



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

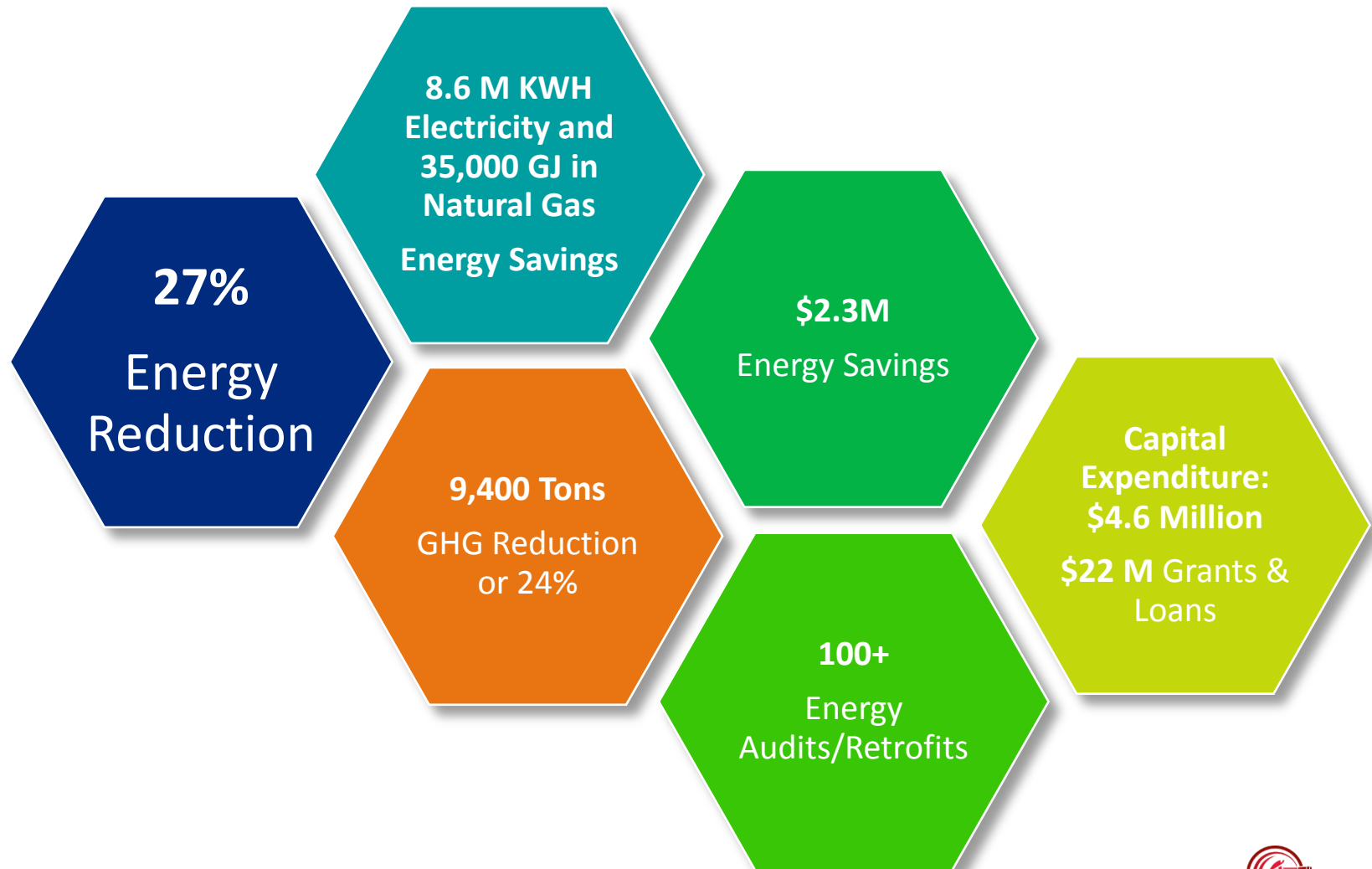
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Objectives of the Presentation

- 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

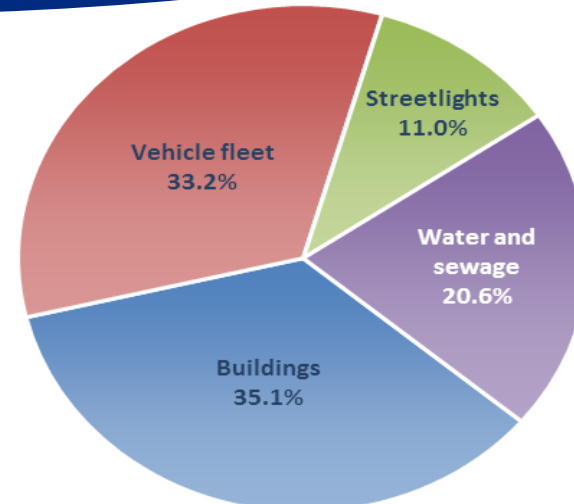
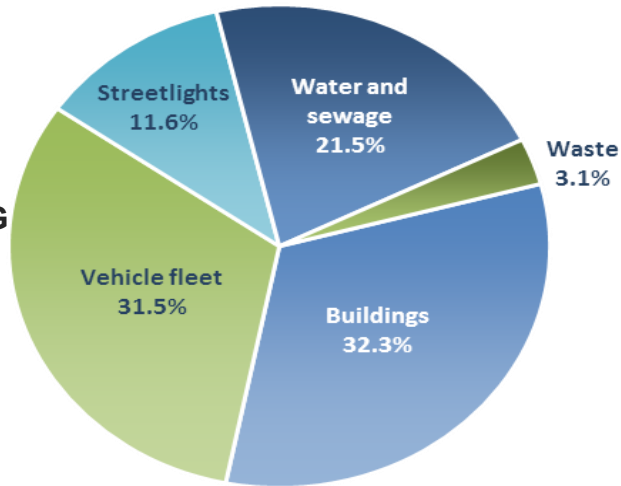
Mission: We are the Centre of Excellence of the Corporate Sustainable Environmental Management. We promote, advise, develop and implement Environmental initiatives on existing and new infrastructures, to lessen the effects of energy use on the environment and operating budget, and to showcase the City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

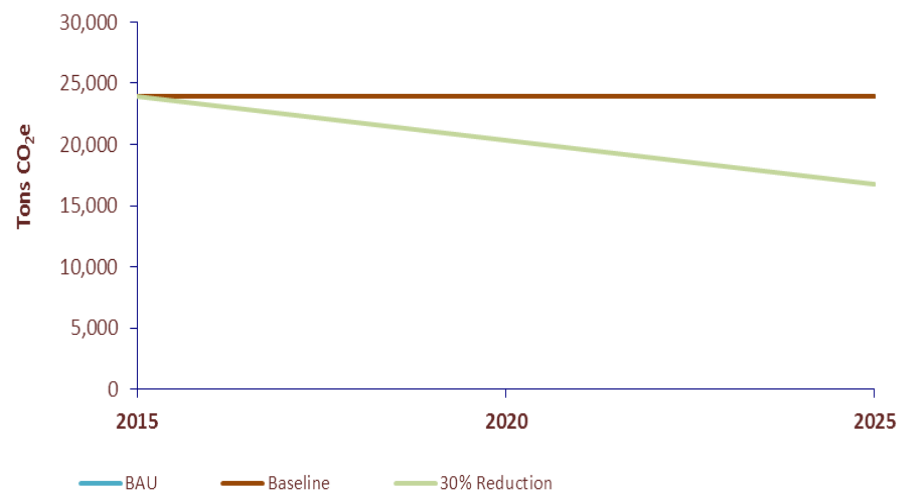
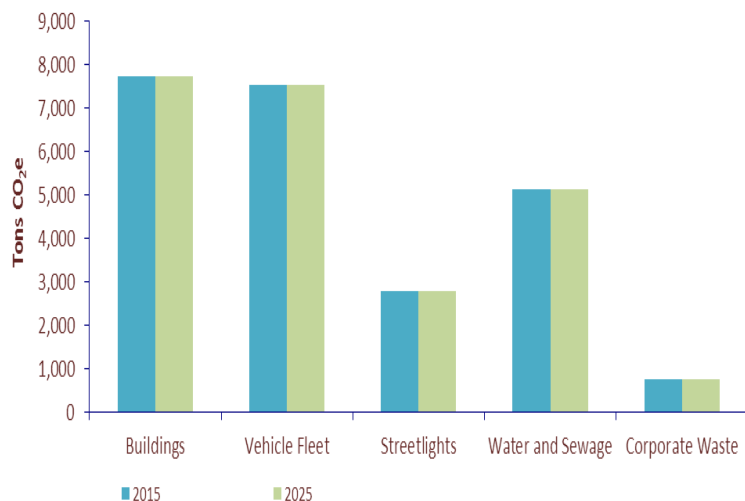


Corporate Energy Consumption Breakdown by Energy Type (GJ)

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)		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



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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



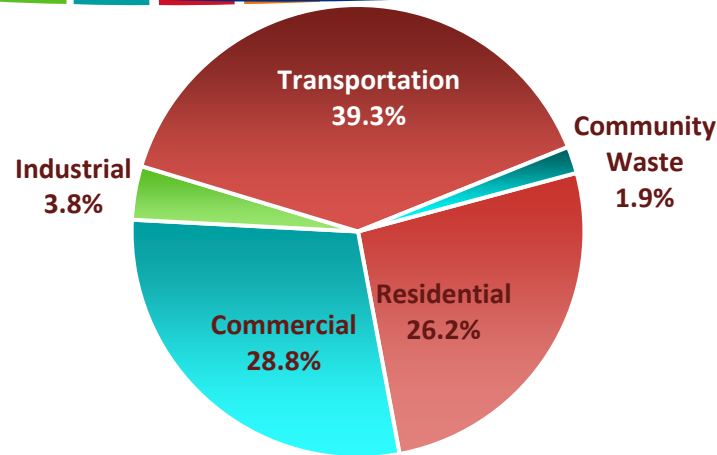
Community GHG & Energy Action Plan Goals

- 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

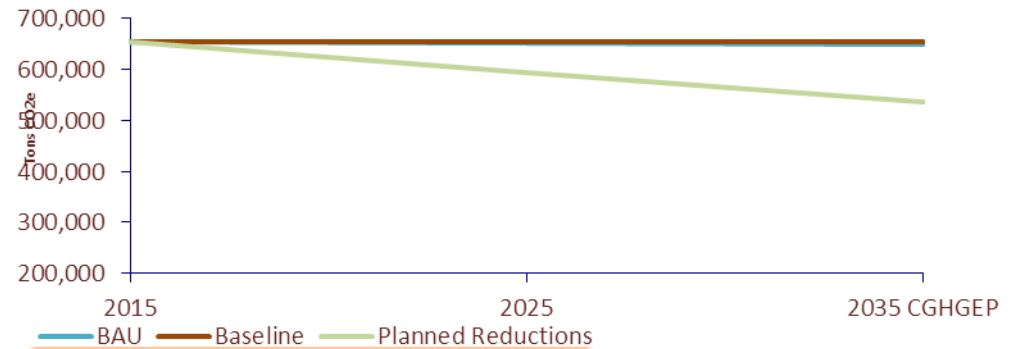
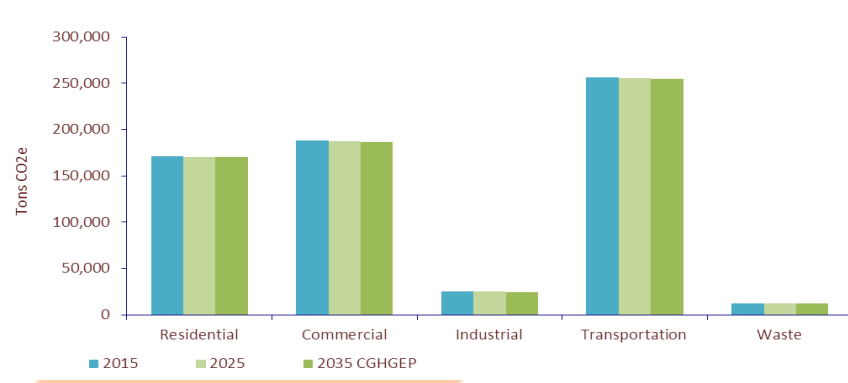
GHG (tons eCO ₂)	2015
Residential	171,288
Commercial	187,917
Industrial	25,020
Transportation	256,393
Community Waste	12,534
Total	653,152
Population	67,575
GHG per capita (teCO ₂)	9.7

• 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
3	Reduction Target		9.0%
4	Forecast emissions (target) (line 1 - line 5)		594,368
5	Total reductions to be achieved (line 1 - line 4)		58,784
6	Total reductions to be achieved (Including BAU Scenario)		56,538



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 !