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May 30, 2023

CL 8-2023, May 18, 2023
PEDC 5-2023, May 10, 2023
PDS 17-2023, May 10, 2023

LOCAL AREA MUNICIPALITIES

SENT ELECTRONICALLY

Climate Change Update
PDS 17-2023

Regional Council, at its meeting held on May 18, 2023, passed the following recommendation of its Planning and Economic Development Committee:

That Report PDS 17-2023, dated May 10, 2023, respecting Climate Change Update, **BE RECEIVED** and the following recommendations **BE APPROVED**:

1. That the recommended corporate greenhouse gas (GHG) emissions reduction target of net zero by 2050 **BE APPROVED** in principle; and
2. That a copy of report PDS 17-2023 **BE CIRCULATED** to the Local Area Municipalities (LAMs).

A copy of PDS 17-2023 is enclosed for your reference.

Yours truly,

Ann-Marie Norio
Regional Clerk
js

CLK-C 2023-058

cc: B. Perna, Climate Change Specialist
M. Sergi, Commissioner, Growth, Strategy and Economic Development
N. Oakes, Executive Assistant to the Commissioner, Growth, Strategy and Economic Development

Subject: Climate Change Update

Report to: Planning and Economic Development Committee

Report date: Wednesday, May 10, 2023

Recommendations

1. That the recommended corporate greenhouse gas (GHG) emissions reduction target of an 80% emissions reduction below 2018 levels by 2050 **BE APPROVED**; and

2. That a copy of report PDS17-2023 **BE CIRCULATED** to the Local Area Municipalities (LAMs).

Key Facts

- Climate change is a global threat to infrastructure, human health, and biodiversity. Without significant GHG emissions reduction, 1.5°C warming will increase climate hazards and risks to ecosystems and humans. Setting GHG emissions reduction targets is crucial to mitigate effects and prevent risks.

- This report updates on the Region's Climate Change Emergency Declaration of 2021, outlines staff progress on climate change action, and recommends a corporate GHG emissions reduction target.

- Niagara Region joined the Partners for Climate Protection program in 2009, a five-step framework to reduce emissions and combat climate change.

- Milestone 1: Completed a corporate emissions inventory (Appendix 3). As well, thoroughly evaluated climate initiatives, and successfully held a climate change summit.

- Milestone 2: Recommends a corporate GHG emissions reduction target of 80% below 2018 levels by 2050. This would contribute to climate change mitigation and align Niagara Region with other municipalities working towards Canada's Net-Zero carbon emissions goal.

- Next steps include developing a Corporate Climate Change Action Plan to achieve the target.

Financial Considerations

In 2021, Council approved a two-year program and funding initiative (CA0-21-2021) to advance the commitments outlined in the resolution. This funding was directed towards the creation of a Climate Change Specialist position and the allocation of consulting funds to develop a comprehensive Corporate Climate Change Action Plan. The initiative also encompasses the organization of an annual Climate Change Summit and other relevant programs, which are scheduled to be carried out in 2023.

In 2023, Council approved a budget reduction of $50,000 to the Climate Change portfolio. Despite this, some planned initiatives for the year, such as the Corporate Climate Change Action Plan and the annual Climate Change Summit, are still being pursued with the remaining funds. However, the reduction will influence other intended initiatives, including the development of the Community Energy Plan/Municipal Energy Plan. As part of preparations for the 2024 budget, staff will assess the resources needed to carry out various climate change projects and initiatives. Based on this evaluation, specific areas will be identified where additional funding is necessary. Notably, there are currently no earmarked funds for the Climate Change portfolio, including the Climate Change Specialist role for 2024.

Funding and Partnerships

Regional staff will work to secure financial support from a diverse array of sources to fund climate change projects and initiatives, including the Green Municipal Fund (GMF) and various governmental entities. In addition, the Region is investigating alternative funding avenues, including provincial government partial funding for Community/Municipal Energy Planning, and partnerships with utilities, institutions, and private enterprises.

Analysis

2021-2022 Climate Change Action Progress

Climate change is a local, national, and global issue affecting individuals and systems around the world, such as infrastructure, human health, and biodiversity. If global GHG emissions are not significantly reduced by 2030, projections indicate that we would globally reach 1.5°C warming in the near-term, which would cause increases in multiple climate hazards and present multiple risks to ecosystems and humans.

Progress has been made within the 2021-2022 year to address climate change. This can be attributed to the efforts made by Regional Council and staff to move the needle implementing key actions and reducing greenhouse gas emissions. Notable initiatives include (a full-detailed list of initiatives can be found in Appendix 1):

1. Regional Council Climate Emergency Declaration
2. Climate Projections for Niagara Region Report
3. Niagara Official Plan Climate Change Policies
4. Corporate Climate Change Working Group (CCWG)
5. Long-term Region Climate Change Action Summary (a full summary is found in Appendix 2):
    - Examples: the Welland Waste Water Treatment Plant Boiler Upgrade and the 3450 Merritville Hwy, Thorold. EMS, LEED Certified
6. 2022 Niagara Climate Change Summit
7. Niagara Climate Change Action Network (NCCAN)
8. Niagara Climate Change Municipal Community of Practice (NCCMCP)

As we look to 2023 and beyond, it is evident that significantly more work needs to be done at Niagara Region to combat climate change. Municipalities are already experiencing the impacts of climate change and are uniquely positioned to take action.

Accelerating Climate Change Action at the Region

Partners for Climate Change Protection Program (PCP)

Niagara Region has been a member of the PCP program since 2009. The program consists of a five-step milestone framework that guides municipalities as they take action against climate change by reducing emissions.

The five milestones are:

1. Creating a baseline emissions inventory
2. Setting emissions reduction targets
3. Developing a local climate action plan/strategy
4. Implementing a local climate action plan/strategy
5. Monitoring and reporting results

Milestone 1: Corporate GHG Emissions Inventory (complete)

In October 2022, staff began the process of completing a GHG emissions inventory for corporate operations and services. This included emissions generated by buildings, outdoor lighting and traffic signals, water and wastewater, waste and fleet. Members of the Climate Change Working Group (CCWG), representing various departments across the Region gathered and provided data to contribute to the development of the Niagara Region corporate GHG Emissions Inventory (Appendix 3). 2018 was selected as the baseline year for the emissions inventory, as it is the most recent year with a complete dataset. The corporate GHG Emissions Inventory helps track and anticipate emissions, energy use and spending, and measure progress over time. Having a forecast also allows to project future emissions based on assumptions about population, economic growth, fuel mix, and technological change.

The GHG Emissions Inventory summarized that in terms of energy dollars, Niagara Region spent $18,350,788 on energy in 2018. As shown in Figures 1, 2, and 3, energy used for power and heating in Niagara Region's building portfolio were the highest contributors to emissions and energy consumption, accounting for 56% of emissions, 47% of energy use, and 41% of energy costs. The second largest contributor was the water and wastewater sector, accounting for 28% of emissions, 45% of energy use, and 47% of energy costs. The municipal fleet contributed 16% to total emissions, 7% of energy use and 9% of energy costs. Outdoor lighting and traffic signals accounted for less than 1% of emissions, 1% of energy use, and 3% of energy costs.

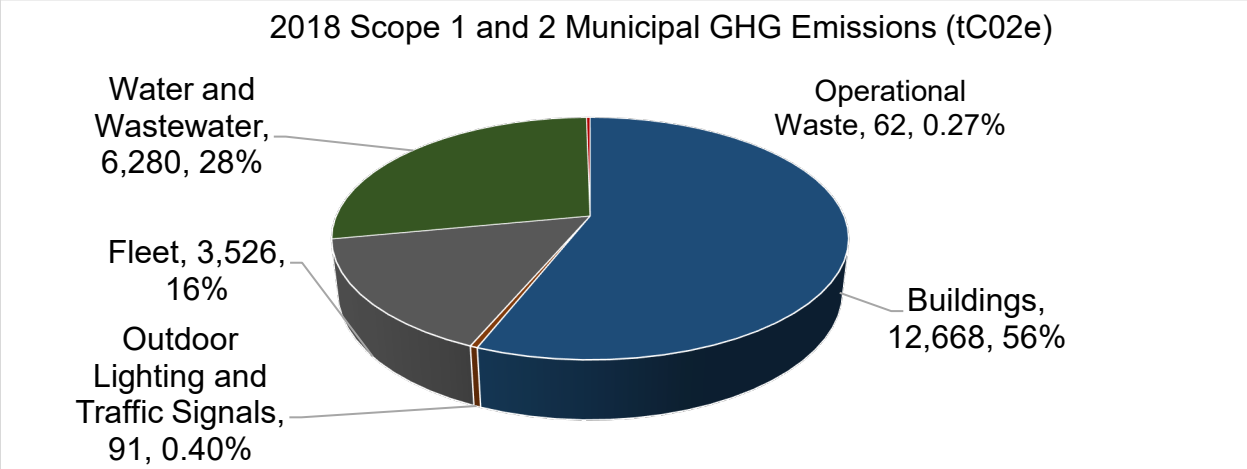

Figure 1: Scope 1 and 2 municipal GHG emissions by sector in 2018

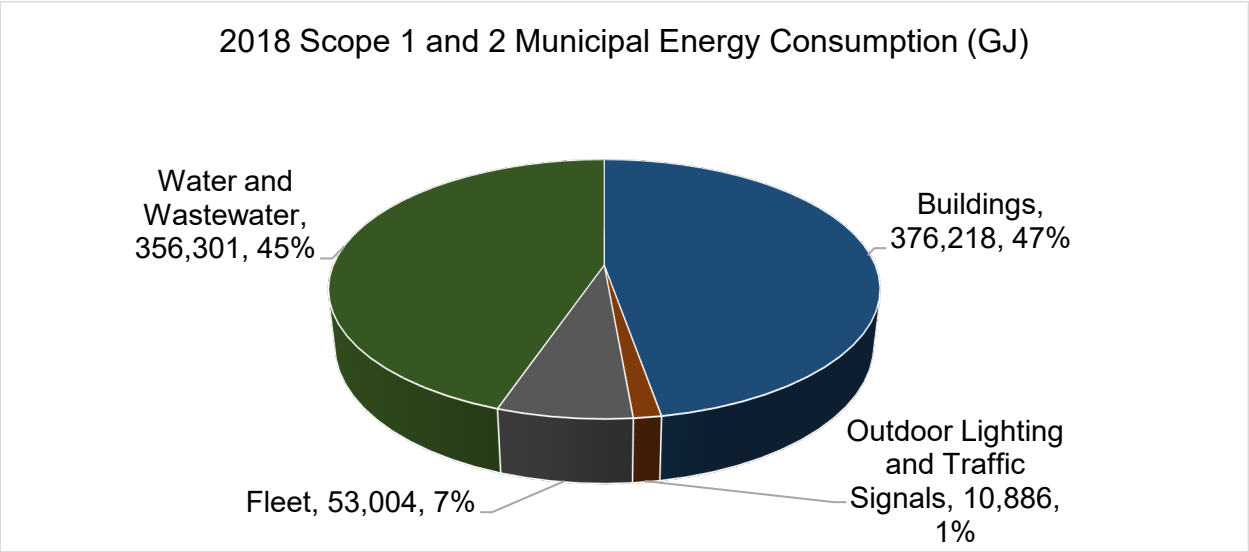

Figure 2: Scope 1 and 2 municipal energy consumption by sector in 2018

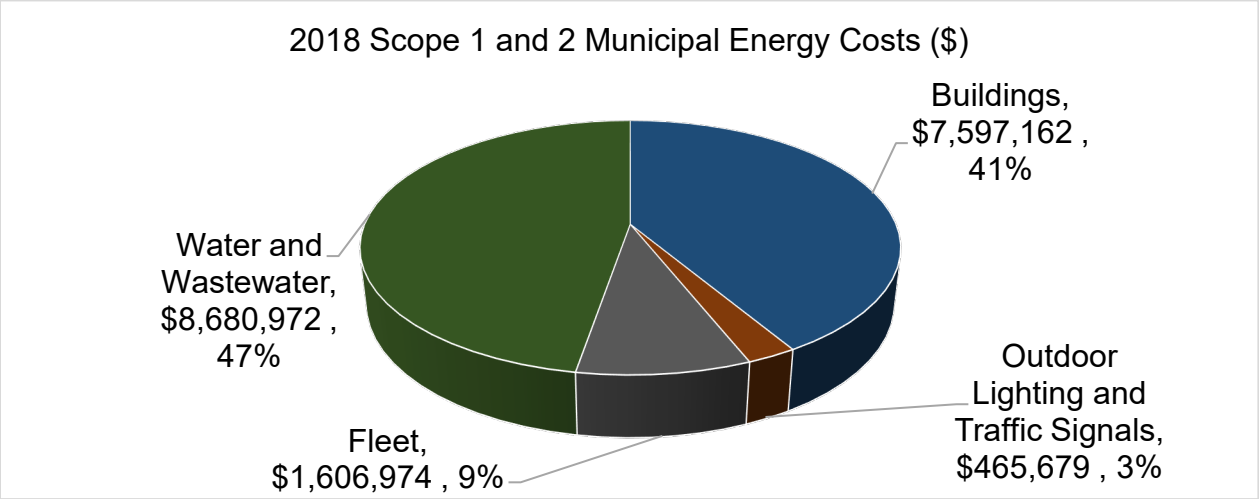

Figure 3: Scope 1 and 2 municipal energy costs by sector in 2018

Milestone 2: Corporate GHG Reduction Targets

Having garnered an understanding of our corporate emissions via the corporate Emissions Inventory, the subsequent step within the PCP framework is to establish corporate emissions reduction goals. Corporate GHG emissions reduction targets set the foundation and direction for our emissions reduction efforts. Setting targets is essential to developing a Corporate Climate Change Action Plan, as the strategy will

determine how to meet the established targets, identify priority areas, propose recommended actions, and secure funding.

To better align with the Intergovernmental Panel on Climate Change (IPCC) science, and the Niagara Climate Change Summit Call to Action, staff recommends that Niagara Region set the recommended corporate emissions reduction target of:

- 80% corporate GHG emissions reduction below 2018 levels by 2050.

Despite being an ambitious target, achievement is within our reach. Appendix 4 illustrates the GHG reduction targets set by other Ontario municipalities, some of which match or even surpass our proposed target. Furthermore, the proposed target is open to future review and updates. It serves as an excellent starting point and will be monitored and evaluated over time to ensure its efficacy.

For the Region, achieving a corporate target of 80% GHG emissions reduction will require a comprehensive and integrated approach to reducing emissions across all sectors, including buildings, fleet, water and wastewater and waste. For an 80% GHG reduction in buildings by 2050, the Region could take practical steps such as retrofitting existing Regional buildings with energy-efficient technologies and materials, promoting the use of low-carbon energy sources, and incorporating sustainable design principles in new construction projects. For example, all new Regional buildings should be built with Net-Zero standards (Regional case study can be found in Appendix 5). To reduce emissions from water and wastewater systems, the Region could invest in renewable energy sources to power treatment facilities, implement water conservation measures, and explore innovative wastewater treatment technologies that minimize emissions. (Regional case study can be found in Appendix 5).

In terms of fleet, the Region could investigate the feasibility to transition the corporate fleet to electric vehicles, implement fuel-efficient driving practices, and explore alternative transportation options, such as public transportation or active transportation for staff. In terms of waste, the Region should investigate alternative waste technologies, and continue to work with staff and residents to educate on the importance of reducing waste.

To achieve an 80% reduction in Corporate GHG emissions by 2050, a collective effort is required from all Regional departments to transition towards sustainable practices and technologies. As previously mentioned, Regional staff will strive to obtain financial support from various sources to finance climate change projects and initiatives. By

leading this transition, the Region can serve as a leader, set an example for other municipalities to emulate, and contribute towards a more sustainable and resilient future for all.

Next Steps

Following the adoption of the recommended corporate GHG emissions reduction targets, a Corporate Climate Change Action Plan will be developed (which will align with the new Energy Conservation and Demand Management Plan [CDMP] 2024-2028), as well as other initiatives, to accelerate climate change work across the region. A full list of initiatives and timelines can be found below with additional details in Appendix 6.

2023-2024 Climate Change Regional Initiatives:

- Niagara Climate Change Municipal Community of Practice (NCCMCP)
- Corporate Climate Change Action Plan
- Niagara Climate Change Action Network (NCCAN)- Community/Municipal Energy Plan Funding
- Host an Annual Climate Change Summit
- Energy Conservation and Demand Management Plan (CDMP) Update

In order for Niagara Region to effectively address and mitigate the impacts of climate change, it is imperative that the recommended corporate targets are fully integrated into the decision-making processes and operations. This requires a comprehensive approach, whereby a climate lens is applied to all relevant aspects of the Niagara Region's services and functions within all departments. By embedding the principles of sustainability and resiliency into the core of the Region’s operations, we will be better positioned to effectively address the challenges of a changing climate and create a more resilient and sustainable future for our staff, residents, and community.

Alternatives Reviewed

The Cost of Inaction

Significant changes in our climate have already been seen globally and locally and are expected to become more severe in the future, affecting our natural and built environments. Lack of mitigation and adaptation will have significant negative impacts on municipal government budgets, which support public infrastructure, health care, and other vital services. These costs are expected to increase as the climate continues to

warm, and municipalities must work to gain a better understanding of climate impacts and prioritize adaptive measures to limit costs. Options 1 and 2 serve as alternatives to the prescribed corporate target of an 80% GHG emissions reduction by 2050.

Option 1: No set target

Failure to set such a target would lead to a continuation of current emissions levels, exacerbating the impacts of climate change.

Option 2: A more ambitious target (Net-Zero)

In contrast, Regional Council could consider a more ambitious corporate target for Net-Zero by 2050 to align with the IPPC science.

Return on Investment – Energy Cost Savings

Upfront costs associated with climate adaptation and mitigation methods provide long-term savings.[1] Implementing energy-efficient technologies and practices can reduce energy consumption, lower energy bills, and avoid potential energy cost increases caused by rising energy prices. Transitioning to renewable energy sources can also protect Niagara Region from the volatility of fossil fuel prices. Failure to implement corporate GHG emissions reduction targets can have implications for Niagara Region regarding carbon pricing and taxes in the long term. Therefore, it is crucial for Niagara Region to set GHG emissions reduction targets to ensure they are financially stable and environmentally sustainable in the long term.

Relationship to Council Strategic Priorities

This report and the recommended GHG emissions reduction targets contribute to and support all of Council's 2019-2022 Strategic Priorities, which include:

- Supporting Businesses and Economic Growth: climate change and increasing GHG emissions will exert economic impact across the globe. Damages caused by climate change will take a toll on the growth of business and the health of the economy in

[1] Financial Accountability Office of Ontario, 2021. Costing Climate Change Impacts to Public Infrastructure: Building and Facilities

Niagara region. Setting GHG emissions reduction targets will support the economy by planning for a healthier future.

- Healthy and Vibrant Community: climate change has an immense impact on public health. Setting and committing to GHG emissions reduction targets will ensure current and future Niagara residents are protected against the dangers of climate change.
- Responsible Growth and Infrastructure Planning: Niagara Region is committed to protecting our natural environment. To demonstrating this commitment, ambitious targets for reducing GHG emissions must be set. By investing in sustainable infrastructure, transit, and waste management, the Region will aim to reduce emissions and foster responsible growth.
- Sustainable and Engaging Government: setting GHG emissions reduction targets will demonstrate Niagara Region's commitment to being open, accountable, and responsive to the needs of residents.

Other Pertinent Reports

PLN	Climate Projections for Niagara Region, February 15, 2023.
CAO 10-2022	2022 Niagara Climate Change Summit Overview and Next Steps, August 25, 2022.
CAO 21-2021	Climate Change Action Program Update, December 9, 2021.
CAO 6-2021	Climate Change Work Program Update, January 13, 2021

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This report was prepared in consultation with the Construction, Energy and Facilities Management Division, Frank Gazzola Water Wastewater Energy Management Project Manager, the Corporate Climate Change Working Group members, and reviewed by Suzanne Madder, Manager Corporate Performance & Strategy.

Appendices

Appendix 1	2021-2022 Climate Change Action Progress
Appendix 2	Long-term Region Climate Change Action Summary
Appendix 3	2018 Corporate Greenhouse Gas Emissions Inventory- Summary
Appendix 4	GHG Emissions Reduction Targets- Ontario Municipalities
Appendix 5	Case Study- 80% Greenhouse Gas Reduction by 2050
Appendix 6	2023-2024 Climate Change Regional Initiatives

Appendix 1
2021-2022 Climate Change Action Progress

Initiative	Description
1. Climate Emergency Declaration	In September 2021, Niagara Region Council declared a climate change emergency through a motion brought forward by the Chair. The motion directed staff to conduct a fulsome review of all Regional climate change initiatives, host a climate change summit, among other initiatives. Regional Council's direction to take more action on climate change was partially informed by a 2020 report issued by the Federation of Canadian Municipalities and the Insurance Bureau of Canada that estimated climate change will cost municipalities across the country $5.3 billion annually. That same report found that local government in Canada is responsible for, or could influence, 50 per cent of all greenhouse gas emissions. These studies, and others, show that local communities are directly impacted by climate change, and have a responsibility to act.
2. Climate Projections for Niagara Region Report	Using a baseline period of 1971-2000, climate projections were generated for various climate parameters (e.g., temperature, precipitation, and growing season) over the short-term (2021-2050) and long-term (2051-2080) under both high emissions (RCP 8.5) and stabilized emissions (RCP 4.5) scenarios. The climate projections report informed the Niagara Official Plan and will also inform future climate change adaptation initiatives and sub watershed planning.
3. Niagara Official Plan Climate Change Policies	On June 23, 2022, Regional Council approved By-law 2022-47 adopting the Niagara Official Plan (NOP). A dedicated climate change section within the NOP highlights additional commitments and actions on climate change, such as preparing a Community/Municipal Energy Plan, implementing a Regional Greening Initiative and developing a Climate Change Adaptation Plan, informed by regional climate projections, and more. On November 4, 2022, the

Initiative	Description
	Minister of Municipal Affairs and Housing approved the Niagara Official Plan.
4. Corporate Climate Change Working Group (CCWG)	Region staff established an internal Climate Change Working Group (CCWG) in 2022 to drive the implementation of climate change projects, programs, policies, and initiatives across multiple departments. Comprised of representatives from various departments, the CCWG works to advance the Region's climate change action goals, and will align its efforts with the strategic direction and priority actions outlined in the forthcoming Niagara Region Climate Change Action Plan. With a collective focus on addressing the challenges of climate change, the CCWG is poised to make significant progress towards a more sustainable future for the Region.
5. Climate Change Action Summary	The Climate Change Action Summary (Appendix 2) was completed in collaboration with all Regional departments. The Summary provides an overview and inventory of all climate related projects, programs, and initiatives the Region has undertaken in the last five (5) years. The objective of the summary is to showcase the meaningful climate action that Regional staff are undertaking, as well as any projects that are planned for the future, in one central location. The summary outlines the division, department, and lead who were responsible for each initiative along with the current status of the work, related energy and/or cost savings, applicable links, and a description of each initiative.
6. 2022 Niagara Climate Change Summit	The 2021 Climate Emergency motion directed Regional staff to organize a climate change summit. The Summit hosted by Niagara Region, in partnership with Brock University and the NPCA took place at Brock University on June 28, 2022, and brought together hundreds of people from municipalities, institutions, and businesses. Concluding the summit, attendees were invited to sign a call to action as a demonstration of their commitment to form partnerships, share critical data, and accelerate climate action.

Initiative	Description
7. Niagara Climate Change Action Network (NCCAN)	The Niagara Climate Change Action Network (NCCAN) was also formed in 2022, which acts as a roadmap to integrate the efforts of the Region, local utilities, business, industry, institutions, and interested parties working towards world-class climate change action, energy performance, and sustainable development while realizing positive economic, environmental, social, and cultural outcomes.
8. Niagara Climate Change Municipal Community of Practice (NCCMCP)	In 2022, the Niagara Climate Change Municipal Community of Practice (NCCMCP) was formed to create a collaborative group involving the Region, the LAMs, and the Niagara Peninsula Conservation Authority (NPCA) to focus on work concerning climate resilience and adaptation, land development, energy management, biodiversity, and more. One of the main objectives of the NCCMCP, is to bring alignment to climate change work across Niagara region.

Appendix 2

Table 2: Long-term Region Climate Change Action Summary

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Community Services - Housing Services/Homelessness Services	2019-2023	Housing and Homelessness Action Plan (HHAP) Action Items for 2019-2023 3.8j) (item 3.6d in the original plan) Align with actions specific to housing support under Niagara Sustainability Plan infrastructure goals (e.g. setting energy reduction targets consistent with those under the Niagara Sustainability Plan for affordable housing and establishing action plans to achieve them). 3.8k) Utilize capital retrofit programs that reduce greenhouse gas emission and create more energy efficient community housing, to reduce operating costs for buildings and improve housing provider sustainability.		

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Community Services - Housing Services/Niagara Regional Housing	2018	Enbridge Savings by Design Affordable Housing New Construction: 207 Roach Avenue, Welland 12-unit townhouse development	Building Energy Performance: 17% above OBC SB-10 base model.	The Savings by Design Affordable Housing Program (SBD AH) encourages builders and developers of new affordable housing to integrate energy efficiency measures, features, and practices into their building designs, as a means to maintain housing affordability. The program provides financial incentives and technical supports to assist affordable housing builders to design and construct buildings that are more energy efficient than required by the Ontario Building Code.
Community Services - Housing Services/Niagara Regional Housing	2019	Building Automation - Heating Management System: 5130 Portgage Rd, Niagara Falls 14 Centre St., St. Catharines 15 Gale Cres., St. Catharines 30 Robinson St., Grimsby 4520 Huron St., Niagara Falls 211 King St., Welland 3874 Portgage Rd., Niagara Falls	Reduction in electrical and/or gas heating consumption for multi-unit apartment buildings with estimated savings at 30%-40% - third party verification in process.	Heat Management Systems installed on apartment buildings with electric heat and hydronic heat at addresses indicated. Funding received through SHAIP program. Install of this system in 17 other NRH-owned apartment buildings is ongoing. When complete, 1734 total units will have heat optimization.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Community Services - Housing Services/Niagara Regional Housing	2020	Enbridge Savings by Design Affordable Housing New Construction: 6388 Hawkins Avenue, Niagara Falls - 55 unit, 3-storey apartment 7180 Heximar Avenue, Niagara Falls - 18-unit 3-storey apartment	6388 Hawkins: 21% annual energy savings above OBC SB-10 baseline; 29.9% annual natural gas savings; 29,178 kg CO2e GHG reduction 7180 Heximer: 18.2% annual energy savings above OBC SB-10 baseline; 23.3% annual natural gas savings; 9,273 kg CO2e GHG reduction	Hawkins / Heximer project is being used by Enbridge SBD as a success case study as part of a Royal Architectural Institute of Canada 2022 presentation. The Savings by Design Affordable Housing Program (SBD AH) encourages builders and developers of new affordable housing to integrate energy efficiency measures, features, and practices into their building designs, as a means to maintain housing affordability. The program provides financial incentives and technical supports to assist affordable housing builders to design and construct buildings that are more energy efficient than required by the Ontario Building Code.
Community Services - Housing Services/Niagara Regional Housing	2023-2028	Affordable Housing New Development Master Specifications		Develop a master specification to be used on future NRH/Housing Services Affordable Housing new development projects. Emphasis on energy

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				efficiency, carbon and GHG reduction, and sustainability through appropriate materials selection and construction methods. Master spec as living document, to be updated periodically based on new technologies, best practices, lesson learned, funding requirements, and Regional policies.
Corporate Services	2022	Creation of the Niagara Region Energy Working Group		The Niagara Region Energy Working Group (NREWG) is a sub-group of the Climate Change Working Group (CCWG) and will develop strategies to implement the goals set by the CCWG and the Conservation & Demand Management Plan as adopted by Corporate Leadership and Council. The Niagara Region Energy Working Group's mandate is to ensure the effective and timely implementation of solutions and improvements to energy usage and emissions in Region buildings.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Corporate Services - Asset Management Office	2022	2021 Corporate Asset Management Plan	Risk identification	The 2021 Corporate Asset Management Plan (2021 CAMP) provides details of maintaining and managing the $9.8 billion in assets that support the Region's services. The plan considers climate change and presents examples of how it interacts with the delivery of service and management of assets.
Corporate Services - Asset Management Office	2023	Asset Management System improvements for Risk and Lifecycle Asset Strategy	Reduce risk and cost of service disruption, asset failure, and consequential damage.	Best practice models the financial requirements of the level of service relative to the organizations risk exposure. To do so requires a comparative risk assessment including to climate change across the services and the associated portfolio of assets. Lifecycle asset strategy involves the analysis and selection of management options to preserve, restore or enhance asset performance considering risk, cost and timing.
Corporate Services - CE & FM	2017	3450 Merritville Hwy, Thorold. EMS, LEED Certified	42% energy reduction, 42% cost reduction and 8,397 kg CO2	This is related to the construction of 3450 Merritville Hwy. The savings are

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
			equivalent reduction (equivalent to 2 homes per year).	from constructing the building with the requirements of LEED certification.
Corporate Services - CE & FM	2017	445 East Main St., Welland. Provincial Ontario Court Facility, LEED Certified	30% energy reduction, 30% cost reduction and 25,654 kg CO2 equivalent reduction (equivalent to 6 homes per year).	This is related to the construction of 445 East Main St. The savings are from constructing the building with the requirements of LEED certification.
Corporate Services - CE & FM	2018	Energy Electricity Projects	256,506 kWh electricity reduction, which resulted in a cost avoidance of $38,476 in annual operating costs and 5,130 kg of CO2 equivalent Greenhouse Gas emissions avoided. This reduction contributed 11.2% towards the CDM electricity reduction goal for buildings.	Projects consisted of LED retrofits for both 745 Doans Ridge Road (Phase 1) and Rapelje Lodge.
Corporate Services - CE & FM	2019	Update to Energy Conservation and Demand Management Plan		In 2019, the Region updated the CDM plan with the goal to reduce electricity consumption by 8% and Natural gas consumption by 4.4%. If the Plan is implemented in its entirety, emissions will be reduced by

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				496,212 kg CO2 equivalent and the energy cost avoidance will be $1M per year by 2023.
Corporate Services - CE & FM	2019	Energy Electricity Projects	209,076 kWh electricity reduction, which resulted in a cost avoidance of $31,361 in annual operating costs and 4,182 kg of CO2 equivalent Greenhouse Gas emissions avoided. This reduction contributed 9.1% towards the CDM electricity reduction goal for buildings.	Projects included LED retrofits at Campbell West and 2 Cushman Road.
Corporate Services - CE & FM	2021	Energy Electricity Projects	594,086 kWh electricity reduction, which resulted in a cost avoidance of $89,113 in annual operating costs and 11,882 kg of CO2 equivalent Greenhouse Gas emissions avoided. This reduction contributed 26% towards the CDM electricity reduction goal for buildings.	Projects included lighting retrofits/upgrades at 3547 Thorold Townline Road, environmental centre and police fleet. Also includes small business lighting projects at 32 locations.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Corporate Services - CE & FM	2021	NRPS 1D new building/LEED Silver Certified	30,391 kWh electricity reduction and a 35,872 m3 (381,319 ekWh) of natural gas reduction , which resulted in a cost avoidance of $13,168 in annual operating costs and 6,953 kg of CO2 equivalent Greenhouse Gas emissions avoided. This reduction contributed 1.3% towards the CDM electricity reduction goal and 1.5% towards the CDM natural gas reduction goal for buildings.	This is related to the construction of NRPS 1D. The saving are from constructing the building with the requirements of LEED Silver certification.
Corporate Services - CE & FM	2021	HVAC/VFD Energy Project at 250 Thorold Rd., Welland SAEO	36,193 kWh electricity reduction and a14,487 m3 (153,997 ekWh) of natural gas reduction, which resulted in a cost avoidance of $8,906 in annual operating costs and 27960 kg of CO2 equivalent Greenhouse Gas emissions avoided. This reduction contributed 1.6% towards the CDM electricity reduction goal and 6.4% towards the CDM natural gas reduction goal for buildings.	This is related to the HVAC upgrades which consist of boiler and controls upgrades.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Corporate Services - CE & FM	2022	Energy Electricity Projects	88,401 kWh electricity reduction, which resulted in a cost avoidance of $13,260 in annual operating costs and 1,461 kg of CO2 equivalent Greenhouse Gas emissions avoided. This reduction contributed 3.9% towards the CDM electricity reduction goal for buildings.	Projects included lighting retrofits such as 745 Doan's Ridge Road pole lights retrofit (Phase 3) and salt dome lights (Phase 4), Thorold Patrol yard exterior lighting and Public works service center outdoor lighting and storage dome lighting, Smithville yard roof insulation upgrade HQ wall packs, and Enviro Centre lighting.
Corporate Services - Energy Management	TBD	LEED Silver Certification for Regional Facilities		Climate Change Policy 3.5.2.2 in the adopted Niagara Official Plan states, "New Regional corporate facilities will achieve minimum Silver Level certification in the Leadership in Energy and Environmental Design (LEED) green building rating system." "Corporate facilities" is defined to exclude water/wastewater infrastructure buildings.
Corporate Services - Energy Management	TBD	Solar Panel electricity production	1,956,223 kWh of electricity produced, which equals 39,124 kg CO2 equivalent GHG avoided (or 12 cars off the road)	Niagara Region has 27 MicroFIT <10kW solar systems that produce electricity directly onto the grid, installed on Regional and NRH

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				buildings. They have been producing since 2015 (1/2) and 2016 (1/2).
Corporate Services - Energy Management	TBD	EV Charging Infrastructure - Regional Facilities		Climate Change Policy 3.5.2.3 in the adopted Niagara Official Plan states, "Public charging infrastructure should be provided at Regional and Local municipal facilities, where feasible, to promote uptake of zero emissions vehicles."
Corporate Services/Administration	TBD	Apply for Provincial Municipal Energy Plan funding		Climate Change Policy 3.5.1.1 in the adopted Niagara Official Plan states, "The Region will maintain its community-wide greenhouse gas inventory to monitor progress in emissions reduction planning." This work may be undertaken as part of a municipal energy plan.
Corporate Services/Administration	TBD	Community Climate and Energy Plan		Climate Change Policy 3.5.1.2 in the adopted Niagara Official Plan states, "The Region will establish new community-wide greenhouse gas reduction targets to work toward the

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				long-term goal of net-zero emissions." This work may be undertaken as part of a municipal energy plan.
Corporate Services/Administration	TBD	Create a community Energy Task Force to guide development and implementation of the plan		Climate Change Policy 3.5.1.3 in the adopted Niagara Official Plan states, "The Region will develop a municipal energy plan in consultation with the Local Area Municipalities, utility companies and organized interest groups to reduce energy consumption and greenhouse gas emissions, complement land use and infrastructure master planning, and support economic development opportunities in the region."
Corporate Strategy & Innovation - Corporate Administration	2022	Climate Change Specialist Hired		

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Corporate Strategy & Innovation - Corporate Administration	2022	Niagara Inaugural Climate Change Summit		In September 2021, Niagara Region declared a climate emergency to accelerate action on climate change in the community. The inaugural Climate Change Summit was hosted by Niagara Region in partnership with Brock University and the Niagara Peninsula Conservation Authority. Summit objectives were to bring diverse community leaders together to develop a common understanding of climate change and its impact on the Niagara community, provide a snapshot of climate change action taking place in Niagara region and other communities, and give the opportunity for community leaders to commit to accelerating climate change initiatives in Niagara region.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Corporate Strategy & Innovation - Corporate Administration	2022	Niagara Climate Change Action Network (NCCAN)		Following the Niagara Inaugural Climate Change Summit, the Niagara Climate Change Action Network (NCCAN) has been formed. The NCCAN will focus on accelerating climate change action in the Niagara region. As well, to support the development and implementation of a Niagara Community Energy and Niagara Region Climate Action Plan. The NCCAN will ensure a progressive approach to addressing the effects of climate change by working in collaboration with Network members. The NCCAN will act as a roadmap to integrate the efforts of the Region, local utilities, business, industry, institutions and community stakeholders working towards world-class climate change action, energy performance, and sustainable development, while realizing positive economic, environmental, social, and cultural outcomes.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Corporate Strategy & Innovation - Corporate Administration	2022	Corporate Climate Change Working Group (CCWG)		The Climate Change Working Group (CCWG) is a multi-departmental group with the purpose of accelerating climate change projects, programs, policies and initiatives at the Region. As well, to guide and support the development of a Corporate Climate Action Inventory and Plan. Collectively, the group will work towards meeting the goals, strategic direction and priority actions as outlined in the Niagara Region Climate Change Action Plan, once developed.
Corporate Strategy & Innovation - Corporate Administration	2022	Summary of Corporate Climate Change Action		Inventory climate actions implemented to date at the Region.
Corporate Strategy & Innovation - Corporate Administration	2022	Niagara Climate Change Municipal Community of Practice (NCCMCP) that includes all 12 Local Area Municipalities (LAMs)		The purpose of the Niagara Climate Change Municipal Community of Practice (NCCMCP) is to create a collaborative group involving the Region and the Local Area Municipalities (LAMs) to focus on work concerning climate resilience and adaptation, land development, energy management and local generation,

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				biodiversity, and green infrastructure. The NCCMCP will ensure a progressive approach to addressing the effects of climate change and working in collaboration with members of administration, Council and stakeholder groups. Overall, the NCCMCP will strive to bring alignment regarding climate change work in Niagara.
Corporate Strategy & Innovation - Corporate Administration	2022	Corporate climate action leadership brand to support engagement and education		
Corporate Strategy & Innovation - Corporate Administration	2022	Hire Climate Change Co-op Student		The student will build understanding of the importance of climate change in Niagara, while contributing to high priority policies, programs, and actions to advance climate change adaptation and mitigation. This position will assist with advancing Regional climate change initiatives through collaborating with the internal Climate Change Working Group (CCWG); assist with developing the Regional Climate Change website and corporate

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				branding; assist with maintaining a Climate Action Summary and the Green House Gases (GHG) Inventory; develop the Climate Change Newsletter; and contribute to the planning of the 2023 Niagara Climate Change Summit. Other areas of responsibilities will include assisting with climate research, collecting qualitative and quantitative data from various sources, assisting with analyzing data, note taking and writing reporting.
Corporate Strategy & Innovation - Corporate Administration	2023	Take Climate Action Summary and Greenhouse Gas (GHG) Inventory Report to Council	Recommended targets: 50% GHG reduction by 2030 Net zero by 2050	This report will provide Council with all Regional climate related projects, programs and initiatives that have taken place in the last 5 years. As well, the GHG inventory, will aid in Council's understanding of the baseline measure for Corporate GHG emissions and will help make decisions moving forward.
Corporate Strategy & Innovation - Corporate Administration	2023	Review corporate policies related to climate change action and greenhouse gas mitigation		

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Corporate Strategy & Innovation - Corporate Administration	2023	Refresh the partners for Climate Change Protection (PCP) program participation and plans		
Corporate Strategy & Innovation - Corporate Administration	2023-2026	Update PCP Milestones #1-3. Update GHG emission inventory, corporate GHG emission target and Corporate Action Plan		
Corporate Strategy & Innovation - Corporate Administration	2023-2027	Integrate existing actions from Region Master Plans, strategies, corporate planned actions and Energy Conservation Demand Management Plan into updated Plan		
Economic Development - Corporate Administration	2022	10-Year Economic Development Strategy going forward to Council		The strategic direction of the Economic Development Strategy were established by combining input from the research conducted through the background review, the economic and industrial base analysis and the community and business engagement. The strategy builds on the strengths of the region, addresses weakness and identifies potential opportunities. The objective is to achieve a confident and

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				positive business environment that is necessary to grow a strong and sustainable economy.
Keen on Green	2022	Office Supply Recycling program		
Keen on Green	2022	Battery Waste Diversion Program		.
Growth Strategy and Economic Development	2021	Niagara Region declared a Climate Change Emergency		On September 15, 2021, the Planning and Economic Development Committee moved a motion to declare a Climate Change Emergency in Niagara. The minutes and approved recommendations were passed at the September 23, 2021 Regional Council meeting.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Growth Strategy and Economic Development - Community and Long Range Planning	2019	Climate Change Discussion Paper for Niagara Official Plan	Inform climate change adaptation initiatives.	In November 2019, a Climate Change Discussion Paper was released to inform the development of the new Niagara Official Plan. The paper explores climate change risks and opportunities within various components of land use planning, such as growth management, infrastructure, transportation, energy, the natural environment, and agriculture.
Growth Strategy and Economic Development - Community and Long Range Planning	2020	Brock District Gateways	Promoting active transportation.	Installation of gateways, seating and planting along new multi-use path along Sir Isaac Brock Way/St. David's Road.
Growth Strategy and Economic Development - Community and Long Range Planning	2020	Glendale District Plan, NOTL, & St. Catharines	Promotion of compact, mixed-use, complete communities, complete streets, sustainable public realm.	The Glendale District Plan was endorsed by Regional Council in September 2020 through Report PDS 27-2020, and key policy direction was incorporated into the Niagara Official Plan adopted by Council in June 2022. The District Plan sets out a proactive land use strategy for the future growth, design and development of the Glendale area. This includes direction

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				relating to sustainable development and climate change (walkability, transit hub, compact built form, green buildings, and diverging diamond-active transportation support) to improve resiliency in the Glendale area. A secondary plan process has been initiated to implement the direction of the District Plan.
Growth Strategy and Economic Development - Community and Long Range Planning	2020	Ecological Land Classification Mapping Project	Data source to form basis of several features in the Region's natural heritage system, identified in the Niagara Official Plan.	This project was undertaken in collaboration with the NPCA and with funding from the Greenbelt Foundation through the Resilient Greenbelt funding stream. ELC is a provincially-accepted approach for mapping natural features. In addition, this project included a field verification exercise which involved participation from Local and Regional planning staff and staff from the NPCA. The ELC mapping exercise was undertaken primarily to support the environment work program for the new Niagara Official Plan. However, the data will also have supplementary uses

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				by the Region's environmental planning team and the NPCA.
Growth Strategy and Economic Development - Community and Long Range Planning	2021	Brock District Placemaking Manual, Thorold, & St. Catharines	Promotes LID techniques, active transportation.	Implementation of the Brock District Vision identifies specific projects that address climate change through streetscaping, stormwater management, and active transportation.
Growth Strategy and Economic Development - Community and Long Range Planning	2021	Regional Greening Initiative	Carbon sequestration to reduce emissions.	The adopted Niagara Official Plan commits the Region to develop and implement a Regional Greening Initiative to restore and enhance vegetative cover to sequester carbon and mitigate climate change. Staff have initiated discussions with the Niagara Peninsula Conservation Authority (NPCA) and established a working group to develop a recommended

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				approach for Council endorsement. A pilot project was implemented in May 2021 where 7,400 native trees were planted at the Region's Decew Falls Water Treatment Plant. This project was undertaken in support of Land Care Niagara's 'Data Gap Analysis of Fragmented Parcels in the Niagara Region' project funded by the Ontario Trillium Foundation. In addition, the Region supported the development of the NPCA's submission to the federal 2 Billion Trees program. The submission was successful in receiving federal dollars to support the planting of 2 million trees over a 10-year period in Niagara.
Growth Strategy and Economic Development - Community and Long Range Planning	2022	Glendale Ecopark, St. Catharines	Ecological restoration of Transport Canada lands, promote active transportation.	Partnership with St Lawrence Seaway. UD team is assisting community planning staff to design an ECO park.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Growth Strategy and Economic Development - Community and Long Range Planning	2022	Climate Projections for Niagara Region	Inform climate change adaptation initiatives.	The Region retained the Ontario Climate Consortium, a subset of the Toronto and Region Conservation Authority, to generate climate projections for Niagara. Using a baseline period of 1971-2000, climate projections were generated for various climate parameters (e.g., temperature, precipitation, and growing season) over the short-term (2021-2050) and long-term (2051-2080) under both high emissions (RCP 8.5) and stabilized emissions (RCP 4.5) scenarios. The climate projections informed the Niagara Official Plan and will also inform future climate change adaptation initiatives and subwatershed planning.
Growth Strategy and Economic Development - Community and Long Range Planning	2022	Niagara Watershed Plan	Planning for natural resources to address climate change.	The Niagara Watershed Plan was prepared to support the protection, enhancement and restoration of natural resources within Niagara's watersheds, with an emphasis on water resources. Watershed planning informs land use planning, including decisions relating to

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				growth and infrastructure, and planning for climate change.
Growth Strategy and Economic Development - Community and Long Range Planning	2022	Niagara Official Plan (Council Adoption)	Intensification targets, strategic growth areas, protected major transit areas, transit supportive densities, complete streets, environmental protection.	On June 23, 2022 Regional Council approved By-law 2022-47 adopting the Niagara Official Plan. The new plan has been sent to the Province of Ontario's Ministry of Municipal Affairs and Housing for approval. The Niagara Official Plan is a long-term land use planning document that shapes and defines our community for future generations through policies that set out what we protect, where and how the region will grow, and policy tools for success. It includes land use planning policy direction relating to climate change, such as efficient use of land and infrastructure, opportunities for transit and active transportation, promoting green infrastructure and low impact development, ensuring strong environmental protections, and direction for local secondary planning and subwatershed studies.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Growth Strategy and Economic Development - Community and Long Range Planning	2022	Natural Environment System- Niagara Official Plan (Council Adoption)	Identification of a natural heritage system and water resource system for protection.	Extensive background review and consultation resulted in policies and mapping that provide stronger protections for Niagara's natural environment system. The Niagara Official Plan, adopted by Regional Council on June 23, 2022, identifies a natural heritage system and water resource system for protection, and sets out policies to maintain, restore and enhance the biodiversity and connectivity of natural features, which exceed provincial requirements.
Growth Strategy and Economic Development - Community and Long Range Planning	TBD	Tree Canopy Inventory (baseline)		The Region intends to undertake a baseline assessment of tree canopy coverage at a regional scale. This metric can be used to set targets and better understand the natural environment in Niagara.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Growth Strategy and Economic Development - Development Planning	2022	Smart Growth Regional Development Charges Reduction Program	promotes energy and water conservation, compact, mixed-use, complete communities, active transportation	The Smart Growth Regional Development Charges Reduction Program, which is administered by Development Planning with input from Urban Design and Landscape Architecture, includes several criteria to promote/encourage design and construction materials that conserve energy and resources/reduce GHG emissions as well as strategies that reduce water consumption. It expires October 1, 2024; transition provisions are contained in PDS 3-2022.
Growth Strategy and Economic Development - Environmental Planning	2020	Woodland Conservation Bylaw Update	Protecting Region's Canopy Cover.	Section 135 (2) of the Municipal Act enables Regional Council to prohibit or regulate the destruction or injuring of trees in woodlands as defined in the Forestry Act larger than one hectare in size. The Bylaw was 12 years old and as such the review considered legislative changes, alignment between the Bylaw and the Regional Official Plan, best management practices and operational needs.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Growth Strategy and Economic Development - Environmental Planning	2022	Environmental Impact Study (EIS) Guidelines Update		The Region's Environmental Impact Study (EIS) Guidelines were last updated in 2018, but a more comprehensive update is now required to address updated natural heritage policies included in the Region's new Official Plan. The updated EIS Guidelines are also anticipated to address the implementation of the climate change policies identified in the new Official Plan.
Growth Strategy and Economic Development - Environmental Planning	TBD	Restoration Plan Guidelines		The Region intends to prepare a Restoration Plan Guideline to give guidance on developing and implementing restoration on sites with active development applications. The focus of the Guideline is on the enhancement and restoration of natural heritage features, including native biodiversity and ecosystem functions. No guideline specific to the Niagara exists currently.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Growth Strategy and Economic Development - Infrastructure Planning and Development Engineering	2020	Stormwater Management Guidelines	Infrastructure design for climate resiliency, LID practices, advocates for a range of potential future rainfall trends, depending on numerous factors, "stress test" on storm infrastructure is recommended.	The SWM Guidelines outline the desired attributes of stormwater infrastructure, as related to the Niagara Region overall governing policies and vision as outlined in the Niagara Official Plan. The SWM Guidelines enhance environmental principles in community and neighborhood planning, provide tools and resources to support infrastructure design on climate change resiliency, and requires an enhanced level of water quality treatment and a minimum of 5 mm stormwater retention to maintain the hydrology cycle through implementation of LID practices.
Growth Strategy and Economic Development - Infrastructure Planning and Development Engineering	2021	2021 Water and Waste Water Master Servicing Plan Update	MSPU evaluates the ability of existing and planned water and wastewater infrastructure to continue to efficiently and effectively service the Region's existing service users, service anticipated growth out to 2051, and evaluate and develop recommended strategies.	Climate change is considered a priority area within the Master Servicing Plan Update, the Region commits to be aware and consider the potential impacts of climate change on the planning and sizing of infrastructure. The update includes a Wet Weather Management Strategy for wastewater servicing as Niagara has a mix of separated and combined sewer

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				systems, which can be impacted by wet weather conditions and climate change.
Growth Strategy and Economic Development - Infrastructure Planning and Development Engineering	2021	Wet Weather Management/Combined Sewer Overflow (CSO) Funding Program	To reduce the volume and frequency of stormwater from entering the wastewater collection system. Excessive inflow and infiltration results in overflows to the environment, potential basement flooding, and reduced capacity.	This includes an annual cost sharing program with the local municipalities for projects to reduce CSOs and remove excessive inflow and infiltration. This CSO Funding Program has been ongoing since 2007.
Growth Strategy and Economic Development - TBD	TBD	Green Development Standards Options		Climate Change Policy 3.5.1.5 in the adopted Niagara Official Plan states, "The Region, in collaboration with the Local Area Municipalities, building and development industry, utility companies and organized interest groups will explore opportunities to elevate standards of green building development across the region."

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2018	Design assistance - Prudhommes Secondary Plan, Lincoln	Promotion of compact, mixed-use, complete communities, complete streets, sustainable public realm.	Design leadership to ensure sustainable streetscapes, Green Building and sustainable design direction.
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2019	International Plaza, Niagara Region Headquarters	Removal of turf areas, use of native plants, LID techniques.	Implementation of the Green Brock District with bio-swales designed to absorb a 100 year storm. Creation of a pollinator garden, use of native plants and large scale trees.
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2020	Niagara Biennial Design Awards	N/A	Bi annual awards program. Celebrates excellence in the design of the built environment. Judging criteria includes sustainable design of buildings, landscapes, public spaces, etc.
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Region's Model Urban Design Guidelines	Promotion of compact, mixed-use, complete communities, complete streets, sustainable public realm.	Updates to the Region's 2005 design guidelines. Chapter on sustainability will be expanded and provide greater direction on designing for climate change, resiliency, etc.
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Region's Terms of References for the Preparation of Micro-Climate Studies	Access to sunlight for green energy and plant growth. Wind mitigation for active transportation and plant growth.	Terms or References prepared for "Pedestrian Level Wind Comfort" and "Sun-Shadow Impact" studies for development and capital projects.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	First Nations Peace Monument Landscape (2370 DeCew House Rd, Thorold)	Increase in native plants, reduced lawn areas.	Partnership with "Friends of Laura Secord, Niagara Parks Commission and Brock University. Installation of sustainable, native landscape surrounding the monument.
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Lincoln's Ontario Street Urban Design Vision & Streetscape Master Plan	Promoting compact, mixed-use community and complete streets approach	Partnership with the Town of Lincoln that created a built form and streetscape vision for this intensification corridor.
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Multifunctional Landscapes Research project (Vineland Research Institute)	Sustainable landscapes in urban environments.	Partnership with Vineland Research Institute and Town of Lincoln to create pilot projects to monitor sustainable landscape initiatives. Focus is on growing the urban tree canopy.
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Public Realm Improvement Program (PRIP)	De-paving of urban areas, increase in native plans and urban tree canopy	Annual matching funding grant project for public realm projects along Regional roads. Began in 2016 and runs annually. Over 40 projects funded to date. Criteria for funding includes enhanced walkability, cycling use of recycled products, sustainable or innovative practices. Some examples include: Main Street, Grimsby (Street

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				trees in downtown), King Street, Lincoln (Streetscape), Prince Charles Dr, Welland (Multi-use path) Farmer's market (Welland), Smithville, West Lincoln (urban plaza), Smithville (roundabout), Bridge St Niagara Falls (roundabout), various tree planting projects: Rice Rd, Martindale Rd, Fourth Ave.
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Gateway CIP Tax Increment Grant and Regional Development Charges Grant	promotes energy and water conservation, sustainable development, active transportation	The Gateway CIP program currently employs Smart Growth criteria to promote/encourage design and construction materials that conserve energy and resources/reduce GHG emissions as well as strategies that reduce water consumption. However, as these criteria are aimed primarily at residential/mixed use development, revisions to the criteria targeting manufacturing and industrial development are expected.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Design assistance to Development Planning Team and Local Area Municipalities	Sustainable streetscapes, LID techniques, increase urban tree canopy	UD team provides urban design and landscape architectural comments for all development applications along Regional Roads. They also provide assistance for high value applications at the request of the LAMs.
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Design assistance to Capital Buildings + Regional Facilities	Sustainable landscapes, LID techniques, increase urban tree canopy	UD team has assisted in conceptual design of several projects. Examples: Niagara Region Headquarters (Master Plan), Linhaven LTC, St. Catharines (re-development), Hawkins LTC, Welland (re-development), Gilmore Lodge LTC, Ft Erie, Grimsby Water treatment Plant (sustainable landscape and SWM design)
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Design assistance to GO Transit Facilities	Sustainable streetscapes, LID techniques, increase urban tree canopy	UD team has assisted in conceptual design of several projects. Examples: Niagara Falls, St. Catharines, Beamsville/Lincoln, Grimsby
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Design assistance to Capital road projects (EAs + Detailed design)	Sustainable streetscapes, LID techniques, increase urban tree canopy	UD team has assisted in conceptual design of several projects. Examples are too few to mention (over 25 EAs)

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Design assistance to Public Health initiatives	Promotion of a safe, vibrant public realm to support active transportation	UD team collaborates with various public health initiatives to apply an urban design and landscape architectural lens. Examples: Walking school bus routes, Health Impact Assessments (HIA), Healthy Eating and Physical Activity Project (HEPA)
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Design assistance to Local Area Municipalities for Public Realm Projects	Design of sustainable public spaces and streetscapes to promote active transportation	UD team has assisted several LAMs on the design of public spaces. There is an emphasis on de-paving, use of native plants and increasing the urban tree canopy. Examples: Lincoln: Rotary Park, Charles Daley Park, Angelina Prokich Park, Prudhommes Park, Jordan Hollow Park, Grimsby: Casablanca parks, Port Colborne: Lions Club Sports Field, Lock 8 Park.
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Design assistance to School Boards (Surplus Properties)	Design of compact built form supported by public realm	UD team has assisted school boards with conceptual designs of surplus school sites. Examples: St Martin School, West Lincoln, Secondary School, Grimsby

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Growth Strategy and Economic Development - Urban Design and Landscape Architecture	2022	Design assistance to Niagara Peninsula Conservation Authority (NPCA)	coordination of best practices in sustainable design	UD staff has collaborate on research and workshops to determine best practices in sustainable landscape design, LID techniques (e.g. SWM practices) and the use of native plants.
Public Health - CDIP & EH	2018	Climate Change Health Promoter hired		
Public Health - CDIP & EH	2020	Climate change portfolio work is resumed in Public Health. Kaitlyn Irving starts her MPH placement Jan 2020		MPH placement came to an end prematurely due to COVID-19 pandemic. Kaitlyn returned back to her role as a PHI but continued to work on climate change projects. Her work is stored in the N: Drive.
Public Health - Chronic Disease and Injury Prevention	2018	Community Gardens		The CASTLE program has supported the build of community gardens in social housing neighbourhoods since 2018.
Public Health - Chronic Disease and Injury Prevention	2020	Students on the Move		This research considers the transportation of Niagara’s 30,000 post-secondary students and the impact of transportation, or lack of transportation on wellbeing.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Health - Chronic Disease and Injury Prevention	2023	Observational Study on Beaches (Smoking and Vaping)		Observational study to examine non-compliance as it relates to smoking and vaping on beaches. Additional information was gathered including the presence of butt litter. Findings will help inform enforcement efforts and future discussions with LAMs and team.
Public Health - EH	2022	Creation of climate change webpage on Niagara Region webpage		
Public Health - EH, CDIP, Medical	2022	Commencing the Climate Change Vulnerability and Adaptation Assessment as per the MOHLTC		Working document is house in the N: Drive.
Public Health - Emergency Management	2017	Emergency and Hazard Tracking Spreadsheet		Regional Emergency Management tracks hazard and emergency occurrences. This includes climate-related hazards.
Public Health - Emergency Management	2017	Emergency Preparedness Website		EM website has safety information for hazards that can impact Niagara. This includes hazards that may be altered in terms of frequency and magnitude by climate change.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Health - Emergency Management	2018	Niagara Region Hazard Identification and Risk Assessment (HIRA)		The HIRA assesses risk through an examination of the frequency and the potential consequences that could arise should a hazard impact Niagara Region at a magnitude that is severe enough to result in a potential emergency. It also includes the variable of 'changing risk' which accounts for changes in vulnerability and frequency due to factors such as population demographic shifts and climate change.
Public Health - Emergency Management	2019	Facility Closure Plan		The Facility Closure Plan outlines the actions that are taken should a severe weather hazard warrant the potential closure of Regional facilities.
Public Health - Emergency Management	2019	Hazard Monitoring		Regional Emergency Management continuously monitors for hazards that could result in an emergency, including hazards related to climate change. This is reflected in the EM Standby procedure and other emergency plans.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Health - Emergency Management	2019	Emergency Management Stakeholder Meetings		Meetings were originally to collaborate with the LAMs and key stakeholders (e.g., Brock University) during the COVID-19 pandemic. This group now meets monthly to discuss emergency management issues and hazards occurrences that are often related to climate change.
Public Health - Emergency Management	2022	Hazard Monitoring		Regional Emergency Management continuously monitors for hazards that could result in an emergency, including hazards related to climate change. This is reflected in the EM Standby procedure and other emergency plans.
Public Health - Emergency Management	2022	Emergency Management Stakeholder Meetings		This event will be an opportunity for emergency management partners including the local area municipal CEMCs to provide input on the Region's COVID-19 response from an emergency management perspective. Although the catalyst will be the pandemic, climate change will be one of the factors that participants will be asked to consider when they share

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				what they would like to see regarding the way forward for emergency management in Niagara.
Public Health - Emergency Management	2022	Niagara Region Emergency Response Plan		The Regional Emergency Response Plan provides the framework for the Region to respond and recover from emergencies. This includes hazards that may have altered frequencies and magnitudes due to climate change.
Public Health - Emergency Management	2022	Emergency and Hazard Tracking Spreadsheet		
Public Health - Emergency Management	2022	COVID-19 Hotwash - The Way Forward for Emergency Management in Niagara		
Public Health - Emergency Management	2022	Community Emergency Response Team (CERT) - Initial Intake		The development and initial intake of a group of trained volunteers who can assist the communities in emergency responses including those related to climate change.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Health - Emergency Management	2023	Update of Emergency Management Public Education Tools		
Public Health - Emergency Management	2023-2025	Additional Community Emergency Response Team (CERT) Intake		
Public Health - Environmental Health	2022	Healthy Environments Working Group (HEWG)		The Environmental Health Division recently established a HEWG in April 2022. The committee consists of the healthy environments program manager and team leader, appointed climate change champion, health promotor, two PHIs, medical resident intern, and program assistant. The HEWG is a forum enabling staff to bring ideas and suggestions forward for the facilitation and improvement of the healthy environments portfolio. Their objectives include: Identifying, recommending, and implementing initiatives to help promote the Healthy Environments portfolio within the Division. - Implementation of a Climate Change

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				and Human Health webpage on the regional website. - Working collaboratively to develop the Climate Change Vulnerability and Adaptation Assessment. Making this document accessible to the public on our designated webpage. - Working collaboratively with the corporate Climate Change Advisor and existing Regional climate change committees with similar goals where they exist.
Public Works	2017	Transportation Master Plan (TMP)		The TMP is a long-term strategy to guide the planning, development, renewal, and maintenance of a multi-modal transportation system in a manner that is consistent with projected needs, and aligned with the region's growth and vision for a sustainable Niagara.
Public Works	2019	Go Train Implementation		Niagara is working collaboratively with local area municipal partners, Metrolinx (MX), CN Rail, VIA Rail and the St. Lawrence Seaway Management Corp

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				(SLSMC) to lead, manage and coordinate the implementation of weekday GO train service.
Public Works	2021	Niagara Region Council approved region-wide transit		In November 2021, Niagara Region Council voted to approve the Moving Transit Forward proposal. The proposal brings together independently operating local transit systems in Fort Erie, St. Catharines, Welland, and Niagara Falls, as well as Niagara Region Transit and NRT OnDemand to offer consistent operating hours and fares, new digital payment technology, and better connections for riders across Niagara.
Public Works	2021	Combined sewer overflow tank upgrades at Chippewa Low-Lift were completed in partnership with the City of Niagara Falls. This reduced the overflow events to zero. This was part of the CSO Funding program for Niagara Falls		

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Works	TBD	Explore Opportunities to Transition to Zero-Emissions Vehicle Fleet		Climate Change Policy 3.5.2.4 in the adopted Niagara Official Plan states, "The Region will explore opportunities to transition to a zero-emissions vehicle fleet."
Public Works - Road Corridor Team	2018	Regional Street Tree Master List	Addition of trees to the urban canopy.	Every development application along a Regional road is required to provide street trees, where space permits. If trees are removed, two must be replaced. If there is no space then CIL of street trees is required.
Public Works - Transit	2023	Zero Emission Busses (ZEBs)		Both hydrogen and battery electric pilots/studies have been undertaken. Green fleet review - infrastructure required to implement. Orders will be placed for next generation fleet in 2024.
Public Works - Transit	2023	Network Review		Concrete plan for implementation of zero emission buses (ZEBs) to transit network. Review will determine which routed, areas, coverage can be optimized to best deploy ZEBs.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Works - Transportation Planning	2021	Niagara Region Complete Streets Design Manual	Complete streets application to road design making streets safe for all ages and abilities.	UD team assisted in design comments for the public realm (streetscapes, street furnishings, street trees, and plant material).
Public Works - W/WW	2018	Niagara Falls Water Treatment Plant LED Lighting conversion Phase 1	15892 Kwhr savings.	
Public Works - W/WW	2018	Niagara Falls Water Treatment Plant LED Lighting conversion Phase 2	7221 Kwhr savings.	
Public Works - W/WW	2018	Dain City Pumping Station LED lighting conversion	8301 Kwhr savings.	The program provides financial incentives and technical supports to assist affordable housing builders to design and construct buildings that are more energy efficient than required by the Ontario Building Code.
Public Works - W/WW	2021	Welland Waste Water Treatment Plant Boiler Upgrade	Improve efficiency of boiler operations by upgrading to condensing type boilers for both natural gas and digester gas fuels. Estimated reduction of CO2 emissions of 387 tonnes annually.	

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Works - W/WW	2021	Port Weller Wastewater Treatment Plant Boiler Upgrade	Improve efficiency of boiler operations by upgrading to condensing type boilers for both natural gas and digester gas fuels. Estimated annual reduction of CO2 emissions of 387 tonnes.	
Public Works - W/WW	2021	Port Weller Wastewater Treatment Plant Exterior Lighting Upgrade	Conversion of exterior lighting to LED with auto sensing Hi/Low. Reduction of 24,430 kwhr.	
Public Works - W/WW	2022	Niagara Falls Wastewater Treatment Plant Boiler Upgrade	Estimated reductions of 350 tonnes of CO2 emissions due to improved efficiency of boiler operations by upgrading to condensing type boilers for both natural gas and digester gas fuels.	
Public Works - W/WW	2022	Niagara Falls Water Treatment Plant Boiler Upgrade	Estimate a 67.8 tonne reduction in CO2 emissions due to increased boiler efficiency for building heating boilers.	
Public Works - W/WW	2023	Replacement for Port Dalhousie Wastewater Treatment Plant	Estimated GHG reduction of 380 tonnes CO2.	
Public Works - W/WW	TBD	Renewable Natural Gas Feasibility		

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Works - W/WW Engineering	2022	Institute for Sustainable Infrastructure		ISI has developed resources to help communities and organizations navigate the complexities of sustainability, resiliency, and equity in infrastructure, ISI embraces strong partnerships and purposeful models of cooperation and collaboration. No single organization has the capacity to act alone to bring about global change, which is why we value consensus building and meaningful relationships.
Public Works - Waste Management	2017	Keen on Green - Deskside Waste Diversion Program	Per the results of an end of year waste composition audit at Regional headquarters in 2017, the implementation of the deskside waste diversion program at Regional HQ reduced the amount of recyclable and compostable material disposed in the garbage by 26%, compared to the 2016 waste audit data.	Keen on Green is a multi-departmental committee with the goal to identify and implement initiatives to minimize waste and increase diversion at Regional facilities. In addition, the committee is dedicated to promoting current practices that demonstrate the Region's commitment to waste reduction. While the focus of the committee will be waste reduction, it will keep within its consideration the larger impact that waste reduction has on energy efficiency and overall sustainability.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Works - Waste Management	2020	Every-Other-Week Garbage Collection	In the first year of every-other-week (EOW) garbage collection, tonnages of organics material collected curbside increase 23% compared to the same time period in 2019 and 2020. The amount of curbside collected garbage decrease by 18% in the year following implementation of EOW garbage collection, compared to the same period in 2019 and 2020. Curbside tonnages of recycling also increased 9.7%. A life cycle assessment completed by Sound Resource Management Group analyzed the environmental benefits associated with the increased diversion following the move to EOW garbage. For the one year period following the change, the assessment found a decrease of 18,400 tonnes of carbon dioxide equivalent.	After successful implementation of the Region organics diversion program in 2003 and full roll-out to all Local Area Municipalities by 2011, the Region approved every-other-week garbage collection in October 2020. Shifting to every-other-week garbage collection encourages residents to put their organic and food waste in the Green Bin for weekly collection.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Works - Waste Management	2022	Humberstone Landfill Gas Collection and Control System		The system is comprised of a series of gravel-filled trenches excavated into the waste with a perforated collection pipe in the gravel. The perforated pipes are connected to an underground solid pipe around the perimeter of the landfill that lead to a gas flare building. Blowers induce negative pressure (suction) which draws the gas from the waste into the gravel and perforated pipe, through the solid pipe and into the landfill gas flare. The methane in the landfill gas is combusted by an enclosed flare.
Public Works - Waste Management	2022	Multi-Residential Electrical and Electronic Equipment (EEE) Recycling Program	As of 2015, this program has diverted 67,486 lbs of electronics from landfill.	Currently have 37 multi-residential properties (high-rise apartments/condos with seven or more units) utilizing this program (including some NRH properties). Electronics are collected in carts by the contractor, EPRA, at regular intervals and recycled. Looking to continue to expand this program to other multi-residential properties across the Region.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Works - Waste Management	2022	Special Events Recycling and Organics Program	In 2019, Niagara Region serviced 176 Special Events with recycling and organics (no service in 2020 or 2021 due to COVID). In 2019, 22 tonnes of recycling was diverted from landfill and 33 tonnes of organics was diverted from landfill.	Service is offered to community-based events free of charge (as long as the Region's guidelines are followed). Events can request recycling and organic carts to increase diversion and decrease the amount of recyclable and organic material going into the waste stream at their event, which have both environmental and financial benefits to the event itself. Niagara Region works with Niagara Recycling to service larger cart requests and 40-yard roll of containers, and the organics service is contracted out to Davidson Environmental.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
Public Works - Waste Management	2022	Multi-Residential Textile Recycling program	As of 2018, this program has diverted over 53 tonnes of textiles from landfill.	Currently have 22 multi-residential properties (high-rise apartments/condos with seven or more units) utilizing this program (including some Region LTC homes and NRH properties). Textiles are collected by one of the Region's two Registered charities, Goodwill Niagara or Cornerstone to Recovery, at regular intervals. Material is then re-sold, or recycled. Looking to continue to expand this program to other multi-residential properties across the Region.
Public Works – Waste Management	2022	Multi-Residential Organics program	Currently have 164 multi-residential properties participating in the Region's organics cart program.	Multi-residential properties are defined as high-rise apartments or condo buildings with seven or more units. This type of property has historically met many challenges when it comes to waste diversion. It is often easier for residents to put all materials down the garbage chutes in these buildings. Niagara Region has slowly expanded this program to multi-residential properties across the Region to increase organics diversion and reduce

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				the amount of waste in the garbage stream. When the property purchases organic carts, the Region provides each unit with a free kitchen catcher (for in-unit collection of organics) and information on the Region's organics program along with a sorting guide. Organic carts are collected weekly. Looking to continue to expand this program to other multi-residential properties across the Region.
Public Works – Waste Management	2022	Multi-Residential Battery Recycling program	As of 2017, this program has diverted 2,311 kgs of batteries from landfill.	Currently have 71 multi-residential properties (high-rise apartments/condos with seven or more units) utilizing this program (including several NRH properties). Properties are provided with a 2 gal battery pail - once the pail is full, the building contacts the Waste Diversion Coordinate (Emily Hughes) and arranges to have the pail switched out. Waste Management staff take the full pail of batteries to the Thorold HHW Depot and deposit in a drum, which is collected at regular

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				intervals by the Region's contractor, Raw Materials Company (RMC). Looking to continue to expand this program to other multi-residential properties across the Region.
Public Works - Waste Management	2023	Glenridge and Mountain Road Leachate Collection Systems		The Glenridge and Mountain Road sites currently have operational leachate collection systems (LCS), but upcoming projects will improve the leachate collection efficiency and ensure pump stations never exceed their approved capacity. Design improvements consist of: - Modifying landfill grading to improve drainage - Revamping stormwater management ponds to separate leachate and surface

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				water - Installation of a small pumping station (Glenridge) - Addition of storage tanks adjacent to our pumping station to provide on-Site buffering capacity In new infrastructure designs, we are taking climate change into account and the more frequent/severe storms that come with it, in order to maintain capacity and efficiency during increasingly large storm events. Designs always have ecological responsibility and environmental conscientiousness at top of mind.
Public Works - Waste Management	2023	Pollinator Program		Will be working with the Canadian Wildlife Federation to establish pollinator gardens at the Region's landfills. The gardens will be a combination of native wildflowers and grasses to provide habitat for butterflies, bees, and other insects losing habitat due to climate change. Strengthening pollinator presence at

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				our sites will combat climate change by giving these species more opportunity to thrive in the face of critical habitat loss due to temperature changes.
Public Works - Waste Management	2023	Waste Management Strategic Plan		The Waste Management Strategic Plan will help guide the direction of waste management for the next 25 years. Mitigating the effects of waste on the environment/climate is intended to be an integral part of waste diversion goals. The plan will consider landfill GHG emissions, capital construction practices, collection vehicle emissions, etc. Development of the overall strategy will be broken up into a series of research and consultation activities that will take place during 2023.
TBD	TBD	Greenhouse Gas Inventory (Community Sectors)		Climate Change Policy 3.5.1.1 in the adopted Niagara Official Plan states, "The Region will maintain its community-wide greenhouse has

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
				inventory to monitor progress in emissions reduction planning." This work may be undertaken as part of a municipal energy plan.
TBD	TBD	New Greenhouse Gas Reduction Targets (Community Sectors)		Climate Change Policy 3.5.1.2 in the adopted Niagara Official Plan states, "The Region will establish new community-wide greenhouse gas reduction targets to work toward the long-term goal of net-zero emissions."
TBD	TBD	Municipal Energy Plan		Climate Change Policy 3.5.1.3 in the adopted Niagara Official Plan states, "The Region will develop a municipal energy plan in consultation with the Local Area Municipalities, utility companies and organized interest groups to reduce energy consumption and greenhouse gas emissions, complement land use and infrastructure master planning, and support economic development opportunities in the region."

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
	2017	Hosts Summit where there is a Climate Change section		
	2017	Niagara Region Asset Management Plan (AMP) approved by Council in March		The Asset Management Plan addresses management of the Region's approximately $7.4B worth of assets, including water/wastewater, transportation, waste management, police services and Regional facilities including housing managed by Niagara Regional Housing (NRH), long term care homes, and the Region's administrative offices. In the AMP, climate change is recognized as an external factor that will affect level of service, and performance of assets.
	2019	Niagara Region completed a Strategic Asset Management Policy and was approved by Council in May		The SAMP commits the Region to consider actions that may be required to address municipal infrastructure vulnerabilities caused by climate change.

Division - Department	Year	Item	Energy Reduction, Cost Savings, Avoidance	Notes
	TBD	Vulnerability Assessment and Climate Change Adaptation Plan		Climate Change Policy 3.5.1.9 in the adopted Niagara Official Plan states, "The Region will assess anticipated climate change risks and vulnerabilities across systems, and develop and implement a Climate Change Adaptation Strategy, informed by Regional climate projections, to prepare for the impacts of climate change."

Milestone# 1

Niagara Region 2018 Corporate Baseline GHG Emissions Inventory Report Summary

March 2023

Prepared by ICLEI Canada

Niagara Region

Contents

Figures

Tables

Introduction

This document is a summary of the Niagara Region (the Region) 2018 Corporate Baseline Greenhouse Gas (GHG) Emissions Inventory. The GHG Emissions Inventory (Hereon referred to as the Inventory) encompasses data on municipal energy use and GHG emissions, in addition to a business-as-usual emissions forecast for Niagara Region's corporate operations.

Partners for Climate Protection

The Region's Inventory was developed in compliance with the Partners for Climate Protection (PCP) program requirements. PCP is a partnership between the Federation of Canadian Municipalities (FCM) and ICLEI Canada – Local Governments for Sustainability. This program helps local government reduce municipal emissions by guiding municipalities through a five-step Milestone Framework (Figure 1).

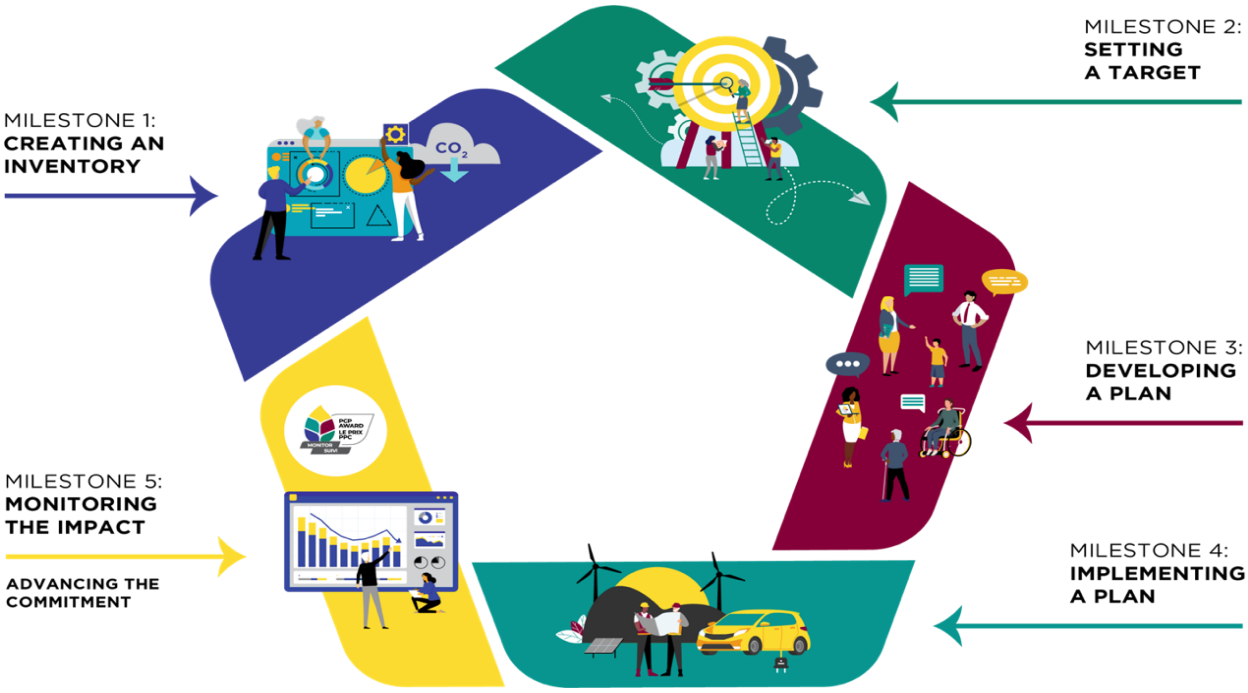


Figure 1: The PCP Five-Milestone Framework

The PCP program offers two streams: Corporate and community. A corporate inventory encompasses all energy use and GHG emissions stemming from municipal operations, including buildings, fleet, outdoor lighting and traffic signals, water and wastewater, and solid waste.

Baseline Energy and Emissions Profile

To develop the baseline energy and emissions profile, this report followed the PCP Protocol[1], which applies industry best practices for quantifying emissions at the local level (Greenhouse Gas Protocol[2] and IPCC Guidelines for Greenhouse Gas Inventories[3]) to the context of municipal operations. The baseline energy profile and GHG emissions inventory tracks three principal GHGs that arise from municipal operations: carbon dioxide ($C0_2$), methane (CH_4) and nitrous oxide (N_20). Emissions fall into one of three scopes:

Scope 1 GHG emissions: Direct emissions from sources owned or operated by the corporation.

Scope 2 GHG emissions: Indirect emissions from sources owned or operated by the corporation.

Scope 3 GHG emissions: Emissions from sources neither owned nor operated by the corporation but are related to the corporation activities.

This Inventory's boundary has been determined using an approach known as operational control, which requires local governments to report 100 per cent of GHG emissions from operations over which it has control (scope 1 and scope 2 emissions). Indirect (scope 3) emissions included in this Inventory are sources of emissions associated with Niagara Region's operations but are not under full operational control and decision-making authority (i.e., police vehicle fleets, the contracted community waste collection vehicle fleet and landfill emissions). Energy and GHG emissions totals will include only scope 1 and 2 emissions. Scope 3 emissions will be reported separately. Energy consumed outside the municipal boundary (and the associated emissions generated) as a result of activities taking place within Niagara region are excluded.

The following information will be presented in this report:

- Total energy consumed by Niagara Region in 2018, by sector and by source.
- Total energy dollars spent by Niagara Region, by sector and by source.
- Total emissions generated by Niagara Region, by sector, source, and scope.
- A business-as-usual GHG emissions forecast for 2032, 2041 and 2051.

[1] ICLEI Canada. (2014). PCP Protocol: Canadian Supplement to the International Emissions Analysis Protocol.
[2] Greenhouse Gas Protocol. (2015). The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard.
[3] IPCC. (2006). Guidelines for National Greenhouse Gas Inventories.

Corporate 2018 Energy and Emissions Profile

In 2018, Niagara Region scope 1 and 2 sources used 796,410 GJ of energy, which resulted in $18,350,788 of energy costs and 22,626 tC02e GHG emissions. Scope 1 and 2 energy consumption, costs, and GHG emissions are disaggregated by sector in Table 1. Table 2 displays the equivalent data for scope 3 emissions.

Table 1: Total scope 1 and 2 municipal energy use, energy costs and GHG emissions in 2018

Sector	Energy Consumption (GJ)	Energy Costs ($)	GHG Emissions (tC02e)
Buildings	376,218	$7,597,162	12,668
Fleet	53,004	$1,606,974	3,526
Outdoor Lighting and Traffic Signals	10,886	$465,679	91
Water & Wastewater	356,301	$8,680,972	6,280
Operational Waste[4]	N/A	N/A	62
Totals*	796,410	$18,350,788	22,626

*Values may not sum to total due to rounding

Table 2: Total scope 3 municipal energy use, energy costs, and GHG emissions in 2018

Sector	Energy Consumption (GJ)	Energy Costs ($)	GHG Emissions (tC02e)
Niagara Region Police Vehicle Fleet	31,991	$1,015,872**	2,074
Contracted Waste Collection Vehicles	86,931	$2,500,845	5,910
Landfilled Waste	N/A	N/A	37,492
Totals*	118,922	3,516,717	45,477

*Values may not sum to total due to rounding

**Estimated based on total per L fuel cost of the vehicle fleet

Table 3 shows scope 1 and 2 municipal energy consumption, costs, and GHG emissions by fuel type. According to this data, while Electricity is the largest source of fuel-derived energy consumption (46%), Natural Gas is responsible for producing the

[4] Operational waste refers to waste collected from waste bins at municipally owned facilities.

largest quantity of GHG emissions amongst fuel types. In fact, Natural Gas accounts for 70% of fuel-derived GHG emissions.

Table 3: Total scope 1 and 2 municipal energy consumption and costs by fuel type in 2018

Fuel type	Energy Consumption (GJ)	tC02e	Energy Costs ($)
Electricity	370,355	3,083	$13,992,339
Natural Gas	309,787	15,775	$2,751,475
Gasoline	24,854	1,604	$797,177
Diesel	28,149	1,936	$809,797
Biogas	63,264	19	N/A
Totals*	796,410	22,403[5]	18,350,788

*Values may not sum to total due to rounding

Municipal Buildings and Facilities

As displayed in Table 1, municipally owned and operated buildings and facilities are the Region's top energy consumer and greatest producer of GHG emissions, accounting for 47% of municipal energy consumption and 56% of municipal scope 1 and 2 GHG emissions. Moreover, Buildings account for 41% of energy costs, second only to Water and Wastewater. There are 10 asset categories included in the Region's building portfolio; Energy consumption and total GHG emissions from each category are presented in Table 4.

Table 4: Total municipal building energy consumption, costs and GHG emissions by asset in 2018

Asset Category	Electricity Consumption (kWh)	Electricity GHG Emissions (tC02e)	Natural Gas Consumption (m3)	Natural Gas GHG Emissions (tC02e)	Total Energy Consumption (GJ)	Total GHG Emissions (tC02e)
Niagara HQ	2,869,344	86	168,148	319	16,602	405
Child Care Services	272,681	8	49,802	95	2,839	103
Long-term Care Facilities	11,104,930	333	1,721,107	3,269	104,175	3,602
Health Care	350,299	11	54,842	104	3,307	115
Niagara EMS	400,946	12	124,073	236	6,446	248

[5] Excludes emissions from operational waste and flaring.

Asset Category	Electricity Consumption (kWh)	Electricity GHG Emissions (tC02e)	Natural Gas Consumption (m3)	Natural Gas GHG Emissions (tC02e)	Total Energy Consumption (GJ)	Total GHG Emissions (tC02e)
Niagara Regional Housing	16,314,940	489	2,882,768	5,475	166,261	5,965
Niagara Regional Police	5,860,042	176	507,651	964	40,032	1,140
Transportation Patrol Yards	1,051,934	32	161,889	307	9,825	339
Employment Offices and Court Services	944,137	28	125,480	238	8,079	267
Waste Management Facilities	3,035,775	91	207,056	393	18,652	484
Totals*	42,205,026	1,266	6,002,816	11,401	376,218	12,668

*Values may not sum to total due to rounding

Corporate Vehicle Fleet & Equipment

Niagara Region owns and operates a fleet of 317 vehicles consisting of gasoline and diesel cars, vans, pickups, heavy duty trucks, and snowplows, EMS vehicles, as well as off-road equipment such as loaders, graders, backhoes tractors, and riding mowers. Corporate fleet accounts for 7% of scope 1 and 2 energy consumption, 9% of municipal energy costs, and 16% of scope 1 and 2 GHG emissions. Table 5 displays fleet energy use, costs and GHG emissions by fuel type, and Table 6 presents this data disaggregated by vehicle type.

Table 5: Municipal fleet fuel use, energy costs, and GHG emissions in 2018

Fuel Type	Energy Consumption (L)	Energy Consumption (GJ)	Energy Costs ($)	GHG Emissions (tC02e)
Gasoline	728,720	25,257	$797,177	1,604
Diesel	730,015	28,237	$809,797	1,922
Totals*	1,458,735	53,494	1,606,974	3,526

*Values may not sum to total due to rounding

Table 6: Municipal vehicle fleet fuel use and GHG emissions by vehicle type

Vehicle Type	Diesel Fuel Use (L)	Gasoline Fuel Use (L)	Total Fuel Use (GJ)	Diesel GHG Emissions (tC02e)	Gasoline GHG Emissions (tC02e)	Total GHG Emissions (tC02e)
Light Duty (Cars/Vans/Pickups)	3,276	448,272	15,416	9	987	996
Medium Duty (Ford F450/550)	29,439	77,517	3,779	78	171	248
Heavy Duty (Large trucks/snowplows)	307,030	0	11,839	805	0	805
OHEV (Loaders/Graders/Backhoes)	30,781	0	1,187	81	0	81
OMED (Tractors)	41,895	0	1,615	111	0	111
Misc. (Riding Mowers)	2,844	24	110	7	0	7
EMS	314,750	202,907	19,057	831	447	1,278
Totals*	730,015	728,720	53,004	1,922	1,604	3,526

*Values may not sum to total due to rounding

Outdoor Lighting and Traffic Signals

Niagara Region owns, operates and maintains 282 traffic signals, 115 warning beacons and over 1,550 roadway lights. Outdoor lighting consumed 10,886 GJ of energy in 2018 accounting for 1% of energy consumption, at a cost of $465,679 or 3% of energy costs (Table 1). Electricity usage for outdoor lighting generated 91 tC02e, contributing less than 1% to scope 1 and 2 GHG emissions.

Water & Wastewater

The Region operates 10 wastewater treatment plants, 6 water treatment plants, 132 remote wastewater facilities and 84 remote water facilities, as well as non-treatment process related buildings including the central maintenance building and environmental services centre. Water and wastewater collection and distribution facilities are not

included here as they fall under member municipality jurisdiction and are not under operational control of Niagara Region.

Water and wastewater accounts for 45% of municipal energy consumption, 28% of scope 1 and 2 GHG emissions, and 47% of energy costs. Table 7 provides an overview of energy use, costs, and GHG emissions in the water and wastewater treatment process. This table does not include non-treatment process related energy use, costs and emissions. Information regarding non-treatment processes is displayed in Table 8.

Furthermore, anaerobic digesters at the wastewater treatment plants produced an additional 19tC02e, and fugitive emissions from flaring accounts for 161 tC02e.

Table 7: Water and wastewater treatment process total energy use, emissions and energy costs in 2018

	Electricity Use (kWh)	Natural Gas (kWh)	Total Energy Use	GHG Emissions (tC02e)	Energy Costs ($)
Water	19,379,719	669,389	94,735	1,853	2,708,759
Wastewater	37,552,971	1,518,708	191,839	4,011	5,855,754
Totals*	56,932,690	2,188,097	286,574	5,864	8,564,513

*Values may not sum to total due to rounding

Table 8: Non-treatment process related energy use, costs and emissions

Building Name	Electricity Use (kWh)	Electricity Cost ($)	Electricity Emissions (tC02e)	Natural Gas Use (m3)	Natural Gas Cost ($)	Natural Gas Emissions (tC02e)
Central Maintenance Building	252,721	$ 28,244	8	48,165	$ 12,993	91
Environmental Services Building	357,834	$ 57,996	11	66,209	$ 17,227	126
Totals*	610,555	$ 86,239	18	114,374	$ 30,220	217

*Values may not sum to total due to rounding

Solid Waste

Due to the operational control of the landfills by Niagara Region, corporate waste emissions are divided into total emissions from active municipally owned and operated landfills, and emissions from operational waste which is waste collected from corporate waste bins at municipally owned facilities. Operational waste is a subset of total landfill emissions and therefore is not added to total landfill emissions. Operational waste

includes emissions from green bin collection delivered to composting facilities. Operational waste contributed less than 1% to total landfill emissions.

Niagara Region is also responsible for 12 inactive landfill sites. Inactive landfill sites can continue to produce GHG emissions for years after their closure. For the purposes of GHG baseline inventories, the methane commitment model is used to calculate landfill GHG emissions from the decomposition of biomass into methane (CH_4). As waste decomposes a portion of emissions are released every year. The methane commitment model calculates the amount of GHG emissions from landfills by using the annual waste disposal amount, regardless of when the emissions actually occurred. In other words, future emissions from waste disposed in a certain year are attributed to that specific inventory year, even though the decomposition of waste and the resulting emissions can take place over many years. Using this method, closed landfills are not included in the Inventory. Total emissions from Niagara Region's two landfills account for 55% of scope 1, 2 and 3 emissions. The Humberstone landfill uses a partial landfill gas collection which significantly reduces emissions.

Table 9: Landfill waste, open burning, and operational waste GHG emissions in 2018

Asset Category	Tonnes of Waste	GHG Emissions (tC02e)
Humberstone Landfill	54,420	14, 693
Niagara Road 12 Landfill	16,888	22,799
Operational Waste* (not added to total)	62	62
Totals**	71,308	37,492

*Includes 19 tonnes of compost collected from municipal facilities
**Values may not sum due to rounding

Business-as-Usual Energy Use GHG Emissions Forecast

The purpose of the Business-as-Usual (BAU) scenario is to understand future energy consumption, energy costs and emissions for the Niagara Region, assuming no action is taken to reduce energy or emissions. Energy consumption, costs and GHG emissions were modelled from 2018 to 2032, 2041, and 2051, in line with population forecasts in the Watson & Associates Economist Ltd. Niagara Region Development Charges Background Study. The BAU forecast is not an absolute picture of future energy use and GHG emissions but instead serves as a tool to guide decision making on energy and emissions mitigation strategies.

Figure 2 shows that energy use is projected to steadily increase throughout the Region between 2018 and 2051. The greatest expected increase is observed in Outdoor Lighting and Traffic Signals, increasing by approximately 46% from 2018 to 2051.

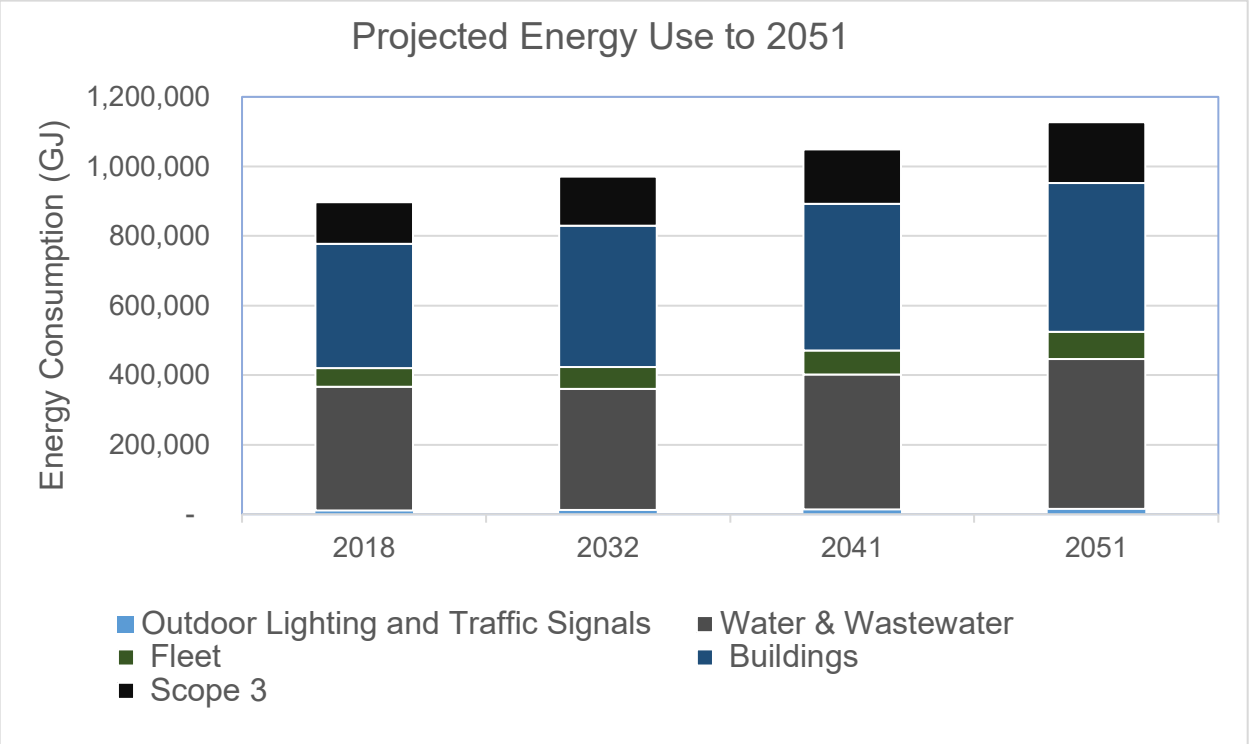


Figure 2: Projected municipal energy use under a business-as-usual scenario by sector to 2051

Figure 3 displays projected GHG emissions from 2018 to 2051. Significant increases are observed in Outdoor Lighting and Traffic Signals (357%), and Water and Wastewater (132%). Total emissions are expected to increase 54% by 2051.

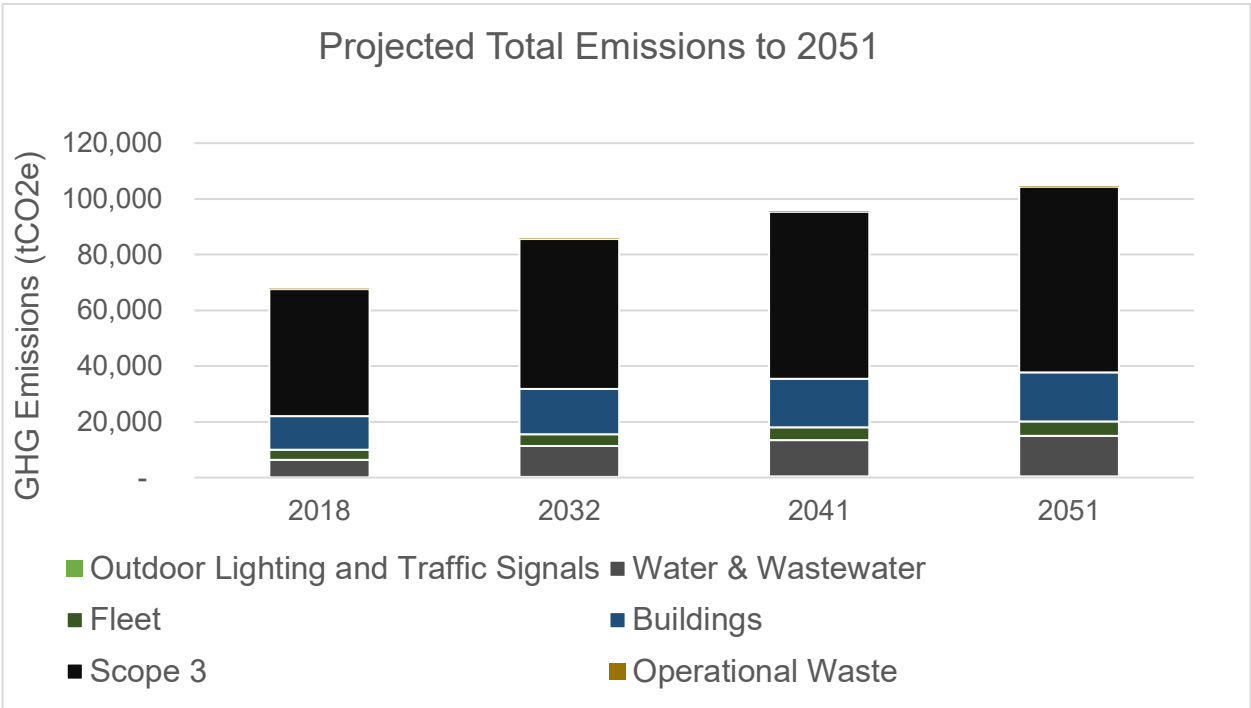


Figure 3: Projected municipal GHG emissions under a business-as-usual scenario by sector to 2051

Business-as-Usual Cost Projections

Canada Energy Regulator projects future energy prices under two scenarios: a “high cost” future where energy prices increase considerably, and a “low cost” future where energy prices increase by a smaller amount or decrease, depending on the fuel type and sector. Under the low-cost scenario energy costs rise by 37% by 2051, and under the high-cost scenario, energy costs increase by 86% by 2051 (Figure 4).

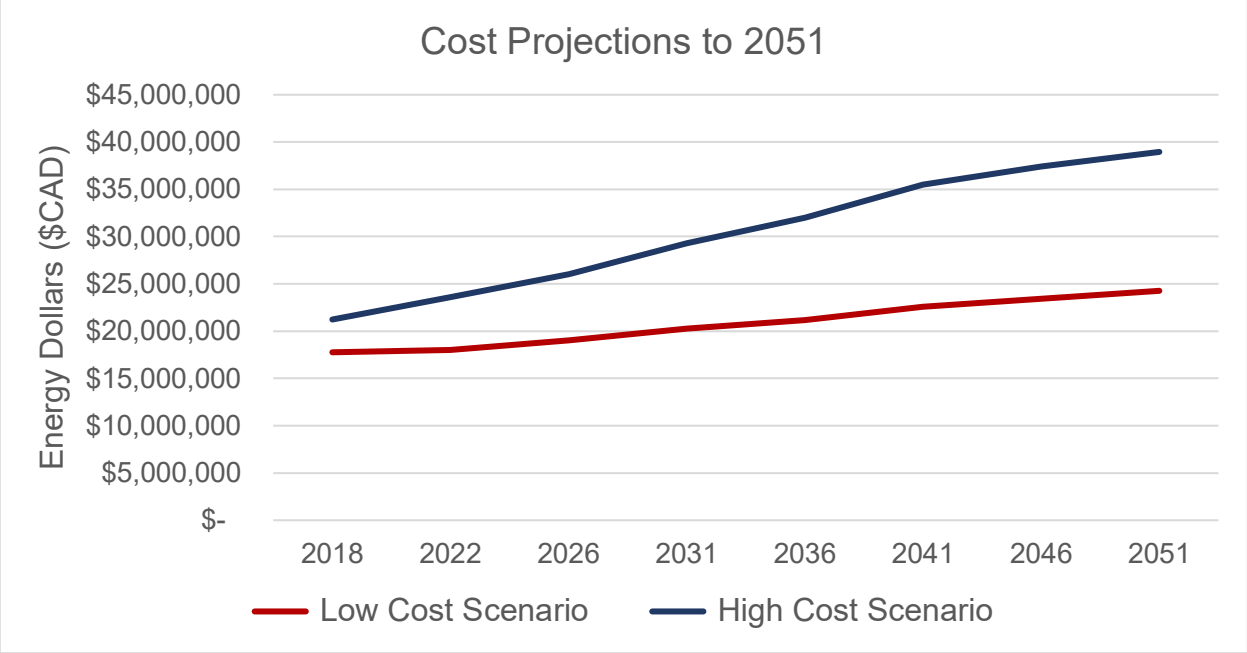


Figure 4: Projection of energy expenditures under a business-as-usual scenario, under a low and high-cost scenario for the Niagara Region

Monitoring and Reporting

The Corporate Inventory serves as an indispensable tool for Niagara Region to track energy use and GHG emissions. Using the business-as-usual emissions forecast Regional staff can anticipate future emissions trends, which will inform the development of effective strategies to mitigate GHG emissions. Continual monitoring and updates to this Inventory is necessary to ensure that the Region remains on track to meet emissions targets and make meaningful contributions to the fight against climate change.

The Inventory also serves as a powerful communication tool for Niagara Region. By publicly reporting on GHG emissions and the progress made towards corporate emission targets, the Region can engage and inform the public and other stakeholders regarding sustainability efforts. This transparency and accountability not only increase public awareness of the challenges posed by climate change but also foster public trust in municipal leadership.

Appendix 4

Table 3: GHG Emissions Reduction Targets- Ontario Municipalities

Municipality	GHG Emissions Target	Baseline Year
City of Brantford	Net-zero by 2050	2018
City of Burlington	Net-zero by 2040	2018
Region of York	Net-zero by 2050	2014
Region of Durham	Net-zero by 2045	2019
City of Hamilton	Net-zero by 2050	2016
City of London	Net-zero by 2050	1990
City of St. Catharines	Net-zero by 2050	2018
Region of Waterloo	80% reduction by 2050	2010
Town of Lincoln	80% reduction by 2050	2011

Niagara Region

Case Study:

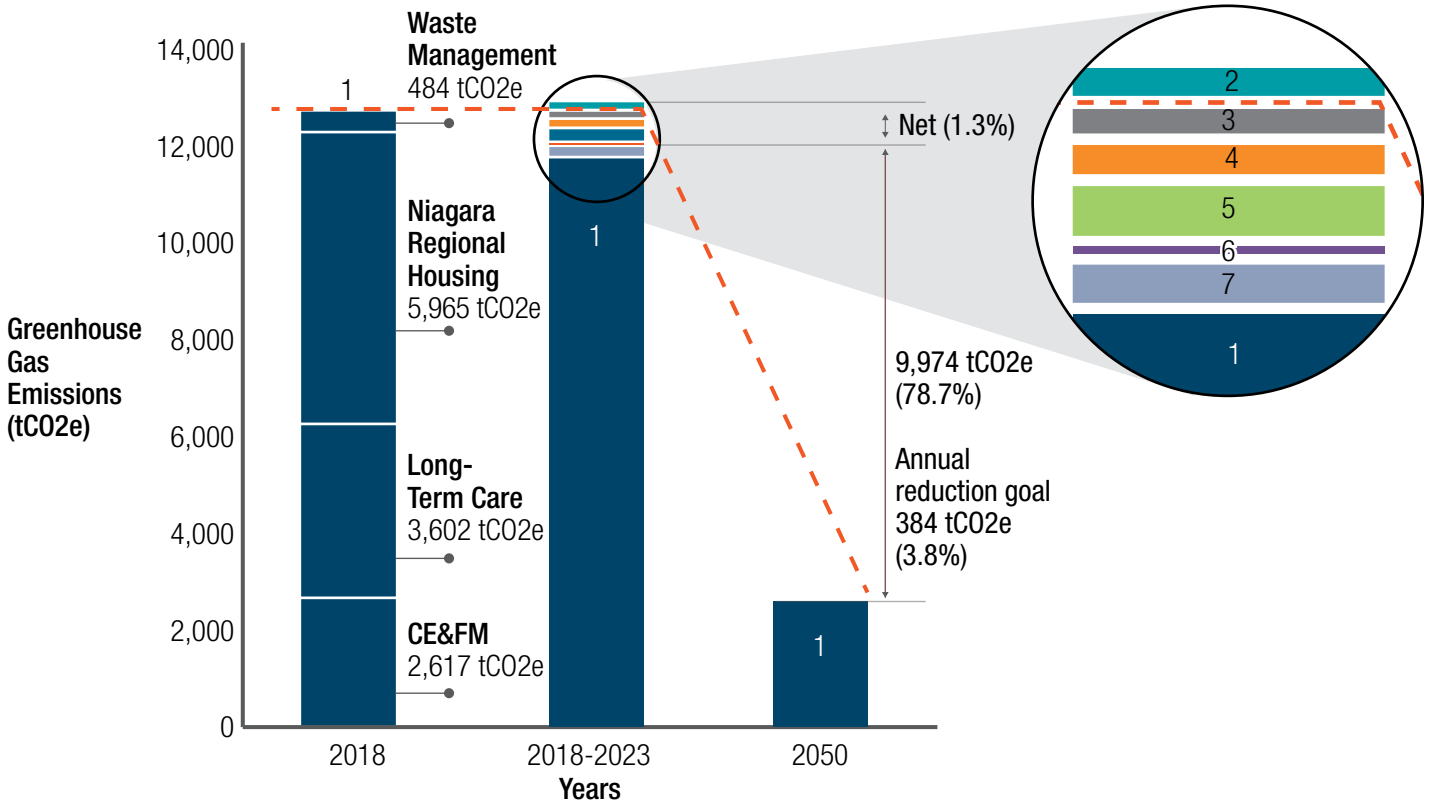
80 Per Cent Greenhouse Gas Reduction by 2050

May 2023 | niagararegion.ca

The following information discusses strategies to achieve an 80 per cent reduction in greenhouse gas emissions by 2050 from the Niagara Region's Building and Water and Wastewater portfolios.

According to the Greenhouse Gas Emissions Inventory, in 2018 the Building portfolio was the largest emitter at 56 per cent, followed by Water and Wastewater at 28 per cent.

Figure 1: Niagara Region Building Portfolio- Greenhouse Gas Emissions



1 **Building Portfolio:**
Construction, Energy and Facilities Management (CE&FM), Long-Term Care, Niagara Regional Housing, Waste Management

Projects/ Initatives

2 Niagara Regional Housing new buildings.....169 tCO2e

3 Decommission 68 Church St Niagara Regional Police Services 1D.....160 tCO2e

4 CE&FM, Long Term Care, Niagara Regional Housing Capital Projects.....160 tCO2e

5 Proposed project – Headquarters Geothermal.....309 tCO2e

6 Proposed project – Headquarters Window Replacement.....47 tCO2e

7 Change in building occupancy during COVID-19.....229 tCO2e

Niagara Region's Greenhouse Gas emissions

Building Portfolio

The graph (Figure 1) on page 2 illustrates the reductions realized since 2018 in the Buildings portfolio as well as possible strategies.

The first bar in Figure 1 displays the Niagara Region's building portfolio, comprising various building types with a total Greenhouse Gas emissions of 12,688 metric tonnes of CO2 equivalent (tCO2e) in 2018. The middle bar presents changes to emissions, including capital projects and proposed initiatives, while the right-hand bar represents the 80 per cent reduction target. Meeting this ambitious goal entails reducing about 384 tCO2e annually, over 26 years (2024-2050). A multi-pronged approach is necessary to achieve this target, such as growth strategies, rightsizing the building portfolio, deep retrofits and strategic building utilization.

Growth Projects- Niagara Regional Housing New Buildings

Since 2018, Niagara Regional Housing has added three energy-efficient buildings with a combined net increase of 107,000 square feet. However, the addition of these buildings have increased Greenhouse Gas emissions by 169 tCO2e annually (item 2), despite their improved building envelope (insulation and windows) and high-efficiency hot water and HVAC systems. If the buildings had been designed according to the minimum energy efficiency requirements specified in the Ontario Building Code, an additional 50 tCO2e would have been added.

To maintain service levels as the region's population grows, new buildings will be necessary, and the adoption of energy-efficient design and building practices should continue to promote sustainable and resilient built environments. Although the Niagara Region currently prioritizes LEED Silver for new construction, achieving the proposed 80 per cent Greenhouse Gas reduction target by 2050 may require a commitment to Net-Zero Greenhouse Gas for all new construction. Without this commitment, new building additions would nullify emission reductions to the existing portfolio (as depicted in Figure 1, items 1 and 2). Moving to Net-Zero has numerous benefits including reducing the carbon footprint of the built environment, lowering energy consumption and costs and enhancing the resilience of new buildings to changing climatic conditions.

Rightsizing - Decommission 68 Church Street

To achieve the 80 per cent Greenhouse Gas reduction target by 2050, the Niagara Region must consider both Net-Zero construction standards and rightsizing the existing building portfolio, as well as applying these standards to future growth projects. Rightsizing the new Niagara Regional Police Services 1 District in St. Catharines (relocated from 68 Church Street to 198 Welland Avenue) and building to LEED Silver standards resulted in a net reduction of 1.6 per cent in Greenhouse Gas emissions (160 tCO2e annually), item 3. Although not statistically significant, the reduction is comparable to the savings generated from all of the energy-related capital projects completed over the past four years. Staff recommends a review of the Niagara Region's building portfolio in order to reduce it where possible as well as exploring opportunities to partner with local area municipalities for shared services.

Deep Retrofits to Existing Building Stock

Item 4 shows a 1.6 per cent reduction in Greenhouse Gas emissions from capital projects in the last four years. Most of the projects focused on end-of-life renewal and energy reduction initiatives linked to Provincial grants/incentives. To date, projects have been focused on reducing the use of electricity and meeting the goals of the Niagara Region's Conservation and Demand Management Plan as per Ontario Regulation 507/18 under the Ontario Electricity Act. Deep retrofits, which involve upgrading multiple building systems, offer a more comprehensive approach, and the proposed items 5 and 6 within Figure 1 could potentially reduce Greenhouse Gas emissions by 356 tCO2e, nearly achieving the annual reduction goal of 384 tCO2e (3.8 per cent). To reach the 80 per cent Greenhouse Gas reduction target, a long-term deep retrofit plan with achievable annual targets is required, taking into account the Niagara Region's Asset Management Plan, building performance, and new technology integration

Building Utilization – Impact of the Pandemic

Figure 1 item 7 presents an unexpected outcome during the pandemic. Due to the remote work policy, the Niagara Region achieved a reduction of 229 tCO2e in the first year of the pandemic despite not closing any facilities and increasing the HVAC requirements in all Long-Term Care facilities. In 2022, with staff returning to the office, Greenhouse Gas emissions returned to pre-COVID-19 levels. This pattern highlights the importance of building utilization and suggests a possible path forward. To decrease the Niagara Region's building portfolio, hybrid workplace policies and alternative service delivery strategies should be considered as part of the Climate Change Action Plan.

Water and Wastewater Portfolio

To meet the Niagara Region's 80 per cent emission reduction target by 2050, the Water and Wastewater division is reviewing potential opportunities to reduce energy consumption, improve efficiency and use renewable sources. It is critical that all measures comply with regulations and maintain water quality, system reliability and meet the increasing demand for treated water.

Achieving emissions reductions within the Water and Wastewater division will consider Table 1.

Overall, meeting the goal of an 80 per cent reduction of emissions in Water and Wastewater operations will require a combination of strategies and continuous efforts to reduce emissions and increase energy efficiency.

Table 1- Emission Reduction Example Opportunities

Category	Theme	Action Items
1- Carbon Footprint Inventory	Identify the sources of greenhouse gas emissions associated with water and wastewater operations.	Identify areas where emissions can be reduced and where renewable energy sources can be implemented.
2- Increase Energy Efficiency	Implementing energy efficiency measures is an essential step toward reducing emissions.	Measures include optimizing aeration blower systems, pumping systems, improving treatment processes and reducing water loss through leaks.
3-Renewable Energy	Renewable energy sources such as solar, wind, and geothermal energy can be used to power water and wastewater treatment plants.	Maximizing the use of digester gas as a fuel source or upgrading the quality of the digester gas to produce renewable natural gas can yield significant emissions benefits.
4-Design & Construction	Design and construction of new facilities to incorporate green/LEED standards.	Use life cycle assessment to evaluate the impacts of the facility design and construction and identify areas where further improvements can be made.

Maximizing Emissions Reduction

Niagara Region operates six water treatment plants, 84 water pumping stations, 10 wastewater treatment plants, 132 wastewater pumping stations and one facility for processing bio-solids. In aggregate, these facilities comprise 28 per cent of the total greenhouse gas emissions for Niagara Region.

A further breakdown of these emissions reveals that Water represents 32 per cent of the emissions and Wastewater operations is 68 per cent. Electricity consumed is 29 per cent of the total emissions and 71 per cent comes from natural gas consumption.

The utilization of these values is pivotal in crafting a comprehensive strategy to optimize emissions reduction by pinpointing key opportunities to achieve an 80 per cent reduction emissions goal. Therefore, in terms of priority of effectiveness for achieving emissions reductions, they rank as seen in Table 3.

Figure 2- Emissions from Water and Wastewater Operation Sources

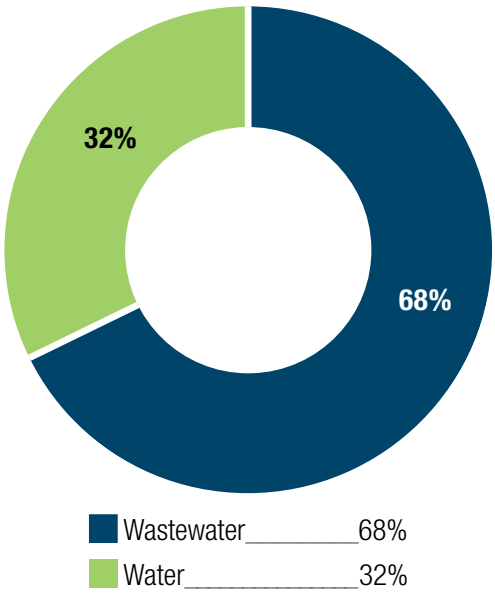


Figure 3- Emissions from Water and Wastewater Fuel Sources

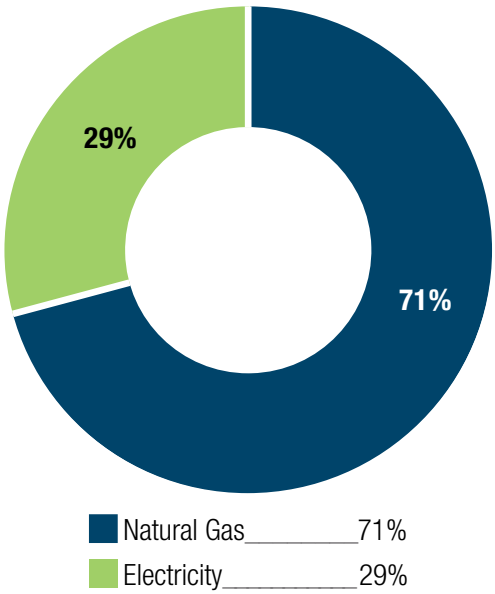


Table 2- Energy Consumption and Emissions- Water and Wastewater Pumping Stations and Treatment Plants

	Pumping Stations				Treatment Plants			
	Electricity Kilowatt-hour (kWh)	Emissions Tonnes (tC02e)	Natural Gas Cubic Metre (m3)	Emissions Tonnes (tC02e)	Electricity Kilowatt-hour (kWh)	Emissions Tonnes (tC02e)	Natural Gas Cubic Metre (m3)	Emissions Tonnes (tC02e)
Wastewater	10,013,534	300	116,821	222	27,539,437	826	1,401,887	2,663
Water	2,909,067	87	16,645	32	16,470,651	494	652,744	1,240

Table 3- Water and Wastewater Emissions Reduction Priorities

Priority	Facility	Type of Gas	Emissions Tonnes (tC02e)
1	**Wastewater Treatment Plant**	Natural Gas	2,663
2	**Water Treatment Plants**	Natural Gas	1,240
3	**Wastewater Treatment Plants**	Electricity	826
4	**Water Treatment Plants**	Electricity	494
5	**Wastewater Pumping Stations**	Electricity	300
6	**Wastewater Pumping Stations**	Natural Gas	222
7	**Water Pumping Stations**	Electricity	87
8	**Water Pumping Stations**	Natural Gas	32

Note: These figures are based on energy consumption for the 2018 base year and exclude non-treatment process related users of energy.

Historically, Water and Wastewater operations has implemented various measures to reduce energy use and their associated emissions and are currently evaluating other measures that will work towards these reduction targets. Example measures are included in Table 4.

Table 4- Water and Wastewater Energy Reduction Measures

Measure	Description
High-Efficiency motors	Motors for all pump and fan systems must be a minimum of 94 per cent efficiency. This is standard for all applications.
Variable Frequency Drives controls	All high-lift and low-lift pumping systems utilize a Variable Frequency Drives to regulate pumping speed to reduce electricity consumption. As per engineering design standards.
High-Efficiency Aeration Blower systems	Technology advances have improved the efficiency of the single largest source of energy consumption in wastewater treatment. Each application is carefully evaluated for efficiency.
LED Lighting	The majority of Water and Wastewater facilities have been converted to LED lighting and in going forward, all new construction projects utilize LED lighting systems. As per engineering design standards.
Digester Gas Use	Use of duel fueled boiler systems at wastewater treatment plants for space heat and process heat. Avoidance of 3,167 tCO2e but replacing consumption of natural gas with digester biogas.
Condensing Boilers	Increase fuel efficiency consumption for process heating and space heating boilers. Four recent boiler upgrades will yield roughly 387 tCO2e reduction.
Renewable Natural Gas	Surplus digester gas can be upgraded to pipeline quality. This initiative is currently being investigated. Potential for revenue generation or to reduce an estimated 4,800 tCO2e of emissions.

In Summary

Achieving an 80 per cent reduction in Greenhouse Gas emissions by 2050 in the Buildings and Water & Wastewater portfolios requires a cohesive and integrated approach. This entails recognizing existing successes and building off them through an integrated and comprehensive plan, including the development of energy-efficient buildings, deep retrofits and including the Water and Wastewater Greenhouse Gas reduction opportunities. Ongoing measures demonstrate the feasibility of the recommended target and highlight the need for continued Niagara Region wide support. Collaborative emissions reduction efforts in both portfolios are necessary for Niagara Region to achieve its ambitious goal.

Case Study:

80 per cent Greenhouse Gas Reduction by 2050

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Appendix 6

Table 4: 2023-2024 Climate Change Regional Initiatives

Action	Description	Timeframe
Niagara Climate Change Municipal Community of Practice (NCCMCP)	The LAMs will be encouraged through the NCCMCP to adopt the recommended corporate GHG emission reduction targets.	Q1 2023 and on-going
Corporate Climate Change Action Plan	The Region will initiate a Corporate Climate Change Action Plan (once targets are approved). The strategy will determine how to meet the established targets, identify priority areas, propose recommended actions, and secure funding • Plan will align with the CDMP, fleet and infrastructure planning, and waste reduction initiatives and programs in Regional buildings etc.	Q2 2023
Niagara Climate Change Action Network (NCCAN)-Community/Municipal Energy Plan Funding	The Region will initiate the process to develop a Community/Municipal Energy Plan, with support from the Province through its Municipal Energy Plan Program Funding (https://www.ontario.ca/page/municipal-energy-plan-program#section-3). Collaboration with the NCCAN is essential. The Plan will be community-wide and be broken down by municipality.	Q2 2023
Host an Annual Climate Change Summit	The Region and partners (Brock University, Niagara Peninsula Conservation Authority, and Niagara College) will host the annual Climate Change Summit.	Q3 2023
Energy Conservation and Demand Management Plan (CDMP) Update	Ontario Regulation 507/18 under the Electricity Act requires public agencies, including Municipalities, to report on their energy consumption and GHG emissions annually, to develop and implement a CDMP, and to update the Plan every five years.	2024