

COUNCIL REPORT

M&C No.	2019-107
Report Date	May 02, 2019
Meeting Date	May 06, 2019
Service Area	Finance and Administrative Services

His Worship Mayor Don Darling and Members of Common Council

SUBJECT: City of Saint John Climate Change Action Plan

OPEN OR CLOSED SESSION

This matter is to be discussed in open session of Common Council.

AUTHORIZATION

Primary Author	Commissioner/Dept. Head	City Manager
<i>Chair – Finance Committee</i>	<i>Samir Yammine Ian Fogan Neil Jacobsen Kevin Fudge</i>	<i>John Collin</i>

RECOMMENDATION

It is recommended that Common Council approve the following Climate Change Action Items, subject to the City's Long-Term Financial Plan and required community energy partnerships:

- 1) City of Saint John Corporate GHG and Energy Action Plan attached at Appendix A and,
- 2) City of Saint John Community GHG and Energy Action Plan attached at Appendix B and,
- 3) Corporate GHG Emission Target of 30% by 2025 below 2015 levels and,
- 4) Community GHG Emission Target of 9% by 2025 and 18% by 2035, below 2015 levels and,
- 5) City of Saint John Corporate Operation to be Carbon Neutral by 2040 and,
- 6) City staff to establish a governance structure to manage/monitor the implementation of the community and corporate energy action plan and,
- 7) City of Saint John shall consider climate change impacts and mitigation measures in all future decision to ensure that residents, the built environment and infrastructure are protected and,
- 8) Approve the Declaration on Climate Change.

EXECUTIVE SUMMARY

The purpose of this report is to provide Council with an overall description of the City of Saint John vision, strategy and approach to address climate change across the organization and community at large. Additionally, this report is to seek Council approval to adopt the Community & Corporate GHG Action Plan and GHG emission targets that address Climate change impacts on the City Corporate operation and infrastructure as well as on residents and natural environment. The goal of the City Climate Change Action Plan is to position the City to address climate change impacts while pursuing economic development opportunities and transitioning to low carbon economy.

PREVIOUS RESOLUTION

In May 2016, Common Council (M&C 2016-121) requested staff develop a Community and Corporate GHG action plan to position the City to meet the goal of reducing GHG emissions while pursuing economic development goals

REPORT

The City's location on the Bay of Fundy, the St. John River, and the Kennebecasis River makes the community particularly susceptible to the effects of climate change and rising water levels. Additionally, the rising cost of energy and its impact on the City operating budget and community at large, as well as Canada, along with the commitment to reduce GHG emissions, has prompted many municipalities across Canada, including the City of Saint John, to take the necessary actions to adapt to climate change impacts.

Current Climate Change Actions and Initiatives

The following are a list of initiatives and actions that the City is taking to address climate change:

Municipal Energy Efficiency Program (MEEP)

The City of Saint John has been an early adopter of implementing energy efficiency measures in relation to municipal and water facilities. The City was one of the first, and one of the few, Canadian municipalities in Atlantic Canada to embark on creating a Municipal Energy Efficiency Program (MEEP). The program has been recognized regionally and nationally as best practice. The following are a list of environmental and economic benefits as of 2017:

- Reduced energy cost by over \$2.3 Million
- Reduced Greenhouse Gas Emissions by over 9400 tons of CO₂ or 24%
- Reduce Energy consumption by approximately 8.6 Million KWH and 35,000 GJ of Natural Gas and oil/propane or 30 %

- Received over \$22 Million in Grants & Loans
- Implemented over 100 environmental initiatives

The City of Saint John shall capitalize on the success of the MEEP to transition the Corporate and Community to a low carbon economy as well as address climate change impacts.

Asset Management Policy

In March 2018, Common Council approved the Asset Management Policy that integrates climate change into decision-making on City's infrastructure assets such as roads, buildings, and water and wastewater systems.

The benefits of this policy are as follow:

- Increase the City's opportunity to obtain infrastructure funding from various level of governments and the Federation of Canadian Municipalities (FCM);
- Improve decision-making and risk management processes by considering the vulnerability of City assets to the effects of climate change; and
- Include asset management considerations in the City's capital and operating budget processes to better define and improve the City infrastructure's financial sustainability.

Climate Change Vulnerability Assessment Methodology and Analysis

The City of Saint John will be conducting vulnerabilities assessment on the City's critical assets such as roads, stormwater, buildings, etc. The vulnerabilities of municipal assets to climate events (both historic as well as expected future climate events) will be identified and quantified, and options to mitigate these vulnerabilities will be developed. This will increase the resiliency of municipal infrastructure during climate driven disasters, and will assist the planning and coordination of emergency response measures by the City of Saint John.

Climate Change Adaptation Plan

ACAP Saint John, with support from the Federation of Canadian Municipalities, has spent the past year working to develop a design-focused Climate Change Adaptation Study for three central neighborhoods in Saint John: the Central Peninsula, the Lower-West Side and the North End. This study included identifying three small neighborhood projects that will demonstrate climate adaptation in practice. The recently approved Rain Garden Project in Queen Square West is an example of one of these projects.

In collaboration with the City of Saint John, and through support from New Brunswick's Climate Change Secretariat, ACAP Saint John will also be developing

a Climate Change Adaptation Plan for the City. ACAP has recently initiated the second year of this project. The first year of this project saw the development of a steering committee consisting of stakeholders and city staff, identification of risks and vulnerabilities, and community engagement. The adaptation plan will incorporate Climate Change adaptation strategies for Stormwater management while identifying, assessing and mapping risks and vulnerabilities in the City, and developing adaptation methods to increase resiliency throughout Saint John. The project will provide a robust understanding of climate change related issues for adapting our region and direct both the City of Saint John and ACAP Saint John in on-the-ground adaptation actions and capital investments.

Project findings will be included in revised editions of the Municipal Plan and will influence the future growth and development of City neighborhoods and neighborhood dialogue. In-person discussions and community sessions hosted by both ACAP and the City of Saint John will be the primary means of community engagement and consultation, while ACAP will continue to engage citizens with best practices for Stormwater management and community placemaking projects through its well-established social media networks and local media outlets. Guides to building retrofits, rain-gardens and the value of green infrastructure will also be made available via printed and online materials.

ACAP will present its final Adaptation Plan to Council for adoption by March 2020.

Community Resilience Action Plan

The City of Saint John will work with six municipalities across Canada to develop a climate risk and vulnerability assessment, using a variety of tools/methods. The process will result in recommendations for improving resilience and adapting to climate change, **with a specific focus on the impacts of prolonged outages of energy supply on essential community services**. This project is part of the “Municipalities and Utilities Partnering for Community Resilience” led by QUEST.

QUEST is national organization, best known for its work to advance Smart Energy Communities in Canada, which not only reduce greenhouse gas emissions (GHGs) but also help improve resilience at a local level.

Deliverables:

- Climate risk and vulnerability assessment, with a particular view on the role of energy (Completed).
- Recommendations to improve resilience / reduce risk, with a focus on reducing the impact of climate change on energy / municipal services that depend on energy.
- Strategy to integrate recommendations with existing municipal processes and plans e.g. Climate Change Adaptation Plan, Asset Management Plan, Emergency Plan, etc.

- Access to a network of municipalities from across Canada that are actively working with their utilities to respond to the impacts of climate change.

What was accomplished to date:

- Conducted baseline survey
- Compiled climate data / projections
- Conducted 1st workshop in Saint John, to assess strengths and weaknesses (included presentations and 3 table-top exercises)
- Engaged energy utilities, Emergency Measures, Insurance Bureau, and Department of Environment to share lessons learned
- Conducted Detailed Hazard-Specific Analysis
- Prepared assessment report
- Monthly calls with all 6 participating municipalities

Next steps:

- Submit recommendations for consideration
- Hold workshop #2 to discuss recommendations, identify priorities (June 12, 2019)
- Produce report for each community (Fall 2019)
- Produce a guide for all Canadian Municipalities (December 2019)

Funding:

This project is supported through a grant provided by FCM's Municipalities for Climate innovation Program, Climate Adaptation Partner grants, and funded by the Government of Canada

CORPORATE & COMMUNITY GHG & ENERGY ACTION PLAN

General

In May 2016, Common Council (M&C 2016-121) requested staff to develop a Community and Corporate GHG action plan to position the City to meet the goal of reducing GHG emissions while pursuing economic development goals.

Both plans were completed in January 2019 by involving major community stakeholders in the planning, analysis and development of the action plan, strategy and GHG emission target.

The major stakeholders that were involved in the development of the community GHG plan are as follow:

- Saint John Energy
- Horizon Health
- Province of NB Department of Energy
- Sustainability SJ

- Quest
- Irving Oil
- Canaport LNG
- MCW Consultant
- Fundy Regional Solid Waste
- Commercial Properties
- Atlantica
- City of Saint John Various Departments
- NB Power Energy Efficiency Group
- Province of NB Environment and Local Government
- University of NB SJ Campus

The GHG Action Plan consists of the following:

- Goals
- Greenhouse Gas Emission Inventory
- Emission Reduction Target
- Action Plan and Strategy
- Benefits

Corporate GHG & Energy Action Plan

Goals

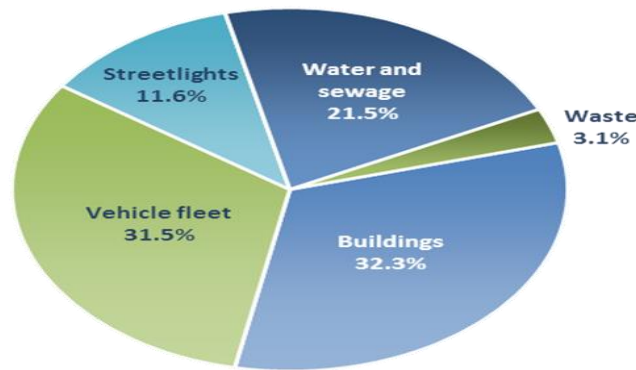
The following are the objectives and goals of the corporate GHG Action Plan:

- Reduce total energy use and GHG emissions
- Help community and business sectors with the lesson learned
- Advise Council and Senior Staff on Energy Policies, Standards, Guidelines and procurement of environmentally sound equipment
- Raise environmental efficiency awareness among staff
- Foster a shift towards low carbon technologies

Greenhouse Gas Emission Inventory

The following are the GHG emission inventory for the City of Saint John Corporate Operation including Fleet and Transit assets

GHG Emissions Breakdown by Sector Type (teCO₂)



Energy Costs and eCO₂ Emission by Source

Energy Type	Total Use	Energy (GJ)	Total Cost (\$)	Total eCO ₂ (t)
Electricity	48,111,540	173,202	4,089,481	13,471
Natural Gas	971,119	38,107	830,015	1,857
CNG	0	0	0	0
Diesel	2,037,035	78,018	2,193,854	5,466
District Energy	0	0	0	0
Ethanol Blend (10%)	0	0	0	0
Biodiesel (B5)	0	0	0	0
Biodiesel (B10)	0	0	0	0
Biodiesel (B20)	0	0	0	0
Fuel Oil	12,767	495	9,703	35
Gasoline	788,719	27,605	806,016	1,924
Propane	180,007	4,556	72,003	278
Waste	-	-	-	744
Total	-	321,983	8,001,071	23,776

Emission Reduction Target

City staff has established a GHG emission target of 30% by 2025 below 2015 levels. The target was established by conducting in house energy analysis and identifying energy saving opportunities for individual municipal and water facilities as well as for the corporate fleet.

	Tons of CO ₂ equivalent	Year	
		Base 2015	Forecast 2025
1 Current Emissions		23 776,2	
2 Reduction Target			30,0%
3 Forecast emissions (target) (line 1- line 4)			16 643,3
4 Total reductions to be achieved (line 1- line 3)			7 132,9

Action Plan and Strategy

City staff has identified various actions and strategies to help achieve the GHG emission target by 2025. Each action/strategy was evaluated in terms of economic and environmental benefits and required capital investment. Further analysis is still required to develop an implementation plan for each strategy. Furthermore, additional action or strategy might be added to help achieve the GHG emission target.

The following are high level actions and strategies for the corporate plan:

- Fleet & Transit Strategy
 - Optimal Vehicle Replacement
 - Idle-free strategy
 - Electric Vehicle
 - Training & Education
- Deep Buildings Energy Retrofit
 - Energy Efficiency Measures
 - Peak Load Shedding
 - Renewable Energy Measures
 - Energy Monitoring & Tracking
 - Training & Education

Benefits

The implementation of the proposed energy saving measures will result in the following environmental and economic benefits:

- Over \$2.2 Million annual savings
- 7,132 Tonnes of CO₂ annually
- Carbon saving \$356,000 (Assuming \$50 per Tonnes of CO₂)
- Over \$300,000 annually saving in maintenance
- Displace over 250,000 GJ of NG (25 Years) and 360,000 liter of gasoline & diesel annually
- Divert over \$50 Million (lifetime of the project) in energy into the local economy

The City has already implemented some of these measures in 2016/2017 and have resulted in the following early benefits:

- 9.7% reduction in GHG emission
- 2,295.8 Tonnes of CO₂
- \$229,000 annually

Community GHG & Energy Action Plan

Goals

The following are the objectives and goals of the community GHG Action Plan:

- Foster a shift towards low carbon technologies
- Increase energy efficiency for new and existing buildings
- Build awareness about energy investment and create a culture of energy conservation among residents, business, institutions, and industry
- Build knowledge, skills and technical capacity through partnerships
- Develop collaboration between the various community stakeholders

GHG Emission Inventory

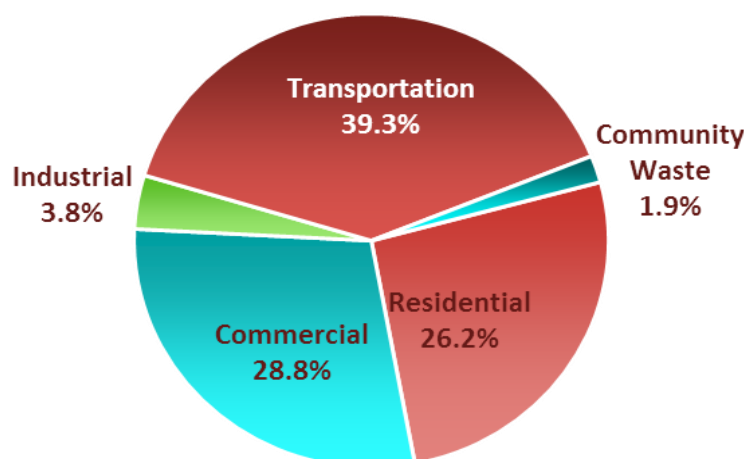
The following are the GHG emission for Saint John Community excluding large industries:

• Community Inventory Summary

Energy Usage and eCO₂ Emission by Source

Energy type	Total Use	Cost	Energy (GJ)	Total eCO ₂ (t)
Electricity	955,491,860	\$ 95,549,186.00	3,439,771	267,538
Fuel Oil	29,536,412	\$ 23,629,129.90	1,146,013	80,787
Natural Gas	10,391,032	\$ 238,993,733.33	407,744	19,770
Diesel - Buildings	0		0	0
Heavy fuel oil	2,958,875	\$ 1,479,437.74	125,752	9,306
Propane - Buildings	4,420,006	\$ 1,989,002.79	111,870	6,825
District Energy	0		0	0
Gasoline	68,613,182	\$ 80,963,555.30	2,401,461	167,384
Diesel - transportation	32,599,587	\$ 38,467,512.07	1,248,564	87,479
Ethanol Blend (10%)	686,446	\$ 810,006.09	23,229	1,507
Biodiesel (B5)	0		0	0
Biodiesel (B10)	0		0	0
Biodiesel (B20)	0		0	0
Propane - transportation	12,441		315	19
CNG	1,266		48	4
Waste	-		-	12,534
Total	1,104,711,108	\$ 481,881,563.22	8,904,768	653,152.0

GHG Emissions Breakdown by Sector Type (teCO2)



Emission Reduction Target

City staff, in cooperation with the various stakeholders, has established a GHG emission target of 9% by 2025 and 18% by 2035 below 2015 levels. The target was established by identifying energy saving opportunities for the various sectors: Transportation, Energy Efficiency, Renewal Energy Opportunities, along with others.

Community Energy & GHG Action Plan

Baseline and Target

Tons of CO2 equivalent		Year	
		Base 2015	Forecast 2025
			Forecast CGHGEP 2035
1	Current Emissions	653,152	
2	Community Emissions Forecast (BAU Scenario)		650,906
3	Reduction Target		9.0%
4	Forecast emissions (target) (line 1 - line 5)		594,368
5	Total reductions to be achieved (line 1 - line 4)		58,784
6	Total reductions to be achieved (Including BAU Scenario)		56,538
			113,075

Action Plan and Strategy

City staff in cooperation with the various stakeholders such as Saint John Energy, Quest, NB Power Energy Group, Irving Oil, etc. has identified various actions and strategies to help achieve the GHG emission target by 2025. Each action/strategy was evaluated in terms of economic and environmental benefits and required capital investment. Further analysis is still required to develop an

implementation plan for the individual strategies. Furthermore, additional action and strategies might be added in order to achieve the GHG emission target.

The following are high level actions and strategies for the community plan:

- **Local Renewable Energy Production**
 - Renewable energy resources (Wind & Solar) of 6% of SJE's total energy by 2025
 - District Energy System
 - Improve SJE Load Factor from 71% to 75%
 - SJE System efficiency (2% by 2030)
- **Transportation**
 - Idle-free Strategy
 - Electric Vehicle Community Program (220 Vehicle by 2025)
 - Fuel Efficiency Driving
 - Efficient & Compact Vehicles
- **Energy Efficiency**
 - LED Lighting (60%)
 - Energy Efficiency Products (HP, DHW) for residential (25%/10%)
 - Energy Efficiency for commercial and residential (15%/10%)
 - Clean Energy Conversion (15%/10%)
- **Clothesline Program**

Benefits

The implementation of the proposed energy saving measures will result in the following environmental and economic benefits to the community:

- Over \$44 Million annual savings
- 56,000 Tonnes of CO2 annually
- Carbon saving \$2.8 Million (Assuming \$50 per Tonnes of CO2)
- Displace over 1 Million of NG annually and 7.5 Million liter of gasoline & diesel annually
- Divert over \$1.1 Billion (25 years) in energy into the local economy
- Local Green Energy Jobs

NEXT STEPS

Following is a list of action items that must be completed prior to implementing the proposed strategies for the corporate and community GHG action plans:

- Present the Plan to the Community
- Develop an Implementation and Monitoring Plan
- Establish a Governance Structure
- Prioritize the list of the Corporate projects
- Solicit Federal and Provincial Funding

STRATEGIC ALIGNMENT

The current climate change action strategies to address climate change mitigation and adaptation are clearly aligned with the following City plans, policies, Council Priorities, and provincial and federal government's strategy:

Plan SJ

- Reduces the City's ecological footprint and strives toward greater long term environmental sustainability for future generations
- Conserves energy and reduces energy use through sustainable building design, alternative energy systems and reduced auto dependence
- Develops effective policy on climate change and integrates mitigation and adaptation actions that can be influenced through land use policy
- Working with the Government of New Brunswick, the Government of Canada and relevant agencies to reduce local emissions of greenhouse gases

Integrated Community Sustainability Plan (ICSP)

- Saint John leads the nation as an example of a sustainable community
- Sustainability Themes on the Environment: We have an inherent responsibility and are dedicated to living in balance with our natural settings and decreasing our demands on finite natural resources

Council Priorities

Value Service Delivery: Saint John invests in sustainable City Services and municipal infrastructure. Our community is engaged and understands what is expected from service delivery.

Saint John Energy, Energy Efficiency and Renewal Initiatives

Paris Climate Change Agreement

As part of the Paris Climate Change Canada Agreement, the Federal Government has committed to reduce GHG emission by 30% by 2030 from 2005 levels

Province of New Brunswick's Climate Change Action Plan

Transitioning to a Low-Carbon Economy

SERVICE AND FINANCIAL OUTCOMES

The total costs of the current Climate Change Action Plan activities and initiatives are provided by the Federation of Canadian Municipalities, Province of NB Environmental Trust Fund, NB Power Energy Programs, Green Infrastructure Funding Programs and City of Saint John General Fund. Furthermore, the City of Saint will be seeking funds for future projects and initiatives from the following sources:

- Green Infrastructure Funding Program
- Integrated Bilateral Program
- NB Power Energy Efficiency Program
- Green Municipal Fund (GMF)
- Low Carbon Economy Fund Program
- ACOA Funding Programs
- Others such as industries, utilities, etc.

INPUT FROM OTHER SERVICE AREAS AND STAKEHOLDERS

The current climate change action plans and programs have been reviewed by City of Saint John Growth and Community Development and Corporate Planning Departments, Saint John Energy and Quest. Additionally, community stakeholders were engaged in the development of the community GHG and Energy Action Plan. The City of Saint John will continue working with Saint John Energy and other stakeholders to establish a governance structure to manage and monitor the successful implementation of the action items and strategies.

ATTACHMENTS

Appendix A- Corporate GHG and Energy Action Plan

Appendix B- Community GHG and Energy Action Plan