City of Saskatoon: Renewable Energy Strategy:
Updates and Other Considerations

Background

The City of Saskatoon is developing a long-term, city-wide Renewable Energy Strategy (Strategy) to help Saskatoon switch to low carbon energy sources and meet energy-related targets from the Low Emissions Community Plan. The Strategy will present the City's current work and planned actions by exploring their costs, feasibility, and greenhouse gas (GHG) emissions reductions. What we hear from the community, along with best practice research from other cities and internal considerations, will be used to inform the Strategy that will be presented to City Council in 2022.

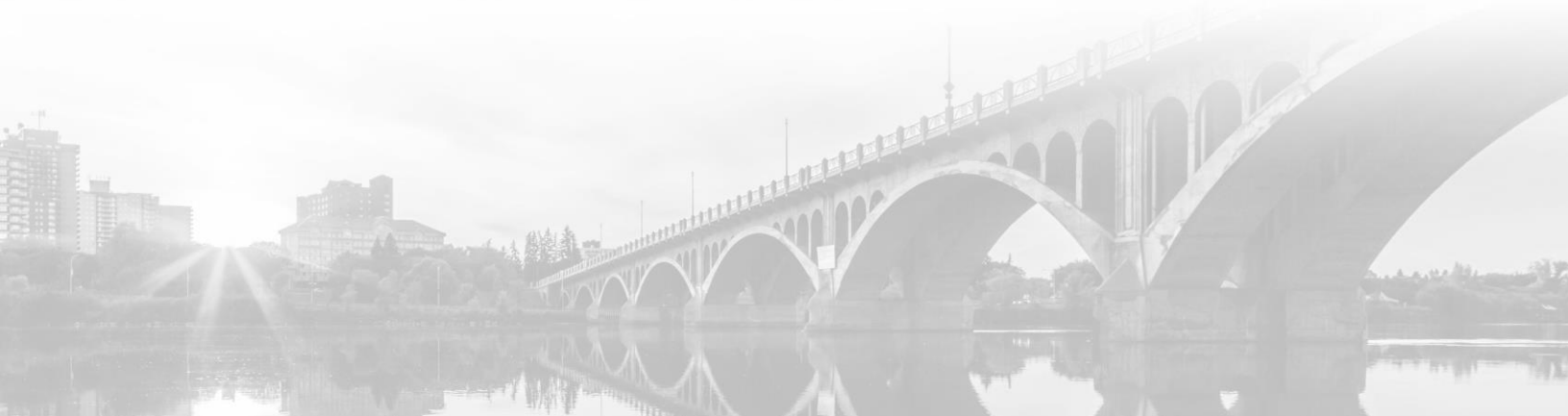
Why We Are Engaging the Community

Previous public surveys and meetings with stakeholders have informed us of the community support for renewable energy, what initiatives should be included within the Strategy, program priorities and preferences, and what makes the switch to renewable energy difficult for the community. Based on the feedback already collected, we have made changes to the Strategy and program options. We would like your input on these changes, including any opportunities or concerns that we may have missed. You can provide your input by filling out our survey.

- Your feedback from this survey will be considered alongside:
- Best practices from other cities
- An examination of issues and opportunities for renewable energy in Saskatoon,
- Costs of the program,
- Triple Bottom Line review.

For more information, please see the Renewable Energy Strategy Engage Page.

The following is a list of popular topics and concerns that came out of previous engagement activities and how we intend to explore them further following City Council’s approval of the Strategy.



Affordability

What We Heard:
The costs of installing and maintaining private solar photovoltaic (PV) systems, followed by the long payback period, are large barriers to producing renewable energy in the community.

How We Can Help:
Programs like the Canada Greener Homes Grant, which provides up to $5,000 in rebates, The Canada Greener Homes Loan, which offers interest-free financing in addition to the Canada Greener Homes Grant, the Government of Saskatchewan's Home Renovation Tax Credit (10.5% rebate on up to $20,000 of eligible home renovation expense), and Saskatoon's Home Energy Loan Program (HELP) can help offset these costs. The HELP was developed to offer Saskatoon homeowners low interest loans to cover the upfront costs on larger energy projects (ex. installing rooftop solar PV panels).

What We Are Exploring:
Saskatoon Light & Power's (SL&P) Net Metering and the Small Power Producer Programs currently incentivize self-generation; however, the rates at which electricity is credited for net metering and purchased do not accurately reflect the costs required to maintain the grid and are more costly than the bulk purchase of electricity from SaskPower. Therefore, the long-term sustainment of self-generation programs requires a change in the rates being offered. The Small Power Producers Program is currently under review and any changes will be brought forward to City Council for approval.

Like HELP, the City is also exploring loans for Industrial, Commercial, and Institutional customers. This project involves the creation of an energy efficiency education program and incentives/financing programs for those who do not qualify for the current self-generation programs.

The City is also exploring how to improve energy/water efficiency and incentivize renewable energy for renters and low-income qualified households through Multi-unit and Affordable Housing Energy Programming and Incentives.

Awareness and Education

What We Heard:
Many respondents were uncertain about what was possible on their property and what the return on investment could be for renewable energy production. A lack of education and awareness about the most appropriate system and costs was also identified as a barrier to investing in renewable energy.

What We Are Exploring:
Through the HELP program the City is developing education programs, including a coaching program, to determine what may be suitable for a given home or building, and what incentives or payment programs may be available to leverage the return on investment.

City Leading by Example

What We Heard:
The City should be a model for residents to follow for renewable energy in Saskatoon.

What We Are Implementing and Exploring:

Below is a list of some initiatives the City is currently working on or exploring along with the potential GHG (CO_2e) emissions reductions. Please note that more research and community engagement will be required before any of the initiatives are implemented.

When considering the question below consider that in 2019 the City's total GHG emissions were 3.8 million tonnes of CO_2e.

Initiative	Description	Potential Benefits
Landfill gas capture	The City is expanding the Saskatoon Landfill gas power generation systems that converts methane captured into electricity.	The current system offsets 50,000 tonnes CO_2e annually; expansion would offset an additional ~30,000 tonnes of CO_2e
Combined heat and power at civic or community facilities	Combined heat and power systems produce electricity using natural gas and reuse otherwise wasted heat within the buildings. The City is exploring the installation of CHP unit(s) at civic or community facilities	Two systems at recreational facilities currently offset ~500 tonnes CO_2e annually
Utility-scale solar pilot	A solar farm at Dundonald Avenue is planned to be constructed in 2022 which will feed into Saskatoon's electrical distribution system. The City is exploring more utility-scale solar energy projects as opportunities arise	This 2.2 MW pilot could offset ~15,000 tonnes CO_2e over lifetime, and ~600 tonnes CO_2e annually
Rooftop solar on City buildings	The City has completed a study for installing rooftop solar on nine municipal facilities and will be pursuing grant funding.	A 1-1.5 MW generation capacity over multiple buildings could reduce 7,200-10,300 tonnes CO_2e over lifetime, and 288-412 tonnes CO_2e annually
Solar at the Wastewater Treatment Plant	The City has completed a study for installing a ground-mount solar PV system to generate electricity to be used onsite and will be pursuing grant funding.	~1.5 MW generation capacity could reduce ~10,000 tonnes CO_2e over lifetime, and ~400 tonnes CO_2e annually
Partnership with SaskPower	The City has expressed interest in partnering with SaskPower in the development of a new 100 MW (Megawatt) solar facility by 2025. If approved, the City would pay SaskPower a higher rate and in return, receive an energy credit with a Renewable Energy Certificate equivalent to the output of the solar facility allocated to the customer. The City has applied for up to 66 MW.	A 66 MW capacity could reduce ~245,000 tonnes CO_2e over proposed 10-year agreement, and 24,500 tonnes CO_2e annually

Biogas use at the Wastewater Treatment Plant	Biogas can is captured and used to heat the many buildings and digesters on site. The use of biogas for electrical generation is also being explored since it became viable with the Plant's recent heating upgrades.	In 2021, using biogas instead of natural gas offset ~465 tonnes of CO_2e
Renewable energy storage	Renewable energy can be stored when produced (i.e., sunny) and used when needed (i.e., at night and during peak demand periods) through battery storage technologies that are becoming more affordable.	We are exploring this initiative as opportunities arise

District Energy Systems

What We Heard:

Many respondents expressed their confusion surrounding what district energy systems are, how they work, and the benefits/barriers in their use. Although some respondents identified the benefit of reusing heated water that is currently pumped back into the water following its use, other respondents expressed their concern for the potential increased building and roadwork costs associated with the initiative at a large scale.

What We Are Exploring:

The University of Saskatchewan is studying district energy to identify medium- and long-term options to decarbonize their heating and cooling systems, while also considering the role electrification may play in supporting this work. The results from this study (2022 – 2023) will help inform the City's decision making around the planning and capital requirements to reduce emissions by 45% of 2010 levels by 2030.

Environmental Considerations

What We Heard:

That many of the renewable energy generation technologies can influence our environment and local species (ex. migratory birds, insects, etc.), therefore environmental impacts must be determined before installing any form of renewable energy. Also, that the City needs to consider the negative impacts of renewable energy generation, including rare earth metals mining.

What We Are Exploring:

All renewable energy projects will follow the Triple-Bottom-Line procurement policy and will include considerations for the ethical sourcing of materials, final disposal of the components. The recycling of solar PVs, batteries, and any additional complex waste caused by renewable energy technology will be considered with the expansion of materials received at Recovery Park, a waste diversion transfer station that is planned to open in 2023.

Hydropower at the Saskatoon Weir

What We Heard:

Comments for hydropower at the Saskatoon Weir received mixed opinions, with some participants supporting the initiative in diversifying energy sources, and others expressing their concern for the potential impacts to local plants and wildlife, aesthetics/views, introduced sound and light pollution.

What We Are Exploring:

A pre-feasibility study was conducted for the hydropower project at the Saskatoon Weir which found that it is not financially economical at this time. This project will be re-evaluated periodically to determine if the feasibility improves in the future

Policies and Procedures

What We Heard:

Most respondents (70-86%) supported changes to municipal policies and procedures to encourage renewable energy. It was suggested that the City should implement regulatory requirements and bylaws that require developers to include renewable energy and charging stations into their developments.

Some respondents identified that a solar easement policy could potentially impact downtown infill targets, which many respondents felt is extremely important for Saskatoon.

What We Are Exploring:

The City is planning to do a review of the solar administration and permitting processes in 2022. This review will incorporate feedback from the community on the opportunities for improving the process.

There are City provisions that enable solar energy uptake, such as the Zoning Bylaws permitting the installation and operation of solar collectors in all zoning districts, and the neighbourhood infill development strategy design guidelines recommending passive solar design and encouraging exploration of geothermal and solar technologies. The City could encourage this further by zoning for developments with favourable conditions for solar energy generation as a method for protecting solar access.

Small Modular Reactors

What We Heard:

Throughout the survey respondents provided mixed opinions on nuclear power, such as the use of small modular reactors (SMRs). Some respondents supported their viability in harnessing enormous amounts of energy and acting as a bridge towards large scale renewable energy applications. Other respondents did not support their use due to the potential for managing and properly disposing of toxic by-products and their inflated costs.

What We Are Exploring:

SMRs are currently at a scale that would supply above and beyond the City's electricity needs and would require a massive reconsideration of the current utility partnership. The Government of Saskatchewan signed a Memorandum of Understanding with the governments of New Brunswick and Ontario to collaborate in supporting the development and deployment of nuclear power from small modular reactors. This is being considered as an initial step towards an in-depth study into whether all of Saskatchewan will consider nuclear generation.

Waste to Energy

What We Heard:

Most of the respondents (89%) supported waste to energy. Waste to energy was strongly supported in comments provided by participants, with many stating the need for a change in thinking about waste as an energy source.

What We Are Exploring:

The City follows a waste management hierarchy, which ranks actions from most to least environmentally preferred based on use of natural resources and energy, production of

pollution, and potential toxicity. The hierarchy emphasizes source reduction and reuse, followed by recycling and composting and energy recovery from waste treatment and disposal. Therefore, the City is prioritizing reduction, reuse, and recycling/composting programs. Although the City is not pursuing waste to energy at this time, it is a topic we will be considering in the future as the City and community's waste composition and management changes.

Saskatoon Light & Power will continue to explore generation technologies, utility-scale generation opportunities, and frequently meet with companies that are interested in generating.