July 1, 2024

2024-2029
Energy Conservation and Demand Management Plan

The Corporation of Norfolk County

Norfolk COUNTY

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APPENDIX

GLOSSARY

Carbon Sequestration: the removal of carbon dioxide from the atmosphere through natural (i.e., trees or plants) or artificial processes.

Cooling Degree Days (CDD): a measurement designed to reflect the demand of energy to cool a building. This report uses CDD figures from the Government of Canada's Climate database for the Delhi Weather Station. CDD for a given day is the number of degrees Celsius that the daily mean temperature is greater than 18°C (i.e.,the mean temperature on August 1st, 2019 was 19.5°C, therefore the CDD for this day is equal to 1.5).

ECDM: Energy Conservation and Demand Management.

Equivalent Kilowatt-Hour (ekWh): a unit of energy to compare different energy sources. The ekWh uses the most commonly used electricity unit (kWh) as its base for comparison.

- 1 kWh of electricity is equal to 1 ekWh; and
- 1 m^3 of natural gas is equal to 10.6 ekWh.

Energy Use Intensity (kBTU/ft^2): a building's annual energy use in kBTU per unit of gross building area in square feet.

GHG (Greenhouse Gas): the emission of various chemicals and gases into the earth's atmosphere that contribute to the greenhouse effect.

Heating Degree Days (HDD): a measurement designed to reflect the demand of energy to heat a building. This report uses HDD figures from the Government of Canada's Climate database for the Delhi Weather Station. HDD for a given day is the number of degrees Celsius that the daily mean temperature is less than 18°C (i.e., the mean temperature on January 1st, 2019 was -6.8°C, therefore the HDD for this day is equal to 24.8).

HVAC: Heating, ventilation and air conditioning. The use of various technologies to control the temperature, humidity and purity of the air in an enclosed space.

kBTU: a common unit of energy.

- 1 kWh of electricity is equal to 3.412 kBTU;
- 1 $m^3$of natural gas is equal to 36.425 kBTU;
- 1L of diesel is equal to 36.301 kBTU; and
- 1L of gasoline is equal to 31.794 kBTU.

1.0 Overview

1.1 About Norfolk County

Norfolk County is a single-tier municipality, located on the north shore of Lake Erie, in the heart of Southwestern Ontario. Located between Elgin and Haldimand Counties, Norfolk County is comprised of several small communities spread across 1,607 square kilometers.

Forming the heart of Canada's Carolinian Forest zone, the County is home to the highest percentage of forested land in Southwestern Ontario, with 25% of the landscape consisting of forest cover. The County is also home to the Long Point UNESCO World Biosphere Reserve, one of nineteen biosphere reserves in the Nation, as well as prime agricultural land, coining the County as "Ontario's Garden."

1.1.1 Norfolk County Energy Profile and Initiatives

Norfolk County is presently home to multiple large commercial solar farm projects, private small ground-mount or rooftop solar projects and a privately-owned energy storage (battery) facility. While the County has declared itself an unwilling host for any new, large-scale wind turbine projects for electricity generation, the County is host to a significant number of wind turbines. Further, in 2015 Norfolk County was one of the first Ontario municipalities to generate energy from non-recyclable solid waste through the Emerald Energy From Waste facility.

Through 2019-2024, the County installed one (1) additional small-scale solar PV system. The most recent installation, fully commissioned in 2023, is equipped with Norfolk County's first battery storage system.

In addition, in 2021, the County initiated an electric vehicle (EV) charging station pilot project, which resulted in the installation of the County's first publicly-owned and available EV charging stations. Further, there has been an observable increase in the installation of privately-owned charging stations, including a Tesla Supercharger location.

In February 2024, the County launched an EV Pilot Program. The program will seek to determine the operational feasibility of EV's within the Norfolk County fleet for potential further implementation and use.

Lastly, in mid-2023, the County began the design process for a low-carbon retrofit at the Norfolk County Public Library, Waterford Branch. Further details of the retrofit can be found in **Section 4.3.3 Facility Retrofits**.

1.1.2 Norfolk County Key Energy Statistics

Norfolk County Geographical Area = 1,607 square kilometers

Population = 67, 490 (2021 Census of Population)

Norfolk County-Owned Woodlot Area = 2,385 acres

Carbon Sequestration of County woodlots = ~9,646.25 tonnes of CO_2 / year

Urban-area County trees = 22,740 trees

Average Carbon Sequestration of 'Urban' County trees = ~341.10 tonnes of CO_2 / year

Installed Renewable Energy Generation Capacity throughout Norfolk County (2018 Estimate) = 132,547.2 kW

Annual Renewable Energy Generation throughout Norfolk County (2018 Estimate) = 268,644,239 kWh

Installed Public EV Charging Stations = 25

	Publicly-Owned	Privately-Owned
Total Chargers	2	23
Level-2 Chargers	2	14
Level-3 Chargers	0	9

Natural Resources Canada Electric Charging and Alternative Fuelling Stations Locator, 2024

Norfolk County Public, Level-2 Charging Station and Waterford Fire & EMS Base Net-Metered Solar System

1.2 ECDM Plan

An ECDM Plan, accompanied with general energy management best practices, are integral amongst corporations, as they can provide economic, environmental, and operational advantages.

Energy conservation measures can (directly and indirectly) result in:

- Improved energy efficiency;
- Cost savings and improved financial stability
- Decreased reliance and dependence on the electrical grid
- Reduced greenhouse gas (GHG) emissions
- Risk mitigation and resiliency
- Improved employee engagement

In summary, energy management plans and best practices are vital to the overall sustainability and success of corporations, addressing economic, environmental, societal and operational considerations.

1.2.1 Provincial Mandate

History

The regulatory requirements for municipal Energy Conservation and Demand Management Plans were originally established in 2011 through Ontario Regulation (O. Reg.) 397/11, under the *Green Energy Act, 2009*. Since then, there have been several changes and amendments to this process. The most recent update to the regulation was in February 2023, now known as:

- **O. Reg. 25/23**, under the *Electricity Act, 1998.*

Regulatory Requirements

Through O. Reg. 25/23, Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans, Ontario public agencies are required to report annual energy consumption and GHG emissions to the Ministry of Energy, Conservation and Parks (MECP) by July 1st of each year. In addition, each public agency is required to produce an updated ECDM Plan every five years.

1.3 Linkages to Norfolk County's 2022-2026 Strategic Plan

The 2024-2029 Norfolk County Energy Conservation and Demand Management Plan meets strategic areas of the County's 2022-2026 Strategic Plan:

1) Building Norfolk

1.1 Ensure the health, safety and well-being of the community

Facilitating the necessary supports to ensure affordable, accessible and equitable service options through:

- Improved energy efficiencies, generation of renewable energy resources and reduced operating costs of public facilities; and
- Reduction in air pollution (GHG emissions) through reduced energy consumption.

1.2 Provide a solid infrastructure foundation

Ensuring that Norfolk has all of the hard infrastructure (i.e., water, sewer, roads, parks) for current and future needs through:

- Ensuring that County operations and upgrades to infrastructure are both efficient and future-proofed to consider future facility needs.

1.3 Ensure responsible growth policies and strategies

Developing policies and processes that foster responsible growth in Norfolk through:

- Amendments and revisions to the Norfolk County Energy Policy; and
- Implementation of Energy Conservation Measures.

1) Serving Norfolk

2.1 Strengthen communication and service delivery

Improving how Norfolk communicates and delivers services to the community, both digitally and in-person through:

- Providing training opportunities to building and equipment operators towards energy efficient and responsible operation; and
- Generating on-site renewable energy at public facilities to reduce service disruptions.

2.2 Foster a positive employee culture

Attracting, developing and retaining employees who will work collaboratively to deliver excellent customer service through:

- Collaborative implementation of energy conservation measures at administrative facilities and public-use facilities; and
- Providing training and development opportunities.

2.3 Create an environment of continuous improvement

Encouraging and recognizing innovation and action that exceeds expectations of the community through:

- Corporate Energy Conservation Promotion and Education initiatives;
- Updated Norfolk County Energy Policy;
- Public Energy Awareness Program; and
- Training opportunities for staff.

3) Sustaining Norfolk

3.1 Continue to implement and enhance our climate action strategies

Making our infrastructure more resilient to the effects of climate change and identify opportunities to reduce Norfolk's carbon footprint through:

- Implementation of energy conservation measures, improved energy efficiency, and mechanical and/or building retrofits; resulting in decreased GHG emissions;
- Generation and storage of on-site renewable energy to reduce the carbon footprints of corporate facilities; and
- Expansion of EVs amongst the County Fleet.

3.2 Ensure financial sustainability

Continue our long-term financial and resource strategy that is realistic, affordable and sustainable through:

- Optimizing facility and equipment operation processes;
- Using energy efficient technologies;
- Equipment and/or facility retrofits;
- Adopting energy management best practices;
- On-site renewable energy generation and storage;
- Design and build of a low-carbon and/or net-zero facility;
- Consideration of Sustainable Procurement practices; and
- Bulk purchasing of utilities.

DID YOU KNOW?

Throughout the duration of the 2019-2024 Norfolk County ECDM Plan period, the County retrofitted approximately **3,825** inefficient, T12, incandescent and high pressure sodium lamps and fixtures with LED bulbs.

The County has been completing lighting retrofits since 2011 and has realized significant energy and cost savings post project completion.

2.0 Norfolk County in 2029: An Energy Vision

The 2024-2029 Norfolk County Energy Conservation and Demand Management Plan (ECDM) has been developed to address the fiscal, societal, and environmental risks associated with the consumption of energy by the Corporation of Norfolk County. It has been designed to continue to provide a guiding light for the future of the energy management program within The Corporation of Norfolk County. The ambitious goals, objectives and expected implementation of the identified measures shall establish Norfolk County's reputation as being an environmentally and fiscally responsible municipality.

In order to successfully achieve the ambitious goals and objectives outlined within the 2024-2029 Norfolk County ECDM Plan, an all hands-on approach must be maintained. Interdepartmental collaboration will be vital in order for the Corporation of Norfolk County to achieve the desired results.

The 2024-2029 Norfolk County Energy Conservation and Demand Management Plan has been developed in accordance with O. Reg. 25/23 under the *Electricity Act, 1998*.

The Plan was endorsed first by the Sustainability Advisory Committee on **May 2, 2024**, followed by Norfolk County's Senior Leadership Team on **May 29, 2024** and further, by Norfolk County Council on **June 18, 2024**.

2.1 Vision Statement

To improve the energy efficiency of municipal services within Norfolk County, provide local leadership in sustainability and enhance the quality of life of all who live, work and play in Norfolk County.

2.2 2024-2029 Goals and Objectives

To achieve the 2029 energy vision for Norfolk County, the following five strategic goals and specific objectives have been established.

2.2.1 Reduce GHG Emissions of County Operations in accordance with the Intergovernmental Panel on Climate Change's (IPCC) scientific targets

2.2.1.1 Goal

Demonstrate leadership by committing The Corporation of Norfolk County to meet ambitious federal and international recommendations to align with the IPCC's scientific targets of a 45% reduction in GHG emissions by 2030 and net-zero operations by 2050.

2.2.1.2 Objectives

a) Pass a joining resolution through Council;
   - Sign Partners for Climate Protection's Joining Resolution
   - Partake in the program's Milestone Framework alongside approximately 518 Canadian Municipalities (representing more than 70% of Canada's population).

b) Move through the 5-Milestone Framework within 10 years of joining;
   - Norfolk County has already completed the following:
     - Milestone 1: Creating Baseline Emissions Inventory (Corporate & Community)
     - Milestone 2: Set Emissions Reduction Targets

c) Reduce the total annual GHG emissions from County operations by 45% from 2018 levels by 2030;

d) Commit the Corporation of Norfolk County to a net-zero corporation by, at latest, 2050 and establish the required framework to meet this target; and

e) Encourage fuel-switching initiatives when applicable.

2.2.2 Increase Energy Efficiency of County Operations

2.2.2.1 Goal

Reduce total annual weather-corrected energy consumption intensity of County facilities below 2023 levels by 2029.

2.2.2.2 Objectives

a) Reduce total energy consumption in 50% of Norfolk County facilities below 2023 levels by 2029;

b) Reduce the total annual weather-corrected energy consumption intensity ($kBTU/ft^2$) of all non-water/wastewater facilities by 15% below 2018 levels by 2029;

c) Reduce street light energy intensity of remaining non-LED street lights by 15% below 2023 levels by 2029;

f) Implement annual energy conservation measures, as noted in Section 4.3.1 from 2025-2029; and

g) Implement additional energy efficiency measures as per Section 4.3.2 over the period of the Plan.

2.2.3 Reduce Annual Energy Costs of County Operations

2.2.3.1 Goal

Reduce the total annual energy costs of County Operations.

2.2.3.2 Objectives

a) Despite anticipated electricity rate increases, reduce total electricity cost intensity of all non-water/wastewater facilities by 5% below 2023 levels by 2029;

i. Encourage the installation of rooftop photovoltaic (PV) solar systems (net-metered and/or off-grid) at County facilities in correspondence with roof replacements.

b) Despite anticipated natural gas rate increases, hold total natural gas cost intensity of all County facilities to a maximum of 10% increase over 2023 levels.

i. Encourage the installation of high-efficiency HVAC equipment upon lifecycle replacement.
ii. Encourage the installation of HVAC optimization controls at County facilities to ensure that systems run efficiently.

c) Despite anticipated fuel rate increases, hold total fuel costs to a maximum 5% increase over 2023 levels;

i. Encourage the expansion of EVs within the County Fleet.
ii. Encourage the use of a Carpool Program for County operations.
iii. Encourage the use of electric-powered landscaping equipment and/or hand tools for County operations.
iv. Explore the feasibility of reduced grass maintenance at County properties.
v. Encourage virtual meetings.

d) Explore alternative, cost-effective, sources of energy and energy storage through pilot projects and/or programs with the aim to meet the above objectives;

e) Explore the feasibility for the design and construction of a net-zero or low-carbon facility; and

f) Explore the feasibility of complete facility retrofits, when applicable.

2.2.4 Promote Commitment to a Sustainable Norfolk

2.2.4.1 Goal

Promote sustainability and advocate for the responsible and efficient use of energy and resources within Norfolk County.

2.2.4.2 Objectives

a) Enhance corporate procurement strategies to place a stronger emphasis on long-term sustainability, life-cycle costing and energy efficiency. Explore potential of inclusion of ‘upstream’ energy and GHG emissions in procurement;
b) Enhance existing staff energy awareness program and expand the program to promote energy efficiency and conservation to residents and businesses County-wide;
c) Integrate energy conservation, asset management, climate change adaptation and GHG emissions reduction planning to provide long-term sustainability guidance to the Corporation;
d) Encourage the use of energy management software and measurement and verification techniques to track energy use and identify inefficient operations;
e) Increase the visibility of energy and sustainability considerations to Council, Senior Leadership Team, County staff and the general public;
f) Explore alternative methods to increasing the long-term sustainability of the Corporation and community;

g) Provide annual training to building and equipment operators at high consumption facilities (i.e., arenas, long-term care, water/wastewater) to improve and promote efficient operating practices across the corporation;
h) Establish and implement a Community Energy Investment & GHG Emissions Reduction Strategy to promote long-term sustainability in Norfolk County;
i) Review and Update the Norfolk County Energy Policy to reflect the revised goals and objectives of the ECDM Plan as well as efficiency and low-carbon initiatives; and
j) Annually report the progress made to the goals and objectives outlined in Plan to Council.

2.2.5 Expand Renewable and Sustainable Energy Generation

2.2.5.1 Goal

Promote energy sustainability through increasing the generation of renewable energy through County facilities.

2.2.5.2 Objectives

a) Generate 10% of the corporation's total electricity consumption through renewable energy sources by 2029;

b) Reduce the energy consumption of ten Norfolk County facilities by at least 15% from 2023 levels, through a combination of energy efficiency measures and on-site renewable energy generation;

c) Complete a Corporate Renewable Energy Feasibility Study by 2029;

d) Establish and implement a Long-Term Corporate Renewable Energy Plan to meet the aforementioned objectives; and

STAY UP-TO-DATE

Interested in Corporate Energy Management? Visit the Norfolk County Webpage to learn more.

3.0 Norfolk County Energy Baseline

In order to achieve the 2029 energy vision for Norfolk County, it is imperative that the current state be thoroughly defined, with a strong baseline of County facilities established, to ensure that future actions can be measured and evaluated.

3.1 Summary of Norfolk County Energy Assets

The Norfolk County ECDM Plan pertains solely to internal matters affiliated within the Corporation.

Overall, the Corporation of Norfolk County is responsible for the energy consumption of approximately 168 properties (detailed listing and 2023 energy consumption found in **Appendix A**), 229 fleet and motorized equipment, 4,891 street lights and 496 traffic lights and associated infrastructure (i.e., pedestrian signals). Properties are powered by grid electricity and natural gas, fleet and motorized equipment are powered by gasoline and diesel and street and traffic lights are mainly powered through grid electricity, with select traffic lights being solar powered.

Norfolk County Properties Overview

Property Category	Number of Properties	Total Gross Building Area (ft^2)
Administration	7	110,040
Public Libraries	4	47,026
Cultural Facilities- Recreational Facilities	44	361,114
Cultural Facilities- Community Centres	14	115,363
Cultural Facilities- Museums and Associated Facilities	8	59,369
Cultural Facilities- Medical Centres	1	6,200
EMS Bases and Associated Facilities	7	20,035
Fire Stations and Associated Facilities	12	83,463
Roads Operations & Storage Facilities	16	84,459
Long Term Care Facilities	1	123,845
Water / Wastewater Facilities	52	187,150
Solid Waste Transfer Stations	2	850

Properties with multiple categories are included in all categories.

Norfolk County Fleet and Equipment Overview

Fleet Category	Number of Vehicles
Medium-Duty Trucks/Vans	Electric: 1, Non: 82
Heavy-Duty Trucks/Vans	36
Fire Vehicles	61
EMS Vehicles	18
Large Motorized Equipment	26
Ice Resurfacers	Electric: 4, Non: 1

Norfolk County Renewable Energy Generation Overview

Location	Renewable Energy Generation Category	Size	Battery Storage? (Y/N)	Year Installed
Waterford Fire & EMS Base	Rooftop Solar (net-metered)	10 kW	N	2021
St. Williams Community Centre	Rooftop Solar (off-grid)	10 kW	Y	2023
NCPL - Waterford Branch	Rooftop Solar (off-grid)	13.95 kW	Y	2024

3.2 Norfolk's Current Corporate Energy Approach

Norfolk County has implemented a de-centralized approach to managing energy and relies on energy awareness and shared responsibility from all staff. Norfolk County currently has dedicated 0.33 of a FTE (full-time equivalent), located in the Facilities Department of the Operations Division to be responsible for overseeing the energy management program including: implementing an energy awareness program, energy data management, energy conservation measures, energy procurement, energy retrofits and regulatory compliance (i.e., reporting).

The implementation of energy conservation measures and energy retrofits within water and wastewater treatment and distribution facilities is the responsibility of the facility owner.

3.2.1 County Energy Awareness Program

Corporate-wide energy awareness was first initiated in Norfolk County when the Energy Conservation Committee (formerly the Energy Conservation Project Team) was formed in May 2003. After the hiring of an Energy Coordinator, a formal staff energy awareness program was established in late 2013 and has evolved into the current program.

3.2.1.1 Staff Energy Conservation Competitions

The Corporation of Norfolk County periodically holds energy competitions, where County staff are challenged to reduce the energy consumption at their respective facilities or develop innovative ideas to reduce energy consumption in their workplace. Approximately eight competitions have been held since 2018 and have generated over ~354,186.88 ekWh (or ~$26,998.56 in avoided costs) in directly measureable energy savings.

3.2.1.2 Energy Promotions

Energy efficiency has historically been promoted within the County through various communication channels. Energy newsletters are issued to all County staff and include consumption performance updates, conservation tips and energy project updates. In addition, energy efficiency is promoted through formal presentations to staff and Council.

3.2.2 Norfolk County Sustainability Advisory Committee

In 2022, the former Norfolk County Energy Conservation Committee was merged with the former Norfolk County Climate Change Adaptation Committee to create the Norfolk County Sustainability Advisory Committee.

Similar to the former Norfolk County Energy Conservation Committee, the Norfolk County Sustainability Advisory Committee meets quarterly and currently has ten members.

The roles and responsibilities of the Norfolk County Sustainability Advisory Committee are vast; however, they mirror the existing initiatives of the Norfolk County Energy Conservation Committee. This includes but is not limited to providing recommendations to Mayor and Council and staff in regards to strategic energy efficiency measures throughout the Corporation. Further, the Sustainability Advisory Committee provides oversight and input to the development and implementation of the Energy Conservation and Demand Management Plan.

The ten Committee members for the current term of Council include: Norfolk County Mayor Amy Martin (ex-officio), Norfolk County Councillor Chris Van Paassen, Michael Simoes (Director, Facilities), Sydney Clarysse (Project Lead, Energy and Facilities), Justin Miller (Public Member), Karla Falk (Public Member), Paul Hammond (Public Member), Timothy Salvatore (Public Member), Valerie Hickey (Public Member) and Wesley Wilson (Public Member).

3.2.3 County Energy Data Management

To meet Norfolk County's legislated reporting requirement and to provide benchmarking, historical consumption trending, bill anomaly review and energy efficiency measure results, energy management software is used by the County.

In 2009, Norfolk County was one of six Ontario municipalities to purchase the energy management software Energy and Environmental Management System (EEMS) from York Region. EEMS was used by Norfolk County until 2017, when Norfolk County elected to transfer to the no-cost software Energy Star Portfolio Manager. Energy Star Portfolio Manager allows benchmarking across more facilities (more than 450,000 properties including public and private sectors), a more user-friendly interface for all County staff to review the energy performance of their facility and the ability to apply for an Energy Star certification at any high performance building.

As of January 2024, in addition to Energy Star Portfolio Manager, the County will be utilizing Local Authority Services' (LAS) (a division of the Association of Municipalities of Ontario) Energy Planning Tool (EPT), which assists in further tracking utilities, energy reporting, monitoring of energy related projects, the creation of 5-year ECDM Plans, utility billing audits and tools for building energy awareness and conservation programs. Staff will be utilizing this tool for the entirety of 2024 and will re-assess prior to January of 2025 to determine the tools' effectiveness and benefits to energy management.

Currently, the County's 324 bills for electricity and natural gas accounts are manually entered into Energy Star Portfolio Manager monthly. Energy Star Portfolio Manager has the ability to complete auto-bill entry of utility bills with data provided directly from utilities; however, our utilities have not registered as service providers of this service. With the addition of the LAS EPT in early 2024, there is an opportunity for monthly energy consumption to be monitored and provided to staff; however, utility cost data will still need to be manually entered in by the FTE.

3.2.4 County Energy Procurement

The Corporation of Norfolk County currently procures its utilities through LAS' natural gas and electricity programs. Norfolk County fuel is competitively procured in a bulk procurement. The bulk procurement strategy provides some protections to Norfolk County in terms of market volatilities.

3.2.5 County Energy Retrofits

The Corporation of Norfolk County has developed and implemented numerous energy efficiency retrofits based on an external energy audit completed in 2019 and internal audits completed by staff. Completed projects to-date include projects with short, simple payback periods (i.e. less than 5 years), such as: lighting retrofits, building envelope/ insulation upgrades and HVAC control systems.

Further, as County energy consuming assets exceed their expected life and require replacement, energy efficiency plays an important role in the selection of replacement assets.

3.2.5.1 Norfolk County Energy Conservation Policy

A corporate energy conservation policy was initially approved by Norfolk County Council in September 2014. The original policy outlined guidelines for the energy efficient use of Norfolk County energy consuming assets. The Policy was revised in October 2017 to include energy design guidelines for renovations, new construction and life cycle replacements of all energy consuming equipment. The Policy assists staff to select efficient equipment to meet our sustainability goals by reducing our energy consumption, GHG emissions and total life cycle costs.

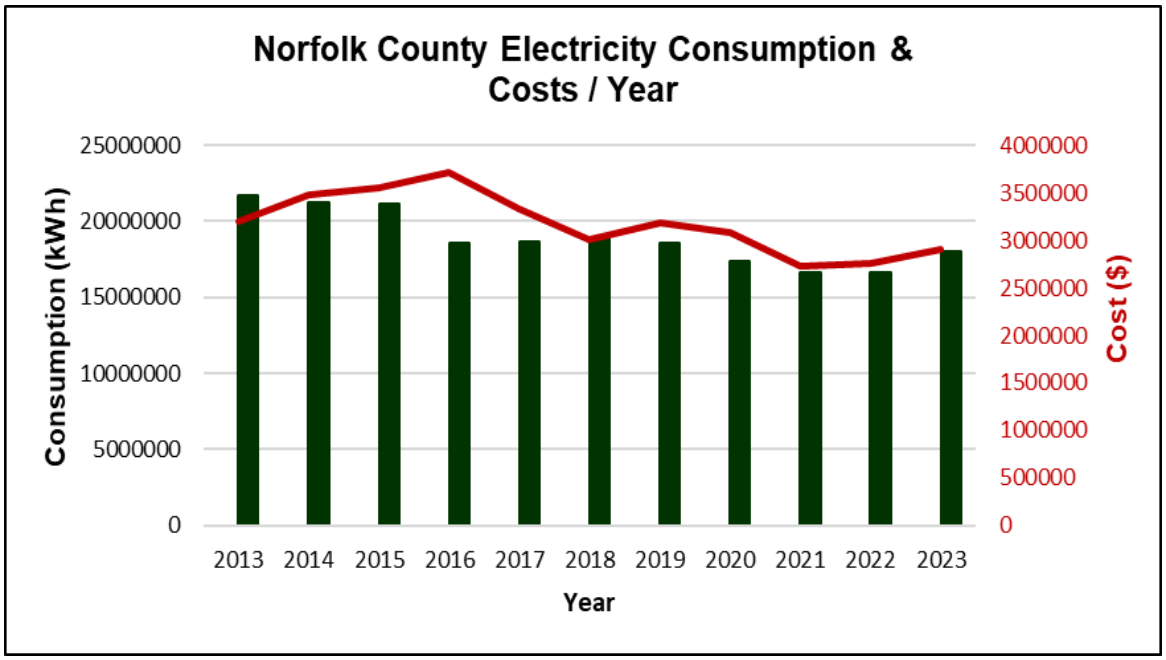
Throughout the period of this Plan, Norfolk County, in collaboration with the Sustainability Advisory Committee, shall be tasked with reviewing and revising this existing policy to ensure that the Corporations energy conservation efforts align with the updated Plan.

3.3 Historical County Energy Use, Costs and GHG Emissions

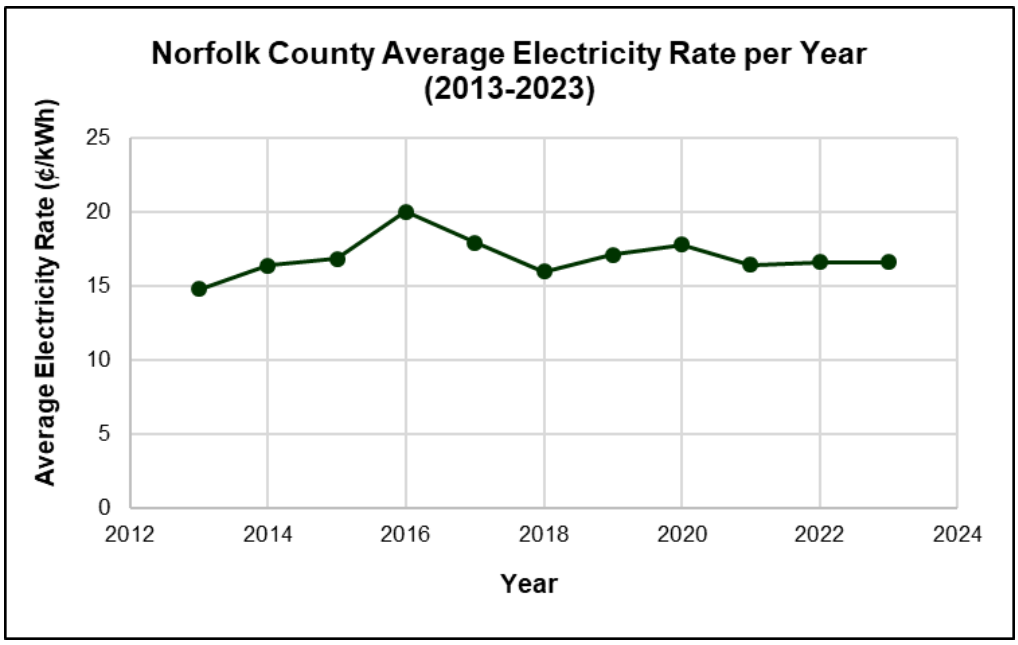
To place the baseline in context, the historical County energy use, costs and emissions are presented in the following charts.

3.3.1 County Electricity Consumption

3.3.3.1 Electricity Consumption & Costs per Year (2013-2023)

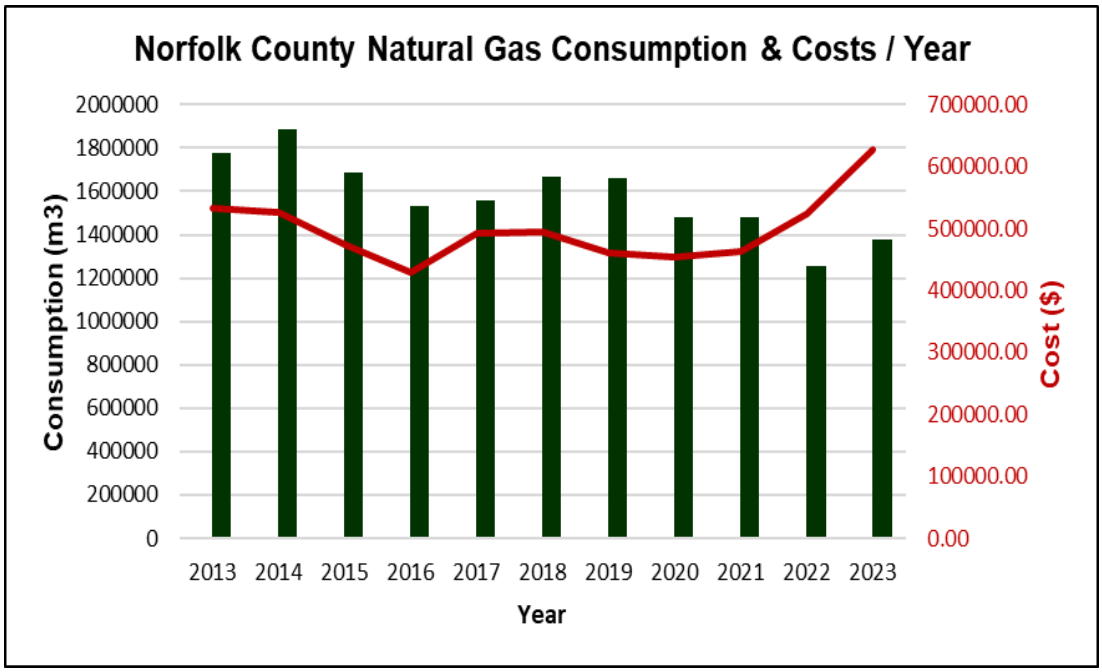


3.3.1.2 Average Electricity Rate per Year (2013-2023)

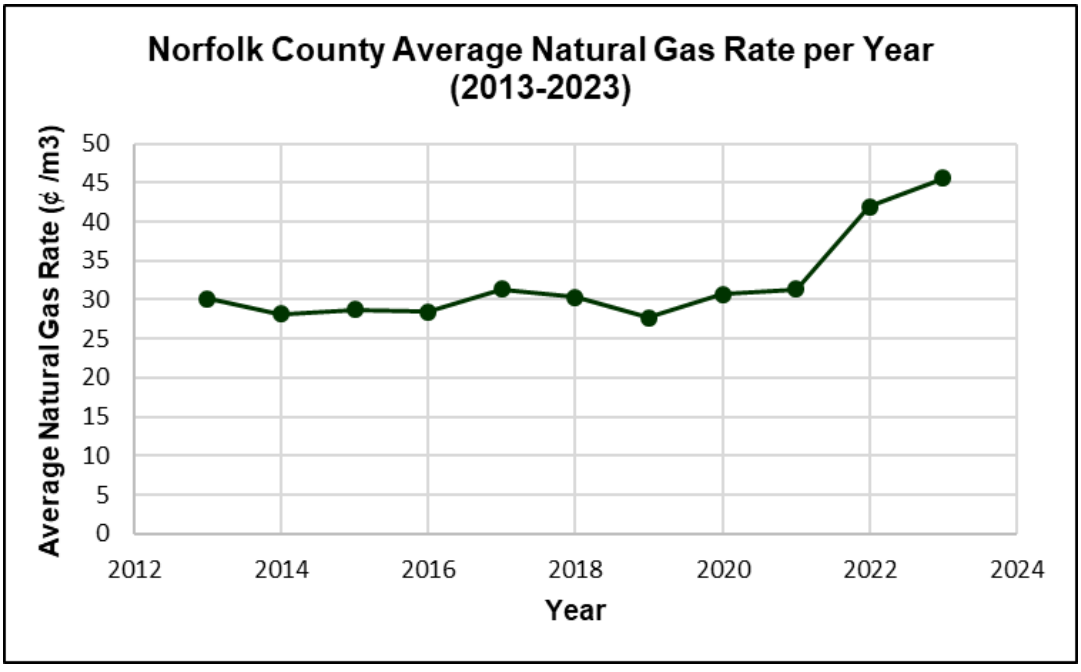


3.3.3 County Natural Gas Consumption

3.3.3.1 Natural Gas Consumption & Costs per Year (2013-2023)

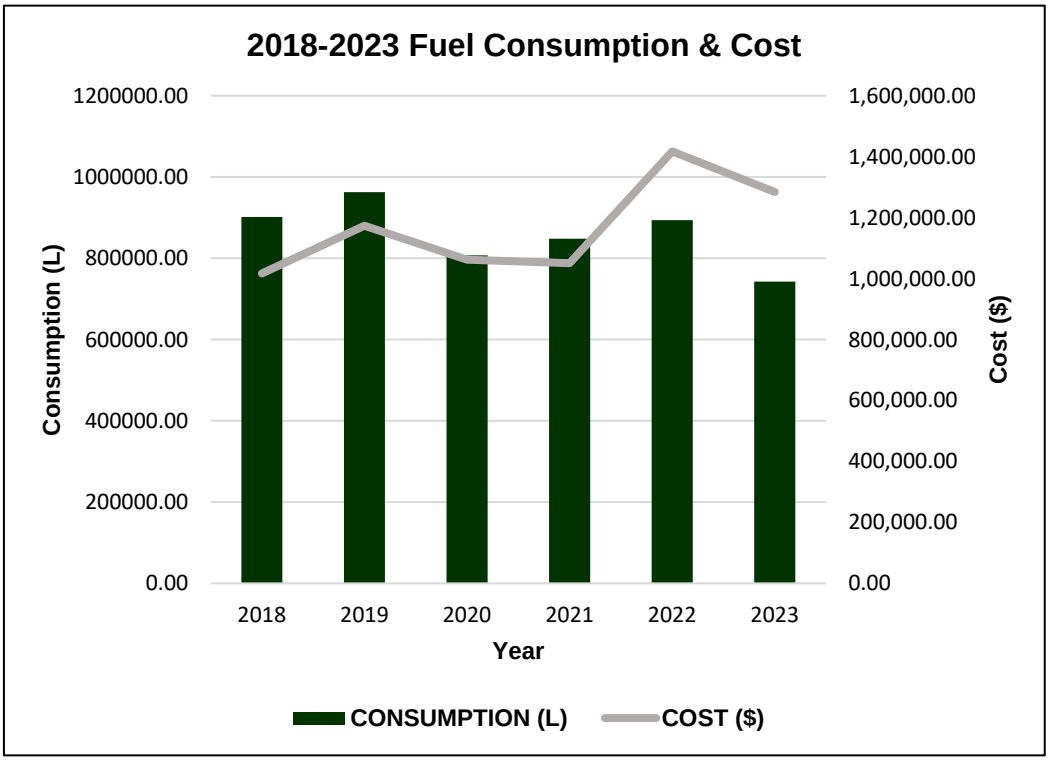


3.3.3.2 Average Natural Gas Rate per Year (2013-2023)



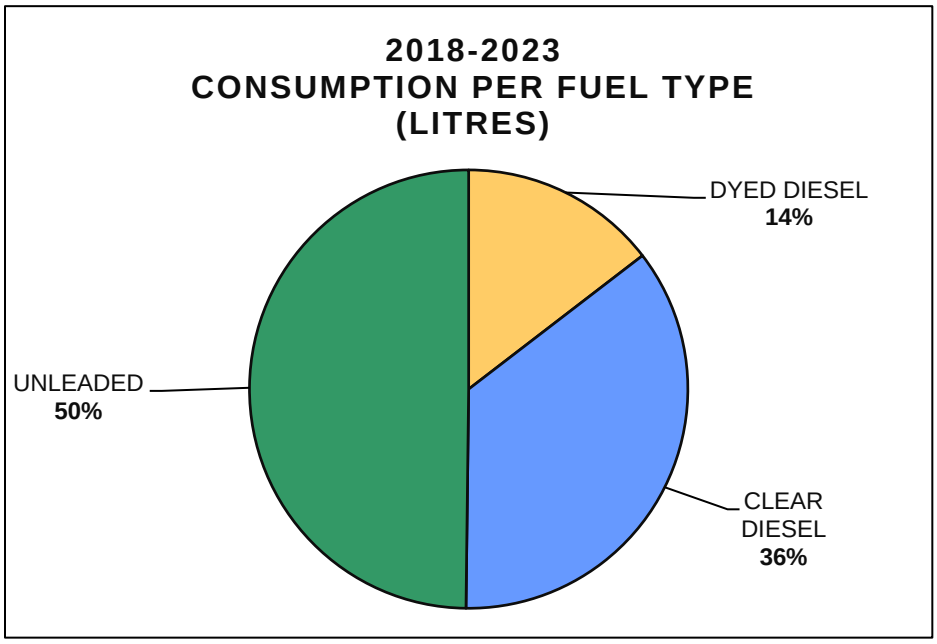
3.3.4 County Fuel Consumption

3.3.4.1 Fuel Consumption & Costs per Year (2018-2023)

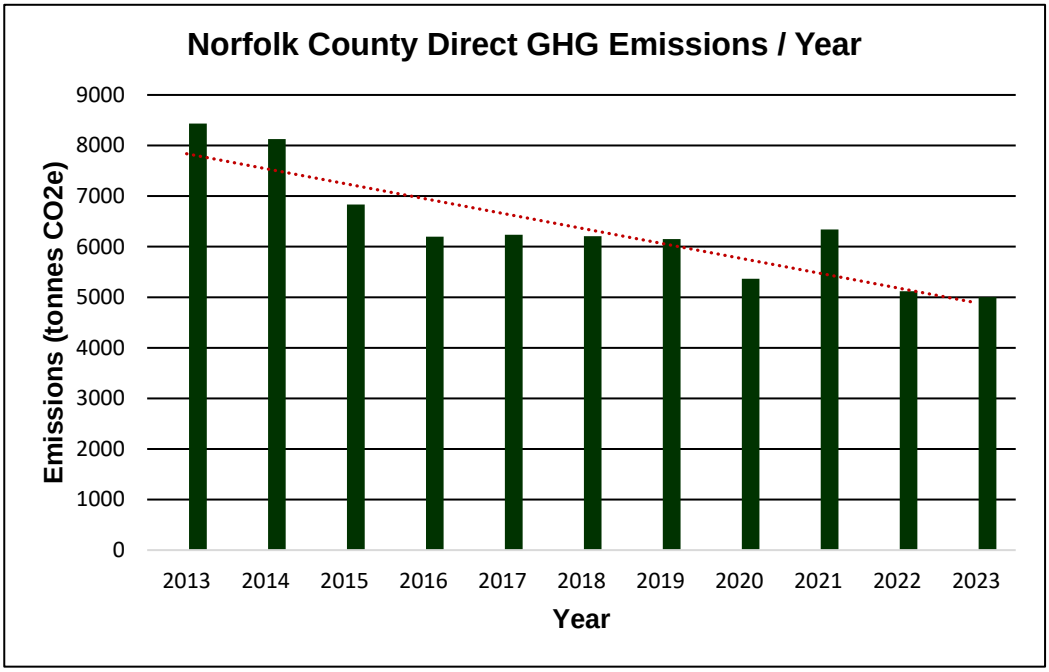


Graph includes reimbursed mileage.

3.3.4.3 Consumption per Fuel Type (2018-2023)



3.3.5 County Direct GHG Emissions per Year (2013-2023)



3.4 Baseline Statistics – 2023

The following energy statistics have been developed to form the baseline to which future actions can be measured and evaluated. Detailed energy consumption for each County facility can be found in '**Appendix A**'.

3.4.1 Energy Consumption Statistics (2023)

2023 Electricity Consumption = 18,049,968.75 kWh

2023 Natural Gas Consumption = 1,380,050.33 m^3

2023 Fuel Consumption:

- Dyed Diesel: 102,678 L, Clear Diesel: 228,313 L
- Unleaded Gasoline: 411,473.86 L

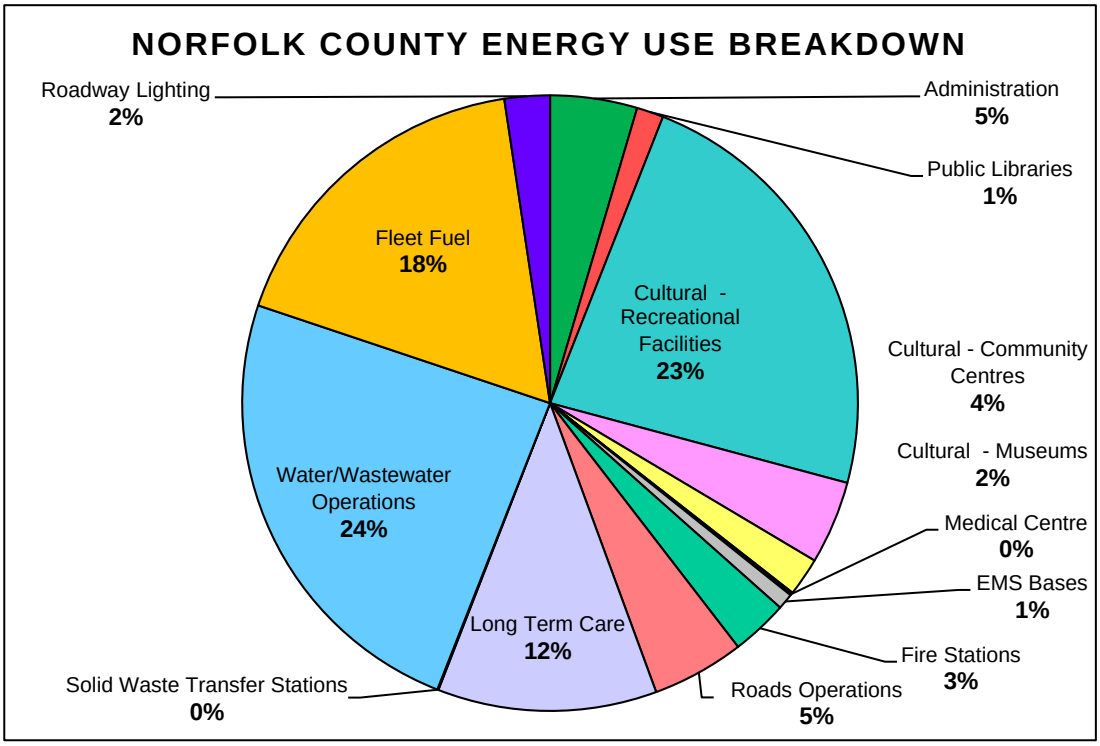
2023 Reimbursed Mileage = ~390,931 km

Total Energy Consumption = 134,010,821.95 kBTU

Total Energy Generation = 57,460.48 kBTU

Total Net Energy Consumption = 133,953,341.47 kBTU

3.4.1.1 Energy Consumption Breakdown



3.4.2 Energy Cost Statistics (2023)

2023 Electricity Costs = $2,906,621.00

2023 Natural Gas Costs = $627,133.00

2023 Fuel Costs: $1,045,762.00

2023 Fuel Costs for Reimbursed Mileage = $238,467.89

Total Energy Costs = $4,817,983.89

3.4.3 Energy Intensity Statistics (2023)

Property Category	Total Gross Building Area (ft^2)	Total Energy Use (kBTU)	2023 Energy Use Intensity (kBTU / ft^2)
Administration	110,040	5,935,146.70	53.94
Public Libraries	47,026	1,832,594.12	38.97
Cultural Facilities- Recreational Facilities	361,114	30,140,276.16	83.46
Cultural Facilities- Community Centres	115,363	5,681,266.81	49.25
Cultural Facilities- Museums and Associated Facilities	59,369	2,623,881.82	44.20
Cultural Facilities- Medical Centres	6,200	209,073.82	33.72

EMS Bases and Associated Facilities	20,035	1,088,247.02	53.78
Fire Stations and Associated Facilities	83,463	3,872,559.11	46.40
Roads Operations & Storage Facilities	84,459	8,383,653.7	99.26
Long Term Care Facilities	123,845	14,962,825.09	120.82
Solid Waste Transfer Stations	850	76,547.40	90.06

Property Category	Total Volume Discharged (m^3)	Total Energy Use (kBTU)	2023 Energy Use Intensity (kBTU / m^3)
Water Treatment Facilities	3,735,195.80	11,004,256	2.95
Wastewater Treatment Facilities	5,416,496.89	20,403,024.87	3.77

3.4.4 GHG Emissions (2023)

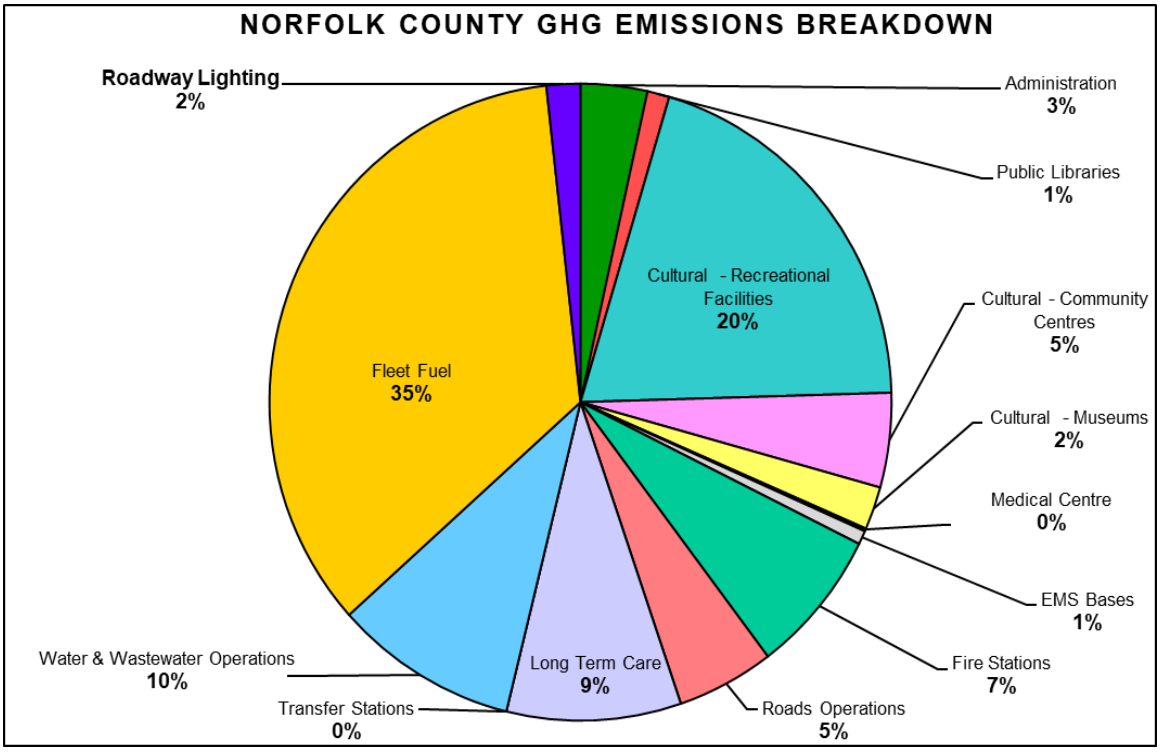
2023 Total GHG Emissions = 5,018.18 metric tonnes CO2e

2023 Net GHG Emissions = -4,969.17 metric tonnes CO2e

Total – (Carbon Sequestration of County-owned Woodlots + County-owned Urban Trees)

5,018.18 – 9,987.35 = -4,969.17

3.4.4.1 GHG Emissions Breakdown



3.5 2019-2024 Plan Goals & Objective Results

The 2019-2024 Norfolk County Energy Conservation and Demand Management Plan outlined five strategic goals to achieve the 2024 vision. Each goal included specific objectives for the County. A summary, including detailed results of the previous Plan, can be found in **Appendix B.**

3.5.1 Key Highlights

Since the inception of the County's energy conservation measures program and its continued efforts to improve energy conservation and efficiency, it is important to highlight the following milestones:

Electricity (kWh)

- 4.43% reduction in consumption from 2018 levels

Natural Gas (m^3)

- 20.93% reduction in consumption from 2018 levels

GHG Emissions (metric tonnes CO2e)

- 23.67% reduction in emissions from 2018 levels

Fuel Consumption (L)

- 21.46% reduction in consumption from 2018 levels

The following information has been derived utilizing 2023 baseline data.

4.0 Energy Efficiency Measures

4.1 Historical Energy Efficiency Measures and Results

To develop effective future energy efficiency measures, previous County energy efficiency measures should be reviewed to ensure anticipated positive results are realized. Although the County does not currently complete formal measurement and verification (i.e., sub-metering, etc.), efficiency measures savings can be accurately estimated through the use of available physical, operational and energy billing information.

4.1.1 2019-2024 Norfolk County ECDM Plan Review

On July 1, 2019, Norfolk County published its updated ECDM Plan outlining numerous goals, objectives and measures to improve energy efficiency, reduce energy consumption and costs and decrease GHG emissions pertaining to County operations. Refer to **Appendix C** for detailed results.

4.1.2 Historical Annual Energy Efficiency Measures

Otherwise defined as ‘energy conservation measures,’ internally; a series of annually recurring measures were implemented amongst the organization throughout the ECDM Plan lifetime. These measures, when combined over the lifespan of the Plan, played a role towards contributing to the County’s short-term goals and objectives.

Whilst these initiatives are noted as ‘smaller’ in nature, it is difficult to realistically quantify the total cost and energy savings for these programs. This is partially due to the differing features of the facilities and their associated components (where implemented) and the lack of availability to energy monitoring instrumentation and tools.

Annual ‘energy conservation measures’ included the following initiatives:

- Weather-stripping
- Building Envelope and Insulation Upgrades
- HVAC Upgrades (Equipment & Vestibule Heater Replacement Program)
- Refrigerator/Freezer Replacement Program
- Corporate Energy Awareness Program

4.1.3 Historical Capital Energy Efficiency Measures

Projects, plans, initiatives and/or programs outside of the annual energy conservation measures program.

Dependent upon the identified measure, the implementation result contributes to the short-term and/or long-term (or both) goals and objectives of the former Plan.

4.1.3.1 Completed Projects & Measures (2019-2024)

The following listing of projects and/or measures are those in which were completed throughout the 5-year period of the Plan.

- Interior LED Retrofits (2019-2021)
- HVAC Upgrades (2019-2024)
- Rooftop Off-Grid Solar System (2023)
- EV Fleet Pilot Project
- Staff Energy Awareness Program

4.1.3.2 Incomplete Projects & Measures (2019-2024)

The following listing of projects and/or measures are those in which were reassessed or otherwise deferred, and therefore, were not completed throughout the 5-year period of the Plan.

- Waterford EMS Base Addition – High Efficiency Design
- Energy Efficiency Integration into County Procurement
- Sustainability Considerations Integration into County Procurement
- Public Energy Awareness Program
- Exterior Lighting Controls Program
- Building Operator/Building Commissioning Training Program
- Carpool Program
- LED Street Lighting Retrofit Program (completed via different budget)

4.2 Proposed Energy Efficiency Measures

A detailed listing consisting of energy efficiency conservation measures/projects, larger in nature, has been developed for this Plan. However, due to the fast, changing pace of the energy industry, as well as anticipated regulatory changes, the Plan will be reviewed annually by the Sustainability Advisory Committee.

A major review and update of the Plan will occur in 2027 to ensure that the Plan remains aligned with the 2026-2030 Norfolk County Strategic Plan and the desired 5-year goals and objectives.

In addition, in continuity with the 2019-2024 ECDM Plan, the County will continue to work towards integrating energy efficiency and sustainability considerations into County Procurement.

4.2.1 Proposed 2024-2029 Annual Energy Efficiency Measures (OPERATING)

The Corporation of Norfolk County will implement the following annual energy conservation measures throughout the duration of the Plan:

- Weather-Stripping Program
    - Small Stream (i.e., Access Doors)
    - Large Stream (i.e., Overhead Doors)
- Building Envelope and Insulation Upgrades
- Window Replacement Program
- Air Curtain Program
- Interior Lighting Controls Program
- Refrigerator/Freezer Replacement Program
- Hybrid Hot Water Heater Replacement Program
- Energy Monitoring and Management Program
- Public Energy Awareness Program
- Corporate Energy Awareness Program
- Building Operator/Building Commissioning Training Program

For detailed analyses, all annual efficiency measures and their respective forecasted cost and energy savings have been included within **Appendix D**.

4.2.2 Proposed 2024-2029 Efficiency Measures (CAPITAL)

To continue the County's efforts towards meeting the detailed goals and objectives over the course of the updated 5-year ECDM Plan, the following additional energy conservation measures/projects have been identified for implementation.

Measures identified with an asterisk (**'*'**), are proposed **annual** (capital) programs from the year of inception to the completion of the Plan (2029).

2024

Norfolk County Energy Conservation Policy Review and Update	
Description:	Review and revisions/updates to the Norfolk County Energy Conservation Policy.
Justification:	The Norfolk County Energy Conservation Policy was last updated in 2017. New building design requirements and/or considerations, as well as updates to the Norfolk County ECDM Plan should align with the Policy.
Initial Cost:	$0
Rebates or Incentives:	N/A
Annual Cost Savings:	Although difficult to quantify, ensuring that County staff are implementing efficient equipment and/or sustainable best practices during work hours has the potential to significantly improve annual cost and energy savings.
Annual Energy Savings:	

2025

HVAC Upgrades/Retrofits | DESIGN	*
Description:	Engineered design (mechanical) for HVAC retrofits in place of annual HVAC upgrades/replacement program (2026-2029). Designs shall explore potential fuel-switching opportunities and/or re-sizing for optimization. Where the following objectives cannot be met, at minimum, designs shall ensure that high-efficiency equipment is to be installed as opposed to like-for-like replacements.
Justification:	There has been an observed increase in available incentives, rebates and funding programs for fuel-

	switching initiatives. In addition, high efficiency equipment is proven to directly result in cost and energy savings. Design is required to ensure that any proposed equipment can function with existing HVAC building system, or alternatively, if the system needs to be altered. Not all facilities may require external design services.
Initial Cost:	$45,000 – dependent upon equipment scheduled for replacement.
Rebates or Incentives:	TBD. Grant & Program-dependent.
Annual Cost Savings:	Cost and Energy Savings shall be realized upon installation and commissioning of equipment.
Annual Energy Savings:	

Rooftop Off-Grid/Net-Metered Solar System Expansion | DESIGN *	
Description:	Engineered inspection and design (structural and electrical) of applicable roof pitches due for replacement in the following year to accommodate rooftop solar systems on suitable, shortlisted roofs. Solar systems are to be net-metered and/or off-grid equipped with battery storage.
Justification:	Life expectancies of roofing systems and solar panels are approximately the same. Equipping roofs with solar systems during replacement can provides the opportunity for further cost savings as well as energy savings.
Initial Cost:	$7,500 per facility
Rebates or Incentives:	TBD
Annual Cost Savings:	Cost and Energy Savings shall be realized upon

Annual Energy Savings:	installation and commissioning of equipment.

LED Street Lighting Retrofit Program	*
Description:	Replacement of high pressure sodium decorative street light fixtures with high efficiency LED fixtures. This project is being combined with end of useful life replacements of street light transformer poles.
Justification:	LED fixtures use approximately 50% less electricity and have approximately four times the expected life of equivalent high pressure sodium fixtures; further, reducing maintenance costs.
Initial Cost:	$105,000
Rebates or Incentives:	TBD
Annual Cost Savings:	$5,000
Annual Energy Savings:	26,000 kWh

Community Energy & GHG Emissions Reduction Plan	
Description:	Through the means of a community energy planning process, the Plan shall be designed to assist Norfolk County in understanding communities' energy usage, as well as identify opportunities to improve energy efficiency and conservation, reduce GHG emissions, study the impact of future growth on energy supplies/needs and foster renewable energy production and economic development.
Justification:	As municipalities have influence on over roughly 50% of GHG emissions, the Plan shall be completed in accordance with Federal emissions reduction targets and Provincial energy planning requirements.

	The Plan will contribute to long-term sustainability, community supports, increased grant opportunities and further abilities to advocate for enhanced energy security and delivery to our 'region.'
Initial Cost:	$90,000
Rebates or Incentives:	TBD – potential for up to 50% funding.
Annual Cost Savings:	Although difficult to quantify, implementing energy efficiency and conservation measures at residential properties and small businesses can result in approximately 10%-30% in energy savings.

2026

EV Fleet Expansion	
Description:	Expansion of the existing passenger EV Fleet to reduce energy (i.e., fuel) and operating (i.e., maintenance) costs, including charging station installations (design and construction).
Justification:	Through the expanding market, EVs are becoming more affordable to purchase and operate. Replacing internal combustion engine vehicles with EVs reduces overall operating costs (i.e., fuel, maintenance, etc.). Further, fuel-switching also provides environmental benefits through the reduction of GHG emissions.
Initial Cost:	$230,000
Rebates or Incentives:	TBD
Annual Cost Savings:	Annual energy and costs savings to be determined upon review of 2024 EV Pilot Project.
Annual Energy Savings:	

Rooftop Off-Grid/Net-Metered Solar System Expansion | CONSTRUCTION	
Description:	Installation of a 20 kW rooftop solar photovoltaic (PV) array (net-metered and/or off-grid) at 1 Norfolk County Facility. Location: Facilities Operations Building and/or West Roads Operations Yard – or TBD pending Facilities Review. A net-metered rooftop solar PV system would provide electricity to the facility and sell excess electricity to the grid. Alternatively, an off-grid rooftop solar PV system would provide electricity to the facility and store excess power through a battery storage system for future-use.
Justification:	A rooftop solar PV system would promote sustainability and self-sufficiency through energy generation. Further, the project would be a strong investment with an estimated return on investment of approximately 10%. Through this, Norfolk County can reduce its reliance upon the grid and further reduce annual energy consumption and costs.
Initial Cost:	$50,000
Rebates or Incentives:	TBD
Annual Cost Savings:	~$5,000 - $7,500
Annual Energy Savings:	~25,000 kWh

HVAC Optimization Pilot Project	
Description:	Implementation of real-time occupancy sensors and, smart HVAC controls in one (1) Norfolk County facility.
Justification:	The implementation of smart HVAC controls equipped with real-time occupancy sensors allows for decreased run-times for HVAC equipment, resulting directly in decreased energy costs, extended equipment life, reduced maintenance costs and reduced GHG emissions. The use of this infrastructure can improve building efficiency by up to 40%.
Initial Cost:	$115,000
Rebates or Incentives:	TBD.
Annual Cost Savings:	$7,500 - $10,000
Annual Energy Savings:	10,000 kWh – 15,000 kWh

HVAC Upgrades/Retrofits | CONSTRUCTION	
Description:	HVAC retrofits at nine (9) County facilities, as per the Approved 2024-2033 Capital Plan. Facilities include: West Roads Operations Building, County Administration Building, Delhi Kinsmen Pool, Langton Fire Station/EMS Base, Port Dover Kinsmen Hall, Port Dover Scout Hut/Hall, Port Rowan Fire Station, and Talbot Gardens Arena. Replacement of existing HVAC equipment with potential fuel-switching options and/or re-sized equipment for optimization. Alternatively, at minimum, high-efficiency equipment installation to reduce operating costs and increase energy savings.

Justification:	There has been an observed increase in available incentives, rebates and funding programs for fuel-switching initiatives. Therefore, additional initial costs associated with the selection of high efficiency equipment are partially offset through external funding sources such as Enbridge and IESO incentives. Further, the remaining additional initial costs of the equipment has a simple payback period between 1-5 years (or return on investment of 20% to 100%).
Initial Cost (Additional Costs):	$ 50,000 (cumulative)
Rebates or Incentives:	$1,000 - $10,000 per unit (equipment size and system dependent)
Annual Cost Savings (Additional):	$1,500 - $5,000 per facility
Annual Energy Savings (Additional):	1,500-5,000 m^3 per facility

Net-Zero Fire Station and/or EMS Base | DESIGN	
Description:	Design of a net-zero Fire Station and/or EMS Base.
Justification:	Net-zero facilities have significant energy and cost savings, as well as reduced maintenance needs and costs. The design of a new fire station and/or EMS base would allow for the replacement of an otherwise outdated, existing facility in ‘poor’ or ‘failing’ condition. The proposed facility would also be able to accommodate growth in Norfolk County to ensure that emergency response group(s) can maintain and/or enhance existing service levels within Norfolk County communities.
Initial Cost:	TBD

Rebates or Incentives:	TBD
Annual Cost Savings:	Annual cost and energy savings to be realized post-construction.
Annual Energy Savings:	

2027

Rooftop Off-Grid/Net-Metered Solar System Expansion | CONSTRUCTION	
Description:	Installation of a 20 kW rooftop solar photovoltaic (PV) array (net-metered and/or off-grid) at 1 Norfolk County Facility. Location: Waterford Heritage & Agricultural Museum or TBD – pending Facilities Review. A net-metered rooftop solar PV system would provide electricity to the facility and sell excess electricity to the grid. Alternatively, an off-grid rooftop solar PV system would provide electricity to the facility and store excess power through a battery storage system for future-use.
Justification:	A rooftop solar PV system would promote sustainability and self-sufficiency through energy generation. Further, the project would be a strong investment with an estimated return on investment of approximately 10%. Through this, Norfolk County can reduce its reliance upon the grid and further reduce annual energy consumption and costs.
Initial Cost:	$50,000
Rebates or Incentives:	TBD
Annual Cost Savings:	~$5,000 - $7,500
Annual Energy Savings:	~25,000 kWh

HVAC Upgrades/Retrofits | CONSTRUCTION	
Description:	HVAC retrofits at six (6) County facilities, as per the Approved 2024-2033 Capital Plan. Facilities include: Langton Arena, Courtland Community Centre, Annaleise Carr Aquatic Centre, Delhi Daycare/Parks Storage Building, Simcoe Recreation Centre and Waterford Heritage and Agricultural Museum. Replacement of existing HVAC equipment with potential fuel-switching options and/or re-sized equipment for optimization. Alternatively, at minimum, high-efficiency equipment installation to reduce operating costs and increase energy savings.
Justification:	There has been an observed increase in available incentives, rebates and funding programs for fuel-switching initiatives. Therefore, additional initial costs associated with the selection of low carbon equipment are partially offset through external funding sources such as Enbridge and IESO incentives. Further, the remaining additional initial costs of the equipment has a simple payback period between 1-5 years (or return on investment of 20% to 100%).
Initial Cost:	$ 35,000 (cumulative)
Rebates or Incentives:	$1,000 - $10,000 per unit (equipment size and system dependent)

2028

HVAC Upgrades/Retrofits | CONSTRUCTION	
Description:	HVAC retrofits at two (2) County facilities, as per the Approved 2024-2033 Capital Plan. Facilities include: Simcoe Branch Library, Waterford Lions Community Centre Replacement of existing HVAC equipment with potential fuel-switching options and/or re-sized equipment for optimization. Alternatively, at minimum, high-efficiency equipment installation to reduce operating costs and increase energy savings.
Justification:	There has been an observed increase in available incentives, rebates and funding programs for fuel-switching initiatives. Therefore, additional initial costs associated with the selection low carbon equipment are partially offset through external funding sources such as Enbridge and IESO incentives. Further, the remaining additional initial costs of the equipment has a simple payback period between 1-5 years (or return on investment of 20% to 100%).
Initial Cost:	$ 7,500 (cumulative)
Rebates or Incentives:	$1,000 - $10,000 per unit (equipment size and system dependent)
Annual Cost Savings:	$1,000 - $2,500 per facility
Annual Energy Savings:	1,000 - 2,500 m^3 per facility

Rooftop Off-Grid/Net-Metered Solar System Expansion | CONSTRUCTION	
Description:	Installation of a 20 kW rooftop solar photovoltaic (PV) array (net-metered and/or off-grid) at 1 Norfolk County Facility. Location: Port Dover Lions Community Centre or TBD – pending Facilities Review. A net-metered rooftop solar PV system would provide electricity to the facility and sell excess electricity to the grid. Alternatively, an off-grid rooftop solar PV system would provide electricity to the facility and store excess power through a battery storage system for future-use.
Justification:	A rooftop solar PV system would promote sustainability and self-sufficiency through energy generation. Further, the project would be a strong investment with an estimated return on investment of approximately 10%. Through this, Norfolk County can reduce its reliance upon the grid and further reduce annual energy consumption and costs.
Initial Cost:	$50,000
Rebates or Incentives:	TBD
Annual Cost Savings:	~$5,000 - $7,500
Annual Energy Savings:	~25,000 kWh

Net-Zero Fire Station and/or EMS Base | CONSTRUCTION	
Description:	Construction of a new, net-zero Fire Station and/or EMS Base.
Justification:	Net-zero facilities result in significant energy and cost

	savings and improve the Corporations carbon footprint.
Initial Cost:	TBD pending cost estimate through design.
Rebates or Incentives:	TBD
Annual Cost Savings:	TBD
Annual Energy Savings:	TBD

Energy Audits at County Facilities	
Description:	Energy Audits at County Facilities to prepare for the 2029-2034 ECDM Plan.
Justification:	As a standard practice, energy audits are conducted at various County facilities prior to the updating of the existing ECDM Plan to assist in identifying best energy management practices to be implemented across the Corporation. The results from the energy audits will guide the future ECDM Plan.
Initial Cost:	$60,000
Rebates or Incentives:	TBD
Annual Cost Savings:	Although difficult to quantify, cost and energy savings will be realized upon the findings of the energy audits.
Annual Energy Savings:	

Corporate Renewable Energy Feasibility Study	
Description:	Complete a Corporate Renewable Energy Feasibility Study to guide Long-Term Corporate Renewable Energy Plan.
Justification:	An in-depth analysis conducted to determine the viability of investing and/or transitioning to renewable energy sources at County facilities. Study shall assess various aspects to ensure that implementation

	is economically, technically and operationally feasible for the corporation. Study shall also include energy and cost savings through potential investment/implementation. With increasing utility costs, the study shall provide valuable insights into potential cost saving measures through the implementation of renewable energy systems.
Initial Cost:	$97,500
Rebates or Incentives:	TBD
Annual Cost Savings:	TBD through feasibility study findings.
Annual Energy Savings:	

2029

HVAC Upgrades/Retrofits | CONSTRUCTION	*
Description:	HVAC retrofits at three (3) County facilities, as per the Approved 2024-2033 Capital Plan. Facilities include: Courtland Scout Hall, South Walsingham Hall, Vittoria Community Centre Replacement of existing HVAC equipment with potential fuel-switching options and/or re-sized equipment for optimization. Alternatively, at minimum, high-efficiency equipment installation to reduce operating costs and increase energy savings.
Justification:	There has been an observed increase in available incentives, rebates and funding programs for fuel-switching initiatives. Therefore, additional initial costs associated with the selection of low carbon equipment are partially offset through external funding sources such as Enbridge and IESO incentives. Further, the remaining additional initial costs of the equipment has a simple payback period between 1-5

	years (or return on investment of 20% to 100%).
Initial Cost:	$ 10,000 (cumulative)
Rebates or Incentives:	$1,000 - $10,000 per unit (equipment size and system dependent)
Annual Cost Savings:	$1,000 - $7,500 per facility
Annual Energy Savings:	1,000-3,500 m^3 per facility

EV Fleet Expansion	
Description:	Expansion of the existing passenger EV Fleet to reduce energy (i.e., fuel) and operating (i.e., maintenance) costs, including charging station installations (design and construction).
Justification:	Through the expanding market, EVs are becoming more affordable to purchase and operate. Replacing internal combustion engine vehicles with EVs reduces overall operating costs (i.e., fuel, maintenance, etc.). Further, fuel-switching also provides environmental benefits through the reduction of GHG emissions.
Initial Cost:	$450,000
Rebates or Incentives:	TBD.
Annual Cost Savings:	Annual energy and costs savings to be determined upon review of 2024 and 2026 (proposed) EV Pilot Project.

2029-2034 ECDM Plan Update	
Description:	Review and update the 2024-2029 Norfolk County ECDM Plan as per O. Reg. 25/23.
Justification:	As legislated, organization's corporate ECDM Plans must be updated every five (5) years. This will provide an opportunity to evaluate what may or may not be working well (efficiency and conservation improvements) and determine energy conservation measures for the following 5 years.
Initial Cost:	$0
Rebates or Incentives:	N/A

Rooftop Off-Grid/Net-Metered Solar System Expansion | CONSTRUCTION	
Description:	Installation of a 15 kW rooftop solar photovoltaic (PV) array (net-metered and/or off-grid) at 1 Norfolk County Facility. Locations: Delhi Administration Building and/or Culver Operations Building or TBD – pending Facilities Review. A net-metered rooftop solar PV system would provide electricity to the facility and sell excess electricity to the grid. Alternatively, an off-grid rooftop solar PV system would provide electricity to the facility and store excess power through a battery storage system for future-use.
Justification:	A rooftop solar PV system would promote sustainability and self-sufficiency through energy generation. Further, the project would be a strong investment with an estimated return on investment of approximately 10%.

	Through this, Norfolk County can reduce its reliance upon the grid and further reduce annual energy consumption and costs.
Initial Cost:	$40,000
Rebates or Incentives:	TBD
Annual Cost Savings:	~$3,500 - $6,500
Annual Energy Savings:	~15,000 kWh

4.2.3 Facility Retrofits

In addition to the energy efficiency measures listed above, the County will be completing two facility retrofit projects in order to improve energy efficiency and conservation and reduce GHG emissions from building operations.

1) Norfolk County Public Library (NCPL)– Waterford Branch Retrofit

As the highest energy consumer in comparison to the remaining NCPL branches, the Waterford Branch Library consists of inefficient HVAC equipment, making it the highest emitting NCPL branch within the County.

The project will be replacing the library's outdated inefficient energy components with the overall goal of improving the building's sustainability. Based on preliminary energy assessments, the suggested retrofits which are being implemented in mid-2024 will result in an 80.7% GHG emissions reduction and reduce the branch's annual fuel costs by nearly 50%.

2) Simcoe Recreation Centre Retrofit

Beginning in mid-2024, Norfolk County will commence the retrofit design process for the Simcoe Recreation Centre, with construction to follow upon design completion.

With the strategic implementation of green infrastructure, there is an anticipated 25% reduction in GHG emissions at the facility. Further, through the proposed retrofit project, there is also an estimated annual energy savings of approximately $80,000.

4.3 Financial Summary

For a comprehensive summary of energy efficiency/conservation measures costs, please see **Appendix E.**

Appendix A - Detailed 2023 Energy Consumption

Facilities highlighted in grey are no longer within the County Facilities portfolio.
All emissions data has been calculated using **Natural Resources Canada Emission and Reference Values (June 2023)**.

Administration Buildings

Facility	Address	Total Floor Area (ft2)	Electricity (kWh)	Natural Gas (m3)	GHG Emissions (kg CO2e)	Energy Intensity (kBTU/ft2)
Culver Operations Building - Admin	95 Culver Street, Simcoe, ON	5,289	39,006.87	5,434.47	11,609.82	55.28
County Administration Building	50 Colborne Street South, Simcoe, ON	25,482	315,444.60	8,535.05	25,859.17	55.4
County Administration Building 2	60 Colborne Street South, Simcoe, ON	1,414	5,119	3,195.00	6,291.17	112.98
Delhi Administration Building	183 Main Street of Delhi, Delhi, ON	16,670	95,511.90	12,371.00	26,630.05	46.82
Gilbertson Administration Building	12 Gilberston Drive, Simcoe, ON	34,365	210,092.70	37,513.00	78,365.25	59.6
Robinson Administration Building	185 Robinson Street, Simcoe, ON	26,820	218,867.90	13,759.23	32,997.51	46.32

Cultural - Community Centres

Facility	Address	Total Floor Area (ft2)	Electricity (kWh)	Natural Gas (m3)	GHG Emissions (kg CO2e)	Energy Intensity (kBTU/ft2)
Adult Community Centre	89 Pond Street, Simcoe, ON	27,648	47,941.90	4,917.00	10,883.81	19.6
Charlotteville Community Hall	1262 Turkey Point Road, Walsh, ON	4,716	18,735	2,158	4,707.57	35.75
Courtland Lions Community Centre	272 Main Street of Courtland, Courtland, ON	6,580	38,095.90	9,344.00	19,092.70	90.1
Courtland Scout Hall	276 Main Street of Courtland, Courtland, ON	4,690	8,041.50	1,804.02	3,706.76	19.7
Delhi Friendship Centre & Parks Storage	418 Queen Street, Delhi, ON	3,969	10,350.30	4,312.00	8,593.86	53.5
Langton Community Centre	28 Albert Street, Langton, ON	8,967	46,837.90	11,861.00	24,190.12	104.1
Port Dover Lions Community Centre	801 St. George Street, Port Dover, ON	14,905	46,275.30	9,239.00	19,136.38	47.2
Port Dover Kinsmen Scout Hall	95 Hamilton Plank Road, Port Dover, ON	1,559	3,315	3,872.00	7,537.56	95.5
Port Rowan Communtiy Centre	14 College Avenue, Port Rowan, ON	11,168	26,380.50	16,500.00	32,487.92	62.2
South Walsingham Hall	2070 Highway 59, Walsingham, ON	2,342	8,539.30	3,857.00	7,665.48	84
St. Williams Community Centre	80 Queen Street West, St. Williams, ON	4,277	33,811.30	5,880.00	12,309.82	78.3
Teeterville Women's Institute Hall & Pioneer Museum	194 Teeter Street, Teeterville, ON	4,399	3,772.90	6,532.00	12,661.16	47.8
Vittoria Community Centre	35 Oakes Blvd., Vittoria, ON	10,904	26,131.70	13,695.00	27,092.05	55.6
Vittoria Old Town Hall	1538 Old Brock Street, Vittoria, ON	2,527	2,513.20	-	75.40	26.9
Waterford & District Lions Community Centre	53 West Church Street, Waterford, ON	6,712	13,212.10	4,087.00	8,247.49	28.9

Public Libraries

Facility	Address	Total Floor Area (ft2)	Electricity (kWh)	Natural Gas (m3)	GHG Emissions (kg CO2e)	Energy Intensity (kBTU/ft2)
Delhi Branch Library	192 Main Street of Delhi, Delhi, ON	9,547	37,980.30	9,010.00	18,447.62	47.65
Port Rowan Branch Library	1034 Bay Street, Port Rowan, ON	4,361	27,547.70	2,103.00	4,866.29	39.5
Simcoe Branch Library	46 Colborne Street South, Simcoe, ON	26,136	141,335	8,756.95	21,062.15	31.28
Waterford Branch Library	15 Main Street South, Waterford, ON	6,982	39,118.50	6,577.00	13,807.97	55.5

Cultural - Museums & Associated Facilities

Facility	Address	Total Floor Area (ft2)	Electricity (kWh)	Natural Gas (m3)	GHG Emissions (kg CO2e)	Energy Intensity (kBTU/ft2)
Carillon Tower	201 Norfolk Street North, Simcoe, ON	968	3,953.30	-	118.60	13.94
Delhi Tobacco Museum & Heritage Centre	200 Talbot Road, Delhi, ON	9,190	21,302.10	5,367.00	10,949.07	31.5
Norfolk County Archives	109 Norfolk Street South, Simcoe, ON	11,928	45,117.50	12,112.69	24,622.01	51.8
Norfolk Arts Centre	21 Lynwood Avenue, Simcoe, ON	9,680	38,740.60	12,751.00	25,656.89	60.9
Port Dover Harbour Museum	44 Harbour Street, Port Dover, ON	7,988	31,326.70	7,717.00	15,764.16	49.9
Waterford Heritage & Agricultural Museum	159 Nichol Street, Waterford, ON	19,615	24,373	18,445.00	36,164.04	38.9

Cultural - Recreational						
Facility	**Address**	**Total Floor Area (ft2)**	**Electricity (kWh)**	**Natural Gas (m3)**	**GHG Emissions (kg CO2e)**	**Energy Intensity (kBTU/ft2)**
Delhi Community Centre Arena	144 Western Avenue, Delhi, ON	59,326	555,854	48,316.00	109,490.66	65
Delhi Kinsmen Pool	336 Talbot Road, Delhi, ON	3,664	19,608.60	5,301.81	10,773.04	95.5
Delhi Soccer Club	510 Main Street of Delhi, Delhi, ON	6,525	77,479.70	-	2,324.39	40.5
Delhi Sports Park	144 Western Avenue, Delhi, ON	600	10,830.20	-	324.91	61.5
Delhi Quance Park Pavillion	144 Western Avenue, Delhi, ON	-	252.7	-	7.58	-
Langton Arena	30 Albert Street, Langton, ON	35,010	431,216	37,072.00	84,151.79	81.71
Main Street Public Washrooms	0 Main Street, Port Dover, ON	889	2,733.70	-	82.01	10.49
Norfolk County Youth Soccer Park	660 West Street, Simcoe, ON	2,144	9,192.20	-	275.77	14.63
Port Dover Arena	809 St. George Street, Port Dover, ON	55,732	493,692	55,993.00	122,373.31	68.9
Port Dover Harbour Marina	50 Passmore Avenue, Port Dover, ON	3,240	140,640.00	-	4,219.20	148.11
Simcoe Lions Park	75 Davis Street East, Simcoe, ON	1,342	28,639.90	-	859.20	72.8
Simcoe Memorial Park	273 Owen Street, Simcoe, ON	916	0	-	-	-
Simcoe Recreation Centre & Annaleise Carr Aquatic Centre	182 South Drive, Simcoe, ON	55,890	686,442.60	124,787.00	260,309.11	124.71
St. George Street Washrooms	9 St. George Street, Port Dover, ON	889	2,962.70	1,983.00	3,898.22	80.1
Talbot Gardens Arena	10 Talbot Street North, Simcoe, ON	70,337	509,232.60	96,905.00	201,431.48	73.9
Waterford Tricenturena & Workshop	32 East Church Street , Waterford, ON	62,100	613,203	76,804.00	165,936.57	75.9
Alice Street Hydro - Pumpkinfest	0 Alice Street, Waterford, ON	-	179.4	-	5.38	-
Audrey S. Hellyer Memorial Park	32 East Church Street, Waterford, ON	-	1,304.20	-	39.13	-
Brant Hill C.S. Club	Brant Hill, Port Dover, ON	200	10,180.60	-	305.42	173.69
Bridge Alley Fountain	Bridge Alley, Port Dover, ON	-	1,311.30	-	39.34	-
Clifton Park	243 Norfolk Street North, Simcoe, ON	-	277.3	-	8.32	-
College Avenue Tennis Courts	14 College Avenue, Port Rowan, ON	-	151.3	-	4.54	-
Courtland Lions Community Ball Park & Pavillion	329 Main Street of Courtland, Courtland, ON	-	883.2	-	26.50	-
Courtland Tennis Courts	330 Main Street of Courtland, Courtland, ON	-	10	-	0.30	-
Fairground Ball Park	505 Fairground Road, Langton, ON	-	927.6	-	27.83	-
Front Road Park	3 Front Road, Port Rowan, ON	-	91.7	-	2.75	-
Harbour Basin Site	Harbour Basin, Port Rowan, ON	-	24,300.90	-	729.03	-
Port Dover Ball Park	Highway 6, Port Dover, ON	-	340.7	-	10.22	-
Houghton Ball Park	699 County Road 28, Fairground, ON	-	327.2	-	9.82	-
Hunt Street Soccer Park	40 Hunt Street, Simcoe, ON	-	0	-	-	0
Simcoe Kinsmen Park / Splashpad	281 Head Street North, Simcoe, ON	-	5,056.30	-	151.69	-
Port Rowan Baseball Park	College Avenue, Port Rowan, ON	-	1	-	0.03	-
Port Rowan Community Park	1084 Bay Street, Port Rowan, ON	-	72.2	-	2.17	-
Port Rowan Info Booth	Bay Street, Port Rowan, ON	100	229.8	-	6.89	7.84
Port Dover Powell Park	250 Main Street, Port Dover, ON	-	4,401.50	-	132.05	-
Port Rowan Harbour Commission & Washrooms	40 Sea Queen Road, Port Rowan, ON	250	4,530.84	-	135.93	211.42
St. Williams Ball Park	114 Queen Street East, St. Williams, ON	-	5	-	0.15	-
St. Williams Fieldhouse	114 Queen Street East, St. Williams, ON	500	30	-	0.90	0.21
Stalker Park	390 Cedar Street, Simcoe, ON	-	1,290.10	-	38.70	-
Turkey Point Play Park Pavillion	4 Turkey Point Road, Turkey Point, ON	-	8,808.60	-	264.26	-
Walsingham Ball Park	2072 Highway 59, Walsingham, ON	-	6,253.90	-	187.62	-
Wellington Park	50 Bonnie Drive, Simcoe, ON	-	4,025.60	-	120.77	-
Thompson Park Fieldhouse & Sports Park	17 Oakes Boulevard, Vittoria, ON	500	1,895.43	-	56.86	45.53
Langton Arena Fieldhouse	30 Albert Street, Langton, ON	960	3,975	-	119.25	14.13

EMS Bases and Associated Facilities						
Facility	**Address**	**Total Floor Area (ft2)**	**Electricity (kWh)**	**Natural Gas (m3)**	**GHG Emissions (kg CO2e)**	**Energy Intensity (kBTU/ft2)**
Culver Operations Building - Simcoe Base	95 Culver Street, Simcoe, ON	3,500	25,812.83	3,595.93	7,682.17	55.28
Delhi EMS Base	789 James Street, Delhi, ON	2,402	17,604	2,262.00	4,873.42	46.3
Fire/EMS Communications Tower	358 Concession 12 Townsend, Waterford, ON	50	5,684.00	-	170.52	-
Langton EMS Base/ Fire Station	18 Queen Street, Langton, ON	3,860	32,307.33	2,248.15	5,287.92	49.47
Port Dover EMS Base	309 St. Patrick Street, Port Dover, ON	2,923	18,083.30	3,911.77	8,057.00	69.3
Port Rowan EMS Base	1417 Highway 59, Port Rowan, ON	4,800	30,665	4,527.72	9,617.70	71.5
Waterford EMS Base / Fire Station	294 Main Street South, Waterford, ON	2,500	11,517.93	823.79	1,928.04	28.59

Fire Stations and Associated Facilities						
Facility	**Address**	**Total Floor Area (ft2)**	**Electricity (kWh)**	**Natural Gas (m3)**	**GHG Emissions (kg CO2e)**	**Energy Intensity (kBTU/ft2)**
Culver Operations Building - Simcoe Station	95 Culver Street, Simcoe, ON	8,500	62,688.30	8,738.60	18,667.50	55.28
Courtland Fire Station	272 Main Street of Courtland, Courtland, ON	4,464	13,827.70	6,634.00	13,158.75	65.1
Delhi Fire Station & Storage Garage	104 Argyle Avenue, Delhi, ON	6,591	49,116.70	10,949.00	22,506.53	86.6
Fairground Fire Station	722 County Road 28, Fairground, ON	11,424	23,111.40	6,567.23	13,308.99	27.6
Fire/EMS Communications Tower	358 Concession 12 Townsend, Waterford, ON	50	5,684.00	-	170.52	-
Langton Fire Station / EMS Base	18 Queen Street, Langton, ON	1,533	12,830.86	895.85	2,105.85	49.47
Port Dover Fire Station	111 Nelson Street East, Port Dover, ON	12,816	39,533.30	4,595.00	10,012.99	23.1
Port Rowan Fire Station	35 Erie Avenue, Port Rowan, ON	6,968	16,972	6,717.00	13,412.52	45.6
St. Williams Fire Station	180 Townline Street, St. Williams, ON	3,094	12,346.40	6,182.00	12,246.01	87.7
Teeterville Fire Station	186 Teeter Street, Teeterville, ON	12,918	26,525.30	9,147.00	18,367.15	34.1
Vittoria Fire Station	1375 Vittoria Road, Vittoria, ON	9,060	25,811.40	15,086.62	29,755.73	69.7
Waterford Fire Station / EMS Base	294 Main Street South, Waterford, ON	6,045	27,850.36	1,991.21	4,660.63	28.59

Long Term Care Facilities						
Facility	**Address**	**Total Floor Area (ft2)**	**Electricity (kWh)**	**Natural Gas (m3)**	**GHG Emissions (kg CO2e)**	**Energy Intensity (kBTU/ft2)**
Norview Lodge	44 Rob Blake Way, Simcoe, ON	123,845	2,110,189	376,744.00	787,030.89	120.82

Medical Centres						
Facility	**Address**	**Total Floor Area (ft2)**	**Electricity (kWh)**	**Natural Gas (m3)**	**GHG Emissions (kg CO2e)**	**Energy Intensity (kBTU/ft2)**
Port Rowan Medical Centre	1035 Bay Street, Port Rowan, ON	6,200	22,137.40	3,707.31	7,785.86	33.6

Roads Operations and Storage Facilities

Facility	Address	Total Floor Area (ft2)	Electricity (kWh)	Natural Gas (m3)	GHG Emissions (kg CO2e)	Energy Intensity (kBTU/ft2)
Central Roads Operations Yard	340 Argyle Avenue, Delhi, ON	8,027	47,155.30	18,453.00	36,862.87	99.1
Courtland Operations Yard	4329 Highway 59, Courtland, ON	4,587	14,958	8,269.00	16,333.49	20
Dundurn Operations Pit	474 County Road 5, Dundurn, ON	1,000	3,275.90	-	98.28	11.2
Facilities Operations Building	591 Norfolk Street South, Simcoe, ON	9,676	30,109.60	18,153.64	35,776.43	78.2
Langton Arena Parks Storage Building & Daycare Facility	30 Albert Street, Langton, ON	7,800	13,742.00	6,323.00	1,508.40	42.27
Loader Storage Garage	3090 Highway 59, Langton, ON	500	4,340.40	-	130.21	29.62
Norfolk County Garage	568 Queensway Street West, Simcoe, ON	11,199	75,697.90	36,722.00	72,813.90	82.7
Oakwood Cemetery Building	55 Potts Road, Simcoe, ON	967	16,255.20	-	487.66	57.4
Parks Storage Building - Delhi	177 Western Avenue, Delhi, ON	1,200	285	-	8.55	0.6
Parks Storage Building & Workshop	129 Pond Street, Simcoe, ON	3,245	651	3,580	6,896.71	28.1
Port Rowan Community Parks Storage Building	1084 Bay Street, Port Rowan, ON	500	72	-	2.16	0.49
Schellburg Offices & Roads Operations	8 Schellburg Avenue, Simcoe, ON	18,728	69,420.50	11,174.00	23,547.87	34.7
South Walsingham Storage Garage	2070 Highway 59, Walsingham, ON	4,344	11,162.50	0	334.88	8.77
Villa Nova Roads Facility	1355 County Road 9, Villa Nova, ON	7,969	45,731.30	13,852.00	27,981.63	82.2
Walsh Salt Dome	984 Charlotteville Road 7, Walsh, ON	-	3,626.40	-	108.79	-
West Roads Operations Yard	1630 County Road 45, Langton, ON	13,440	31,741.20	21,368.00	42,000.16	58.2

Roadway Lighting

Lighting Type	Address	Total # of Fixtures	Electricity (kWh)	Natural Gas (m3)	GHG Emissions (kg CO2e)	Energy Intensity (kBTU/fixture)
Street Lighting	County-Wide	4,891	1,797,861.20	-	53,935.84	1,254.25
Traffic Lighting & Associated Infrastructure	County-Wide	496	257,117.30	-	7,713.52	42,645.01
Delhi Kinsmen Sign	Delhi, ON	-	4,151.90	-	124.56	14,166.87

Water Treatment & Distribution

Facility	Address	Total Discharged (m3)	Electricity (kWh)	Natural Gas (m3)	GHG Emissions (kg CO2e)	Energy Intensity (kBTU/m3)
Cedar Street Buildings	396 Cedar Street, Simcoe, ON	-	419,752.30	8,043.00	28,043.17	
Cedar Street Wells	398 Cedar Street, Simcoe, ON	-	88,648.70	-	2,659.46	
Chapel Street Well / Pump	260 Chapel Street, Simcoe, ON	-	266,838.50	-	8,005.16	
Courtland Pump Station	Concession 1 STR, Lot 166, Courtland, ON	81,666	85,272.30	1,804.02	6,023.69	4.36
Delhi Water Depot	80 Industrial Road, Delhi, ON	-	22,093.30	-	662.80	
Delhi Water Tower	324 Argyle Avenue, Delhi, ON	-	32,488.00	-	974.64	
Delhi Water Treatment Plant	391 Old Mill Road, Delhi, ON	0	20,567	3,277	6,912.13	
N/W Well #1 Pumphouse	171 14th Street West, Simcoe, ON	-	18,308	-	549.24	
N/W Well #2 & #3 Pumphouses	231 14th Street West, Simcoe, ON	-	148,376.90	-	4,451.31	
Port Dover Water Tower / Depot	Highway 6, Port Dover, ON	-	47,269	-	1,418.07	
Port Dover Water Treatment Plant	603 Nelson Street, Port Dover, ON	805,356	351,942.90	-	10,558.29	1.49
Port Rowan Water Tower & Depot	1084 Bay Street, Port Rowan, ON	-	38,072.36	-	1,142.17	
Port Rowan Water Treatment Plant	4 Archibald Street, Port Rowan, ON	278,043	304,760	-	9,142.80	3.74
Ronson Drain Pumphouse	1187 1st Concession, Courtland, ON	-	10,368.60	-	311.06	
Simcoe Bulk Water Depot	118 First Avenue West, Simcoe, ON	-	5,022.80	-	150.68	
Simcoe Filter Plant	154 14th Street West, Simcoe, ON	1,723,291.80	269,131.50	14,948.00	36,789.05	0.89
Simcoe Water Tower	296 Union Street, Simcoe, ON	-	12,666.60	-	380.00	
St. Williams Booster Pump Station	180 Townline Street, St. Williams, ON	-	24,780.10	-	743.40	
Water Storage Building	197 Queen Street East, St. Williams, ON	-	6,996.70	-	209.90	
Waterford Water Depot	9 Deer Park Road, Waterford, ON	-	114,025.00	-	3,420.75	
Waterford Water Treatment Plant	375 Thompson Road West, Waterford, ON	338,914	283,784.10	-	8,513.52	2.86
Waterford Water Tower	71 Bruce Street, Waterford, ON	-	3,442	-	103.26	
Well No.1 Pumphouse	2497 Windham W 1/4 Line Road, Delhi, ON	507,925	333,128.80	-	9,993.86	2.24
Well No. 2 Pumphouse	2529 Windham W 1/4 Line Road, Delhi, ON	-	77	-	2.31	

Wastewater Treatment

Facility	Address	Total Discharged (m3)	Electricity (kWh)	Natural Gas (m3)	GHG Emissions (kg CO2e)	Energy Intensity (kBTU/m3)
Blueline Road Pumping Station	2270 Blueline Road, Waterford, ON	-	21,399.40	86.34	807.84	
Bridge Street Sewage Pumping Station Generator	4 Bridge Street, Port Dover, ON	-	-	2,312.36	4,442.04	
Decou Road Sewage Pumping Station	25 Decou Road, Simcoe, ON	-	-	48	92.21	
Deer Park Road Pumping Station	28 Deer Park Road, Waterford, ON	-	58,634.40	155	2,056.79	
Delhi Water Pollution Control Plant	244 Western Avenue, Delhi, ON	375,402.16	603,312.00	7,346.00	32,211.03	6.19
Donjon Boulevard Pump Station	80 Donjon Boulevard, Port Dover, ON	-	23,417.10	55.77	809.65	
Ellis & Front Sewage Pump Station	Ellis Street & Front Road, Port Rowan, ON	-	43,972.70	-	1,319.18	
Front Street Sewage Pumping Station Generator	10 Front Road, Port Rowan, ON	-	-	440.45	846.10	
Harbour Street Pump Station	40 Harbour Street, Port Dover, ON	-	10,567	-	317.01	
Hillside Avenue Pumping Station	133 Hillside Avenue, Delhi, ON	-	429.6	4,532.47	8,719.76	
Hunter Drive Sewage Lift Station	82 Hunter Drive South Port Rowan, ON	-	-	153.01	293.93	
Lynn Street Sewage Pumping Station	13 Lynn Street, Port Dover, ON	-	524.5	-	15.74	
Main Street of Delhi Pumping Station	441 Main Street of Delhi, Delhi, ON	-	27,879.70	187.35	1,196.29	
Mallard Walk Sewage Pumping Station	1 Mallard Walk, Port Rowan, ON	-	4,767.30	59.76	257.82	
Nelson Street West Pump Station	328 Nelson Street, Port Dover, ON	-	38,312.30	-	1,149.37	
Port Dover Water Pollution Control Plant	137 Hamilton Plank Road, Port Dover, ON	1,605,796.71	558,886.80	28,493.49	71,502.59	1.83
Port Rowan Water Pollution Control Plant	55 Hunter Drive North, Port Rowan, ON	222,295.35	753,478.16	-	22,604.34	11.57
Second Avenue Sewage Pumping Station	225 Second Avenue West, Simcoe, ON	-	11,540.20	-	346.21	
Sewage Lift Station #3 Gen. Building	13 Grand Street, Port Dover, ON	-	24,765.20	-	742.96	
Sewage Lift Station #7	38 Ryerse Crescent, Port Dover, ON	-	46,320.50	1,973.34	5,180.41	
Simcoe Sewage Pumping Station	157 Queensway West, Simcoe, ON	-	25,705.48	-	771.16	
Simcoe Water Pollution Control Plant	16 Oakwood Avenue, Simcoe, ON	2,748,557	1,598,417.30	64,138.12	171,161.85	2.82
St. Michaels St. Sanitary Pumping Station	68 St. Michaels Street, Delhi, ON	-	11,024.90	-	330.75	
St. Patrick Street Sewage Pumping Station	4 Bridge Street, Port Dover, ON	-	138,021	-	4,140.63	
Talbot Road Pumping Station	260 Talbot Road, Delhi, ON	-	11,913.20	221.69	783.26	
Talbot Street - Sewage Lift Station	302 Talbot Street North, Simcoe, ON	-	17,929.80	-	537.89	
Waterford Water Pollution Control Plant	672 Concession 8 Townsend, Waterford, ON	464,445.67	770,323.60	152	23,401.70	5.67
Western Avenue Sewage Pumping Station	170 Western Avenue, Delhi, ON	-	8,894.30	162.63	579.24	

Solid Waste Transfer Stations

Facility	Address	Total Floor Area (ft2)	Electricity (kWh)	Natural Gas (m3)	GHG Emissions (kg CO2e)	Energy Intensity (kBTU/ft2)
Simcoe Transfer Station	164 - 14th Street West, Simcoe, ON	400	13,690.90	-	410.73	93.4
South Walsingham Transfer Station	1180 3rd Concession, Walsingham, ON	450	8,743.80	-	262.31	59.7

Appendix B – Plans, Goals & Objectives Results (2019-2024)

2019-2024 Plans, Goals & Objectives

Goal No. 1

Reduce GHG Emissions of County Operations in accordance with the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement targets

Goal: Demonstrate leadership by committing The Corporation of Norfolk County to meet Canada's targets to the UNFCCC Paris Agreement by reducing emissions by 30% below 2005 levels by 2030.

Objectives:

a) Reduce the total annual GHG emissions from County operations by 25% below 2005 levels by 2024;

b) Reduce the annual GHG emissions from County facilities by 5% below 2018 levels by 2024;

c) Commit The Corporation of Norfolk County to meeting Canada's targets to the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement by reducing GHG emissions by 30% below 2005 levels by 2030; and

d) Commit The Corporation of Norfolk County to becoming a carbon neutral organization by 2030.

Comments:

Objectives 'a)' through 'c)' have been met and/or are on course to be met by the County by 2024. For further context, total annual GHG emissions from County operations and facilities were reduced 23.67% below 2018 levels by 2023.

Objective 'd)' is currently outstanding; however, it is important to note that the County currently sequesters more carbon than it produces, as per **Section 3.4.4** in the Plan.

Goal No. 2

Increase Energy Efficiency of County Operations

Goal: Reduce the total annual weather-corrected energy consumption intensity of County facilities below 2018 levels by 2024.

Objectives:

a) Reduce total energy consumption in 80% of Norfolk County facilities below 2018 levels by 2024;
b) Reduce the total annual weather-corrected energy consumption intensity (kBTU/ft^2 of all non-water/wastewater facilities below 2018 levels by 2024;
c) Reduce street light energy intensity of remaining 800 non-LED street lights by 50% below 2018 levels by 2024; and
d) Reduce total annual weather-corrected energy consumption intensity (kBTU/m^3) of water/wastewater facilities by 5% below 2018 levels by 2024.

Comments:

The County did not meet the following objectives over the course of the Plan. Based on the 2023 baseline data:

a) Total energy consumption was reduced below 2018 levels at approximately 61% of County facilities;
b) Total annual weather-corrected energy consumption intensity (kBTU/ft^2) at almost all non-water/wastewater facilities was reduced, with the exception of the Port Rowan Medical Centre and miscellaneous roads operations and storage facilities;
c) Street light energy intensity decreased by approximately 3.32% below 2018 levels; and
d) Total annual weather-corrected energy consumption intensity (kBTU/m^3) increased at County water/wastewater facilities over 2018 levels.

Goal No. 3

Reduce Annual Energy Costs of County Operations

Goal: Reduce the total annual energy costs of County Operations.

Objectives:

a) Despite expected electricity rate increases, reduce total electricity cost intensity of all non-water/wastewater facilities by 5% below 2018 levels by 2024;
b) Despite expected natural gas rate increases, hold total natural gas cost intensity of all County facilities to a maximum 10% increase over 2018 levels;
c) Despite expected fuel rate increases, hold total fuel costs to a maximum 5% increase over 2018 levels; and
d) Explore alternative, cost-effective, sources of energy with the aim to meet the above objectives.

Comments:

The County continues to explore alternative, cost-effective, sources of energy in order to further enhance the sustainability of the organization beyond the aforementioned goals; representing the successful completion of objective ‘d).’

Objectives ‘a)’ through ‘c)’ were not met by the County throughout the duration of this Plan. As such, the County saw a 3.5% decrease in electricity costs and a 21.25% increase in natural gas costs in 2023 in comparison to 2018 levels. In addition, the County observed a 20.81% increase in fuel costs from 2018 levels, despite a reduction in total consumption.

Goal No. 4

Promote Commitment to a Sustainable Norfolk County

Goal: Promote sustainability and advocate for the responsible and efficient use of energy and resources within Norfolk County.

Objectives:

a) Establish and implement a Norfolk County Climate Change Adaptation and GHG Emissions Reduction Plan to promote long term sustainability of Norfolk County;
b) Enhance corporate procurement strategies to place a stronger emphasis on long-term sustainability, life-cycle costing and energy efficiency. Explore potential of inclusion of “upstream” energy and GHG emissions in procurement;
c) Enhance existing staff energy awareness program and expand the program to promote energy efficiency to residents and businesses County-wide;
d) Integrate energy conservation, asset management, and climate change adaptation and GHG emissions planning to provide long-term sustainability guidance to the Corporation;
e) Increase the visibility of energy and sustainability considerations to Council, senior leadership team, County staff and general public;
f) Annually report the progress made to the goals and objectives outlined in Plan to Council; and
g) Explore alternative methods to increasing the long-term sustainability of the Corporation and the community.

Comments:

The following objectives, as listed above, have either been fully or partially met. Objectives not met throughout the duration of the 2019-2024 Plan have been re-introduced within the updated 2024-2029 Plan.

Goal No. 5

Expand Renewable and Sustainable Energy Generation

Goal: Promote energy sustainability through increasing the generation of renewable energy through County facilities.

Objectives:

a) Generate 10% of the County's total electricity consumption through renewable energy sources by 2024;
b) Reduce the energy consumption of five Norfolk County facilities by at least 30% through a combination of energy efficiency measures and on-site renewable energy generation; and
c) Commission (or final design) of a "net zero" County facility.

Comments:

Objective 'b)' was met and exceeded by Norfolk County throughout the duration of the Plan, with more than 5 buildings seeing, at minimum, a 30% decrease in consumption.

Objectives 'a)' and 'c)' were not met by the County throughout the duration of the Plan; however, the County will continue to strive to meet these goals through the re-introduction and/or introduction of measures in the updated Plan.

Appendix C – Historical Energy Efficiency Measures and Results

2019-2024 Historical Energy Efficiency Measures and Results

Interior LED Retrofits *(2019-2022)*

As a very strong return on investment energy efficiency measure, lighting retrofits have been completed at County facilities since 2011. A target of a 2 to 5-year simple payback (approximately 20-50% return on investment) on only energy cost savings has been used by staff as a minimum requirement for any recommendations for facility lighting retrofits.

Since 2011, lighting retrofits included the replacement of inefficient T12, incandescent and high pressure sodium lamps and fixtures to high efficiency fluorescent fixtures and select LED bulb replacements. As of 2019, the County began to retrofit all existing lighting to LED bulbs and fixtures, further demonstrating the County's commitment to energy efficiency, as well as realizing significant energy, cost and maintenance savings. The County also replaces any remaining, formerly retrofitted, fluorescent tubes and/or bulbs with LED tubes/bulbs and fixtures at end of life.

These previous investments in lighting retrofits have since paid for themselves and continue to provide cost avoidance savings annually.

Total Cost of LED Lighting Retrofits since 2019 = $500,000

Total External Funding for LED Lighting Retrofits = ~$150,000

Total Net Cost of LED Lighting Retrofits since 2019 = $350,000

Cost Avoidance of LED Lighting Retrofits to 2024: ~$476,000

Weather-Stripping Program *(2019-2024)*

Since 2019, the County has completed weather stripping at multiple facilities. This program included the annual replacement of failed or non-existent exterior door weather-stripping to enhance facilities' building envelope and further, improve energy conservation.

Various locations have received weather-stripping upgrades on an as-needed basis since the program's inception.

Replacing failed and/or upgrading non-existent exterior doors with weather-stripping has assisted in reducing facility energy use by approximately 2- 3% annually.

Total Cost of Weather-stripping upgrades since 2019 = $51,000

Cost Avoidance of Weather-Stripping Upgrades to 2024: ~$5,000

Building Envelope and Insulation Upgrades Program *(2019-2024)*

Since 2019, the County completed insulation or building envelope component upgrades (i.e., repointing) in attempts to improve the energy efficiency and conservation of County facilities. Facilities upgraded since 2019 include, Waterford Branch Library, Port Rowan Medical Centre, Port Rowan Library and Port Dover EMS Base, Norfolk County Archives Building, Central Roads Operations Yard and County Administration Building 2.

Since the inception of the program, replacements resulted in reductions to facilities' energy consumption through increasing the insulation of ceiling and exterior walls or increasing air tightness of the building. The aforementioned upgrades, totaling in at $110,000, typically had a return on investment of approximately 7% to 13%; however, is difficult to quantify due to differing existing site conditions and the scope of work performed and the lack of access to measurement and verification instrumentation.

HVAC Upgrades

Due to the lower financial returns associated with retrofitting HVAC equipment, minimal retrofits of County HVAC equipment have been completed with the sole purpose of improving energy efficiency. However, when County HVAC equipment requires replacement, high energy efficient equipment and systems are selected as a replacement. Additional initial costs associated with the selection of high efficiency equipment are partially offset through external funding sources such as Enbridge and IESO incentives. The remaining additional initial costs of the high efficiency equipment have a simple payback between 1-5 years (or return on investment of 20% to 100%).

Staff Energy Awareness Program *(2019-2024)*

Please refer to section 3.2.1 County Energy Awareness Program for further details.

Electric Fleet Pilot Project *(2024)*

Norfolk County purchased its first electric vehicle (EV) to be incorporated within the County Fleet in the first quarter of 2024. It is anticipated that the County will see a reduction in energy costs (fuel), GHG emissions and maintenance costs through this integration.

A comprehensive overview of energy and cost savings will not be able to be determined until the vehicle is ready for use and utilized by staff.

Rooftop Solar Net-Metering Pilot Project /Off-Grid RFP *(2023)*

In 2023, the County completed the Installation of a rooftop solar off-grid PV system at the St. Williams Community Centre. The rooftop solar PV system provides electricity to the facility and stores the excess within a battery for future or emergency-use. The following project was the County's first battery storage project.

The following project demonstrates the County's commitment to sustainability and self-sufficiency through the systems renewable energy generation and storage.

The County was able to secure 75% project funding through Fed/Dev Ontario's Canada Community Revitalization Fund (CCRF). Moreover, the pilot project was a strong investment with an estimated return on investment of approximately 15%. The total cost avoidance to 2024 is yet to be determined due to lack of data available for further analysis. In addition, through the energy generated by the system, the County was able to reduce its grid consumption and thus, reduce energy costs at the facility.

Total Cost = $30,000.00

Total External Funding = $22,500.00

Total Net Cost = $7,500.00

Refrigerator/Freezer Replacement Program *(2019-2023)*

In 2019, the County introduced a Refrigerator/Freezer Replacement Program geared towards bulk replacements of existing old, end of expected life refrigerators with new, EnergyStar certified high-efficiency refrigerators/freezers. This program continued through to 2023 and has been re-introduced through the 2024-2029 ECDM Plan.

During the program lifetime, the County replaced approximately 45 refrigerators and/or freezers**.** Through this, the County saved approximately 1,550 kWh (~$232) of energy per year per unit. Additionally, many older refrigerators/freezers had reached end of expected life and were due for replacement.

HVAC Upgrades – Vestibule Heater Replacement Program *(2020-2023)*

The Vestibule Heater Replacement Program occurred from 2020 to 2023.The program entailed the replacement of manual vestibule and cabinet heaters with programmable remote-access controlled vestibule heaters. This program replaced several original construction vestibule and cabinet heaters. Through having the ability to improve the heating controls, the County realized improved energy consumption as well as reduced travel time/costs as staff were previously travelling to make daily adjustments.

Total Cost = $35,000

Cost Avoidance to 2024 = ~$3,500

Appendix D

Proposed 2024-2029 Annual Energy Efficiency Measures

Weather-Stripping Program *(2024-2029)*

Description: Annual replacement of failed or non-existent exterior door weather- stripping within County facilities. A Small Stream program, as noted below, will address access doors, provided through in-house services. A Large Stream program, also noted below, is intended to address components such as overhead doors.

Justification: Weather-stripping primarily reduces air infiltration and leakage, improving the air tightness of a building and thus, leading to energy savings in heating and cooling. Air leaks account for approximately 10%-20% of facilities' energy use. The percentage reduction in energy consumption can vary; however, the common estimate is within the range of 2% to 3% for well-implemented weather-stripping.

Financial and Energy Summary:

Small Stream	*Large Stream*
Initial Cost = $3,000	Initial Cost = $7,500
Annual Cost Savings = $500	Annual Cost Savings = $750
Total Annual Energy Savings = ~3500 kWh	Total Annual Energy Savings = ~8000 kWh

***IESO & Enbridge Incentives are available from time-to-time on an annual basis, with the potential to recoup 50-75% of initial costs.*

Building Envelope and Insulation Upgrades Program *(2024-2029)*

Description: Installation of insulation or building envelope components (i.e., re-pointing) which improve the energy efficiency of County facilities. Facilities to be upgraded in 2024 include: Norfolk County Archives Building and County Administration Building 2 (CAB2).

Justification: Building envelope and insulation upgrades play a crucial role in improving energy efficiency by enhancing the thermal performance of a facility. The Replacements will reduce energy consumption by increasing the insulation of ceiling and exterior walls or increasing air tightness of the building. Upgrades typically have a return on investment of approximately 10%, but are highly dependent on existing site conditions.

Financial and Energy Summary:

2024	**2025-2029**
Initial Cost = $10,000	Initial Cost = $15,000
Annual Cost Savings = $1,000	Annual Cost Savings = $1,500
Total Annual Energy Savings = 3,000 m^3	Total Annual Energy Savings = 4,500 m^3

***IESO Incentives are available from time-to-time on an annual basis, with the potential to recoup 50-75% of initial costs.*

Refrigerator/Freezer Replacement Program *(2025-2029)*

Description: Bulk replacement of old, end of expected life refrigerators with new highefficiency refrigerators.

Justification: Older refrigerators and chest freezers (<1990) use approximately 2,000 kWh ($300) of electricity per year. New refrigerators and chest freezers use approximately 450 kWh ($68) of energy per year. Many older refrigerators/freezers havereached end of expected life and are due for replacement, this program will replace the fridges in a bulk purchase annually.

Financial and Energy Summary:

Initial Costs = $5,000

Rebates / Incentives = ~$175/appliance (SaveOnEnergy)

Annual Cost Savings = $500

Total Annual Energy Savings = 8,000 kWh

Hybrid Hot Water Heater Replacement Program *(2025-2029)*

Description: Replacement of end-of-life natural gas-fired or electric-powered hot water heaters throughout applicable County Facilities. Project is to replace the current Hot Water Heater Replacement Program.

Justification: Replacing existing end-of-life natural-gas fired and/or electric-powered hot water heaters with hybrid electric heat pump water heaters provides significant cost and energy savings, improving a buildings' overall energy efficiency. The County installed their first hybrid heat pump water heater in 2023 and the system is expected to be 8x more efficient than the existing natural-gas fired system. Hybrid electric hot water heaters are also expected to be 4x as efficient as standard electric-powers tanks. Beyond the aforementioned savings, both options also result in GHG emissions reductions.

Financial and Energy Summary:

Initial Costs = $25,000

Annual Cost Savings = $490-$850

Total Annual Energy Savings = 4000-6000 kWh

***IESO & Enbridge Incentives are available from time-to-time on an annual basis, with the potential to recoup 50-75% of initial costs.*

Window Replacement Program *(2025-2029)*

Description: Replacement existing, end-of-life inefficient windows in small to medium-sized facilities to improve the overall building performance. Existing windows are to be replaced with Energy Star certified double or triple-pane efficient window units.

Justification: Double and triple pane windows are more efficient than single pane windows primarily due to their increased insulation capabilities. Beyond their insulation capabilities, more efficient windows improve a buildings overall heat loss/gain, reduce air leakage and are less prone to condensation, helping to further maintain more consistent indoor air temperatures. With the improved durability of high-efficiency windows, there is an opportunity for reduced maintenance costs as well as long-term energy and cost savings (via reduced energy consumption).

Financial and Energy Summary:

Initial Costs = $20,000

Annual Cost Savings = $2,500-$5,000

Total Annual Energy Savings = 15%-30% (double pane), 25%-50% (triple pane) – facility dependent

***IESO & Enbridge Incentives are available from time-to-time on an annual basis, with the potential to recoup 50-75% of initial costs.*

Air Curtain Program *(2025-2029)*

Description: Installation and/or replacement of air curtains at exits at County facilities to improve overall building performance.

Justification: Air curtains create a barrier of air that separates indoor and outdoor air temperatures, helping to prevent the exchange of air between the two spaces. The ‘barrier’ reduces heat loss in the winter and heat gain in the summer, leading to approximately 10%-15% in energy savings. In addition, by reducing the workload on HVAC systems, there is an opportunity for reduced maintenance costs. Many County buildings are not equipped with air curtains, whereas those equipped with the technology are nearing end-of-life and are due for replacement.

Financial and Energy Summary:

Initial Costs = $5,000

Annual Cost Savings = $750-$1050

Total Annual Energy Savings = ~500-700 ekWh

***IESO & Enbridge Incentives are available from time-to-time on an annual basis, with the potential to recoup 50-75% of initial costs.*

Interior Lighting Controls Program *(2025-2029)*

Description: Installation of motion sensor lighting controls within County facilities (where not already equipped) to reduce overall energy consumption and improve building performance.

Justification: Motion sensor lighting controls provide an array of benefits within a facility, such as, energy and cost savings, improved efficiency, enhanced safety and security and extended lamp life. Motion sensor lights have a typical energy savings of 25% to 75%, as well as a maintenance cost savings potential through extended life expectancies of bulbs.

Financial and Energy Summary:

Initial Costs = $7,500

Annual Cost Savings = $2,500-$5,000

Total Annual Energy Savings = 2,500-7,500 kWh

***IESO Incentives are available from time-to-time on an annual basis, with the potential to recoup 50-75% of initial costs.*

Public Energy Awareness Program *(2024-2029)*

Description: An Energy Awareness Program (promotion and education) for Norfolk County residents/members of the public. Promotion and education initiatives may provide general efficiency tips and residential and commercial incentives and rebates programs.

Justification: Energy conservation and efficiency awareness can assist in reduced utility costs for the general public. Further, energy conservation measures, when implemented, help to provide energy security within Norfolk County.

Financial and Energy Summary:

Initial Costs = $500.00 (communications and advertising)

***IESO & Enbridge Incentives are available from time-to-time on an annual basis, with the potential to recoup 50-75% of initial costs.*

Corporate Energy Awareness Program *(2024-2029)*

Description: Energy Awareness Program (promotion and education) for internal staff at Norfolk County. Completed through initiatives such as newsletters, energy competitions, etc.

Justification: Energy conservation and awareness can directly result in reduced utility costs and increased energy savings.

Financial and Energy Summary:

Initial Costs = $1,000 (communications, prizes, etc.)

Although difficult to quantify, implementing simple energy conservation and efficiency measures during work operations can result in approximately 10-20% in energy savings.

Energy Monitoring and Management Program *(2025-2029)*

Description: Annual purchase of an energy management system/software to better assist staff in energy monitoring, analysis, reporting and auditing.

Justification: Staff currently utilize a free software, Energy Star Portfolio Manager; however, this requires a large amount of staff time due to the requirement for manual data entry of 324 total utility accounts. Real-time, automatic energy management software allows for improved energy efficiency, increased cost savings, enhanced sustainability and corporate social responsibility, improved operational efficiency and regulatory compliance. Further, staff can utilize time saved on additional duties/responsibilities.

Financial and Energy Summary:

2025	**2026-2029**
Initial Cost = $450.00	Initial Cost = TBD – pending review of existing software.
Annual Cost Savings = 5%-10% of utility costs	Annual Cost Savings = 5%-20% of utility costs
Total Annual Energy Savings = TBD – pending review.	Total Annual Energy Savings = TBD

Building Operator/ Building Commissioning Training Program *(2025-2029)*

Description: Professional on-site training for County building operators that are responsible for the daily maintenance and operation of large County buildings with complex HVAC and electrical systems.

Justification: Formalized on-site training for County building operators will provide hands-on training to identify opportunities to reduce energy use and improve energy efficiency, and further, creating a foundation for low-carbon initiatives in municipal facilities through operation and maintenance.

Workshops will be designed to reveal the steps towards net-zero; including, practical early and mid-term actions to reduce energy costs, and GHG emissions.

Financial and Energy Summary:

Initial Costs = $1,650 ($550 per attendee)

Rebates and Incentives = ~$1,237.50 (up to 75% /attendee)

Annual Cost Savings = $2,500-$5,000

Total Annual Energy Savings = 40,000 kWh & 5,000 m^3

Appendix E - Financial Summary

Summary of Energy Efficiency Measures Costs

	Capital Cost ($)						
Energy Efficiency Measure	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2024-2029**
Weather-Stripping Program (Small Stream)	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$18,000
Weather-Stripping Program (Large Stream)	-	$7,500	$7,500	$7,500	$7,500	$7,500	$37,500
Building Envelope and Insulation Upgrades	$10,000	$15,000	$15,000	$15,000	$15,000	$15,000	$85,000
Window Replacement Program	-	$20,000	$20,000	$20,000	$20,000	$20,000	$100,000
Air Curtain Program	-	$5,000	$5,000	$5,000	$5,000	$5,000	$25,000
Interior Lighting Controls Program	-	$7,500	$7,500	$7,500	$7,500	$7,500	$37,500
Refrigerator/Freezer Replacement Program	-	$5,000	$5,000	$5,000	$5,000	$5,000	$25,000
Hybrid Hot Water Heater Replacement Program	$10,000	$25,000	$25,000	$25,000	$25,000	$25,000	$135,000
Energy Monitoring and Management Program	-	$450.00	TBD	TBD	TBD	TBD	$450
Public Energy Awareness Program	-	$500	$500	$500	$500	$500	$2,500
Corporate Energy Awareness Program	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$6,000
Building Operator/Building Commissioning & Training Program	-	$1,650	$1,650	$1,650	$1,650	$1,650	$8,250
Norfolk County Energy Conservation Policy Review and Update	$0	-	-	-	-	$0	$0
HVAC Upgrades/Retrofits (Design)	-	$45,000	$45,000	$45,000	$45,000	$45,000	$225,000
HVAC Upgrades/Retrofits (Construction)	-	-	$50,000*****	$35,000*****	$7,500*****	$10,000*****	$0
Rooftop Off-Grid/Net-Metered Solar System Expansion (Design)	-	$7,500	$7,500	$7,500	$7,500	$7,500	$37,500
Rooftop Off-Grid/Net-Metered Solar System Expansion (Construction)	-	-	$50,000	$50,000	$50,000	$40,000	$190,000
LED Street Lighting Retrofit Program	-	$105,000	$105,000	$105,000	$105,000	$105,000	$525,000
Community Energy & GHG Emissions Reduction Plan	-	$90,000	-	-	-	-	$90,000
EV Fleet Expansion	-	-	$230,000	-	-	$450,000	$680,000
HVAC Optimization Pilot Project	-	-	$115,000	-	-	-	$115,000
Net-Zero Fire Station / EMS Base (Design)	-	-	TBD*	-	-	-	$0
Net-Zero Fire Station / EMS Base (Construction)	-	-	-	-	TBD*	-	TBD
Energy Audits at County Facilities	-	-	-	-	$60,000	-	$60,000
Corporate Renewable Energy Feasibility Study	-	-	-	-	$97,500	-	$97,500
2029-2034 ECDM Plan Update	-	-	-	-	-	$0	$0
TOTAL COSTS PER YEAR	**$24,000**	**$339,100**	**$643,650**	**$298,650**	**$456,150**	**$738,650**	**$2,500,200**
TOTAL SAVINGS	**$1,500**	**$22,070**	**$55,490**	**$76,910**	**$100,080**	**$124,500**	**$380,550**
TOTAL COST AFTER SAVINGS	**$22,500**	**$317,030**	**$588,160**	**$221,740**	**$356,070**	**$614,150**	**$2,119,650**

*Potential cost savings are expected to increase upon further analysis and research for capital efficiency measures (Section 4.3.2). Total costs may also vary dependent upon available rebate/incentive programs and funding programs.

*The potential County-funded portion may be reduced due to available funding sources and/or increased year-over-year due to changing markets and inflation. Any changes, if applicable, will be introduced during the County's annual budget exercises.

*All incremental costs have been identified with an asterisk (*****).