

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 | <p>Housing and Homelessness Action Plan (HHAP) Action Items for 2019-2023</p> <p>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).</p> <p>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.</p> | | |

| 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 Portgag 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 Portgag 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) | | <p>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.</p> <p>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.</p> |

| 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 |
|--|------|----------------------------------|--|--|
| | | | | <p>approach for Council endorsement.</p> <p>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.</p> |
| 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 plants 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) | | <p>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.</p> <p>- Implementation of a Climate Change</p> |

| 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 | <p>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%.</p> <p>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.</p> | 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 off 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 | | <p>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.</p> <p>Design improvements consist of:</p> <ul style="list-style-type: none">- 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 |
|---------------------------------|------|--------------------|---|--|
| | | | | <p>water</p> <ul style="list-style-type: none">- Installation of a small pumping station (Glenridge)- Addition of storage tanks adjacent to our pumping station to provide on-Site buffering capacity <p>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 consciousness at top of mind.</p> |
| Public Works - Waste Management | 2023 | Pollinator Program | | <p>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</p> |

| 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." |