

Live Green Toronto: Project Quantification Guidelines

- Use these guidelines to measure and report on all project outcomes including greenhouse gas emission reductions.
- Guidelines are provided for various types of projects; more than one category may apply to your project. All projects must report outreach.
- "Key indicators" and "Calculations" are to be reported to the Toronto Environment Office in your interim and final reports.
- Examples are included for indicators that translate into GHG emission reductions. Assumptions contain the most recent emission factors used by the Toronto Environment Office along with sample calculations.
- Have questions about these guidelines? Please send inquiries to: livegreengrants@toronto.ca.

PROJECT TYPE	KEY INDICATORS / EXAMPLES	ASSUMPTIONS	CALCULATIONS
Local Food <ul style="list-style-type: none"> • Community Gardens Yard Sharing • Balcony Gardening • Local Food Promotion 	<ul style="list-style-type: none"> • Number of new community gardens created • Number of balcony gardening kits distributed • Area of garden(s) (meters squared) • Weight of produce produced (kg) <p>Example: The community group harvested 26 kg of local food from their gardens.</p>	<p>Assumptions to calculate greenhouse gas emissions:</p> <ul style="list-style-type: none"> • Local food items travel an average of 30 km from farm to plate and generate 0.008 kg eCO₂/kg food consumed • Imported foods travel an average of 4497 km and generate an average of 1.3 eCO₂/kg food 	<p>GHGs reduced from local food production (kg) = (1.3 x kg of local food) – (0.008 x kg of local food)</p> <p>Example, 26 kg of food produced: = (1.3 x 26 kg) – (0.008 x 26 kg) = (33.8) – (0.208) = 33.592 = 34 kg of eCO₂ reduced</p>
Greening Initiatives <ul style="list-style-type: none"> • Tree Planting • Re-Naturalization • Biodiversity 	<ul style="list-style-type: none"> • Number of trees planted (<i>specify tree type and age, sapling versus mature trees</i>) • Number of shrubs/flowers planted • Area naturalized (square meters) <i>indicate previous existing condition (eg. Asphalt)</i> <p>Example</p>	<p>Assumptions to calculate greenhouse gas emissions:</p> <ul style="list-style-type: none"> • The average tree in Toronto sequesters approximately 5 kg of carbon/year for an average tree size of 16.3 cm in diameter¹ • TEO* assumes that each tree planted through LGT will have a high percentage 	<p>GHGs reduced from planting trees (kg)</p> <p>Example: 125 trees planted: = 125 trees x 5 kg C/year = 625 kg C/year sequestered</p>

¹ Rike Burkhardt, Planner, Urban Forestry, April 26, 2010 from research found in UFORE

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	<ul style="list-style-type: none"> The community group has planted 125 trees. 	<p>of survival although this has not yet been verified</p> <ul style="list-style-type: none"> TEO* assumes that the carbon sequestered by trees is not available for eCO₂ generation and therefore reduces GHG emissions by this amount 	
<p>Energy</p> <ul style="list-style-type: none"> Renewable Energy: Geothermal, Solar PV and Wind <ul style="list-style-type: none"> Audits Feasibility Installation Solar Hot Water Energy Conservation <ul style="list-style-type: none"> Audits Retrofits 	<ul style="list-style-type: none"> Number of renewable energy installations (<i>specify type and size</i>) Capacity of renewable energy installation(s) (kW) CO₂ avoided from solar hot water installations Number of energy audits If feasible, compare utility bills over a year (or per similar seasons) pre and post retrofit to determine net energy savings <p>Example:</p> <ul style="list-style-type: none"> Based on utility bill data, retrofits to the building have saved 126,000 kWh of electricity and 23,000 m³ of natural gas. 	<p>Assumptions to calculate greenhouse gas emissions:</p> <ul style="list-style-type: none"> 1 kWh electricity saved = 187 grams of eCO₂ reduced² 1 m³ of natural gas saved = 1879 grams of eCO₂ reduced³ 	<p>GHGs reduced from energy savings of electricity and natural gas = savings from electricity + savings from natural gas</p> <p>Example: 126,000 kWh of electricity and 23,000 m³ of natural gas saved:</p> <p>= (126,000 kWh x 187 g eCO₂/kWh) + (23,000 m³ natural gas x 1879 g eCO₂/m³) = (23,562,000 grams eCO₂) + (43,217,000 grams eCO₂) = 66,779,000 grams eCO₂ = 66,779 kg eCO₂</p>

² Using 2008 number from NIR with 10% transmission loss

³ Using 2008 number from NIR

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<p>Water</p> <ul style="list-style-type: none"> • Rainwater Harvesting • Water Conservation • Stormwater Diversion <ul style="list-style-type: none"> • Green roofs, permeable paving, • Education 	<ul style="list-style-type: none"> • Number of rainbarrels installed (<i>indicate size L</i>) • Quantity of rainwater harvested (L) • Quantity of stormwater diverted (L) • Drinking water conserved (L) • Area of green roof (meters squared), also indicate year green roof was installed <ul style="list-style-type: none"> • Area of permeable surface created (meters squared) <p>Examples</p> <ul style="list-style-type: none"> • The community group has conserved 13,450 L of water. 	<ul style="list-style-type: none"> • Each m³ of water saves 1.2 kWh of electricity⁴ • 1 kWh of electricity is equal to 187 grams of eCO₂ (carbon dioxide equivalents)⁵ • There are 1000 grams (g) in a kilogram (kg) • There are 1000 litres (L) in a cubic metre (m³) 	<p>Two common units are used to report water conservation are:</p> <ol style="list-style-type: none"> a. cubic metres of water (m³) b. litres of water (l or L) <p>The unit that we use to calculate GHG emissions is m³ so if your measurement is taken in litres, you must convert to m³.</p> <p>To convert litres to m³, divide by 1000. So, for the example above 13,450 L / 1000 = 13.45 m³.</p> <p>Then,</p> <p>GHGs reduced from water conservation/diversion (kg) = 13.45 m³ x 1.2 kWh x 187 grams eCO₂/kWh = 3018.18 grams eCO₂ = 3.01818 kg eCO₂ now round decimal = 3 kg eCO₂</p>
<p>Waste</p> <ul style="list-style-type: none"> • Litter collection (area clean ups) • Waste Diversion <ul style="list-style-type: none"> ○ Recycling ○ Composting ○ Reuse 	<ul style="list-style-type: none"> • Amount of trash picked up/collected (kg) • Amount of waste diverted from the waste stream (kg) – through encouraging reuse, recycling or compost <ul style="list-style-type: none"> ○ Breakdown waste into categories: Food waste (kg), paper recycled (kg), glass recycled (kg), etc. • Amount of compost produced (kg) 	<ul style="list-style-type: none"> • n/a – provide raw data only, TEO staff will assist with calculations 	<ul style="list-style-type: none"> • n/a

⁴ This is a Toronto specific measurement

⁵ Taken from NIR with addition of 10% transmission losses for year 2008

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<p>Transportation</p> <ul style="list-style-type: none"> • Sustainable transportation promotion <ul style="list-style-type: none"> – Biking, Walking, Carpooling, Transit, etc • Cycling safety/awareness/repair 	<ul style="list-style-type: none"> • Number of people converted from single occupant vehicles (SOV) • VKT reduced and what type of vehicle they drive (compact van, car, truck, SUV, etc) • Number of bicycles donated • Mode shift (eg. % single occupant vehicle, % carpool, % transit, % cycling, % walking, % telework) measured and reported for before and after project 	<ul style="list-style-type: none"> • n/a – provide raw data only, TEO staff will assist with calculations 	<ul style="list-style-type: none"> • Please contact Toronto Environment Office staff to discuss appropriate measures and how to collect data and quantify results.
Outreach: Report for All Projects			
<p>All projects are to track these indicators where applicable.</p>	<ul style="list-style-type: none"> • Number of Media Impressions – print, radio and TV circulation/listeners/viewers • Number of (new) Website hits • Number of (new) Social Media followers/Members/Blog Readers • Number of Outreach Materials (brochures, etc.) Distributed • Number of Events Attended • Number of Events Hosted <ul style="list-style-type: none"> • Number of attendees at event • Number of Workshops held <ul style="list-style-type: none"> • Number of workshop participants • Number of Volunteers Trained/Engaged <ul style="list-style-type: none"> • Volunteer Hours • Number of Households/Residents engaged 	<ul style="list-style-type: none"> • n/a 	<ul style="list-style-type: none"> • n/a