



# ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN

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The Public Utilities Commission of  
the City of Sault Ste. Marie

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## Executive Summary

The Public Utilities Commission of Sault Ste. Marie (the Commission) owns and manages the city's water supply and distribution infrastructure, ensuring the provision of safe and reliable potable water at cost to customers within the municipal boundary.

The Commission has set an ambitious goal to reduce overall energy consumption by 15%. To achieve this, the Commission will enhance energy tracking and reporting, strategically plan capital projects, and implement operational improvements.

The project includes using the Energy Star Portfolio Manager system to track and analyze building energy consumption. The implementation team will evaluate and develop plans for identified projects moving forward.

Additionally, the Commission will explore new technologies and foster a culture of sustainable conservation across all facilities and PUC Services.

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## Introduction

On January 1, 2019, a new regulation was introduced under the Electricity Act, 1998 titled O. Reg. 507/18: Broader Public Sector: Reporting and Conservation and Demand Management Plans ( <https://www.ontario.ca/laws/regulation/r18507> ).

This regulation replaces Ontario Regulation 397/11 titled Energy Conservation and Demand Management Plans enacted under the now-repealed Green Energy Act, 2009. The requirements for broader public sector energy planning and reporting by Ontario agencies are identical to those under the former Regulation 397/11.

Under Ontario Regulation 507/18, all public agencies are required to report annually on energy use and greenhouse gas (GHG) emissions. The agencies are also required to prepare and make public updated five-year energy conservation and demand management plans.

This report has been created to outline PUC's strategy. By leveraging internal resources and external contractors, the Commission has developed a forward-looking 5-year plan that addresses both present and future needs. Our goal is to create water delivery infrastructure that is highly efficient, while meeting the demands of current and future municipal requirements.

## Company Information

### *PUC Services Inc.*

Is a utility services company operating as a wholly owned private company of the Corporation of the City of Sault Ste. Marie and is incorporated under the Ontario Business Corporations Act. PUC Services Inc. manages the assets and business of PUC Distribution Inc., manages the municipal drinking water system for the Public Utilities Commission of the City of Sault Ste. Marie, and operates the City's two wastewater treatment plants under multi-year contracts. Water and wastewater services are also provided to several communities and organizations in the Algoma District.

### *Public Utilities Commission*

The Public Utilities Commission of the City of Sault Ste. Marie owns the water supply and distribution infrastructure, ensuring the provision of safe, reliable, and cost-effective potable water to customers within the municipal boundary of Sault Ste. Marie, Ontario. This distribution system also supplies potable water to an area of the Rankin Reserve of the Batchewana First Nation.

More information can be found at [www.ssmruc.com](http://www.ssmruc.com)

# System Overview

## *SSM Drinking Water System*

The Sault Ste. Marie Drinking Water System (SSM DWS) serves a population of approximately 74,000 (within the Urban Service Line area) within the City of Sault Ste. Marie and Rankin Reserve.

Water for the greater Sault Ste. Marie area is presently obtained from two independent sources. One source of supply is from six deep wells in four pumping stations located at the Steelton Pump Station, Goulais Pump Station, Shannon Pump Station and Lorna Pump Station. The water pumped from the wells is disinfected and pumped directly to the distribution system.

All four pump stations utilize chlorine for primary and secondary disinfection. Two of the well sites are located in the West areas of the city, while the other two are in the Eastern part of the Service Territory.

The second source is from Lake Superior at Gros Cap. The raw water from Lake Superior is pumped to the twin control tanks on Marshall Drive and then flows by gravity through to the Water Treatment Plant (filtration plant).

The complete water supply system, including the Gros Cap Pumping Station, deep wells and filtration plant, are monitored and controlled through a SCADA system from the Control Room at the Water Treatment Plant. There is a central process controller and data logging facility along with a graphic panel indicating the plant and the distribution system components.

## *Distribution System*

The distribution system is divided into two pressure zones, all production facilities are in pressure zone one. There is one large booster station in the system which supplies the second pressure zone.

### Strategic Plan

The objective of this plan is to establish a strategic plan for energy conservation for the water delivery system in Sault Ste. Marie. This will be achieved through the following steps:

- **Establishment of a Baseline Year (2023):** Establish a reference point for measuring progress.
- **Identification of Past Conservation Initiatives:** Review and document previous efforts.
- **Establishment of Clear, Understandable Goals:** Define system-wide objectives and delivery methods for each location.

- **Setting of Annual Targets:** Set realistic, attainable goals using current and future resources.
- **Continuous Monitoring and Tracking:** Utilize readily available tools for ongoing assessment. Simplify reporting to ensure no opportunities are missed and to reduce the burden on those responsible for each location.

This plan will detail how the Commission aims to achieve both quantitative and qualitative goals in each section.

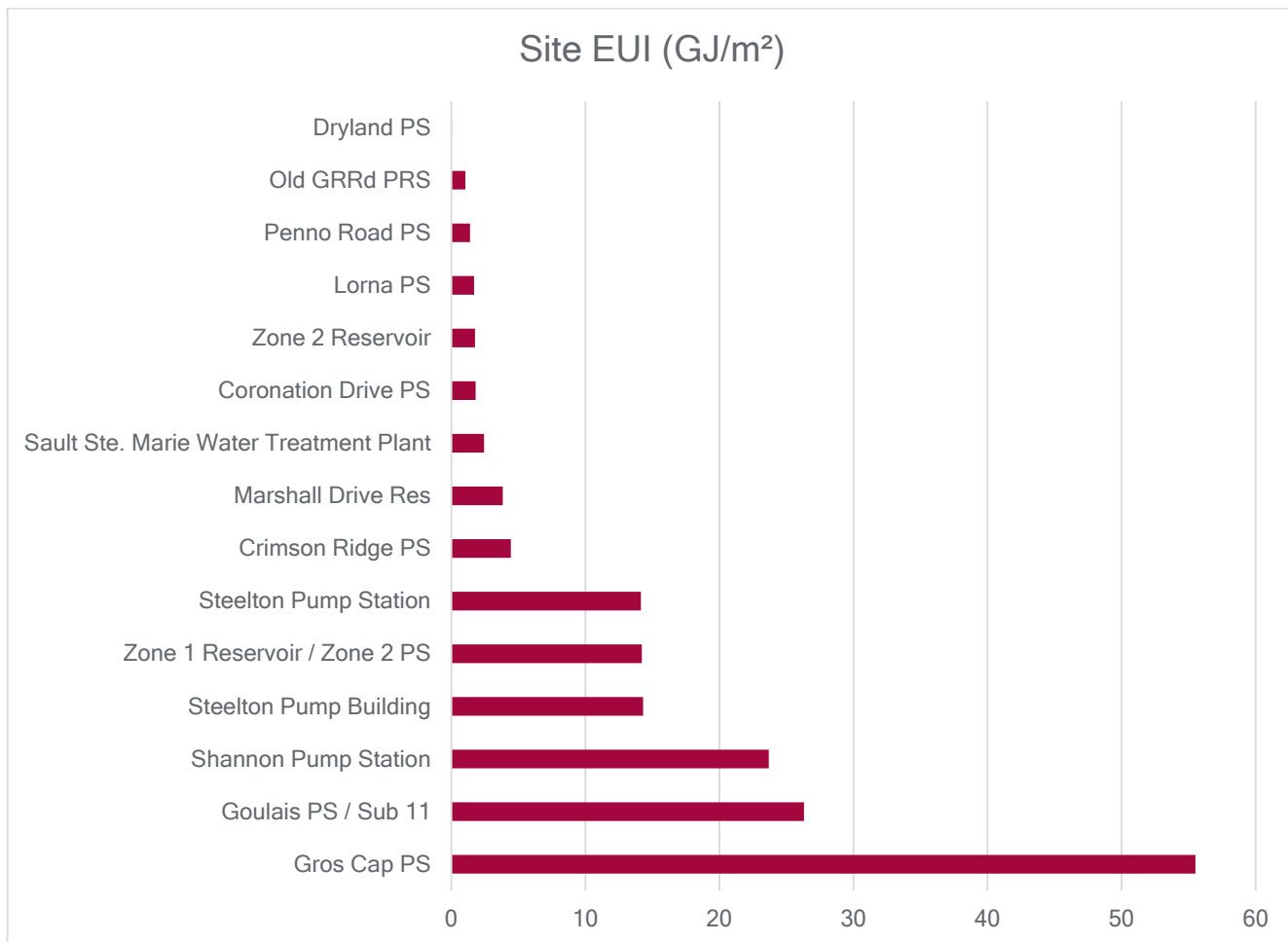
## Establishing a Baseline

### Methodology

Understanding the relationship between the energy usage and the flow rates of each building will guide us in current and future building energy consumption during “work” periods and “non work” times. While changing the process to conserve energy would take more in-depth knowledge of the entire process not only for the building but the city wide “system”, baseload of buildings typically is less complex to modify and change. Training, building controls or maintenance offer the first and often low-cost options for starting to realize energy savings in a building. The other method of measurement would be to convert to the more common standard of ekWh/sqft. This standard of measurement would allow the comparison of our buildings to similar buildings using the Energy Star website’s portfolio manager.

### Current building Information

The water system throughout the Commission’s service territory consists of one water treatment facility, the Gros Cap pumping station, four well pumping stations, five pumping facilities throughout the city and three reservoirs. The Energy Use Index (EUI) is noted below for each facility, historical consumption and flow data can be found in the appendices.



## Objectives and Targets

### Objective

The objective of this document is not only to meet ministry guidelines but lay out a framework for current and future direction to reduce the overall energy consumption within the Public Utilities Commission water delivery system.

- **The first objective** is to establish a reasonable and reliable reporting and tracking system that is easily kept current and determines past, current and potential energy consumption. This is typically done through the use of spreadsheets, going forward the use of energy star's portfolio manager ([Energy Star Portfolio Manager](#)). This is recognized by both the Canadian and American Governments as a reliable and secure location to store building information, benchmark against buildings of similar size and uses and watch for both positive and negative trends.

- **The second objective** is to establish and maintain a team of personnel to determine current and future projects, record these ideas and follow through to completion. Having a regular meeting or project updates to discuss and record these ideas would establish accountability to each project and ensure completion in a timely manner. This team would also ensure the objective number one is met and continuously updated.
- **The third objective** is to reduce the overall system consumption over the next five years. Setting yearly targets to achieve this overall reduction target, through a combination of low cost/no cost measures and capital expenditures. These yearly targets will be flexible and continuously change as we establish projects and their timelines, while maintaining the overall objective.

## Target

As stated in the objectives our target is a measurable reduction in the energy consumption of the overall system.

The target for the next five years is set at a 15% reduction in the KWh consumption. This would equate to a 3% reduction on average per year but remain flexible on a yearly basis.

# Energy Efficiency Initiatives

## Retrofit Projects

- **Description:** Physical changes in equipment related to water pumping and overall building consumption.
- **Scope:** Includes energy consumption for HVAC, lighting, and other process equipment, beyond just water processing.

## Process Optimization Projects

- **Description:** Modifications to the operation process aimed at reducing energy consumption.
- **Scope:** Primarily focuses on reducing energy loss in water pumping and treatment processes. May also include retrofitting equipment.

## Renewable Energy Projects

- **Description:** Investments in renewable energy sources.
- **Scope:** Includes solar panels on the rooftop and an energy recovery turbine at the water treatment plant. Each site is evaluated for renewable energy benefits.



## Fleet Electrification

- **Description:** Transitioning the vehicle fleet to electric vehicles.
- **Scope:** Over 15 light-duty and passenger electric vehicles currently in operation. Future plans include integrating heavy-duty electric vehicles.

## Moving Forward

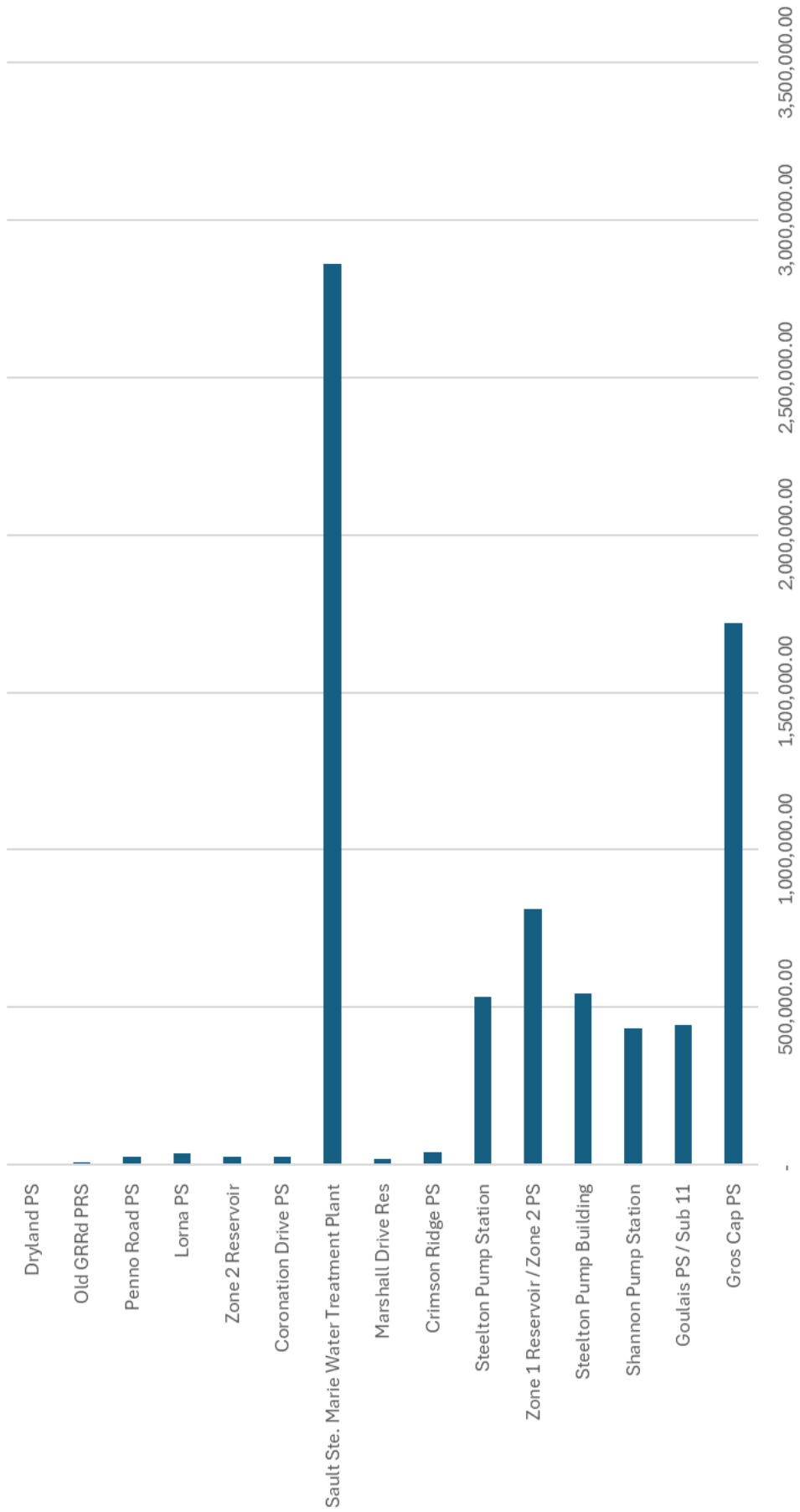
The next steps will be to advance the objectives over the first part of 2024.

- **The first phase** will be to compile and enter the data into the Energy Star website for building energy consumption and baseline creation. In conjunction to this we will be assembling a project team leveraging expertise from different areas of the company to give insight and provide knowledge to each measure.
- **The second phase** is to create a business case for each measure on the included list. This will be basic project information to determine the viability and savings for each measure, the team will then decide on order and timeline for each project. As this information is determined, appendices will be added to this document to keep up to date on the projects. We will also add new measures as they become available.

Finally, we will monitor and track changes to the system to understand where we are currently and moving towards our reduction targets.

# Appendix A

Electricity Use - Grid Purchase (kWh)



Total (Location-Based) GHG Emissions (Metric Tons CO2e)

