



City of Saint John
Finance Committee - Open Session
AGENDA

Wednesday, January 30, 2019

5:30 pm

8th Floor Common Council Chamber (Ludlow Room), City Hall

Pages

1. Call to Order

1.1	Approval of Minutes - December 6, 2018	1 - 4
1.2	Corporate and Community GHG and Energy Action Plan	5 - 125
1.3	Disaster Mitigation Adaptation Fund	126 - 140
1.4	Long-Term Financial Plan Targets and Principles	141 - 156



The City of Saint John

MINUTES – OPEN SESSION FINANCE COMMITTEE MEETING
DECEMBER 6, 2018 AT 5:15 PM
8th FLOOR BOARDROOM, CITY HALL

Present: Mayor D. Darling
Councillor D. Merrithew
Councillor G. Sullivan
Councillor S. Casey

Absent: Councillor D. Reardon
Councillor G. Norton

Also

Present: Acting City Manager N. Jacobsen
Commissioner of Finance and Treasurer K. Fudge
Commissioner Growth & Community Development J. Hamilton
Comptroller Finance C. Graham
Senior Manager Financial Planning H. Nguyen
Director Corporate Performance S. Rackley-Roach
Assistant Comptroller Finance and Administrative Services C. Lavigne
Deputy Commissioner Administrative Services I. Fogan
Commissioner Transportation & Environment M. Hugenholtz
Web Specialist T. McGraw
Senior Financial Analyst J. Forgie
Fire Chief K. Clifford
CEO Transit & Parking Commissions I. MacKinnon
Corporate Performance N. Moar
Deputy Commissioner Saint John Water K. Mason
Director Strategic Real Estate Services S. Carson
Energy Manager S. Yammine
Planner J. Cyr
Administrative Assistant K. Tibbits

1. Meeting Called To Order

Moved by Councillor Sullivan, seconded by Councillor Casey:
RESOLVED that the Finance Committee resume in open session.

MOTION CARRIED.

Councillor Merrithew called the Finance Committee open session meeting to order.

1.1 Approval of Minutes – October 17, 2018

Moved by Councillor Sullivan, seconded by Councillor Casey:
RESOLVED that the minutes of October 17, 2018, be approved.

MOTION CARRIED.

1.2 Coast Guard Administration Building

Referring to the submitted report Mr. Fogan reviewed the options as it relates to the building on the Coast Guard site. Options include:

- Reinvestment in the building and subsequent lease/sale of the site - Significant work would be required to bring the building to an appropriate standard, at an approximate cost of \$2.9M. There is no business case to support this option.
- Maintain the building in its current condition and attempt to lease/sell the site - An investment would be required to keep the building in its current condition and prevent further deterioration, at a cost of approximately \$150K every year to maintain it.
- Demolition of the Coast Guard building - Staff is recommending the demolition at an approximate cost of \$1M although there may be opportunity to mitigate some of this expense. Once the site is clear and the seawall remediated, the expected value of the site is \$3.5M. It is further recommended that the site be used as a temporary parking lot, estimated to generate \$100,000 annually in parking revenue. This revenue used to replenish the reserves used for demolition.

Moved by Councillor Sullivan, seconded by Mayor Darling:

RESOLVED that the Finance Committee:

- Recommend to Council to approve the transfer of \$500,000 of the projected 2018 General Operating Fund surplus to the General Operating Reserve Fund to partially fund demolition work in 2019;
- Recommend that Common Council allocate \$500,000 approved in the 2018 Capital Budget for Growth to fund demolition work in 2019;
- Refer to the Growth Committee to approve the use of the 2018 Growth Capital Budget envelope for Growth to fund demolition in 2019;
- Direct staff to negotiate a Memo of Understanding with the Saint John Parking Commission for the management and operation of the parking lot at the former Coast Guard Site;
- Direct staff to proceed with application to PAC to obtain a temporary parking lot and comply with conditions set out by PAC;
- Direct City pro-rata portion of proceeds from parking revenue be used to replenish the General Operating Reserve Fund used to pay for demolition.

MOTION CARRIED.

(Mr. Carson, Mr. Yammine and Mr. Cyr withdrew from the meeting)

1.3 2018 Year End Forecast and Reserve Recommendation

Ms. Nguyen reviewed the year-end forecast for 2018, noting that there is an estimated surplus of \$1.2M at the end of October before reserve recommendations. If reserve recommendations are taken into account the surplus is reduced to approximately \$164K. There is still an approximate \$5.9M structural deficit.

Moved by Councillor Sullivan, seconded by Mayor Darling:

RESOLVED that the Finance Committee recommend to Common Council to approve the transfer of:

- \$400,000 to an Operating Reserve to cover the potential increase in WorkSafeNB premiums;
- \$400,000 to the General Capital Reserve to fund infrastructure deficit;
- \$500,000 to an Operating Reserve to fund the demolition of the Coast Guard Administration Building in 2019;
- \$100,000, which is the amount needed to complete the Market Slip Dredging to an Operating Reserve to be used in 2019;
- \$1 Mil which is the projected surplus in the Utility Operating Fund to the SCDW project reserve fund;
- Any fluctuation in the value of the City's employee benefit programs due to actuarial gains to an Operating Reserve annually in order to fund future losses;
- Approve the "Reserve Schedule A" submitted with the report.

MOTION CARRIED.

Mr. Mason reviewed projections for Saint John Water with an estimated year end surplus of approximately \$1.1M. A large portion of the surplus is attributed to a higher volume of water sold to industry and increased interest earned on SCDW funds. Neither of these items are reoccurring revenues. There is still considerable risk to the SCDW project until it is substantially complete.

In response to a question, Mr. Fudge stated that if the reserve is not needed for the SCDW project, it would be used to reduce the debt on the remainder of the project.

Moved by Mayor Darling, seconded by Councillor Casey:

RESOLVED that the Finance Committee recommend that Common Council transfer \$1M to the Safe Clean Drinking Water Project Reserve for 2018.

MOTION CARRIED.

1.4 Transit Building Fund Reserve

Mr. MacKinnon stated a year-end surplus of approximately \$130K, largely linked to an increase in ridership revenue and charter service, is predicted. It is recommended that \$100K of the surplus be transferred to the Building Reserve fund. There are no pending projects, but given the age of the building maintenance will be required in the future.

Moved by Mayor Darling, seconded by Councillor Casey:

RESOLVED that the Finance Committee recommend to Common Council to authorize the transfer of \$100,000 into the Transit Building Reserve Fund as a result of the estimated 2018 year end operating surplus.

MOTION CARRIED.

1.5 2019 General Operating Budget

Mr. Fudge stated that tax base and unconditional grant information has been received from the province. Tax base growth is 1.86%, an increase from the original draft budget projection of 0.5% growth. This represents approximately \$1.6M in additional tax revenue. Although the 1.86% growth is encouraging, it lags considerably from other peer communities. Unconditional grant revenue is \$17.3M, approximately \$750K more than assumed in the first draft. A combination of the two revenues is \$2.3M.

There is an agreement with the province respecting the city's structural deficit; assumptions used in the structural deficit was a 1% tax base increase. Because tax base growth was 1.86%, the 0.86% increase will be given back to the province. In addition, it was assumed that the

unconditional grant would remain the same. Overall \$1.8M will be given back to the province. Adjustments to the budget are approximately \$600K. The tax rate remains the same.

Moved by Mayor Darling, seconded by Councillor Casey:

RESOLVED that the Finance Committee recommend to Common Council that:

1. That the sum of \$160,257,783 be the total Operating Budget of the City of Saint John for 2019;
2. That the sum of \$123,577,054 be the Warrant of the City of Saint John for 2019;
3. That the tax rate for the City of Saint John be \$1.785;
4. That Common Council orders and directs the levying by the Minister of Environment and Local Government of said amount on real property liable to taxation under the Assessment Act within the Municipality of Saint John;
5. That Common Council authorizes the Commissioner of Finance and Administrative Services to disburse, at a time acceptable to him, to the named Commissions, Agencies and Committees, the approved funds as contained in the 2019 budget;
6. That Common Council approves the 2019 Establishment of Permanent Positions at 627;
7. That Common Council approves \$350,000 to the Growth Reserve Fund to support the City's growth initiatives;
8. That Common Council approve \$500,000 to the Capital Reserve Fund to fund infrastructure deficit; and,
9. That Common Council approve \$300,000 to the Operating Reserve Fund to support a Restructuring Plan.

MOTION CARRIED.

Adjournment

Moved by Councillor Sullivan, seconded by Councillor Casey:

RESOLVED that the open session meeting of the Finance Committee be adjourned.

MOTION CARRIED.

The Finance Committee open session meeting held on October 17, 2018 was adjourned at 6:45 p.m.



**Presentation to Finance Committee
City of Saint John Corporate and Community GHG & Energy
Action Plan
31 January , 2019**

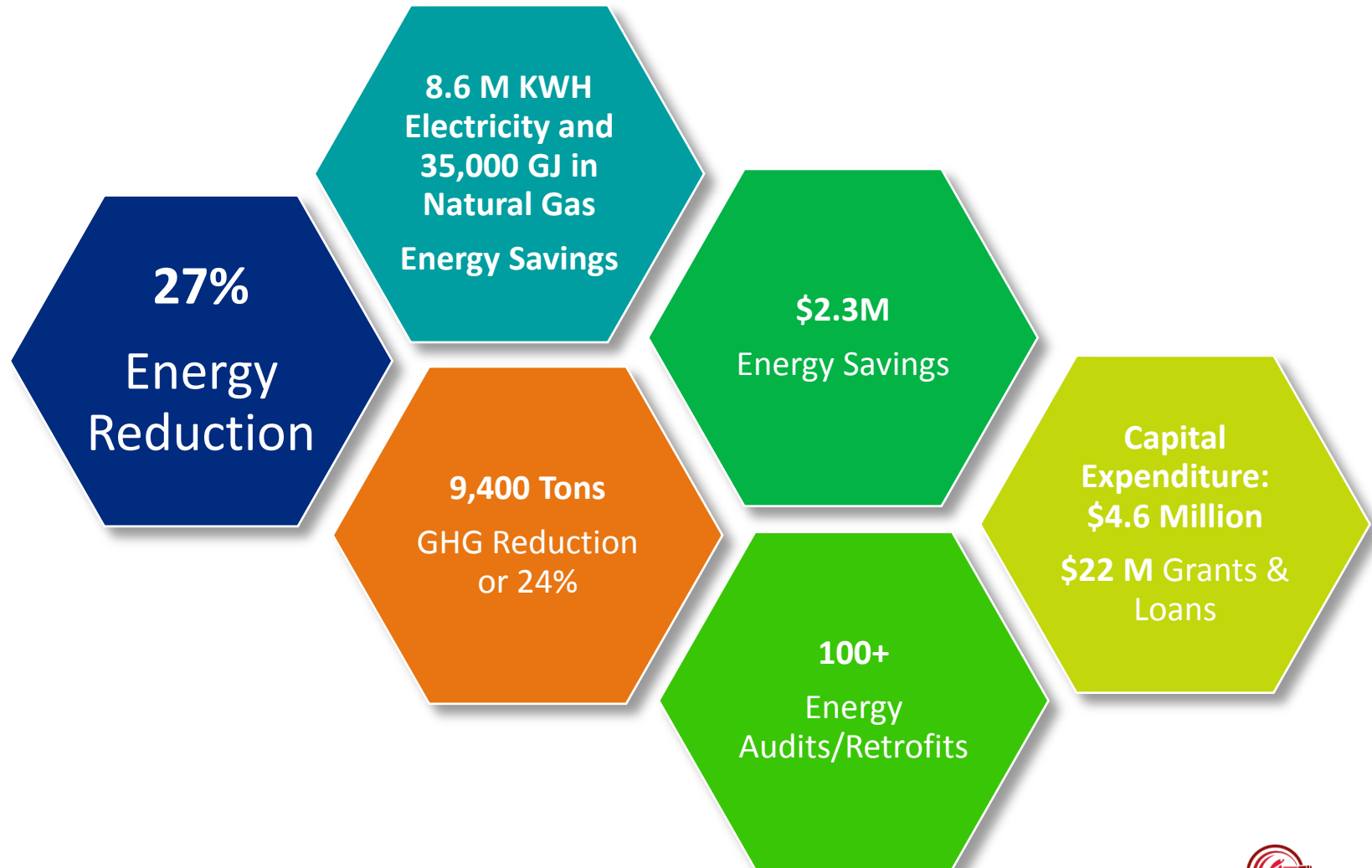
**Samir Yammine
CEM, CMVP, CSDM, P.Eng.
Asset and Energy Management**

Objectives of the Presentation

- Overview of the Corporate & Community GHG & Energy Action Plan
 - Greenhouse Gas Emission Inventory
 - Emission Reduction Target
 - Action Plan and Strategy
 - Benefits
 - Next Steps
- Finance Committee recommends that Council approve the Corporate & Community GHG & Energy Plan



Accomplishments as of 2017



Accomplishments (contd.)

- 2017 Smart Community Award Presented by QUEST
- **Premier's Award For Energy Efficiency 2011- Commercial Energy Efficiency Champion**
- Top 13 in North America for **Best Energy Management Practices**
- **Milton F. Gregg Conservation Award**
- FCM-CH2 M Hill **Sustainable Community Award 2008: Energy**
- Canadian Association of Municipal Administrators (CAMA) 2004: **Environmental Award**
- **GNB Community Recognition Award**

Mission & Goals of the Corporate GHG & Energy Action Plan

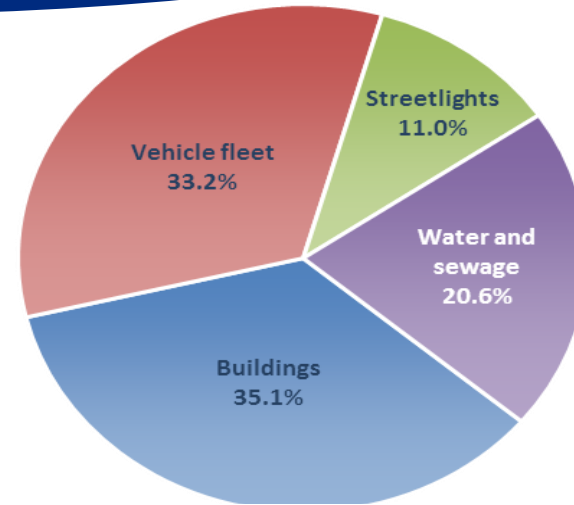
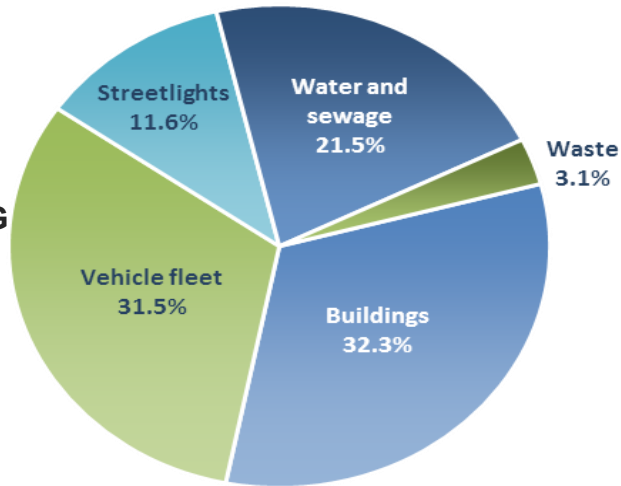
Mission: We are the Centre of Excellence of the Corporate Sustainable Environmental Management. We promote, advise, develop and implement Environmental initiatives on existing and new infrastructures, to lessen the effects of energy use on the environment and operating budget, and to showcase the City as a leader in Sustainable Environmental Management.

- 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



Corporate GHG Inventory

Corporate GHG Emissions Breakdown by Energy Type (teCO2)

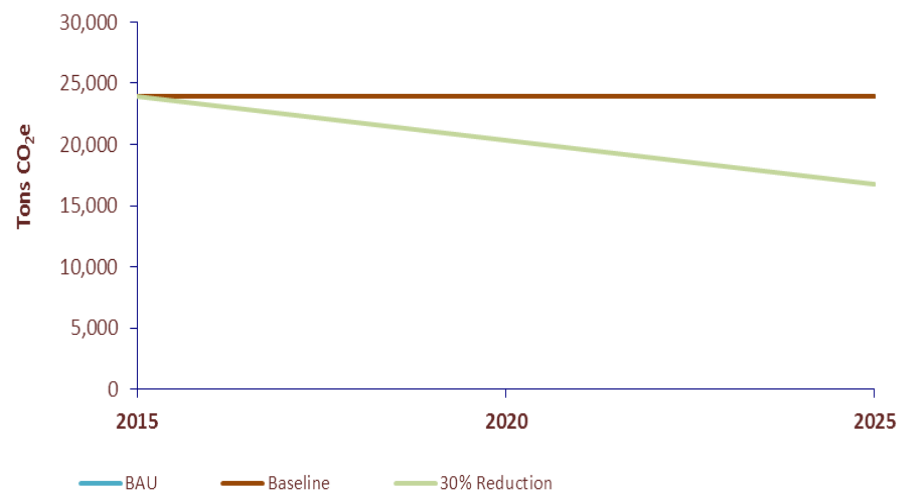
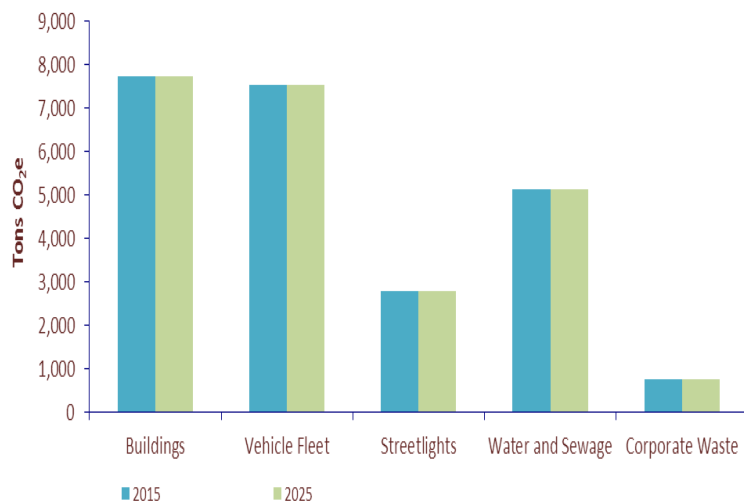


Corporate Energy Consumption Breakdown by Energy Type (GJ)

Energy Costs and eCO₂ Emission by Source

Energy	2015						Energy Type	Total Use	Energy (GJ)	Total Cost (\$)	Total eCO ₂ (t)
	Volume	Units	(teCO ₂)	%	(Gj)	%					
Electricity	48 111 540	kWh	13 471,2	58,5%	173 201,5	53,8%	Electricity	48,111,540	173,202	4,089,481	13,471
Natural Gas	971 119	m3	1 857	8%	38 107	12%	Natural Gas	971,119	38,107	830,015	1,857
CNG	0	Liters	0	0%	0	0%	CNG	0	0	0	0
Diesel	2 037 035	Liters	5 466,2	23,7%	78 018,4	24,2%	Diesel	2,037,035	78,018	2,193,854	5,466
Gasoline	788 719	Liters	1 924,1	8,4%	27 605,2	8,6%	District Energy	0	0	0	0
District Energy	0	Gj	0	0%	0	0%	Ethanol Blend (10%)	0	0	0	0
Ethanol Blend (10%)	0	Liters	0	0%	0	0%	Biodiesel (B5)	0	0	0	0
Biodiesel	0	Liters	0	0%	0	0%	Biodiesel (B10)	0	0	0	0
Fuel Oil	12 767	Liters	34,9	0%	495,4	0%	Biodiesel (B20)	0	0	0	0
Propane	180 007	Liters	277,9	1,2%	4 556,0	1,4%	Fuel Oil	12,767	495	9,703	35
Waste	-	-	-	-	-	-	Gasoline	788,719	27,605	806,016	1,924
Total			23 031,8		321 983,2		Propane	180,007	4,556	72,003	278
							Waste	-	-	-	744
							Total	-	321,983	8,001,071	23,776

Corporate GHG Emission Target



Baseline and Target

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)	11	7 132,9

Corporate Strategy & Action 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



Corporate GHG & Energy Action Plan Benefits

- **Overall 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

- **Early Actions (2016-2018)**

- 9.7%
- 2,295.8 Tonnes of CO2
- \$229,000 Annually

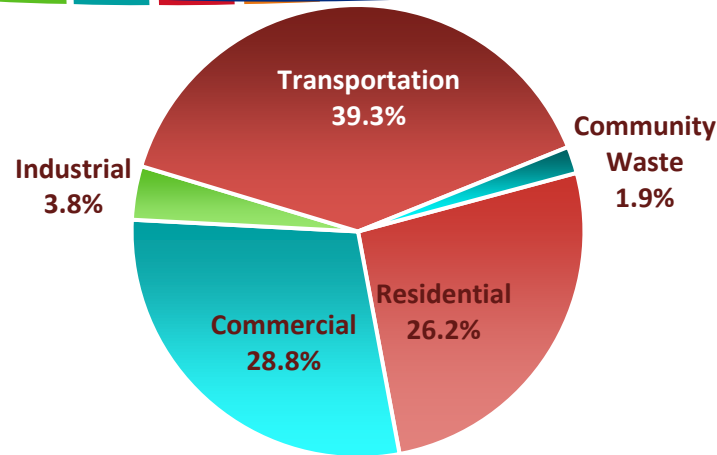
Community GHG & Energy Action Plan Goals

- 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 approach between the various community stakeholders



Community GHG Inventory

GHG Emissions Breakdown by Energy Type (teCO₂)



GHG Emissions summary

Community GHG Emissions for the base year

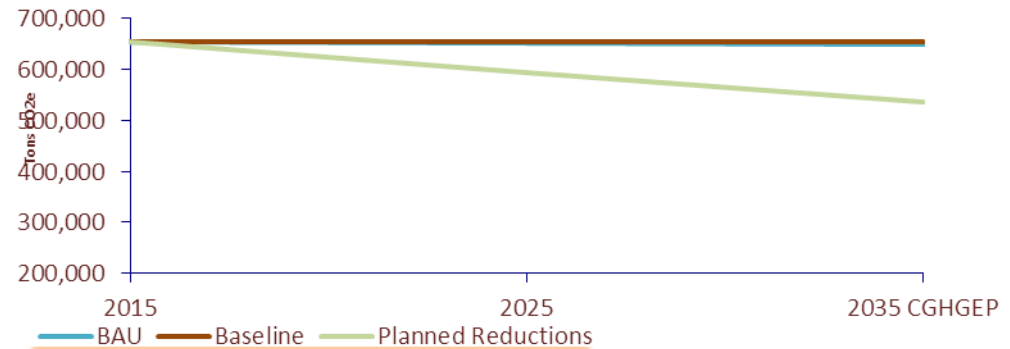
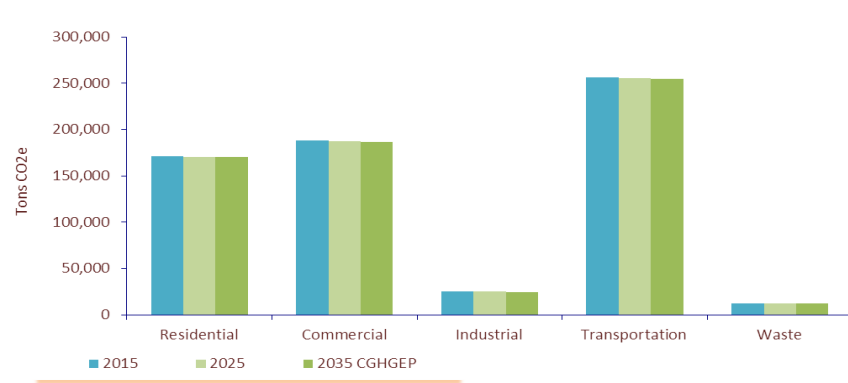
GHG (tons eCO ₂)	2015
Residential	171,288
Commercial	187,917
Industrial	25,020
Transportation	256,393
Community Waste	12,534
Total	653,152
Population	67,575
GHG per capita (teCO ₂)	9.7

• 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

Community GHG Emission Target



Community Energy & GHG Action Plan

Baseline and Target

Tons of CO ₂ equivalent	Year		
	Base 2015	Forecast 2025	Forecast CGHGEP 2035
1 Current Emissions	653,152		
2 Community Emissions Forecast (BAU Scenario)		650,906	648,660
3 Reduction Target		9.0%	18.0%
4 Forecast emissions (target) (line 1 - line 5)		594,368	535,585
5 Total reductions to be achieved (line 1 - line 4)		58,784	117,567
6 Total reductions to be achieved (Including BAU Scenario)		56,538	113,075

Community Strategy & Action Plan

- **Local Renewal 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

Strategy & Action Plan Continue

- **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%)
- Clothes Line Program

Community Benefits

- Overall Benefits assuming 9% Reduction by 2025
 - 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

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



Funding 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





THANK YOU !

City of Saint John Community GHG & Energy Action Plan



January 2019

Realised with the



Consulting team



23

Financed by



© 2019, Union of Municipalities of New Brunswick. All Rights Reserved.

The preparation of this plan was carried out with assistance from the Green Municipal Fund, a Fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

Acknowledgements

We would like to express our deepest appreciation to all those who provided support to our team to complete reports, annexes and all tools developed in this UMNB initiative.

- A special gratitude to UMNB general managers, Mrs. Margot Cragg and the late Mr. Raymond Murphy.
- We want to thank Eddie Oldfield - Spatial QUEST for its technical contribution with the mapping, the workshops organisation and all the work provided.
- We also want to present special thanks to all stakeholders and municipal employees who have contributed to achieve the UMNB CCEI.



I.	Introduction	3
II.	The Plan’s Strategy	5
III.	The Community’s profile	8
IV.	The Plan’s Summary	18
V.	The Inventory	25
VI.	The Plan	34
VII.	Appendix	57



I. INTRODUCTION

Communities across Canada are facing the effects of climate change. Some have to deal with greater droughts, others with more violent storms.

Municipal governments have a leading role to play in climate protection. They have direct or indirect control over nearly half of Canada's greenhouse gas (GHG) emissions (350 million tons).

Canada's goal is to reduce its GHG emissions by 30% below 2005 levels under the Paris Agreement.

The CLIMATE CHANGE AND ENERGY INITIATIVE (CCEI)

Municipalities in New Brunswick are increasingly aware of environmental challenges they face, and are particularly concerned with actual and future impacts of climate change.

The **City of Saint John** joined the Climate Change and Energy Initiative of the Union of Municipalities of New Brunswick, to reinforce its efforts to advance in the Partners for Climate Protection Program (PCP). The UMNb initiative fits perfectly in the global and national context of addressing climate change, following the Paris Agreement (COP 21).

THE PARTNERS FOR CLIMATE PROTECTION (PCP) PROGRAM

is a network of Canadian municipal governments that have committed to reducing greenhouse gases (GHG) and to acting on climate change. Since the program's inception in 1994, over 300 municipalities have joined PCP, making a public commitment to reduce emissions. PCP membership covers all provinces and territories and accounts for more than 65 per cent of the Canadian population. PCP is the Canadian component of ICLEI's Cities for Climate Protection (CCP) network, which involves more than 1,100 communities worldwide. PCP is a partnership between the Federation of Canadian Municipalities (FCM) and ICLEI — Local Governments for Sustainability.

Saint John is engaged:

- ✓ Climate Change and Energy Initiative (CCEI) of the Union of Municipalities of New Brunswick, 2017
- ✓ Member – Partners for Climate Protection program, FCM, 2016
- ✓ City of Saint John, NB, Saint John City Market energy upgrades, 2018
- ✓ Our Saint John, Integrated Community Sustainability Plan, 2009

I. INTRODUCTION

In addition to the Corporate GHG Action Plan, the Community GHG & Energy Plan 11is the UMNb CCEI second foundation stone. The Plan brings a powerful and dynamic tool to help communities for smart and sustainable development allowing to reduce its carbon print.

What is a Community GHG & Energy Plan? *The Plan is a long-term plan that identifies ways to reduce GHG emissions and to support the Municipality's local economy by increasing its competitiveness, helping to create local or regional jobs in the energy sector, improving energy efficiency, and improving energy security.*

In 2018, planning and coordinating energy use and GHG emission reduction at the community level remains innovative especially for smaller size communities outside metropolitan areas. However, in cities or communities where it has been done, it has resulted in some of the most efficient, and from an energy standpoint, most cost-competitive cities in the world, with resulting reductions in associated environmental impacts.

*The communities that are leaders have taken an integrated energy systems approach looking at the potential for innovation in how energy is sourced, generated, consumed, re-captured, conserved, stored, and delivered. **The UMNb CCEI's Community GHG & Energy Plan** will be a "living document", in that the actions taken by the Municipality and community stakeholders are expected to grow and change over time.*

Why a Community & GHG Energy Action Plan? *The Plan is great tool to face community transformation challenges encountered in New Brunswick: Climate change impacts, population growth or decline, development growth and economic transformation.*

Those challenges push municipalities and communities to examine ways to reduce its cost of services while continuing to maintain and enhance the quality of life. And how energy is used, and the cost of that energy to residents as well as to the municipality, is an important factor. Smart solutions also reduce environmental impacts associated with the consumption of energy. A good strategy and planning can enhance prosperity by making the municipality more economically competitive.

Enhancing access to energy efficiency, conservation and demand-management opportunities can also have a positive effect on the local retail and service industry. Businesses that increase the energy efficiency of their facilities and operations can improve their competitiveness in the marketplace.

II. THE PLAN'S STRATEGY

Vision

The vision of the Plan is to achieve a community that is efficient and economically viable in how it reduce its carbon footprint, uses energy through development and retrofits, land use and transportation planning, renewable or clean energy generation, conservation and improve local energy security.

Goals

The vision is supported by a series of goals that bring focus to mitigating climate change, improving energy performance within the community and creating economic advantage:

1. **Foster a shift towards low carbon technologies.**
2. **Increase energy efficiency for new and existing buildings.**
3. **Foster a shift towards low carbon transportation that integrates EV infrastructure, promotes alternative fuel vehicles, low carbon fuel options, as well as public transit and active transportation as mechanisms to reduce the number of vehicles on the road.**
4. **Create or help adaptive, sustainable, affordable, and reliable local renewable and clean energy supply.**
5. **Design, build, and revitalize neighbourhoods as complete communities that offer multi-modal transportation options.**
6. **Create new market opportunities for innovative energy solutions that are attractive for local and new businesses, and through high quality, affordable, clean energy services foster retention and growth of existing businesses and industries.**
7. **Build awareness about energy investment and create a culture of energy conservation amongst residents, business, institutions, and industry.**
8. **Build knowledge, skills, and technical capacity through partnerships that deliver innovative energy solutions at the local scale.**

II. THE PLAN'S STRATEGY

The principles provide direction for the development of the projects and initiatives presented in the Plan. To build and implement an action plan and portfolio of environmentally and economically successful projects all proposed solutions, projects, or initiatives should consider these principles:

1. Advocate for urgent action to address climate change
2. Set achievable reduction targets
3. Maximize benefits for the municipality and the community
4. Ensure and enhance a sustainable energy system
5. Maximize efficient use of energy
6. Design model and innovative projects
7. Build on existing programs and funds: for example, FCM and GMF programs, Environmental Trust Fund, Saint John Energy programs, etc.
8. Create a competitive and economic advantage for the Community
9. Demonstrate global leadership

GHG Emission Reduction Target

9% for 2025 and 18% for 2035

For the Community Plan, GHG emission reduction target is set on a voluntary and non-binding basis. It is important that the targets are ambitious while being realistic both in their importance (projected reductions) and in their duration (year of maturity). Before setting the reduction targets and the action plan timeline, we took into account:

- ✓ PCP and GMF recommendations is -6% over the base year, within 10 years.
- ✓ The objectives of the Government of New Brunswick.*
- ✓ The GHG reduction potential of the municipality and its community.

*** The New Brunswick's Climate Change Action Plan "Transitioning to a Low-Carbon Economy" (2017) - The provincial government will: 31 - Establish specific GHG emission targets for 2020, 2030 and 2050 that reflect a total output of:**

- a - 14.8 Mt by 2020;
- b - 10.7 Mt by 2030; and
- c - 5 Mt by 2050.

II. THE PLAN'S STRATEGY

Timeline For efficiency, the choice of a pertinent timeline is essential. Because the scope of the Community Plan is important and imply major technological and behavioral changes, we recommend a 20 years timeline. However, for reviewing and monitoring process the Community Plan propose a 10 year step in 2025 concordance with the **Corporate GHG Action Plan**.

Approach and developing the Plan

Background data was collected via energy distributors in New Brunswick and from various other provincial and federal sources. Electricity data was provided by NB Power, Saint John Energy and Perth Andover Electric and Light Commission.

For all participant, a workshop was held to do a mapping exercise through a community GHG & energy planning process. The workshop allowed the team, the municipality and its stakeholders to identify areas or sectors where GHG reduction projects, conservation and efficiency measures could be focused, to assess the potential for local generation, particularly renewable energy, and look at the energy implications of future growth and prosperity. Webinars were held with each participants to finalize the Corporate GHG & Energy Action Plan as well as to prepare the final workshop to complete the Community GHG & Energy Action Plan. Each municipality CCEI manager invited to workshops and webinars, stakeholders they considered important to assist, councillors and municipal employees.

Each Community Plan includes a presentation document and more importantly is also build with a series of tool joined in annexes:

- Annexe A: Project's description with implementation procedures
- Annexe B: Excel Projects Sheets with GHG and energy data calculation
- Annexe C: Mapping document for Workshop (Spatial Quest)

As final step, the Community and the Corporate plan are submitted to the Participant Municipality to be adopted by resolution.

YHC Environnement, an energy planning and environment consultant, was retained by UMNb to provide services to produce inventories, action plans and the various tool needed. Spatial Quest was hired to do the GHG and energy mapping related to workshop's organisation and as liaison agent with the concerned stakeholders in New Brunswick.

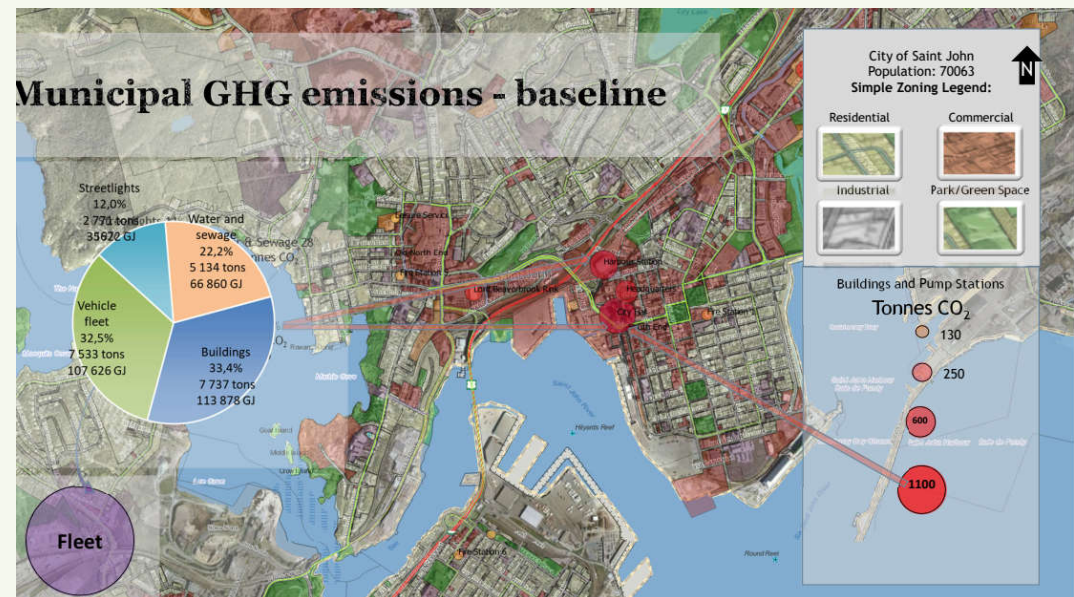
III. THE COMMUNITY'S PROFILE

The City of Saint John is located in southern New Brunswick, in the County of Saint John, of which it is the chief City. Saint John is 415 kilometers west-northwest of Halifax, 915 kilometers east of Montreal and 650 kilometers northeast of Boston. Located at the mouth of the Saint John River on the edge of the Bay of Fundy, the City, with its port, occupies an important place in the economy of the Maritimes. Saint John is the oldest incorporated municipality in Canada and the second largest City in New Brunswick after Moncton.

The population of Saint John in 2016 was 67,575 inhabitants spread over an area of 315.96 km², a density of 213.9 hab./km². It experienced a population decrease of 3,6% from 2011 to 2016. The City had 33,801 private dwellings in 2016, of which 30,208 were occupied by full time residents. 81% of dwellings were built before 1991.

The official languages spoken by the Saint John population are 86% English, 0,15% French, and 13% both French and English.

PICTURE 1: SAINT JOHN'S MAP



III. THE COMMUNITY'S PROFILE

Saint John's dedication to excellency and to be a social leader in New Brunswick and in Canada is well illustrated by the number of awards received through the years.

Awards for City &/or Its Amenities

2017 - 20 of the Most Beautiful Canadian Cities to Live In, Slice.ca

2012 - Top 7 Intelligent Communities Award, Intelligent Communities Forum (ICF)

2010 - Cultural Capital of Canada Designation, Government of Canada, Canadian Heritage and Official Languages

City Organization & Services

2017 - Showcase Award for Engineering Excellence, Assoc. of Consulting Engineering Companies –NB (ACEC-NB) – Spruce Lake Barge Facility

2016 - CAMA Willis Award for Innovation, Canadian Association of Municipal Administrators (CAMA) - One Stop Development Shop

2016 - Laserfiche Run Smarter® Award - Best Records Management category

2014 - URISA Exemplary Systems in Government (ESIG) Award, Distinguished System/Single Process System – Zone SJ Map Viewer

2013 - Community Recognition Award, Province of New Brunswick – Saint John Municipal Energy Efficiency Program (MEEP)

2013 - Premier's Award for Energy Efficiency, project - Commercial New Construction, One Peel Plaza,

2012 - Willis Award for Innovation, Canadian Association of Municipal Administrators (CAMA) – Plan SJ

2012 - Showcase Award for Engineering Excellence, Assoc. of Consulting Engineering Companies –NB (ACEC-NB) - Eastern Wastewater Treatment Facility

2011 - Premier's Award for Energy Efficiency, project - Commercial New Construction, Saint John Transit

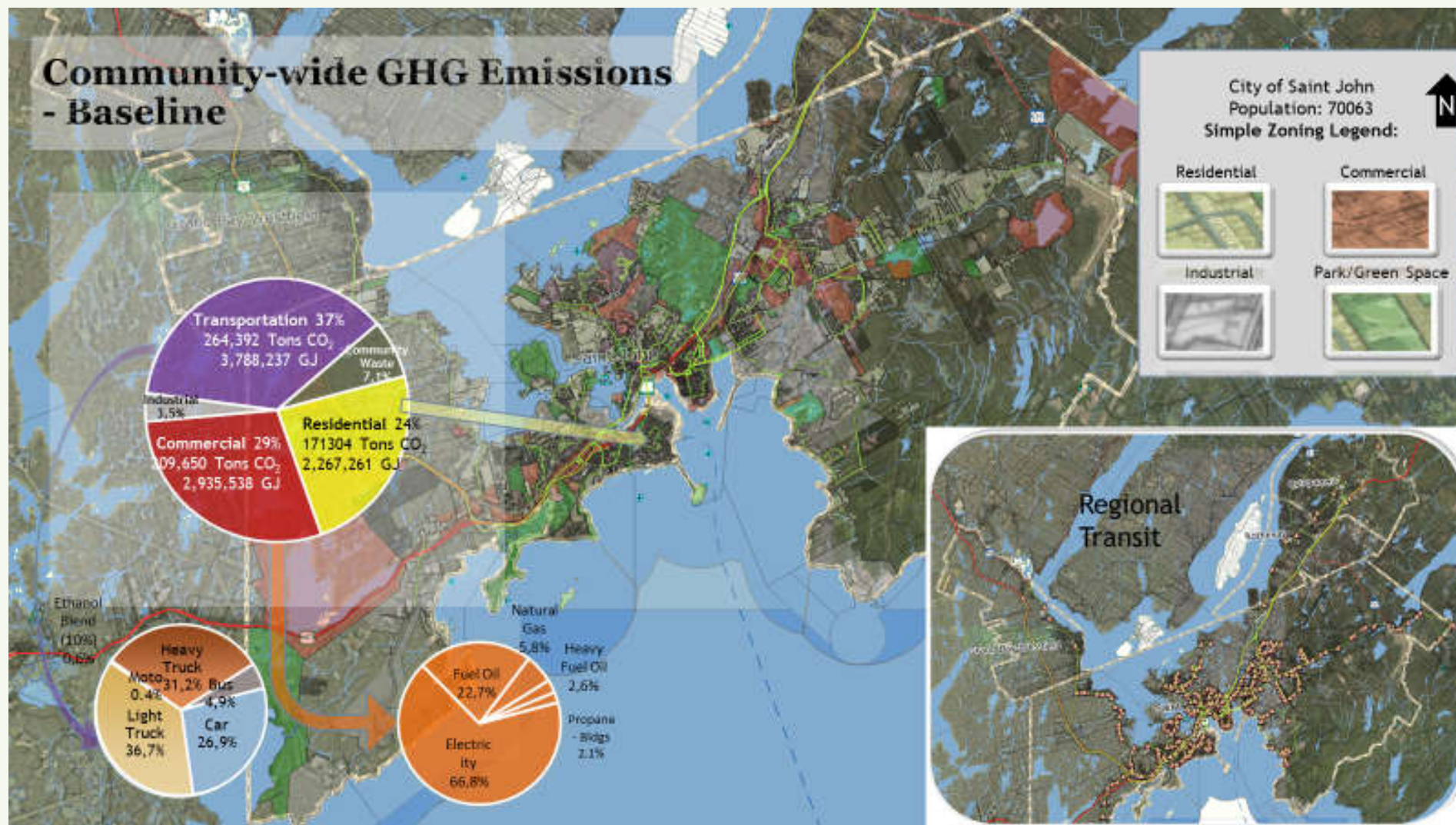
2011 - Premier's Award for Energy Efficiency, Energy Efficiency Champion - Commercial Sector, City of Saint John

2010 - Milton F. Gregg Conservation Award, Conservation Council of New Brunswick – Saint John Sustainable Energy Management Team

2008 - Federation of Canadian Municipalities (FCM)-CH2M HILL Sustainable Community Award, Energy - Saint John Municipal Energy Efficiency Program (MEEP).

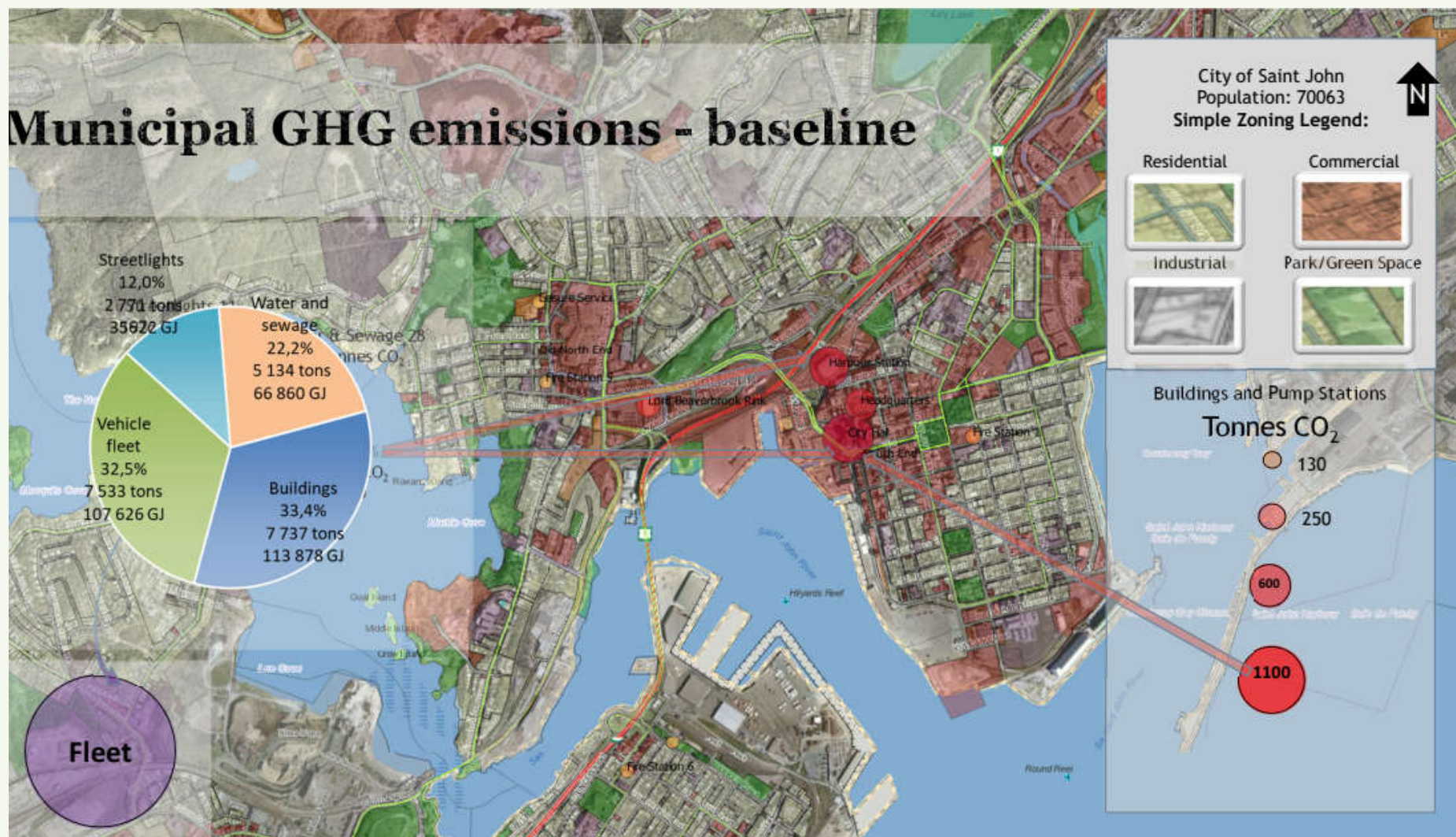
III. THE COMMUNITY'S PROFILE

PICTURE 2: SAINT JOHN'S GHG COMMUNITY EMISSIONS MAP



III. THE COMMUNITY'S PROFILE

PICTURE 3: SAINT JOHN'S GHG MUNICIPAL EMISSIONS MAP



III. THE COMMUNITY'S PROFILE

PICTURE 4: SAINT JOHN TRANSIT REGIONAL SERVICES



The Saint John Transit Commission was established in 1979 to provide scheduled transit service to the city. It is the largest public transit system in New Brunswick in terms of both mileage and passengers. Ridership on Saint John Transit's system is about 2.1 million passengers per year.

Saint John Transit's ridership is approximately 50 percent higher than the average for Canadian cities with a population of between 50,000 and 150,000.

Governed by a Commission, Saint John Transit is dedicated to high standards of customer service through innovative programs and commitment to the community.

Demographics

- ✓ Saint John has had public transit since 1869.
- ✓ Seven day-per-week service—29 separate workday routes—covers every area of the city, including high-traffic areas (Uptown and East side, university and hospital service).
- ✓ Routes cover approximately 515 kilometers of city streets.
- ✓ Ridership on Saint John Transit is about 2.7 million passengers per year; the highest in the province.
- ✓ Saint John Transit is currently experiencing a significant increase in passenger levels.
- ✓ Saint John Transit receives about 50 percent of its operating costs from the fare box, which makes it one of the most self-sufficient services in Canada for cities of similar size.

III. THE COMMUNITY'S PROFILE

PICTURE 5: SAINT JOHN TRANSIT ROUTES



III. THE COMMUNITY'S PROFILE



Saint John Energy (SJE) is 100% owned by the City of Saint John, and accountable to 36,400 residential, commercial and industrial customers for reliable service at rates that are among the lowest in the region.

SJE owns and operates the electricity grid and serves all connected customers and also provides energy services including the installation, maintenance, and rental of electric hot water heater units and mini split heat pump units. On average, residential rates are 10% lower and commercial rates are 3% lower than other utilities in New Brunswick. This is due in part to an excellent relationship with NB Power, the supplier of wholesale electricity.

Facts

- ✓ 36,400 customers
- ✓ 94 full-time employees
- ✓ 760 km of distribution line (590 overhead & 170 underground)
- ✓ 22,000 poles
- ✓ 13 substations

Environment, Saint John Energy continuously works to reduce environmental footprint and help customers do the same through energy conservation. In 2017, SJE achieved all environmental objectives and targets with 100% environmental regulation compliance. SJE also updated its Environmental Management System to the ISO 14001:2015 Standard. And 2018 marks the 20th year that Saint John Energy operations have been certified as meeting this internationally recognized standard of environmental performance.

SJE has over 9,300 smart meters in-market. Saint-John Energy's award-winning Energy Star Most Efficient rated mini-split ductless heat pump rental program, established in 2016, was the first of its kind in Canada and now provides over 3,200 customers with safe, efficient and affordable home heating.

Energy conservation is a key priority for SJE who not only encourage customers to reduce and conserve energy, but continuously looks for ways to do so within its operations. The utility actively finds ways to reduce overall costs and to benefit its customers. One of these many initiatives was installing LED street lights, which not only last longer and require less maintenance, but are more energy efficient.

SJE is founding member of Sustainable Saint John, a grassroots program dedicated to advocacy, education and engagement on environment-related initiatives through a network of like-minded, local organizations.

In 2018, SJE developed a Smart Grid Roadmap with the aspirational view to provide state of the art enhancements to its electricity distribution grid which will maximize energy efficiency, provide environmental benefits, enhance system operations, contribute to the regional economy, and induce customer participation. Following the Smart Grid Road Map, SJE developed a framework to support the Community Energy Plan. This framework sets forth to quantify general targets and timelines, and to identify a number of specific initiatives.

III. THE COMMUNITY'S PROFILE

Managing Peak Demand and Smart Grid

- Smart Grid Roadmap and smart Grid demonstration projects
- Operational efficiencies from smart grid projects
- Peak demand reduction projects

Exploring Renewable Generation Projects

- Embedded renewable energy projects – solar PV and wind energy

Increasing Efficient Consumer products

- Mini-split heat pump rental program
- Water heater rental program
- New energy efficient products and energy-saving initiatives
- Electric Vehicle residential charging units

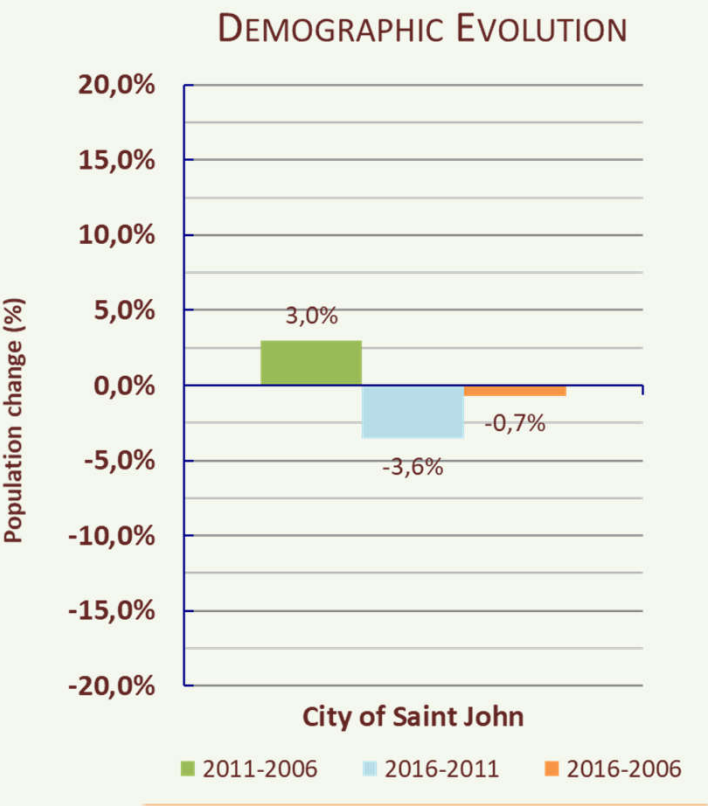
SJE's Plan aims to integrate renewable energy generation to the system, to decrease energy demand, and to increase overall energy efficiency.



III. THE COMMUNITY'S PROFILE

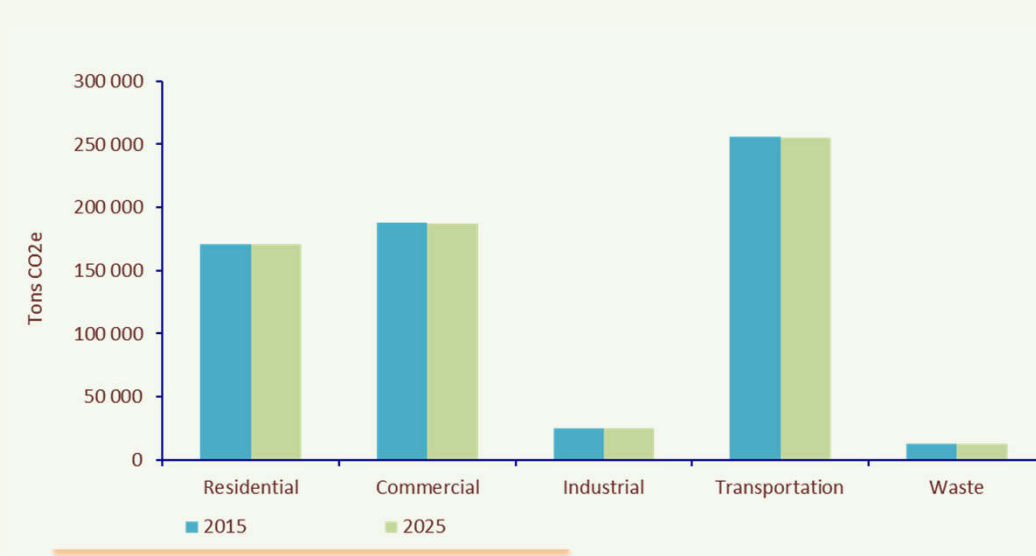
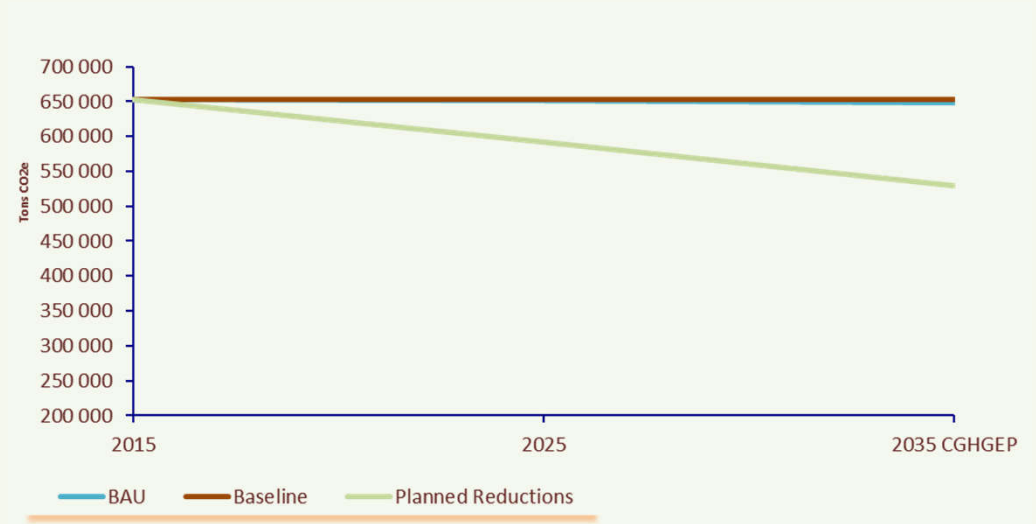
Challenges

- ✓ The City of Saint John and its community are facing challenges related to population decrease: almost 4% between 2011 and 2016.
- ✓ For the City, while its responsibilities and expenses remain similar or increase, tax and other incomes are decreasing in time. However energy needs are difficult to curb down.
- ✓ In the last 3 years, but also prior to 2015 with the Municipal Energy Efficiency Program (MEEP) adopted in 2008, many actions (called the Early Actions), reflected in the Corporate GHG Action Plan, were taken to reduce energy consumption and had significant positive impacts on the GHG emission reduction.
- ✓ For the Community, to curb down energy consumption and GHG emission, investment will be needed to help citizens to adopt cleaner and more efficient equipment.
- ✓ To provide regional services to growing neighborhood municipalities impacts energy needs and community GHG evolution.
- ✓ The main challenge for Saint John, the City and its Community, is to find solutions to reduce energy consumption, to produce clean energy and imperatively generate income as well as a good return on investment.



III. THE COMMUNITY’S PROFILE

The business as usual scenario anticipates that, apart from the present action plan reduction, the level of the community GHG emissions will decrease by 0.7%. This action plan is expected to bring them down by 9% in 2025 and by 18% in 2035.



A. THE PLAN

The Plan aims to help Saint John and its Community to face main challenges.

- **Reduce dependency on fossil energies**
- **Curb down energy use, expenses and reduce GHG emissions**
 - Promote individual and collective energy efficient habits:
 - a. Implement an ongoing anti-idling campaign & fuel efficient driving all across the community
 - b. Increase at least by 15% clothes line usage
 - Promote energy efficient technologies:
 - a. LED lighting to replace 60% all lights in the community
 - b. 6 000 commercial and industrial consumers to reduce their electricity use by 10% (Target set by Saint John Energy)
 - c. At least 15% of residential consumers to improve their non-electrical energy efficiency for an average of 10%
 - d. At least 20% of commercial and industrial consumers to improve their non-electrical energy efficiency for an average of 10%
 - Promote energy wise decision-making : smaller vehicles are in average 20% more fuel efficient
- **Foster a shift towards low carbon transportation solutions integrating EV infrastructure, promotes alternative fuel vehicles**
 - Use existing programs and incentives to increase the number of Electric and Hybrid Cars and to install more Charging Stations

IV. THE PLAN'S SUMMARY

A. THE PLAN (CONTINUED)

- **Implement low capital project & strategy to generate good return on investment overcome tax income stagnation**
- **Generate income with local renewable energy production:**
 - A. District Energy
- **Support and collaborate with Saint John Energy to achieve their 6% renewable energy production target**
 - A. Solar Farms – PV
 - B. Wind Turbine Farms
- **Diversify transportation alternatives by supporting public transit services**

IV. THE PLAN'S SUMMARY

Saint John Energy – Supportive Community Energy Plan 2019 in support of The City of Saint John

Targets and Initiatives The general targets for the SJE's Energy Use Effectiveness Plan are:

1. Increase SJE's annual system load factor from 71% to 75% by 2025. An increase in system in load factor will result in a lower energy demand during peak times, and more smooth energy usage throughout the day. The reduction of peak power demand will improve total system operations, reduce stress on electricity delivery assets, and displace high-cost emitting generation during peak times. The load factor target will be achieved through several demand response initiatives such as the development of demand prediction algorithms, managed energy storage assets, smart dispatchable assets, conservation voltage reduction, and fleets of controllable energy loads.

➤ **Target Demand Reduction of 25 MW, and t/yr of 1,170 t/yr GHG.**

2. Offer products that allow customers to reduce energy by 10% by 2025. Reducing customers' energy usage will result in less generation production, less greenhouse gases overall, and lower costs to the end users. The load reduction targets will be achieved by installing more efficient energy products in bundles at customers' homes – e.g. mini split heat pumps, ultra high efficiency hot water heaters.

➤ **Target Energy Reduction of 9,400 MW/yr, and 2,632 t/yr of GHG**

3. Provide infrastructure to allow for the integration of embedded renewable energy resources of 6% of SJE's total energy needs by 2025. The integrated renewable energy assets will be predominately wind energy projects and utility-scale solar PV plants. SJE plans to accommodate the first wave of renewable energy projects by 2022, and have a connection-ready process and system by 2025 for additional larger projects. The renewable energy generated will displace emitting generation in the system and reduce greenhouse gases.

➤ **Target Vehicle conversion of 20, and 60 t/yr of GHG.**

(continued)

IV. THE PLAN'S SUMMARY

Saint John Energy – Supportive Community Energy Plan 2019 in support of The City of Saint John

Targets and Initiatives The general targets for the SJE's Energy Use Effectiveness Plan are:

4. Provide initial pilot installations for residential EV chargers for 20 vehicles by 2025. The pilot installations will be part of the overall Community Program, which will consist of the provision of several public electric vehicle ("EV") charging stations as well as the introduction of a residential home charger rental program. The use of electric vehicles will reduce combustion emissions and greenhouse gases. This target is consistent with NB Power's province-wide target for EV chargers.

➤ **Target Vehicle conversion of 20, and 60 t/yr of GHG.**

5. Increase SJE's system operational efficiency by 2% by 2025. The modernization of the grid will result in operational efficiencies utilizing more efficient transformers, and upgrading the electrical infrastructure. This will result in more streamlined power flow and lower distribution losses.

➤ **Target losses reduction of 24 mWhr/yr and 6.75 t/yr of GHG.**

6. Increase SJE's operational productivity by 2% by 2025. Implementing state of the art grid information systems will result in increased operational productivity such as lowering downtime, reducing windshield time for operational crews, decreasing maintenance timelines and costs, and providing more efficient customer service. These efficiencies will be derived by the use of several smart informational technologies, such as AMI, GIS, Self-Healing Networks, Intelligent Fault Indicators and Smart Sensors throughout the system.

AMI infrastructure will eliminate 2 maintenance vehicles from the SJE fleet.

➤ **Target Vehicle elimination of 2, and 6 t/yr of GHG.**

B. THE STRATEGY

Strategy's Summary

Implementation and monitoring Procedures

General Procedures

1

Annual sectorial review meeting

2

Annual Community GHG & Energy Action Plan Update

Reaching PCP Milestone 4

3

Annual or biennial inventory update (Community & Corporate)

Reaching PCP Milestone 5

4

Project Portfolio Revision: New & Retrieved Project

Project Portfolio Procedures		
Residential		
R 1	LED lighting	
1	Annual activity review report	Status, project implementation development
R 2	Energy efficiency (Residential buildings)	
1	Annual activity review report	Status, project implementation development
2	Monitoring activities	GHG & GJ reduction evaluation
R 3	Clean Energy Conversion	
1	Annual activity review report	Status, project implementation development
2	Monitoring activities	GHG & GJ reduction evaluation
R 4	Energy efficiency - Residential - Clothes Line Program	
1	Annual activity review report	
2	Annual activity review report	Status, project implementation development



B. THE STRATEGY (CONTINUED)

ICI		
ICI 1 LED lighting		
1	Annual activity review report: Status, project implementation development	
ICI 2 Energy efficiency (commercial buildings)		
1	Annual activity review report	Status, project implementation development
2	Monitoring activities	GHG & GJ reduction evaluation
SJE's Supportive Community Energy Plan Targets for 2025		
R 1 SJE Energy efficiency (Residential/Commercial/Industrial)		
1	Annual activity review report	Status, project implementation development
2	Monitoring activities	GHG & GJ reduction evaluation
R 2 Increase Annual Load Factor		
1	Annual activity review report	Status, project implementation development
2	Monitoring activities	GHG & GJ reduction evaluation
R 3 Facilitate Fuel Switching (EV's)		
1	Annual activity review report	Status, project implementation development
2	Monitoring activities	GHG & GJ reduction evaluation
R 4 Increase Operational Productivity		
1	Annual activity review report	Status, project implementation development
2	Monitoring activities	GHG & GJ reduction evaluation
R 5 SJE Renewable Energy Strategy		
1	Annual activity review report	Status, project implementation development
2	Monitoring activities	GHG & GJ reduction evaluation
3	According to potential volume - Carbon Credit Registration process: Year status, registered credits, etc.	

B. THE STRATEGY (CONTINUED)

Transportation		
T 1	Electric Vehicle Community Program	
1	Annual activity review report	Status, project implementation development
2	Monitoring activities	EV purchase information
T 2	Idle-free Policy	
1	Annual activity review report	Status, project implementation development
	Branding operation & policy revision Drive through	
T 3	Fuel-efficient driving	
1	Annual activity review report	Status, project implementation development
T 4	More efficient & compact vehicles	
1	Annual activity review report	Status, project implementation development
	Branding operation	
Local Renewable Energy Production		
RE 1	District Heating	
1	Annual activity review report	Status, project implementation development
2	Monitoring activities	GHG & GJ reduction evaluation
3	According to potential volume - Carbon Credit Registration process: Year status, registered credits, etc.	
RE 4	Hydroelectricity - Turbine	
1	Annual activity review report	
2	Monitoring activities	Status, project implementation development
3	According to potential volume - Carbon Credit Registration process: Year status, registered credits, etc.	

COMMUNITY GHG INVENTORY

V. THE INVENTORY

The City of Saint John has joined the Climate Change and Energy Initiatives Program by commissioning UMNb and YHC Environnement to develop an inventory of its GHG emissions that will be used to develop an action plan that includes a suite of measures to control and reduce GHG emissions from their sources.

Saint John's emissions inventory consists of two separate components. The first is emissions from the activities of the municipal administration (the Corporate) and the second covers the entire territory of the Municipality (the Community).

This document covers the Greenhouse Gas Emission Inventory for the 2015 reference year of the community component of the City of Saint John. The relevant additional elements are detailed in the appendices.

V. THE INVENTORY

A. SUMMARY

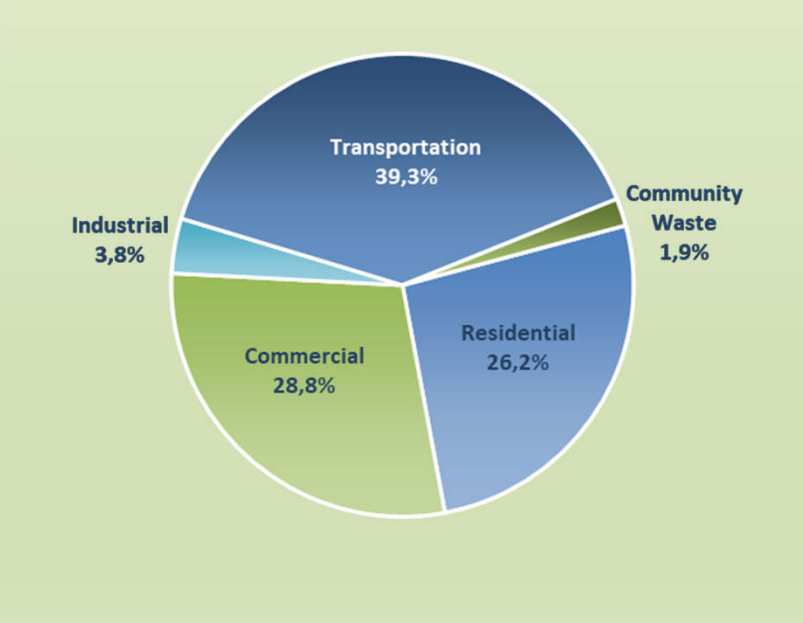
The community component consists of five emission sectors. For Saint John, the total emissions of the community is approximately 653 152 tons of CO₂ equivalent. Most of these came from transportation that is 39.3%. Commercial generated 28.8% of emissions, residential 26.2%, industrial 3.8% and finally 1.9% of emissions are attributed to the community waste.

The Community, with its 67 575 inhabitants has a per capita emission rate of 9.7 tons of CO₂ equivalent.

TABLE 1 :
COMMUNITY GHG EMISSIONS FOR THE BASE YEAR

GHG (tons eCO ₂)	2015
Residential	171 288
Commercial	187 917
Industrial	25 020
Transportation	256 393
Community Waste	12 534
Total	653 152
Population	67 575
GHG per capita (teCO ₂)	9,7

GRAPH 1 :
COMMUNITY GHG EMISSIONS BREAKDOWN BY SECTOR (teCO₂)



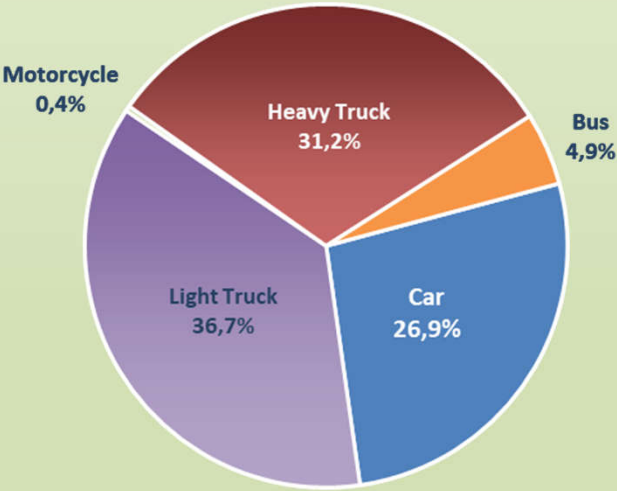
B. TRANSPORTATION

For the year 2015, the Saint John community had 56 795 vehicles numbered on its territory. With 256 393 tons of eq. CO₂, the transportation sector is responsible for a large part (39.3%) of greenhouse gas emissions of the community (see Graph 1). Emissions from the sector come from five (5) subclasses; light truck because of their large number, form the category that generates the most emissions from GHG, with 36.7% of the total sector. Heavy Truck is in second place with 31.2%, follow car 26.9%, bus 4.9%, and finally motorcycle with 0.4%.

TABLE 2 :
TRANSPORTATION GHG EMISSIONS BREAKDOWN
BY VEHICLE TYPE (teCO₂)

Vehicle Type	2015			
	Number	%	(teCO ₂)	%
Car	27 377	48,2%	69 015,5	26,9%
Light Truck	23 982	42,2%	94 107,6	36,7%
Motorcycle	1 910	3,4%	907,1	0,4%
Heavy Truck	3 304	5,8%	79 913,6	31,2%
Bus	222	0,4%	12 449,0	4,9%
Total	56 795		256 393	

GRAPH 2 :
TRANSPORTATION GHG EMISSIONS BREAKDOWN
BY VEHICLE TYPE (teCO₂)



C. Industrial, Commercial and Institutional Buildings (ICI)

In 2015, an estimated 384 225 tons of eq. CO₂, greenhouse gas emissions from come from Saint John's residential and industrial, commercial and institutional (ICI) sectors. Electricity gets noticed as first source of GHG emissions with 267 538 tons of eq. CO₂. Fuel oil and natural gas assume 80 787 and 19 770 tons, heavy fuel oil and propane emit 9 306 and 6 825 tons eq. CO₂.

TABLE 3 :

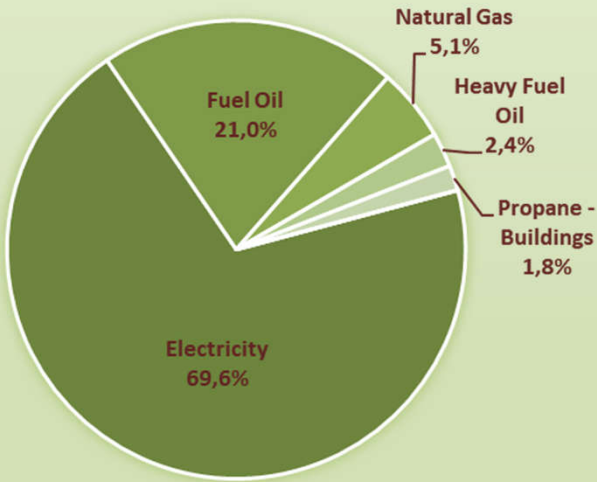
COMMUNITY GHG EMISSIONS AND ENERGY CONSUMPTION BY TYPE

Energy	2015		(teCO ₂)	%	(Gj)	%
	Volume	Units				
Electricity	955 491 860	kWh	267 538	69,6%	3 439 771	65,8%
Fuel Oil	29 536 412	Liters	80 787	21,0%	1 146 013	21,9%
Natural Gas	10 391 032	m3	19 770	5,1%	407 744	7,8%
Diesel - Buildings	-	Liters	-	-	-	-
Heavy Fuel Oil	2 958 875	Liters	9 306	2,4%	125 752	2,4%
Propane - Buildings	4 420 006	Liters	6 825	1,8%	111 870	2,1%
District Energy	-		-	-	-	-
Total			384 225		5 231 150	

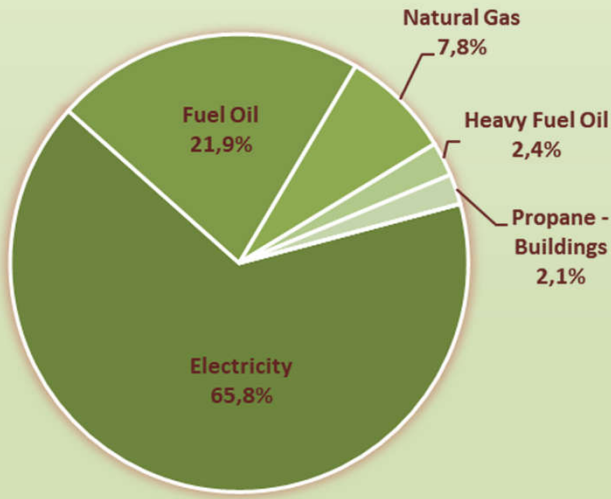
C. Industrial, Commercial and Institutional Buildings (ICI) (continued)

Electricity produces 69.6% of the sector's emissions and meets 65.8% of the Saint John Territory's energy needs for the residential sector and ICI. Fuel oil, natural gas, heavy fuel oil and propane accounted for 21.0%, 5.1%, 2.4% and 1.8% of greenhouse gases, respectively, and together they 21.9%, 7.8%, 2.4% and 2.1% of their energy demand in their sectors for the Saint John community.

GRAPH 3 :
RESIDENTIAL AND ICI GHG EMISSIONS BREAKDOWN
BY ENERGY TYPE (tCO₂)



GRAPH 4 :
RESIDENTIAL AND ICI ENERGY CONSUMPTION BREAKDOWN
BY ENERGY TYPE (GJ)



D. Community Waste

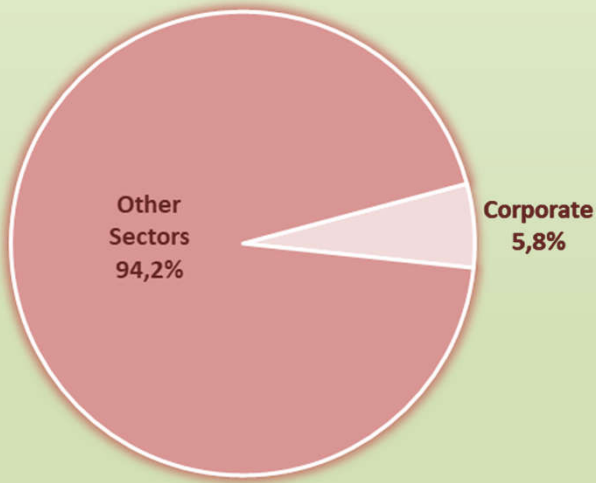
In 2015, the 36 050 tons of Saint John’s solid waste produced 12 534 tons of eq. CO₂ greenhouse gas. They are responsible for 1.9% of the total emissions of the Community (see Graph 1).

The estimated share of corporate emissions is 731.9 tons of eq. CO₂ (5.8% of the total) which would correspond to nearly 1 785 tons of waste.

TABLE 4 :
COMMUNITY LANDFILL WASTE BY CATEGORY

Waste Category	2015			
	tons	%	(teq. CO ₂)	%
Corporate	1 785	5,0%	731,9	5,8%
Other Sectors	34 265	95,0%	11 802,1	94,2%
Total	36 050		12 534,0	

GRAPH 5 :
COMMUNITY LANDFILL WASTE GHG EMISSIONS
BY CATEGORY (teCO₂)



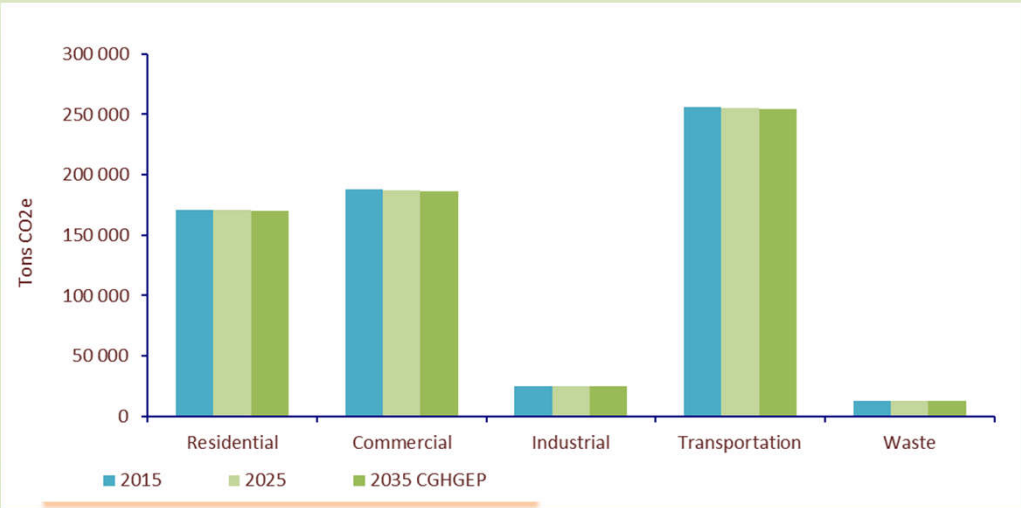
E. Community Emissions Forecast

Community emissions forecast present how the inventory emissions may evolve at the end of the action plan (2025), based on a business as usual scenario (BAU), i.e. without any direct intervention of the decision-makers. Factors such as demographic change or economic conditions are taken into account in determining future levels of current emissions.

For Saint John, the business as usual scenario anticipates that, apart from the current action plan reduction, the level of the community GHG emissions will decrease slightly by 0.7%.

TABLE 5 :
COMMUNITY EMISSIONS FORECAST BY SECTOR

	Current emissions	% Change Expected**	Emissions in Forecast year	Emissions in CEP Forecast year
Residential	171 288	-0,7%	170 699	170 110
Commercial	187 917	-0,7%	187 270	186 624
Industrial	25 020	-0,7%	24 934	24 848
Transportation	256 393	-0,7%	255 511	254 629
Waste	12 534	-0,7%	12 491	12 448
Total Emissions (t CO2e)	653 152		650 906	648 660



E. Community Emissions Forecast (continued)

The projected emissions, seek to present how inventory emissions will evolve at the end of the action plan, based on a business as usual scenario, ie without any direct intervention of the decision-makers. Factors such as demographic change or economic conditions are taken into account in determining future levels of current emissions.

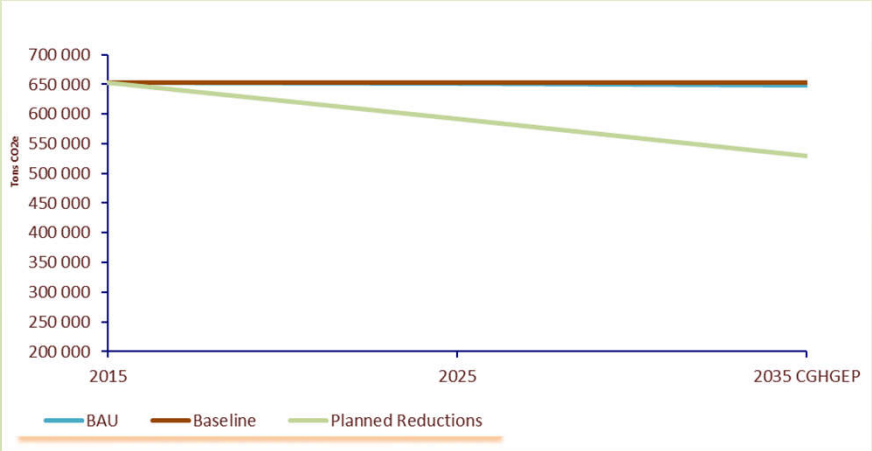
For Saint John, the business as usual scenario anticipates that, apart from the present action plan reduction, the level of the community GHG emissions will decrease by 0.7%. This action plan is expected to bring them down by 9% in 2025 and by 18% in 2035.

TABLE 6 :
COMMUNITY INFORMATION

Base Year	2015	
Forecast Year*	2025	2035 CGHGEP
Reduction Target by Forecast Year* (%)	9,0%	18,0%

Baseline: 2015 (Base year)
BAU: Business as usual scenario forecast
2025: Action Plan deadline
CGHGEP or CEP: Community Greenhouse Gases Energy Planning. Long term projects requiring a longer horizon than the current action plan.

GRAPH 6 :
COMMUNITY EMISSIONS FORECAST



COMMUNITY PLAN

A. STRATEGY FOR GHG REDUCTION AND PROJECT SELECTION

Community Action Plan

As noted in Section II - Strategy, for PCP and GMF, the GHG emission reduction targets of participating municipalities are set on a voluntary and non-binding basis.

Taking into account the context of the City, the community plan proposes the achievement of a target of 9% reductions in GHG emissions for 2025 and 18% reductions in GHG emissions for 2035 according to the reference year 2015.

TABLE 7 :
COMMUNITY INFORMATION

Objectives and year set by Saint John:		
Corporate Action plan :		
		• Reduction Target : 9% and 18%
		• Base year : 2015
		• Forecast year : 2025 and 2035

A. STRATEGY FOR GHG REDUCTION AND PROJECT SELECTION

Guiding Principles

The approach behind the development of the City of Saint John's Action Plan as part of UMNb's CCEI is to develop an action plan that includes projects which :

- 1) Improve the quality of life of communities (better environment and savings)**
 - ✓ Improve the quality of life of communities (better environment and savings) ;
 - ✓ Generate GHG emission reductions that meet the goals and needs of the community ;
 - ✓ Allow as much as possible to generate energy savings that guarantee the sustainability of the actions of the Municipality and its community.
- 2) Use community resources to develop the expertise of UMNb and New Brunswick members**
 - ✓ Optimize the use of community resources and know-how to maximize socio-economic benefits;
 - ✓ Help develop local and regional expertise to increase the knowledge of communities and New Brunswick..
- 3) Will become examples and models for New Brunswick and other communities in Canada**
 - ✓ The projects must enable UMNb member municipalities to stand out / take leadership, to respond to challenges of climate change for New Brunswick communities, to protect the environment, improve the quality of life, and become role models for action and resilience.

A. STRATEGY FOR GHG REDUCTION AND PROJECT SELECTION

Global Approach

«GOOD PRACTICE» PROJECTS

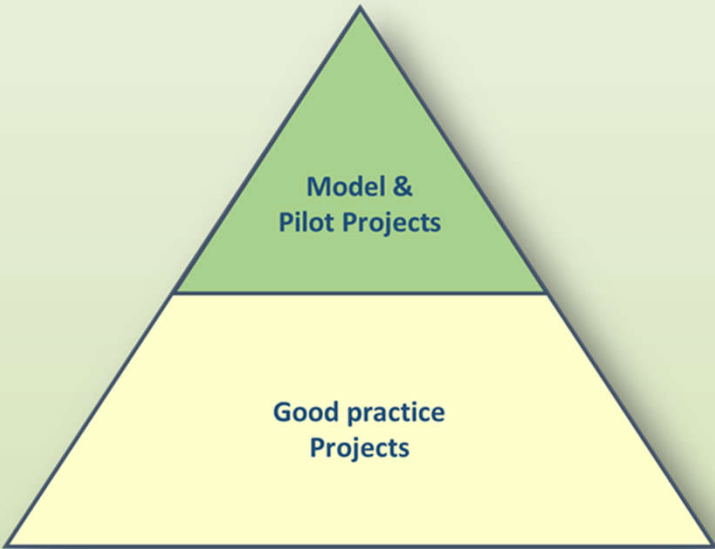
The action plan prioritises projects considered as "good practices". These projects correspond to the application of, for example, measures and technologies supported by the programs of New Brunswick Power, the Government of New Brunswick or Canada.

- ✓ These "Good Practice" projects form the basis of the Action Plan.

MODEL PROJECTS & PILOT PROJECTS

As part of Saint John's CCEI, the action plan also proposes s three types of model projects & pilot projects :

- **Transport electrification & EV integration in the community**





B. REFERENCE LEVEL AND TARGET

The goal of the City of Saint John’s Community Action Plan is to reduce greenhouse gas emissions by 9% by 2025 and 18% by 2035 from their 2015 baseline.

For Saint John, the emissions calculated for the year 2015 allow us to estimate the reductions required to reach the target set by the Community's action plan to approximately 58 784 tons or 9% by 2025 and 117 567 tons or 18% by 2035.

TABLE 8 :
BASELINE AND TARGET

Tons of CO2 equivalent		Year		9%	18%	
		Base	Forecast	Forecast CGHGEP	<u>2025</u>	<u>2035</u>
		2015	2025	2035		
1	Current Emissions	653 152				
2	Community Emissions Forecast (BAU Scenario)		650 906	648 660		
3	Reduction Target		9,0%	18,0%		
4	Forecast emissions (target) (line 1 - line 5)		594 368	535 585		
5	Total reductions to be achieved (line 1 - line 4)		58 784	117 567		
6	Total reductions to be achieved (Including BAU Scenario)		56 538	113 075		

C. ANALYSIS OF THE PROJECTED RESULTS OF THE ACTION PLAN

Achieving the objective of Saint John’s Action Plan would mean that the level of community GHG emissions for the year 2025 be at 592 883 tons of eq. CO₂. This is a decrease of 60 269 tons from the 2015 emissions level of 653 152 tons of eq. CO₂. This represents a potential reduction of 9.2%, which is 0.2 percentage points above the target of 9% and 1 486 tons more than the targeted reduction of 58 784 tons (see Table 8).

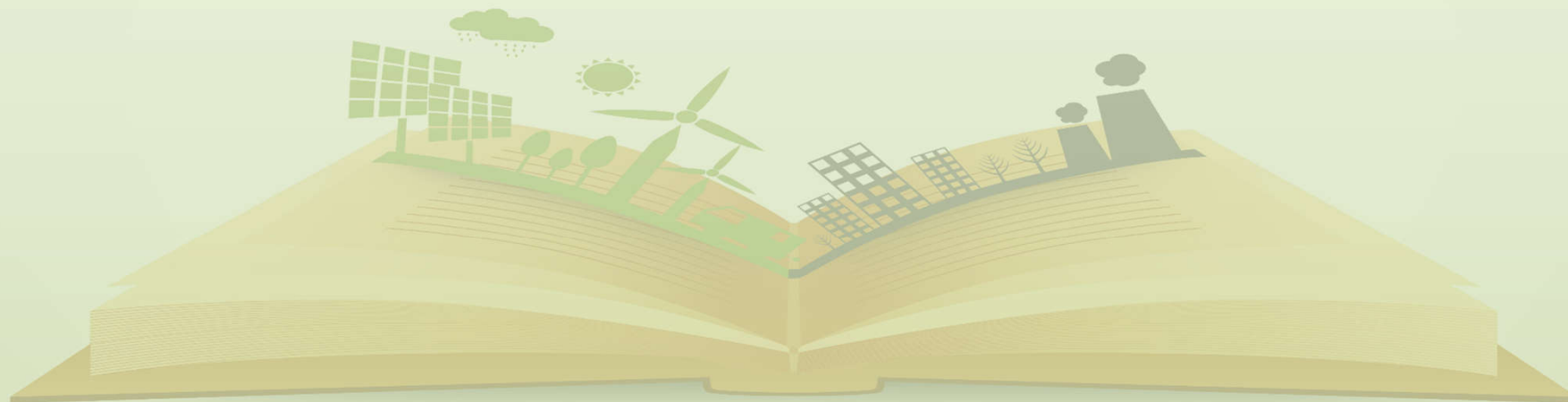
TABLE 9 :
ANALYSIS OF THE OUTCOME OF THE ACTION PLAN

Total reductions			Forecast CGHGEP 2025
	eCO ₂ (t)	%	
1	Current Emissions (Base year)	653 152	100,0%
2	Early action results	0,0	0,0%
3	Expected reductions in the Action Plan	60 269	9,2%
4	Total Reductions (line 2 + line 3)	60 269	9,2%
5	Level of anticipated emissions (forecast year) (line 1 - line 4)	592 883	90,8%
6	Gap with the target (Action Plan 2025)	1 486	0,2%
7	Considering BAU Scenario (2025)	3 732	0,3%
			9,6%

D. PROJECT PORTFOLIO

The most recent measures, technologies and programs have been analyzed and evaluated. They form the basis of the action plans produced by YHC Environnement. Then, based on the 2015 inventory data, as well as the characteristics and needs of the Community of Saint John, the development of the Project Portfolio was completed.

The action plan contains seventeen (17) projects whose potential reductions are estimated at 60 269 tons of CO₂ equivalent (see Table 10).



D. PROJECT PORTFOLIO

Project Portfolio Summary

TABLE 10 : COMMUNITY PROJECT PORTFOLIO

Projects (Measures, Actions, Technologies)			Total GHG reductions (tons)
Residential			5 857
1	R 1	LED lighting	2 118
2	R 2	Energy efficiency (Residential buildings)	369
3	R 3	Clean Energy Conversion Conversion rate : 35%	2 673
4	R 4	Energy efficiency - Residential - Clothes Line Program	696
ICI			8 312
5	ICI 1	LED lighting	6 710
6	ICI 2	Energy efficiency (commercial buildings)	1 602
SJE's Supportive Community Energy Plan Targets for 2025			19 893
7	SJE 1	SJE Energy efficiency (Residential/Commercial/Industrial)	2 632
8	SJE 2	Increase Annual Load Factor	1 170
9	SJE 3	Facilitate Fuel Switching (EV's) See Electric Vehicle Community Program	-
10	SJE 4	Increase Operational Efficiency	7
11	SJE 5	Increase Operational Productivity	40
12	SJE 6	SJE Renewable Energy Strategy SJE Target 6%	16 044
Transportation			22 753
13	T 1	Electric Vehicle Community Program EV Units: 220	243
14	T 2	Idle-free Policy	16 020
15	T 3	Fuel-efficient driving	4 859
16	T 4	More efficient & compact vehicles	1 631
Local Renewable Energy Production			3 454
17	RE 1	District Energy System	3 454
TOTAL			60 269

D. PROJECT PORTFOLIO

1. Infrastructure (lighting) - LED lighting (Residential/Commercial/Industrial)

(Project #: R1 & ICI1)

LED technology is more reliable with a much longer life span compared to other types of lighting. According to Hydro-Quebec : "Most LED bulbs last about 25,000 hours, while incandescent lightbulbs last only 1,000." So if they're on 8 hours a day, 365 days a year, LED bulbs could last more than 8 years". In the community, voluntary conversions and those made through information, awareness and incentive campaigns reduce electricity consumption.

It is assumed that 60% of the incandescent bulbs will be replaced by LED bulbs at the end of this action plan.

LED lighting	Base year : 2015		
	GJ	kWh	Ratio
1 Total residential energy consumption	2 267 261	629 794 834	
2 Estimated residential lighting power consumption	82 528	22 924 532	3,64%
3 Total CI sector energy consumption	2 317 362	643 711 632	
4 Estimated commercial lighting power consumption	248 421	69 005 887	10,72%
5 Total industrial energy consumption	357 221	99 228 038	
6 Estimated industrial lighting power consumption	13 003	3 611 901	3,64%
7 Efficiency gains due to conversion		55%	
8 Conversion rate for 2025		60%	
9 Annual energy conversion reduction (residential)		7 565 096	kWh
10 Annual Energy Conversion Reduction (CI)		22 771 943	kWh
11 Annual Energy Reduction in Conversion (Industries)		1 191 927	kWh
12 Reduction of GHG emissions from conversion (residential)		2 118	t. eq. CO ₂
13 Conversion GHG emission reduction (CI)		6 376	t. eq. CO ₂
14 Reduction in Conversion GHG Emissions (Industries)		334	t. eq. CO ₂
15 Reduction of GHG emissions from conversion (all sectors)		8 828	t. eq. CO ₂

Note:

Line 12- Table 10, Project 1 R 1

Lines 13 & 14- Table 10, Project 5 ICI 1

D. PROJECT PORTFOLIO

2. Infrastructure (heating, cooling & envelope) - Energy efficiency (Residential buildings)

(Project #: R2)

In addition to Saint John Energy Targets and Initiatives which provide efficiency solutions to power consumers, the City of Saint John intends to develop energy efficiency programs and incentives that aim other forms of energy used for heating purposes in the residential sector (natural gas, fuel and propane).

According to the community inventory, more than 26% of the community's GHG emissions come from the residential sector.

The average implementation rate of these measures is set at 15%. The average efficiency of all these measures is set at 10%.

Base year : 2015			
Energy efficiency (Residential buildings)			
1	Energy saving (estimated)	10,0%	
2	Participating households (number and %) *	4 532	15,0%
3	Energy saved per year (Gj)	5 487	
4	Reduction of GHG emissions (tonnes and %)	369	1,5%
	* Rough estimation		
5	Estimation details		
6	Total electricity Consumption	n/a	Gj See SJE project
7	Energy use for heating purposes	65,94%	
8	Electric Consumption - heating	n/a	Gj See SJE project
9	Fuel consumption - heating	309 363	Gj see below
10	Natural gas and Propane consumption - heating	56 426	Gj
11	Electricity consumption GHG emissions	n/a	eCO ₂ (t) See SJE project
12	Fuel consumption GHG emissions	21 808	eCO₂ (t)
13	Natural gas and propane GHG emissions	2 801	eCO ₂ (t)
14	GHG emissions targeted	24 609	3,8%
15	Projects' rate of implementation	15%	Target to set
16	Total community emissions	653 152	eCO ₂ (t)
17	Average energy efficiency gain	10,0%	Target to set
18	Number of Dwellings in the community	30 210	
19	Participating households	4 532	Rough estimation
	See Clean Energy Conversion project		

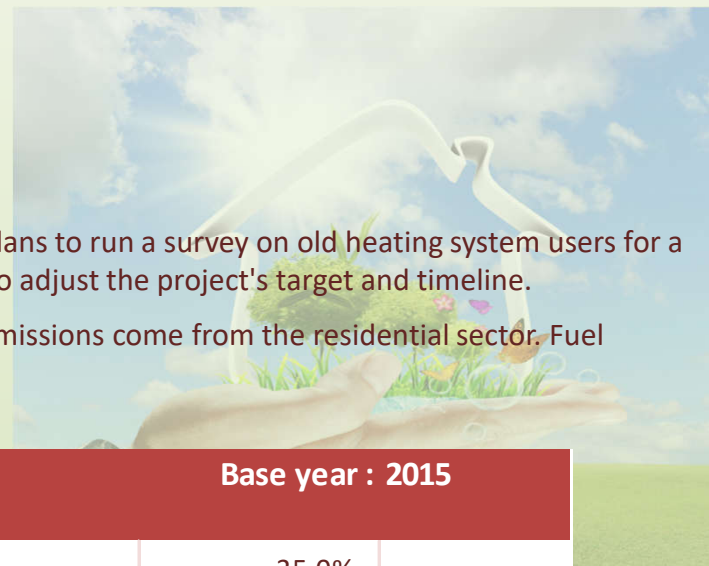
D. PROJECT PORTFOLIO

3. Infrastructure (heating, cooling) - Clean Energy

(Project #: R3)

Saint John wishes to increase use of cleaner sources of energy. The municipality plans to run a survey on old heating system users for a better understanding of their number, needs and demands. The survey will allow to adjust the project's target and timeline.

According to the community inventory, more than 26% of the community's GHG emissions come from the residential sector. Fuel furnaces are less efficient than electric heater.



Base year : 2015		
Clean Energy Conversion		
1	Energy conversion	35,0%
2	Participating households (number and %) *	10 574 35,0%
3	Energy saved per (Gj)	49 974
4	Reduction of GHG emissions (tonnes and %)	2 673 8,0%
* Rough estimation		
Estimation details		
5	Heating oil consumption	475 944 Gj
6	Heating oil GHG emissions	33 551 eCO ₂ (t)
7	Projects' rate of implementation	35% Target
8	Number of Dwellings in the community	30 210
9	Participating households	10 574 Rough estimation
10	Electricity needs (result of conversion)	116 606 Gj
11	Electricity GHG Emissions (result of conversion)	9 069 eCO ₂ (t)
12	Residual Heating Oil consumption	309 363 Gj
13	Residual Heating GHG Emissions	21 808 eCO ₂ (t)
14	GHG reduction	2 673,5 eCO ₂ (t)

D. PROJECT PORTFOLIO

4. Infrastructure (heating, cooling) - Energy efficiency - Residential - Clothes Line Program

(Project #: R4)

Saint John wishes to promote simple yet efficient measures that will reduce energy costs and carbon footprint of its citizens. According to the community inventory, more than 26% of the community's GHG emissions come from the residential sector. Clothes lines have multiple advantages : Low installation/repair cost, saves money, zero GHG emission, etc.

The average implementation rate of these measures is set at 15%.

Base year : 2015		
Infrastructure (heating, cooling)		
1 Energy saving (estimated)	7,5%	
2 Participating households (number and %)	4 144	13,7%
3 Energy saved per year (kWh)	2 486 356	
4 Reduction of GHG emissions (tons and %)	696	0,1%
Estimation details		
5 Average electric clothes Dryer consumption per household	100	kWh / month
6 Total power use for clothes drying	1 200	kWh / year
7 Number of Dwellings in the community	30 210	
8 Ratio of households with an electric clothes dryer	91,4%	
9 Annual estimated power used by laundry dryers	33 151 414	kWh / year
10 Total estimated GHG emissions of laundry drying	9 282	eCO ₂ (t)
11 Clothes lines efficiency	100%	
12 Clothes lines use rate	50%	6 months / year
13 Projects' rate of penetration	15%	
14 Participating households	4 144	
15 Energy reduction	2 486 356	kWh
16 GHG reduction	696	
17 Energy savings	263 305	\$
18 Total community emissions	653 152	eCO ₂ (t)

D. PROJECT PORTFOLIO

5. Infrastructure (heating, cooling & envelope) - Energy efficiency (Commercial buildings)

(Project #: ICI2)

In addition to Saint John Energy Targets and Initiatives which provide energy efficiency solutions to electrical power consumers, the City of Saint John intends to develop energy efficiency programs and incentives that aim other forms of energy (natural gas, fuel and propane) used for heating purposes in the commercial, institutional and industrial sector.

According to the community inventory, more than 28 % of the community's GHG emissions come from the commercial and institutional sector.

Improving energy efficiency is therefore a key means of reducing overall community emissions.

The average implementation rate of these measures is set at 20%. The average efficiency of all these measures is set at 10%.

Energy efficiency (commercial buildings)		Base year : 2015	
1	Energy saving (estimated)	10%	
2	Energy saved per year (Gj)	25 324	
3	Reduction of GHG emissions (tonnes and %)	1 602	2,0%
Estimation details			
4	Total electricity Consumption	n/a	Gj See SJE project
5	Energy use for heating purposes	48,35%	
6	Electric Consumption - heating	n/a	Gj See SJE project
7	Fuel consumption - heating	772 414	Gj
8	Natural gas and Propane consumption - heating	493 766	Gj
9	Electricity consumption GHG emissions	n/a	eCO ₂ (t) See SJE project
10	Fuel consumption GHG emissions	54 450	eCO ₂ (t)
11	Natural gas and propane GHG emissions	25 644	eCO ₂ (t)
12	GHG emissions targeted	80 094	12,3%
13	Projects' rate of implementation	20%	Target to set
14	Total community emissions	653 152	eCO ₂ (t)
15	Average energy efficiency gain	10,0%	Target to set

D. PROJECT PORTFOLIO

6. Infrastructure (heating, cooling & envelope) – SJE Energy efficiency (Residential/Commercial/Industrial)
(Project #: SJE1)

Saint John Energy Targets and Initiatives - Offer products that allow subscribing customers to reduce energy usage by 10% by 2025. Reducing customers’ energy usage will result in less generation production, less greenhouse gases overall, and lower costs to the end users. The load reduction targets will be achieved by installing more efficient energy products in bundles at customers’ homes.

According to the community inventory, 69,6 % of the community's GHG emissions come from the residential sector .

The project aims to reach 6000 customers.

Base year : 2015		
SJE Energy efficiency (Residential/Commercial/Industrial)		
1	Energy saving (estimated)	10,0%
2	Participating customers (number)	6 000
3	Energy saved per year (Gj ; kWh)	33 839 9 399 600
4	Reduction of GHG emissions (tonnes and %)	2 632 1,0%

See also Summary of Supportive Community Energy Plan 2018



D. PROJECT PORTFOLIO

7. Infrastructure – SJE Energy efficiency (Energy Optimization)

(Project #: SJE2, SJE3, SJE4, SJE5)

Saint John Energy Targets and Initiatives - Offer products that allow subscribing customers to reduce energy usage by 10% by 2025. Reducing customers’ energy usage will result in less generation production, less greenhouse gases overall, and lower costs to the end users. The load reduction targets will be achieved by installing more efficient energy products in bundles at customers’ homes.

Energy optimization		
SJE Energy Plan		
Base year : 2015		
1	Energy saving (estimated) *	0,6%
2	Energy saved per year (Gj ; kWh) *	1 673 6 024 000
3	GHG reduction	1 217 eCO2 (t)
* Rounded figures		
See also Summary of Supportive Community Energy Plan 2018		

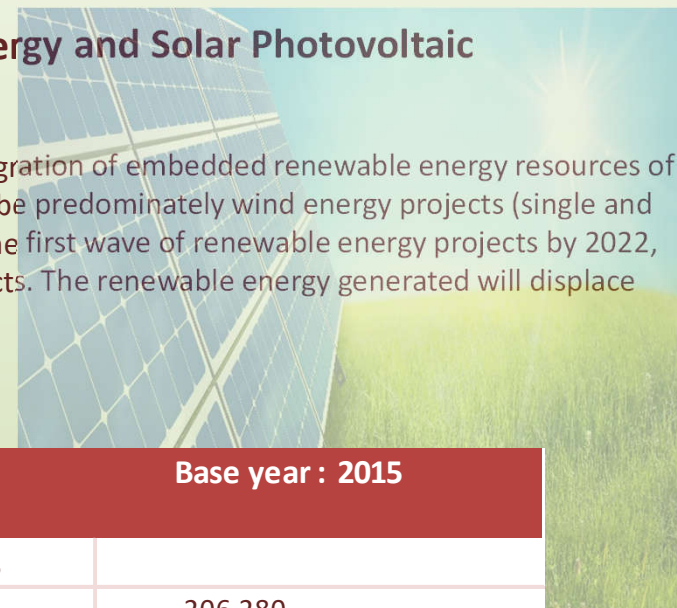


D. PROJECT PORTFOLIO

8. Saint John Energy Renewable Energy Production – Wind Energy and Solar Photovoltaic

(Project #: SJE6)

Saint John Energy Targets and Initiatives - Provide infrastructure to allow for the integration of embedded renewable energy resources of 6% of SJE's total energy needs by 2025. The integrated renewable energy assets will be predominately wind energy projects (single and multi-turbine projects) and utility-scale solar PV plants. SJE plans to accommodate the first wave of renewable energy projects by 2022, and have a connection-ready process and system by 2025 for additional larger projects. The renewable energy generated will displace emitting generation in the system and reduce greenhouse gases.



SJE Renewable Energy Strategy			Base year : 2015	
1	Energy conversion	Target starting year	2025	
2	Energy saved per (Gj)			206 280
3	Reduction of GHG emissions (tons and %)			16 044 6,0%
Estimation details				
4	Electricity consumption (all sectors)		3 439 771	Gj
5	Electricity consumption (all sectors) GHG emissions		267 538	eCO ₂ (t)
6	Renewable Electricity Production		206 280	Gj
7	Renewable Electricity Production		57 300 000,0	kWh
8	Renewable Electricity Production ratio		6,0	%
9	GHG reduction		16 044,0	eCO ₂ (t)
10	GHG reduction for all sector electricity use (%)		6,0	%

D. PROJECT PORTFOLIO

Saint John Energy – Summary of Supportive Community Energy Plan 2019

Major Target		Current Initiatives Underway	Target Figure for 2025	GHG Factor	GHG Saved at Target t/year
Energy optimization					
1	Increase Annual Load Factor	SMART Grid Demonstration Project Integrated System Manger Utility Batteries Generator Disptaching Transformer Tap Changers Controllable Water Heaters, Baseboard Heaters and Heat Pumps	Demand Savings of 25 MW 6 000 MWhr shifted from Peak to OffPeak (2 hr/day x 120 days/yr)	0,463 t/MWhr Peak, 0,268 t/MWhr OffPeak	1 170,0
4	Facilitate Fuel Switching (EV's)	Residential Charging Pilot Program Future Charging Stations **	20 residential charging stations pilot	3 t/yr/vehicle	See Electric Vehicle Community Program
5	Increase Operational Efficiency	Capital Planning Amorphous Core Transformers ** Overhead Conductor Upgrades ** Underground Conductor Upgrades **	24 MWhr	0,280 t/MWh	6,7
6	Increase Operational Productivity	Regulatory Planning Capital Planning Advanced Metering Infrastructure (AMI) ** Intelligent fault sensing devices **	Elimiation of 2 full time service vehicles	3 t/yr/vehicle	40,0
Energy efficiency					
2	Reduce Energy Usage	Mini-split Heat Pumps Next Gen Consumer Products ** Customer Outreach	Annual Energy Savings of 9 400 MWhr 6 000 customers: 10% of 15,6 MWhr each	0,280 t/MWh	2 632,0
Renewable Energy Production					
3	Integrate Embedded Generation	Utility Embedded Generation Policy Distribution Infrastructure ** Embedded Wind Energy Projects ** Community Solar Projects **	Annual Energy Produced of 57 300 MWhr 6% of 955 000 MWhr	0,280 t/MWhr	16 044,0
Total					19 892,7

** Requires Funding and/or Budget Approvals

D. PROJECT PORTFOLIO

9. Transportation - Electric Vehicle Community Program

(Project #: T1)

The EV Community Program is proposed for the Community GHG and Energy Planning timeline. The program is related to the NB Climate Action Plan and will help the community to integrate EV and gradually replace conventional vehicle use.

Information : EV use electrical energy to power an electric motor, they also reduce society's dependence on environmentally damaging fossil fuels while lowering greenhouse gas emissions and air pollution. Electric cars are cost effective, good for the environment and deliver great performance. There are two kinds of electric car:

Fully Electric Cars are powered 100% by electricity and have zero tailpipe emissions. Fully electric cars can travel 200-400 km on a single charge.

Plug-in Hybrid Electric Cars have small battery packs for short all-electric driving distances (20-80 km) before a gasoline engine or generator turns on for longer trips.

		Base year :	2015
		Target year :	2025
1	GHG Offset Target - eCO ₂ (t)	243	
2	Target number of EV units for 2025	Minimum & maximum	79 220
3	NB CCAP Target for EV units for 2025 (estimated)	Total & annually	886 111
4	GHG emissions reduction (tonnes and %)	Minimum	243 0,0%
5		Maximum	675 0,1%
6	Transport GHG emissions reduction (%)	Maximum & Minimum	0,3% 0,1%
7	Savings per year (Minimum & maximum)	80 960 \$	246 620 \$
8	Number of car & light Truck	51 359	
9		Minimum & maximum	0,2% 0,4%



D. PROJECT PORTFOLIO

9. Transportation - Electric Vehicle Community Program (continued)

Charging Station : In 2018, Saint John counts 27 public N2 charging stations (CS) on its territory. Number of public charging stations should be increased locally and regionally. We estimates that EV owners should have private level 2 charging station (500 to 800\$).

EV-Charging Station (Installed & planned)		
Location	Comment	Number
	Total	27
400 Chesley Dr, - Ocean Steel & Construction - SJEnergy - Flo		1
57 Union St, SJEnergy - Flo		1
65 Carleton St, Peel Plaza Parking Garage - SJEnergy - Flo		1
183 Rothesay Ave, Brett Chevrolet Cadillac - SJEnergy - N3 Flo		1
1265 Loch Lomond Road, Loch Lomond Mitsubishi - No network		1
906 Grandview Ave, NBCC Saint John - No network		1
4241 Loch Lomond Rd, Saint John Airport - FLO Addenergy		1
· Rockwood Park	Proposed W1	1
· Uptown SJ	Proposed W1	1
· McAllister Mall	Proposed W1	1
· Lancaster Mall	Proposed W1	1
· Reversing Falls (stone hammer)	Proposed W1	1
· Cruise Ship Terminal (Water Street)	Proposed W1	1
· University / Hospital	Proposed W1	1
· Tucker Park (by UNB and Hospital)	Proposed W1	1
· Irving Nature Park	Proposed W1	1
· Tourism Info Building	Proposed W1	1
· Commercial Drive (East mall)	Proposed W1	1
· Lansdowne Plaza	Proposed W1	1
· Main Street North, and Main Street West, and Waterloo Area (for development)	Proposed W1	1
· Harbour Station	Proposed W1	1
· Port	Proposed W1	1
· Seniors Home	Proposed W1	1
· Refinery/ East Industrial Park	Proposed W1	1
· Dominion Park	Proposed W1	1
· Shamrock Park	Proposed W1	1
· Little River Reservoir	Proposed W1	1



D. PROJECT PORTFOLIO

10. Transportation - Idle-free Policy

(Project #: T2)

Idling refers to running a vehicle's engine when the vehicle is not in motion. Idling occurs when car owner is warming up or cooling down a vehicle, drivers are stopped at a red light, waiting while parked outside a business or residence, or otherwise stationary with the engine running. For the average vehicle with a 3-litre engine, every 10 minutes of idling costs 300 milliliters (over 1 cup) in wasted fuel – and one half of a liter (over 2 cups) if your vehicle has a 5-liters engine.

- For a successful anti-idling campaign includes

 - the adoption of a speed reduction regulation
 - carrying out an awareness-raising campaign
 - the acquisition and installation of permanent signs



Idle-free Policy	Base year : 2015			
	Gasoline		Diesel	
1 Number of units	52 593		3 701	
2 Fuel consumption	68 613 182	liters	32 599 587	liters
4 GHG emissions	167 384	eCO ₂ (t)	87 479	eCO ₂ (t)
5 Average fuel wasted idling	5 654 799	liters	829 024	liters
6 Average fuel economy	8,2%		2,5%	
7 GHG emissions reduction	13 795	eCO ₂ (t)	2 225	eCO ₂ (t)
9 Total GHG Emissions reduction	16 019,68		eCO ₂ (t)	

D. PROJECT PORTFOLIO

11. Transportation - Fuel-efficient driving

(Project #: T3)

Driving can significantly influence fuel consumption. We assume in this project that community drivers, through incentives, promotional campaigns and economic reasons, will gradually integrate these principles of effective behaviour.

According to Natural resources Canada, Adopting these five fuel-efficient driving techniques can reduce fuel consumption and carbon dioxide emissions by as much as 20 percent (20%):

1. Accelerate gently
 2. Maintain a steady speed
 3. Anticipate traffic
 4. Avoid high speeds
 5. Coast to decelerate

Base year : 2015		
Fuel-efficient driving		
1 Community transportation emissions	256 393	eCO ₂ (t)
2 Total community emissions	653 152	eCO ₂ (t)
3 Number of targeted units	5 466	
4 Reduction of GHG emissions (tonnes and %)	4 859	0,74%

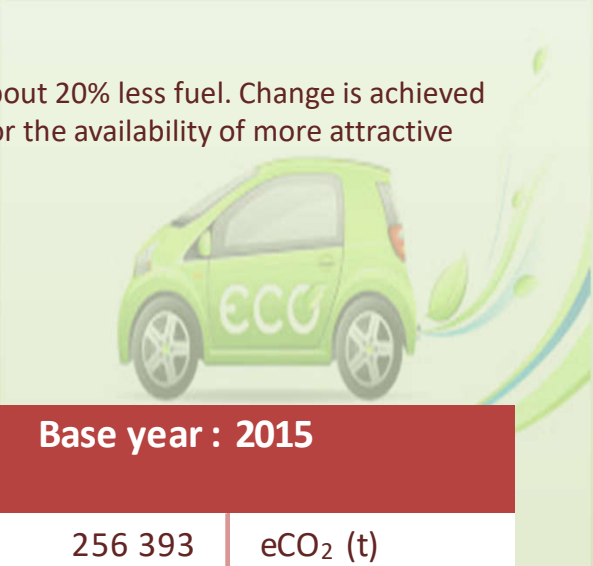


D. PROJECT PORTFOLIO

12. Transportation - Compact vehicles

(Project #: T4)

The community vehicle fleet is becoming more fuel-efficient and fuel-efficient, consuming about 20% less fuel. Change is achieved through targeted incentives, public awareness, a gradual change in transportation patterns, or the availability of more attractive business models.



Base year : 2015		
More efficient & compact vehicles		
1 Community transportation emissions	256 393	eCO ₂ (t)
2 Total community emissions	653 152	eCO ₂ (t)
3 Number of targeted units	2568	
4 Reduction of GHG emissions (tonnes and %)	1631	0,25%

D. PROJECT PORTFOLIO

13. Renewable Energy Production – District Energy System

(Project #: RE1)

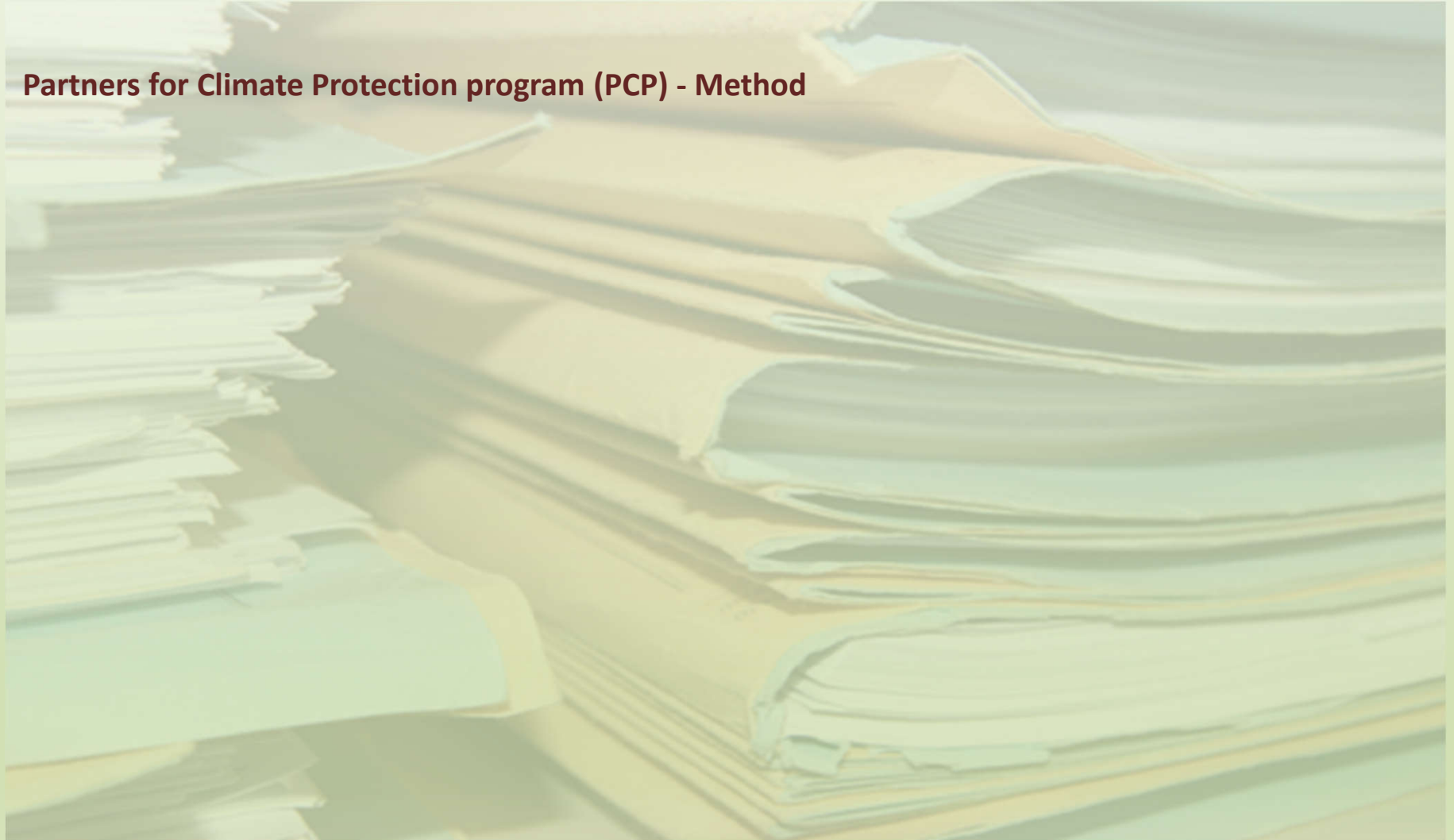
The City of Saint John aims to take leadership in terms of sustainable energy by implementing and managing sustainable energy policies and measures, with the goal of reducing green house gas emissions, reducing energy costs, and improving the efficiency of the City’s infrastructure.

The City of Saint John isn’t focused solely on operations. The policies and measures are also intended to affect the wider community. For instance, Brunswick Square, St. Joseph’s Hospital and other public buildings will be part of the district energy project, which takes thermal energy that’s a by-product of industry and turns it into an efficient way to heat buildings.

Base year: 2015		Target Year				TOTAL
District Energy System		2025	2030	2035	3040	2025-2040
1	Total Energy saved (Gj)	52 988	96 198	61 755	230 000	440 941
2	Total GHG reductions (t eCO2)	3 454	4 747	3 250	11 349	22 800
3	Total GHG reductions per floor area (t eCO2/Sq.Ft)	0,004	0,003	0,003	0,006	0,004



Partners for Climate Protection program (PCP) - Method



Community GHG & Energy Action Plan

PARTNERS FOR CLIMATE PROTECTION PROGRAM (PCP) - METHOD

UMNB CCEI allows participating municipalities to complete the first 3 steps of the Partners for Climate Protection (PCP) program. Steps 4 and 5 consist of the implementation of action plans and the monitoring and reporting of results.



MILESTONE 1 CREATING A GREENHOUSE GAS EMISSIONS INVENTORY AND FORECAST

A greenhouse gas inventory brings together data on community and municipal energy use and solid waste generation in order to estimate greenhouse gas (GHG) emissions in a given year. The forecast projects future emissions based on assumptions about population, economic growth and fuel mix.



MILESTONE 2 SETTING AN EMISSIONS REDUCTIONS TARGET

An emissions reduction target can be established at any time. The target is normally set, however, following the development of an emissions inventory and forecast or after the quantification of existing emissions reduction measures.



MILESTONE 3 DEVELOPING A LOCAL ACTION PLAN

A Local Action Plan (LAP) is a strategic document that outlines how your municipality will achieve its greenhouse gas (GHG) emissions reduction target. The LAP covers municipal operations and the community.

City of Saint John Corporate GHG & Energy Action Plan



January 2019

Realised with the



Consulting team



Financed by



© 2019, Union of Municipalities of New Brunswick. All Rights Reserved.

The preparation of this plan was carried out with assistance from the Green Municipal Fund, a Fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.



CONTENTS

Corporative GHG Inventory & Action Plan

I. Introduction	3
II. Strategy	6
III. Town profile	8
IV. Inventory	11
V. Action Plan	17
VI. Appendix	43
Annexe 1 GHG Inventory (Spreadsheet)	
Annexe 2 GHG Action Plan (Spreadsheet)	
Annexe 3 Municipal Energy Efficiency Program (MEEP)	



I. INTRODUCTION

A. CONTEXT

The simple fact of having asked for a greenhouse gas inventory and an action plan to reduce it already demonstrates the willingness of Saint John's elected officials and municipal leaders to do their part in the protection of air quality and the environment!

Communities across Canada are facing the effects of climate change. Some have to deal with greater droughts, others with more violent storms. For example, shorter and warmer winters accentuate coastal erosion and damage to infrastructure, which is less well protected due to loss of coastal ice. Such repercussions will cost municipalities and their communities millions of dollars and the implementation of adaptation and mitigation measures in and for communities seems inevitable today. Municipal governments have a leading role to play in climate protection. They have direct or indirect control over nearly half of Canada's greenhouse gas (GHG) emissions (350 million tons).

Canada's goal is to reduce its GHG emissions by 30% below 2005 levels under the Paris Agreement.



I. INTRODUCTION

B. UMNb CCEI & PPC

CLIMATE CHANGE AND ENERGY INITIATIVE (CCEI) - Municipalities in New Brunswick are increasingly aware of environmental challenges they face, and are particularly concerned with actual and future impacts of climate change. The City of Saint John joined the Climate Change and Energy Initiative of the Union of Municipalities of New Brunswick, to reinforce its efforts to advance in the Partners for Climate Protection program (PCP). The UMNb initiative fits perfectly in the global and national context of addressing climate change, following the Paris Agreement (COP 21).

The UMNb CCEI aims to offer support to members to realize their corporate and community GHG inventories and Local Action Plan, as well as integrate the QUEST Community Energy Planning approach.

THE PARTNERS FOR CLIMATE PROTECTION (PCP) PROGRAM is a network of Canadian municipal governments that have committed to reducing greenhouse gases (GHG) and to acting on climate change. Since the program's inception in 1994, over 300 municipalities have joined PCP, making a public commitment to reduce emissions. PCP membership covers all provinces and territories and accounts for more than 65 per cent of the Canadian population. PCP is the Canadian component of ICLEI's Cities for Climate Protection (CCP) network, which involves more than 1,100 communities worldwide. PCP is a partnership between the **Federation of Canadian Municipalities (FCM)** and **ICLEI** — Local Governments for Sustainability.

As a member of UMNb, the City of Saint John has agreed to participate in CCEI.

[Link to: ACTION-GHG Saint John](#)

I. INTRODUCTION

C. PARTNERS FOR CLIMATE PROTECTION PROGRAM (PCP) - METHOD

UMNB CCEI allows participating municipalities to complete the first 3 steps of the Partners for Climate Protection (PCP) program. Steps 4 and 5 consist of the implementation of action plans and the monitoring and reporting of results.



MILESTONE 1 CREATING A GREENHOUSE GAS EMISSIONS INVENTORY AND FORECAST

A greenhouse gas inventory brings together data on community and municipal energy use and solid waste generation in order to estimate greenhouse gas (GHG) emissions in a given year. The forecast projects future emissions based on assumptions about population, economic growth and fuel mix.



MILESTONE 2 SETTING AN EMISSIONS REDUCTIONS TARGET

An emissions reduction target can be established at any time. The target is normally set, however, following the development of an emissions inventory and forecast or after the quantification of existing emissions reduction measures.



MILESTONE 3 DEVELOPING A LOCAL ACTION PLAN

A Local Action Plan (LAP) is a strategic document that outlines how your municipality will achieve its greenhouse gas (GHG) emissions reduction target. The LAP covers municipal operations and the community.

II. STRATEGY

A. CITY OF SAINT JOHN - CCEI OBJECTIVE AND STRATEGY

City of Saint John CCEI aims to design and implement projects:

- ✓ Which will be examples and role models for New Brunswick and other communities in Canada;
- ✓ Which will improve the quality of life of communities and can guarantee a better environment and economic benefits (energy savings, income, job creation);
- ✓ Which will develop expertise for UMNb members and for New Brunswick.

The strategy is based on the following principles:

1. Build an action plan and portfolio of environmentally and economically successful projects;
2. Design model and innovative projects;
3. Set ambitious and achievable reduction targets;
4. Build on existing programs and funds: for example, FCM and GMF programs, Environmental Trust Fund, NB Power programs, etc. ;
5. Maximize benefits for participating municipalities, their region.

II. STRATEGY

B. GHG EMISSION REDUCTION TARGET

For PCP and GMF, the GHG emission reduction targets of participating municipalities are set on a voluntary and non-binding basis. It is important that the targets are ambitious while being realistic both in their importance (projected reductions) and in their duration (year of maturity).

Before setting the reduction targets and the action plan timeline, we took into account:

- PCP and GMF recommendations.
- The objectives of the Government of New Brunswick.
- The GHG reduction potential of the municipality and its community.

The PCP and GMF make the following recommendations:

- For the **Corporate component**, that is, the municipality itself, the recommended target is -20% over the reference year, within 10 years. Thus, if the reference year is 2015, the year of maturity will be 2025.
- For the **Community component**, that is to say citizens, businesses, etc., the recommended target is -6% over the base year, within 10 years.

*** The New Brunswick's Climate Change Action Plan "Transitioning to a Low-Carbon Economy" (2017) - The provincial government will:** 31 - Establish specific GHG emission targets for 2020, 2030 and 2050 that reflect a total output of:
a - 14.8 Mt by 2020;
b - 10.7 Mt by 2030; and
c - 5 Mt by 2050.

III. CITY PROFILE

Profile of the municipality and its geographical context

The City of Saint John is located in southern New Brunswick, in the County of Saint John, of which it is the chief City. Saint John is 415 kilometers west-northwest of Halifax, 915 kilometers east of Montreal and 650 kilometers northeast of Boston. Located at the mouth of the Saint John River on the edge of the Bay of Fundy, the City, with its port, occupies an important place in the economy of the Maritimes. Saint John is the oldest incorporated municipality in Canada and the second largest City in New Brunswick after Moncton.

Municipal composition

- 1 mayor, 2 general councillors and 8 neighborhood councillors
- 682 full time employees and seasonal staff and 203 police employees

Municipal infrastructures

- 183 buildings, lighting, water and sewage
- 429 vehicles and motorized equipment

Profile of the community

The population of Saint John in 2016 was 67,575 inhabitants spread over an area of 315.96 km², a density of 213.9 hab./km². It experienced a population decrease of 3,6% from 2011 to 2016. The City had 33,801 private dwellings in 2016, of which 30,208 were occupied by full time residents. 81% of dwellings were built before 1991.

The official languages spoken by the Saint John population are 86% English, 0,15% French, and 13% both French and English.

In Saint John:

- | | | | |
|---------------------|---------------------|--------------------|---------------------|
| • Public library | • Ferry | • Outlets | Skateboarding Parks |
| • University | • City Transit | • Shopping Centers | Play Parks |
| • Elementary School | • Bus Rapid Transit | • Market Square | Sporting Facilities |
| • Middle School | • Taxi Service | • Parks | Golf Courses |
| • High School | • Camping | • Beaches | Aquatic Facilities |
| • Harbor | • Marina | • Ice Rinks | Trails |
| • Airport | | | |

III. CITY PROFILE

CLIMATE CHANGE AND ENERGY INITIATIVE (CCEI)

Municipalities in New Brunswick are increasingly aware of environmental challenges they face, and are particularly concerned with actual and future impacts of climate change. The City of Saint John joined the Climate Change and Energy Initiative of the Union of Municipalities of New Brunswick, to reinforce its efforts to advance in the Partners for Climate Protection Program (PCP).

The UMNb initiative fits perfectly in the global and national context of addressing climate change, following the Paris Agreement (COP 21).

The UMNb CCEI aims to offer support to members to realize their corporate and community GHG inventories and Local Action Plan, as well as integrate the QUEST Community Energy Planning approach.

- Climate Change and Energy Initiative (CCEI) of the Union of Municipalities of New Brunswick, 2017
- City of Saint John, NB, Saint John City Market energy upgrades, 2018
- Asset Management Policy and Strategy, 2017
- Municipal Energy Efficiency Program (MEEP), 2014
- Our Saint John, Integrated Community Sustainability Plan, 2009
- Member – Partners for Climate Protection program, FCM, 2006

The City of Saint John has eight public electric charging stations* on its territory.

*Listed by PlugShare (July 2018)



III. CITY PROFILE

Municipal Energy Efficiency Program (MEEP)

Goals and Objectives:

- ✓ Reduce total energy use and GHG emissions by 35%
- ✓ Assist other municipalities, communities and business sectors using lessons learned
- ✓ Advise Council and Senior Staff on energy policies, standards, guidelines and procurement of environmentally sound equipment
- ✓ Raise energy awareness amongst staff

Provincial, National and International Awards

- Premier's Award - Energy Efficiency 2011- Commercial Energy Efficiency Champion
- Top 13 in North America for Best Energy Management Practices
- Milton F. Gregg Conservation Award
- FCM-CH2M Hill Sustainable Community Award 2008: Energy
- Canadian Association of Municipal Administrators (CAMA) 2004: Environmental Award
- Government of New Brunswick Community Recognition Award
- Premier's Award - Energy Efficiency for New Construction of Police Headquarters and Transit Operations Building
- 2017 Smart Community Award Presented by QUEST

Environmental, Social and Economic Benefits

The City of Saint John has been early adopter of new advances, technologies, and approaches and a strong promoter of efficiency awareness amongst staff and management. The MEEP has proven to be successful in reducing energy costs and GHG emissions, and this success has showcased the City as a leader in Sustainable Energy Management. Following are some of the accomplishment and benefits of the MEEP as of 2015:

- Energy savings of over \$2.3M
- Reduced energy consumption by approximately 8.6M KWH and 49,000 GJ of natural gas and oil/propane, or 30%, from baseline
- Greenhouse gas emissions reduced by 9400 tons of CO₂, or 24%, from baseline, with emission reductions expected to meet and exceed the 35% reduction target by 2020 as indicated in the MEEP objectives
- Help other NB municipalities such as Moncton and Fredericton to undertake their own climate change and energy efficiency initiatives
- Capital Investment of over \$5 million in energy efficiencies measures to reduce GHG emissions

IV. INVENTORY

CORPORATE GHG INVENTORY

IV. INVENTORY

The City of Saint John has joined the Climate Change and Energy Initiatives Program by commissioning UMNb and YHC Environnement to develop an inventory of its GHG emissions that will be used to develop an action plan that includes a suite of measures to control and reduce GHG emissions from their sources.

Saint John's emissions inventory consists of two separate components. The first is emissions from the activities of the municipal administration (the Corporate) and the second covers the entire territory of the Municipality (the Community).

This document covers the Greenhouse Gas Emission Inventory for the 2015 reference year of the Corporate Component of the City of Saint John. The relevant additional elements are detailed in the appendices.

IV. INVENTORY

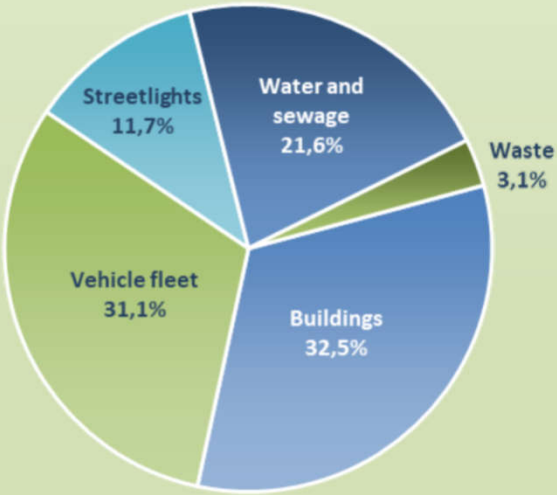
A. SUMMARY

The corporate component consists of five emission sectors which, in Saint John's case, are responsible for approximately 23 776 tons of CO₂ equivalent. The two largest corporate GHG emission sectors are buildings and vehicle fleet. The former produce 32.5% of corporate GHGs, the latter generate 31.1%. Water and sewage is responsible for 21.6% of the Municipality's emissions, streetlights 11.7% and finally 3.1% of emissions are attributed to municipal waste.

TABLE 1 :
CORPORATE GHG EMISSIONS FOR THE BASE YEAR

GHG (tons eCO2)	2015
Buildings	7 737
Vehicle fleet	7 390
Streetlights	2 771
Water and sewage	5 134
Waste	744
Total	23 776
Population	67 575
GHG per capita (teCO2)	0,4

GRAPH 1 :
CORPORATE GHG EMISSIONS BREAKDOWN BY SECTOR (teCO₂)



IV. INVENTORY

A. SUMMARY (continued)

In 2015, the energy consumption of the various corporate activities of the Municipality was the source of 23 031.8 tons of emissions (CO₂ equivalent). For its energy needs, Saint John uses electricity, natural gas, fuel oil and propane for heating and two types of fuels for vehicles. Electricity, natural gas, fuel oil and propane are devoted to the energy demand of buildings and other infrastructure. Gasoline and diesel are used by the fleet of vehicles and various equipment and tools of the municipal administration.

TABLE 2 : CORPORATE GHG EMISSIONS AND ENERGY CONSUMPTION BY TYPE

Energy	2015		(teCO ₂)	%	(Gj)	%
	Volume	Units				
Electricity	48 111 540	kWh	13 471,2	58,5%	173 201,5	53,8%
Natural Gas	971 119	m ³	1 857	8%	38 107	12%
CNG	0	Liters	0	0%	0	0%
Diesel	2 037 035	Liters	5 466,2	23,7%	78 018,4	24,2%
Gasoline	788 719	Liters	1 924,1	8,4%	27 605,2	8,6%
District Energy	0	Gj	0	0%	0	0%
Ethanol Blend (10%)	0	Liters	0	0%	0	0%
Biodiesel	0	Liters	0	0%	0	0%
Fuel Oil	12 767	Liters	34,9	0%	495,4	0%
Propane	180 007	Liters	277,9	1,2%	4 556,0	1,4%
Waste	-		-		-	
Total			23 031,8		321 983,2	

IV. INVENTORY

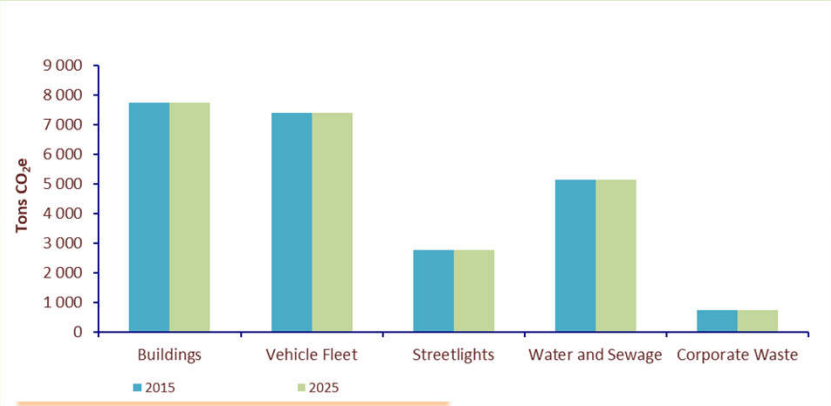
B. CORPORATE EMISSIONS FORECAST

The corporate inventory of GHG emissions is only valid for the reference year. The forecast emissions seek to show how inventory emissions will evolve at the end of the action plan (2025), based on a business as usual scenario (BAU), i.e. without any direct intervention from the decision makers. Factors such as demographic change or economic conditions are taken into account in determining future levels of current emissions.

For Saint John, the business as usual scenario anticipates that, apart from the present action plan reduction, the level of the corporate GHG emissions will remain stable.

TABLE 3 :
CORPORATE EMISSIONS FORECAST BY SECTOR

	Current emissions	% Change Expected**	Emissions in Forecast year
Buildings	7 736,8	0,0	7 736,8
Vehicle Fleet	7 390,3	0,0	7 390,3
Streetlights	2 770,6	0,0	2 770,6
Water and Sewage	5 134,1	0,0	5 134,1
Corporate Waste	744,4	0,0	744,4
Émissions total (t CO ₂ e)	23 776,2		23 776,2



IV. INVENTORY

B. CORPORATE EMISSIONS FORECAST (continued)

The portrait of the corporate inventory of GHG emissions is only valid for the reference year. The projected emissions, seek to present how inventory emissions will evolve at the end of the action plan (2025), based on a business as usual scenario, ie without any direct intervention of the decision-makers. Factors such as demographic change or economic conditions are taken into account in determining future levels of current emissions.

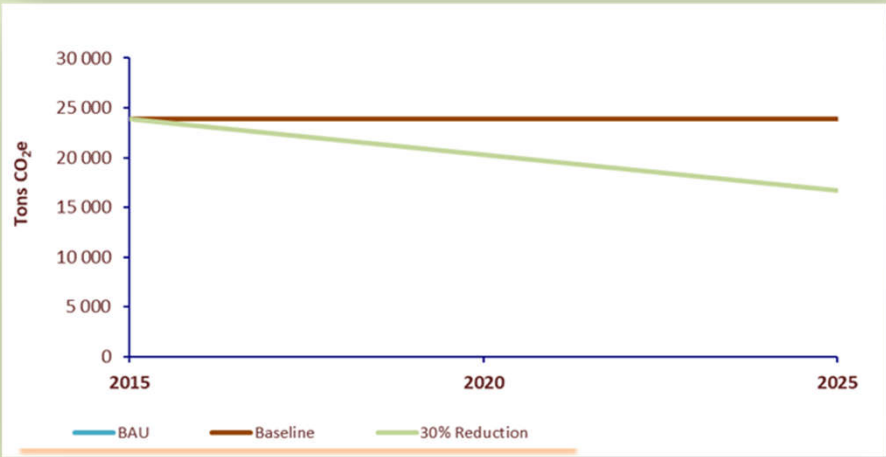
For Saint John, the business as usual scenario anticipates that, apart from the present action plan reduction, the level of the corporate GHG emissions will remain stable. This action plan is expected to bring them down by 30% (Graph 2).

TABLE 4 :
CORPORATE INFORMATION

Base Year	2015
Forecast Year*	2025
Reduction Target by Forecast Year* (%)	30,0%

Baseline: 2015 (Base year)
BAU: Business as usual scenario forecast (when BAU scenario predicts no change in GHG emissions, it equals to Baseline)
2025: Action Plan deadline

GRAPH 2 :
FORECAST OF CORPORATE GHG EMISSIONS UNTIL 2025



GHG & ENERGY ACTION PLAN

V. ACTION PLAN

A. STRATEGY FOR GHG REDUCTION AND PROJECT SELECTION

Corporate Action Plan

As noted in Section II - Strategy, for PCP and GMF, the GHG emission reduction targets of participating municipalities are set on a voluntary and non-binding basis.

Taking into account the context of the Municipality, the corporate plan proposes the achievement of a target of 30% reductions in GHG emissions for 2025 according to the reference year 2015.

TABLE 5 :
OBJECTIVES AND YEAR

Objectives and year set by Saint John:		
Corporate Action plan :		
		• Reduction Target : 30%
		• Base year : 2015
		• Forecast year : 2025

V. ACTION PLAN

A. STRATEGY FOR GHG REDUCTION AND PROJECT SELECTION

Guiding Principles

The approach behind the development of the City of Saint John's Action Plan as part of UMNb's CCEI is to develop an action plan that includes projects which :

- 1) Improve the quality of life of communities (better environment and savings)**
 - ✓ Generate GHG emission reductions that meet the goals and needs of the community ;
 - ✓ Allow as much as possible to generate energy savings that guarantee the sustainability of the actions of the Municipality and its community.
- 2) Use community resources to develop the expertise of UMNb and New Brunswick members**
 - ✓ Optimize the use of community resources and know-how to maximize socio-economic benefits;
 - ✓ Help develop local and regional expertise to increase the knowledge of communities and New Brunswick..
- 3) Will become examples and models for New Brunswick and other communities in Canada**
 - ✓ The projects must enable UMNb member municipalities to stand out/take leadership, to respond to challenges of climate change for New Brunswick communities, to protect the environment, improve the quality of life, and become role models for action and resilience.

V. ACTION PLAN

A. STRATEGY FOR GHG REDUCTION AND PROJECT SELECTION

Global Approach

«GOOD PRACTICE» PROJECTS

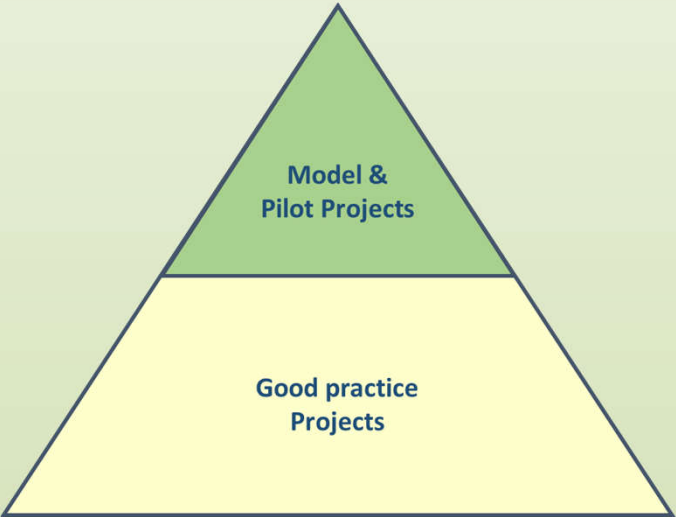
The action plan prioritises projects considered as "good practices". These projects correspond to the application of, for example, measures and technologies supported by the programs of New Brunswick Power, the Government of New Brunswick or Canada.

- ✓ These "Good Practice" projects form the basis of the Action Plan.

MODEL PROJECTS & UMNb PILOT PROJECTS

As part of UMNb's CCEI, the action plan also proposes to municipalities two types of model projects & pilot projects :

- **Transport electrification & EV integration in the community**



V. ACTION PLAN

B. REFERENCE LEVEL AND TARGET

The goal of the City of Saint John's Corporate Action Plan is to reduce greenhouse gas emissions by 30% by 2025 from their 2015 baseline.

For Saint John, the emissions calculated for the year 2015 allow us to estimate the reductions required to reach the target set by the Municipality's action plan to approximately 7 132.9 tons or 30%.

TABLE 6 :
BASELINE AND TARGET

Tons of CO ₂ equivalent		Base 2015	Year 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

30%



V. ACTION PLAN

C. ANALYSIS OF THE PROJECTED RESULTS OF THE ACTION PLAN

Achieving the objective of Saint John's Action Plan would mean that the level of corporate GHG emissions for the year 2025 be at 16 501.7 tons of eq. CO₂. This is a decrease of 7 274.5 tons from the 2015 emissions level of 23 776.2 tons of eq. CO₂. This represents a potential reduction of 30.6%, which is 0.6 percentage points above the target of 30% and 141.6 tons more than the targeted reduction of 7 132.9 tons (see Table 6).

TABLE 7 :
ANALYSIS OF THE OUTCOME OF THE ACTION PLAN

Total reductions		
	eCO ₂ (t)	%
1 Current Emissions (Base year)	23 776,2	100,0%
2 Early action results	2 295,8	9,7%
3 Expected reductions in the Action Plan	4 978,7	20,9%
4 total Reductions (line 2 + line 3)	7 274,5	30,6%
5 Level of anticipated emissions (forecast year) (line 1- line 4)	16 501,7	69,4%
6 Gap with the target	141,6	0,6%

V. ACTION PLAN

D. PROJECT PORTFOLIO – EARLY ACTIONS

Some projects have been completed or initiated by the City of Saint John between the reference year of the inventory (2015) and the year of adoption of the action plan presented (2019). These early actions have contributed to the municipality's effort to reduce corporate GHG emissions. The action plan identified the completion of seven (7) projects whose estimated reductions were estimated at 2 295.8 tons of CO₂ equivalent.

TABLE 8 :

PROJECTS COMPLETED PRIOR TO THE ADOPTION OF THE ACTION PLAN (EARLY ACTIONS)

Projects (Measures, Actions, Technologies)			Total GHG reductions (tons)
Buildings ; Water & Sewage			312,2
1	EA 1 Energy Efficiency (Natural gas)	Multiple buildings	129,2
2	EA 2 Energy Efficiency (Propane)	Buildings (West Garage)	8,8
3	EA 3 Energy Efficiency (Electricity)	Multiple buildings	159,2
4	EA 4 Energy Efficiency (heating oil)	Buildings (Public Garden)	15,0
Vehicle Fleet			73,2
5	EA 5 Optimal Replacement Policy	Number of units 143	57,4
6	EA 6 Saint John Transit - Fleet renewal	Number of units 3	15,8
Streetlights			1 910,4
7	EA 7 Streetlight replacement	Number : 8100	1 910,4
TOTAL			2 295,8

V. ACTION PLAN

D. PROJECT PORTFOLIO – EARLY ACTIONS

1. Description - Early Actions (2016-2019)

The City of Saint John has carried out several measures, actions and realizations. The action plan we are currently working on cannot integrate them all because their positive impact is already pointed out in the 2015 inventory. "Early actions" are those initiated or carried out between the base year of the inventory (2015) and the year of adoption of the action plan (2019).

Buildings (multiple buildings)		Base year : 2015
1 Natural gas use	432 261	m3
2 Cost of natural gas	369 454	\$
3 GHG emissions from natural gas use	826,75	eCO ₂ (t)
4 Savings	15,62	%
5 Natural gas use reduction	67 533	m3
6 GHG emissions reduction	129,17	eCO₂ (t)
7 Annual savings	57 721	\$

Buildings (West Garage)		Base year : 2015
1 Propane use	17 437	Liters
2 Cost of propane	6 975	\$
3 GHG emissions from propane use	26,92	eCO ₂ (t)
4 Savings	32,69	%
5 Propane use reduction	5 700	Liters
6 GHG emissions reduction	8,80	eCO₂ (t)
7 Annual savings	2 280	\$

V. ACTION PLAN

D. PROJECT PORTFOLIO – EARLY ACTIONS

2. Description - Early Actions (2016-2019) (continued)

The City of Saint John has carried out several measures, actions and realizations. The action plan we are currently working on cannot integrate them all because their positive impact is already pointed out in the 2015 inventory, "Early actions" are those initiated or carried out between the base year of the inventory (2015) and the year of adoption of the action plan (2019).

Buildings (multiple buildings)		Base year : 2015	
1	Electricity use	5 495 123	kWh
2	Cost of electricity	467 085	\$
3	GHG emissions from electricity use	1 538,63	eCO ₂ (t)
4	Savings	10,34	%
5	electricity use reduction	568 454	kWh
6	GHG emissions reduction	159,17	eCO₂ (t)
7	Annual savings	48 319	\$

Buildings (Public Garden)		Base year : 2015	
1	Heating oil use	12 767	Liters
2	Cost of heating oil	9 703	\$
3	GHG emissions from heating oil use	34,92	eCO ₂ (t)
4	Savings	43,08	%
5	Heating oil use reduction	5 500	Liters
6	GHG emissions reduction	15,04	eCO₂ (t)
7	Annual savings	4 180	\$

V. ACTION PLAN

D. PROJECT PORTFOLIO – EARLY ACTIONS

3. Description - Early Actions (2016-2019) (continued)

The City of Saint John has carried out several measures, actions and realizations. The action plan we are currently working on cannot integrate them all because their positive impact is already pointed out in the 2015 inventory, "Early actions" are those initiated or carried out between the base year of the inventory (2015) and the year of adoption of the action plan (2019).

Base year : 2015	
Saint John Transit - Fleet renewal	
1 Number de vehicles	3
2 Fuel consumption	33 577 litres
3 Fuel cost	36 169,06 \$
4 GHG emissions	90,10 eCO₂ (t)
5 Average efficiency gains due to renewal of fleet	0
6 Total Reductions in GHG Emissions	15,77 eCO₂ (t)

Base year : 2015			
Optimal Replacement Policy	Gasoline	Diesel	
1 Number de vehicles	109	34	
2 Fuel consumption	305 953 litres	149 691 litres	
3 Fuel cost	313 842 \$	165 789 \$	
4 GHG emissions	746,38 eCO ₂ (t)	401,69 eCO ₂ (t)	
5 Number of vehicles to be replaced	109	34	
6 Average efficiency gains due to renewal of fleet	5,0%	5,0%	
7 Reduction of GHG emissions after conversion	37,3 eCO ₂ (t)	20,1 eCO ₂ (t)	
8 Total Reductions in GHG Emissions	57,40 eCO₂ (t)		

V. ACTION PLAN

D. PROJECT PORTFOLIO – EARLY ACTIONS

4. Description - Early Actions (2016-2019) (continued)

The City of Saint John has carried out several measures, actions and realizations. The action plan we are currently working on cannot integrate them all because their positive impact is already pointed out in the 2015 inventory, "Early actions" are those initiated or carried out between the base year of the inventory (2015) and the year of adoption of the action plan (2019).

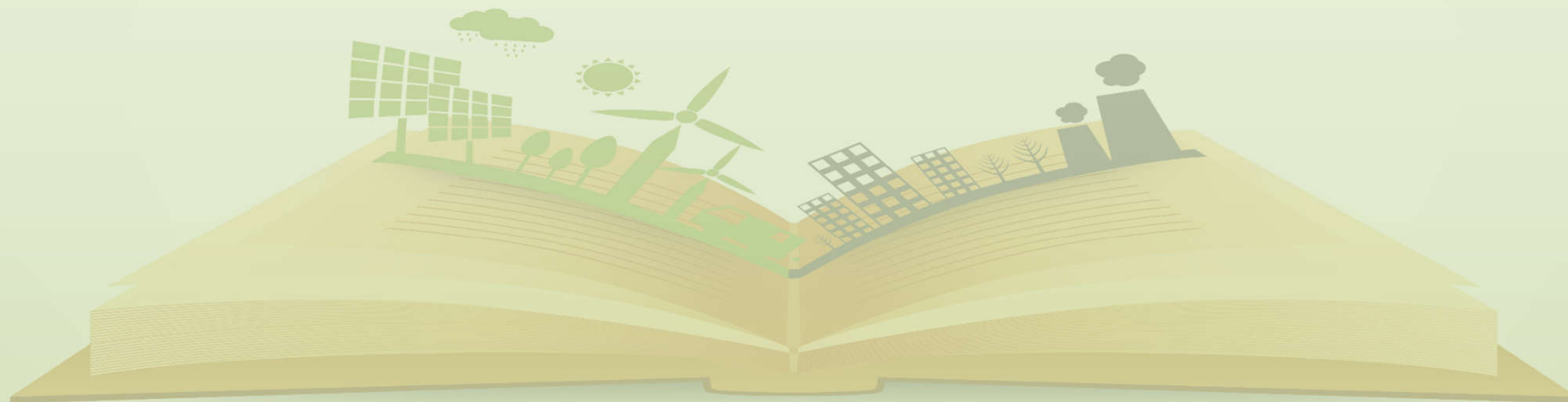
Streetlights		Base year : 2015	
1	Total lighting consumption	9 685 380	kWh
2	Cost of electricity for lighting	823 257	\$
3	GHG emissions from lighting electric consumption	2 712	eCO ₂ (t)
4	Efficiency gains after conversion	70,4%	
5	Annual consumption after conversion	2 862 346	kWh
6	Annual energy savings due to conversion	6 823 034	kWh
7	Annual savings due to conversion (for City of Saint John)	116 500	\$
8	Reduction of GHG emissions after conversion	1910,4	eCO₂ (t)
Note : The capital investment of the conversion is provided by Saint John Energy			

V. ACTION PLAN

D. PROJECT PORTFOLIO

The most recent measures, technologies and programs have been analyzed and evaluated. They form the basis of the action plans produced by YHC Environnement. Then, based on the 2015 inventory data, as well as the characteristics and needs of the City of Saint John, the development of the Project Portfolio was completed.

The action plan contains thirteen (13) projects whose potential reductions are estimated at 4 978.7 tons of CO₂ equivalent (see Table 9).



V. ACTION PLAN

D. PROJECT PORTFOLIO

Project Portfolio Summary

TABLE 9 : CORPORATE PROJECT PORTFOLIO

Projects (Measures, Actions, Technologies)			Total GHG reductions (tons)
Buildings			2 835,2
1	B1 Buildings (Municipal Garages)	Energy Efficiency (Elec. Natural gas & propane) & Renewable Energy	349,4
2	B2 Buildings (Sport & Leisure Buildings)	Energy Efficiency (Electricity & Natural Gas) & Renewable Energy	420,3
3	B3 Buildings (Management & Commissions)	Energy Efficiency (Electricity & Natural Gas) & Renewable Energy	1 969,8
4	B4 Buildings (Fire stations)	Energy Efficiency (Electricity & Natural Gas) & Renewable Energy	95,7
Vehicle Fleet			806,9
5	VF1 Optimal Replacement Policy - rental vehicles	Number of vehicles : 27	4,3
6	VF2 Optimal Replacement Policy	Number of vehicles : 175	97,3
7	VF3 Optimal replacement policy (SJT)	Number of vehicles : 31	442,0
8	VF4 Corporate Idle-free Policy	Number of vehicles : 268	114,5
9	VF5 Telemetry & Idle-free Policy	Number of vehicles : 87	63,0
10	VF6 Electric Vehicle	Number of vehicles : 2	1,5
11	VF7 Electric Vehicle (Saint John Transit)	Number of vehicles : 2	86,7
12	VF8 Hybrid Vehicle	Number of vehicles : 4	2,0
Water and Sewage			1 336,6
13	WS1 Water & Sewage	Energy Efficiency (Electricity)	1 336,6
TOTAL			4 978,7

V. ACTION PLAN

D. PROJECT PORTFOLIO

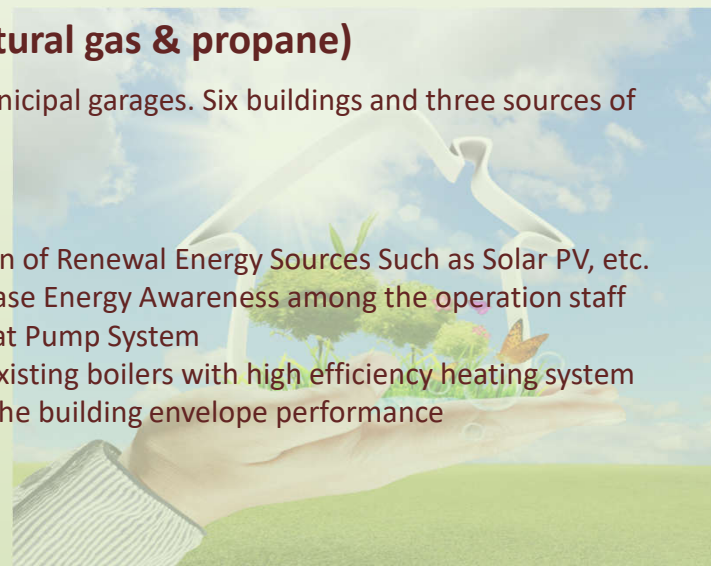
1. Buildings (Municipal Garages) - Energy Efficiency (Elec. Natural gas & propane)

City of St John plans to implement several energy conservation measures at its municipal garages. Six buildings and three sources of energy are targeted.

Among planned actions, there are:

- Upgrade the lighting System to LED
- Upgrade the Energy Management Control System (ECMS)
- Energy Optimization
- Installation of Renewal Energy Sources Such as Solar PV, etc. and Increase Energy Awareness among the operation staff
- Install Heat Pump System
- Replace existing boilers with high efficiency heating system
- Increase the building envelope performance

Overall estimated GHG reductions: 55%



Buildings (Municipal Garages)	Base year : 2015					
	Electricity		Natural Gas		Propane	
1 Energy Use (Consumption)	1 397 644	kWh	114 627	m3	17 437	Liters
2 Energy Costs	118 800	\$	97 972	\$	6 975	\$
3 GHG emissions	391	eCO ₂ (t)	219	eCO ₂ (t)	27	eCO ₂ (t)
4 Average efficiency gains	68	%	34	%	32	%
5 Energy Use reduction	950 500	kWh	38 991	m3	5 500	Liters
6 Total Reductions in GHG Emissions			349	eCO ₂ (t)		
7 Annual savings (2025)			129 380	\$		
8 Capital investment			699 500	\$		
9 Projects' benefits (2019-2025)			322 450	\$		
10 Net Capital investment (Investment - cost reductions)			377 050	\$		

Further technical and financial feasibility study may be required to validate numbers

V. ACTION PLAN

D. PROJECT PORTFOLIO

2. Buildings (Sport & Leisure Buildings) - Energy Efficiency (Electricity & Natural Gas)

City of St John plans to implement several energy conservation measures at its sports and leisure buildings. Multiple buildings, such as arenas, parks, ball fields, etc., and two sources of energy are targeted.

Among planned actions, are:

- Upgrade the lighting System to LED
- Upgrade the Energy Management Control System (ECMS)
- Energy Optimization
- Install Solar Hot Water System

- Installation of Renewal Energy Sources Such as Solar PV, etc. and Increase Energy Awareness among the operation staff
- Install High Efficiency Motors for the Compressors
- Replace existing boilers with high efficiency heating system
- Increase the building envelope performance
- Install Air to Air Heat pump system in some areas

Overall estimated GHG reductions: 49%

Buildings (Sport & Leisure Buildings)	Base year : 2015	
	Electricity	Natural Gas
1 Energy Use (Consumption)	2 751 899 kWh	45 428 m3
2 Energy Costs	233 911 \$	38 827 \$
3 GHG emissions	771 eCO ₂ (t)	87 eCO ₂ (t)
4 Average efficiency gains	49 %	48 %
5 Energy Use reduction	1 352 000 kWh	21 916 m3
6 Total Reductions in GHG Emissions	420,26	eCO₂ (t)
7 Annual savings (2025)	153 260 \$	
8 Capital investment	1 406 400 \$	
9 Projects' benefits (2019-2025)	340 430	\$
10 Projects' savings (2019-2025)	1 065 970	\$

Further technical and financial feasibility study may be required to validate numbers

V. ACTION PLAN

D. PROJECT PORTFOLIO

3. Buildings (Management & Commissions) - Energy Efficiency (Electricity & Natural Gas)

City of St John plans to implement several energy conservation measures at its management buildings. Multiple buildings, such as Tourists information Centre, City Hall, Transit Buildings, etc., and two sources of energy are targeted.

Among planned actions, are:

- Upgrade the lighting System to LED
- Install Solar Lights
- Upgrade the Energy Management Control System (ECMS)
- Installation of Renewal Energy Sources Such as Solar PV, etc. and Increase Energy Awareness among the operation staff
- Install Heat Pump System
- Increase the building envelope performance
- Energy Optimization

Overall estimated GHG reductions: 34%

Buildings (Management & Commissions)	Base year : 2015	
	Electricity	Natural Gas
1 Energy Use (Consumption)	15 623 969 kWh	745 610 m3
2 Energy Costs	1 328 037 \$	637 273 \$
3 GHG emissions	4 375 eCO ₂ (t)	1 426 eCO ₂ (t)
4 Average efficiency gains	37 %	26 %
5 Energy Use reduction	5 722 770 kWh	193 272 m3
6 Total Reductions in GHG Emissions	1 969,82	eCO₂ (t)
7 Annual savings (2025)	730 341	\$
8 Capital investment	3 088 400	\$
9 Projects' benefits (2019-2025)	3 147 899	\$
10 Net Capital investment (Investment - cost reductions)	-59 499	\$
Further technical and financial feasibility study may be required to validate numbers		

V. ACTION PLAN

D. PROJECT PORTFOLIO

4. Buildings (Fire Stations) - Energy Efficiency (Electricity & Natural Gas)

City of St John plans to implement several energy conservation measures at its fire station stations. All eight buildings and two sources of energy are targeted.

Among planned actions, are:

- Install LED lighting and Lighting Control
- Install Heat Pump System at Fire Station #1, #5 and #7
- Install Heat Pump DHW Tanks at Fire Station #1,#8
- Upgrade the ECMS & Energy Optimization
- Install High Efficiency Motors for the Compressors
- Replace Existing Boilers at fire #4,#8 with Biomass or Heat Pump Technology
- Install 40 KW Solar PV system
- Upgrade building envelope
- Install Heat recovery system

Overall estimated GHG reductions: 24%

Buildings (Fire stations)	Base year : 2015	
	Electricity	Natural Gas
1 Energy Use (Consumption)	965 707 kWh	65 453 m3
2 Energy Costs	82 085 \$	55 943 \$
3 GHG emissions	270 eCO ₂ (t)	125 eCO ₂ (t)
4 Average efficiency gains	22 %	29 %
5 Energy Use reduction	211 000 kWh	18 986 m3
6 Total Reductions in GHG Emissions	95,68 eCO₂ (t)	
7 Annual savings (2025)	36 745 \$	
8 Capital investment	273 000 \$	
9 Projects' benefits (2019-2025)	60 825 \$	
10 Net Capital investment (Investment - cost reductions)	212 175 \$	

Further technical and financial feasibility study may be required to validate numbers

V. ACTION PLAN

D. PROJECT PORTFOLIO

5. Transportation - Optimal Replacement Policy - rental vehicles

The City of Saint John, each year, rents some vehicles for seasonal needs.

This rental fleet is regularly renewed with recent models.
The City prioritizes the smallest models that meet his needs.

Optimal Replacement Policy - rental vehicles	Base year : 2015	
	Gasoline	Diesel
1 Number de vehicles	23	4
2 Fuel consumption	27 469 litres	6 912 litres
3 Fuel cost	29 198 \$	7 198 \$
4 GHG emissions	67,01 eCO ₂ (t)	18,55 eCO ₂ (t)
5 Number of vehicles to be replaced	23	4
6 Average efficiency gains due to renewal of fleet	5,0%	5,0%
7 Reduction of GHG emissions after conversion	3,4 eCO ₂ (t)	0,9 eCO ₂ (t)
8 Total Reductions in GHG Emissions	4,28 eCO ₂ (t)	



V. ACTION PLAN

D. PROJECT PORTFOLIO

6. Transportation - Optimal Replacement Policy

The City of Saint John has a fleet replacement policy that aims to optimize fleet size and usage. Vehicles are replaced based on a formula that takes into account:

- Their age
- Their general state
- Their usage (mileage)

In addition, once a vehicle has reached its useful life, the City assesses whether better management of the remaining fleet could prevent its replacement or it could be replaced by a smaller vehicle.

As a result, this project includes a cleaner vehicle purchase policy component.

Optimal Replacement Policy	Base year : 2015	
	Gasoline	Diesel
1 Number de vehicles	121	54
2 Fuel consumption	387 979 litres	372 840 litres
3 Fuel cost	390 823 \$	397 246 \$
4 GHG emissions	946,49 eCO ₂ (t)	1000,49 eCO ₂ (t)
5 Number of vehicles to be replaced	121	54
6 Average efficiency gains due to renewal of fleet	5,0%	5,0%
7 Reduction of GHG emissions after conversion	47,3 eCO ₂ (t)	50,0 eCO ₂ (t)
8 Total Reductions in GHG Emissions	97,35 eCO₂ (t)	

V. ACTION PLAN

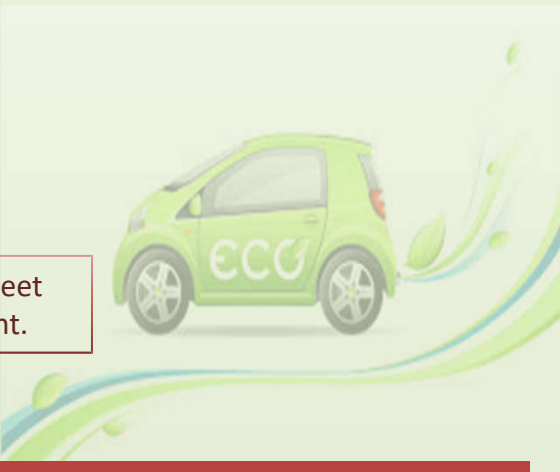
D. PROJECT PORTFOLIO

7. Transportation - Optimal Replacement Policy (Saint John Transit)

The vehicle replacement policy of the municipality is as follows:

- Trucks and light vehicles: after 10 years
- Transit buses : after 17 years

Thus, at the end of this action plan (2015-2025), a large number of the vehicles of the bus fleet will be replaced. In addition, the City plans to optimize the fleet size to make it more efficient.



Base year : 2015	
Optimal replacement policy (SJT)	
1 Number de vehicles	47
2 Number of vehicles to be replaced	31
3 Fuel consumption	941 145 litres
4 Fuel cost	1 013 799 \$
5 GHG emissions	2525,50 eCO ₂ (t)
6 Average efficiency gains due to renewal of fleet	17,5%
7 Total Reductions in GHG Emissions	441,96 eCO₂ (t)

V. ACTION PLAN

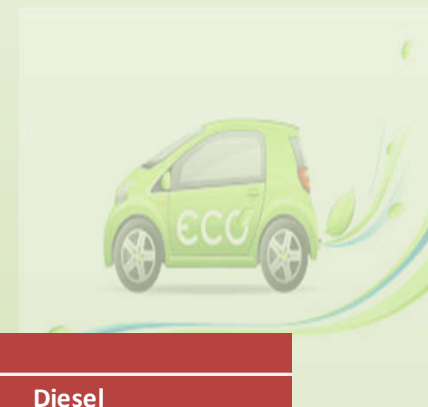
D. PROJECT PORTFOLIO

8. Transportation - Idle-free Policy

Idling refers to running a vehicle's engine when the vehicle is not in motion. Idling occurs when car owner is warming up or cooling down a vehicle, drivers are stopped at a red light, waiting while parked outside a business or residence, or otherwise stationary with the engine running. For the average vehicle with a 3-litre engine, every 10 minutes of idling costs 300 milliliters (over 1 cup) in wasted fuel – and one half of a liter (over 2 cups) if your vehicle has a 5-liters engine.

For a successful anti-idling campaign includes

- the adoption of a speed reduction regulation
- carrying out an awareness-raising campaign
- the acquisition and installation of permanent signs



Corporate Idle-free Policy	Base year : 2015			
	Gasoline		Diesel	
1 Number of units	173		95	
2 Fuel consumption *	491 215	litres	681 259	litres
3 Fuel cost *	506 876	\$	734 112	\$
4 GHG emissions *	1198,33	eCO ₂ (t)	1828,11	eCO ₂ (t)
5 Average fuel wasted idling	25 189	litres	19 760	litres
6 Average fuel economy	5,1%		2,9%	
7 GHG emissions reduction	61,45	eCO ₂ (t)	53,02	eCO ₂ (t)
8 Fuel savings (\$)	25 992	\$	37 644	\$
9 Total GHG Emissions reduction	114,47	eCO₂ (t)		
10 Total fuel savings (\$)	63 636	\$		
11 Saving per tonne of GHG reduced	556	/ t eCO ₂		
* Cumulative effects of replacement policy are roughly taken into account				

V. ACTION PLAN

D. PROJECT PORTFOLIO

9. Transportation – Telemetry & Idle-free Policy Telemetry

Telemetry is a particularly effective measure to improve energy efficiency and the GHG emissions related to vehicle use. This is a management measure that makes it possible to optimize the use of vehicles.

An information gathering module retrieves the electronic data from the vehicle in order to optimize the efficiency of its use by changes in behavior. The management of this information is carried out by means of computer software and enables the vehicle manager to obtain reports according to the parameters he has previously established.

Telemetry combined with idle-free policy allows fuel savings exceeding 10%

Telemetry & Idle-free Policy	Base year : 2015	
	Gasoline	Diesel
1 Number of units	70	17
2 Fuel consumption *	198 858 litres	53 963 litres
3 Fuel cost *	198 094 \$	56 728 \$
4 GHG emissions *	485,12 eCO ₂ (t)	144,81 eCO ₂ (t)
5 Average fuel economy	10,0%	
6 GHG emissions reduction	48,51 eCO ₂ (t)	14,48 eCO ₂ (t)
7 Fuel savings (\$)	19 809 \$	5 673 \$
8 Total GHG Emissions reduction	62,99 eCO₂ (t)	
9 Total fuel savings (\$)	25 482 \$	
10 Saving per tonne of GHG reduced	404,53	/ t eCO ₂
* Cumulative effects of replacement policy are roughly taken into account		

V. ACTION PLAN

D. PROJECT PORTFOLIO

10. Technical Sheet - Electric Vehicle

Electric cars

Use electrical energy to power an electric motor, they also reduce society's dependence on environmentally damaging fossil fuels while lowering greenhouse gas emissions and air pollution. Electric cars are cost effective, good for the environment and deliver great performance.

Fully Electric Cars are powered 100% by electricity and have zero tailpipe emissions.

City of Saint John plans to replace two of its cars by full electric models.

Base year : 2015		
Nissan Leaf (2018) versus Chevrolet Aveo (2010)		
1 Total kilometers travelled	13 317 km	
2 Number of targeted units	2	
3 Energy saved per year (Gj and \$)	22,26	680 \$
4 GHG emissions reduction (tonnes and %)	1,48	68,1%



V. ACTION PLAN

D. PROJECT PORTFOLIO

11. Technical Sheet - Electric Vehicle (Saint John Transit)

Electric cars

Use electrical energy to power an electric motor, they also reduce society's dependence on environmentally damaging fossil fuels while lowering greenhouse gas emissions and air pollution. Electric cars are cost effective, good for the environment and deliver great performance.

Fully Electric Cars are powered 100% by electricity and have zero tailpipe emissions.

Saint John Transit plans to buy two full electric buses for 2020 in replacement of two diesel buses.

Base year :		2015
Diesel vs electric bus		
1 Total kilometers travelled	64 805	km
2 Number of targeted units	2	
3 Diesel use (GJ and \$)	1 613	45 375 \$
4 GHG emissions from diesel use (tons)	113	eCO ₂ (t)
5 Electricity use of replacement buses (GJ and \$)	338	7 987 \$
6 GHG emissions from electricity use (tons)	26	eCO ₂ (t)
7 GHG emissions reduction (tonnes and %)	86,72	76,7%

V. ACTION PLAN

D. PROJECT PORTFOLIO

12. Technical Sheet - Hybrid Vehicle (Saint John Transit)

Electric cars

Use electrical energy to power an electric motor, they also reduce society's dependence on environmentally damaging fossil fuels while lowering greenhouse gas emissions and air pollution. Electric cars are cost effective, good for the environment and deliver great performance.

Hybrid Electric Cars have small battery packs for short all-electric driving distances before a gasoline engine or generator turns on for longer trips.

City of Saint John already has two hybrid cars and plans to add four more hybrid models at its fleet.

Base year : 2015		
Daimler Smart versus Chevrolet Volt (2018)		
1 Total kilometers travelled	31 302	km
2 Number of targeted units	4	
3 Energy saved per year (Gj and \$)	29,32	893 \$
4 GHG emissions reduction (tonnes and %)	1,95	39,4%



V. ACTION PLAN

D. PROJECT PORTFOLIO

13. Water and Sewage - Energy Efficiency (Electricity)

City of St John plans to implement several conservation measures to its Water and sewage facilities some of which are :

- Upgrade the lighting System to LED
- Upgrade the Energy Management Control System (ECMS)
- Energy Optimization
- Investigate new water treatment technology
- Installation of Renewal Energy Sources Such as Solar PV, etc. and Increase Energy Awareness among the operation staff
- Install variable-frequency drive (VFD) where applicable
- Install High Efficiency Motors & Pumps where applicable
- Install Energy Meters
- Develop and Implement a demand response strategies through load shifting, shedding or on site generation

Overall estimated GHG reductions: 27%

Base year : 2015	
Water & Sewage	
1 Electricity use	17 477 448 kWh
2 Electricity cost	1 485 583 \$
3 GHG emissions from electric consumption	4 894 eCO ₂ (t)
4 Efficiency gains	27,3 %
5 Electricity use reduction (kWh)	4 782 000 kWh
6 GHG emissions reduction (tons)	1 336,57 eCO ₂ (t)
7 Annual savings (2025)	478 200 \$
8 Capital investment	3 331 000 \$
9 Projects' benefits (2019-2025)	1 335 000 \$
10 Net Capital investment (Investment - cost reductions)	1 996 000 \$
Further technical and financial feasibility study may be required to validate numbers	

VI. APPENDIX

The methodology and references are available on request.



FINANCE COMMITTEE REPORT

Report Date	January 11, 2019
Meeting Date	January 30, 2019

Chairman Councillor Merrithew and Members of Finance Committee

SUBJECT: Disaster Mitigation and Adaptation Funding

OPEN OR CLOSED SESSION

This matter is to be discussed in open session of Finance Committee.

AUTHORIZATION

Primary Author	Commissioner/Dept. Head	City Manager
<i>Jodie Forgie</i>	<i>Kevin Fudge</i>	<i>John Collin</i>

RECOMMENDATION

It is recommended that this report be received and filed.

EXECUTIVE SUMMARY

The purpose of this report is to provide the Finance Committee a brief overview of a Capital Funding application the City in coordination with Saint John Energy has submitted to Infrastructure Canada to the Disaster Mitigation & Adaptation Fund (DMAF).

PREVIOUS RESOLUTION

N/A

STRATEGIC ALIGNMENT

This report aligns with being fiscally responsible and providing valued service delivery by identifying within the asset management plan municipal infrastructure requirements that can leverage funding available and working collaboratively with Saint John Energy to optimize funding opportunities.

REPORT

The Government of Canada announced a 10 year, \$2 billion national program designed to help communities strengthen their resilience against disasters

triggered by natural hazards and extreme weather events. DMAF will support large-scale infrastructure projects with a minimum cost requirement of \$20 million and will provide 40% funding of costs for municipalities. The application process consisted of two intakes, the Expression of Interest and Full Application.

In 2018 the City experienced a flooding event which resulted in a historic 5.8m flood level (nearly 1.6m above flood levels). This flood event caused significant damage to the municipal infrastructure such as sanitary sewer system back-up, electrical utility infrastructure and coastal structure SeaWall. The DMAF program is the opportunity to obtain assistance with mitigation efforts for future flooding events and sea level rise.

On July 31, 2018, the City submitted an Expression of Interest with Saint John Energy, applying for funding which comprise of 3 components that make up the project. The opportunity to work together was invaluable as on our own neither organization was able to meet the minimum cost requirements. On October 12, 2018 the City was notified that the eligibility requirements were met and the City was invited to submit a full application. On January 11, 2019 the full application was submitted and awarding of funding will be announced in the spring.

The project submitted is intended to mitigate the risk and increase the resiliency of the City's critical infrastructure. The 3 components listed in this project have been determined based on vulnerability risk assessment of where the biggest risk is associated with the effects of climate change due to flooding. Below is a brief description along with cost allocation for each project.

1. Refurbishment of SeaWall (former coast guard site): The SeaWall is a critical infrastructure for any existing and future development in the waterfront area. It has experienced erosion and structural damages due to higher coastal water level. The intent is to reinforce the structure to address the flooding level to a 1-in-100-year event.
2. Pumping Stations: Raise or replace critical municipal infrastructure (nine wastewater pumping stations and one water pumping station) above flood levels to avoid future damages from flooding and to provide continued critical services during flood.
3. Relocation of Critical Waterfront Electrical Utility Infrastructure (Saint John Energy): The existing substations are vulnerable to sea level rise, with the risk of future storm events causing flooding, wave action and salt sprays with the potential to disrupt essential electrical services. Currently, this infrastructure serves more than 7,500 residents and 1,150 businesses, employing more than 25% of the regional workforce. The relocation of this vulnerable electrical infrastructure will also mitigate the risk of future storm events resulting in hydro-carbon and heavy metal

contamination of Long Wharf slip, harming ocean ecosystems, and impacting commercial and first nation's fisheries.

The total costs submitted for the 3 components of the project is \$29.8 million made of Federal share of costs \$11.9 million (\$4.5 million for Saint John Energy and \$7.4 million for the City), Saint John Energy share of costs \$6.8 million and the City share of costs \$11.1 million. The costs and associated cash flow impacts for the City are detailed below:

D.3 (Cash Flow) based on when reimbursement not when incurred	Federal share of cost for the City	City's share of cost	Total Costs
2018-2019 (April 1-March 31)	\$0	\$0	\$0
2019-2020 (April 1-March 31)	\$1,220,000	\$1,830,000	\$3,050,000
2020-2021 (April 1-March 31)	\$2,177,301	\$3,265,951	\$5,443,252
2021-2022 (April 1-March 31)	\$1,157,301	\$1,735,951	\$2,893,252
2022-2023 (April 1-March 31)	\$1,882,602	\$2,823,902	\$4,706,504
2023-2024 (April 1-March 31)	\$340,000	\$510,000	\$850,000
2024-2025 (April 1-March 31)	\$352,000	\$528,000	\$880,000
2025-2026 (April 1-March 31)	\$224,000	\$336,000	\$560,000
Total	\$7,353,203	\$11,029,805	\$18,383,008

In addition to the funding applied for within this application, we are currently working on obtaining additional funding for the SeaWall through the Bilateral agreement with the province. This has not been included within the calculations above as we cannot reasonably conclude at this time that we will receive further funding from the province.

SERVICE AND FINANCIAL OUTCOMES

The City estimated cost for these projects would be \$11,029,085 which would be split between General Fund (\$4,903,805) and Utility Fund (\$6,126,000). If the City is successful at securing funding, staff will notify Council and recommend they be included in future capital budgets.

INPUT FROM OTHER SERVICE AREAS AND STAKEHOLDERS

Input was received from all service areas within the City, Develop SJ and Saint John Energy

ATTACHMENTS

Appendix 1 – Full Application



City of Saint John

Disaster Mitigation Adaptation Fund

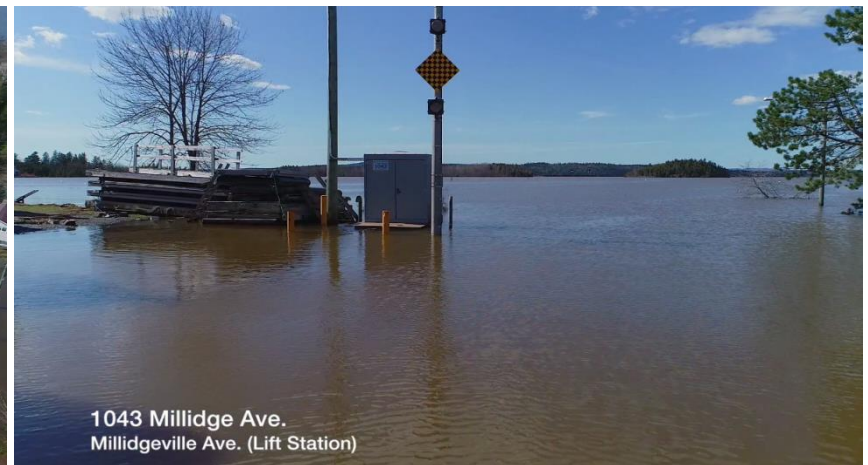


SAINT JOHN

Introduction

- In 2018 the City experienced a flooding event which resulted in a historic 5.8m flood level (nearly 1.6m above flood levels).
- This flood event caused significant damage to the municipal infrastructure such as sanitary sewer system back-up, electrical utility infrastructure and SeaWall (Coast Guard Site).
- Climate change resiliency is required in order for the City to protect vulnerable infrastructure that is susceptible to flooding.

Historic Flood 2018



Disaster Mitigation Adaptation Fund (DMAF)

- The Government of Canada announced a 10 year, \$2 billion national program designed to help communities strengthen their resilience against disasters triggered by natural hazards and extreme weather events.
- DMAF will support large-scale infrastructure projects with a minimum cost requirement of \$20 million and will provide 40% funding of costs for municipalities.
- The application process consisted of two intakes, the Expression of Interest and Full Application.
- The City was successful during the Expression of Interest and invited to submit a Full Application.
- Full Application was submitted on January 11, 2019.

Details of Project Submission

- Collaboration with all City services and Saint John Energy to identify the most vulnerable infrastructure associated with the effects of climate change due to flooding. Three projects were identified:
 - SeaWall Refurbishment (former Coast Guard Site)
 - Pumping Stations (Water and Wastewater)
 - Electrical Substations (Saint John Energy)
- Working with all service areas and Saint John Energy was invaluable in order to meet the minimum cost requirements of \$20 million.

SeaWall Refurbishment Project

- Refurbishment of SeaWall (former coast guard site): The SeaWall is a critical infrastructure for any existing and future development in the waterfront area.
- The SeaWall has experienced erosion and structural damages due to higher coastal water level.
- The intent is to reinforce the structure to address the flooding level to a 1-in-100-year event.
- Total Cost: \$8,173,008
- Federal Share of Cost: \$3,269,203
- City Share of Cost (General Fund): \$4,903,805

Pumping Stations (Water and Wastewater)

- Pumping Stations: Raise or replace critical municipal infrastructure (nine wastewater pumping stations and one water pumping station) above flood levels to avoid future damages from flooding and to provide continued critical services during flood.
- Total Cost: \$10,210,000
- Federal Share of Cost: \$4,084,000
- City Share of Cost (Utility Fund): \$6,126,000

Electrical Substations (Saint John Energy)

- Relocation of Critical Waterfront Electrical Utility Infrastructure (Smythe Street): The existing substations are vulnerable to sea level rise, with the risk of future storm events causing flooding, wave action and salt sprays with the potential to disrupt essential electrical services.
- Currently, this infrastructure serves more than 7,500 residents and 1,150 businesses, employing more than 25% of the regional workforce.
- Total Cost: \$11,407,176
- Federal Share of Cost: \$4,562,870
- Saint John Energy Share of Cost: \$6,844,306

Summary of Cash Flow Requirements

- Total costs submitted for the 3 projects is \$29.8 million
- Total Federal share of costs \$11.9 million (\$4.5 million for Saint John Energy and \$7.4 million for the City).
- The costs and associated cash flow impacts for the City are detailed below:

D.3 (Cash Flow) based on when reimbursement not when incurred	Federal share of cost for the City	City's share of cost	Total Costs
2018-2019 (April 1-March 31)	\$0	\$0	\$0
2019-2020 (April 1-March 31)	\$1,220,000	\$1,830,000	\$3,050,000
2020-2021 (April 1-March 31)	\$2,177,301	\$3,265,951	\$5,443,252
2021-2022 (April 1-March 31)	\$1,157,301	\$1,735,951	\$2,893,252
2022-2023 (April 1-March 31)	\$1,882,602	\$2,823,902	\$4,706,504
2023-2024 (April 1-March 31)	\$340,000	\$510,000	\$850,000
2024-2025 (April 1-March 31)	\$352,000	\$528,000	\$880,000
2025-2026 (April 1-March 31)	\$224,000	\$336,000	\$560,000
Total	\$7,353,203	\$11,029,805	\$18,383,008

Next Steps

- Notification of funding to be announced in Spring of 2019.
- Staff will provide information on results of application and awarding of funding.
- Staff will provide a report and recommendation to Finance Committee on the overall project and funding sources which will be based on results from the application.

Questions?



Please wait...

If this message is not eventually replaced by the proper contents of the document, your PDF viewer may not be able to display this type of document.

You can upgrade to the latest version of Adobe Reader for Windows®, Mac, or Linux® by visiting http://www.adobe.com/go/reader_download.

For more assistance with Adobe Reader visit <http://www.adobe.com/go/acrreader>.

Windows is either a registered trademark or a trademark of Microsoft Corporation in the United States and/or other countries. Mac is a trademark of Apple Inc., registered in the United States and other countries. Linux is the registered trademark of Linus Torvalds in the U.S. and other countries.



Long Term Financial Plan Targets and Principles City of Saint John

January 2019



Purposes of the Presentation

- Staff's Proposed Financial Targets and Principles for the Long Term Financial Plan
- High level discussion of potential impacts on the City's Budget
- Finance Committee's feedback
- Recommend adoption of the Financial Targets and Principles

Saint John – A Sustainable Community

What does it mean to be a Sustainable City?

“A Sustainable City simply means the ability to meet the present and future economic, social and environmental needs of today’s citizens without compromising the ability of future generations to meet their own needs”

From a financial perspective, a sustainable city:

- Provides affordable, reliable and consistent levels of service over the long term;
- Is able to absorb financial shocks caused by economic or natural adversities without external financial assistance (resiliency);
- Is able to pay for its services (full costs - operating as well as capital costs) from its own sources of revenues;
- Does not shift tax and debt burden to future generation by deferring capital costs or borrowing excessively.

Financial Principles

Why Financial Principles are needed?



- Financial principles are cornerstone of a Solid Long Term Financial Plan
- They will help guide Staff in the process of developing a 10 Year Financial Plan
- They help achieve the ultimate goal – **A Financially Sustainable Saint John**

Financial Targets and Principles

TARGETS

- Stable tax rate with a preference for future tax reduction;
- The Budget has to be structurally balanced;
- Revenue increases beyond growth assumptions in the 10-Year Financial Plan will be used for Tax Reduction Strategy.

PRINCIPLES

1. Sustainability

- ***Limit increase in Tax Burden:***
Continued Increases in Property Taxes will strain Taxpayer's Ability to Pay (Saint John has lower median Household Income compared to the surrounding communities and peer cities)



Operating Budget Policy

Financial Targets and Principles

TARGETS

- Reduce Infrastructure Deficit by 25% over 10 years
- Increase Pay-As-You-Go (Capital from Operating) budget by \$1 Mil/year

PRINCIPLES

1. Sustainability:

- *Invest in infrastructure renewal and replacement according to the Asset Management Plan*
- *Continue to address Infrastructure Deficit*



Asset Management Policy



Capital Budget Policy

Financial Targets and Principles

TARGETS

- Introduce Wages Escalation Policy to align wages and benefits increases to revenue growth

PRINCIPLES

1. Sustainability:

- *Align Expenditure Growth to Revenue Growth*



Operating Budget Policy

Financial Targets and Principles

TARGETS

- Reduce Debt Balance by 25% over 10 Years or 2.5% per Year
- Increase contributions to capital reserves by 10% per year

Debt Management Policy

PRINCIPLES

2. Flexibility

- *Active Debt Management to reduce Debt Level.*

3. Vulnerability

- *Adequate reserves to minimize financial risks to tax payers and address Infrastructure Deficit*



Capital Budget Policy



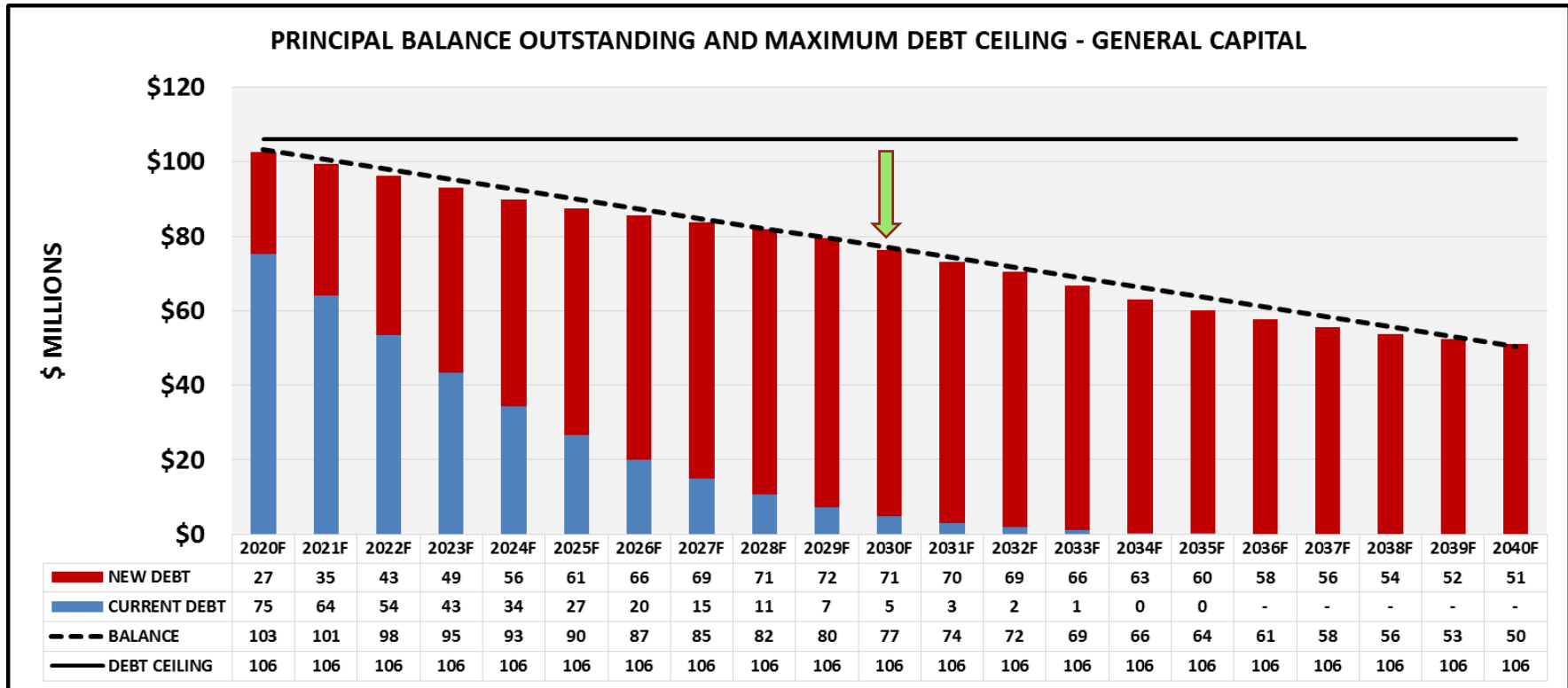
Operating & Capital Reserves Policy



City's Budget Implications as a result of applying the Financial Principles to achieve the Targets

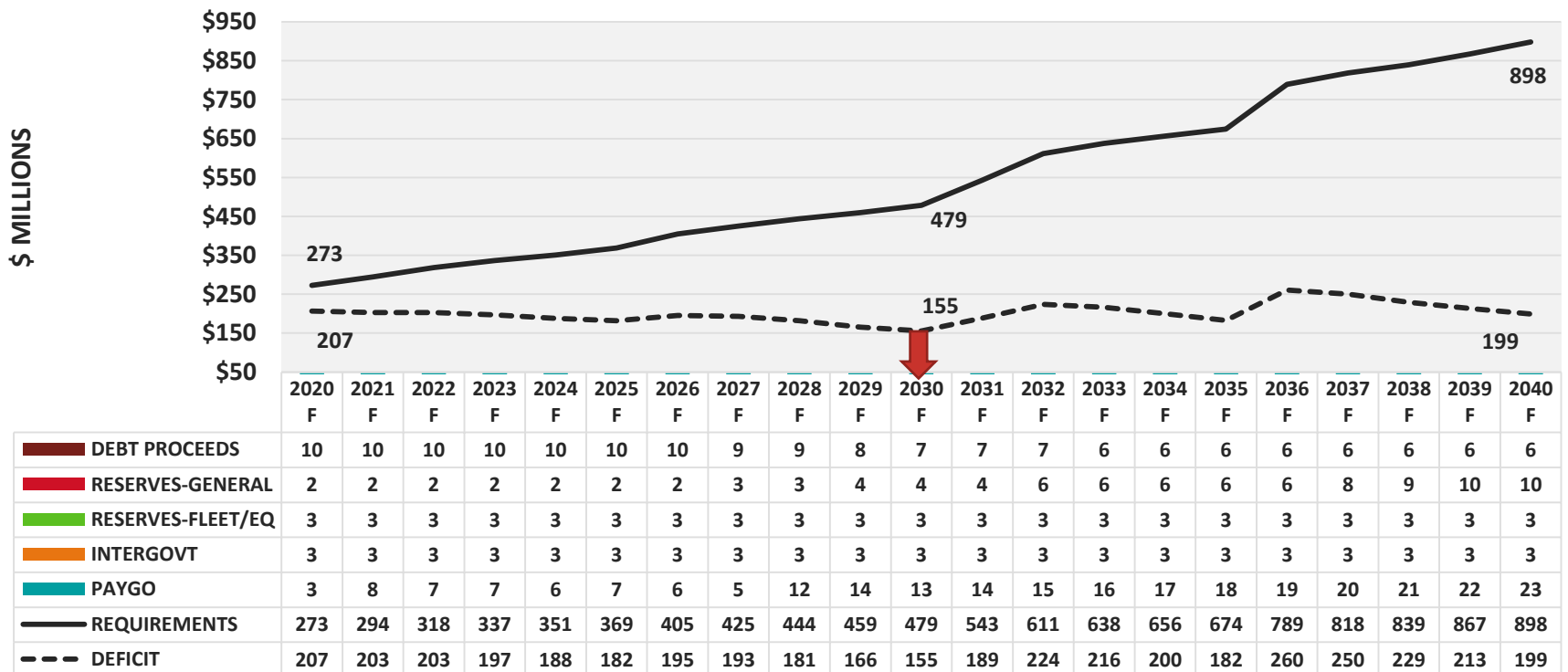
- Reduce budget or Increase revenue (new revenue) by \$15 Mil;
- Increase pay-as-you-go (capital from operating) every year by \$1 Mil per year;
- Increase contribution to capital reserves by 10% per year;
- Reduce Debt Balance by 2.5% every year starting 2019 (Borrowing for capital expenditures will decrease over time from \$10Mil/Year to \$6Mil/Year);
- Introduce Wages Escalation policy to mitigate risk of future structural deficits due to wages escalations exceeding revenue growth

Debt Balance will reduce from \$103 Mil in 2020 to \$77 Mil in 2030 (25% reduction)



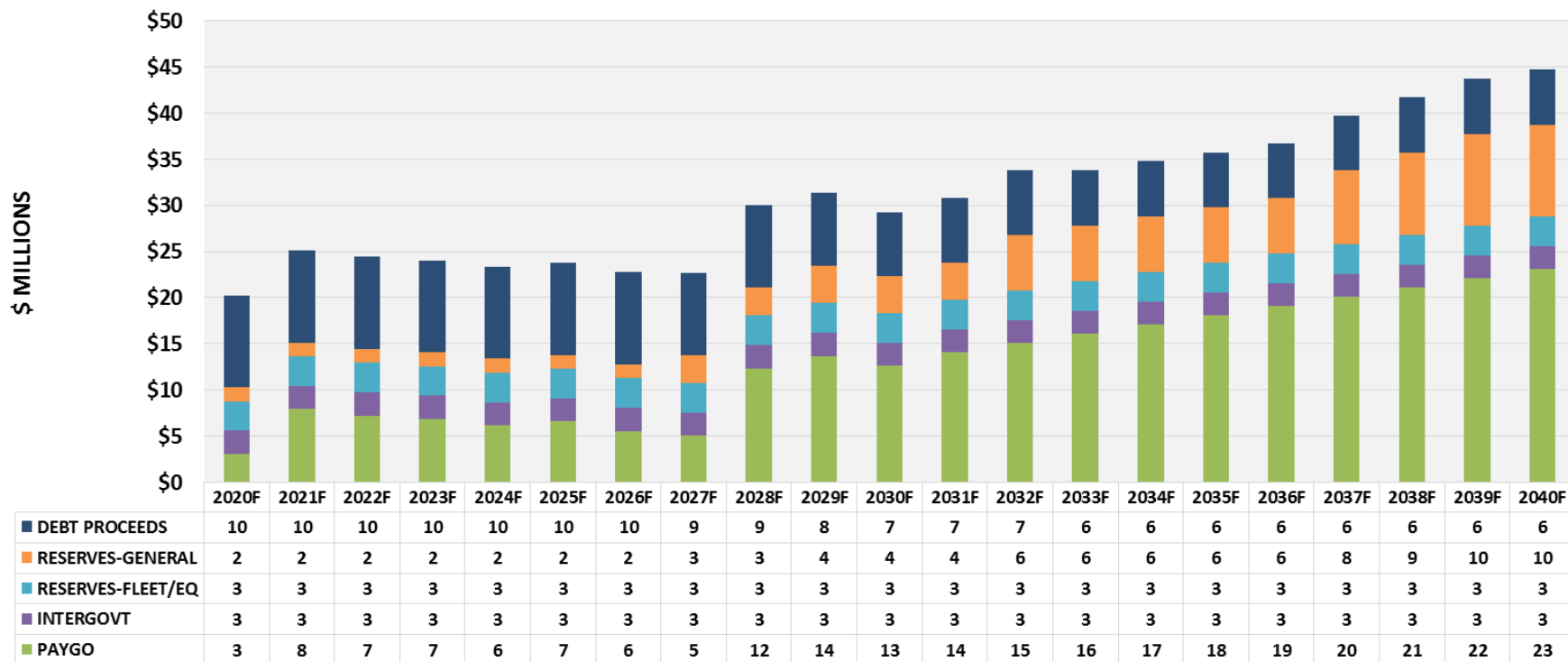
Infrastructure deficit will decrease from \$207 Mil in 2020 to \$155 Mil in 2030 (25% reduction)

CUMULATIVE INFRASTRUCTURE DEFICIT AND ANNUAL FUNDING - GENERAL CAPITAL

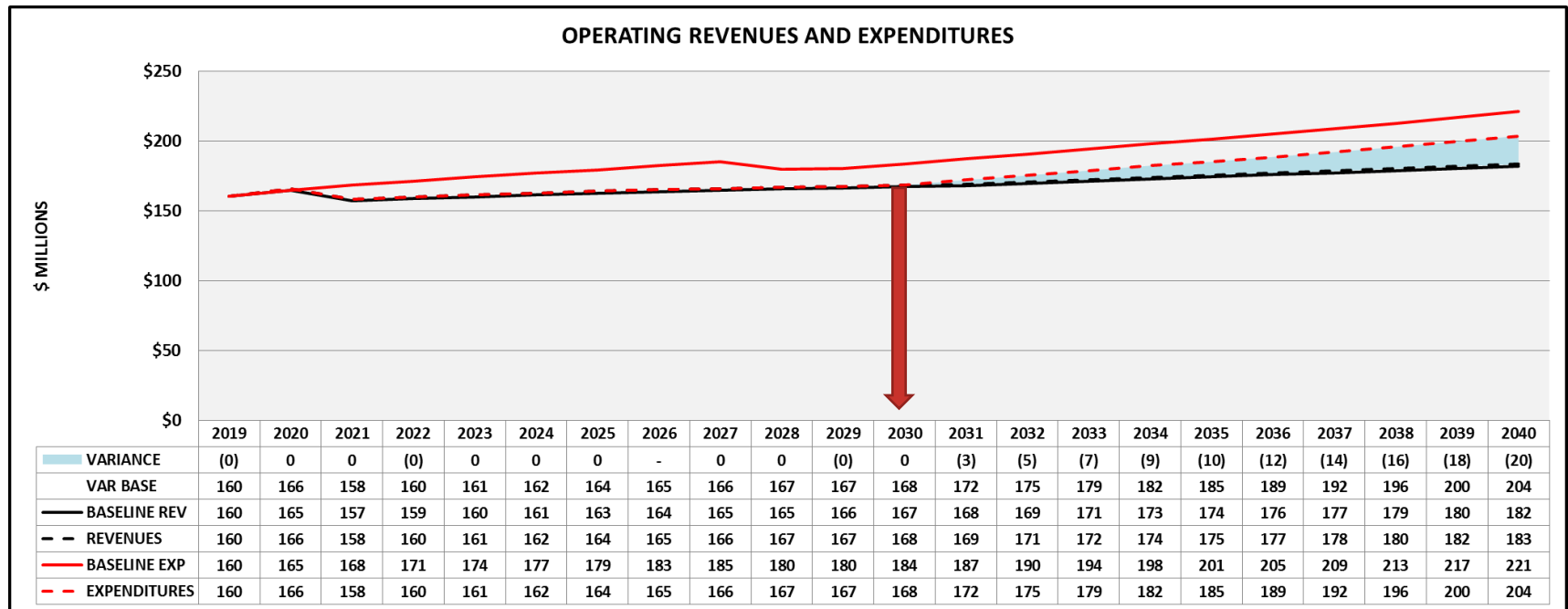


Funding for capital will increase due to increase in pay-as-you-go and the City is less reliant on debt to fund capital expenditures

ANNUAL FUNDING SOURCES - GENERAL CAPITAL



The City will achieve a Structurally Balanced Budget over the next 10 years



Next Step

- Consider recommendations from the Municipal/Provincial Sustainability Report;
- Complete & Report on Public Engagement Results;
- Updated State of the Infrastructure (SOTI) Report;
- Finalize Debt Management and Long Term Financial Plan policies;
- Prepare Wages Escalation Policy for Finance Committee's and Council's approval;
- Prepare 10-Year Operating and Capital Investment Plans.

Recommendation

It is Recommended that the Finance Committee direct staff to incorporate the Financial Principles and Targets as presented in the Draft 10 Year Long Term Financial Plan

Q & A

