

## **Toronto Green Standard Review and Update**

<b>Date:</b>	May 23, 2013
<b>To:</b>	Planning and Growth Management Committee
<b>From:</b>	Chief Planner and Executive Director, City Planning Division
<b>Wards:</b>	All
<b>Reference Number:</b>	P:\2013\Cluster B\PLN\PGMC\PG13051

### **SUMMARY**

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This report encompasses the results of a comprehensive technical review and update of the Toronto Green Standard (TGS) adopted by City Council in December 2009. The TGS is a two-tier set of environmental performance measures that facilitates sustainable new development in Toronto. The revised and updated TGS reflects improvements resulting from direct experiences in applying the Green Standard to new development and the incorporation of new City guidelines, policy or regulations that came into effect since implementation began in 2010. Representatives of City Divisions and development industry stakeholders have participated in the review of each section of the TGS.

Highlights of the new version of the TGS include:

- Improved Tier 1 performance measures to address implementation challenges.
- Consistency with the City-wide Zoning By-law and the City-wide Site Plan Control By-law.
- Incorporation of new performance measures supporting the latest City guideline documents.
- Expanded Tier 2 voluntary package, aligned with LEED® Canada for New Construction and Waterfront Toronto's Mandatory Green Building Requirements.

It is recommended that the proposed, updated TGS be adopted and implemented for all new development applications commencing January 1, 2014. Further reports on sustainable energy targets for new development and on the feasibility of applying a Tier 2 policy for new City-owned facilities in 2014 are recommended. The next review to the TGS will commence in 2017.

## RECOMMENDATIONS

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### **The City Planning Division recommends that:**

1. City Council adopt the revised Toronto Green Standard Tier 1 and Tier 2 performance measures as presented in Appendix A: Mid-High Rise Residential and Non Residential; and Appendix B: Low Rise Residential, to be applied to new development applications under the *Planning Act* commencing January 1, 2014, subject to any necessary Official Plan and City-wide Site Plan Control By-law amendments.
2. City Council direct the Chief Planner and Executive Director, in consultation with the Chief Corporate Officer, to develop a comprehensive planning approach to address sustainable energy issues posed by development and report back to City Council with recommendations in 2014, taking into account:
  - a. the results of the report on energy and electricity needs associated with growth requested by Council;
  - b. the Toronto Regional Electricity Plan being prepared by Ontario Power Authority and Toronto Hydro; and
  - c. the results of further consultation with the Chief Building Official and Executive Director Toronto Building and stakeholders on increasing sustainable energy targets for new development.
3. City Council direct City Agencies, Boards, Commissions, Corporations and Divisions apply Tier 1 of the Toronto Green Standard as the minimum standard to all capital projects and Tier 2 at their discretion in requests for proposals effective immediately.
4. City Council direct the Chief Planner and Executive Director, City Planning and the Chief Corporate Officer to jointly undertake a cost benefit analysis of the application of Tier 2 of the Toronto Green Standard to all capital projects undertaken by the City's Agencies, Boards, Commissions, Corporations and Divisions and report back on the findings and recommendations in 2014.
5. City Council direct that, where technically and financially practical, all new facilities owned by the City's Agencies, Boards, Commissions, Corporations and Divisions with a gross floor area greater than 600m<sup>2</sup> install on-site renewable energy devices to generate the equivalent of at least 5% of the building's modelled annual energy consumption effective immediately upon the adoption of this report.

## Implementation Points

The success of the revised TGS will require an implementation strategy that builds on and strengthens the current protocol. The required Tier 1 performance measures are implemented through the *Planning Act*, this includes:

- Submission of complete TGS checklists and statistics as part of zoning by-law, site plan and plan of subdivision application submissions;
- Divisional development review comments on TGS Tier 1 compliance and coordination by community planning;
- Securing of Tier 1 performance measures through site plan approval, plan of subdivision agreements and section 37 agreements;
- Reference to Tier 1 and Tier 2 performance measures in planning staff reports;
- Site inspections by technical divisions and site plan inspectors; and
- Ongoing staff training on sustainable design and procedures.

Tier 2, the voluntary higher standard, is verified by third party evaluators registered with the City of Toronto. They conduct a two-stage review of construction tendering documents followed by an inspection at building occupancy. A Verification Report is submitted to City Planning documenting proof of compliance with Tier 2. A development charge refund of 20% is refunded if the project is certified as having met Tier 2. Tier 2 projects are coordinated by the Environmental Planning section of City Planning.

Since 2009, the City of Toronto has a Memorandum of Understanding with the Canada Green Building Council to regularly prepare and update the Toronto LEED Supplement which identifies the similarities and differences between LEED Canada rating systems and the TGS documentation that can be exchanged for Tier 2. Where the TGS and LEED share similar priorities, efforts are made to align the performance measures recognizing the Ontario and the City of Toronto contexts and local variations in standards. Achievement of the TGS Tier 1 and 2 contributes to LEED Gold certification.

Both the Official Plan and the City-wide Site Plan Control By-law reference the 'Toronto Green Standard as approved by Council in October 2009'. In order to implement the TGS in January 2014, the Official Plan and the Site Plan By-law will need to be amended to reflect the new approval date of Council.

For more information see the Toronto Green Standard website:  
<http://www.toronto.ca/planning/environment/greendevlopment.htm>

## Financial Impact

The recommendations of this report have no financial impact beyond what has already been approved in the current year's budget.

## DECISION HISTORY

On October 26 and 27, 2009, City Council adopted the revised two-tier set of performance measures associated with the Toronto Green Standard to be applied to all applications under the *Planning Act*, with Tier 1 as mandatory and Tier 2 as voluntary with a 20% development charge refund.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2009.PG32.3>

At its meeting August 25, 26 and 27, 2010, City Council adopted revisions to the Site Plan Control By-law to address exterior design and sustainability provisions. Section 114 of the *City of Toronto Act* provided additional Site Plan Control powers regarding matters of exterior design, including sustainable design, and Official Plan Amendment No. 66 incorporated revisions with respect to these additional Site Plan Control powers. The Ontario Municipal Board approved Official Plan Amendment No. 66, as modified, in April 2010. These sustainability provisions allow the City to require the TGS performance measures on the exterior of buildings.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2010.PG40.14>

## ISSUE BACKGROUND

The Toronto Green Standard (TGS) is a two-tier set of environmental performance measures that promote more sustainable new development in Toronto. Tier 1 is the minimum level of environmental performance required for new development. It is implemented through Council's Site Plan Approval authority and other planning tools. Tier 2 is a higher level of performance measures that is voluntary but offers a development charge refund as an incentive. Tier 2 and the development charge refund program reward more resource-efficient developments by recognizing their decreased pressure on City infrastructure and servicing.

The TGS is an important performance management tool for new development aimed at lessening future infrastructure demands and environmental impacts. TGS integrates environmental performance requirements established through City policy, guidelines and regulations, and implements these through established land use planning processes. It represents strong policy in that it implements the broader policy objectives of the Official Plan and corporate climate change policy using authorities under the *City of Toronto Act* and the *Planning Act*.

The TGS is performance based and sets measurable targets to achieve better designed sites and buildings. It references City-made guidelines to illustrate how performance measures can be achieved using innovation in design. The TGS streamlines City environmental performance related requirements into one package.

Since its adoption by City Council in 2009 and implementation in 2010, the TGS has made a significant impact on the way buildings are designed and constructed in Toronto.

Through the City's development review process the TGS has been applied to over 650 rezoning and site plan applications.

The TGS came into effect for all development applications received on or after January 31, 2010. Since that time City Planning has reviewed and applied the Tier 1 standard to development applications as follows\*:

- 346 Multi-Unit Residential Buildings (MURBS), including apartments and mixed-use proposals
- 187 Institutional, Commercial and Industrial (ICI) buildings, including schools, health care centres and medical facilities
- 108 low rise residential buildings or subdivisions, including grade-related townhouses

\*Based on data gathered between February 1, 2010 and December 31, 2012

The TGS energy requirement that applied to 265 new development projects between 2010 and 2012 is estimated save 593,200 MWh of energy (natural gas and electricity) and avoided 102,500 tonnes of annual GHG emissions, according to the Environment and Energy Office.

Tier 2 and the development charge refund of 20% is a unique offering of the City of Toronto for extra green buildings. Since 2010, the City has received 3 to 4 projects enrolled in the program per year. The first two Tier 2 green developments are almost constructed and are in the process of final verification and certification. They are both residential condominiums with ground floor retail.

The TGS is considered a leading municipal green building policy and has been recognized by the Federation of Canadian Municipalities Sustainable Communities Award. It has also been noted as a best practice for climate change adaptation by the Canadian Institute of Planners and Natural Resources Canada in various documents.

Of particular mention, the Greater Toronto Area municipalities including the Cities of Vaughan, Richmond Hill and Brampton recently adopted TGS performance measures as part of their report *Measuring Sustainability of New Development*. Also, EnerQuality in partnership with BILD, OHBA and BRE Canada is developing a new program to certify high performance mid and high-rise residential buildings that incorporate TGS Tier 2 performance measures.

At the Chief Planners Roundtable on the Resilient City on March 5, 2012, participants noted that a more resilient city is not only a more liveable city but gives us a competitive edge. They also spoke to the need to use regulation and incentives that allow for flexibility and innovation to steer development that can be not only marketed today but can also be resilient in the future. The Toronto Green Standard is one tool that uses both regulation and incentives together to promote a more resilient and sustainable city.

## COMMENTS

### Toronto Green Standard Summary of Changes and Improvements

The comprehensive review of the TGS was undertaken between May 2011 and December 2012. Working groups were established based on the various sections of the TGS and included internal staff and external consultants and experts. Studies were undertaken for components requiring further research in order to refine the performance measures. A LEED comparison was undertaken in concert with the CaGBC. Broader external consultation was undertaken for the energy component with BILD Toronto Chapter and with external technical advisors. The comments were considered in developing the revised TGS. The table below illustrates the key changes made to the TGS.

<b>Tier 1 changes and improvements</b>	<b>Tier 2 changes and improvements</b>
New bicycle parking rates that are consistent between the City-wide Zoning By-law and the TGS	New Electric Vehicle (EV) provision set with Toronto Hydro
Maintain similar energy efficiency targets consistent with 2012 Ontario Building Code	Similar energy efficiency targets but updated to reflect 2012 Ontario Building Code
New on-site renewable energy requirement for City owned buildings	New on-site renewable energy options added
Improved tree planting requirements that connect to the City's 40% canopy cover target	Updated metering requirements to assist in post-occupancy monitoring of energy use
Clarifications and adjustments made to the bird friendly treatment requirements	Adjusted storm water retention target in Tier 2 to be more achievable
New solid waste requirements consistent with City guidelines for residential apartment buildings	New site (ecological) restoration option
	New building reuse option to encourage preservation of facades, roofs and floors
	New regional materials option added to promote local procurement of building materials

## **Merged Two Standards**

The TGS is divided into three categories based on the predominant development types in Toronto: low rise residential, mid-high rise residential and low-rise non residential uses. It is proposed to merge the mid-high rise and non-residential categories into one standard that applies to all these building types for ease of use. This change reduces the former three standards to two as attached in Appendix A of this report.

## **Reflects Updated By-laws**

The TGS has been updated to align with the new City-wide Site Plan Control By-law, adopted by City Council in June, 2012 and the City-wide Zoning By-law (ZBL) adopted by City Council in May, 2013. The low-rise residential standard has been adjusted to apply to housing forms that now require site plan approval under the Site Plan Control By-law including: row houses and townhouses greater than 5 dwelling units.

## **Bicycle parking**

The bicycle parking standards in the new ZBL and the TGS bicycle parking standards have been developed to address industry needs for simplified rates using a two-zoned approach that is higher in the downtown core than in the rest of the City. In addition, greater flexibility in the location of bike parking spaces has been added to the ZBL and TGS by allowing bike parking on floors above and below grade provided that the majority of parking is located on the first parking floor below grade and providing a bike elevator to subsequent parking floors. Bicycle survey data was used to inform the development of the two-zone approach now adopted in the City Wide ZBL. Tier 2 includes higher bike parking rate than Tier 1 and a new public bike share option.

## **Improved Tier 1 Performance Metrics**

Experience with development applications and input from industry representatives since 2010 identified some challenges with achieving key performance metrics on constrained downtown sites and large sites with small building footprints. Adjustments were made to the metrics accordingly to account for varying site conditions.

Examples of changes to the TGS include:

### **Ecology Section - Urban Forest: Increase Tree Canopy**

This section includes an updated and improved tree planting calculation that links to the City's 40% canopy target and relates canopy growth to soil volumes while allowing the distribution of trees across the larger site including the private site and the public boulevard. The recently completed study, *Tree Planting in Public Boulevard Surfaces* conducted by a consulting firm for the City of Toronto provides the basis for the updated calculation. The City of Toronto Urban Forestry Branch compared the previous TGS

performance measure for tree planting against the new performance measure using a variety of case studies and has concluded that the new approach should yield better results towards increasing the City's tree canopy. The TGS also includes a new off-site tree planting option for Tier 2 applications.

### **Bird-Friendly Design**

The City of Toronto led in the development of *Lights Out Toronto!* and Bird Friendly Design Guidelines in 2006. Since then a number of cities in Canada and the U.S. have followed suit to develop their own guidelines. The U.S. Green Building Council recently released a bird friendly design pilot credit for new construction recognizing the work of cities and the importance of reducing bird mortalities from buildings.

In 2010, Toronto required bird friendly design in all new development subject to site plan approval. Experience with development applications and consultation with architects, consultants, developers and glass manufacturers has resulted in a review of the performance metrics.

A study undertaken by a consultant for the City evaluated the typical breakdowns of exterior building materials used that are bird friendly. In combination with other real case studies that applied the TGS requirements, the TGS performance measures were adjusted from 100% treatment of glazing within the threat area to 85%, to be more realistic in terms of what is achievable for a variety of building types. Also, new research indicates that a denser visual pattern than was previously required is more effective for reducing bird collisions so a 100 mm x 100 mm density pattern has been adopted in the mid-high rise standard. These changes are expected to work better for a variety of building types and are in keeping with the construction products and materials available.

### **Energy Efficiency and Green House Gas Reductions**

In 2010 the TGS required that all mid-high rise and institutional, commercial and industrial (ICI) buildings be designed to achieve at least 25% better than the Model National Energy Code for Buildings (MNECB) in Tier 1 and 35% in Tier 2 and that all low-rise residential type construction meet EnerGuide 80 for Tier 1 or 85 for Tier 2. At the time, Council recommended that the OBC be changed to require that all new construction have energy efficiency at the level which was applied to Tier 1 development in Toronto.

For mid-high rise and ICI projects, this performance measure was achieved by requiring a "Design Stage Energy Report" prior to the approval of the site plan application for Tier 1. For Tier 2, an as-constructed Energy Report must be submitted post construction. In both cases, the Energy Reports were reviewed by the City's Energy Efficiency Office (EEO), which provides review and comments during the site plan approval process. The EEO has been a delivery agent for Provincial financial incentives programs administered under the Better Buildings Partnership Program (BBP). The TGS requirement and EEO financial incentives were dovetailed beginning in 2010.



On December 31, 2011 the new updated Ontario Building Code (OBC) came into effect and included energy efficiency requirements for new buildings at the same levels as the TGS. The TGS is cited as having contributed to those increases in the OBC requirements by having increased the capacity in the market place for energy modelling (requirement of TGS) and by achieving higher levels of building efficiency.

In order to evaluate whether TGS energy performance measures should be increased at this time, City Planning with funding support from Toronto Atmospheric Fund (TAF) undertook a two-part study to assess research undertaken in preparation of the 2012 OBC. The study undertaken by consultants assessed the capacity for different building types to achieve higher energy efficiency and GHG reductions through design. The study provided a scoped cost-benefit analysis of higher energy efficiency levels.

The Study showed that that the development industry could absorb higher energy efficiency of between 5 and 15% above OBC 2012 through standard design practices and with manageable incremental costs. This conclusion was reaffirmed in consultation with energy consultants. However the study notes that certain building types are challenged more than others. Beyond 15% will require more significant changes to the building envelope and the incorporation of renewable energy. These findings are in line with the proposed 2017 changes to the OBC where an increase to approximately 13% better than 2012 is expected. However, based on research undertaken by the province, they concluded that levels higher than the 2012 OBC would not be achievable as a minimum standard limit until 2017.

Consultation conducted with industry and energy consultants indicated mixed views about increasing the TGS energy targets at this time while industry is adjusting to the new requirements of the OBC. The City of Toronto continues to play an important role in influencing decisions made by the Province with respect to the Ontario Building Code, the *Planning Act* and the Provincial Policy Statement by showing leadership. At this time it is not proposed that the TGS energy efficiency targets for mid-high rise residential and ICI be increased but that they continue to be assessed for potential improvements and increases Peak electrical demand trends and pressures associated with new growth will be part of any future considerations.

The Tier 2 energy efficiency target for the low rise residential standard has been adjusted from EnerGuide 85 energy efficiency rating to an EnerGuide 83 energy efficiency rating to increase participation in the Tier 2 low rise standard. EnerGuide 83 represents a 15-20% improvement over Tier 1 EnerGuide 80. The target was set by an external advisory committee who are experts on the EnerGuide and Energy Star protocols developed by Natural Resources Canada. This would apply to low-rise building types such as townhouses and subdivisions, where the project contains 5 dwelling units or more.

## **Energy and Electricity Needs Associated with Growth**

In October of 2012, City Council requested the City Manager to report to Executive Committee on the energy and electricity needs associated with economic and urban growth. City Planning will work with the Environment and Energy Office to evaluate the electrical capacity for growth and to assess the TGS as a conservation strategy to meet projected electrical and peak demand.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.ED17.3>

Currently, electricity supply and demand are roughly in balance in the downtown core. This is not likely to remain the case as Toronto is currently experiencing the highest rate of high-rise construction in North America with growth here outpacing four of the major U.S. cities combined. The 185 new buildings under construction in Toronto are largely multi-residential and share the same electrical demand characteristics. They will share similar load shape with their electrical peaks being coincident not only with each other, but with the system peak. These factors in combination will challenge the ability of the electricity supply infrastructure to reliably meet the expectations of the marketplace.

The Ontario Power Authority (OPA), in collaboration with Toronto Hydro, is currently undertaking the Toronto Regional Electricity Plan which is assessing the electrical load capacity and future growth in the downtown. The Regional Electricity Plan is anticipated to be released for comment in September 2013. As part of the process of developing the Plan, the City, Toronto Hydro and OPA are reviewing options such as energy conservation, efficiency and other sustainability measures to reduce the demand for power in order to accommodate future growth.

It is therefore proposed that City Planning and the Energy and Environment Office collaborate to develop a comprehensive planning approach to address sustainable energy issues posed by development. This work will take into account the results of the Council requested report on energy and electricity needs associated with growth, work being done by OPA and Toronto Hydro on the Toronto Regional Electricity Plan and the results of further consultation with Toronto Building and stakeholders on increasing sustainable energy targets for new development.

## **Capital Projects**

Many cities throughout Canada and the U.S. require their own capital projects to meet a 'green' performance standard, including Vancouver, Calgary, Montreal, San Francisco, Portland, Victoria and Ottawa. Currently, all capital projects of Toronto's ABCCDs are required to meet Tier 1 of the TGS. New buildings are also required to install green roofs on all new buildings and roof replacements in addition to those required by the Green Roof By-law.

The City encourages new private development to meet Tier 2 of the TGS with the incentive of the development charge refund. The potential application of Tier 2 to City-owned facilities was discussed by the 'Capital Project Managers Working Group'

(including Facilities Management, Technical Services, Parks, Solid Waste, Children's Services, EMS, TTC, and Toronto Public Library). The capital project managers were concerned with the higher capital costs of implementing Tier 2, which are not accounted for in current budget envelopes. They also noted that at this time, there is no integration of the capital and operational budgets, so that savings resulting from higher performance developments cannot leverage increased investment to cover the higher initial capital costs.

The cost benefit implications of applying Tier 2 to all new City-owned developments should be explored and the capital budget process should be reviewed to reflect improvements to operational cost reduction. To this end, a study will be undertaken to determine if and how City-owned facilities can incorporate Tier 2 level performance into new buildings. Results will be reported to Council in 2014.

### **Renewable Energy Installations**

The installation of renewable energy devices is one strategy the City and its ABCC's can undertake to support achieving higher 'green' building performance while saving on energy costs and generating revenue. This strategy has the up-front capital costs financed through recoverable debt. The financing is paid back from operating program energy savings or from revenue generation resulting from the renewable installation. In January 2013, City Council approved the 2013 Capital and Operating Budgets which included approval of funds to be loaned to energy projects of City agencies and divisions demonstrating sufficient projected return from energy savings or revenue generation to be financed through recoverable debt.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.EX27.1> (Rec. 119)

The City (excluding agencies, boards and commissions) already has 42 existing renewable energy installations. These include 15 solar photovoltaic, 15 solar hot water heating, 4 solar air, 5 geoexchange, and 3 landfill gas systems. The City, in partnership with Toronto Hydro, is also installing solar PV systems on a number of City buildings under the Ontario Power Authority Feed-In Tariff program (FIT). In addition, the City purchases renewable energy in the form of deep lake water cooling for a number of its buildings in the downtown.

The installation of renewable energy devices is supported by the 2009 report "The Power to Live Green – Toronto's Sustainable Energy Strategy," where Council directed the installation of renewable energy on all City buildings, where feasible, by 2020. Further, starting in 2014 the City will be required, under *The Green Energy Act* (Regulation 397/11) to report on its renewable energy generation. To enable this, all new renewable systems on City facilities will have a web-based monitoring system that will collect and store data through a remote server.

The City and its ABCC's construct, on average, 2 to 3 new buildings each year. In recent years, most new City buildings have incorporated some form of renewable energy. For example, the Toronto Police Services' 11 and 14 Division stations have implemented a

geo-exchange system, as has the Warden Hilltop Community Centre. The renewable requirement will encourage energy efficiency measures since the lower a building's energy baseline is, the smaller the renewable system needed to achieve the required 5%.

Notwithstanding the benefits of renewable energy, it is recognized that there will be situations where it is not feasible on some buildings. Staff will develop a list of exemption criteria which respects Council's directive to install renewable energy systems on all City buildings where it is feasible to do so. For example, projects that don't meet the recoverable debt criteria will not be required to proceed.

It is proposed that, where technically and financially practical, new buildings over 600m<sup>2</sup> owned by the City of Toronto and its Agencies, Boards Commissions and Corporations be required install on-site renewable energy devices to generate the equivalent of at least 5% of the building's modelled annual energy consumption. Review of the City's current renewable energy projects suggests that 5% is an achievable target, and it is anticipated that many buildings will exceed this, particularly when geothermal sources are used.

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## **SIGNATURE**

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## **ATTACHMENTS**

Attachment 1: Appendix A: Toronto Green Standard - Mid-High Rise Residential and  
Low Rise Non Residential Development  
Attachment 2: Appendix B: Toronto Green Standard - Low Rise Residential  
Development

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## Attachment 1 – Appendix A: Toronto Green Standard - Mid-High Rise Residential and Low Rise Non Residential Development

### AIR QUALITY



For New Mid to High-Rise Residential and Industrial, Commercial and Institutional (ICI) Development

Development Feature	Required Tier 1	Voluntary Tier 2
<b>Low-emitting and Fuel Efficient Vehicle Infrastructure</b> Encourage the use of low emitting, fuel efficient vehicles, car pooling and car-sharing	<b>AQ 1.1 LEV spaces</b> <u>Residential:</u> If providing more than the minimum parking required under the Zoning Bylaw, include: Physical provision for future electric vehicle charging for the excess number of parking spaces provided above the minimum Zoning Bylaw required parking spaces and distributed to each parking level. <u>Institutional/Commercial:</u> If providing more than the minimum parking required under the Zoning Bylaw, the excess spaces must be provided only for dedicated priority parking spaces for low-emitting vehicles (LEV), carpooling or for publicly accessible spaces dedicated to car-sharing.	<b>AQ 1.2 (Optional) Enhanced LEV spaces</b> Electrical provision for at least 2% of residential parking spaces for future electric vehicle charging in accordance with the Ontario Electrical Safety Code.
<b>Cycling Infrastructure</b> Encourage cycling as a clean air alternative	<b>AQ 2.1- Bicycle parking rates</b> <u>Residential:</u> Bicycle <u>Zone 1:</u> (1 per unit) Provide a minimum of 0.9 long-term bicycle parking spaces and 0.1 short-term bicycle parking spaces per dwelling unit. Bicycle <u>Zone 2:</u> (0.75 per unit) Provide a minimum of 0.68 long-term bicycle parking spaces and 0.07 short-term bicycle parking spaces per dwelling unit. <u>All other uses:</u> Bicycle Zone 1 and Bicycle Zone 2: Provide long-term and short-term bicycle parking spaces consistent with the non-residential bicycle parking rates identified in Chapter 230 of the City-wide Zoning Bylaw. <b>AQ 2.2 Long-term bicycle parking location</b> Long term bicycle parking must be provided in a secure controlled access bicycle parking facility or purpose-built bicycle locker in the following locations: (i) on the first storey of the building; (ii) on the second storey of the building; (iii) on levels of the building below-ground commencing with the first level below ground and moving down, in one level increments when at least 50% of the area of that level is occupied by bicycle parking spaces, until all required bicycle parking spaces have been provided. <b>AQ 2.3 Short-term bicycle parking location</b> Locate short-term bicycle parking in a highly visible and publicly accessible location at-grade or on the first parking level of the building below grade. <b>AQ 2.4 Shower &amp; change facilities</b>	<b>AQ 2.5 (Optional) Enhanced Bicycle parking rates</b> <u>Residential:</u> Bicycle <u>Zone 1:</u> (1.2 per unit) Provide a minimum of 1.08 long-term and 0.12 short-term bicycle parking spaces per dwelling unit. Bicycle <u>Zone 2:</u> (1.0 per unit) Provide a minimum of 0.9 long-term and 0.1 short-term bicycle parking space per dwelling unit. <b>AQ 2.6 (Optional) Bike share</b> Provide a public bike share location at-grade and program for visitors on the site.

Appendix A: Apply this Standard to  
New Residential Apartments greater than 4 storeys and ALL Industrial, Commercial and Institutional (ICI) Development  
Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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## AIR QUALITY



For New Mid to High-Rise Residential and Industrial, Commercial and Institutional (ICI) Development

Development Feature	Required Tier 1	Voluntary Tier 2
	<p><u>Non-residential uses:</u> Provide shower and change facilities for each gender consistent with the rate identified in Chapter 230 of the City-wide Zoning Bylaw.</p>	
<p><b>Pedestrian Infrastructure</b></p> <p>Encourage walking as a clean air alternative for all ages and abilities</p>	<p><b>AQ 3.1 Connectivity</b></p> <p>Provide safe, direct, universally accessible pedestrian routes, including crosswalks and midblock crossings, that connect the buildings on-site to the off-site pedestrian network and priority destinations.</p> <p><b>AQ 3.2 Sidewalk space</b></p> <p>Provide a pedestrian clearway at least 2.1 m wide to safely and comfortably accommodate pedestrian flow.</p> <p><b>AQ 3.3 Weather protection</b></p> <p>Provide covered outdoor waiting areas for pedestrian comfort and protection from inclement weather.</p> <p><b>AQ 3.4 Pedestrian specific lighting</b></p> <p>Provide pedestrian-scale lighting that is evenly-spaced, continuous and directed onto sidewalks, pathways, entrances, outdoor waiting areas and public spaces.</p>	
<p><b>Urban Heat Island Reduction: At Grade</b></p> <p>Reduce ambient surface temperatures, and provide shade for human health and comfort</p>	<p><b>AQ 4.1 UHI, Non-roof hardscape</b></p> <p><u>All uses:</u> Use a combination of the following strategies to treat at least 50% of the site's non-roof hardscape (including driveways, walkways, courtyards, surface parking areas, artificial turf and other on-site hard surfaces):</p> <ul style="list-style-type: none"> <li>• High-albedo surface materials with an initial reflectance of at least 0.3 or SRI of 29</li> <li>• Open grid pavement with at least 50% perviousness</li> <li>• Shade from existing tree canopy or within 5 years of landscape installation</li> <li>• Shade from structures covered by solar panels.</li> </ul> <p><u>Non-residential uses option:</u> Select one or a combination of the above strategies</p> <p><b>OR</b></p> <p>Place a minimum of 50% of required parking spaces under cover. Any roof used to shade or cover parking must have an SRI of at least 29, be green roof or be covered by solar panels that produce energy to offset some non-renewable resource use.</p>	<p><b>AQ 4.2 (Core) Enhanced UHI, Non-roof hardscape</b></p> <p>Use any combination of the following strategies to treat at least 75% of the site's non-roof hardscape (including driveways, walkways, courtyards, parking areas, artificial turf and other on-site hard surfaces):</p> <ul style="list-style-type: none"> <li>• High-albedo surface materials with an initial reflectance of at least 0.3 or SRI of 29</li> <li>• Open grid pavement with at least 50% perviousness</li> <li>• Shade from existing tree canopy or within 5 years of landscape installation</li> <li>• Shade from structures covered by solar panels.</li> </ul>

Appendix A: Apply this Standard to  
New Residential Apartments greater than 4 storeys and ALL Industrial, Commercial and Institutional (ICI) Development  
Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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## AIR QUALITY



For New Mid to High-Rise Residential and Industrial, Commercial and Institutional (ICI) Development

Development Feature	Required Tier 1	Voluntary Tier 2
<b>Urban Heat Island Reduction: Roof</b> Reduce ambient surface temperatures on or from rooftops	<p><b>AQ 5.1 Green &amp; cool roofs</b></p> <p><u>Buildings where the Green Roof Bylaw is applied:</u> Install a green roof to meet the requirements of the Bylaw.</p> <p><u>Buildings where the Green Roof Bylaw does not apply</u> use one of the following strategies:</p> <ul style="list-style-type: none"> <li>Green roof installed for at least 50% of Available Roof Space</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>Cool roof installed for 100% of Available Roof Space</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>Use a combination of a green and cool roof for at least 75% of Available Roof Space.</li> </ul> <p><u>City-owned buildings and all Agencies, Boards, Commissions and Corporations:</u></p> <p>For new buildings or building additions with a GFA greater than 600 m<sup>2</sup> install a green roof for at least 50% of the Available Roof Space or meet the requirements of the Green Roof Bylaw, whichever is greater. Cover the remaining Available Roof Space with cool roofing materials.</p>	

Appendix A: Apply this Standard to

New Residential Apartments greater than 4 storeys and ALL Industrial, Commercial and Institutional (ICI) Development

Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

3



# GREENHOUSE GAS EMISSIONS/ENERGY EFFICIENCY



For New Mid to High-Rise Residential and Industrial, Commercial and Institutional (ICI) Development

Development Feature	Required Tier 1	Voluntary Tier 2
<b>Minimum Energy Performance</b> Minimize energy demand through efficient building design and encourage renewable energy supply	<b>GHG 1.1 Energy efficiency</b> Design the building(s) to meet or exceed the energy efficiency requirements of the Ontario Building Code.  <b>GHG 1.2 On-site renewable energy</b> <u>City-owned buildings and all Agencies, Boards, Commissions and Corporations:</u>  For new buildings with a GFA greater than 600 m <sup>2</sup> install renewable energy devices to supply at least 5% of the building's total energy load from one or a combination of energy sources.	<b>GHG 1.3 (Core) Enhanced energy efficiency</b> Design and construct the building(s) to achieve at least 10% energy efficiency improvement over the Ontario Building Code.  <b>GHG 1.4 (Optional) On-site renewable energy</b> Design and install on-site renewable energy systems to supply at least 1 % of the building's total energy load from one or a combination of solar Photovoltaic (PV), solar thermal or wind energy sources  <p style="text-align: center;"><b>OR</b></p> 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).
<b>Operational Systems</b> Ensure building systems function efficiently and as designed		<b>GHG 2.1( Core) Building Commissioning</b> Commission the project using best practice commissioning.  <b>GHG 2.2 (Optional) Meters</b> Install in-suite thermal energy meters on all heating and cooling appliances in all residential units.  <p style="text-align: center;"><b>OR</b></p> For multi-tenant commercial/retail buildings, install thermal energy meters for each individual commercial/ retail tenant.

Appendix A: Apply this Standard to  
New Residential Apartments greater than 4 storeys and ALL Industrial, Commercial and Institutional (ICI) Development  
Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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# WATER QUALITY, QUANTITY AND EFFICIENCY



For New Mid to High-Rise Residential and Industrial, Commercial and Institutional (ICI) Development

Development Feature	Required Tier 1	Voluntary Tier 2
<b>Construction Activity</b> Ensure protection of water quality during construction and demolition	<b>WQ 1.1 Erosion &amp; sediment control</b>  Follow the <i>Erosion and Sediment Control Guidelines for Urban Construction</i> (Greater Golden Horseshoe Conservation Authorities, December 2006) during construction and demolition activities.	
<b>Stormwater Retention (Water Balance)</b> Minimize stormwater that leaves the site	<b>WQ 2.1 Stormwater balance</b>  Retain stormwater on-site to the same level of annual volume of overland runoff allowable under pre-development conditions.  <b>WQ 2.2 Stormwater retention &amp; reuse</b>  Retain at least the first 5 mm from each rainfall through rainwater reuse, on-site infiltration, and evapotranspiration.  OR  Ensure that the maximum allowable annual runoff volume from the development site is no more than 50% of the total average annual rainfall depth.	<b>WQ 2.3 (Optional) Enhanced stormwater retention &amp; reuse</b>  Retain 10 mm of each 24 hour rainfall event, or 70% of total average annual rainfall depth, for rainwater reuse, on-site infiltration and/or evapotranspiration.
<b>Water Quality- Stormwater Run-Off</b> Manage and clean stormwater that leaves the site	<b>WQ 3.1 Total suspended solids (TSS)</b>  Remove 80% of total suspended solids (TSS) on an annual loading basis from all runoff leaving the site based on the post-development level of imperviousness.  <b>WQ 3.2 E. Coli reduction</b>  Control the amount of E. Coli directly entering Lake Ontario and waterfront areas as identified in the <i>Wet Weather Flow Management Guidelines</i> .	
<b>Water Efficiency</b> Reduce demand for potable water	<b>WQ 4.1 Drought-tolerant landscapes</b>  Provide drought tolerant plants for at least 50% of the landscaped site area (including at-grade landscapes, vegetated roofs and walls).	<b>WQ 4.2 (Core) Water efficient fixtures</b>  Install water fixtures and appliances that achieve at least a 30% reduction in potable water consumption for the building (not including irrigation) over the baseline water fixtures and appliances.  <b>WQ 4.3 (Core) Irrigation</b>  Where soft landscaping exists on the site, reduce potable water use for irrigation by 50%.

Appendix A: Apply this Standard to  
 New Residential Apartments greater than 4 storeys and ALL Industrial, Commercial and Institutional (ICI) Development  
 Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected



Development Feature	Required Tier 1	Voluntary Tier 2
<b>Urban Forest: Tree Protection</b> Preserve the existing urban forest	<b>EC 1.1 Tree protection</b> Adhere to the Tree Protection Policy and Specifications for Construction Near Trees for tree protection and barriers during construction.  <b>EC 1.2 Preservation of mature trees</b> Protect and retain all trees that are 30 cm or more DBH (diameter at breast height) from injury or removal.  <b>EC 1.3 Ravine protection</b> Within the Ravine Protected Area, protect and retain trees of all diameters from injury or removal.  <b>EC 1.4 Street tree retention</b> Protect and retain trees of all diameters adjacent to City of Toronto streets and roadways and City-owned Parkland.	
<b>Urban Forest: Increase Tree Canopy</b> Make Space for trees, enhance the urban forest	<b>EC 2.1 Tree Planting</b> Provide tree canopy cover distributed across the site area and the public boulevard at a minimum rate of : 1 tree for every 66 m <sup>2</sup> of 40% of the site area.  <b>EC 2.2 Soil volumes</b> Provide all trees planted with a minimum volume of 30 m <sup>3</sup> of high quality soil per tree. The minimum soil volume can be 20 m <sup>3</sup> per tree where the soil volume is shared.  <b>EC 2.3 Trees along street frontages</b> Plant large growing shade trees at the equivalent of 8 to 10m intervals along all street frontages, including along private streets and in the public boulevard.  <b>EC 2.4 Trees in parking lots</b> If surface parking is permitted and provided, plant shade trees throughout the parking lot interior at a minimum ratio of one tree planted for every five parking spaces supplied.  <b>EC 2.5 Watering program</b> Provide a watering program for trees for at least the first 2 years after planting.	<b>EC 2.6 (Optional)</b> <b>Enhanced trees in parking lots</b> If surface parking is provided, plant internal shade trees at a minimum ratio of one tree planted for every three parking spaces supplied.  <b>EC 2.7 (Optional)</b> <b>Enhanced tree planting</b> Provide additional tree planting beyond the development site and the associated public boulevard in locations approved by the City of Toronto Urban Forestry Department at a minimum rate of:  1 tree for every 200 m <sup>2</sup> of 40% of the total site area.

Appendix A: Apply this Standard to  
 New Residential Apartments greater than 4 storeys and ALL Industrial, Commercial and Institutional (ICI) Development  
 Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

# ECOLOGY

For New Mid to High-Rise Residential and Industrial, Commercial and Institutional (ICI) Development



Development Feature	Required Tier 1	Voluntary Tier 2
<b>Natural Heritage</b>  Protect, restore and enhance the natural environment and increase biodiversity	<b>EC 3.1 Biodiversity in landscapes</b>  Plant the landscaped site area using a minimum of 50% native species (including trees, shrubs, and herbaceous plants).  <b>EC3.2 Ravines and natural areas buffers</b>  Where a setback from top-of-bank is required, plant the landscaped area of the setback with native species.  <b>EC 3.3 Invasive species</b>  Do not plant any invasive species on properties along streets abutting ravines and natural areas.	<b>EC 3.4 (Optional)</b> <b>Enhanced landscaping</b>  Restore or protect a minimum 50% of the site area (excluding the building footprint) or 20% of the total site area (including building footprint), whichever is greater, with native or drought tolerant vegetation.
<b>Bird Collision Deterrence</b>  Design buildings to reduce bird collisions and mortality	<b>EC 4.1 Bird friendly glazing</b>  Use a combination of the following strategies to treat a minimum of 85% of all exterior glazing within the first 12 m of the building above grade (including balcony railings, clear glass corners, parallel glass and glazing surrounding interior courtyards and other glass surfaces): <ul style="list-style-type: none"> <li>• Low reflectance, opaque materials</li> <li>• Visual markers applied to glass with a maximum spacing of 100 mm x 100 mm</li> <li>• Building-integrated structures to mute reflections on glass surfaces.</li> </ul> <u>Balcony railings</u> Treat all glass balcony railings within the first 12 m of the building above grade with visual markers provided with a spacing of no greater than 100 mm x 100 mm.  <u>Fly-through conditions</u> Glass corners: Within the first 12m of the building, treat all glazing located at building corners with visual markers at a spacing of no greater than 100 mm x 100 mm.  Parallel glass: Treat parallel glass at all heights with visual markers at a spacing of no greater than 100 mm x 100 mm.  <b>EC 4.2 Rooftop vegetation</b>  Treat the first 4 m of glazing above the feature and a buffer width of at least 2.5 m on either side of the feature using strategies from EC 5.1.  <b>EC 4.3 Grate porosity</b>  Ensure ground level ventilation grates have a porosity of less than 20 mm X 20 mm (or 40 mm x 10 mm).	<b>EC 4.4 (Optional)</b> <b>Enhanced bird friendly glazing</b>  Use a combination of the following strategies to treat a minimum of 95% of all exterior glazing within the first 12 m of the building above grade (including all balcony railings, clear glass corners, parallel glass and glazing surrounding interior courtyards): <ul style="list-style-type: none"> <li>• Low reflectance, opaque materials</li> <li>• Visual markers applied to glass with a maximum spacing of 100 mm x 100 mm</li> <li>• Building-integrated structures to mute reflections on glass surfaces.</li> </ul> <b>EC 4.5 (Optional)</b> <b>Opaque building materials</b>  Provide at least 50% of the exterior surface of the building as non-reflective opaque materials to significantly reduce bird collisions with buildings.

Appendix A: Apply this Standard to

New Residential Apartments greater than 4 storeys and ALL Industrial, Commercial and Institutional (ICI) Development

Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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## ECOLOGY



For New Mid to High-Rise Residential and Industrial, Commercial and Institutional (ICI) Development

Development Feature	Required Tier 1	Voluntary Tier 2
<p><b>Light Pollution</b></p> <p>Reduce nighttime glare and light trespass</p>	<p><b>EC 5.1 Exterior lighting</b></p> <p>Shield all exterior light fixtures to meet the IESNA Full Cutoff Classification or an Uplight rating of 0, to prevent glare and/or light trespass onto any neighbouring properties.</p>	<p><b>EC 5.2 (Core)</b> <b>Enhanced lighting</b></p> <p>Rooftop architectural illumination must be directed downward and be shut off between the hours of 11 pm and 5 am.</p> <p><b>EC 5.3 (Core)</b> <b>Lighting Controls</b></p> <p><u>Institutional /Commercial:</u> Install an automatic device that reduces the outward spillage of internal light by:</p> <p>Reducing the input power to lighting fixtures by at least 50% between the hours of 11 PM and 5 AM <b>OR</b> Shielding all openings in the envelope with a direct line of sight to any non-emergency light fixture between the hours of 11 PM and 5 AM.</p>

Appendix A: Apply this Standard to

New Residential Apartments greater than 4 storeys and ALL Industrial, Commercial and Institutional (ICI) Development

Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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# SOLID WASTE



For New Mid to High-Rise Residential and Industrial, Commercial and Institutional (ICI) Development

Development Feature	Required Tier 1	Voluntary Tier 2
<b>Storage and Collection of Recycling and Organic Waste</b> Facilitate waste sorting and reduction	<b>SW 1.1 Waste collection &amp; sorting</b> Residential: Provide a waste sorting system using a single chute with a tri-sorter or two chutes, one with a bi-sorter.  <b>SW 1.2 Waste storage space</b> Residential: Provide an easily accessible waste storage room with a minimum floor space of 25 m <sup>2</sup> for the first 50 units plus an additional 13 m <sup>2</sup> for each additional 50 units.  <b>SW 1.3 Bulky waste</b> Residential: Provide a minimum of 10 m <sup>2</sup> for bulky items and additional diversion programs.	<b>SW 1.4 (Optional)</b> <b>Enhanced waste collection &amp; sorting</b> Residential: Provide three separate chutes for collection of each of the three waste streams on all floors.  <b>SW 1.5 (Optional)</b> <b>Enhanced waste storage space</b> Residential: Provide separated cabinet space in all kitchen suites for segregated collection of: • Recyclables • Organics • Garbage. Other uses: Provide a dedicated area or areas within the building for the collection and storage of recycling and organics.  <b>SW 1.6 (Optional)</b> <b>Household hazardous waste</b> Provide a dedicated collection area or room for the collection of household hazardous wastes and/or electronic waste.
<b>Building Reuse</b> Maintain existing walls, floors and roof		<b>SW2.1 (Optional)</b> <b>Building reuse</b> Maintain at least 55% of the existing building structure (including structural floors and roof decking) and envelope.
<b>Construction and Demolition Waste Management</b> Reduce waste going to landfill		<b>SW 3.1 (Optional)</b> <b>Construction waste</b> Recycle at least 75% of non-hazardous construction and demolition debris.
<b>Recycled Content</b> Reduce demand for new materials and increase market for recycled materials		<b>SW 4.1(Optional)</b> <b>Recycled content</b> Ensure that at least 20% of a project's construction materials (based on value) comprise recycled content.
<b>Regional Materials</b> Increase demand for building materials and products extracted, processed and manufactured in the region		<b>SW 5.1 (Optional)</b> <b>Regional materials</b> Ensure that at least 20% of a project's building materials or products have been extracted, harvested, recovered or processed within 800 km (2400 km if moved by rail or water) of the final manufacturing site.

Appendix A: Apply this Standard to

New Residential Apartments greater than 4 storeys and ALL Industrial, Commercial and Institutional (ICI) Development

Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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## Attachment 2 – Appendix B: Toronto Green Standard - Low Rise Residential Development

### AIR QUALITY

For New Low-Rise Residential Development



Development Feature	Required Tier 1	Voluntary Tier 2
<b>Pedestrian Infrastructure</b> Encourage walking as a clean air alternative for all ages and abilities	<b>AQ 1.1 Connectivity</b> Provide safe, direct, universally accessible pedestrian routes, including crosswalks and midblock crossings, that connect the buildings on-site to the off-site pedestrian network and priority destinations.  <b>AQ 1.2 Sidewalk space</b> Provide a pedestrian clearway at least 2.1 m wide to safely and comfortably accommodate pedestrian flow.  <b>AQ 1.3 Pedestrian specific lighting</b> Provide pedestrian-scale lighting that is evenly-spaced, continuous and directed onto sidewalks, pathways, entrances, outdoor waiting areas and public spaces.	
<b>Urban Heat Island Reduction: At Grade</b> Reduce ambient surface temperatures, and provide shade for human health and comfort	<b>AQ 2.1 UHI, Non-roof hardscape</b> <u>All uses:</u> Use a combination of the following strategies to treat at least 50% of the site's non-roof hardscape (including driveways, walkways, courtyards, surface parking areas, artificial turf and other on-site hard surfaces): <ul style="list-style-type: none"> <li>• High-albedo surface materials with an initial reflectance of at least 0.3 or SRI of 29</li> <li>• Open grid pavement with at least 50% perviousness</li> <li>• Shade from existing tree canopy or within 5 years of landscape installation</li> <li>• Shade from structures covered by solar panels.</li> </ul>	<b>AQ 2.2 (Core) Enhanced UHI, Non-roof hardscape</b> Use any combination of the following strategies to treat at least 75% of the site's non-roof hardscape (including driveways, walkways, courtyards, parking areas, artificial turf and other on-site hard surfaces): <ul style="list-style-type: none"> <li>• High-albedo surface materials with an initial reflectance of at least 0.3 or SRI of 29</li> <li>• Open grid pavement with at least 50% perviousness</li> <li>• Shade from existing tree canopy or within 5 years of landscape installation</li> <li>• Shade from structures covered by solar panels.</li> </ul>
<b>Urban Heat Island Reduction: Roof</b> Reduce ambient surface temperatures on or from rooftops	<b>AQ 3.1 Green &amp; cool roofs</b> Use cool roofing materials for 100% of the Available Roof Space.  <b>OR</b> Use a combination of a Green Roof and cool roofing materials for 100% of the Available Roof Space.	

Appendix B: Apply this standard to Residential development under Part 9 of the Ontario Building Code where the project contains 5 dwelling units or more  
Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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# GREENHOUSE GAS EMISSIONS/ENERGY EFFICIENCY



## For New Low-Rise Residential Development

Development Feature	Required Tier 1	Voluntary Tier 2
<b>Minimum Energy Performance</b> Minimize energy demand through efficient building design	<b>GHG 1.1 Energy efficiency</b> Design the building(s) to meet or exceed the energy efficiency requirements of the Ontario Building Code (at least EnerGuide 80 energy efficiency rating).	<b>GHG 1.2 (Core)</b> <b>Enhanced energy efficiency</b> Design and construct building(s) to achieve at least EnerGuide 83 energy efficiency rating or ENERGY STAR.  <b>GHG 1.3 (Core)</b> <b>Energy efficient appliances</b> Where supplied, for each unit, provide ENERGY STAR® labeled refrigerators, clothes washers and dishwashers.
<b>Renewable Energy</b> Reduce demand for non-renewable energy by encouraging local renewable energy production		<b>GHG2.1 (Optional)</b> <b>On-site renewable energy</b> Design and install on-site renewable energy systems to supply at least 1 % of the buildings total energy load from one or a combination of solar PV, solar thermal or wind energy sources <b>OR</b> 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).

Appendix B: Apply this standard to Residential development under Part 9 of the Ontario Building Code where the project contains 5 dwelling units or more  
Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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# WATER QUALITY, QUANTITY AND EFFICIENCY



## For New Low-Density Residential Development

Development Feature	Required Tier 1	Voluntary Tier 2
<b>Construction Activity</b> Ensure protection of water quality during construction and demolition	<b>WQ 1.1 Erosion &amp; sediment control</b>  Follow the <i>Erosion and Sediment Control Guidelines for Urban Construction</i> (Greater Golden Horseshoe Conservation Authorities, December 2006) during construction and demolition activities.	
<b>Stormwater Retention (Water balance)</b>  Minimize stormwater that leaves the site	<b>WQ 2.1 Stormwater balance</b> For sites greater than 0.1 hectares, retain stormwater on-site to the same level of annual volume of overland runoff allowable under pre-development conditions.  <b>WQ 2.2 Stormwater retention &amp; reuse</b> For sites greater than 0.1 hectares retain at least 5 mm from each rainfall through rainwater reuse, on-site infiltration, and evapotranspiration  <b>OR</b> Ensure that the maximum allowable annual runoff volume from the development site is no more than 50% of the total average annual rainfall depth.	<b>WQ 2.3 (Optional) Enhanced stormwater retention &amp; reuse</b>  Retain 10 mm of each 24 hour rainfall event, or 70% of total average annual rainfall depth, for rainwater reuse, on-site infiltration and/or evapotranspiration.
<b>Stormwater Run-Off</b>  Manage and clean stormwater that leaves the site	<b>WQ 3.1 Total suspended solids (TSS)</b>  Remove 80% of total suspended solids (TSS) on an annual loading basis from all runoff leaving the site based on the post-development level of imperviousness.  <b>WQ 3.2 E. Coli reduction</b>  Control the amount of E. Coli directly entering Lake Ontario and waterfront areas as identified in the <i>Wet Weather Flow Management Guidelines</i> .	

Appendix B: Apply this standard to Residential development under Part 9 of the Ontario Building Code where the project contains 5 dwelling units or more  
 Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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## WATER QUALITY, QUANTITY AND EFFICIENCY



### For New Low-Rise Residential Development

Development Feature	Required Tier 1	Voluntary Tier 2
<b>Water Efficiency</b> Reduce demand for potable water	<b>WQ 4.1 Drought-tolerant landscapes</b> Provide drought tolerant plants for at least 50% of the landscaped site area (including at-grade landscapes, vegetated roofs and walls).	<b>WQ 4.2 (Core)</b> <b>Water efficient fixtures</b> Install high efficiency (low flow) fixtures and fittings to meet or exceed the following standards: Average flow rate for all lavatory faucets 7.5 LPM Average flow rate for all showerheads 7.5 LPM Average flow rate for all toilets, including dual flush toilets 4.9 LPF.  <b>WQ 4.3 (Core) Irrigation</b> Design the landscape and irrigation system to reduce the overall irrigation demand by 50%.

Appendix B: Apply this standard to Residential development under Part 9 of the Ontario Building Code where the project contains 5 dwelling units or more  
Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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## ECOLOGY

For New Low-Rise Residential Development



Development Feature	Required Tier 1	Voluntary Tier 2
<b>Urban Forest: Tree Protection</b> Preserve the urban forest	<b>EC 1.1 Tree protection</b> Adhere to the Tree Protection Policy and Specifications for Construction Near Trees for tree protection and barriers during construction.  <b>EC 1.2 Preservation of mature trees</b> Protect and retain all trees that are 30 cm or more DBH (diameter at breast height) from injury or removal.  <b>EC 1.3 Ravine protection</b> Within the Ravine Protected Area, protect and retain trees of all diameters from injury or removal.  <b>EC 1.4 Street tree retention</b> Protect and retain trees of all diameters adjacent to City of Toronto streets and roadways and City-owned Parkland.	
<b>Urban Forest: Increase Tree Canopy</b> Make space for trees; enhance the urban forest	<b>EC 2.1 Tree Planting</b> Provide tree canopy cover distributed across the site area and the public boulevard at a minimum rate of : 1 tree for every 66 m <sup>2</sup> of 40% of the site area.  <b>EC 2.2 Soil volumes</b> Provide all trees planted with a minimum volume of 30 m <sup>3</sup> of high quality soil per tree. The minimum soil volume can be 20 m <sup>3</sup> per tree where the soil volume is shared.  <b>EC 2.3 Trees along street frontage</b> Plant large growing shade trees at the equivalent of 8 to 10m intervals along all street frontages, including along private streets and in the public boulevard.  <b>EC 2.4 Trees in parking lots</b> If surface parking is permitted and provided, plant shade trees throughout the parking lot interior at a minimum ratio of one tree planted for every five parking spaces supplied.  <b>EC 2.5 Watering program</b> Provide a watering program for trees for at least the first 2 years after planting.	<b>EC 2.6 (Optional)</b> <b>Enhanced trees in parking lots</b> If surface parking is provided, plant internal shade trees at a minimum ratio of one tree planted for every three parking spaces supplied.  <b>EC 2.7 (Optional)</b> <b>Enhanced tree planting</b> Provide additional tree planting beyond the development site and the associated public boulevard in locations approved by the City of Toronto Urban Forestry Department at a minimum rate of:  1 tree for every 200 m <sup>2</sup> of 40% of the total site area.

Appendix B: Apply this standard to Residential development under Part 9 of the Ontario Building Code where the project contains 5 dwelling units or more  
 Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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# ECOLOGY

## For New Low-Rise Residential Development



Development Feature	Required Tier 1	Voluntary Tier 2
<b>Natural Heritage: Site</b> Protect, restore and enhance the natural environment and increase biodiversity	<b>EC 3.1 Biodiversity in landscapes</b> Plant the landscaped site area using a minimum of 50% native species (including trees, shrubs, and herbaceous plants).  <b>EC3.2 Ravines and natural areas buffers</b> Where a setback from top-of-bank is required, plant the landscaped area of the setback with native species.  <b>EC 3.3 Invasive species</b> Do not plant any invasive species on properties along streets abutting ravines and natural areas.	<b>EC 3.4 (Optional)</b> <b>Enhanced landscaping</b> Restore or protect a minimum 50% of the site area (excluding the building footprint) or 20% of the total site area (including building footprint), whichever is greater, with native or drought tolerant vegetation.
<b>Bird Collision Deterrence</b> Design buildings to reduce bird collisions and mortality	<b>EC 4.1 Bird friendly glazing</b> Where abutting ravines or natural areas, treat the exterior glazing using a combination of the following strategies: <ul style="list-style-type: none"> <li>• Visual markers provided with a spacing of between 100 and 280 mm apart</li> <li>• Building- integrated structures to mute reflections on glass surfaces.</li> <li>• Treat all glass railings with visual markers provided with spacing of no greater than 100 mm x 100 mm.</li> </ul> <b>EC 4.2 Grate porosity</b> Ensure ground level ventilation grates have a porosity of less than 20 mm X 20 mm (or 40 mm x 10 mm).	<b>EC4.3 (Optional)</b> <b>Enhanced Bird friendly glazing</b> Treat the exterior glazing using a combination of the following strategies: <ul style="list-style-type: none"> <li>• Visual markers provided with a spacing of between 100 and 280 mm apart</li> <li>• Building- integrated structures to mute reflections on glass surfaces</li> <li>• Treat all glass railings with visual markers provided with spacing of no greater than 100 mm x 100 mm.</li> </ul>
<b>Light Pollution</b> Reduce nighttime glare and light trespass	<b>EC 5.1 Exterior lighting</b> Shield all exterior light fixtures to meet the IESNA Full Cutoff Classification or an Uplight rating of 0, to prevent glare and/or light trespass onto any neighbouring properties.	

Appendix B: Apply this standard to Residential development under Part 9 of the Ontario Building Code where the project contains 5 dwelling units or more  
 Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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# SOLID WASTE



## For New Low-Rise Residential Development

Development Feature	Required Tier 1	Voluntary Tier 2
<b>Storage and Collection of Recycling and Organic Waste</b> Facilitate waste reduction and efficient processing	<b>SW 1.1 Waste collection and storage</b>  <u>Residential:</u> Provide an easily accessible dedicated area or areas for the collection and storage of materials for recycling for each dwelling unit. Materials must be consistent with the City of Toronto waste diversion programs.	<b>SW 1.2 (Optional) Enhanced waste collection &amp; storage</b>  <u>Residential:</u> Provide separated cabinet space in all kitchen suites for segregated collection of: <ul style="list-style-type: none"> <li>• Recyclables</li> <li>• Organics</li> <li>• Waste</li> </ul>
<b>Construction Waste Management</b> Reduce waste going to landfill		<b>SW 2.1 (Optional) Construction waste</b>  Recycle at least 75% of non-hazardous construction and demolition debris.
<b>Regional Materials</b> Increase demand for building materials and products extracted, processed and manufactured in the region		<b>SW 3.1 (Optional) Regional materials</b>  Ensure that at least 20% of a project's building materials or products have been extracted, harvested, recovered or processed within 800 km of the manufacturing site If moved by truck and 2400 km if moved by rail.

Appendix B: Apply this standard to Residential development under Part 9 of the Ontario Building Code where the project contains 5 dwelling units or more  
 Note: Tier 2 Core requirements must be met and 3 Tier 2 Optional requirements must be selected

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