



REPORT FOR ACTION

Toronto Green Standard Tier 2 for Capital Projects

Date: February 8, 2016

To: Planning and Growth Management Committee

From: Chief Planner and Executive Director, City Planning Division and Chief Corporate Officer

Wards: All

SUMMARY

This report responds to a request from City Council to undertake a review of the potential application of Tier 2 of the Toronto Green Standard (TGS) to all capital projects undertaken by the City's Agencies, Corporations and Divisions (ACDs). As a result of this review, this report recommends that the City's ACDs be directed to apply the TGS Tier 2 Core performance measures to all new buildings and additions greater than 600 m² commencing with the 2018 ten-year Capital Budget.

Toronto is a recognized leader in sustainable development. Since 2010 all City ACDs have been required to meet the Tier 1 TGS performance measures for new capital projects plus additional requirements for green roofs, renewable energy and bird friendly. No other municipality in Ontario requires a minimum green standard for all new development or incents private developers who meet a higher level of performance. Calgary, Vancouver and Montreal all require higher environmental performance standards similar to Tier 2 for buildings they own and operate.

Application of Tier 2 TGS performance measures to the City's own buildings will demonstrate Toronto's commitment to reducing green house gas emissions and continued leadership in green building and sustainable development. Application of Tier 2 will also reduce future operating costs with anticipated payback of 4 to 10 years.

RECOMMENDATIONS

The Chief Planner and Executive Director, City Planning Division and the Chief Corporate Officer recommend that:

1. City Council direct that the City's Agencies, Corporations and Divisions apply the Toronto Green Standard Tier 2 Core performance measures to all new buildings and additions greater than 600m² GFA, where technically practical and financially feasible, commencing in 2018 with the ten year Capital Budget and Plan within all procurement processes.

2. City Council direct the City's Agencies, Corporations and Divisions to engage a third party evaluator registered with the City of Toronto to certify that all new capital facilities have met the Tier 2 Core performance requirements.

FINANCIAL IMPACT

The estimated cost premium for application of the seven proposed core Tier 2 performance measures and verification costs for new ACD-owned facility would be between 1% and 5%. The current provincial High Performance New Construction (HPNC) incentive can assist with offsetting this capital cost. This estimated cost premium can be considered an investment in future reduced operating costs and reduced green house emissions. Typical payback times for the investment are estimated to be between 4 to 10 years; with the HPNC grant the payback period can be reduced to 3 to 8 years.

Further, property tax supported projects can receive a loan from the City's Sustainable Energy Plan (SEP) capital program to fund the capital costs for project components that will result in operational savings. These operational savings will then be applied to repay the SEP loan.

The SEP program has been in effect since 2013 and is administered by the Environment and Energy Division. The 2017 - 2016 Capital Budget and Plan includes approximately \$20 million in funding for this program, which provides repayable loans for eligible energy savings and/or revenue generation projects to property tax supported ACD's and community-based (including not-for-profit) organizations. The SEP is financed through recoverable debt bearing an interest rate equal to the City's cost of borrowing and a maximum term of twenty years.

Capital funding from the SEP program cannot exceed available annual cash flows within the capital project. Capital funding will need to be identified for any remaining costs associated with Tier 2 requirements that do not generate operating savings that can be applied towards loan repayment.

The Deputy City Manager & Chief Financial Officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

On December 13, 14 and 15, City Council approved the Transform TO Short-term strategies, as identified in Appendix A of the report. The strategies include: 1) supporting energy efficiency in buildings; 2) raising the bar for new construction and community energy planning; 3) advancing sustainable transportation; and 4) leading by example, which sets out, among other actions, improving energy efficiency for City ACD-owned buildings in order to demonstrate leadership in curbing carbon emissions by strategically managing its own assets.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.PE15.1>

On December 16, 17 and 18, 2013, City Council adopted higher bird friendly requirements for all new buildings and those undergoing major renovations owned by the City and its Agencies and Corporations as follows: application of bird friendly treatment to glazing up to 16 metres above grade; and increasing the density of visual markers to 50 mm x 50 mm.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.PG29.12>

On July 16, 17, 18 and 19, 2013, City Council adopted the revised Toronto Green Standard Tier 1 and Tier 2 performance measures and directed that City ACDs 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. In addition, Council directed that new facilities owned by the City's Agencies, Commissions, Corporations and Divisions with a gross floor area greater than 600m² install onsite renewable energy devices to generate the equivalent of at least 5% of the building's modelled annual energy consumption.

At the July 2013 meeting, City Council also requested that the Chief Planner and Executive Director, City Planning and the Chief Corporate Officer 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, Corporations and Divisions.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.PG25.10>

On October 26 and 27, 2009, City Council adopted the 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 voluntary stretch targets with a 20% development charge refund.

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

On March 3, 4 and 5, 2008, City Council amended its policy respecting the installation of green roofs on City and Agencies, Boards, Commissions and Corporations owned facilities by deleting the term 'where feasible' so that the policy reads: "where technically practical, green roofs with a coverage of at least 50% of the building footprint be constructed on all new city-owned buildings, including agencies, boards and commissions."

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2008.EX17.15>

COMMENTS

Transform TO - Climate Change Action Plan

Transform TO is a joint initiative by the City's Environment and Energy Office and the Atmospheric Fund to identify the path to a low carbon future and achieving the City's GHG reduction target. City Council approved the Climate Change Action Plan in 2007 which outlined the City's response to climate change and included a target to reduce GHG emissions by 80% by 2050 with a target of 30% by 2020.

The Transform TO principles include leading by example - the City would accelerate its investment in low-carbon technologies across City-owned facilities and operations

including energy efficiency retrofits, demand management, renewable energy projects in order to demonstrate leadership in curbing carbon emissions. The principles also address raising the bar for new building construction towards net-zero energy emissions.

Actions to meet the intermediate target of reducing emissions by 30% by 2020 was approved by Council at its meeting December 13, 14, and 15, 2017. The short-term actions include improving energy efficiency of existing social housing to drive deep carbon and utility cost reductions, and retrofitting 50% of city-owned buildings to achieve 30% average annual energy savings.

The TGS is an acknowledged part of Transform TO and the Climate Change Action plan and requiring the City's agencies, corporations and divisions to meet the higher performance requirements of TGS Tier 2 would demonstrate the City's leadership in meeting the GHG reductions targets.

Green Energy Act – Reporting on Energy Consumption and GHG Emissions

The Ontario Green Energy Act (Regulation 397/11) requires municipalities to report annually on energy consumption and GHG emissions for all City-owned facilities. The 2014 – 2018 Energy Conservation and Demand Management Plan (released July 1, 2014) identifies opportunities for energy savings in approximately 528 City facilities. Toronto's Annual Consumption and GHG Emissions Report, released to the public in July 2016, provided an analysis of the energy consumption and GHG emissions of 1,070 city sites and buildings. Municipalities are required to report to the Minister of Energy on an annual basis on energy consumption and GHG emissions.

Constructing new City ACD buildings to the higher performance standard of Tier 2 would assist the City in meeting its targets for reductions in energy consumption and GHG emissions under the Green Energy Act.

City-wide Real Estate Review

A June 13, 2016 Staff Report to City Council on the City-Wide Real Estate Review identified the need for a comprehensive plan to co-ordinate all City-owned real estate. Council has adopted in principle the directions to move to a centralized real estate operating model. <http://www.toronto.ca/legdocs/mmis/2016/ex/bgrd/backgroundfile-94332.pdf>. It is anticipated that this new model will address the coordination of capital and operating budgets to identify where operational savings can be realized and the benchmarking and reporting of green performance metrics for City ACDs.

Toronto Green Standard

The Toronto Green Standard (TGS) is a two-tier set of environmental performance measures that promote more sustainable new development. The TGS implements the policy objectives of the Official Plan (<http://www.toronto.ca/planning>) and the Climate Change Action Plan. The TGS integrates 60 environmental performance requirements

to address air quality, GHG emissions and energy efficiency, ecology, and solid waste established through City policy, guidelines and regulations.

Tier 1 is the minimum level and is a requirement for both public and private new development. Tier 1 is implemented through site plan approval under the authority of the Planning Act and City of Toronto Act. Tier 1 requires submission of an energy model demonstrating a higher level of building energy efficiency than required by the Ontario Building Code (OBC).

Tier 2 is a higher level environmental performance that requires meeting Tier 1 plus 7 required ('core') and a minimum of 3 optional higher performance measures to be selected from the TGS checklist. Tier 2 is voluntary but offers a development charge refund to private developments, subject to third party verification. Achieving Tier 2 contributes to LEED (Leadership in Environmental Energy & Environmental Design) Gold Level certification.

The TGS is updated on four-year review cycles with TGS version 3.0 underway. A report on TGS version 3.0 is targeted to be submitted to Planning and Growth Management Committee in Q3 2017, with implementation targeted for January 2018. This report will include updated performance measures as well as a plan to achieve zero emissions from new buildings by 2050.

Since coming into effect on January 31, 2010 the TGS Tier 1 standard has been applied to over 1,000 developments and the Tier 2 standard has been certified for 13 projects with an additional 36 applications enrolled in the Tier 2 DC Refund program. Once all these projects are completed and occupied the annual GHG emissions will be reduced by an estimated 115,205 tonnes of eCO₂ (carbon dioxide equivalent) compared to projects constructed to the OBC.

For more information on the Toronto Green Standard and profiled Tier 2 certified projects see: www.toronto.ca/greendevlopment.

Review of Potential Application of Tier 2

This section reviews the potential of applying Tier 2 to all City buildings and includes research on green standards for municipal buildings in other Canadian cities, assessment of City building data to determine the potential number of projects by Division, estimated costs and consultations with City ACDs.

1. Current TGS Requirements for ACD-owned facilities

In addition to meeting Tier 1, all capital projects of the City's ACDs are required to meet three additional higher performance measures: installation of 50% green roof coverage or requirements of the Green Roof Bylaw, whichever is greater; installation of renewable energy devices to supply 5% of a buildings total energy requirements; and bird friendly glass treatment up to 16 m with visual markers at 50 mm x 50 mm spacing. Tier 2 may be applied at the City's discretion.

A number of City's capital projects are already targeting or achieving higher sustainable design and performance levels and incorporating GHG-reducing technologies such as geothermal and solar photovoltaics. For example, 'Block 31', located in the Railways Lands West and consisting of a community centre, child care centre and two elementary schools is targeting Tier 2. The Tier 2 performance measures include a higher number of visitor bike parking spaces, drought-tolerant and native landscaping, rain water re-use and 25% energy efficiency improvement over the building code.

Some capital projects have also either achieved or are pursuing certification under the LEED rating system. Six Toronto Community Housing buildings and the Toronto Pan Am Sports Centre have achieved LEED Gold. The Pan Am Centre features high energy performance, water efficient fixtures and non-potable rainwater reuse for irrigation. Toronto Police Service buildings for Divisions 11 and 14 have incorporated geothermal heating and cooling systems to achieve LEED Silver. Achieving Tier 2 of the TGS contributes to meeting LEED Gold.

2. Green Standards for City-owned Buildings in Other Canadian Municipalities

Many cities across Canada target higher environmental performance standards for their own capital projects including Calgary, Vancouver, Montreal and Ottawa. A total of 27 municipalities across Canada have implemented the LEED (Leadership in Energy and Environmental Design) rating system for municipally-owned facilities, with the majority setting a Silver or Gold target. Calgary, Vancouver and Montreal all require LEED Gold for new municipal buildings, which is similar to meeting Tier 2 of the TGS.

Vancouver is also pursuing zero emissions for all new buildings and in July 2016 Vancouver City Council endorsed the Zero Emissions Building Plan, which includes a component for constructing all new City-owned and managed projects to the Passive House standard or alternate zero emission building standard using only low carbon fuel sources. The report also requires that a Zero Emissions Policy for New Buildings for all City-owned building projects be developed by 2018.

3. Building Portfolio Data

A review of building permit data for the past eleven years identifies that the city constructs approximately 5 to 6 new buildings per year. Recreation/community centres and outdoor recreation facilities make up the largest proportion of City buildings (one-third) followed by industrial buildings and police, paramedic and fire stations. (see Attachment 1: City of Toronto Agency, Corporation and Division Building Portfolio Data).

The 2016-2025 Capital Budget and Plan and information from the Environment and Energy Division identifies that recreation/community centres, EMS, fire and police stations are expected to continue to be the largest proportion of buildings in the next 10 years, followed by a range of other city buildings.

4. Estimated Costs

The estimated cost premium for application of the proposed seven core Tier 2 performance measures for new ACD-owned facilities is between 1% and 5%. This cost

premium is based on: a review of city-owned facilities which identified a range from .06% to 1.3% premium for community centres, fire stations and EMS buildings; a 2016 study commissioned by the City of Toronto on energy efficiency in buildings; and consultation with the City's Tier 2 program evaluators which identified cost premiums of 2% to 5% for commercial, residential multi-unit and low-rise. The estimated cost premium of the proposed Tier 2 Core performance measures is summarized in Table 1.

Table 1: Estimated Cost

Proposed TGS Tier 2 Performance Measures for ACDs	Estimated % overall cost
1. Urban Heat Island Impact: treatment of additional 25% non-roof hardscape	0% to .05%
2. Energy Efficiency and GHG emission reduction: 12% energy efficiency improvement above OBC	.06% to 5%
3. Energy Efficiency and GHG emission reduction: commissioning and verification to ensure building is performing as modelled	Incorporated into energy cost in 2. above
4. Water Efficiency: Installation of water fixtures and appliances and to achieve 30% reduction in potable water consumption.	No cost premium
5. Water Efficiency: Reduction of potable water use for irrigation by 50%.	No cost premium
6. Light Pollution: Lighting controls: direct rooftop architectural illumination downwards.	No cost premium
7. Light Pollution: Install automatic device that reduces the outward spillage of internal light to reduce night time glare and light pollution	No cost premium
Verification: third party review to verify the application of the Tier 2 performance measures	Incorporated into energy cost in 2. above

The provincial High Performance New Construction (HPNC) incentive assists with offsetting the capital and operating costs associated with energy efficiency. For example, a recent application for an office tower received a \$68,000 grant which reduced the cost premium by 22% and a municipal arena received a grant of \$13,000 which reduced the cost premium by 8%. There is also a savings in operating costs. Typically, these savings result in a payback of 4 to 10 years; with the provincial HPNC that time is reduced to 3 to 8 years.

Further, City capital projects funded by the property tax base are eligible for a revolving loan for installation of energy conservation and demand management, district energy systems, or renewable energy projects under the City's Sustainable Energy Plan Financing for Energy Projects (SEP) program. The program allows applicants to borrow up to 100 percent of the incremental cost of energy projects (the difference between the cost of an energy system and a conventional system). Loans are repayable within a maximum of 20 years and operational energy savings are paid back to the Reserve Fund. Financial feasibility is determined through a business case demonstrating that the project will generate energy savings or revenues sufficient to offset the debt within 20 years. The Environment & Energy Division will also review other available provincial or utility based incentive programs including any potential new funding through the Provincial Cap and Trade program.

5. Consultation with City Agencies, Corporations and Divisions

Currently the City's ACDs are required to meet Tier 1 plus 3 additional performance measures for green roofs, renewable energy and bird friendly. To better understand the implications of applying a higher standard to capital projects and to determine the appropriate Tier 2 performance measures for the range of municipal buildings constructed, consultations were held with capital project managers from City ACDs responsible for new buildings and additions. The group included representatives from Children's Services; Engineering & Construction; Environment & Energy; Facilities Management; Long Term Care; Parks, Forestry & Recreation; Real Estate Services; Solid Waste Management; Toronto Water; Toronto Paramedic Services; Fire Services; Toronto Police Services; Transportation Services; Toronto Community Housing; TTC; and the Toronto Public Library. Two group meetings and a number of individual meetings were held with these representatives. In addition, the following City ACDs were consulted: Affordable Housing Office; Build Toronto; Exhibition Place; Shelter, Support and Housing; Toronto Parking Authority; and the Toronto Zoo.

Overall, there was general support for achieving the higher sustainable performance measures for capital projects and recognition that the City needed to demonstrate leadership in sustainable development and reducing GHG emissions. The main comments related to how to balance the anticipated incremental capital costs against the anticipated lower operating costs. This is discussed in the implementation protocol section below.

Build Toronto supports in principle the application of Tier 2 to City-owned projects and their holdings and will explore inclusion of the application of Tier 2 standards as part of their development agreements with future owners of land (similar to requirements such as affordable housing).

Proposed TGS Tier 2 for Agencies, Corporations and Divisions

As with the TGS Tier 2 for private developments, it is proposed that achieving Tier 2 for capital projects be comprised of 7 required ('core') performance measures. This would mean that capital projects would apply Tier 1, the 3 additional performance measures as previously directed by City Council and the 7 core Tier 2 performance measures. The City's ACDs would be encouraged to meet as many of the optional targets as

possible, but are not required, as private developers are, to choose a minimum number as ACDs are already required to meet the 3 additional enhanced performance measures for green roofs, renewable energy and bird friendly.

For the complete list of performance measures see Attachment 2: Toronto Green Standard Tier 2 for City Agencies, Corporations and Divisions: New Buildings and Additions over 600m².

The proposed core performance measures are supported by the ACDs consulted. This report recommends that Tier 2 be applied to City ACD capital projects, where technically practical and financially feasible, commencing January 1, 2018 and implemented starting with the 2018 Capital Budget and related Requests for Proposals (RFPs), Project Specific Output Specifications (PSOS) for Public-Private Partnerships (P3), or any other procurement process. This timing provides adequate lead time for any necessary adjustments to capital budget requests.

Implementation Protocol

Through consultation with representatives from the ACDs key considerations related to implementation and monitoring were identified. The following points were identified as instrumental to being able to apply the Tier 2 standard to capital projects:

- a. incorporate the incremental cost to build to Tier 2 into the capital budget and procurement process when financially feasible;
- b. identify criteria for what constitutes "not technically practical" (i.e. energy performance for unconditioned spaces such as a warehouse) in an implementation protocol to address process and application;
- c. certify city projects to Tier 2 to ensure that projects are meeting targets set out in the Tier 2 requirements;
- d. provide coordinated access to programs, revenues and other types of support in terms of coordination within and between divisions, and externally;
- e. provide training for building operators to ensure effectiveness of new technologies (e.g. sophisticated HVAC systems, permeable paving) required for higher performance measures;
- f. coordinate the capital and operating budgets to offset higher capital cost with potential lower operating cost; and
- g. use benchmarking and reporting to measure progress within the City and to compare to other municipalities for other green performance indicators in addition to energy and GHG emissions.

These considerations are not unlike implementation matters related to private development for which there is an existing protocol. City Planning and the Environment and Energy Division will jointly develop an implementation protocol that responds to the above listed matters including development of criteria for where 'technically practical' applies, the Tier 2 certification process, potential funding sources and staff training for building operators (see b), c), d) and e) above).

Also in response to a), d) and f) above it is understood that the incremental capital costs for greener developments will be higher of which estimates are summarized in Table 1.

These costs can be significantly reduced when sustainability priorities and design strategies, such as building orientation, are explored early in the design of the project, prior to site plan application. To maximize capital savings, Tier 2 performance measures should be incorporated into the Request for Proposal (RFP), Project Specific Output Specifications (PSOS) for Public-Private Partnerships (P3) or any other procurement process. Capital project managers should incorporate any anticipated costs in their budget forecasts.

Conclusion

It is recommended that, where technically practical and financially feasible, City capital projects for ACDs be required to apply the TGS Tier 2 to all new buildings and additions over 600m². Application of the TGS Tier 2 to City buildings will demonstrate Toronto's continued leadership in green building and commitment to meeting its 80% reduction of GHG levels by 2050. It will also assist the City in addressing the energy and emissions reporting required under the Green Energy Act. Finally, the capital costs to implement the Tier 2 higher performance measures can be offset by the provincial HPNC incentive program, the SEP for property tax-supported ACDs, and anticipated operational savings.

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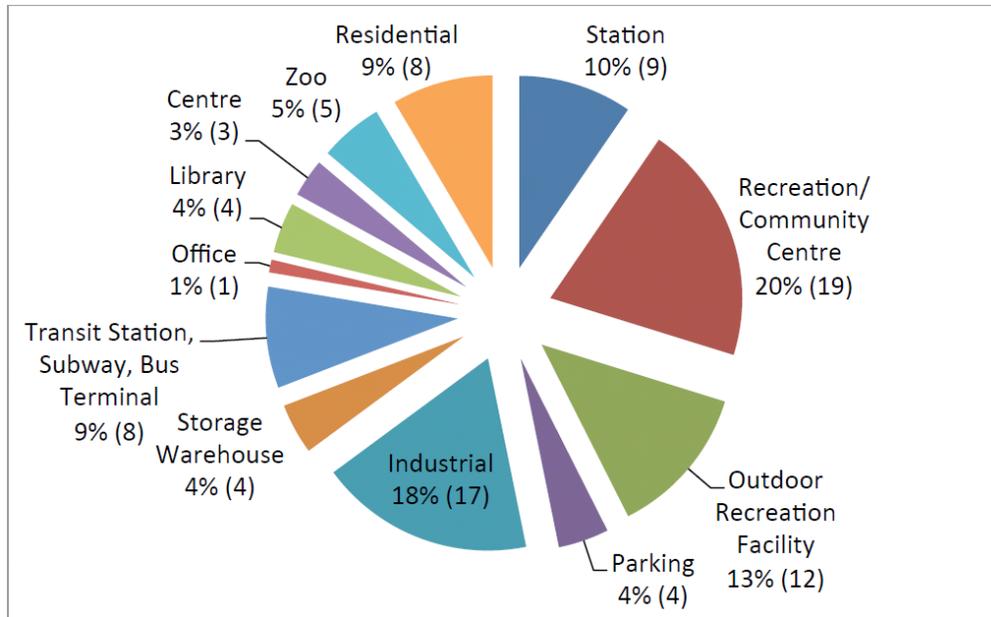
Josie Scioli
Chief Corporate Officer

ATTACHMENTS

Attachment 1: City of Toronto Agency, Corporation and Division Building Portfolio Data
Attachment 2: Toronto Green Standard Tier 2 for City Agencies, Corporations and Divisions: New Buildings and Additions over 600m²

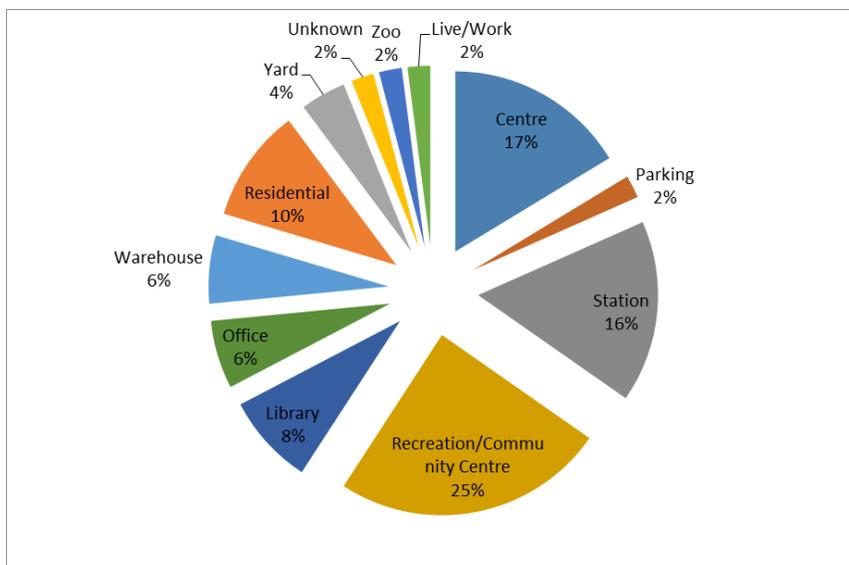
Attachment 1: City of Toronto Agency, Corporation and Division Building Portfolio Data

Figure 1: City of Toronto Building Permits from Jan. 1, 2005 to April 30, 2016



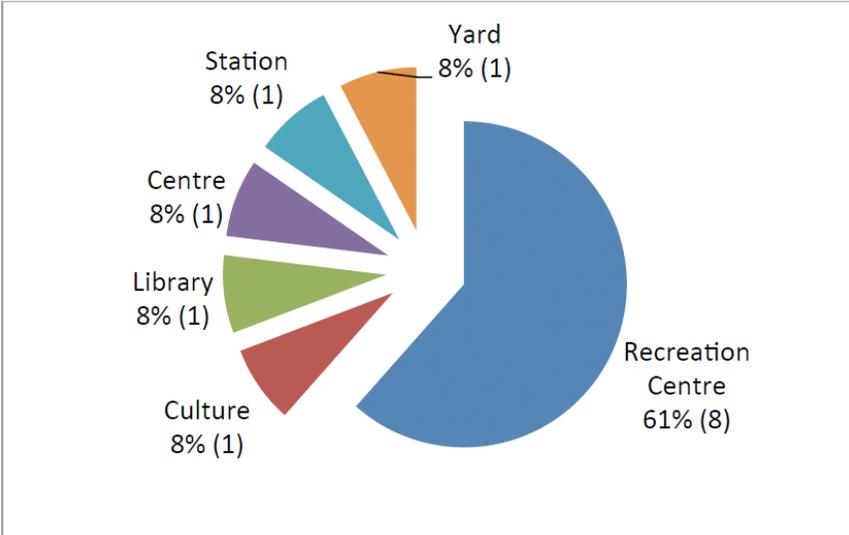
Historical Building Data: Building permit data from the past 11 years shows the top building types include recreation/community centres (20%), industrial buildings (18%), outdoor recreation facilities (13%) and police, paramedic and fire stations (10%).

Figure 2: Current and Projected New Builds from the 2016-2025 Capital Budget and Plan, TREO database for renewable energy projects (March 21, 2016)



Current and Projected Building Data: The 2016-2025 Capital Budget and Plan, and data from the Toronto Renewable Energy Office, Environment and Energy Division show that recreation/community centres (25%), centres, schools, and daycares (17%) and police, paramedic and fire stations (16%) are the top building types.

Figure 3: TREO database for renewable energy projects (March 21, 2016)



Major Renovations and Additions: Data from the Environment and Energy Division indicate that the majority of renovations apply to recreation centres (61%).