

June 20, 2019

To: Members
Priorities and Planning Committee

Re: Energy and Sustainability Framework

RECOMMENDATION

1. That the City of Regina host an Energy and Sustainability Conference in May 2020 to provide input into the development of an Environmental Sustainability Framework, which among other initiatives, would include a roadmap for the organization to move to more renewable energy sources, autonomous vehicles and solar panels.
2. That the return date for item *MN18-11*, *MN18-1* and *MN18-4* be updated to Q3 of 2020 on the List of Outstanding Items of City Council.
3. That this report be forwarded to the July 29, 2019 meeting of City Council for Approval.

CONCLUSION

The City of Regina proposes hosting an Energy and Sustainability Conference (Conference) in early May 2020. The Conference will focus on best practices in energy management and environmental sustainability to interested parties in the community as well as other municipalities and partners across Canada. It will focus on exploring innovative and best in class opportunities to move delegates towards their goals of becoming more renewable and sustainable.

The Conference content will provide input into the development of an Energy and Sustainability Framework for the City of Regina, which among other initiatives, would include a roadmap for moving to more renewable energy sources, autonomous vehicles and solar panels. The scope of the Energy and Sustainability Framework would be focused on the City of Regina as an organization. This means that efforts are focused on the City's fleet and transportation, facility heating and cooling, and electricity.

BACKGROUND

Original Motion

This report is in response to Council Motion *MN18-11* from the October 29, 2018 meeting of City Council. The motion stated:

1. That Administration return to Council by Q4 of 2019 with a proposed framework and implications for the City of Regina to join the growing number of municipalities from around the world and commit to being a 100% renewable city by 2050.

2. That Administration seek external funding sources, such as grants made available through the Federation of Canadian Municipalities, to finance the report and any future costs incurred from this commitment.
3. Said report include at least four possibilities of new and concrete actions for improving the environmental sustainability of the City of Regina that could be considered by Council for implementation by Q4 of 2023.

Clarifying Terminology

Renewable energy is any form of energy from solar, geophysical or biological sources that is replenished by natural processes at a rate that equals or exceeds its rate of use. The following table categorizes the most common forms of energy:

Forms of renewable energy include: • Biomass • Solar • Geothermal • Hydropower • Tidal and waves • Ocean thermal • Wind	Forms of non-renewable energy include: • Coal • Oil • Natural gas • Nuclear
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Sustainable energy is the provision of energy such that it meets the needs of the present without compromising the ability of future generations to meet their needs. An example of energy that is sustainable, but not renewable is nuclear.

Environmental sustainability can be interpreted more broadly to mean ecosystem continuity and health. It means taking care of the environment in such a way as to not compromise the environment for future generations. Environmental sustainability is accomplished through environmental management and consumption management. Through innovation resulting in emissions reductions and efficient use of fuel, non-renewable energy sources, such as fossil fuels can contribute to environmental sustainability efforts.

Renewable City Mandate

The Council motion refers to the growing number of municipalities from around the world that are committing to moving to 100 per cent renewable energy sources by 2050. Globally, cities are responsible for an estimated 75 per cent of energy consumption and an equivalent share of greenhouse gas emissions. As a result, the largest number of jurisdictions to have adopted a 100 per cent renewable target are municipalities. A few cities, such as Reykjavik and Burlington, Vermont have already achieved that goal in at least one sector. Many other larger global cities have adopted a 100 per cent renewable energy goal in one or more of the electricity, heating and cooling, or transportation sectors. Some of these cities include Vancouver, Munich, Sydney, Hamburg, San Francisco, Barcelona, San Diego, and Malmö.

There are two main organizations sharing an overlapping purpose of helping different levels of government achieve independence from non-renewable energy:

Renewable Cities is a global program originating out of Simon Fraser University's Morris J. Wosk Centre for Dialogue in Vancouver, Canada. Its mission is to support

cities through the transition to 100 per cent renewable energy and increased energy efficiency.

100% Renewables is another global platform advocating the switch to 100 per cent renewable energy. 100% Renewables vision is to achieve globally, 100 per cent renewable energy in the power, heating/cooling and transportation sectors; to see new investments in energy systems only being 100 per cent renewable energy; and the belief that a decentralized and people-centered approach is the fastest way to transform and benefit societies.

Both organizations define a Renewable City as all municipal government operations being 100 per cent powered using only renewable energy. This means all electrification, heating and cooling, as well as transportation, are powered only from renewable energy. Both organizations advocate that the target date for becoming 100 per cent renewable should be 2050.

These organizations also advocate that municipalities should, at the same time:

- Look for ways to become more energy efficient, reducing greenhouse gas emissions.
- Take a leadership role in affecting community uptake of renewable energy and/or energy reduction initiatives.

Related Motions

There are two additional City Council motions related to environmental sustainability that will be addressed in the Energy and Sustainability Framework.

Council Motion *MN18-1* is from the January 29, 2018 meeting of City Council. It stated:

1. The City of Regina monitor the research and trials that are currently underway and will shortly be undertaken with regards to autonomous and connected vehicles.
2. The Administration report back to Regina City Council in the second quarter of 2019 with analysis as to the impacts or potential impacts upon the City of Regina of these type of vehicles and to take into account any impact of a large number of vehicles powered by batteries and the need for charging stations.
3. The Administration give consideration to any advantage the City of Regina may have with being one of the leading edge communities with regards to testing of autonomous vehicles given our varied climate.

Council Motion *MN18-4* is from the April 30, 2018 meeting of City Council. It stated:

1. The Administration investigate the potential of installing solar panels on various City of Regina facilities and analyze the cost benefit of removing select city facilities from the power grid to be self-sustaining, and determine if there is a financial benefit in selling the power that would be generated.

2. The Administration investigate the possibility of installing a large number of solar panels on city owned land with the expressed desire to generate revenue for the City of Regina.
3. The Administration also determine if there are partnerships available regarding the installation of solar panels resulting in revenue generation for the City of Regina, with, but not limited to, SaskPower.
4. That fleet electrification using solar panels for charging, where viable, be included in the report.
5. The Administration report back to Regina City Council no later than December 2019.

DISCUSSION

The following section outlines the Administration's proposed course of action to respond to several Council motions related to environmental sustainability. Currently, the City has greater control over increasing its sustainability (reducing energy consumption and improving energy efficiency) than it does in affecting the renewability of its electricity and heating supplies. Although discussed in detail below, these constraints have shaped the Administration's philosophy to focus on becoming more sustainable through reducing energy consumption and improving energy efficiency.

Administration recognizes that with advancement of energy-related technologies in the future, becoming a Renewable City by 2050 will become more tangible.

Generation and Consumption: The City's Current State

Energy Generation

Becoming more sustainable or renewable is possible through increasing the renewability and sustainability of energy sources. Except in unique situations (such as the Landfill's Gas to Energy Generator) the City does not generate its own electricity or energy for heat but rather it purchases electricity and natural gas from SaskPower and SaskEnergy.

The sustainability and renewability of City electricity is currently dependent on the sustainability and renewability of SaskPower's energy sources. As of 2017, roughly 20 per cent of SaskPower's energy mix comes from renewable sources. By extension, the City's electricity is 20 per cent renewable. One of the bigger challenges to the City becoming more renewable is that SaskPower offers limited ability for its customers to produce electricity *if* customers still wish to connect to SaskPower's electricity grid. Without lobbying for SaskPower to change its policies, it would be extremely difficult for the City to generate its own renewable electricity. SaskPower's full energy mix is displayed in the graphic below. The City uses an average of five (5) megawatts (MW) of electricity at any given time.

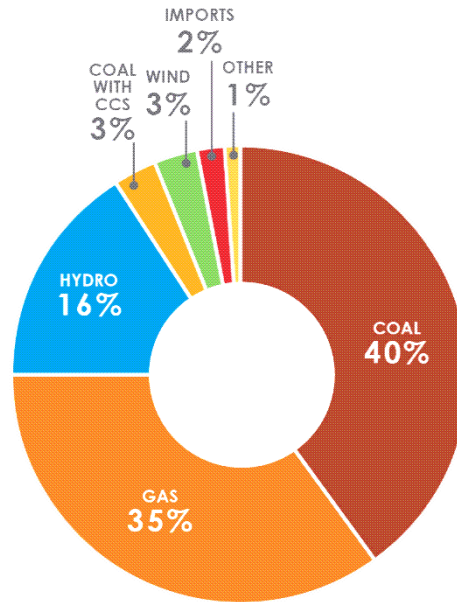


Figure 1: SaskPower Energy Mix

SaskPower does have a Power Generation Partner Program (PGPP) that allows customers to develop power generation projects to sell electricity to SaskPower. According to SaskPower, the PGPP accepts up to 10 megawatts (MW) of renewable generation, but individual projects can only produce a maximum of one (1) MW. The City went through a similar process to install its single gas-to-energy generator that produces one (1) MW of electricity at the landfill. The challenge is that SaskPower only allows projects to advance if there is capacity on their grid in the specific location. The City applied for permission to install a second landfill gas-to-energy system but was denied approval because SaskPower did not have adequate grid capacity in the area. The PGPP would apply to any solar generation projects as well.

Efforts are being made to improve the environmental sustainability of non-renewable energy sources such as coal. Burning coal produces roughly one-third of SaskPower's energy supply. While relatively cheap and abundant, coal is one of the world's largest producers of carbon dioxide - one of the greenhouse gases that causes climate change and global warming. Carbon capture and storage is a technology process that helps diminish coal's negative environmental impact and Boundary Dam Power Station near Estevan became one of the first power stations in the world to use carbon capture and storage technology. Federal government guidelines are requiring that coal plants be decommissioned at the end of their useful life or be retrofitted by 2030 to include carbon capture and storage technology. At this time, SaskPower has decided not to expand the technology on anymore coal-fired plants and is instead, looking to switch to more renewable options.

Even without implementing carbon capture and storage, any new coal power plants would likely implement High-Efficiency Low-Emissions (HELE) technologies. HELE technologies can generate the same amount of electricity while burning less fuel, emitting less carbon, releasing less local air pollutants, and consuming less water. This is an example of the types of innovations within the oil and gas sector that make fossil fuels more environmentally sustainable. The City

looks forward to leveraging such innovations the sector is pursuing.

The City relies on natural gas from SaskEnergy to heat City facilities. Natural gas is a non-renewable energy source. For the City to become a Renewable City, it would need to find alternative ways of heating City facilities.

Consumption

Considering the above challenges, the second and preferred approach is to focus on how the City consumes energy. While the City has limited ability to affect the renewability of energy sources, it does have a greater ability to affect how much energy it consumes and how efficiently energy is consumed. It is possible for the City to become more sustainable, decreasing its carbon dioxide (CO₂)/greenhouse gas (GHG) emissions, while still relying on the non-renewable energy supplied by SaskPower and SaskEnergy.

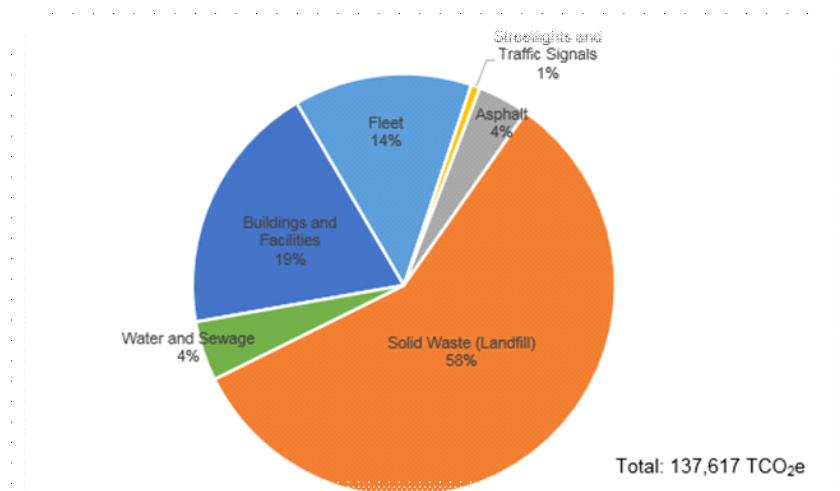


Figure 2: City of Regina Green House Gas Emissions

The City of Regina produces roughly 137,000 tonnes of CO₂ equivalent. The majority of the City of Regina's GHG emissions come from the Landfill, followed by City buildings and facilities, as well as the City fleet. By pursuing ways of increasing efficiency and reducing energy consumption, it is possible for the City to reduce its production of carbon dioxide equivalent - even without switching to renewable energy sources.

Path Forward: Renewable 2050, Efficiency and Reduction

An Energy and Sustainability Framework will provide a holistic approach to energy management including potential solutions such as solar power generation on buildings and utilization of autonomous and electric vehicles.

Community and industry engagement is an important component in building this Framework and has been an important component influencing frameworks in other cities. As a first step, the Administration recommends hosting an Energy and Sustainability Conference that will bring together the energy industry, residents, other municipalities, and our provincial energy and power utilities. Bringing together a diverse group of people is an important step to identify

tangible opportunities and initiatives the City can leverage on its Renewable City journey.

The Conference will highlight best practices in energy management and environmental sustainability to interested parties in the community as well as other municipalities and partners. Participants will learn about sustainability-related initiatives and opportunities, including renewable energy opportunities. The Conference will focus on exploring innovative and best in class opportunities to move delegates towards their goals of becoming more renewable and sustainable. This conference will seek to bring national attention, attracting delegates from Saskatchewan and across Canada. Ideally, the conference will include an internationally recognized keynote speaker, who would bring a unique and innovative approach and perspective to environmental sustainability. The City looks forward to the participation of the oil and gas sector in the Conference, to ensure the City can leverage any innovations the sector is pursuing. To maximize participation, the Administration recommends that this event be held in May 2020, to avoid conflicting with the federal election occurring in October 2019. The Mayor has requested City Council take a leadership role in the planning of this conference and has asked Councillor Mike O'Donnell and Councillor Joel Murray to co-chair the event. The next step will be to establish a planning committee.

Next Steps

Becoming a Renewable City by 2050 means using 100 per cent renewable energy for transportation, heating/cooling and power. To achieve this, the Administration is continuing to explore:

- Advocating for SaskPower to amend its policies on partnerships and grid connectivity
- Pursuing the generation of another four (4) MW of renewable electricity (the City produces one (1) MW of renewable energy through the landfill gas-to-energy generator and consumes five (5) MW)
- Transitioning all City vehicles to those that use renewable energy
- Transitioning to renewable methods of heating City facilities

RECOMMENDATION IMPLICATIONS

Financial Implications

Based on expenditures for past Summit events, the Energy and Sustainability Conference is estimated to cost approximately \$125,000, with up to \$50,000 recouped in revenues from sponsorship and registration fees. Attracting a prominent speaker will require additional investment.

In addition to conference expenditures, planning the conference will require funding for an Event Planning resource/contractor for six to eight months.

The conference will be funded through the City Manager's Strategic Innovation Fund.

Environmental Implications

None with respect to this report.

Policy and/or Strategic Implications

An Energy and Sustainability Framework supports several elements of the Official Community Plan. The Community Priority to, “promote conservation, stewardship and environmental sustainability” will help guide the development of the Framework, as the Priority includes reducing Regina’s environmental footprint. An Energy and Sustainability Framework focussed on increasing energy efficiency and reducing energy consumption also advances Goal 4 - Resiliency under Section D2, Environment, “Build a resilient city and minimize Regina’s contributions to climate change,” as the goal seeks to reduce greenhouse gas emissions.

Other Implications

None with respect to this report.

Accessibility Implications

None with respect to this report.

COMMUNICATIONS

A formal communications strategy will be developed.

DELEGATED AUTHORITY

The recommendation in this report requires City Council Approval.

Respectfully submitted,



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