Toronto Green Standard Version 4 Training for Capital Project Managers: Frequently Asked Questions

General TGS Questions

1. **Are all new buildings required to meet TGSV4?**
   Back in 2017, City Council directed that City-owned new developments and additions larger than 100 m2 apply Tier 2 levels of TGS performance to their projects through the capital budget and procurement processes, aim to achieve Net Zero emissions on their projects and to engage a third party evaluator registered with the City of Toronto to certify that the TGS requirements have been met.

   On July 16, 2021, City Council adopted Toronto Green Standard (TGS) Version 4 including the City-owned Facilities Standard to be applied to new development applications under the Planning Act commencing May 1, 2022. The City-owned standard is set at a Tier 2 level but contains no reference to performance tiers. TGS v4 provides four pathways to choose from to achieve net zero emissions.

   In December 2021, as part of the Transform TO report, Critical Steps to Net Zero 2040, City Council directed that all City-owned new developments: 1f."continue to ensure that as of 2023, any new equipment being installed in a City facility must contribute to net zero and all new buildings be designed and built to net zero."

   In summary, effective May 1st 2022, TGSV4 is mandatory for City-owned new developments, greater than 100m2 and these projects must be designed and constructed to net zero emissions.

2. **Where can I find TGS related council reports and motions?**
   You can find TGS-related council reports here.

3. **Does the standard requirements include process equipment and energy?**
   The TGS version 4 includes four pathway options to achieve net zero emissions, each require the development of an energy modelling report following the City of Toronto modelling guidelines that set out rules for process energy and other model assumptions and inputs. Please follow the guidelines and contact the Environment and Energy Division (EED) New Construction team for any questions and technical support on how to model your building and what assumptions to include.

   There are considerations for process energy, however it is not "all or nothing". In those cases, the expectation is to reduce emissions as much as possible. The TGS emissions and energy section is focused on buildings itself. There are

considerations regarding process energy use (and related emissions) for industrial types of buildings such as some Toronto Water buildings. That being said, process energy use will have to be addressed before 2040, as Council's Net Zero by 2040 mandate includes all emissions from City operations, including process energy, transportation, and all other sources, not just building related ones.

4. **How does the TGS Version for City-owned compare to private non-residential TGS Tiers?**
   It is comparable to Tier 2 for most of requirements, except for GHGI (emissions index) which is more stringent.

5. **Does the inclusion of these standards apply to the construction of new City-owned parks as well? Has the Parks Operations been updated on these new requirements and what they will be responsible to maintain moving forward?**
   The TGS versions have always applied to parks. When initiating a project, the project manager will review the TGS standards in effect and determine which apply to the project that is what is being changed or built. The TGS version 4 Ecology section is most aligned with sustainable parks development.

6. **Can projects in advanced stages of design be grandfathered to avoid project delays?**
   The TGS version in effect is based on the date of the planning application and locked in on the date of the Site Pan Application (SPA) first submission. There is no grandfathering permitted for public or private projects. For projects that are in process, no changes will be required to TGS versions or net zero requirements. TGS version 4 applies to current projects with planning applications submitted on or after May 1, 2022. However Council has directed that City-owned projects are low carbon through Transform TO and through the CREM's Net Zero Carbon Plan to reduce the need for costly retrofits in the future. This means that project managers should do everything possible to address Transform TO Report recommendation 1f above.

7. **It is difficult to have a green roof and Solar Photovoltaic (Solar PV) together on the roof. Which one will be the key requirement?**
   This should be assessed case by case based on the site requirements and conditions. Under the Green Roof By-Law, the area of required green roof is calculated based on the Available Roof Space (total available roof area minus mechanical equipment, amenity space and renewable energy devices). Renewable energy systems such as Solar PV are excluded in the calculations. However studies have shown and there are examples in the City of Toronto of combined Solar PV and green roofs together as complimentary, and the City is hoping to see more of such combinations.

8. **Many Toronto Water projects done by ECS in Wasterwater plants (such as Ashbridge's Bay) do not have to go through Preliminary Project Review, Zoning Applicable Law Certificate, Pre-application Consultation or Site Plan approval processes and only go through the building permit application. At what point would the City confirm the TGS/NZ requirements applicable to a specific project?**
   TGS applies to most new construction. If the project is still greater than 100 square meters in size it should be designed and built to net zero standards; the net zero emissions requirements need to be clearly outlined in the Request for Proposals (RFP) for design consulting services and implemented during design of the building, even if certain TGS requirements are not applicable to the specific case. Net Zero mandate still applies.

Operational Emissions & Energy

9. **Can projects pursue carbon offsets as it will be more cost effective than on-site renewable energy?**
   If a project follows the Canadian Green Building Council (CaGBC) Zero Carbon pathway, the process for providing and accounting for off-sets is provided as part of that standard for the residual emissions that were not feasible to be eliminated as part of the design. For other projects, EED is currently developing a policy for the purchase of carbon offsets based on leading sources of guidance, including the Oxford Principles for Net Zero Aligned Carbon Offsetting (September 2020) and the UN Race to Zero criteria version 3.0 and expert interpretive guidance version 2.0, the latter of which apply directly to Toronto as a founding member of the Race to Zero campaign. The policy will include the core principle that priority must always be given to reducing real world emissions (e.g. via energy efficiency and fuel switching to on-site renewable energy), with credible offsets only applicable to any residual emissions that are not feasible to eliminate.

10. **Solar PV, Geothermal and other requirements results in more than 20% cost escalation.**
    Reducing natural gas dependency and related carbon tax exposure during operations can also offset the upfront capital costs of renewable energy such as geo-exchange or solar PV. Design should focus on enhancing the thermal performance of building enclosures or envelope upgrades to reduce the sizing of mechanical systems, another cost savings. Alternatives to natural gas-fired systems shall be considered in order to meet council mandates. Overall cost premiums on early projects range between 7-10% on average for net zero buildings above SB-10 base case, and projects that have targeted net zero emissions from the beginning show lower premiums. In part this is related to design efficiencies.

Electric Vehicle Infrastructure

11. **Are there exceptions to Electric Vehicle (EV) charging, bike infrastructure, etc., for small buildings such as public washrooms or pump buildings?**
    The requirement is based in the recently amended City of Toronto Zoning Bylaw which technically applies to "in-building parking lots" rather than at-grade lots. The

TGS reinforces the Zoning Bylaw 25% of spaces in non-residential parking areas should have access to EV outlets for charging, but it encourages for high use City-owned public buildings like community centres and libraries, that they still provide EV charging for visitors and users. Washrooms and bathrooms are not areas where people will go to charge their cars necessarily so this is not required and would be left to the judgement of the project manager. In addition, for EV serviced lots, TGS encourages shared circuits such as 4-way sharing on a 40A circuit using one EV outlet or charging station. This reduced service demands and costs. Please see the detailed specifications in the TGS.

12. **Do EV chargers have to be level 2 chargers, or can they just be ordinary 120V plugs?**
    The City-wide Zoning Bylaw and the TGS define the level of charge required as Level 2 (208-240V). This is also the industry standard. Level 1, 120V is a slow charge that is not suitable for public lots but may be used in some home situations. The Toronto Parking Authority or the Toronto Transit Commission may need to consider Level 3 charging for some applications at their discretion where a faster charge is appropriate.

13. **Is TGS receptive to use of higher quality level 2 chargers?**
    Yes, TGS provides minimum requirements, developments can include higher requirements for their projects as needed.

Tree Planting

14. **Is there a mandate to encourage the use of permeable pavers for parking lots?**
    Permeable pavers are one of the strategies listed in the standard to manage urban heat island at-grade or help address stormwater management and infiltration on-site. Please refer to Ecology section, Landscape & Biodiversity requirements for Green & Cool Paving standards.

15. **What is the requirement for parking lots where there are no buildings, and need to maximize revenue generating parking spaces? The tree planting requirement does not seem feasible.**
    Parking lot requirements are found under the Ecology Section, Tree Planting, EC3.1 found here and in the Greening Surface Parking Lot Guidelines (Specification #9). The standard requires 1 tree/5 parking spaces. Shading of asphalt parking lots is an important to strategy to reduce urban heat island, provide habitat and make lots publically appealing.

16. **Can the shrubs be planted where it is not possible to plant trees?**
    Shrubs are not considered a replacement for tree planting requirements found under EC 1.1. However EC 2.2, On-site Landscaping requirements encourage planting a variety of native and flowering shrub and herbaceous plants.

17. **Are there other measures other than shading of parking lots that can be used for reducing urban heat island?**
    Parking lot surface materials that are light in colour or high albedo (reflective), solar shading, EC 2.1 includes a suite of options to manage/treat hard surfaced areas:

    - High-albedo paving materials with an initial solar reflectance of at least 0.33 or SRI of 29;
    - Open grid pavement with at least 50% perviousness;
    - Shade from existing tree canopy or new tree canopy within 10 years of landscape installation;
    - Shade from architectural structures that are vegetated or have an initial solar reflectance of at least 0.33 at installation or and SRI of 29;
    - Shade from structures with energy generation.

18. **Can solar carports help meet the heat island mitigation requirements?**
    Yes and these have been used in City-building projects already such as the North East Scarborough Community Centre project by Perkins & Will.

Waste and the Circular Economy

19. **TransformTO's waste management target for City-owned buildings is zero waste by 2030. Who will be creating the Waste Management Plans for the new sites? Will it include C&D waste management, as well as managing waste generated by the internal business of the site?**
    Please contact Dolores Maher at dmaher@toronto.ca to ensure both construction and ongoing operating waste management specifications are included early in the RFP/Design process. The TGS includes two requirements for waste management plans for your projects under the Solid Waste section, Construction Waste Management, SW 4.1 and 4.2 with detailed specifications outlining the requirements.

Refuge Area and Back-Up Power Generation

20. **Could you provide resources that define the size of a refuge area and explains the backup power strategy defining what the essential services are?**
    Refer to TGS section GHG 1.2, Specification #1: A refuge area should be a minimum size of 93 square meters (1,000 square feet), and/or 0.5 square meters per occupant and may act as building amenity space during normal operations. Common refuge areas are temporarily shared, lit spaces where vulnerable residents can gather to stay warm or cool, charge cell phones and access the internet, safely store medicine, refrigerate basic food necessities, access potable water and toilets and perhaps prepare food.

21. **Are all city new buildings required to have a stand-by power generator?**
    No. Generally the 72 hour back-up power requirements need to be discussed with the EED first. Please refer to GHG 1.2 Refuge Area and Back-Up Power Generation, Specification #2 defines the system requirements. The intent of this requirement is to add to the City's emergency preparedness by providing safe spaces for residents in the case of a disruption or extended back-up power in the case of a facility that

houses vulnerable people. So there is some discretion that needs to be provided as to the use of the facility and its role in emergency planning and resilience.

Procurement

22. **Would the new requirements add time to the RFP process?**
    Based on current net zero projects, there is minimal additional time added to the process.

23. **Will PMMD set up a roster of Third Party Evaluators? Who defines what the Third Party professional certifications are?**
    Planning is working with PMMD to discuss the best approach to update the list of prequalified third party evaluators. In meantime please use the list of registered TGS project evaluators here.

Budget

24. **How was the 7-10% incremental estimated budget for net zero derived?**
    It is estimated based on feedback received from early projects targeting net zero emissions (including both cost estimations during design as well as tender results for several of them), as well as overall industry observation from the architect.

25. **What if my Client Division does not have the budget to change the envelope and has limited funds to upgrade the HVAC?**
    Council has directed that costs escalations can go back to Council for review and approval to achieve net zero.

26. **Assuming that all practical engineering-technical challenges to achieve all these targets are appropriately addressable, mainly regarding the City owned new buildings TGS requirements for net zero emissions is there financial planning to secure funding? Is there a life cycle cost (LCC) approach consideration in order to assess the total cost of an asset over its life cycle including initial capital costs, maintenance costs, operating costs and the asset's residual value at the end of its life?**
    The 2019 Council Net Zero Buildings Now motion instructed City divisions to bring any extra costs to council for consideration. More recently, in December 2021, Council have instructed City projects that "as of 2023, any new equipment being installed in a City facility must contribute to net zero and all new buildings be designed and built to net zero". Access the 2021 City Council decision here. From now, all new projects need to put it into their base budgets. Doing like for like replacements that do not reduce emissions from buildings is no longer an option.

Existing Buildings

27. Does the TGS apply to existing buildings/retrofits?

This standard applies to new buildings or new additions greater than 100 square meters that are subject to planning approvals. For existing buildings, please refer to CREM's Net Zero Carbon Plan. The goal is to decarbonize existing buildings outside the TGS, CREM is exploring the CaGBC Zero Carbon Building Standard for application to major retrofits and are running a pilot project that will adhere to the EnerPhit standard, which may also be considered. In the interim, design teams should:

1) Instruct project teams to carry a sustainability consultant to advise on the decarbonisation strategies for projects,
2) Prioritize envelope upgrades,
3) HVAC system size reductions, and
4) Remove natural gas combustion systems in favour of alternative heating and cooling systems.

28. If we have a project to change HVAC system in an existing building should it be replaced with electrical heating event though it is not a new building project?

Yes, new HVAC should be electric – as per Council mandate "Continue to ensure that as of 2023, building retrofits and new equipment being installed in a City facility must contribute to net zero and all new buildings be designed and built to net zero emissions."

Contact Information

For technical specifications/guidance on the TGS new construction, contact the following: Lisa King or Shayna Stott, City Planning Division, Toronto Green Standard or sustainblecity@toronto.ca

For Agencies and Corporations OR Toronto Green Standard Buildings Energy, Emissions & Resilience compliance – energyreview@toronto.ca

For City Divisions New Construction & Existing Buildings - netzerobuildings@toronto.ca