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City of Saskatoon's energy management roadmap

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CASE STUDY

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- Federal funding, effective leadership, and support from senior management were crucial to developing the energy management project roadmap.
- Securing funding and resourcing was essential to sustaining energy management initiatives.
- Enhanced coordination across teams and better communication of energy savings helped ensure that the program stayed on track and gained support from various stakeholders.
- Sustainability and energy efficiency require ongoing effort. Programs must be continually evaluated and refined to achieve further savings.
- Demonstrating a commitment to delivering sustainability efforts can provide the organization recognition in energy management circles, thereby increasing external funding opportunities.





Background

Saskatoon, located in Saskatchewan, Canada, is experiencing significant growth, with its population expected to increase from approximately 300,000 to 500,000 by 2050. The City of Saskatoon's Water and Wastewater Treatment Plants are crucial infrastructure, managed by Saskatoon Water, the municipal water treatment department.

Saskatoon Water's water and wastewater treatment plants are both Class IV treatment facilities. The water treatment plant (WTP) processes 119 megalitres per day, with an average daily demand design capacity of 220 megalitres, while the wastewater treatment plant (WWTP) processes 80 megalitres per day, with an average daily flow capacity of 120 megalitres.

In 2020, Saskatoon Water began an energy management project that involved hiring an energy manager who would be responsible for making energy performance at Saskatoon Water visible to various levels of the organization so that actions could be taken to systematically reduce energy waste, variability, and use. The energy management project was made possible by a \$180,000 financial contribution from Natural Resources Canada. The project formally began May 2020 and concluded March 31, 2022.

Challenges

In 2019 the City of Saskatoon's Sustainability Department created the [Low Emissions Community Plan](#) and [Corporate Climate Adaptation Strategy](#). These documents provided an overview and plan to meet the City of Saskatoon's greenhouse gas targets of achieving a five percent reduction below 2014 levels by 2023 and a 80 percent reduction below 2014 levels by 2050.

Water and wastewater treatment operations contribute approximately 21 percent of the City of Saskatoon's greenhouse gas emissions. This is mainly due to the energy-intensive requirements of water and wastewater treatment and distribution. In Saskatchewan, these energy requirements are mainly met by carbon-intensive fossil fuel sources.

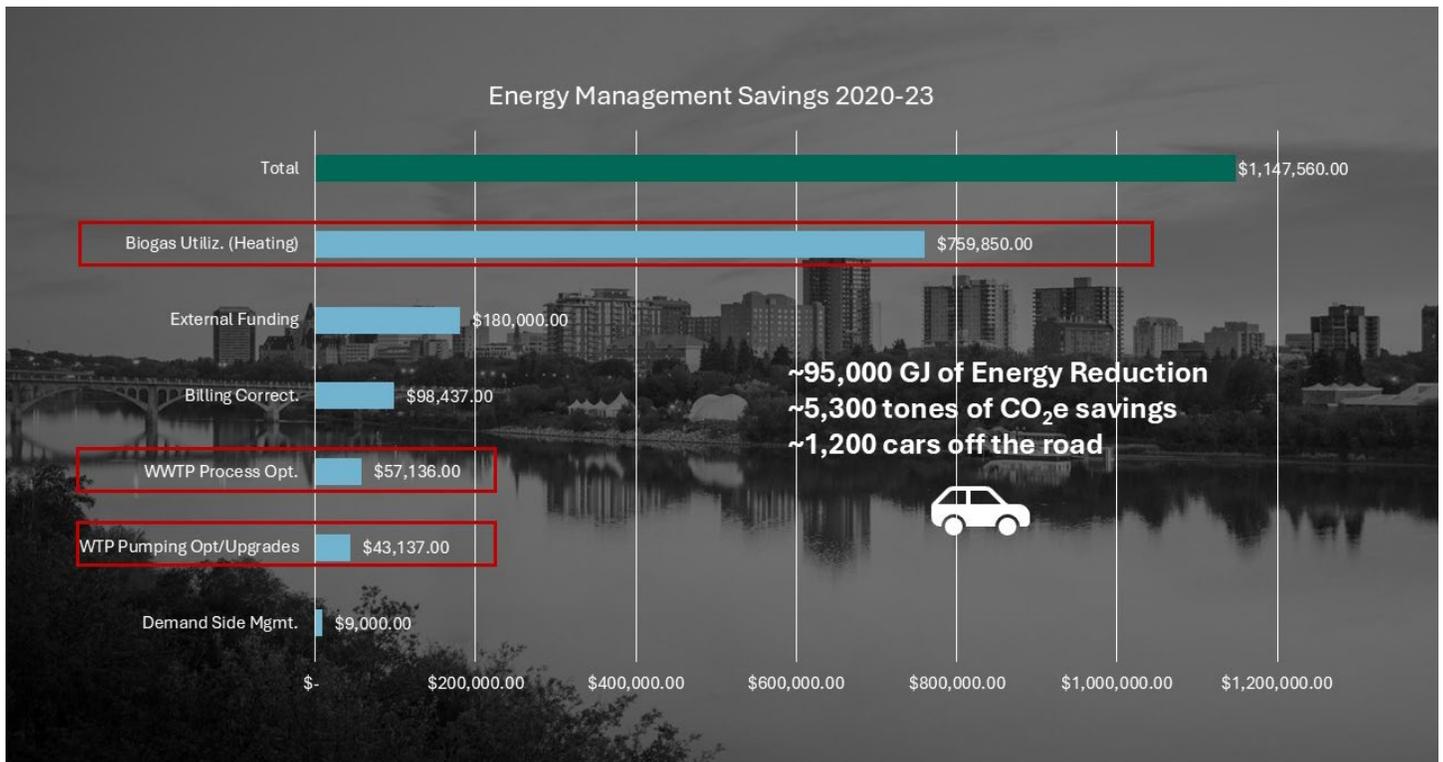


As part of the City of Saskatoon’s long-term sustainability goals, the energy management project was launched by Saskatoon Water to reduce energy consumption and greenhouse gas emissions while maintaining the efficiency and reliability of water treatment processes. The goal of the project was to assess and develop energy-savings initiatives while securing full support from Saskatoon Water Senior Leadership in managing energy consumption. Additionally, a key priority was exploring external funding opportunities and effectively communicating the progress and impact of energy-saving initiatives to both internal stakeholders and City of Saskatoon Council.

Roadmap steps

The energy management project included the following critical organizational steps:

1. Hiring an energy manager to lead the project, bring energy awareness to the corporation, and communicate energy use to senior leaders.
2. Creating energy teams at the WTP and WWTP — including plant managers, maintenance managers, water operations managers, and project/process engineers — to meet quarterly.
3. Creating an energy policy to demonstrate Saskatoon Water’s commitment to managing energy use.
4. Baselining and benchmarking to understand energy use and compare performance with other industries.
5. Conducting an Energy Management System (EnMS) gap analysis to understand how energy use is currently managed at Saskatoon Water and determine ways to improve the system.
6. Identifying energy improvements based on data and review by energy teams.
7. Developing action and communication plans to identify actions to complete and monitor approaches.



This project created two action plans: WTP long-term energy management strategy and WWTP long-term energy management strategy. Each plan includes the requirement to conduct energy studies every two years to identify capital projects and process optimizations to include in each budget cycle.

A communication plan was developed to enhance transparency and communicate successes to the City of Saskatoon Council and the public, utilizing City of Saskatoon reports such as the Service, Savings, and Sustainability (SSS) Report and Climate Action Plan Progress Report.

Results and lessons learned

The results of the energy management project were encouraging. The project increased Saskatoon Water’s ability to coordinate, communicate, plan, and strategically manage energy use. This benefited Saskatoon Water’s corporate image and created new opportunities for external collaborations and obtaining government funding.

In 2023, the energy management project turned into the energy management program,

led by the energy manager, as a permanent addition to Saskatoon Water’s water and wastewater operations.

From 2020 to 2023, Saskatoon Water was able to significantly reduce energy consumption, cut down on costs, and minimize greenhouse gas emission from the plants through the energy management program. During this period, Saskatoon Water identified approximately \$1.1 million in savings and a 95,000 gigajoule reduction in energy. The energy reduction translates into approximately a 5,300 ton reduction in CO₂e emissions, which is equivalent to taking approximately 1,200 cars off the road in terms of environmental impact.

While these savings represent a significant step in the right direction, Saskatoon Water acknowledges that there is still much work to be done to reach net-zero emissions.

The successful transition of the energy management project to a permanent energy management program has resulted in:

- Greater understanding of energy literacy among staff members at the WTP and WWTP.
- Support for ongoing training and collaboration.



- Improved staff knowledge and skills necessary to contribute to energy management efforts.
- Designated energy manager as a single point of contact for all energy-related inquiries.
- Energy teams that allowed for better resource allocation and leadership commitment to ensure continued energy savings and sustainability.

Lessons learned

As indicated above, the energy management project has delivered numerous benefits to Saskatoon Water. However, ensuring that adequate resources are allocated to the initiative is crucial for realizing these benefits and sustaining long-term success. Evaluating energy initiatives and opportunities requires proper staff expertise, effective coordination, collaboration, thorough documentation, and ongoing training. Therefore, strong senior leadership and commitment are essential to provide the necessary support for this initiative.

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