

COMMON COUNCIL REPORT

M&C No.	2021-277
Report Date	October 12, 2021
Meeting Date	October 18, 2021
Service Area	Utilities and Infrastructure Services

Her Worship Mayor Donna Noade Reardon and Members of Common Council

SUBJECT: Letter of support for the Smart Renewables and Electrification Pathways Program (SREP) application- City of Saint John District Energy System (DES) Study

AUTHORIZATION

Primary Author	Commissioner/Dept. Head	City Manager
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RECOMMENDATION

It is recommended that Common Council provide a letter of support to TorchLight Bioresources, in partnership with Rathco ENG, for their funding application under the Natural Resources Canada Smart Renewables and Electrification Pathways Program (SREP) to complete a detailed technical and financial study for the development of a district energy system using industrial waste heat and local renewables.

EXECUTIVE SUMMARY

The purpose of the report is for Common Council to provide a letter of support to TorchLight Bioresources, in partnership with Rathco ENG, for their funding application under the Natural Resources Canada Smart Renewables and Electrification Pathways Program (SREP) to complete a detailed technical and financial study for the development of a District Energy System using industrial waste heat and local renewables. The report will include presentation by Dr. Jamie Stephen of TorchLight to highlight the proposed study, funding application, and the potential development of a District Energy System within Saint John.

PREVIOUS RESOLUTION

NA

REPORT

In the past 2-3 years, the City of Saint John has been actively working to help develop a District Energy System (DES) to provide thermal energy to several

buildings, using various energy sources such as industrial waste, renewable, geothermal, etc.

The objectives of the DES are as follow:

- Achieve the City of Saint John Climate Change Action Plan Objectives
- Reduce Greenhouse Gas (GHG) emissions
- Reduce fossil fuel dependency
- Transition to low carbon economy
- Encourage the development of green buildings
- Support sustainable energy
- Provide stability for future energy costs
- Provide a revenue opportunity for the City

City staff are simultaneously working on two DES projects:

Project 1 - Small Scale DES for the Uptown area

This project consists of connecting multiple buildings to the Market Square central heating/cooling plant. The project will use Saint John harbour water as a source of energy to provide thermal energy to several buildings: Market Square, Hilton, Aquatic Center, City Hall, new development at the Funday Quay Site, others.

The staff are in the process of finalizing the concept design and the business case. Additionally, the City has received a grant in the amount of \$3.7 Million from the Federal Government toward the project.

The proposed project is a short-term DES to be completed by March 31, 2024.

Project 2 - Large Scale DES (Long-Term)

This project consists of connecting over 30 buildings to a large-scale DES. The project will use industrial wastewater and renewable energy to provide high water temperature loop to several buildings in the Saint John area. This is a long-term project and will require several years to complete. Additional detailed technical and financial analysis will be required to formulate recommendations to Council on whether to proceed with the development of the project.

In 2011, the City of Saint John completed a technical and financial assessment to develop a large-scale DES using various energy sources such industrial waste, others. The analysis at the time indicated the project is financially viable. However, the project was put on hold due financial challenges facing the City.

In the past 4-5 years, there has been a culture-shift and now there is significant commitment from the various levels of government toward addressing climate change. DES has been identified as essential infrastructure to reduce GHG

emissions from the building sector in cities and towns. As an example, the City of Edmonton anticipates development of a city-wide DES under its Energy Transition Strategy. Additionally, the Government of Canada has put a price on carbon, which is to increase to \$170 per tonne of CO₂ by 2030. This adds \$10.50 per GJ of natural gas and would increase the commodity of natural gas charge by 120%, which is in addition to the gas distribution charge. Carbon pricing at \$170/t CO₂ also adds \$0.57/L to heating oil on a life cycle basis. However, the Government of Canada is also providing capital support to municipalities to develop green, low carbon infrastructure, such as a DES, which can be used to avoid the carbon price.

These recent changes of addressing some of the contributing factors of climate change have increased the financial and technical viability of developing a large-scale DES to allow the City to move forward with the study.

In the past few months, the City has been working with TorchLight Bioresources and Rathco ENG to revisit the existing study and assess the opportunity and design a system that meets the needs of the City and community in a rapidly changing energy and climate policy environment.

Scope & Deliverables for Saint John District Energy System Feasibility Study

TorchLight Bioresources and Rathco ENG are proposing to complete a comprehensive feasibility study on a Saint John DES. The study would concentrate on warm water heat network design for the South-Central peninsula, including Uptown, using industrial waste bioheat from the Irving Pulp & Paper operation as the primary energy resource. TorchLight intends to apply to Natural Resources Canada's Smart Renewables and Electrification Pathways program to fully fund the feasibility study.

The deadline for application is October 22, 2021.

Feasibility Study Scope:

1. Saint John DE Master Plan – Database of all buildings in Saint John, with thermal energy demand estimates. Saint John would be divided into 10-12 zones for DE development over a 15-20-year timeframe. The energy demand and GHG reduction opportunity for each zone would be estimated.

2. Feasibility Engineering – Engineering and costs for Phase 1 of DE development: a) heat transmission line from Irving Pulp & Paper mill to Uptown; b) heat distribution network covering all of South-Central Peninsula (Uptown, South End, Waterloo Village); c) in-building conversions (using local subcontractor support); d) large heat pumps and energy storage; 3) auxiliary/backup/alternative thermal supply options, with a focus on biomass (wood chips) and natural gas for peaking/backup.

3. Utility Business Plan – Working with the City of Saint John and using cost data from the feasibility-level engineering, preparation of a heat utility business plan including financial projections. Comparison of ownership, operations, and financing models (public, co-op, P3, etc.). Identification of potential private sector partners (if desired) and role of The City of Saint John. Quantify GHG savings and design utility approach, including rates, that ensures heat customer connection.

4. Community Engagement – Work with City of Saint John to create community engagement plan. Lead multiple community meetings and establish project website. Present key information from heat utility business plan to public. Lead efforts to secure connection commitments from major building owners.

5. Application for ICIP Grant Funding – Preparation of draft application to ICIP Green Stream for submission by City of Saint John.

Deliverables:

- A. Saint John DE Master Plan Report – Pathway/vision document for DE build-out over time
- B. Building Database – estimated heat loads for all buildings in Saint John
- C. Feasibility Study Report – Major sections on South Central heat network, transmission line, in-building conversions, and energy supply
- D. Utility Business Plan – Ownership, financial, operational, and development plan for thermal heat utility
- E. Community Engagement Plan – Plan to communicate with public and gain support for utility connections
- F. Draft ICIP Application – To provide line-of-sight to major financing

STRATEGIC ALIGNMENT

The City of Saint John DES study is clearly aligned with the following City plans, policies, programs, and practices:

- City of Saint John Corporate GHG and Energy Action Plan to reduce GHG emissions by 30% by 2025 and achieve carbon neutral by 2040.
- City of Saint John Climate Change Action Plan.

SERVICE AND FINANCIAL OUTCOMES

If successful in securing the funding, the total cost to complete the study will be 100% provided by the Natural Resources Canada Smart Renewables and Electrification Pathways Program (SREP).

The City will provide in-kind support in terms of staff coordination of the various activities related to the execution of the study, releasing previous reports, data, technical and financial analysis, etc.

INPUT FROM OTHER SERVICE AREAS AND STAKEHOLDERS

n/a

ATTACHMENTS

City of Saint John Letter of Support

TorchLight and Rathco - Commitment to Provide Documentation and Reports

Presentation