

The Regional Municipality of York

Committee of the Whole
Environmental Services
June 11, 2020

Report of the Commissioner of Environmental Services

2019 Corporate Energy Report

1. Recommendation

Council receive this report for information.

2. Summary

This report provides an annual update on greenhouse gas emissions, energy consumption and costs from Regional operations. This document reports progress on initiatives and targets detailed in the Region's 2019 update to its [Energy Conservation and Demand Management Plan](#).

Key Points:

- Corporate greenhouse gas emissions are 1% below the Energy Conservation and Demand Management Plan target for 2019
- Corporate energy costs fell by 3% or \$1.6 million as a result of lower market prices for gasoline and diesel fuel and successful natural gas and electricity procurement strategies
- Net-zero by 2051 will require right-sizing and electrification of fleet vehicles and deep energy retrofits to Regional buildings

3. Background

The Region's annual Corporate Energy Report is prepared for Council and used to track progress toward commitments made to mitigate impacts of climate change. While this report is not legislatively required, it has been prepared annually since 2006 to inform Council about efforts made by all departments to meet greenhouse gas emission targets set in the Energy Conservation and Demand Management Plan and Vision 2051.

Initiatives undertaken through the Energy Conservation and Demand Management plan help mitigate the impacts of climate change

Reduced corporate emissions align and support implementation of the [Regional Climate Change Action Plan](#). This report summarizes progress on initiatives undertaken by the Region through delivery of Regional services. Achieving net-zero carbon by 2051 is an aspirational goal set in Vision 2051 to achieve environmental stewardship and deliver a sustainable future.

4. Analysis

The Region achieved its 2019 greenhouse gas emissions target

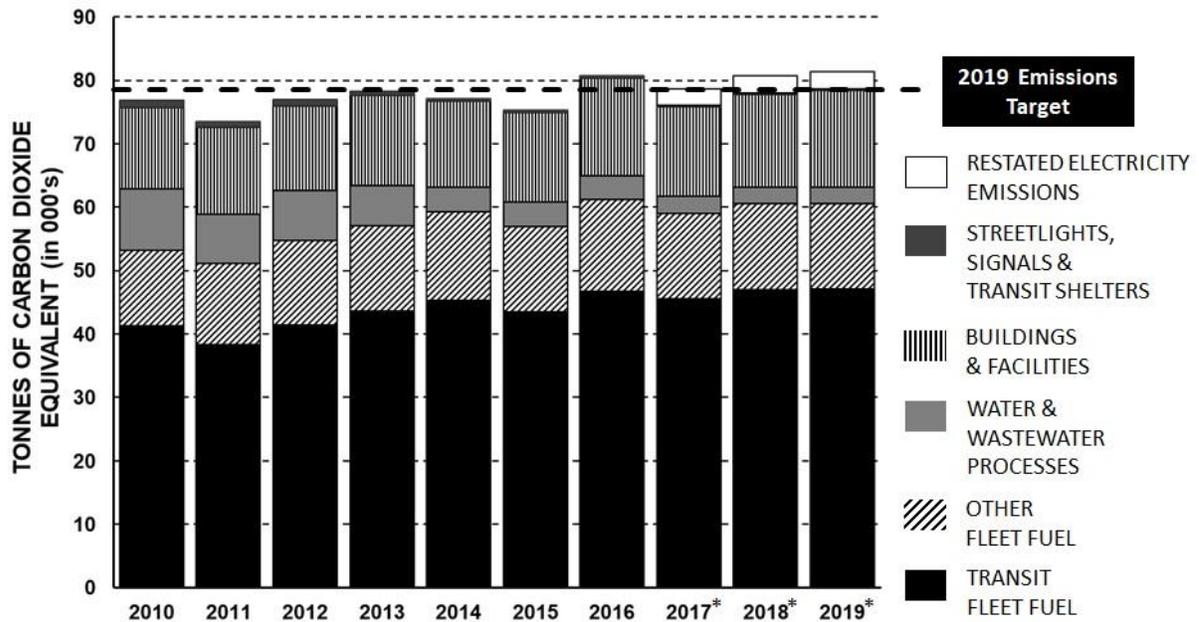
Interim targets set in the Region's Energy Conservation and Demand Management Plan ensures that the Region remains on track to meet its aspirational Vision 2051 goals. The Region is currently 1% below its 2019 target. Transit and vehicle fleets account for 77% of corporate emissions. Meeting future emissions targets will require the Region to apply fleet optimization plans including training, right-sizing, anti-idling and ultimately electrification of its transit and vehicle fleets.

Greenhouse gas emissions from Ontario's electricity supply fell by 50% in 2017 benefiting the Region

Figure 1 illustrates annual corporate emissions since 2010 and restates electricity emissions since 2017 based on the most recently published National Inventory Report that summarizes energy sources used to generate electricity in Ontario. Emissions from Ontario's grid supplied electricity fell by 50% in 2017 reflected by white squares in Figure 1 for 2017, 2018 and 2019. Each white square represents reductions in corporate electricity emissions restated from last year's report.

Corporate emissions associated with electricity consumption are below 2019 Regional targets mainly due to reduced emissions from generation and initiatives by the province. Lower Regional emissions may not continue as electricity generation emissions are outside the Region's control and can increase without notice. Energy conservation, efficiency and switching to cleaner fuels are necessary to meet future emission targets.

Figure 1
2010 to 2019 Corporate Emissions



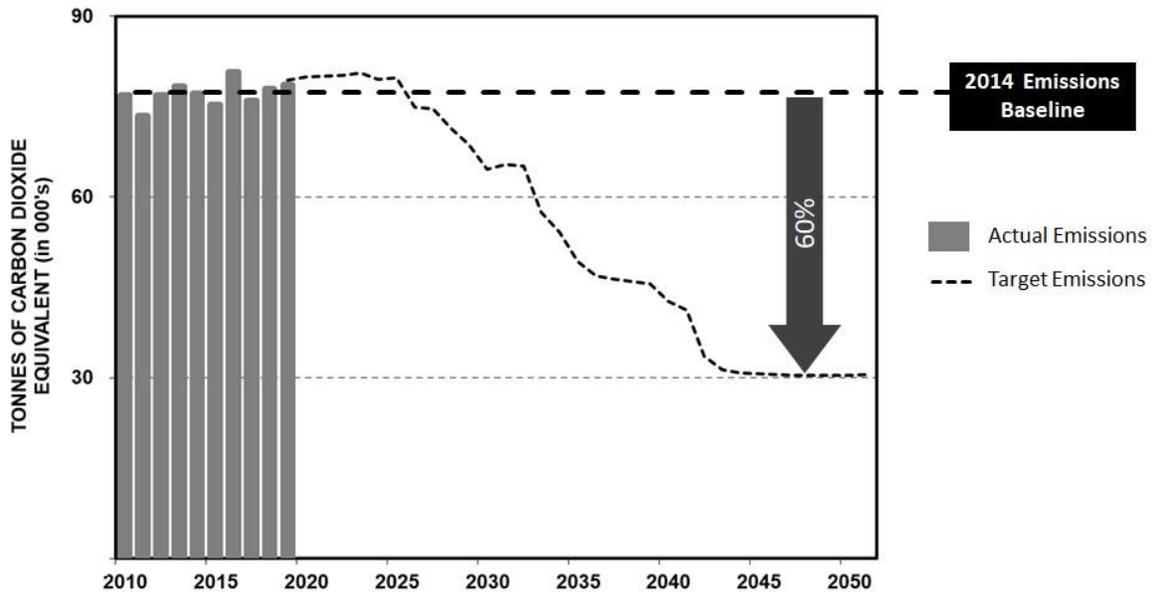
* Greenhouse gas emissions recalculated from 2017 onward reflect Ontario's electricity emission reductions from the 2020 Federal National Inventory Report

Corporate emissions are expected to grow in the short term but at a slower rate compared to business as usual

The Region is a growing municipality. It must make investments now to support future population growth and demand for services. It cannot avoid short-term emissions growth, but it can work to limit emissions with conservation efforts and service efficiencies. Figure 2 illustrates actual corporate emissions and the forecast to 2051 compared to 2014 emissions. Eighty per cent of the targeted emissions reduction will be driven by replacing diesel buses at the end of their useful life (2025, 2030 and 2040) with battery electric buses. An additional 10% will be from non-transit fleet electrification and the balance will come from improved building energy performance and reduced demand for natural gas heating.

“Greening the Region’s Transportation Services Fleets” is a report to Council (also on this agenda) that introduces an emission reduction strategy for York Region Transit bus fleets. Meeting the aspirational emissions targets in Vision 2051 and the Energy Conservation and Demand Management Plan depend on zero-emission fleets.

Figure 2
2010 to 2051 Corporate Emissions Trend and Target



Corporate emissions increased by less than 1% in 2019 driven largely by an increase in natural gas consumption to heat buildings

Efforts by all Regional departments in combination with cleaner grid supplied electricity have slowed corporate emissions growth to less than 1% in 2019. Corporate emissions from electricity, gasoline and diesel fuel consumption declined by 0.6% compared to 2018. Emissions from natural gas consumption in 2019 increased by 5%, which correlates to an increase in heating demand compared to 2018.

Energy consumed by Regional facilities built to past and current building codes is sensitive to weather conditions. To minimize reliance on fossil fuels for heating and cooling, existing buildings will require deep energy retrofits and future buildings require construction to higher standards.

Pilot projects are in progress to support the draft Sustainable Building Policy with the aim to reduce emissions from newly constructed buildings

Developed to reduce building-related emissions by up to 90%, the draft Sustainable Building Policy is in a pilot phase and currently being applied to the design of Paramedic Response Station #33 (Jane Street and Teston Road). By piloting the draft Sustainable Building Policy, staff are better able to understand construction and operational challenges that must be overcome to achieve significant building emissions reductions. For example, to achieve building design principles in the draft Policy, alternative storage practices need to be developed and tested to ensure that medications used by Paramedic Services staff requiring specific temperatures remain viable. The design of York Regional Police's One District station, located in Newmarket, is using sustainable building principles to maximize building envelope performance. The draft Policy is a sizeable leap forward for the Region and pilots

are expected to identify and resolve hurdles. Based on timelines associated with new construction projects, a five year pilot phase has been established to confirm concepts, construction approaches and the availability of experienced contractors in the Ontario marketplace. Staff plan to bring the draft Policy to Council for endorsement in 2025.

During the pilot phase, staff will refine the draft Policy to minimize impacts on capital costs and operational priorities

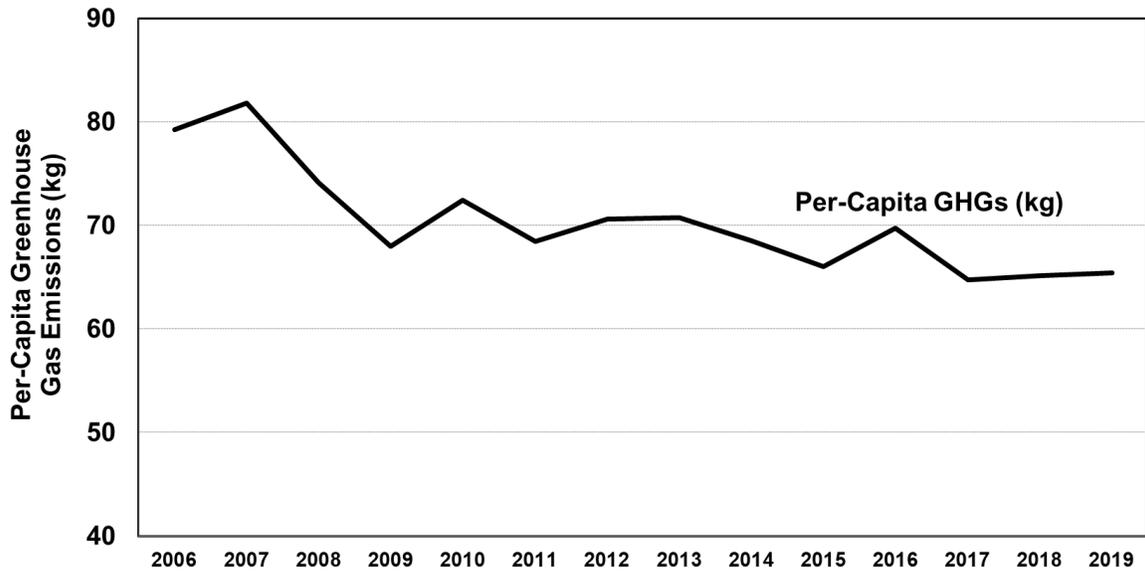
The draft Policy targets a higher LEED® Gold standard compared to current LEED® Silver requirement. During the pilot phase of the draft Policy, all new buildings will strive to achieve the higher standard with a renewed emphasis on efficiency, value, quality, performance measurement and savings verification. Where the higher standard cannot be met, the current LEED® Silver standard will continue to be a requirement.

Energy conservation is a priority that staff incorporate into the design and operation of new and upgraded facilities. Additional elements that need to be considered in pursuit of cost effective and energy efficient buildings include aesthetics, operational mandates, budget, construction market readiness and procurement risks. Staff continue to balance these priorities to ensure the draft Sustainable Building Policy is implemented in a fiscally responsible manner that does not hinder delivery of Regional service expectations. In combination with value engineering, draft Policy refinements aim to minimize incremental costs and maximize intended outcomes of energy reduction along with functionality and user experience.

Since 2006, the Region's population has grown by 27% but corporate emissions to deliver services to residents have been held to 4% growth

A Key Performance Indicator in the Region's [2019 to 2023 Strategic Plan](#) is emissions per capita, which is a measure of how the Region is delivering environmentally sustainable services to its residents. An increase in population generally translates into a proportional increase in service delivery and corporate greenhouse gas emissions. Since 2006, the Region's population has grown by 27%, but total corporate emissions have been limited to 4% growth resulting in a net reduction in per capita emissions. Efficiency and technology have allowed the Region to meet its obligations to residents for increased services without a proportional increase in corporate greenhouse gas emissions. Figure 3 illustrates the improving trend in per capita emissions since 2006.

Figure 3
2006 to 2019 Per Capita Corporate Emissions Trend



Transit bus and vehicle emissions account for 77% of the Region’s total corporate emissions

A 2019 summary and trend of per capita corporate emissions by service area are presented in Attachments 1 and 2. Since 2006, a reduction in per capita emissions has been the trend across lines of service where electricity is the primary energy source. Services relying heavily on consumption of fossil fuels will require conservation, efficiency and fuel switching to achieve the same result. Vehicle use by the Region accounts for 77% of its total corporate emissions. The largest proportion is emitted by transit buses bolstering the battery electric transit bus pilot project approved in [January 2019](#). Staff has been developing transition plans for conventional fleets, which include right-sizing, anti-idling and integration of electric vehicles into Regional non-transit fleets. Both Transportation and Environmental Services have committed to advancing the integration of electric vehicles where business cases clearly demonstrate value for money. Other opportunities include training to ensure efficient driving and virtual meetings to avoid travel. York Region Police, Transportation Services, Paramedic and Senior Services have participated in these discussions and are actively pursuing opportunities to reduce their vehicle emissions in the context of regulatory standards and operational constraints.

All departments have contributed to the Region’s 2019 emissions target

Efforts have been made by all departments to identify opportunities to conserve energy in support of the Energy Conservation and Demand Management Plan’s corporate emission targets for 2019. Table 1 highlights accomplishments from across the corporation to reduce greenhouse gas emissions in 2019.

Table 1
2019 Greenhouse Gas Reduction Accomplishments

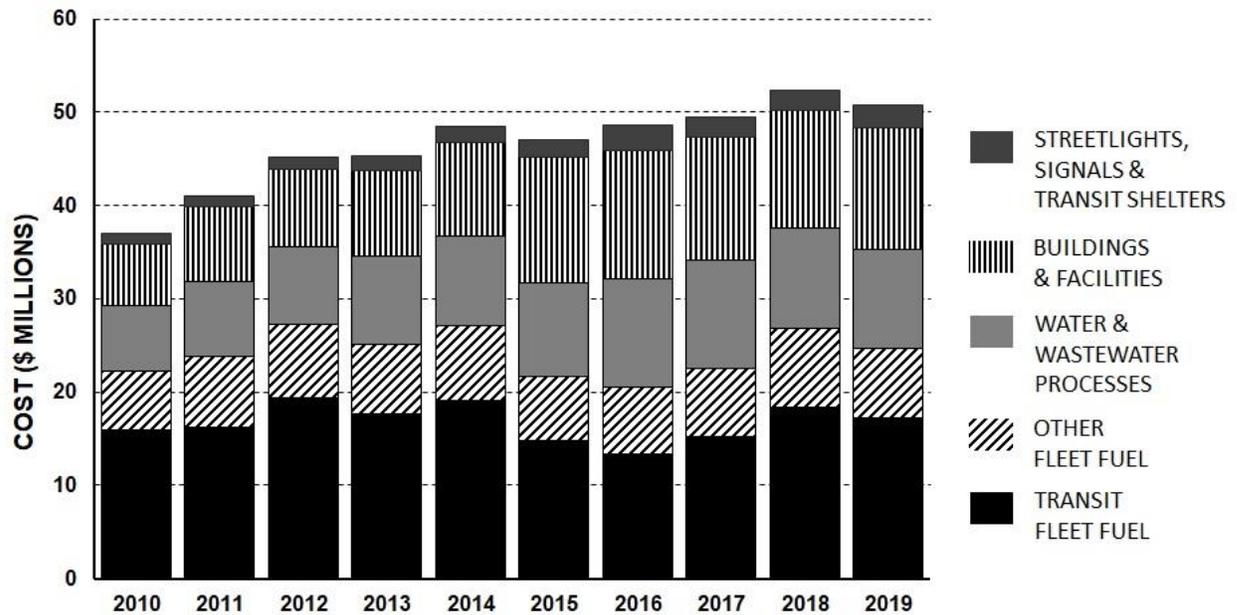
| Initiatives | Service Area |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Sustainable Building Certifications</p> <p>145 Harry Walker Parkway earned LEED® Silver certification.</p> | <p>Corporate Services / Environmental Services</p> |
| <p>Ambulance Technologies</p> <p>Paramedic Services currently has 16 ambulances equipped with hybrid-electric drivetrains, which reduced fuel consumption by 22,400 litres of gasoline in 2019. Additionally, 69 ambulances have been outfitted with anti-idle technology which conserved 62,000 litres of fuel in 2019.</p> | <p>Community & Health Services</p> |
| <p>Draft Sustainable Building Policy Pilot</p> <p>Piloted the draft Sustainable Building Policy on the design of Paramedic Response Station #33. Applied Policy design principles on York Regional Police’s One District new construction project. Insights gained through these pilots will support refinements and practical application of the draft Policy and its impact on 10-year capital plans for future facility construction.</p> | <p>Corporate Services / Community & Health Services / York Regional Police / Environmental Services</p> |
| <p>Electric Vehicle Charging Project</p> <p>The existing Regional Electric Vehicle Charger Policy and a quick response to Natural Resources Canada resulted in approval of a \$350,000 grant to install 70 publically accessible electric vehicle charging stations at 13 Regional properties. Attachment 3 provides a map of Regional facilities for the proposed installation of charging stations. Staff are finalizing the Contribution Agreement that will allow the Region to issue a request for proposal for equipment purchase and installation.</p> | <p>Corporate Services / York Regional Police / Housing Services Inc. / Transportation Services / Environmental Services</p> |
| <p>Solar Photovoltaic Monitoring Program</p> <p>The Region has developed a new Solar asset monitoring and tracking process to ensure performance across Regional solar Photo Voltaic systems. Consequently, emissions free generation of electricity increased by 12% in 2019. Revenues through provincial Feed-in Tariff contracts are producing a good return on investment to the Region while adding resilience to the Ontario electricity grid.</p> | <p>Environmental Services</p> |

| Initiatives | Service Area |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| <p>Electric Bus Pilot</p> <p>Council approved the pilot of six battery electric buses on two Newmarket routes. A zero-emission transit fleet has the potential to significantly reduce total corporate emissions over the longer term.</p> | Transportation Services |
| <p>Outreach and Collaboration</p> <p>Staff met with local municipal partners to discuss energy conservation initiatives and projects with the aim to align efforts by collaborating on common goals. Electric Vehicle Charging and draft Sustainable Building Policy have been shared with local municipalities to avoid duplication and accelerate adoption of similar goals.</p> | Environmental Services |
| <p>Grants for Energy Conservation Projects</p> <p>Received over \$50,000 in grants to complete energy conservation projects at Regional facilities including lighting upgrades at Newmarket Health Centre (194 Eagle St.) and Maple Health Centre (10424 Keele St.) that conserves an estimated 348,000 kWh and save \$56,000 annually.</p> | Community & Health Services / Environmental Services |
| <p>Energy Procurement Savings</p> <p>Natural gas and electricity procurement strategies resulted in the Region saving over \$1 million.</p> | Environmental Services |

5. Financial

Total 2019 energy costs for Regional operations were \$50.7 million, a decrease of \$1.6 million compared to 2018. With the exception of natural gas, corporate consumption of electricity, gasoline and diesel fuel remained relatively unchanged in 2019. A 12% drop in the price of crude oil and favourable natural gas and electricity procurement strategies resulted in a 3% energy cost savings for the Region. Figure 3 summarizes the trend in Regional energy costs since 2010.

Figure 3
2010 to 2019 Corporate Energy Costs



Federal carbon prices increased to \$30 per tonne in 2020

In April 2020, the Federal Greenhouse Gas Carbon Pricing system increased to \$30 per tonne of carbon dioxide equivalent. The change in carbon pricing could increase the Region’s fossil fuel (diesel, gasoline, natural gas and propane) costs by up to \$1 million in 2020. However, fuel prices have fallen significantly over the past few years resulting in minimal net carbon tax impact to overall Regional operating budgets to-date. The Federal Government has confirmed that despite challenges associated with COVID-19, climate change remains a serious threat to the wellbeing of Canadians and planned increases to the carbon tax will remain in place. Carbon tax will continue to increase by \$10 per year reaching \$50 per tonne in 2022.

\$14 million in energy conservation initiatives is planned over the next five years

Over the next five years, Housing York Inc., Transportation Services and Environmental Services have committed a total of \$14 million towards building efficiencies, electric bus pilot projects and process upgrades. Accomplishing a sustainable future requires an organizational alignment of efforts, priorities and budgets to minimize and ultimately eliminate our reliance on fossil fuels and corresponding emissions. Staff hold quarterly cross-organizational meetings to advance greenhouse gas emissions reduction opportunities and examine methods for providing Council with deeper insights into investments that are being made to achieve the Region’s aspirational net-zero carbon goal by 2051. The Region’s investments in energy conservation and greenhouse gas emissions reductions will continue to be subject to robust business case analysis and annual budget approval.

6. Local Impact

The Region's corporate emissions are one to three per cent of total community emissions. Though the Region's contribution to overall community emissions is small, staff recognize the importance of their role in leading emission reduction initiatives with the goal of achieving a sustainable future. The Region continues to collaborate with local municipalities to exchange information, share best practices and initiatives towards reducing energy consumption and greenhouse gas emissions.

7. Conclusion

In 2019, the cost of Regional energy consumption totalled \$50.7 million and produced 78,628 tonnes of greenhouse gas emissions. This is equivalent to 65.4 kilograms of greenhouse gas emissions for each York Region resident. The Region met its 2019 emissions target set in the Energy Conservation and Demand Management Plan as a result of near-zero growth in energy consumption and a reduction in grid supplied electricity emissions. Electricity emissions are outside of the Region's control and can increase without notice. Efforts are being made by all departments to identify opportunities to conserve energy and switch to low emission alternatives.

For more information on this report, please contact David Szeptycki, Director, Strategy and Innovation at 1-877-464-9675 ext. 75723. Accessible formats or communication supports are available upon request.

Recommended by:

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Commissioner of Environmental Services

Approved for Submission:

Bruce Macgregor
Chief Administrative Officer

May 22, 2020
Attachments (3)
eDOCs#10545970