Plan of Subdivision Submission	Post Construction Submission	
EB2.4	Tier 1	All	• Plant trees to shade at least 50% of the bike paths and walkway/sidewalk lengths.		**Site Plan Application only:** Canopy Cover Plan(s) or drawings demonstrating walkway/sidewalk area shaded within 10 years.		
EB2.5	Tier 1	All	• Provide a watering and maintenance program for trees for at least the first 4 years after planting. The maintenance programs should include measures to reduce the impact of de-icing salt on vegetation.		**Site Plan Application only:** A Letter of Commitment signed by an accredited professional (Landscape Architect, Architect, or Professional Engineer) and the owner/developer that describes the watering and maintenance program for trees.	Operating and Maintenance plan or other documentation detailing the maintenance program for trees.	
EB2.6	Tier 2	All	• Plant trees to achieve a 40% tree canopy cover for the site, excluding the building footprint.		**Site Plan Application only:** Landscape Plan(s) and supporting calculations demonstrating compliance. Canopy Cover Plan(s).		

EB3 BIRD FRIENDLY DESIGN

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EB3.1	Tier 1	All	• Design in accordance with the guidelines laid out in the Canadian Standards Association's (CSA) Bird-Friendly Building Design Standard A460. • Use a combination of Bird-Friendly Design strategies to treat at least 90% of the exterior glazing including transparent railings and barriers) located within the first 16 metres of the building above grade or to the height of the mature tree canopy, whichever is greater. • Where there is glazing adjacent to green roofs and/or other rooftop vegetation, the bird collision mitigation strategy shall be applied to a height of 4 m from the surface of the green roof or the height of the adjacent mature vegetation, whichever is greater. • Eliminate all fly-through effects (e.g., glass corners, parallel glass) and other traps from building design or use specified bird-safe glass or integrated protection measures.		Elevation drawings demonstrating the location of bird-friendly strategies and calculations demonstrating metric requirements will be achieved. Details or specifications and drawings indicating treated area, type of treatment, density of visual markers, etc.		
EB3.2	Tier 1	All	• Ground-level ventilation grates have a porosity of less than 20 mm X 20 mm (or 10 mm X 40 mm).		Site plan, or other documentation indicating the location and porosity of any ground-level ventilation grates.		

EB4 LIGHT POLLUTION

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EB4.1	Tier 1	All	• All exterior fixtures must be Dark Sky compliant.		Site plan, or other documentation indicating lighting type, orientation, location, and controls.		
EB4.2	Tier 1	All	• Rooftop and exterior facade architectural illumination must be directed downward and turned off between the hours of 10 p.m. and 6 a.m.				
EB4.3	Tier 1	All	• Implement lighting controls in non-residential spaces that reduce nighttime spillage of light by 50% from 11 p.m. to 5 a.m.		A Letter of Commitment from a qualified professional (Architect or Electrical Engineer), and the owner/developer/builder describing how metric requirements will be met.		

EB5 CLIMATE POSITIVE LANDSCAPE DESIGN

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
EB5.1	Tier 2	All	• Use the Climate Positive Design's Pathfinder: Landscape Carbon Calculator to calculate the embodied carbon and the carbon sequestration potential within landscape designs.		Climate Positive Design Scorecard reporting the Net Project Impact. Site plan and/or landscape plans aligning with the information input in the Landscape Carbon Calculator.		

W1 REDUCED WATER USE

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
W1.1	Tier 1	All	• Water-consuming fixtures do not exceed the following maximum flow requirements and are WaterSense® labeled: ○ High-efficiency toilets: 4.0 L/flush OR 3 and 6 L/flush (dual flush toilets); and ○ Low flow lavatory faucets: 5.7 L/min.		A Letter of Commitment signed by a qualified professional (Mechanical Engineer) and the owner/developer that includes confirmation that requirements of this metric will be met.	Plumbing fixture specifications or other documentation demonstrating WaterSense® labelling and flush/flow rates.	
W1.2	Tier 2	All	• Reduce indoor potable water consumption by 40% over the baseline fixture (per LEED BD+C v4 guidance).		Credit calculations demonstrating compliance with the metric requirements.	Plumbing fixture specifications or other documentation demonstrating flush/flow rates, and updated credit calculations (if necessary).	
W1.3	Tier 2	All	• **Outdoor**: Reduce potable water used for irrigation by 60% (per LEED BD+C v4 guidance).		Credit calculations demonstrating compliance with the metric requirements.	Irrigation specifications or other documentation demonstrating irrigation system, and updated credit calculations (if necessary).	

W2 BENCHMARKING AND REPORTING

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
W2.1	Tier 1	Part 9	• **Buildings 50,000 square feet (≈ 4645 m^2), or larger:** Enroll the project in ENERGYSTAR® Portfolio Manager to track energy and water consumption of the new development during operations in accordance with O. Reg. 506/18.		Provide a Letter of Commitment signed by the owner/developer/builder that includes confirmation that the requirements of this metric will be met.	Confirmation of Registration	
W2.2	Tier 2	All	• Enroll the project in ENERGYSTAR® Portfolio Manager to track energy and water consumption of the new development during operations.			Confirmation of Registration	

W3 WATER METERING

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
W3.1	Tier 2	All	• For buildings with multiple tenants, provide water submetering for each commercial/institutional tenant and per residential suite.		Plans, drawings, or other documentation indicating individual water meters in building.		

W4 STORMWATER MANAGEMENT

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
W4.1	Tier 1	All	• Provide long-term controls for Erosion and Sediment Control (ESC) in conformance with the Erosion and Sediment Control Guide for Urban Construction (2019). • Demonstrate compliance with the Green Standards and Guidelines for Low Impact Development.		Stormwater Management Report, Plan(s), and drawing(s) to verify compliance.		
W4.2	Tier 2	All	• Design for future rainfall data instead of historical rainfall data to account for future climate change.		Stormwater Management Report, Plan(s), and drawing(s) to verify compliance.		

WM1 CONSTRUCTION WASTE REDUCTION AND MANAGEMENT

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
WM1.1	Tier 1	All	• Manage construction and demolition waste in accordance with O. Reg. 103/94.		Construction and Demolition Waste Management Plan.		
WM1.2	Tier 1	All	• Develop and implement a Construction and Demolition Waste Management Plan and demonstrate a diversion rate of 50% or more from landfill.		Construction and Demolition Waste Management Plan.		
WM1.3	Tier 2	All	• Demonstrate a waste diversion rate of 75% or more from landfill.			Waste Diversion Report indicating total Construction and Demolition Waste diversion rate of the project.	

WM2 OPERATIONAL WASTE REDUCTION AND MANAGEMENT

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
WM2.1	Tier 1	Part 9 (Residential)	• Design and construct the building(s) to meet section 3.5 of the City of Hamilton's waste design requirements for new developments.		Drawings or plans indicating the type, floor area and location of the waste storage and sorting system.		
WM2.2	Tier 1	Part 3 & Part 9 (Residential)	• Design kitchen cabinets to accommodate space for the separate collection of recycling, organics, and garbage.		A Letter of Commitment signed by a qualified professional (Architect) and the owner/developer/builder that includes confirmation that requirements of this metric will be met.	Drawings or plans indicating the designated space.	

WM3 MATERIAL REUSE

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
WM3.1	Tier 2	All	• Maintain the existing building structure and envelope for 30% of the existing floor area OR use existing interior non-structural elements for at least 30% of the entire completed building, including additions.		A Letter of Commitment signed by a qualified professional (Architect, Structural Engineer) and the owner/developer/builder that includes confirmation that requirements of this metric will be met. Calculations completed by a qualified professional (Architect, Structural Engineer) demonstrating this metric can be met.	Report/ drawings/ plans demonstrating the preserved and new components of the building, Calculations completed by a qualified professional (Architect, Structural Engineer) demonstrating this metric has been met.	

CD1 PROMOTION OF PUBLIC AND ACTIVE TRANSPORTATION

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application / Plan of Subdivision Submission	Post Construction Submission	
CD1.1	Tier 1	All	• Develop a Transportation Demand Management (TDM) Plan and demonstrate a 25% reduction in single occupancy auto vehicle trips generated by the proposed development.		**Site Plan Application only:** Transportation Demand Management Plan demonstrating a 25% reduction.		
CD1.2	Tier 1	All	• Construct a network of suitable cycling facilities and multi-use paths within the development which also connects to the bicycle network and implement recommendations of the City's Transportation Master Plan and/or Cycling Master Plan (where applicable).		**Site Plan Application and Plan of Subdivision:** Plan(s) indicating network of cycling facilities and multi-use paths.		
CD1.3	Tier	All	• Provide safe and direct routes that encourage the use of active transportation modes and connect to transit, commercial areas, community facilities, and parks.		**Site Plan Application and Plan of Subdivision:** Plan(s) indicating safe and direct active transportation routes.		
CD1.4	Tier 1	All	• Locate transit stops in accessible and safe areas.		**Site Plan Application and Plan of Subdivision:** Plan(s) indicating transit stops.		

CD2 SERVICES WITHIN WALKING DISTANCE

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
CD2.1	Tier 2	All	• Locate the building(s) within 800m of at least one of the following: ○ Transit station or stop; ○ Three amenities or services; ○ Public park or recreational trail.		Site plan(s) highlighting walking distance to selection option.		

CD3 BICYCLE FACILITIES

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
CD3.1	Tier 1	All	• Provide long-term and short-term bicycle parking spaces that meet or exceed the minimum rates.		Plan(s) indicating location, number, and type of bicycle parking spaces.		
CD3.2	Tier 2	All	• Provide an additional 20% long-term and short-term bicycle parking spaces, beyond the CD3.1 requirements.		Plan(s) indicating location, number, and type of bicycle parking spaces.		
CD3.3	Tier 2	Part 9 (Residential)	• Include dedicated bike share location onsite and engage in contract with Hamilton Bike Share program. • **Alternative Compliance Path:** Provide at least 10 additional publicly accessible, short-term bicycle parking spaces, at-grade on the site or within the public boulevard.		Site plan(s) highlighting the location of planned bike share location **For ACP only**: Site plan(s) highlighting the location of publicly accessible spaces.	Documentation demonstrating enrollment in Hamilton Bike Share Program.	

CD4 ACCESSIBLE DESIGN

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
CD4.1	Tier 1	All	• Meet the Accessibility for Ontarians with Disabilities Act (AODA) Integrated Accessibility Standards, sections 80.16 to 80.31 inclusive, for pedestrian infrastructure.		Plan(s), drawing(s), or other documentation demonstrating compliance.		

CD5 URBAN AGRICULTURE

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
CD5.1	Tier 1	All (Excluding Commercial and Industrial)	• Residential buildings: Provide 0.5 sq.m. per dwelling unit of garden space. • Institutional Buildings: Provide space for urban agriculture and/or community garden.		Landscape Plans indicating dedicated garden area.		

CD6 HEAT ISLAND EFFECT

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
CD6.1	Tier 1	All	• Use one or a combination of a green roof, cool roof and solar PV installed for at least 75% of available roof space.		Roof plan(s) indicating the heat island reduction measures, including the SRI values(s) of roof materials (if applicable).		

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
CD6.2	Tier 1	All	• Use one or a combination of the heat island reduction strategies to treat at least 50% of the site's non-roof hardscape.		Site plan or landscape plan indicating the non-roof heat island reduction measures.		
CD6.3	Tier 2	All	• Use one or a combination of the heat island reduction strategies to treat at least 75% of the site's non-roof hardscape.		Site plan or landscape plan indicating the non-roof heat island reduction measures.		

CD7 COMMUNITY SUSTAINABILITY OUTREACH

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
CD7.1	Tier 1	All (Excluding Institutional and Industrial)	Distribute a building specific sustainability handout to all homeowners and tenants, outlining sustainability features. • Familiarize tenants and homeowners with the building's green building feature with an on-site review.		A Letter of Commitment signed by a qualified professional and the developer that includes confirmation that the requirements of this metric will be met.	Educational package or other educational materials demonstrating compliance.	

CD8 CELEBRATION OF HERITAGE AND CULTURE

Item #	Tier	Applicability	Metrics	Met	Documentation		Comments (Description of Compliance)
					Site Plan Application Submission	Post Construction Submission	
CD8.1	Tier 1	All	• Where new developments are located near natural heritage features, locate amenities and green spaces nearby to provide a buffer. Where trails occur or are planned, provide a connection to the broader community.		Plan(s), drawing(s), or other documentation demonstrating targeted feature(s).		
CD8.2	Tier 1	All	• Significant cultural heritage resources, including heritage buildings and structures, shall be conserved in accordance with provincial and municipal policies. These resources should be retained in situ and integrated into compatible and sympathetic new development. • For development projects that may impact on-site or adjacent cultural heritage resources, a Cultural Heritage Impact Assessment may be required and would guide the strategy for conservation, ranging from adaptive reuse, relocation to documentation and salvage.		Cultural Heritage Impact Assessment, including any subsequent plans or studies recommended in the assessment (Conservation Plan, Vibration Study, etc.).		
CD8.3	Tier 1	All	• Incorporate public art into publicly accessible and visible spaces or into building designs as an architectural element, where feasible, which celebrates the culture or history of the area.		Plan(s), drawing(s), or other documentation demonstrating targeted feature(s).		
CD8.4	Tier 2	All	• Introduce beautification measures/amenities that beautify stormwater management features, such as ponds.		Plan(s), drawing(s), or other documentation demonstrating targeted feature(s).		

Appendix C

Advisory & Consultation Findings for GBS Implementation

Considerations for GBS Implementation

This Appendix outlines the advisory and consultation findings regarding future implementation considerations for the GBS. It includes a summary of the discussed implementation supports, a summary of 'What We Heard' from the engagement, and the outcomes of this work.

#1 – Development charge reductions or deferrals

Overview & Research Findings

Development charge reductions or deferrals are financial incentives offered by municipalities to lower or postpone the fees that developers must pay for infrastructure and services when building new projects. These incentives aim to reduce upfront costs, making it more attractive for developers to invest in sustainable and innovative building practices.

Incentivizing builders with lower upfront development costs may spur growth and attract more projects. By offering development charge reductions or other financial incentives, municipalities can enhance the marketability of sustainable developments. These incentives can attract investors and developers who prioritize sustainability, encouraging the adoption of new and innovative building technologies that might otherwise be too expensive.

Other cities with GBS, such as Vancouver and Toronto, already offer reduced development charges and expedited permit processes for those that go beyond the minimum requirements. This approach not only makes sustainable development more appealing but also streamlines the approval process, making it easier for developers to move forward with their projects.

The return on investment for municipalities can also be significant. A study by the National Renewable Energy Laboratory (NREL) found that green buildings generate economic returns through higher property values, reduced utility costs, and increased demand for sustainable properties. By offering development charge reductions, municipalities can reap long-term economic benefits while promoting environmentally friendly building practices[8].

What We Heard

The following summarized key feedback that was received through the consultation sessions regarding this topic:

- City interested parties noted that development charge reductions are likely not feasible; however, the City is currently exploring deferrals and other options through CIPs, Parkland Dedication Fees, etc.
- Interested parties in the development industry are eager to see incentives related to faster, simpler approval processes and clearer guidance on requirements. Providing prescriptive pathways may support this.
- Interested parties in the development industry are supportive of development charge reductions or deferrals and expressed that they should apply to all developers building above the OBC.
- Amendment to the Development Charges By-law would be subject to public process and decision of Council and therefore subject to potential appeals.

[8] As found here: https://betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/Energy%20Efficiency%20and%20Financial%20Performance_12_2015.pdf

Outcomes

The following summarizes the outcomes from the research and consultation findings as it relates to exploring development charge reduction or deferrals:

- City to continue to explore deferrals and other options to reduce or defer development charges through CIPs and Parkland Dedication Fees.
- Consider using prescriptive pathways as method to support faster and simpler approval processes, and guidance on requirements.
- The core recommendation of having the benefits from DC deferrals and other City-led incentives flow only to those pursuing Tier 2 (or better) performance is aligned with the CCAC recommendation and consistent with best practice recommendations which use the GBS to motivate material change within the sector while also offering incentives for further innovation[9].
- To make more tangible the benefits of DC deferrals and other contemplated supports, it is recommended that the City engage with local developers to explore the "pro forma" benefit of various incentives on specific (or exemplar) projects, confirming the extent to which the actions the City is willing to take will have a material contribution to project financials. This engagement will allow the feedback of developers to influence the scale of the incentives while also making more transparent the balance of costs vs. benefit associated with the programs.

#2 – Harmonize reviews for modeled submissions

Overview & Research Findings

Mississauga, Toronto and other GTHA municipalities all have modeled submission requirements for both Part 3 and Part 9 buildings, few municipalities have a dedicated team of staff who perform reviews of modeled submissions (for example, Toronto only has this for Part 3 buildings). This means that quality reviews of modeled submissions are not common, leading to some risk for both future owners, developers and the City. Working with other municipalities to harmonize the review of modeled submissions would improve the quality and reliability of submissions and reduce the cost of the process for all – this could be a consideration for future work in GBS implementation and future updates.

Enbridge's Saving's By Design program also required the development of models at a similar level of quality and accuracy as those typically submitted for GBS approval. Savings by Design is expected to end in 2025. A unique way to continue to engage the large community of modelers who are associated with this program is ask them to help develop a process for standardized reviews of modeled submissions across Ontario. Sustainable Buildings Canada (who has run Savings By Design in Ontario for many years) may be an appropriate organization to act as the platform for this engagement.

Additionally, GBS modeled submissions and OBC modelled submissions currently occur at two separate instances in the development timeline – the intent of harmonizing reviews for modeled submissions would be to try and merge or tightly align both reviews so that they are completed at the same time and potentially by the same reviewer (see Figure 3). This would expedite the review and approval process and hopefully provide some efficiencies for businesses and the City.

[9] A summary of the benefits of Green Development Standards provided by The Atmospheric Fund includes – as core recommendations – making the standard mandatory and rewarding leadership through incentives. See more details here.

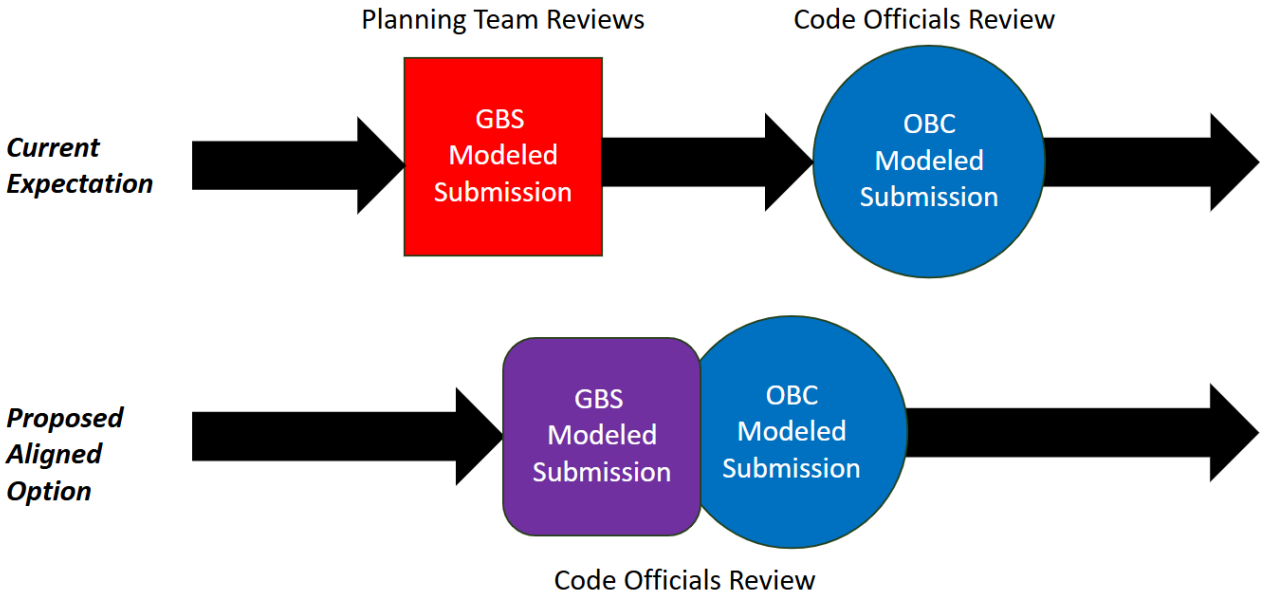


Figure 3: Overlapping submissions and reference standards for both GBS and OBC

Furthermore, harmonizing the GBS metrics with other standards and codes (such as NECB or TGS) could allow for streamlined submission reviews. This would also help with upskilling City staff that will be reviewing and approving GBS-related submissions.

What We Heard

The following summarized key feedback that was received through the consultation sessions regarding this topic:

- Regardless of whether reviews are centralized, upskilling City Staff to review and approve GBS-related submissions or seeking external expertise will be crucial.
- This could address some issues industry faces with green development standards being part of the site plan approval stage.
- Concern about the potential liability of discrepancies between GBS and OBC.
- Interested parties expressed concern about timing of harmonized review.
- Other municipalities address the issue of separate SPA and OBC requirements by requiring a letter of commitment (for example) to address a particular metric or requirement later in the development process.
- Interested party recommended ongoing engagement with development professionals to understand what is required at SPA vs. OBC.

Outcomes

The following summarizes the outcomes from the research and consultation findings as it relates to harmonizing reviews for modeled submissions:

- City to consider and proactively plan for upskilling needs of City staff to review GBS-related submissions.
- City to consider working with other municipalities to centralize the review of modeled submissions to improve quality and reduce costs overall.

- Explore potential of overlapping submissions, however, ensure that this is done with consideration of liabilities between GBS and OBC.

#3 – Advocate for access to incentives for developers and purchasers

Overview & Research Findings

The City could advocate for developers to access industry or government funds by actively engaging with utilities, energy regulators, and provincial or federal governments to create a supportive network for sustainable development. This advocacy could involve organizing collaborative meetings and forums where developers can directly interact with representatives from these organizations to learn about available funding opportunities and incentives. The city could also provide resources and guidance on navigating the application processes for grants, subsidies, and other financial support. Additionally, the city might work to establish partnerships with these entities to develop tailored incentive programs that align with the city's green building standards. By fostering these connections and offering comprehensive support, the city can effectively encourage developers to leverage industry and government funds to achieve sustainable building practices.

Creating a centralized hub or website that connects developers to municipal, provincial, and federal incentives could also be an effective approach to streamlining access to financial support and encouraging sustainable development. This resource center would not only direct developers to available incentives but also provide comprehensive information about eligibility, the application process, and deadlines.

An example of such a system is the UK Green Building Council (UKGBC), which has developed resources to connect developers with government programs like the Green Homes Grant. Similarly, many local authorities promote national programs that encourage energy efficiency upgrades in buildings. By ensuring that incentives are easy to find and understand, these platforms significantly increase uptake and support the adoption of sustainable building practices.

Implementing a similar resource center in Ontario (and, if appropriate, across Canada) could greatly benefit developers by simplifying the process of accessing financial support and fostering a more sustainable built environment.

Furthermore, the City might advocate for greener or more energy-efficient homes by creating a range of incentives and rebates for purchasers. One approach could be to offer financial incentives such as tax credits, rebates, or grants for buyers who choose homes that meet specific green building standards. These incentives can help offset the higher upfront costs associated with energy-efficient homes, making them more attractive to potential buyers.

What We Heard

The following summarized key feedback that was received through the consultation sessions regarding this topic:

- Interest in having a resource hub or specified Staff person within the City that can direct developers toward known incentives to assist with GBS compliance. ‘One-stop customer service’.
- Questions related to how new funding can be channelled from Enbridge & IESO – how can the City advocate to these organizations for future funding?
- Interested parties expressed that a prescriptive path could also alleviate this need to a certain extent.

- There may be opportunities for incentives for the end purchaser as well. For example, a form of rebate for the home purchaser for a solar-ready home – this could be implemented through the pre-existing GST approach. This approach may be welcome by builders as it is familiar and has a low administrative burden.

Outcomes

The following summarizes the outcomes from the research and consultation findings as it relates to advocating and supporting developers' access to incentives:

- City to explore having a resource hub or specialized Staff person in the City that can track incentives and liaise with the development community to assist with GBS compliance.
- Discuss with other Ontario municipalities and participate in public feedback opportunities for established funders, such as Enbridge and IESO, to advocate for incentives for energy performance & GHG reduction in new construction. For example, the IESO has recently announced their 2025-2027 Electricity Demand Side Management Program Plan[10] which mentions the plan of including both residential and commercial new construction by 2026.
- City to explore additional rebates or incentives for purchasers through the phased implementation of the GBS.

#4 – Improve testing, reporting and labeling for building certification

Overview & Research Findings

There is a common issue with green buildings where the design (e.g. SPA-submitted) model often differs from the actual, as-measured operating performance. To address this performance gap, several strategies can be implemented. One approach is to enhance building energy modeling by incorporating real-world (i.e. as-constructed/as-operated) data. Models created with information available at the SPA stage often differ from their final, as-operated counterparts. Incenting a process by which as-built models are created and compared to actual building energy use can help explore the performance gap and inform Hamilton (and other cities) about how to update modeling requirements to improve accuracy overall. An example of this work is already being prepared by The Atmospheric Fund, but a larger-scale effort may be worth exploring.

Additionally, requiring (or incenting) building commissioning as part of the GBS can help identify discrepancies between design specifications and actual building performance. Post-occupancy evaluations could also be mandated to assess how buildings perform after occupancy and to collect valuable data for future improvements. Both commissioning and post-occupancy surveys are a requirement to achieve Tier 2 performance within the TGS.

Another potential solution is to implement public building labelling as an extension of existing Energy and Water Reporting and Benchmarking (EWRB) regulations. Two types of labeling may be appropriate – universal labels, or green building labels. The former – as demonstrated by the UK's Energy Label – shows the performance of all buildings relative to each other (as with Energy Star). This kind of label would clearly benefit developers of new buildings who deliver facilities which perform well. Desire for such labeling to be universal is important, however, making universal labeling something to advocate

[10] As viewed here: www.ieso.ca/Sector-Participants/IESO-News/2025/01/2025-2027-Electricity-Demand-Side-Management-Program-Plan-Released

for across the province, not just in Hamilton. Green building labels similar to San Francisco's GreenPoint Rated label or LEED offer an alternative approach. These labels publicly recognize buildings for their sustainability, enhancing visibility to potential tenants, investors, and the public. By introducing a public building label Tier 2 buildings, developers may be incentivized to exceed Tier 1 standards, further promoting sustainable development.

These measures can collectively help bridge the gap between designed and actual performance, ensuring that green buildings achieve their intended environmental benefits.

What We Heard

The following summarized key feedback that was received through the consultation sessions regarding this topic:

- Interested parties in the development industry expressed concern over a local labelling system which would cause regional discrepancies and would potentially add additional paperwork to an already complex system.
- Interested parties in the development industry expressed concern that ongoing testing and verification of performance post-construction would add costs and be challenging to implement for condo boards and at low-rise freehold developments where individual homes are turned over to end-users.
- Interested parties expressed that testing associated with labelling evaluates building performance and helps purchasers understand operational costs.
- Interested parties commented on discrepancies between energy design and energy performance and recognized that the results of testing and reporting can improve the accuracy of modelling and design.
- There appears to be support from Toronto and the Federal government for a potential labelling system. A staged initiative was suggested, starting with climate resilience-related elements (potential home buyers may look at that in areas at risk of flooding) and later adding more stages such as energy efficiency labels.
- Labelling and the associated testing can allow for comparison between new buildings and building retrofits.

Outcomes

The following summarizes the outcomes from the research and consultation findings as it relates to improving testing, reporting, and labelling for buildings:

- Given the benefit of as-built modeling and commissioning, consider aligning with the City of Toronto requirements for Tier 2 performance in this regard, while keeping the scope of these activities in the hands of the developer and limiting them to facilities where a modeled approach has been used for submission (i.e. mostly Part 3 facilities).
- Explore the work done by City of Toronto to make EWRB reporting apply to a larger number of buildings and become public. These steps are a pre-cursor to both a potential universal labeling system and future Building Emissions Performance Standards which would require all facilities to decarbonize.
- Engage with the Province, in partnership other large Ontario municipalities, on the potential creation of a province-wide universal building labeling system.

Appendix D

Energy Performance Metrics Workshop Presentation

City of Hamilton Green Building Standards

Energy Performance Metrics Workshop

February 19, 2025

Introductions and Workshop Overview

Introductions

City of Hamilton

Emily Coe
Acting Manager, Zoning & Committee of Adjustments , Planning and Economic Development

Mallory Smith
Planner L – Zoning By-Law Reform, Planning and Economic Development

WSP

Antoni Paleshi
Energy & Carbon Technical Lead

Robert Rappolt
Planning/Engagement Lead

Lucy Pronk
Planning/Engagement Support

Hana Lapp
Climate Risk Advisor

Haley McRae
Sustainability Analyst

Agenda

- **Introductions and Project Framing (1 hour)**
  - Review of GBS process and final recommendations
  - Framing of discussion to address gaps and improve cost-effectiveness
- ***Break (10 minutes)***
- **Workshop Activity – Roundtable Discussions (1 hour)**
- **Report Back (15 minutes)**
- ***Break (10 minutes)***
- **Close-Out & Next Steps (25 minutes)**

Background & Context

Discussion Overview

- Review process and motivations for the operational energy and carbon requirements within the GBS
- Outline the CCAC recommended version of the requirements and what motivated these changes
- Discuss key questions & challenges to the proposed approach
- Discussion how to improve cost-effectiveness and streamline delivery:
    - **Topic #1** – Offering simpler or more flexible pathways to compliance.
    - **Topic #2** – Finding ways to reduce the cost of development and submissions.
    - **Topic #3** – Supporting the value proposition for decarbonized new construction.

What motivated Hamilton to act on climate change?

- **Climate Change Emergency Declaration – 2019**
  - City council unanimously approved the declaration
  - Science says it's urgent
  - We need to **do our part**.

- Other cities took action:
  - In 2019, the City of Kingston became the **first** Ontario municipality to declare that climate change is an emergency that requires an urgency and strategic response.
  - Approximately **650** Canadian municipal governments have since declared a climate emergency.

A climate emergency puts the local government on record in support of emergency action to respond to climate change and recognizes the pace and scale of action needed.

How is the city currently addressing building emissions?

- In the base year of 2016 buildings accounted for 23% of the city's energy consumption and 14% of its GHG emissions
- Through 2050 in the business-as-planned scenario, GHG emissions from buildings are expected to ***increase by 29%.***
- Space heating has the highest share of emissions by end use in the residential sector, followed by water heating.

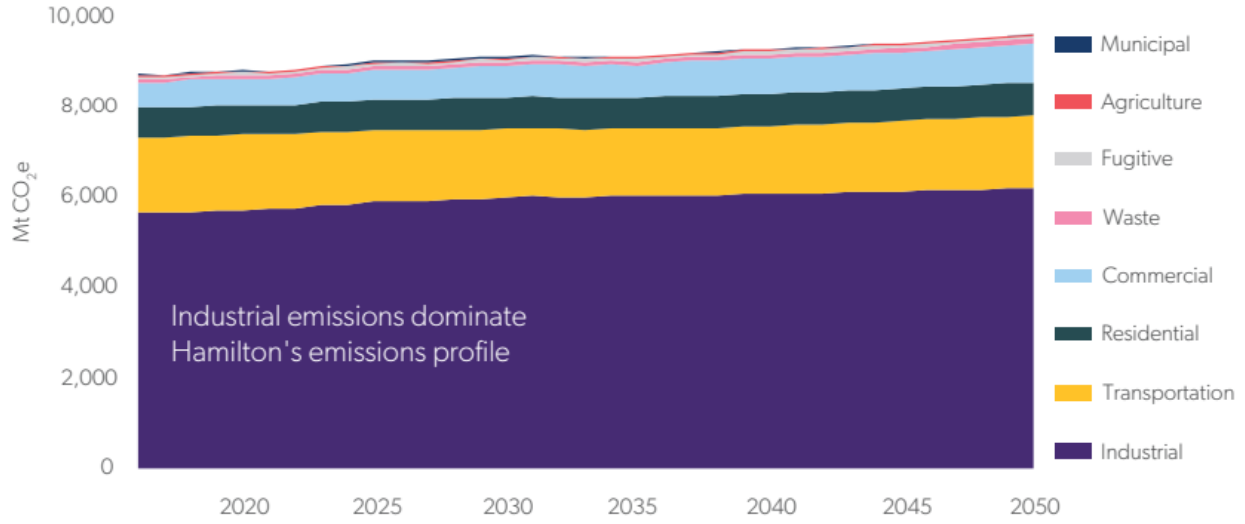


Figure 1. Projected business-as-planned GHG emissions (Mt CO_2e) for the city of Hamilton, by sector, 2016-2050.

Approximately new 100,000 households estimated in the 2021- 2051 time period, generally from 200,000 to 300,000 households.

All other sectors following BAU, ***new construction will contribute to ~2-4% of City-wide emissions***.

How is the city currently addressing building emissions?

Community Energy and Emission Plan (CEEP)

Includes 30 targets for commercial buildings, homes, municipal buildings, transportation and industry, including:

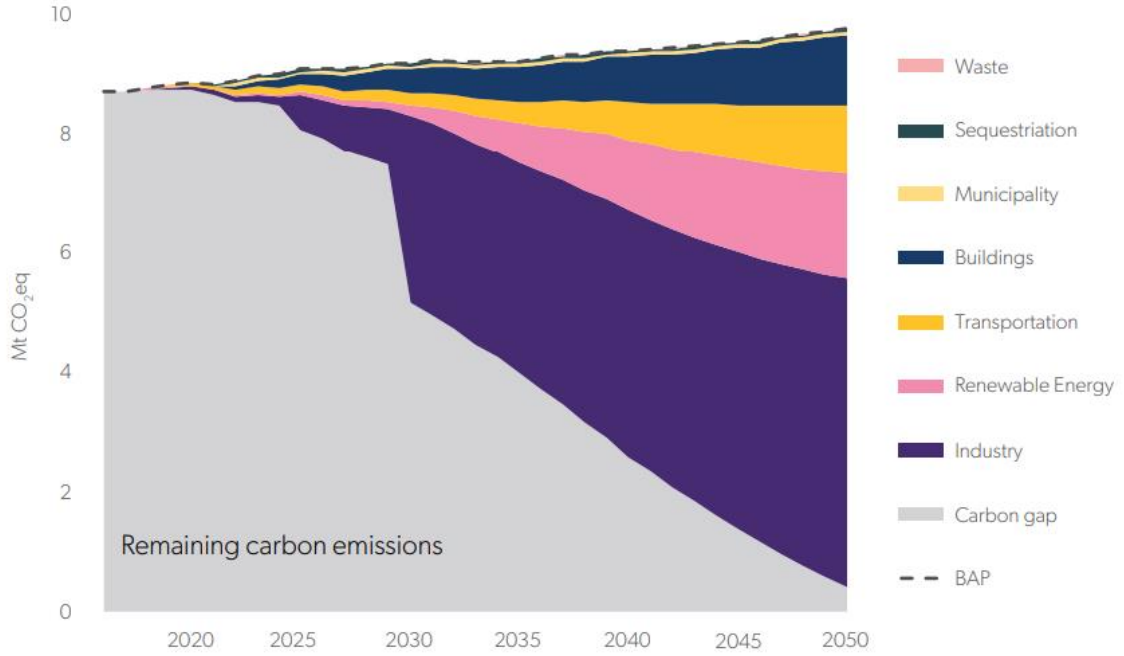
Existing Buildings

- **Retrofit 100% of existing homes and commercial buildings** to achieve 50% energy efficiency savings relative to 2016 by 2050

New Buildings

- New commercial buildings are 60% lower in EUI by 2050
- By 2031, new dwellings are **60% more energy efficient** relative to 2016.

All buildings*: Use heat pumps (or similar) for heating and domestic hot water by 2050.



"Although new buildings are projected to represent a relatively low share of GHG emissions in the City, new development represents long-term infrastructure that will establish patterns of energy use and GHG emissions for decades."

* Not clearly stated in the CEEP but inferred from results shown.

What is the intent of climate action policy for operational energy?

Fuel-Switching

Deep decarbonization through zero on-site fossil fuel use, mostly achieved by switching away from natural gas as a heating source.

Grid Stewardship

Support (i.e. more cost-effective, faster, safer) decarbonization & resilience planning of the electricity grid.

Resilience Planning

Ready facilities and their operators for the effects of climate change.

What are the key metrics used to evaluate success?

#1. Greenhouse Gas Intensity (GHGI)

- **Definition:** The amount of carbon dioxide equivalent (CO2e) emissions per gross floor area per year. Typically includes both *Scope 1 (direct) & Scope 2 (electricity) emissions*.
- **Supports:** Fuel-switching.
- **Risks:** Could cause peak demand to increase and energy costs to go up.

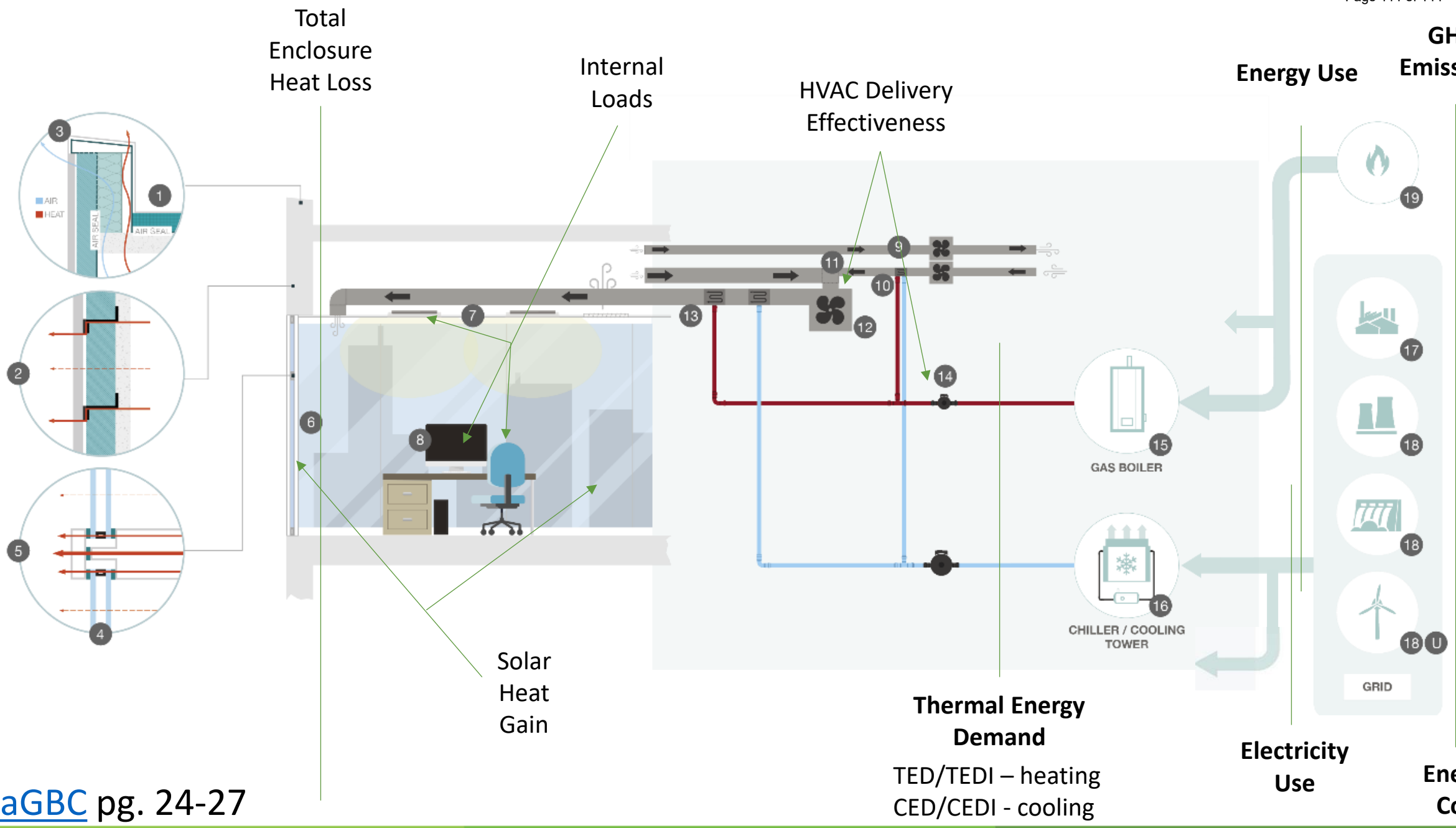
#2. Total Energy Use Intensity (TEUI)

- **Definition:** The net energy used by the building divided by the building's floor area. Typically accounts for on-site generation.
- **Supports:** Grid stewardship, resilience & back-up power, energy cost savings for occupants.
- **Risks:** Agnostic to GHG reductions (a core goal).

#3. Thermal Energy Demand Intensity (TEDI)

- **Definition:** The annual heating load per floor area of a building.
- **Supports:** Grid stewardship, resilience & passive survivability, energy cost savings for occupants.
- **Risks:** Ignores the benefit of heat recovery and energy sharing.

Taken together, these metrics support the holistic set of goals outlined.



[CaGBC](#) pg. 24-27

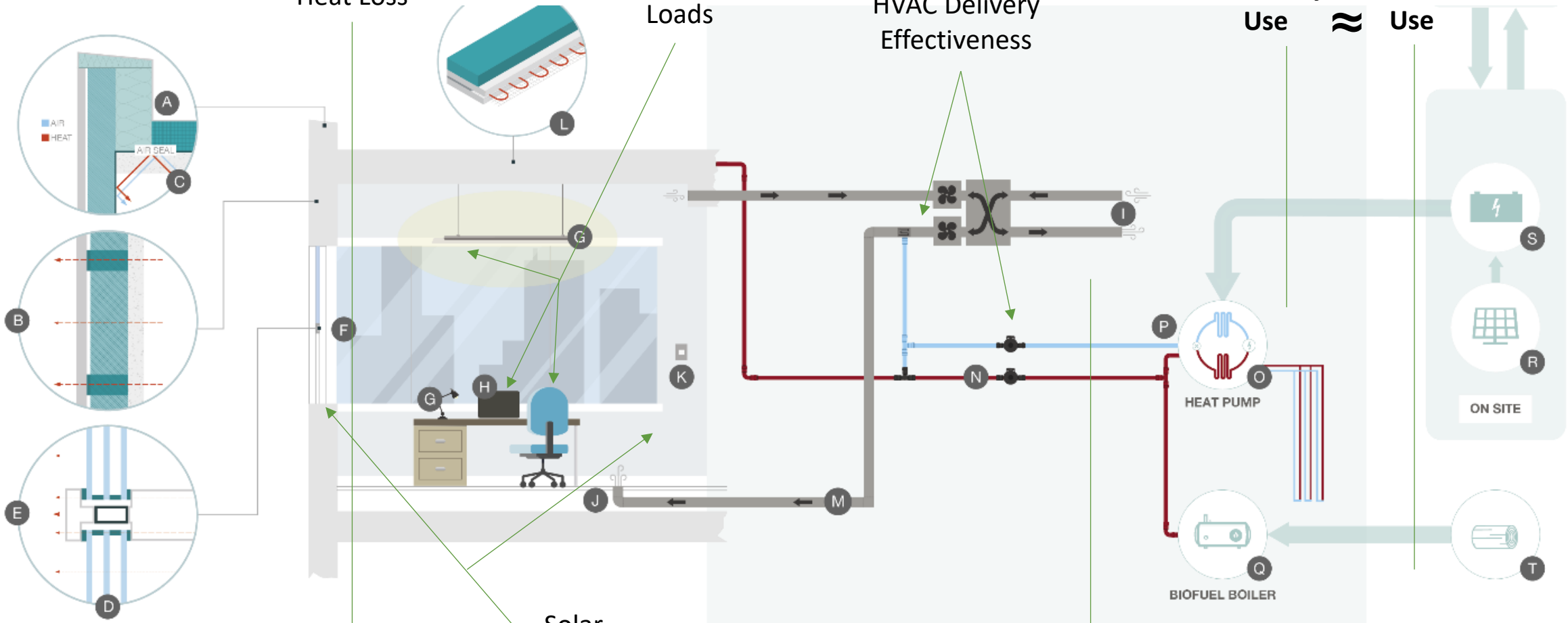
Total Enclosure Heat Loss

Internal Loads

HVAC Delivery Effectiveness

Electricity Use ≈ Energy Use

GHG Emissions



Solar Heat Gain

Thermal Energy Demand

TED/TEDI – heating
CED/CEDI - cooling

Energy Cost

[CaGBC](#) pg. 24-27

What policies and programs can drive action in new buildings?

- Precedent – **BC Step Code**
  - Support from BCHC to give municipalities a path to select their own targets and requirements
- Precedent – **Toronto Green Standard**
  - City-led process which sets performance-based targets in key metrics
- There are now nearly **30 municipalities** with TGS-like standards in place across Ontario.
- The City of **Toronto** and 3 others are the only municipalities in Ontario with tiered, mandatory standards.
- The cities of **Brampton, Markham, and Vaughan** use a points-based approach to green standards, with a menu of compliance options but no mandatory requirements.
- Many other municipalities are actively pursuing new or better Green Development Standards after declaring climate emergencies.

ENERGY STEPCODE
BUILDING BEYOND THE STANDARD

What metrics and targets are proposed for Hamilton's GBS?

Part 3 BUILDINGS - MURBS >6 Storeys

Motivations

- Three metrics to address breadth of climate action goals (as outlined).
- Performance-based to allow for maximum flexibility to developers.
- Consistent set of metrics across all building types, but unique targets by major building type.
- Aligns with Toronto, Mississauga, Caledon, and many others.

Performance-based Targets

GHGI*

- 2026 - **10** kgCO2e/m²/year
- 2028 - **5** kgCO2e/m²/year

TEUI

- 2026 - **100** kWh/m²/year
- 2028 – **75** kWh/m²/year

TEDI

- 2026 - **30** kWh/m²/year
- 2028 – **15** kWh/m²/year

*Electricity EF = 30 gCO2e/kWh

What metrics and targets are proposed for Hamilton's GBS?

Part 9 BUILDINGS - MURBs >10 Units, but <4 Storeys

Motivations

- Three metrics to address the breadth of climate action goals (as outlined).
- Performance-based to allow for maximum flexibility to developers/builders.
- ***Consistent set of metrics across all building types.***

Performance-based Targets

GHGI*

- 2026 - **10** kgCO2e/m²/year
- 2028 - **5** kgCO2e/m²/year

TEUI

- 2026 - **100** kWh/m²/year
- 2028 – **70** kWh/m²/year

TEDI

- 2026 - **25** kWh/m²/year
- 2028 – **15** kWh/m²/year

*Electricity EF = 30 gCO2e/kWh

What critiques and challenges have been brought against these metrics and performance thresholds?

#1 - The OBC is already achieving significant energy and GHG savings. Why require more?

It seems defensible that GBSs fill a gap in ***urgency*** and ***a focus on climate action*** that is not present in the current OBC or its recent iterations.

- **Evidence #1** - After several years of an energy-focused Step Code, the BC Government hos now added a carbon requirement.

- **Evidence #2** - For the same reason, the NECB 2025 will have a new purpose – to address GHG mitigation.

What critiques and challenges have been brought against these metrics and performance thresholds?

#2 - Fuel-switching is expensive for developers and owners

- Part 9 Buildings (Recent debate in Vancouver): ***~1% savings*** vs. gas-fired
- Part 3 Buildings (City of Toronto prelim. / WSP review): ***~1% increase*** vs. gas-fired

Vancouver report to council:

> ***"No correlation between construction cost and carbon emission performance."***

Observations:

- For fuel-switching the capital cost is probably very small (<1%) if not cost-neutral.
- The energy cost may be slightly higher, but that depends on many factors.
- Requiring fuel-switching has its biggest implications in the ***long-term city-wide emissions (i.e. continuing with gas-fired equipment locks-in emissions).***

What critiques and challenges have been brought against these metrics and performance thresholds?

#3 - Enclosure and HVAC delivery upgrades required to achieve all targets can add >10% to construction costs.

- Part 9 & Part 3 (insights from WEHB): ***4-8% increase*** (anecdotal, to be reviewed)
- Part 3 (City of Toronto prelim. / WSP review): ***3-7% increase*** vs. NECB-2020

Observations:

- For the full suite of changes, ~4-5% capital cost is likely vs. current typical practice.
- Even in Toronto, revisions to TEDI targets are being explored to address concerns
- Other municipalities have chosen not to have TEDI and EUI targets, or to allow for flexibility in these targets.

What critiques and challenges have been brought against these metrics and performance thresholds?

#4a - Existing Buildings (EBs) are not required to act - however they make up most of the building sector impact.

- Full or partial EB regulations in place in Vancouver, New York City, etc.
- Toronto is working on Building Emissions Performance Standard (BEPS) to be implemented soon.
- Cost of retrofits for Part 3 (WSP review):
  - **Fuel-switching only:**
    - Cost of fuel-switching can be $100-700/sqm (~3-12% of a used condo sale value)
    - Fully fuel-switching can require electrical service upgrades, which may have feasibility constraints
  - **Deep retrofits (i.e. that achieve significant EUI and TEDI reductions):**
    - Cost can be very high – $1000-1500/sqm (>20% of existing condo sale value)
    - *Cost is **10-20x higher** than in NC projects*
    - Can be challenging to implement in occupied facilities

What critiques and challenges have been brought against these metrics and performance thresholds?

#4b - Existing Buildings (EBs) are not required to act - however they make up most of the building sector impact.

- Energy efficiency (e.g. Energy Star) & GBSs (e.g. LEED) contribute to better sectoral performance (WSP Review):
  - **Higher Rental Rates** – 4-8%
  - **Higher Occupancy Rates** – 10-18%
  - **Higher market values** – +$30/sqft - $129/sqft

- There's a gap between what is expected from NC models submitted at SPA and what is achieved in reality (TAF on-going research)

Observations:

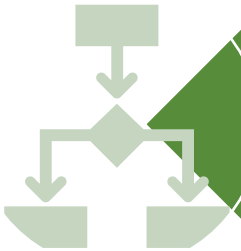
- NC can more effectively lead the way and offer owners decarbonized facilities at much lower cost, but also need to deliver on that performance.
- NC facilities need to avoid lock-in of emissions which are likely to come from science-based EB regulations.
- NC could be rewarded if buyers/renters knew the benefits of the decarbonization investments.

Discussion Topics

How can we improve the cost-effectiveness and streamline the implementation of these requirements, while still achieving the needed action in reality?

- **Topic #1** – Offering simpler or more flexible pathways to compliance.
- **Topic #2** – Finding ways to reduce the cost of development and submissions.
- **Topic #3** – Supporting the value proposition for decarbonized new construction.

Topic #1 - Offer simpler or more flexible pathways



Idea #1 –Offer flexibility for reaching Tier 2

e.g., TEDI & EUI relaxed by 10% if Tier 2 GHGI is achieved (Caledon)

Idea #2 – Include a prescriptive path

e.g., Require partial/full fuel-switching, but otherwise not require more (Caledon)

e.g., Using the new NECB-2025 prescriptive packages (Waterloo)

e.g., HCE thermal energy connection

Other options?

Topic #2 - Reduce the cost of development and submissions

Idea #1 -Development charge reductions or deferrals for reaching in whole (or in part) Tier 2 performance.

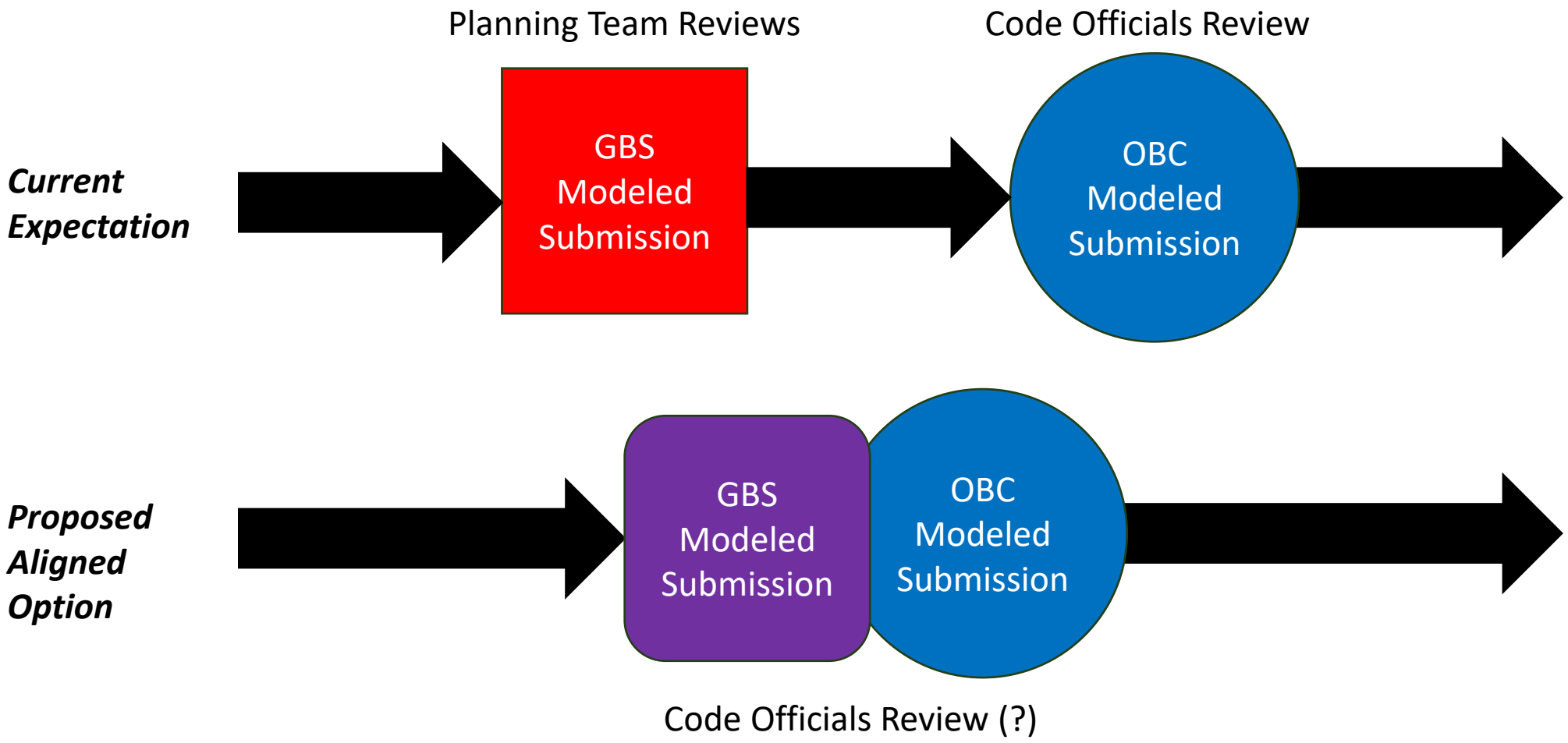
Idea #2 – Overlapping submissions and reference standards for both GBS and OBC.

Idea #3 – Support and advocate for owners and developers to access initiatives.

Other options?

Topic #2 - Reduce the cost of development and submissions

Idea #2 – Overlapping submissions and reference standards for both GBS and OBC



Topic #3 - Support the value proposition for decarbonized new construction

Idea #1 -Require or support a low/zero-carbon labeling system for buildings.

Idea #2 - Indicate policy direction for Existing Buildings in Hamilton.

Idea #3 - Requirements and supports for HVAC commissioning, airtightness testing, etc. and verification of performance post-construction.

Other options?

Workshop Activity

World Café

Goal: React to, refine & add to the provided ideas

20 minutes with each topic

Facilitators and topic will rotate, participants stay seated

Be respectful

City Staff are available to answer questions

Topic #1 - Offering simpler or more flexible pathways

Facilitator: Haley

Topic #2 - Reduce the cost of development and submissions

Facilitator: Hana

Topic #3: Supporting the value proposition for decarbonized new construction

Facilitator: Lucy

Robert Rappolt
Lead Facilitator

Antoni Paleshi
Technical Lead

Discussion & Report Back

Thank you!

Appendix E

Energy Performance Metrics Workshop Comment Transcriptions

Hamilton Green Building Standards Workshop Comments		
Topic 1: Offering Simpler or More Flexible Pathways	**Topic 2: Reduce the Cost of Development and Submissions**	**Topic 3: Supporting the Value Proposition for Decarbonized New Construction**
-Flexibility and prescriptivity -HCE DES Prescriptive Path -A prescriptive path within an objective framework provides max flexibility -HCE: what are the early steps you are doing to achieve T1? -When selecting the options for flexibility, happy with either option provided we prioritize GHGI and relax TEDI & EUI - Lucia CCAC -A perspective path reduces time to build + development cost -District energy as a prescriptive alternative - Community owned and controlled - Pathway for new and old builds - Other economic benefits" electrical distribution capacity, transmission is already bad	-Actual viability of signing off on GBS? -If something doesn't meet code, and code fails --> huge liability --> why is the GBS trying to replicate provincial waste requirements?" Concerns about certain requirements being included beyond building energy **Idea #1** -Refunds likely not feasible -Issues already in place with provincial requirements eg. affordable housing -Open back up bylaw and open up appeals -Defferals more likely -Some deferrals exist - pay development charges (% interest) -Developers: deferrals are welcome but developers want to see more -Used to have deferral programs Giving subsidies needs to be done through CIP -Subsidized approach -Community approval plan process - tax increment financing grant -Support community approach to take this on? subsidising for CIP parkland dedication reductions **Idea #2** -OBC + GBS concurrent process: revision to site plan would affect OBC approvals -Concern from developers --> needing to identify metrics too early. This might make timing more agreeable -Risk to developers to advance building specs without SPA	-Labelling vs. Certification: • Labelling captures operational costs • Equalizes new builds + existing building retrofits • Labelling measures performance -Existing buildings are an "unknown" whereas the new builds are determined -Labelling first impacts the new builds because they will get an ""A"" rating. All existing buildings will get a ""D"" until retrofitted. -Rating System - needs a repercussion & associated incentive to ensure ""D"" buildings are being improved. -Feedback loop: testing feeds data set to build out accuracy of labelling metrics -Reporting associated with labelling allows for comparison between new buildings and retrofits -Ongoing testing needed to keep labelling Certification: • Voluntary • CHB Net Zero • Include complete supply chain • LEED very expensive - not contributing to performance -Existing metrics - LEED, only used for new construction. Metrics can be skewed by proximity to MTSA (etc.) rather than performance -No Hamilton-specific guidelines, need to be broadly applicable -How can the city advance labelling system? "advocacy" -Does labelling provide value if it is Hamilton specific?? -Any existing green development standards currently using a labelling policy? -With low density greenfield subdivision -Is each house tested?

	upskilling course for people that can complete both submissions how do we manage liability + approval/sign off? -Either in-house or a third party: most desirable but more complex -In-house staff vs external expertise: Still to be determined -Overall integrated design process is the goal -GBS would be done before building permit: expert on staff would be needed **Idea #3** -One stop customer service incentives person in city who knows all of this info this would be helpful -Concern requiring soft costs - a lot of consultants need + time required -ECD - has incentives programs from city. Likely have knowledge would be good point of contact prescriptive paths could help reduce this level of effort	- What happens if you fail?" -Energuide - good grade: - can impact purchase price - advantageous to developers -Frequency of testing? -Testing implications if you average over the neighbourhood for low density vs. the impact of a large building -Limit to how small of a building you could go for testing -Prescriptive path from topic #1 can guide policy/integrate with retrofitting - Integrated systems provide affordability - economy of scale -Hamilton assets are primed to be leveraged for these economies of scale, ie. District energy system + microgrid -Economies of scale require co-operative post build approach is one tenant overusing?? -Privacy concerns with the reporting/labelling? - NY releases data publicly -Design vs. performance -What is the value proposition? (following 4 comments) -Do you believe in climate change? Carbon is only a problem if you recognize that climate change is a problem -Quantifying - dollars and cents is the value proposition -Wholistic approach to deal with building sector emissions (include existing builds) to minimize "excuses" -Upfront capital cost > operational cost. How do we "incentivize" people to care or recognize that upfront cost is worth it

Appendix F

Submitted Comment Letters

February 26, 2025

From:
West End Home Builders' Association
1112 Rymal Road East
Hamilton, Ontario L8W 3N7

To:
Emily Coe and Mallory Smith
City of Hamilton
71 Main Street West
Hamilton, ON L8P 4Y5

WE HBA Letter: Hamilton Green Building Standards – February 2025

The West End Home Builders' Association ("WE HBA") is the voice of the land development, new housing and professional renovation industries in Hamilton, Burlington, and Grimsby. WE HBA represents 320 member companies made up of all disciplines involved in land development and residential construction. WE HBA appreciates the opportunity provided by the City and WSP to participate in the Hamilton Green Building Standard ("GBS") Energy Performance Metrics Workshop. We would like to take this opportunity to offer preliminary thoughts regarding the proposed metrics and topic areas to improve cost-effectiveness and streamline delivery.

Proposed Metrics

WE HBA does not support the GHGI, TEUI, and TEDI metrics as recommended by the Climate Change Advisory Committee and presented at the workshop. The timelines proposed are extremely aggressive and require developers to drastically alter active applications on an extremely short timeframe. While having a predictable, clearly laid-out timeline is appreciated, moving to 5 kgCO2e/m²/year, 70-75 kWh/m²/year, and 15 kWh/m²/year metrics in 2028 is simply unachievable. Developers have increasingly faced issues securing electrical transmission capacity to service proposed developments from Alectra and are facing delays and escalating costs to bring that capacity to sites. Under the metrics for 2028, which if all three are required necessitate fuel switching and increased enclosure and HVAC costs, this issue will be exacerbated. New home sales are at their lowest since the 1990s, the industry is challenged by rising construction costs, the threat of tariffs, DCs increasing by 87% since 2021, and the recent introduction of new Community Benefits Charges. Now is not the time to add new costs, complicate development processes, and create discrepancies between regions. Furthermore, WE HBA notes that there is now a concerted effort across Canada to harmonize regulations from coast to coast and Hamilton appears to be moving in the opposite direction to create its own regulatory regime that differs from neighbouring jurisdictions. Maintaining the OBC requirements ensures improved affordability and consumer choice to heat and power their homes in a manner that fits their needs.

WE HBA has previously expressed concern regarding the jurisdictional overreach presented by municipal GBSs. While flexibility and alternative compliance paths are welcome, WE HBA does not support municipalities regulating matters that fall under the jurisdiction of other levels of government. WE HBA, alongside the provincial Ontario Homes Builders' Association and other local HBAs, are deeply concerned regarding the current trend of municipalities adopting GBSs, and further concerned by the aggressive metrics proposed to be amended. While the Performance-Based targets are in alignment with several neighbouring jurisdictions, there is

WEST END HOME BUILDERS' ASSOCIATION

little alignment in how the programs are implemented and incentivized. Now is the time to harmonize all building and development related municipal regulations to eliminate and prevent barriers to rapid deployment of housing.

Topic Area #1
WE HBA is supportive of the concept of more flexible and prescriptive pathways to provide multiple compliance routes, such as relaxing TEDI and TEUI metrics if Tier 2 GHGI is achieved, as well as alternative prescriptive paths, such as relaxing metrics if HCD thermal energy is connected to. There are numerous routes a developer can take to achieve the overall intent of the metrics, which should be taken into consideration in the GBS.

Topic Area #2
WE HBA is also supportive of the concept of DC reductions or deferrals, however we are of the opinion incentives should be provided to all developers building above OBC. We encourage the City to advance Idea #3 through a customer-service oriented approach to guide owners and developers through all available incentives at the City and provided elsewhere. WE HBA is concerned regarding Idea #2, as it may be logistically difficult and add complexity to process and may ultimately not lead to time savings.

Topic Area #3
WE HBA has concerns regarding Ideas #1 and #3. A local labelling system would again cause regional discrepancies and would potentially add additional paperwork to an already complex system. Similarly, testing and verification of performance post-construction would add costs, and be challenging to implement for condo boards and at low-rise freehold developments where individual homes are turned over to end-users.

WE HBA looks forward to providing further comment in future. We again reiterate that in the midst of a generational housing crisis, where the cost to build new housing exceeds what the market can bear, it is not the appropriate time to add new requirements and processes. WE HBA further reiterates that there is a clear movement across the country to harmonize regulations while we are under the threat of tariffs from the United States and this approach by Hamilton to create a new local municipal regulatory regime is completely out of step with the Team Canada approach that is needed in the current moment. We appreciate opportunities to provide feedback and are especially appreciative of in-person engagement.

Sincerely,

Mike Collins-Williams, MCIP, RPP
Chief Executive Officer
West End Home Builders' Association

Hamilton

Dept. Name

Memorandum

Date: February 27, 2025

To: Emily Coe, Acting Manager, Zoning & Committee of Adjustment, Planning and Economic Development and Mallory Smith, Planner I, Zoning By-law Reform, Planning and Economic Development

From: Trevor Imhoff, Senior Project Manager, Office of Climate Change Initiatives, Lynda Lukasik, Director, Office of Climate Change Initiatives and

Subject: **GBS Energy Performance Metrics Workshop Follow-up and Comments from Office of Climate Change Initiatives**

Hi Emily and Mallory,

We want to start off by sharing a BIG thank you to your team and to WSP for providing productive opportunities for consultation with the Climate Change Advisory Committee (CCAC) and its associated working groups. We appreciated the effort that Planning staff and WSP team members put into engaging with CCAC members and other community partners.

We also appreciated the presentation slides and the facilitator's efforts to present the GBS within the context of the Climate Emergency and background on the Community Energy and Emissions plan.

To help organize our feedback, we have arranged our comments below into 3 main sections including:

1) Energy Performance Metrics and Associated Tiers and Timelines
2) Prescriptive and/or Alternatives in Part 9; and
3) Prescriptive and/or Alternatives regarding District Energy

OCCI Staff are also looking forward to reviewing the Staff Recommendation Report for both the updated Energy Performance Metrics and the Implementation Plan when drafted.

If you have any questions please do not hesitate to contact either Trevor Imhoff (Trevor.Imhoff@hamilton.ca) or Lynda Lukasik (Lynda.Lukasik@hamilton.ca) .

Energy Performance Metrics and Associated Tiers and Timelines Our current understanding is that Planning Staff and WSP support the following proposal put forward by the CCAC (and also supported by staff in the Office of Climate Change Initiatives (OCCI):

1) Advancing the GHGI metric for Part 3 and Part 9 buildings to require energy modelling that demonstrates compliance of the building with the following GHGI metrics:
    a. 2026 – 10 kgCO2e/m2/year; and
    b. 2028 – 5 kgCO2e/m2/year.

OCCI will note, however, that to fully achieve CCAC recommendations and alignment with Hamilton's Climate Action Strategy, a third Tier of 0 kgCO2e/m2/year should be established with a timeline of 2030 as part of that full transparency and long-term policy signal to industry regarding achieving net-zero buildings by 2030. This also aligns with Toronto's Green Standard tiers and timelines.

On a final note, the OCCI generally agrees with the ability to loosen the requirements of the TEDI and EUI, within reason as proposed by WSP.

One consideration would be through post building commissioning and working with our local utilities to determine potential increasing energy usage of buildings that were built with a lower TEDI/TEUI, and any potential or anticipated impacts on local/regional electrical grids.

Prescriptive and/or Alternatives in Part 9
OCCI supports the CCAC recommendations for allowing for a prescriptive and/or alternative for Part 9 buildings whereby they are allowed to build to Ontario Building Code compliant building AND commit to fuel switching to a Heat Pump (to confirm this could be ground or air source heat pump).

It was unclear in the workshop and in the report back to CCAC whether that is the direction being taken and appreciate a confirmation.

Prescriptive and/or Alternatives regarding District Energy
The OCCI supports, within reason, facilitating connection to both the existing and future District Energy System (DES) as an alternative compliance pathway outlined in specific metrics within Hamilton's Green Building Standards. Below is a list of metrics we could support to achieve alternative routes to compliance:

1) EC1.3 & 1.4 Energy Performance: GHGI for both Part 3 and Part 9 buildings for all archetypes EXCEPT for Commercial Retail. This is with the assumption WSP agrees with HCE's energy modelling numbers. OCCI also further believes it would be reasonable to exempt a proponent from the requirement to undertake a full energy model if that proponent, in partnership with HCE, provides proof of compliance with the applicable GHGI metric;

2) EC3.1 Refrigerant Leakage: It is our understanding that should a building connect to the DES it would not need chillers and therefore there would be no

refrigerant leakage concern at the specific building scale. Therefore it is reasonable to assume compliance with this metric should a building connect to DES. Onus will then need to be put on HCE to continue to track, report and fix any refrigerant leaks.

3) EC5.3 Onsite Renewables: OCCI believes it is reasonable to classify DES as a form of renewable energy, especially given HCE's intention to decarbonize the DES system. This would provide greater motivation for Council and HCE to accelerate DES decarbonization. However, this will need to be carefully framed and clearly communicated to the broader public.

HAMILTON COMMUNITY ENTERPRISES

February 24, 2025

Emily Coe
Acting Manager, Zoning and Committee of Adjustment
City of Hamilton
emily.coe@hamilton.ca

Re: City of Hamilton - Green Building Standards – Energy Performance Metrics Workshop

Dear Emily,

Thank you for inviting us to participate in your GBS Energy Performance Metrics Workshop on February 19, 2025.

HCE, which is 100% owned by the City of Hamilton, has contributed transformative solutions to our community since 2002, including our community-owned and operated downtown District Energy System (DES). With an initial mandate to reduce Green House Gas (GHG) emissions, we continue to use our expertise in integrating thermal energy, renewables, and data technologies to actively reduce our carbon footprint. Our shared goal is clear: create a sustainable and resilient community, and as such, HCE fully supports the Green Building Standard (GBS) goals.

We accept and applaud your proposal to include an ***alternative prescriptive path*** with a connection to HCE's Downtown District Energy System for compliance with the following GBS Sections:

- EC1.3 – TEUI/TEDI/GHGI performance limits for any building archetype (Tier 1)
- EC1.4 - TEUI/TEDI/GHGI performance limits for any building archetype (Tier 2)
- EC3.1 - Refrigerant Leakage (Chilling provided offsite by DES)
- EC4.1 – Building Resilience
- EC5 – On-Site Renewables (EC5.1/EC5.2/EC5.3)
- EC6 – District Energy (EC6.1/EC6.2)

The GBS must encourage connection and growth of our community-owned and operated DES. A DES lends itself to scale. When it grows and connects customers, not only is carbon lock-in avoided for individual buildings, but the costs of decarbonization, expansion and investment are shared amongst a more extensive base, leading to lower individual costs for all customers, including the City, which is a major customer, of the DES system.

HCE has adopted a *3 C Pathway to Decarbonization – Conservation, Connection and Conversion*. Our current emphasis is on *Conservation* through efficiency improvements, reducing the demand for energy

through digitization/AI and using energy more effectively by reducing waste through energy harvesting and sharing, for which a DES is critical.

HCE is now actively working with our customers on the DES to improve their building's operation and efficiency by recommissioning HVAC systems and updating BAS controls. These modifications will reduce energy consumption and associated carbon footprint as well as operating costs. Most importantly, they will allow improvements to the DES's carbon footprint and capability.

HCE is also focussing on *Conservation* and *Connection* with energy harvesting and sharing and has just completed a two-year, ½ million-dollar feasibility study demonstrating both a technically feasible design and a commercially viable business case to utilize waste heat from Hamilton's industrial bayfront as a renewable low-carbon heat source for building heating. We have coined this expansion of our DES, *Canada's Thermal Corridor,* giving rise to the *Hamilton Advantage*. The *Hamilton Advantage*:

- **Economically decarbonizes building heating** using renewable industrial waste heat at competitive pricing through our DES.
- Provides a cost-effective **building retrofit pathway** that addresses the enormous challenge of tackling **carbon lock-in** and making existing buildings net zero.
- **Offsets electricity** use for building heating, reducing generation, transmission and local distribution investments that will be necessary to upgrade aged infrastructure in Hamilton.
- **Anchors industry and jobs** with new revenue streams for manufacturers and supply chains.
- Creates a local large-scale **infrastructure development opportunity** for investment and construction jobs.
- Offers **resilience, security and affordability** based on a local renewable energy supply.

Key to the *Hamilton Advantage* is our DES and growth through connecting new customers to the system. It is, therefore, imperative that Hamilton intentionally capitalizes on our community DES —a highway for thermal energy, as it incorporates a GBS.

While the decarbonization path is clear for our DES, the timing of our progress will depend upon regulation, our customers, of which the City is the largest, and our ownership, again, the City of Hamilton. We have little doubt that we will remain aligned with the goals of the City's GBS.

It is recognized that more than a GBS is required to add customers to the DES. Additional incentives, such as Revitalizing Hamilton's Commercial Districts CIP incentives program, will assist in adoption and connection, ensuring the benefits of expanding the existing DES. We look forward to future discussions regarding the role of incentives.

Incorporating the ***alternative prescriptive path*** into the GBS is needed to ensure that Hamilton's DES system grows so that its benefits: a renewed downtown infrastructure, reduced GHG emissions through

affordable low-carbon building heating, a pathway to mitigate locked-in carbon, and an overall sustainable community can be realized by the City of Hamilton.

Yours Truly,

David Inkley
Vice President
Hamilton Community Enterprises

Jeff Cowan
President, and CEO
Hamilton Community Enterprises

CC: M. Smith, R. Rogers

Hello Mallory,

Further to Emily's email below, I did have some thoughts in follow up to last week's working session. Thanks to the team who pulled it together – I appreciated being included in the session!

As you know, BACCC is currently in the process of collecting input from BACCC's Implementation Team (i.e. the "BACCIT") on Green Development Standards, so the following is not reflective of the BACCIT nor of BACCC's position.

The following are my own thoughts, based on the broader perspective I developed prior to joining BACCC. It came from engaging with different municipalities and different industry players. Below, I have focused more on broader considerations and leave more technical suggestions to the experts who were in the session.

TOPIC #1 – OFFER SIMPLER OR MORE FLEXIBLE PATHWAYS

1. BENEFITS OF CONNECTING NEW BUILDING-LEVEL DEVELOPMENTS – As you know, many municipalities are looking at how to implement a district energy system, to address the priority on decarbonizing space heating and cooling. Hamilton is blessed to already have a district energy system. Using a prescriptive path for requiring partial or full fuel-switching makes a lot of sense. Based on what I have understood from other municipalities' efforts, Hamilton would benefit from a prescriptive path that ensures that the district energy system in Hamilton remains at the heart of the solution for heating and cooling solutions.
2. CONSIDERATIONS OF NATURAL GAS AS CURRENT FUEL SOURCE - Though Hamilton's system is a high-temperature system that relies on natural gas as a fuel source, Ottawa is showing the way to decarbonizing a district energy system when it is time to renew it. This will be especially important as we start seeing natural gas assets being stranded. Keeping the Hamilton district energy system growing will ensure that it has the capital to replace the natural gas boilers when either they reach their end of life, or natural gas assets start being categorized as stranded assets. This means growing the system by also adding low-carbon thermal assets like geo-exchange systems.
3. CHALLENGES IN GETTING HIGH RISE DEVELOPMENTS TO CONNECT - One challenge is that there is no obvious benefit for geo-exchange and other "energy-as-a-service" providers to connect to the district energy system in Hamilton. In a discussion with the principal of a geo-exchange company, their return on investment is based on the building being a closed-loop system. I was told that they'd need additional incentives to make it beneficial for them to connect into the larger district energy system. I'd recommend engaging with geo-exchange companies to see what the benefit/incentive for them might be to connect to the broader district energy system.
4. IMPORTANT FOR ENSURING NO LIMITS ON ECONOMIC GROWTH – I wanted to again expressly support what Antoni Paleshi mentioned about grid stewardship and resilience. Emphasizing low-carbon heating and cooling that is not dependent on electrification can have important outcomes for all of Hamilton. Based on my understanding of Hamilton's electricity distribution

system's limitations, supporting alternative options for heating and cooling will be essential to ensure that Hamilton's economic growth is not constrained because of the electrification of heating and cooling.

TOPICE #2: REDUCE THE COST OF DEVELOPMENT AND SUBMISSIONS

1. OVERLAPPING SUBMISSIONS AS A CREATIVE OPTION - I thought that the idea of overlapping submissions and reference standards of GBS and OBC was a creative idea which could address some issues industry faces with green development standards being part of the site plan approval stage. I understand that other municipalities address these issues by requiring a letter of commitment (for example) to address a particular metric or requirement later in the development process.
2. ESTABLISH ONGOING ENGAGEMENT - I would propose that the City establish a process for regular engagement with professionals (architects will be helpful as they see the whole project) and developers. For this approach to work, one would need to clarify what developers need for approvals to secure project funding (i.e. at the Site Plan Application stage) and what can be completed as part of a later step that would include the permitting process under OBC.

TOPIC #3: SUPPORT THE VALUE PROPOSITION FOR DECARBONIZED NEW CONSTRUCTION

1. DEFINING THE VALUE PROPOSITION AND EXAMPLE OF NEW HOME REBATE - In the group I participated in, we briefly discussed what exactly was the value proposition for decarbonized new construction. I wondered whether we were speaking of a value proposition for the end purchaser or if it was a value proposition for builders/developers. Clarifying this would help to determine how implementation might be phased in and where the incentives might apply. For example, the value proposition might be for the end purchaser who places a high value on a home being "solar ready". This could then translate into an incentive for the end purchaser, for example, a form of rebate for the home purchaser for a solar-ready home. The whole ecosystem is familiar with the GST rebate for new homes – a rebate for "solar ready" homes for the home purchaser could be implemented easily through the pre-existing GST approach. This approach would be very welcome by builders as it is familiar and has a low administrative burden.
2. BUILDING LABELING SYSTEM WITH INSURANCE INDUSTRY CHAMPIONS - To-date both Toronto and the Federal government have indicated their support for a building labeling system. As I understand, there has been resistance as I understand from realtors and real estate agents. I'd propose that we'd need to find an industry that might champion a labeling system, for example the insurance industry. Since the Calgary flooding, the insurance industry has been leading in risk management and how to price risk in a changing climate. Developing and implementing a labeling system could be a staged initiative. It might begin by emphasizing resiliency-related elements within the Green Building Standards that insurance industry has prioritized. A second (or later) stage then could be to incorporate energy efficiency into the labeling system.

Truly,

Victoria

Victoria Coffin (She/Her)

Acting Manager

Bay Area Climate Change Council (BACCC)

Centre for Climate Change Management at Mohawk College

135 Fennell Avenue West, Hamilton ON L9C 0E9

(647) 553-5544 victoria.coffin@bayareaclimate.ca