

Report to: Development Services Committee

SUBJECT:	RECOMMENDATION REPORT, Implementation of the Sustainability Metrics as a Green Development Standard in Markham
PREPARED BY:	Mattson Meere, M.C.I.P., R.P.P, Senior Planner, Urban Design, Ext. 5790
	Tony Iacobelli, M.Sc., M.C.I.P., R.P.P., Manager of Natural Heritage, Ext. 7925
REVIEWED BY:	Parvathi Nampoothiri, A.I.C.P, LEED AP, Senior Manager Urban Design, Ext. 2437 Darryl Lyons, M.C.I.P., R.P.P., Senior Manager, Policy and
	Research, Ext. 2459

## **RECOMMENDATION:**

- 1) That the staff report entitled "Recommendation Report, Implementation of the Sustainability Metrics as a Green Development Standard in Markham" dated May 30, 2022, be received;
- 2) That Council adopt the Sustainability Metrics, attached as Appendix 1, prepared by Morrison Hershfield and revised following internal review and stakeholder consultation with the land development community;
- 3) That the report from the Sustainability Solutions Group (SSG), "Updating the Sustainability Score Thresholds", attached as Appendix 2, be received;
- 4) That the revised Sustainability Metrics in Appendix 1 be implemented by Q1 2023 requiring that:
  - a. Plan of subdivision applications meet a minimum sustainability threshold score of 27;
  - b. Site plan applications for low rise residential, office, commercial and industrial buildings meet a minimum sustainability threshold score of 41;
  - c. The current LEED Silver certification requirement for site plan applications for medium and high rise residential and mixed-use developments be replaced by the requirement to meet a minimum sustainability threshold score of 55;
- 5) That Staff report back to Development Services Committee in 2023 with recommendations to require improved energy performance of buildings for all site plan and plan of subdivision applications as set out in the "Good" standard in Metric IB-12 (Energy Efficiency and GHG Reductions), and including a procedure to monitor outcomes such as through third-party verification;
- 6) That Council endorse the roadmap to net zero energy buildings as shown in Appendix 3;

- 7) That the Sustainability Metrics not apply to plans of subdivision in the Future Urban Area (FUA) as identified in the Markham Official Plan, 2014 and that the City continue the existing requirement for developments in the FUA to conform with the Community Energy Plan, and that the application of the Sustainability Metrics for site plans in the FUA be considered at such time as improved energy performance of buildings is required through the Sustainability Metrics;
- 8) That the mandatory energy performance measures in the Community Energy Plan for the FUA be extended to all low rise residential developments in the City as part of the formal launch of the Sustainability Metrics, until such time as improved energy performance of buildings is required through the Sustainability Metrics; and,
- 9) Further that Staff be authorized and directed to do all things necessary to give effect to this resolution.

#### **EXECUTIVE SUMMARY:**

The purpose of this report is to recommend Council adoption of the revised Sustainability Metrics program, which implements green development standards to measure and enhance the sustainability performance of new developments. A staged implementation is recommended. The first stage recommended for implementation in 2023 sets a minimum sustainability score (threshold score) for site plan and plan of subdivision applications. It is also recommended in the first stage to replace the current LEED Silver certification requirement for site plan applications for medium and high rise residential and mixed-use developments with a minimum sustainability threshold score. The second stage recommended for implementation later in 2023 adds a requirement for improved energy performance of buildings as part of the Sustainability Metrics for site plans and plans of subdivision. The staged implementation is consistent with sustainability approaches by the City of Markham through the City's 'Greenprint' Sustainability Plan, and implements a specific action for climate mitigation recommended in the Markham Municipal Energy Plan to utilize a green development standard for new developments.

The Sustainability Metrics builds on past sustainability initiatives by the City of Markham related to green building and is based on a collaborative approach to establish a joint set of sustainability standards by partnering with the municipalities of Brampton, Vaughan and Richmond Hill. Markham's participation in the municipal partnership supports sharing of knowledge and resources and will support the adoption of a consistent sustainability approach for site plan and plan of subdivision applications across multiple municipalities, which provides clear and predictable expectations for the development industry.

The Sustainability Metrics was implemented by the partner municipalities in 2014 and was recognized with a 2014 Ontario Professional Planners Institute (OPPI) award and a

2016 American Planning Association award. The revision of the Sustainability Metrics include the development of updated Metrics completed by Morrison Hershfield in 2020 (Appendix 1) and was the subject of a <u>staff report</u> in May 2021. Sustainability Solutions Group (SSG) undertook an analysis and recommended updated sustainability threshold scores that each development application should be required to achieve (attached as Appendix 2).

Stakeholder consultation has occurred throughout the revision of the Sustainability Metrics including with industry experts, feedback from the City's technical staff, and a working group with the Building Industry and Land Development Association (BILD). The consultation has provided feedback for refinements to the Metrics and informed the staged implementation approach.

# **PURPOSE:**

The purpose of this report is to recommend Council adoption of the revised Sustainability Metrics program and a staged implementation of the Metrics in 2023. The first stage introduces the requirement to meet a minimum sustainability threshold score for site plan and plan of subdivision applications. This includes a minimum sustainability score be achieved for (i) site plan applications for low rise residential, office, commercial and industrial buildings, and (ii) replacing the LEED Silver certification requirement for site plan applications for medium and high rise residential and mixed-use developments with a higher minimum sustainability threshold score. It is recommended that staff report to Council in 2023 to implement the second stage that would add a requirement for improved energy performance of buildings and recommend an approach to verify the metrics selected by applicants to incorporate into new developments.

# **BACKGROUND:**

## Benefits of the Sustainability Metrics

Green development standards are measures created by municipalities and integrated into the planning approvals process in order to quantify and improve the sustainability performance of new developments. A wide range of local municipalities have green development standards already in place or in development. The Sustainability Metrics program will serve as an implementation tool for achieving Markham's objective of building healthy, sustainable and complete communities. It will ensure that measurable actions are incorporated into new development, providing a number of short and longterm benefits including: using municipal infrastructure more efficiently; reducing GHG emissions from new buildings and automobile use; improving health and wellness of residents; increasing resilience; and offering cost savings (lower electricity and heating costs) for residents and businesses.

#### Page 4

## Green Development Standards in Markham

The City of Markham has demonstrated leadership through different forms of green development standards for nearly two decades.

- In 2002, the City developed performance measures for Markham Centre, which focused on transportation, built form, green infrastructure, public spaces and natural heritage. The performance measures were revised in 2007 to further consider Leadership in Energy and Environmental Design (LEED) criteria.
- In 2008, Council directed that all medium and high density residential developments achieve a minimum LEED Silver rating. The LEED Silver standard was intended to be an interim measure until a citywide sustainability checklist could be implemented for all types and scales of development.
- Development in the Future Urban Area is informed by a draft Sustainability Checklist and a Community Energy Plan with required sustainability and energy performance measures negotiated with landowners.

The Sustainability Metrics is intended to build on this demonstrated implementation of green development standards.

## Municipal Partnership

In Spring 2019, the City of Markham entered into a Memorandum of Understanding with the municipalities of Brampton, Richmond Hill and Vaughan to participate in the update of the Sustainability Metrics. The establishment of a consistent sustainability standard across multiple municipalities supports buy-in from the development industry by providing clear and predictable expectations. As a form of green development standard, the Sustainability Metrics has proven to be durable and effective policy in part because of the municipal collaboration and the advancement of similar sustainability standards in other municipalities.

## Policy Direction

Concerns over public health, climate change, energy and resource use have brought sustainability to the forefront for municipalities when planning, building and managing growth. In response to these priorities, there is a clear legislative framework and policy direction supporting sustainable development and green development standards at the provincial level, as outlined in the *Municipal Act*, the *Planning Act*, and the Provincial Policy Statement. In addition, the York Region Official Plan provides policy direction for Regional Staff to work with local municipalities to improve energy efficiency, conserve water, support solar readiness and develop incentive programs.

The need to address sustainability is also supported by Markham's Strategic Plan, the Municipal Energy Plan, Greenprint and the Official Plan, 2014. Markham's Municipal

Energy Plan establishes the objective of achieving net zero energy and emissions by 2050 and recommends the adoption of energy performance targets as part of a citywide green development standards program. The Official Plan, 2014 provides specific policy direction to apply a sustainable development checklist as part of the development approval process to ensure a full range of innovative sustainable design practices and technologies are considered. The goals of the sustainability checklist articulated in the Official Plan, 2014 are aligned with the Sustainability Metrics and include promoting energy conservation and renewable energy, encouraging the use of environmentally preferable building materials, and encouraging walking, cycling, and transit use.

# Sustainability Metrics Overview

The Sustainability Metrics program is similar in approach to LEED, a point based system in which applicants are not required to achieve every metric or target, but they are required to achieve enough metrics to attain a total score that is above a minimum threshold. This approach provides two benefits. First, it supports the City of Markham's sustainability goals by ensuring that development applications are achieving a measurable level of sustainability performance. Second, it aims to provide some flexibility for developers to tailor the sustainability design features of a project to their site and development objectives.

The Sustainability Metrics are organized into four general categories of sustainability:

(1) 'built environment' relates to compact urban form and proximity of the development to amenities,

(2) 'natural environment and parks' includes natural heritage enhancement opportunities, the urban tree canopy, stormwater management and related items,
(3) 'mobility' addresses transportation options with a focus on active transportation and promoting transit use, and

(4) 'infrastructure and buildings' includes matters related to the building envelope and interior, such as energy efficiency, renewable energy, water conservation and accessibility among other measures.

There is also a fifth category dedicated to innovation that is designed to support innovative sustainability measures that are not captured by the current Metrics.

Appendix 1 serves as a draft Guidebook that will be finalized and provided to applicants as a reference to assist in their submissions in support of site plan and plan of subdivision applications. The Guidebook identifies 52 sustainability indicators (e.g., 'Electric Vehicle Charging' or 'Tree Conservation') comprising the Sustainability Metrics. The 120 Metrics are essentially performance targets labelled as "Good", "Great" or "Excellent" to reflect the progressive level of performance that can be achieved within each indicator and the increasing number of points allocated. The applicability of each Metric to plan of subdivision and site plan applications is also identified. Some targets and points are only applicable to certain land uses, such as low-rise residential, medium and high-rise residential, mixed-use or industrial, commercial and institutional developments.

#### Recent Relevant Municipal Action on Sustainability and Climate Action

#### Toronto Green Standard

The <u>Toronto Green Standard</u> (TGS) sets out tiered performance targets (originally Tier 1 to Tier 4). Since 2010, the TGS required development applications to meet Tier 1 measures including energy performance targets for buildings that are an improvement above the Ontario Building Code (OBC). Higher Tiers include more ambitious performance targets, including for energy conservation, and are voluntary and eligible for a rebate of some portion of Development Charges.

In late 2021 the City of Toronto approved Version 4 of the TGS that is applicable to new development applications since May 1, 2022. Low-rise residential developments are required to be designed, constructed and labelled to Energy Star® for New Homes V17.1 or R-2000 standards. This represents approximately a 20% improvement in comparison to the OBC. Multi-unit residential buildings greater than 6 storeys are required to meet a total energy use intensity (TEUI) of 135 kilowatt hours per square metre per year (kWh/m2/yr) while multi-unit residential buildings less than 6 storeys are required to meet a TEUI of 130 kWh/m2/yr. This represents an improvement of approximately 29% and 34%, respectively, in comparison to the OBC (SB-10) according to the City of Toronto "Zero Emissions Buildings Framework".

#### Whitby Green Standard

The <u>Whitby Green Standard</u> was approved in September 2020 and is modelled after the TGS. Similar to the TGS, the Whitby Green Standard requires the following energy performance targets to be achieved for all applications as a mandatory aspect of the Tier 1 requirement:

Low Rise - Design the building(s) to achieve at least ENERGY STAR® for New Homes, version 17, R-2000® requirements, or equivalent.

High Rise – (Site Plan, Part 10 Buildings) - Design the building to achieve 15% improvement above OBC, SB-10, Division 3 (2017); OR TEUI, TEDI and GHGI targets by building type (required for Tier 2).

(TEDI refers to Thermal Energy Demand Intensity and GHGI refers to Greenhouse Gas (GHG) Intensity)

City of Vancouver Zero Emissions By-law Amendment

The City of Vancouver recently passed <u>zoning amendments to support the Climate</u> <u>Emergency Response</u> by amending the <u>Zoning and Development By-law</u> to require zero emissions equipment for space and water heating for residential buildings of three storeys or less. This effectively requires electric heating and cooling (e.g. air source heat pumps, electric hybrid heat pump water heaters) while maintaining options for possible future hydrogen fuel or other non-fossil fuel powered equipment for space and water heating in new low-rise residential dwellings.

City of Waterloo Resolution to Inform the Ontario Building Code Update The Council of the Corporation of the City of Waterloo recently passed a resolution (March 23, 2022) requesting the Province of Ontario to include performance tiers and timelines to increase the minimum energy performance in the next edition of the OBC. The resolution also requests the Province of Ontario to allow municipalities to adopt higher minimum energy performance requirements than the OBC.

# Municipal Partnership Progress

On May 4, 2022, <u>City of Brampton Council</u> approved updates to the Sustainability Metrics and new Sustainability Score Thresholds under their Sustainable New Communities Program. The revised Sustainability Metrics will be required for site plan and plan of subdivision applications starting July 1, 2022 to achieve the updated minimum sustainability scores, as well as the introduction of mandatory <u>minimum</u> <u>building energy and GHG performance requirements</u> that will commence in January 2023.

On May 3, 2022 Vaughan Council endorsed the revised Sustainability Metrics and updated Threshold Scores to be implemented in Q1 2023 for Site Plan (except minor applications), Draft Plan of Subdivision, and Block Plan applications. New applications located within Intensification Areas will be required to meet the updated Silver threshold scores (see Table 1 in Options/Discussion section), and applications located elsewhere in the City will be required to meet the updated Bronze threshold scores.

# **OPTIONS/ DISCUSSION:**

## Recommended Implementation of Sustainability Threshold Scores

SSG undertook an evaluation, comprising a quantitative analysis and stakeholder engagement, to determine sustainability threshold scores for plan of subdivision and site plan applications to achieve based on the revised Sustainability Metrics. As noted previously, the Metrics are essentially performance targets within each of the 52 sustainability indicators that are categorized into "Good", "Great", and "Excellent". A point value is assigned to the performance targets. Applicants choose a combination of Metrics to implement in their development proposal, which results in a sustainability score.

The analysis by SSG identified the Metrics available for all applications by excluding the Metrics that may not be relevant to a site depending on existing conditions (e.g. noting site variations such as whether there are heritage resources or existing healthy trees). SSG also differentiated between Metrics related to exterior design and Metrics that are matters covered by the OBC. Quantifying the cumulative "Good" score by considering only the Metrics applicable to all sites and only exterior design elements results in a baseline threshold score as shown for the Bronze level in Table 1.

		•		
	Total points available	Bronze	Silver	Gold
Site Plan	241	41 - 61	62 - 75	76 - 241
Plan of Subdivision	194	27 - 40	41 - 49	50 - 194

Table 1. Cumulative "Good" score for Metrics available for all applications and related to exterior design (Bronze level following Relativism Methodology Option B in SSG Report – Appendix 2). It is recommended by SSG to implement the Bronze threshold score in 2023.

SSG also evaluated the cumulative "Good" scores considering Metrics available for all applications, and including Metrics related to exterior design as well as Metrics that are matters covered by the OBC (Table 2). SSG recommends phasing implementation of the higher threshold scores, shown in Table 2, over time and based on annual monitoring.

Table 2. Cumulative "Good" score for Metrics available for all applications and related to exterior design, as well as matters covered by the Ontario Building Code (Bronze level following Relativism Methodology Option A in SSG Report). It is recommended by SSG to implement the Bronze threshold over time and based on regular monitoring.

	Total points available	Bronze	Silver	Gold
Site Plan	241	55 - 81	82 - 101	102 - 241
Plan of Subdivision	194	44 - 65	66 - 80	81 - 194

The phased approach suggested by SSG at the outset establishes a sustainability threshold score with a focus on exterior design elements available to all applicants, while the increase in the threshold score for the next phase requires that a development proposal address some matters related to energy efficiency and climate change impacts of buildings.

SSG undertook a separate analysis specific to the City of Markham to compare applications that met LEED Silver certification levels with the revised Sustainability Metrics. As noted previously, the direction from Council that all medium and high density residential developments achieve a minimum LEED Silver rating has been implemented since 2008. For the six (6) applications that were reviewed, Sustainability Metrics scores ranged from 18 to 44, with 50% (3 applications) exceeding the Bronze threshold score for site plans shown in Table 1. LEED (Version 4) scores ranged from 49 to 54. Hence, for medium and high density residential developments, it is recommended to implement the Bronze threshold score shown in Table 2 (minimum sustainability score of 55) to ensure no decrease in performance requirements when transitioning from LEED Silver certification to the Sustainability Metrics.

Based on the analysis by SSG for the municipal partnership and the separate analysis for the City of Markham, the following sustainability threshold scores are recommended to be implemented requiring that:

- Plan of subdivision applications meet a minimum sustainability threshold score of 27 as shown in Table 1 for the Bronze level
- Site plan applications for low rise residential, office, commercial and industrial buildings meet a minimum sustainability threshold score of 41 as shown in Table 1 for the Bronze level

- The LEED Silver certification for site plan applications for medium and high rise residential and mixed-use developments be replaced by the requirement to meet a minimum sustainability threshold score of 55 as shown in Table 2 for the Bronze level.

## Community Energy Plan for the Future Urban Area

The threshold scores recommended for implementation in 2023 do not represent an improvement for the sustainability of buildings over the mandatory requirements of the Future Urban Area Community Energy Plan (CEP). Until climate mitigation action is directly integrated into the Sustainability Metrics (see discussion below) and adopted by Council, staff recommend that the mandatory requirements of the CEP for the Future Urban Area (FUA) continue to apply. The Sustainability Metrics can be used as a complement to the CEP for plans of subdivision applications, particularly to provide performance targets for the voluntary measures in the CEP. It should be noted that plans of subdivision in the FUA will not be required to meet the threshold sustainability score at this time.

Should Council endorse the inclusion of a minimum energy performance requirement in the future as part of the Sustainability Metrics (see discussion below), then the application of the Metrics for site plan applications in the FUA should be considered at that time.

The CEP for the Future Urban Area includes mandatory energy performance measures aligned with elements of Energy Star® Version 17. It is recommended to extend the same mandatory energy performance measures for low rise residential developments in all areas of the City until climate mitigation action is directly integrated into the Sustainability Metrics and adopted by Council.

# Recommended Integration of Climate Action – Mandatory Energy Performance of Buildings

The Sustainability Metrics was originally developed with the intent to use as a platform to address climate action as well as design principles for complete communities such as promoting health through active transportation and green infrastructure, quality urban design, and proximity to amenities. Given the call to action in two recent special reports of the Intergovernmental Panel on Climate Change (IPCC) in 2018 and 2022, every home or building that is not constructed to net zero standards today is another home or building which will need to be retrofitted, imposing a financial and logistical burden on owners or occupants and on society.

SSG considered four approaches to directly require climate action in the Sustainability Metrics to reduce greenhouse gas emissions of buildings. Setting a minimum performance target for energy efficiency was the preferred approach of the municipal partners and stakeholders given its simplicity to understand and ensures an increase in building performance. This is critical to reducing emissions and creates a building stock that can be more easily retrofitted in the near future. The "Good" performance target in Metric IB-12 (Energy Efficiency and GHG Reduction) is the recommended building energy performance target to require as part of the submission of the Sustainability Metrics (see Table 3 below). It is recommended to implement the minimum building energy performance target in 2023. It should be noted that the representatives of the Building Industry and Land Development Association did not comment on the potential requirement for an energy performance target during the stakeholder consultation, but did provide feedback on the content of the energy targets.

Table 3. Recommended minimum energy performance requirements for buildings (new	
construction).	

Implementation year	IB-12: Energy Efficiency and GHG Reductions Metric level	Requirement
2023	Good	<b>Part 9 Residential Buildings</b> (3 storeys or less and less than 600 m2 in gross floor area), design, construct and certify the building to achieve Energy Star® V17.1, or R-2000® requirements.
		<ul> <li>Part 3 Buildings – Multi-Unit Residential, Office and Retail (more than 3 storeys or more than 600 m2 in gross floor area), develop a whole-building energy model, and design and construct the building to achieve the following whole-building performance metrics: <ul> <li>Total Energy Use Intensity (TEUI): 170 kWh/m2.yr.</li> <li>Thermal Energy Demand Intensity (TEDI): 70 kWh/m2.yr.</li> <li>Greenhouse Gas Emissions Intensity (GHGI): 20 kgCO2/m2.yr.</li> </ul> </li> <li>All Other Part 3 Buildings, develop a whole-building energy model, and design and construct the building to achieve at least a 15% improvement in energy efficiency over the Ontario Building Code (OBC) SB-10, Division 3 (2017) reference building.</li> </ul>

Construction to Energy Star® V17.1 represents approximately a 20% improvement in comparison to the current OBC, while construction to a TEUI of 170 kWh/m2/yr is an 11% improvement over the OBC according to the City of Toronto "Zero Emissions Buildings Framework".

It is the opinion of staff that the minimum energy performance of buildings outlined in Table 3 represents an incremental step that builds on previous City of Markham actions such as the requirement for LEED Silver certification for applications for mid- and high-rise developments. In particular, the mandatory energy efficiency requirements for low rise buildings in the Community Energy Plan for the FUA already include several key prescriptive elements of Energy Star® V17.1 related to high performance building envelopes. These prescriptive aspects of the Community Energy Plan for the FUA have been modelled to result in an approximate 8% improvement over the OBC. Hence, requiring Energy Star® V17.1 for low rise buildings represents a feasible incremental step to enable greenhouse gas reductions in Markham.

Through Environmental Registry of Ontario posting <u>ERO #091-4974</u>, the Province of Ontario has indicated a desire to align the Ontario Building Code with the 2020 National Construction Codes for buildings. It is the understanding of City staff that this alignment

will not result in any change to energy efficiency standards in the OBC. In addition, at the time of the writing of this report, the Province of Ontario is not considering a tiered approach to improved energy efficiency towards net zero energy buildings in the proposed update for the OBC. City Staff will continue to monitor any updates to the OBC to determine how it may influence the implementation of an energy performance requirement as part of the Sustainability Metrics.

Energy use is dictated by both land use planning decisions as well as specific criteria set out in the OBC. City building officials are required to review to the standards of the OBC. While the OBC sets the minimum standard across the Province, the City has achieved energy performance outcomes above the OBC through conditions of *Planning Act* approval, such as the LEED Silver certification requirement and the Community Energy Plan for the FUA.

<u>Development Industry Feedback in the Refinement of the Metrics and Update of</u> <u>Sustainability Threshold Scores</u>

The municipal partnership gathered input through a Working Group with members of BILD (York and Peel Chapters) to discuss (a) the revised Metrics prepared by Morrison Hershfield (see the May 2021 staff report) and (b) the recommended threshold scores and energy performance integration proposed by SSG (Appendix 2). The objective of the Working Group was to collaboratively address issues and review technical comments regarding the Metrics, which staff believe will improve implementation of the Metrics.

The following changes to the Metrics were made following feedback and discussion with members of BILD:

- -Clarifications to the intent statements to highlight the purpose of each indicator/metric
- -Revisions to specific point scores to reflect costs, level of effort and sustainability performance being achieved
- -Clarification of incremental points for achieving targets above the good performance level
- -Revisions to metric requirements to clarify language and targets
- -Revisions to documentation requirements to clarify the supporting documentation to submit to allow staff to verify requirements and points
- -Removal of the indicator for passive solar alignment to eliminate conflict with other land use planning objectives to make efficient use of land and maximize connectivity to adjacent sites.

# Roadmap to Net Zero Energy Buildings

British Columbia (BC) was the first jurisdiction in Canada to include an Energy Step Code in the Building Code. The <u>BC Energy Step Code</u> was adopted in 2017 and sets increased energy performance targets for buildings in "steps", or a "high performance staircase", to net zero ready construction by 2032. The BC Energy Step Code is an optional compliance path in the BC Building Code that local governments may use, if they wish, to incentivize or require a level of energy efficiency in new construction that

goes above and beyond the requirements of the BC Building Code. Builders may voluntarily use the BC Energy Step Code as a new compliance path for meeting the energy-efficiency requirements of the BC Building Code.

Similar to the BC Energy Step Code, the Councils of the City of Toronto and Town of Whitby have endorsed a tiered approach to require energy performance targets towards net zero energy buildings by 2030 or 2032 (see Appendix 3). The tiered approach identifies increasing energy performance in 3 to 4 year time steps towards Passive House standards. Passive House is recognized as the most rigorous building standard for energy efficiency and achieves that through energy modelling and setting strict targets for energy use. For example, energy use for heating and cooling (related to thermal energy demand intensity rather than total energy use intensity) is not to exceed an annual demand of 15 kilowatts per square metre of floor space per year.

Staff agree that a roadmap to net zero energy buildings is important for implementation and to ensure tangible outcomes in terms of reduced greenhouse gas emissions in the building sector. A roadmap to net zero energy buildings aligns with the Markham Municipal Energy Plan (MEP). Achieving the highest energy performance standard by 2030 or 2032 is consistent with the energy modelling undertaken in support of the MEP. Staff encourage working towards this objective given the municipal commitments in the City of Toronto and Town of Whitby, the 2018 and 2022 Special Reports of the IPCC, and available programs such as Energy Star®, the Canadian Home Builders Association (CHBA) Net Zero Program, the Canada Green Building Council Zero Carbon Building Standard, Passive House, and other certification systems. The roadmap to net zero energy buildings shown in Appendix 3 is consistent with the intent of the Federal government's "Pan-Canadian Framework on Clean Growth and Climate Change" in identifying the objective "that provinces and territories adopt a net-zero energy ready model building code by 2030". It also creates a coalition of municipalities that emphasize the importance of increasing building energy performance to achieve long-term environmental, social and economic sustainability.

## Cost Implications of Building to a Higher Standard

A summary of costing studies to construct to highly energy efficient buildings is provided in a 2020 edition of the Annual Review of Environment and Resources, "Advances Toward a Net-Zero Global Building Sector". Although publicly available comparable cost data is limited, the findings demonstrate that building to net-zero or net-zero ready standards can be achieved at cost parity or at single-digit cost premia over conventional buildings. A few examples are provided below.

The Pennsylvania Housing Finance Authority awards additional points for project proposals to be certified to Passive House standards in a competitive bidding process. The initial incremental cost of building to Passive House standards was 5.8%, but after three years of implementation the 74 Passive House projects were found to be 1.7% less expensive than the 194 proposals for conventional construction.

The BC Energy Step Code was adopted after determining that defined energy targets such as energy use intensity was the best means to achieve Provincial climate goals. A study in support of the BC Energy Step Code determined that the cost premium was nil to less than 3% for buildings such as mid- and high-rise construction (under Part 3 of the BC Building Code) and nil to 7.4% for low rise residential buildings (under Part 9 of the BC Building Code).

The City of Toronto Zero Emissions Buildings Framework assessed incremental construction costs for the Tiers in the Toronto Green Standard. The analysis determined that costs associated with the highest levels of performance (i.e., approaching Passive House standards) were less than the incremental costs for less ambitious targets and in all cases resulted in a few percentage point increases over conventional construction.

Construction costs to Passive House standards are summarized in a report by SSG for the City of Ottawa. An Ottawa-specific example is referenced for a low rise residential building that notes an incremental additional cost of \$15,000 to \$30,000 to build to Passive House standards, and a consequent cost saving of \$1,000 per year in utility bills.

#### Green Building Incentives

Municipalities in Ontario have used a variety of incentives to promote high performance new construction and sustainable neighbourhoods. Stakeholder feedback from consultation with representatives of BILD recommend incentives for all performance steps above mandatory standards.

Staff recommend that the scan and evaluation of available incentive programs and approaches be undertaken as a multi-departmental initiative. Certain incentives can be used for a range of measures that provide community benefits, such as affordable housing, purpose built rental, age-friendly design, provision of parks, as well green buildings. Available incentives have been extensively documented in a recent report commissioned for the Federation of Canadian Municipalities (report prepared by <u>s2e</u> <u>Technologies</u>). As such, only a listing of available incentives is provided below for further discussion with appropriate City departments and external stakeholders.

- Feasibility Study Grants (for example, to provide a partial cost offset for the cost of preparing a feasibility study to connect to a district energy system)
- Tax Assistance Plans or Tax Increment Grants (waiving part or all of expected increased levies from re-development)
- Development Charge Rebate
- Property Tax Exemption
- Cash Rebates (e.g., Toronto Eco-Roof Incentive Program,
- stormwater rate credits, rainwater harvesting rebate)
- Use of Servicing Allocation (e.g., York Region's Sustainable Development Through LEED program)
- Community Improvement Plan

# Local Improvement Charges

Expedited approvals and reduced parking requirements are also commonly noted as potential incentives that are not a direct financial rebate or fee reduction.

## Next Steps - Implementation Framework Targeted for 2023

The Sustainability Metrics is proposed to be a standard requirement for all plans of subdivision and site plan applications and the documentation and compliance requirements will be formally integrated with the existing development review and planning approval process, when implemented. Applicants will be notified at the pre-consultation stage of the requirement to achieve the minimum sustainability score, and will be provided a Sustainability Metrics Guidebook (see Appendix 1 for a draft version) that clearly outlines the submission requirements. Through the development review process, staff from various departments with technical expertise related to specific metrics will review the development application materials and supporting sustainability documentation to verify that the selected Metrics are being achieved and to provide comments where required. The sustainability score will be reported to DSC as part of the recommendation reports.

The achievement of the minimum sustainability score is recommended to be a requirement for an application to receive endorsement. The applicant's commitment to specific sustainability measures will also be included as a condition in the site plan or subdivision agreements. The tasks below are anticipated to be completed in the next 6 to 12 months.

## Sustainability Checklist (Scoring Tool) and Guidebook

With Council endorsement of the Sustainability Metrics, staff will complete the guidance documents for the submission of the Sustainability Metrics as part of a complete application. This includes a checklist which functions as a sustainability scoring tool and allows the applicant to identify the submission documents where particular Metrics are described and the performance target achieved. The Sustainability Guidebook will also be finalized as a reference for applicants and staff to assist in the preparation of supporting studies and the review by staff. Much of the content for the checklist (scoring tool) and Guidebook is available in Appendix 1. Staff aim for a formal launch of the Sustainability Metrics program in 2023 and will include outreach to the development industry in advance of the launch.

## Confirming Applications Exempt from the Sustainability Metrics

The Sustainability Metrics apply to applications that are not minor in nature (e.g., additions under a certain size will be exempt, such as aligned with the Site Plan Control By-law) and for which a certain level of detail regarding building type and development layout is known. City staff will clarify the exemptions through interpretation of the Site Plan Control By-law and internal and external

consultation when finalizing the scoring tool and Guidebook. The noted exempt applications will be described in the Guidebook.

#### Verification Procedure

The Sustainability Metrics program implemented by the partner municipalities since 2014 has not required post-construction verification except as articulated as a condition in a site plan agreement or subdivision agreement. The intent for implementation in the City, and to build on the existing green standards in the City of Markham, is to implement an approach to verification that may include post-construction verification. This can take the form of one or more progress reports and a post-construction verification report prepared and submitted either by qualified consultants hired by the applicant or selecting from a pre-qualified list of consultants. The use of securities will also be considered. The City will evaluate the appropriate approach in consultation with applicable City departments, the development industry, external stakeholders and the municipal partners.

#### Plan of Subdivision and Site Plan Agreements

Subdivision Agreements and Site Plan Agreements currently include conditions related to LEED Silver certification requirements or mandatory Community Energy Plan measures (e.g., in the Future Urban Area) applicable to the proposed development. Similarly, it is important to recognize the applicable Sustainability Metrics selected by the applicant to integrate in their development as a condition of approval.

The use of conditions of approval to verify the construction of specific intended sustainability measures will be assessed in tandem with evaluating the overall verification procedure. In its most basic form, this can be standard text included in the condition of approval that the developer provide a post-construction verification report to the City. A condition that allows inspection by appropriate City staff and/or independent peer review will also be considered to ensure implementation of a verification procedure. The verification approach will be designed in a way so as not to delay the application review and approvals process or obstruct the issuance of building permits under the OBC. The use of a Letter of Credit may be considered, such as used in York Region's Water for Tomorrow program and Sustainable Development Through LEED initiative.

#### Confirmation of the Minimum Energy Performance Requirement and Roadmap to Net Zero Energy Buildings in 2023

Should Council endorse the recommended minimum energy performance targets set out above and the roadmap to net zero energy buildings, staff will then proceed to confirm implementation matters related to a minimum energy performance requirement, including a verification procedure. Staff will report to a future meeting of the Development Services Committee in 2023 to seek adoption of the energy performance targets.

The tasks below are anticipated to be completed mid to late 2023.

Incentives Review

It is recommended that a multi-departmental working group collaborate on the review of available incentives for several community benefits such as parks, purpose built rental, affordable housing and green building. This holistic approach will assist in the identification of incentives, where feasible, for the appropriate community benefit.

Online Sustainability Metrics Scoring Tool

Staff have consulted with ITS on the development of an automated web tool for simplified submission and scoring of a plan of subdivision or site plan by an applicant. The request to develop the automated web form is proceeding through the ITS project tracking and is scheduled to commence some time in 2023.

## FINANCIAL CONSIDERATIONS

Not applicable.

## HUMAN RESOURCES CONSIDERATIONS

Staff anticipate that additional resources may be needed related to monitoring, tracking of the verification procedure, fielding inquiries to provide clarification to applicants, and minor updates to the Metrics program and documentation. At this time, the intent of the approach to verify energy-related metrics is through qualified third-party consultants hired by applicants rather than hiring staff with specialized skills.

## ALIGNMENT WITH STRATEGIC PRIORITIES:

The Sustainability Metrics is aligned with *Building Markham's Future Together: 2020-2023 Strategic Plan,* particularly the Goal for a safe, sustainable and complete community. The Sustainability Metrics will further support the objectives of the City's Official Plan, 2014 and Municipal Energy Plan.

## **BUSINESS UNITS CONSULTED AND AFFECTED:**

Policy and Research, Development Planning and Urban Design, Development and Environmental Engineering, Transportation, Operations, Sustainability & Asset Management, Waste & Environmental Management and Building Standards have been consulted and will continue to be involved in the implementation of the Metrics.

#### Meeting Date: May 30, 2022

#### Page 17

#### **RECOMMENDED BY:**

Biju Karumanchery M.C.I.P., R.P.P. Director of Planning & Urban Design Arvin Prasad M.C.I.P., R.P.P. Commissioner of Development Services

#### **ATTACHMENTS:**

Appendix '1' – Draft Sustainability Metrics Guidebook based on Morrison Hershfield Report and Stakeholder Consultation Appendix '2' – 'Updating the Sustainability Score Thresholds', assessment and report by Sustainability Solutions Group (SSG), 2022 Appendix '3' – Proposed Roadmap to Net Zero Energy Buildings