



REGION OF WATERLOO

CORPORATE RESOURCES Facilities Management and Fleet Services

TO: Chair Tom Galloway and Members of the Administration and Finance Committee

DATE: May 29, 2012

FILE CODE: D06-80

SUBJECT: ENVIRONMENTAL SUSTAINABILITY PROGRESS REPORT: 2011 ACHIEVEMENTS

RECOMMENDATION:

For Information.

SUMMARY:

This progress report provides a summary overview of the Region of Waterloo's activities and achievements during the year 2011 with respect to the goals of the Environmental Sustainability Strategy. The first progress report on strategy implementation was provided to Regional Council on February 15, 2011 (CR-FM-11-004). This current status report places a greater emphasis on measurable improvements and achievements in relation to the strategic environmental goals. For example, in 2011, the Region reduced 7756 tonnes of greenhouse gas emissions from its corporate operations. At the community scale, an estimated 91 million litres of water consumption was reduced last year through local uptake of a number of water efficiency programs. Major actions for the Region's Sustainability Office planned for the 2012 - 2013 time period are also included in this report.

REPORT:

Sustainability Strategy Background

The Region of Waterloo's Sustainability Strategy established an organization-wide Environmental Policy Statement which commits the Region to incorporate environmental considerations in its decision-making and to foster community stewardship of the natural environment (CR-FM-09-012, dated May 12, 2009). The application of this policy is geared towards Regional *corporate* operations as well as *community*-oriented programs and services provided by the Region. The Environmental Strategic Framework aims to:

- Optimize the efficient use of natural resources;
- Prevent pollution, and;
- Protect and enhance the environment.

The Strategic Framework includes five environmental goals which address air, water, waste, land and culture. The goal statements and recent progress achieved in these five areas are included in the next section of this report.

One of the main responsibilities of the Region's Sustainability Office is to provide consolidated monitoring and public reporting of progress on the Region's environmental goals and activities. In addition, Sustainability staff work with the Region's departments in applying the Environmental Policy towards achieving continuous improvement in the five environmental goal areas identified in the strategy. This includes the development and maintenance of a variety of Environmental Progress Indicators for both *corporate* initiatives applied to the Region's operations as well as *community*

oriented programs such as transit ridership and waste diversion (CR-FM-09-001, dated January 6th, 2009). The Sustainability Office coordinates progress monitoring in this regard in collaboration with staff across all departments including data collection, analysis and verification along with preparation of specialized reports on greenhouse gases (GHG) for example. Historical environmental achievements of the Region of Waterloo were reported during the development of the Sustainability Strategy in a reference document entitled *Past and Present Environmental Initiatives: Towards Regional Environmental Excellence* and is available on the Region’s environment web pages.

Progress Monitoring 2011

Following the approval of the Sustainability Strategy, the first progress report provided to Regional Council addressed updates on strategy implementation and other related achievements within the May 2009 – December 2010 timeframe (CR-FM-11-004, dated February 15, 2011). This current status report places a greater emphasis on measurable improvements and achievements in relation to the Region’s strategic environmental goals. The following five tables include highlights of recent accomplishments achieved up to year-end 2011 for each of the corresponding environmental goals established within the Sustainability Strategy.

Table 1. Air and Energy: Effectively use and manage energy resources and reduce greenhouse gases and other air emissions.	
Scope	2011 Progress / Achievement
Corporate	A corporate-wide GHG emission inventory (using 2009 as base year) and action plan for Regional operations was completed and approved by Regional Council in 2011. In implementing the corporate action plan last year, over 7700 Tonnes of GHG emissions were reduced from Regional operations at the landfill, energy efficiency in buildings, fuel efficiency in vehicle fleet and a reduction in staff business travel as well as completion of six solar photovoltaic rooftop installations which produce 255,000 MWh of clean renewable energy annually (see Appendix A). This is a positive step towards reaching the Region’s 10 year GHG reduction target of approximately 40,000 tonnes of emissions by the year 2019.
Community	A Climate Collaborative was formally established to develop a community-wide GHG Action Plan as part of the Region’s commitment to the FCM partners for Climate Protection program. The local collaborative involves Sustainable Waterloo Region, REEP Green Solutions, area municipalities, local utility providers and representatives from local post-secondary institutions. Details of progress on this initiative are included in a companion report CR-FM-012-009.

Table 2. Water: Protect the quality and quantity of our water resources	
Scope	2011 Progress / Achievement
Corporate	Regional road salt applications have been at or below the target set in 2004 six of the last eight years. In 2011, 23 Tonnes of road salt per 2-lane km were applied, below the target of 25 Tonnes. This is influenced by both winter weather conditions as well as salt applicators being trained through the Region’s Snowfighter program which balances road safety with protection of our local water quality.
Community	An estimated 91 million litres of community water consumption was reduced through a variety of Water Efficiency Master Plan programs (e.g. water efficient technology in businesses, aerators, shower head and toilet replacements). This continues the trend of decreasing community water consumption over the past decade (see Appendix B) which also includes the impact of the water conservation by-law and improvements in new building construction.

Table 3. Waste and Material Resources: Reduce the amount of waste requiring landfill and the demand and impact on natural resources	
Scope	2011 Progress / Achievement
Corporate	<p>Within Regional operations:</p> <ul style="list-style-type: none"> - 18,369 tonnes of reclaimed asphalt was used in road re-paving projects which reduces the need for new aggregate resources; - use of recycled “paperless” restroom hand towels within Regional buildings saved 700 trees; - recycled 7179 fluorescent light tubes to recover 1743 kg of glass, metals, phosphor and mercury; - 3750 square yards of environmentally friendly carpet was installed in Regional administration buildings which includes lower environmental impact throughout the lifecycle of the product (from raw material extraction to end of product life);
Community	<p>Total residential, business and institutional waste going to Regional landfill was 22% lower in 2011 (209,900 Tonnes) compared to 2006 (270,391) even though population has increased by 45,000 people during that time period (see Appendix C). The Region’s Green Bin, e-waste ban and other diversion programs provided with several different partners such as Habitat for Humanity and Recycles Cycles has helped achieve this reduction.</p>

Table 4. Rural and Urban Land: Manage and shape land use to ensure a liveable, healthy and sustainable Waterloo Region.	
Scope	2011 Progress / Achievement
Corporate	<p>The Region planted over a thousand native species trees and shrubbery in 2011 along side of Regional roads, on closed portions of the landfill as well as in various grounds surrounding Regional facilities. The Region is also responsible for managing 16 forests throughout the community. Native species of trees and healthy forests help contribute to biodiversity, provide habitat and shading, can prevent soil erosion as well as aid in improving air quality and removing GHGs from the atmosphere.</p>
Community	<ul style="list-style-type: none"> - Transit oriented development in urban areas, on-going service improvements to the transit network including new and more direct routes, increased frequency and hours of service, and transportation demand management programs such as individualized marketing have assisted in increasing Grand River Transit ridership in 2011 by approximately 9.2% compared to 2010 and has doubled since the Region assumed operations in 2000. A previous ridership target of 19.7 million to be achieved by the year 2016 was met by year-end 2011. A new ridership target has been established at 53.6 million by the year 2034 as part of the recently updated Regional Transportation Master Plan (see Appendix D); - The Regional Official Plan targets a minimum of 45% of all new residential development to be achieved within designated growth areas each and every year by 2015 onward. This target has been surpassed within the region during four of the past six years with an average of 46.7% since 2006. In 2011, 55% of new development was achieved within these designated growth areas.

Table 5. Sustainability Culture: Foster stewardship of the natural environment and encourage behaviours to reduce environmental impact	
Scope	2011 Progress / Achievement
Corporate	<ul style="list-style-type: none"> - Since 2010, approximately a dozen initiatives proposed by Regional staff have been funded by the Corporate Sustainability Fund including projects that reduce staff business travel, improve fleet fuel efficiency, planting of trees, naturalizing child care play space, reduce waste from Regional buildings as well as the completion of a corporate GHG reduction plan. - As part of the Environmental Champions program, 80 trees were planted near the Grand River in Woolwich Township to acknowledge Regional staff who incorporate environmental sustainability into their daily lives either at work, on the road or at home. Woolwich's Mayor and the Regional CAO joined in the event during spring 2011. A new site is being established for annual staff tree planting events for this ongoing employee recognition program.
Community	<ul style="list-style-type: none"> - The Environmental Stewardship and Community Sustainability grant programs were integrated into a new Community Environmental Fund. The 2011 call for proposals recently led to an allocation of \$270,000 towards 28 different projects that will address all five environmental goals of the Sustainability Strategy (results available in 2013). - Waterloo Region placed 1st in Ontario and 2nd nationally in the annual Commuter Challenge including a 94% increase in local participation.

These highlights are examples of the areas where progress is being made however there is additional information available on the internet regarding both corporate and community sustainability related initiatives. An on-line interactive database was established in 2009 to monitor progress on the Region's Strategic Plan including those related to the Environmental Sustainability goals. Recently the website was revised to focus solely on the Region's corporate and community Environmental Progress Indicators. The new site is available at the following internet address: <http://regionofwaterloo.fuseforward.com>. Several indicators still need to be further developed or updated which is an ongoing process as information becomes available. The goal of this site is to publicly communicate the environmental impact and subsequent improvements of both the Region as an organization and at the community scale.

Corporate Environmental Performance

Many environmentally related success stories come from the local community's participation in the Region's various programs and services such as transit, blue/green waste diversion bins and the Rural Water Quality Program to name just a few. The Region also strives to demonstrate that it is making parallel efforts within its operations in those areas where we ask the community to help reduce environmental impact. In terms of measuring the results of this effort, the Region monitors its corporate environmental performance through progress indicators which are also made publicly available on the previously mentioned website. As part of the ongoing development of this public database, informative data is still being compiled within 2012 for future indicator reporting including areas such as GHGs, green purchasing practices, corporate-wide waste diversion and the internal Travelwise program for Regional staff. A summary overview of some recent progress in this regard is provided below.

Preliminary analysis on staff business travel indicate that despite expanding services, staff business mileage was reduced by over 8% from 2010-2011, a reduction of 177,000 km. Approximately 15,000 km of this reduction was achieved from implementing two staff initiated projects funded by the internal Corporate Sustainability Fund where technology is employed to enable Regional staff to reach more

stakeholders and clients without as much need for vehicle travel (e.g. videoconferencing). Another outcome of utilizing the Corporate Fund was to improve the Region’s internal recycling and organic waste diversion. Following a comprehensive staff education program in 2009-2010, a 17% increase in recycling in four of the Region’s largest buildings was achieved in 2011 from using high profile multi-sort bins with educational signs which resulted in diverting an additional 7400 kilograms of waste from going to the landfill compared to waste diversion figures from the previous year. Other initiatives to reduce packaging waste are being explored by the Region’s internal Green Purchasing Committee.

The Region has publicly reported its consumption of utilities and fuel for a number of years. This is an important area to monitor in terms of environmental sustainability due to the demand that energy and water consumption places on natural resources along with the associated air and GHG emissions from the combustion of non-renewable energy sources. The Region’s consumption of electricity, natural gas, water and fuel is used to support and deliver a wide variety of community oriented programs and services and reflect the environmental efficiency of our corporate operations in delivering those services. They are briefly summarized here in relation to population growth and expansion of Regional facilities and fleet.

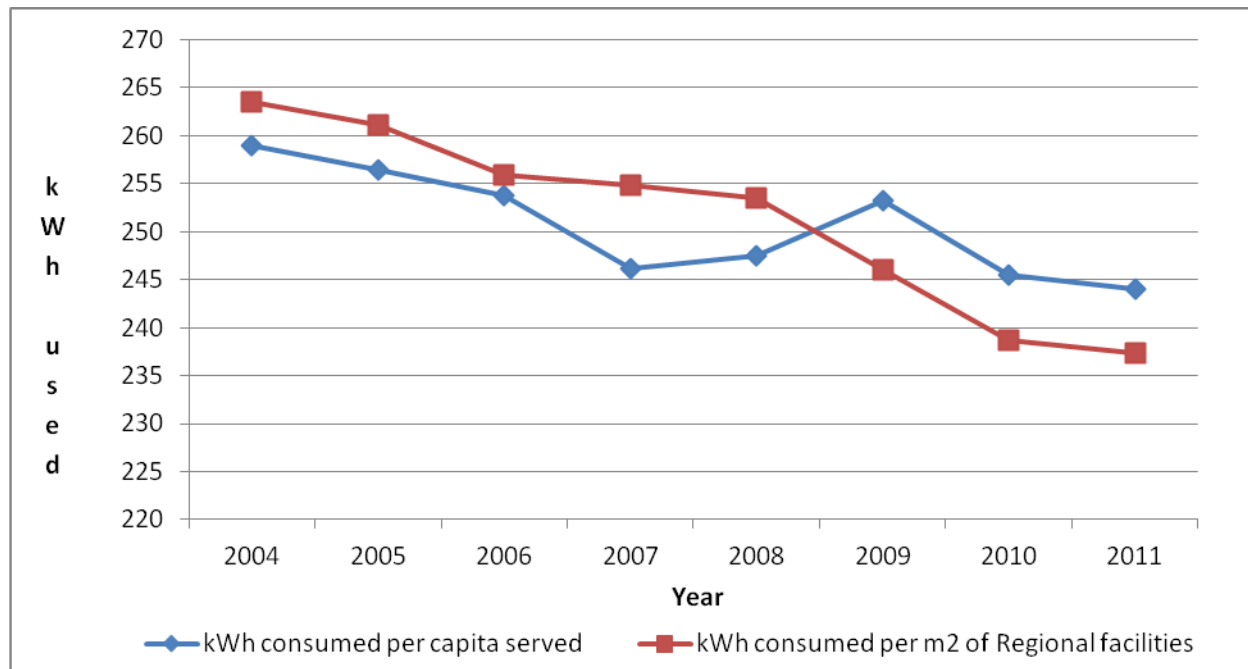
The growth in local population has influenced associated expansion of programs and services along with increases in Region’s facilities and fleet. For example, the population of Waterloo Region has grown by 11.3% from 2004 – 2011 whereas the building area of Regional facilities has grown 12% during this same time period. Similar growth has occurred within the Regional vehicle fleet during recent years in areas such as Transit and Police in order to better serve our growing community. Subsequent trends in the Region’s total consumption of electricity and water within its operations have shown increases over the past several years whereas natural gas consumption used for heating has decreased largely due to a number of recent warm winters (see Table 6 below). The increase in water consumption in Regional facilities is due to some recent prolonged cases of flushing water lines and occurrences of leaks during a few construction projects. Table 6 also shows that energy consumption per square meter (m2) decreased during this time due to energy conservation efforts and LEED construction standards.

Table 6. Percentage change in Region of Waterloo’s utility use 2004 - 2011

Utility Consumption	Total Consumption*	Consumption / m2 of Region’s administrative building area
Electricity	+ 4.9%	- 7.4%
Natural gas	- 8.7%	- 18.5%
Water	+ 13.2%	+ 1.1%

*includes electricity consumption in traffic signals, street lights and water service facilities

Figure 1 illustrates the improved efficiency in consumption of electricity in relation to the increased demand for services and growth of Regional infrastructure from 2004 - 2011. In other words, Regional operations and services are improving their management of electricity use whilst providing power to a larger area of building space and services to an increased local population. However, improvements are still needed as increased consumption occurred in 2011 for electricity (+2.8%), natural gas (+7.7%) and water (+6.3%) even though the Region’s building area only increased by 0.6% last year. Plans are being developed to identify additional initiatives that could improve the Region’s efficient use of utilities which will include a resource strategy to support their implementation. These include an energy efficiency plan for wastewater facilities, and energy management plan for Regional buildings based on a number of building audits that are being conducted as well as the expansion of successful pilot projects funded by the Corporate Sustainability Fund.

Figure 1. Efficiency of Electricity Use in serving the Population of the Region: 2004 - 2011

The overall Regional fleet grew by 65 vehicles from 2009 – 2011 and used approximately half a million more litres of fuel. However, there have been some minor improvements in fuel efficiency during this time due to efforts in greening a small portion of the fleet. For example, approximately two dozen replacement vehicles were purchased using life-cycle costing to ensure that they were right-sized (appropriate vehicle class/specifications for the required workload) and fuel-efficient which in turn helped save approximately 40,000 litres of fuel and reduced 100 tonnes of GHG in 2011. Much more progress can be made in this regard as this approach is expanded throughout the Regional fleet along with pilot projects such as idling reduction technology being assessed in 2012.

An inventory update on the Region's total corporate GHG emissions, including all energy and fuel consumption, will be provided to Regional Council at a later date as a part of the ongoing progress monitoring towards the Region's reduction targets. Although efficiency improvements are useful in monitoring incremental progress, in terms of long-term sustainability, alternatives to natural resource use need to be considered more widely across Regional operations in terms of greater use of renewable energy and water supplies.

Planned Actions: 2012 - 2013

Major priorities of the Sustainability Office over the next year include:

- continued implementation of the Region's GHG reduction plan along with associated progress reporting;
- completion of a community-scale GHG action plan with a variety of local stakeholders which includes establishing reduction targets for the year 2020;
- assisting the Region's Energy Conservation Office in preparing for compliance with Ontario's Green Energy Act (energy and GHG reporting along with development of action plans);
- assisting in the expansion of the Region's green purchasing practices, and;
- aligning the Region's asset management and infrastructure master plans with the Sustainability Strategic Framework along with incorporation of adaptation considerations regarding emerging changes in Waterloo Region's climate.

The next consolidated annual sustainability report reflecting Regional environmental achievements and major related activities will be provided in the spring of 2013.

CORPORATE STRATEGIC PLAN:

Focus Area 1 - Protect and Enhance the Environment:

- Objective 1 – Integrate environmental considerations into the Region’s decision-making
- Objective 2 – Reduce Greenhouse gas emissions and work to improve air quality
- Objective 3 – Reduce the amount of waste going to landfill
- Objective 4 – Protect the quality and quantity of our drinking water sources
- Objective 5 – Restore and preserve green space, agricultural land and sensitive environmental areas

Focus Area 5 - Service Excellence

- Objective 6 - Strengthen and enhance partnerships with area municipalities, academia, community stakeholders and other orders of government

FINANCIAL IMPLICATIONS:

Costs of the initiatives addressed within this report have been accommodated within existing departmental budgets.

OTHER DEPARTMENT CONSULTATIONS/CONCURRENCE:

Development of this report included interdepartmental feedback via staff consultation as well as the Environmental Leadership Committee.

ATTACHMENTS:

- Appendix A: Summary of Estimated Corporate GHG Emission Reductions from Region of Waterloo Operations - Projects Completed in 2011
- Appendix B: Community Water Consumption in Waterloo Region, 1999 - 2011
- Appendix C: Community Waste Landfilled in Waterloo Region, 1991 – 2011
- Appendix D: Grand River Transit Ridership, 2000 – 2011

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APPROVED BY: *Gary Sosnoski*, Commissioner, Corporate Resources

APPENDIX A:

**Summary of Estimated Corporate GHG Emission Reductions
Region of Waterloo Operations - Projects Completed in 2011**

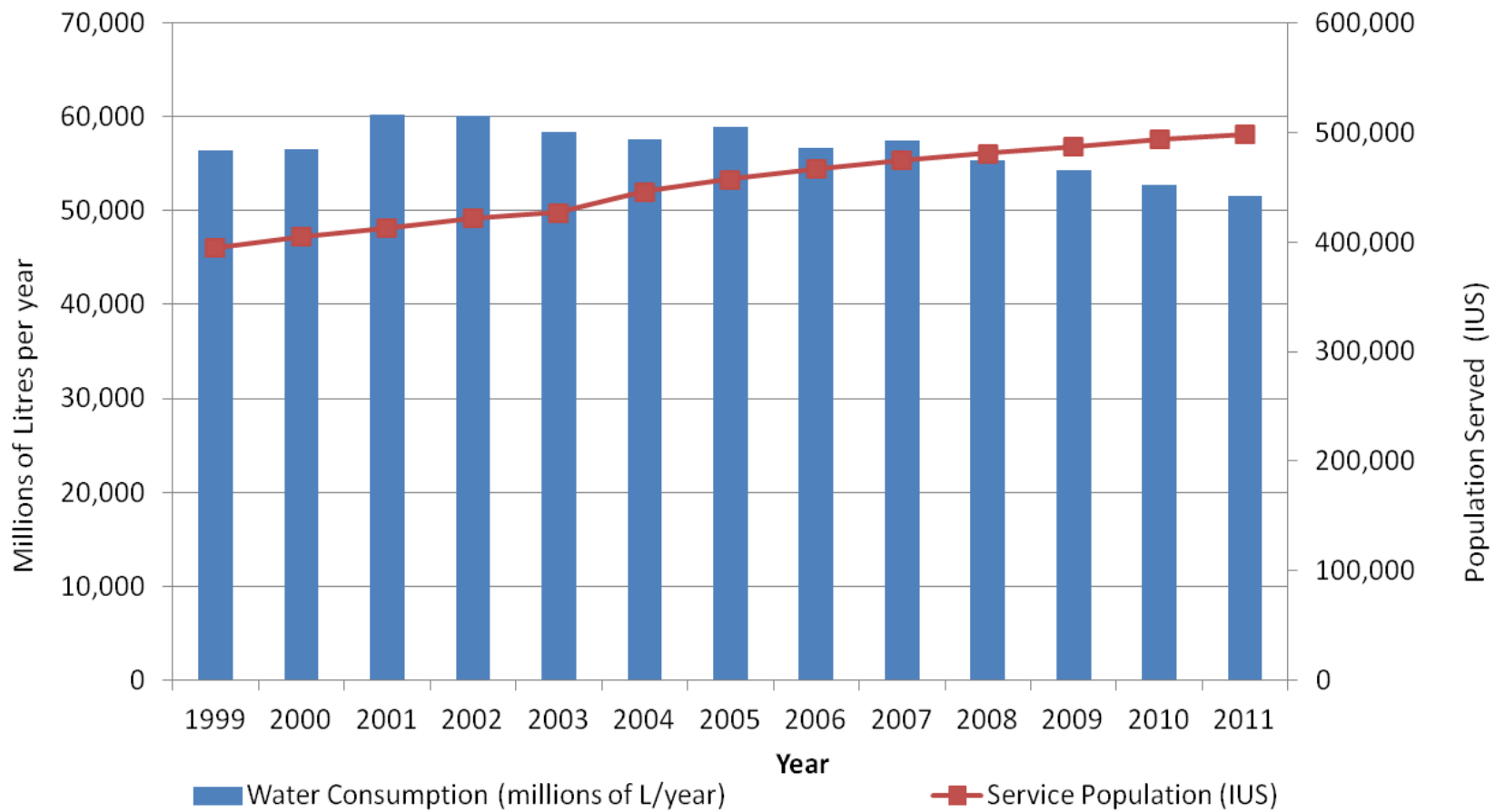
Emission Reduction Description	GHG Emissions Reduced Annually (Tonnes CO₂e)^A	Annual \$ Savings or Revenue^B
Methane destruction at landfill – solar flaring	4027	not applicable
Methane reduction from landfill - Green Bin Organic Waste diversion	3428	not applicable
Rightsizing fleet (smaller, more fuel efficient vehicles)	104	\$40,000 fuel savings
Purchase, and put into operation, six new Hybrid-electric diesel transit buses (based on comparison with conventional GRT bus)	74	\$ 27,600 fuel savings
Energy efficiency lighting and equipment retrofits (includes furnace replacements in housing)	56	\$45,000 energy savings
Completion and operation of solar photovoltaic installations on 6 Regional Buildings	27	\$155,800 Feed-in-Tariff revenue
Reduction in Employee Commute and Business Travel (Staff Travelwise program = 20 T, Commuter Challenge =2 T; initiatives reducing staff business travel* = 4 T;)	26	\$7,000 saved in mileage expense* *(from business travel)
Green Energy Purchase for LEED Building	14	cost neutral
Annualized Totals	7756 Tonnes CO₂e*	Savings: \$119,600 Revenue: \$155,800

Note A: CO₂e = Carbon Dioxide (CO₂) Equivalentents which include CO₂, Methane (CH₄) and Nitrous Oxide (N₂O)

Note B: Revenue and energy savings dollar values are not net of the Region's capital investment in each initiative.

APPENDIX B:

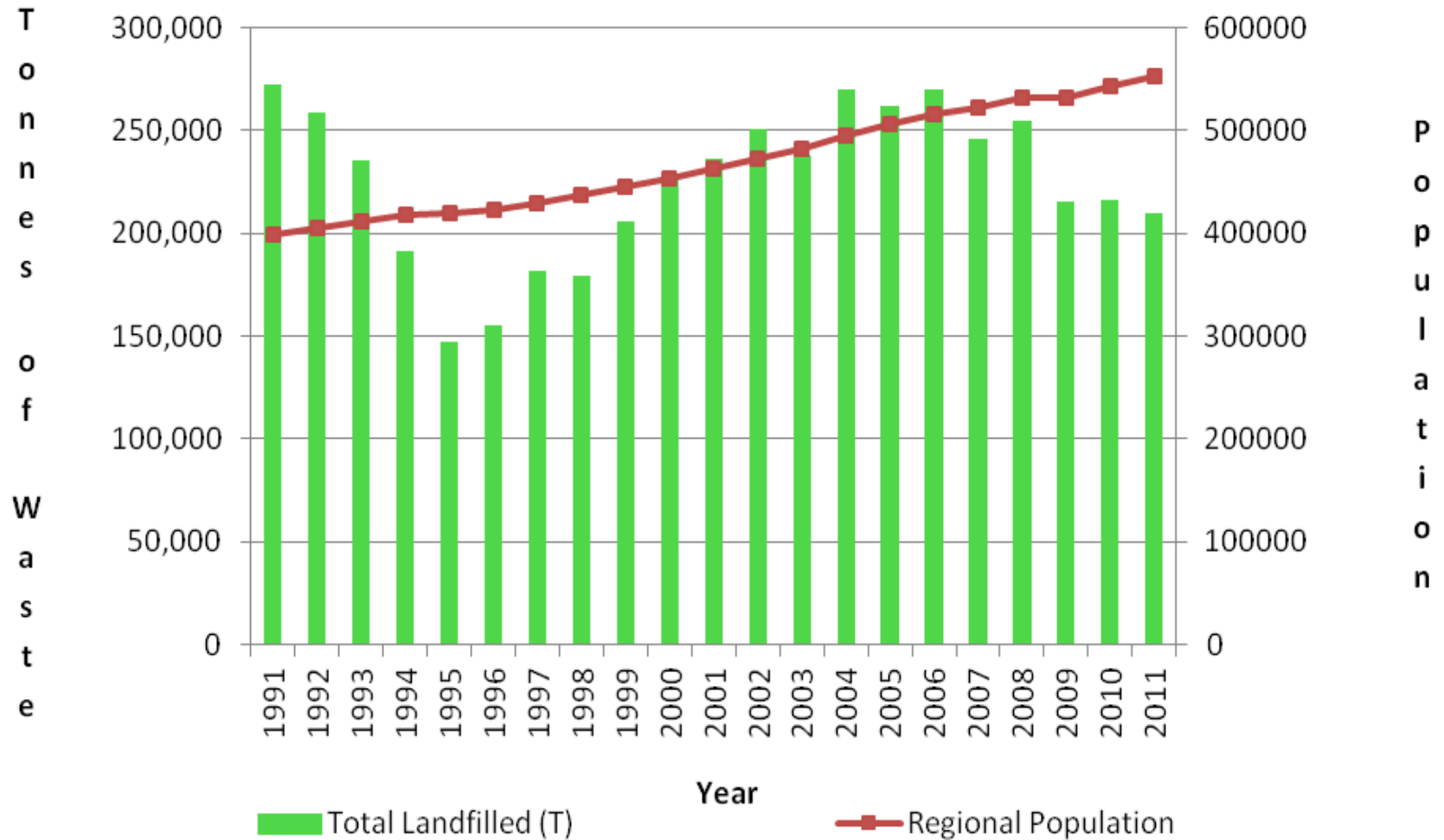
**Total Residential, Business & Institutional Water Consumption in Waterloo Region:
1999 to 2011 - Integrated Urban System (IUS)***



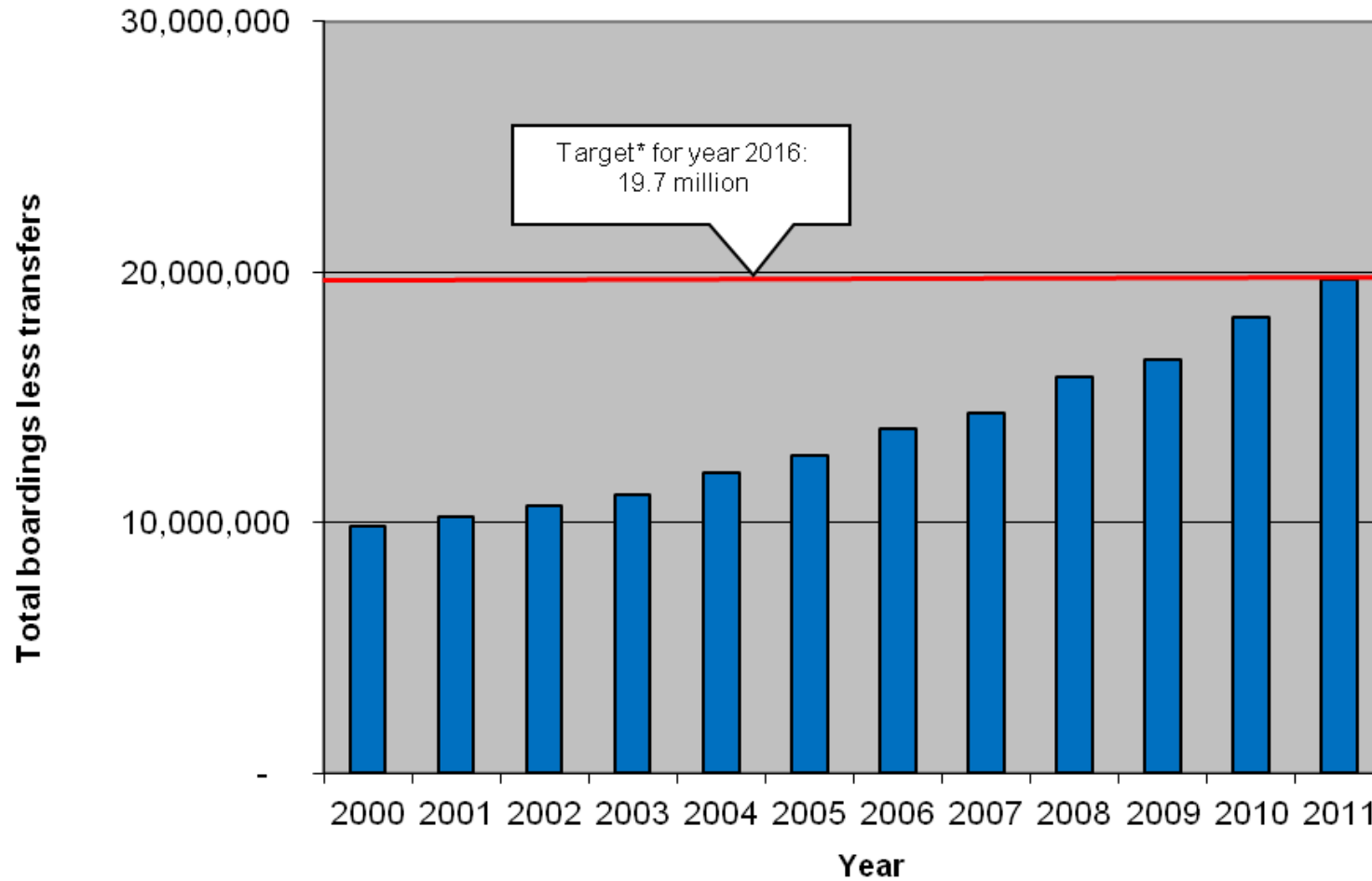
*Integrated Urban System accounts for 95% of water consumption in Waterloo Region including Cambridge, Kitchener, Waterloo, Elmira and St. Jacobs which is also where the majority of regional growth is planned.

APPENDIX C

**Total Waste Landfilled (Tonnes) in Waterloo Region : 1991 - 2011
(Residential, Industrial, Commercial and Institutional Waste)**



APPENDIX D: Grand River Transit Ridership 2000 - 2011



*Note: 2016 target from Regional Transportation Master Plan 1999 - adjusted to account for population growth 1999-2009. The new target for ridership is 53.6 million by the year 2034.