

Cape Breton Regional Municipality

Municipal Climate Action Plan Update
Workshop

AGENDA

MONDAY, JANUARY 20, 2020

9:30 A.M.

Council Chambers
2nd Floor, City Hall
320 Esplanade, Sydney, NS

Cape Breton Regional Municipality

Municipal Climate Action Plan Update Workshop

Monday, January 20, 2020
9:30 a.m.

AGENDA ITEMS

1. **APPROVAL OF AGENDA:** (Motion Required)

2. **CBRM CLIMATE ACTION PLAN UPDATE:**
 - 2.1 **Municipal Climate Change Action Plan Update:** Wayne MacDonald, Director of Engineering & Public Works; and Michael Ruus, Director of Planning & Development (See page 5) *Appendix A attached separately*

 - 2.2 **CBRM Energy Update 2018-2019:** Ken LeBlanc, Efficiency Nova Scotia

Appendix 2 Documents:
 - 2018-2019 CBRM Energy Update (See page 7)
 - Cape Breton Regional Municipality Energy Plan 2020-2024 (See page 15)
 - Cape Breton Regional Municipality Energy Update 2017 (See page 36)

3. **Honourable Derek Mombourquette, NS Minister of Energy**

4. **Presentation:**
 - 4.1 **Clean Foundation Re: Clean Energy Financing Program:** Katie Giles, Senior Lead, Clean Energy Initiatives (See page 48)

5. **Stakeholders:** (10 minutes max. per presenter)
 - i. Scott Sharplin, Cape Breton Extinction Rebellion (See page 92)

 - ii. Lloyd Allan MacPherson (See page 104)

 - iii. Janet Bickerton, Community Engagement

Continued...

**Municipal Climate Action Plan Update Workshop Agenda
January 20, 2020 (Cont'd)**

Stakeholders (Cont'd)

- iv. Scott Hatcher, BLBR Climate Change Adaptation Scientist - Bras d'Or Lake Biosphere Reserve Association (See page 106)
- v. Charlie MacLean, Co-Chair - Scotia Rail Development Society (See page 107)
- vi. Amanda McDougall, Executive Director - ACAP Cape Breton (See page 109)

6. Written Submissions:

- i. Paul Strome (See page 115)

Adjournment



CAPE BRETON
REGIONAL MUNICIPALITY

ISSUE PAPER

TO: CBRM Council

DATE: January 14, 2020

FROM: Director, Engineering and Public Works & Director, Planning and Development

RE: **CBRM CLIMATE ACTION PLAN UPDATE**

BACKGROUND

In response to increased concern about the sustainability of our communities and infrastructure, the Province of Nova Scotia mandated that all municipalities prepare Municipal Climate Change Action Plans (MCCAP) to meet obligations described in the 2013-14 Gas Tax Agreement and Municipal Funding Agreements.

The CBRM adopted its MCCAP in 2014 to meet these obligations and to:

- Identify past impacts;
- Vulnerable areas for future climate hazards; and
- Provide clear recommendations for adaptation and mitigation measures.

As noted in the plan, with cooperation with other levels of government (fulfilling their environmental mandates and responsibilities), climate change impacts within the municipality can be adapted over time and mitigated.

DISCUSSION

In response to Council's recent request for a report detailing progress made on the MCCAP, a summary of the actionable items has been included with comments and source material from the responsible departments (**APPENDIX A**).

With respect to Energy Efficiency and Energy Efficiency Initiatives for CBRM, CBRM Council has received yearly updates on the work that has been completed through partnerships with

Efficiency Nova Scotia. A high level look into the work completed since 2014 and draft planned mitigations are attached (**APPENDIX 2**).

NEXT STEPS

CBRM administration has been active in pursuing activities identified in the MCCAP. However, some of these items will require municipal regulatory changes over a longer period of time and additional resources for implementation.

CBRM administration recommends continuing with the implementation of the remaining MCCAP actions from the 2014 plan.

Respectfully submitted by:

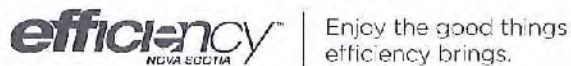
ORIGINAL SIGNED BY

Michael Ruus
Director, Planning and Development

ORIGINAL SIGNED BY

Wayne Macdonald, P.Eng.
Director, Engineering and Public Works

2018 - 2019 CBRM Energy Update



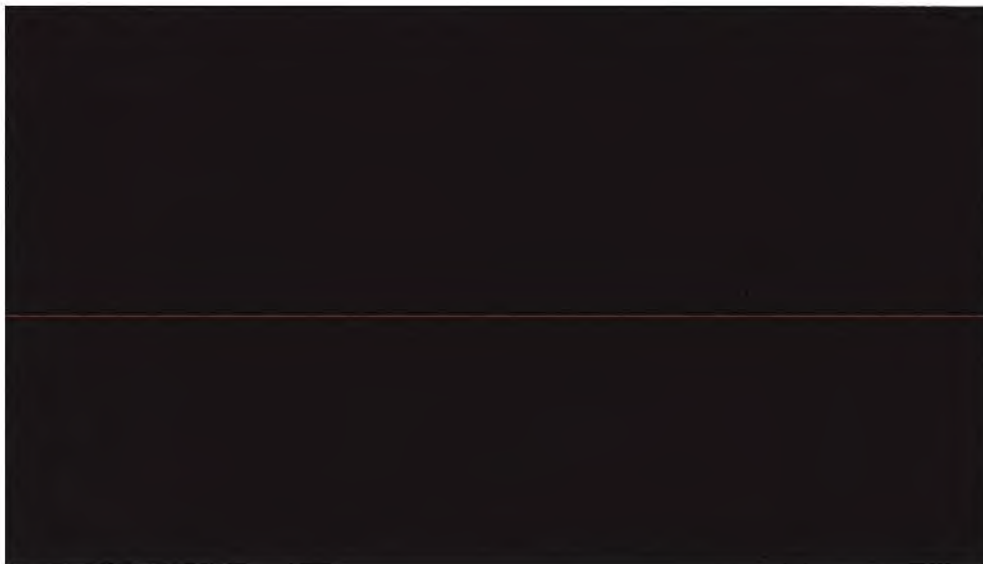
Introduction

- Partnership between CBRM and Efficiency Nova Scotia since 2015
- Objective 1: Reduce energy costs across organization by 15% over 5 year period
- Objective 2: Implement "Strategic Energy Management Plan" to allow for continuous energy improvement: energy monitoring and reporting, energy audits, employee awareness and engagement, capital planning, management assessment, etc.
- Maximize Efficiency Nova Scotia incentives and access "Green" project funding available through federal and provincial programs
- Only implement projects that have strong business case. Ideally, 2 to 3 year return

2018 Efficiency Highlights

- Began conversion of decorative street lighting to LED
- Complete 1st phase of water loss initiative – Sydney and Pottle Lake
- Complete LED retrofit of Glace Bay and Sydney fire station
- Incorporate efficiency standards into new construction documents for Glace Bay Police Station and Bayplex Arena
- Enwave completes feasibility study for District Energy in Downtown Sydney
- Winner of two Efficiency Nova Scotia Bright Business Awards 2018:
 - Engagement Award – CBRM Water Utility
 - Leadership Award – Bill Murphy

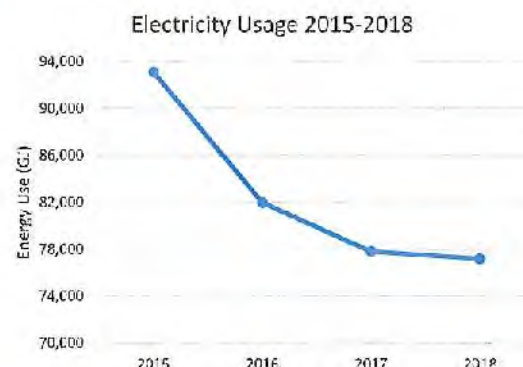
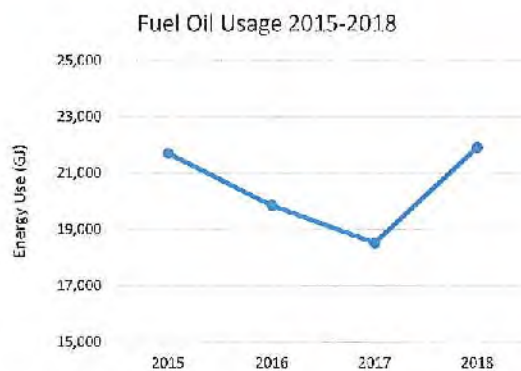
2018 Efficiency Highlights



Energy Use Summary

CBRM Energy Usage Summary: 2015 (Baseline) vs 2018					
Category	Gigajoules (GJ) 2015	Gigajoules (GJ) 2017	Gigajoules (GJ) 2018	% Savings From 2015	% Savings From 2017
Water Treatment Plants	39,522	35,993	37,517	5.1%	-4.2%
Solid Waste Facilities	8,861	7,584	6,702	24.4%	11.6%
Wastewater Treatment Plants	16,156	13,941	14,464	10.5%	-3.8%
Public Works Garages	6,577	5,152	5,616	14.6%	-9.0%
Police Stations	7,452	6,363	6,649	10.8%	-4.5%
Arenas	21,464	14,721	14,997	30.1%	-1.9%
Libraries and Community Services	9,265	8,583	8,647	6.7%	-0.7%
Fire Stations	5,491	5,094	4,938	10.1%	3.1%
Streetlights	44,128	18,412	18,412	58.3%	0.0%
Total	158,916	115,843	117,942	25.8%	-1.8%

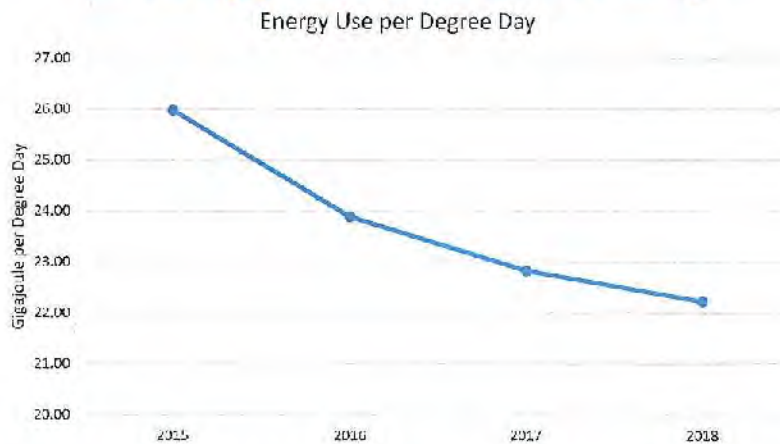
Energy Use Summary



* Does not include streetlight usage

- Fuel oil use increased 18.3% from 2017 → 2018
- Electricity use decreased 0.8% from 2017 → 2018

Energy Use Summary

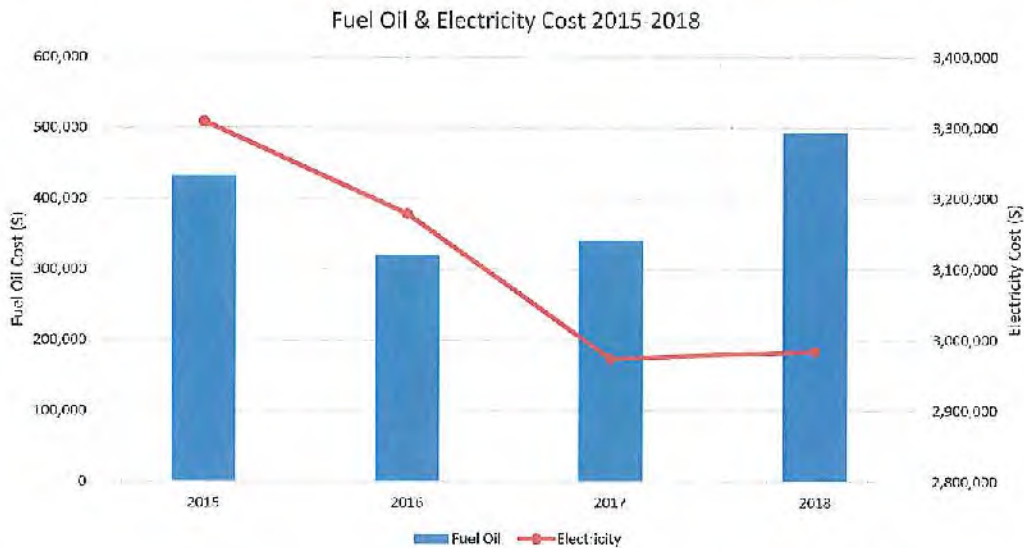


- Degree days are a measure of how cold or warm it is outside
- The more degree days in a given year, the more heating/cooling a building must provide
- Energy use per degree day allows for apple-to-apple comparison despite changing weather conditions
- Energy use per degree day decreased 3.33% from 2017 → 2018

Energy Cost Summary

CBRM Energy Cost Summary: 2015 (Baseline) vs 2018					
Category	Cost 2015	Cost 2017	Cost 2018	% Savings From 2015	% Savings From 2017
Water Treatment Plants	\$1,290,561	\$1,180,673	\$1,169,969	9.3%	0.9%
Solid Waste Facilities	\$346,550	\$299,143	\$265,190	23.5%	11.4%
Wastewater Treatment Plants	\$535,035	\$455,386	\$500,936	6.4%	-10.0%
Public Works Garages	\$227,412	\$181,988	\$201,707	11.3%	-10.8%
Police Stations	\$212,327	\$196,181	\$210,471	0.9%	-7.3%
Arenas	\$819,998	\$622,785	\$614,319	25.1%	1.4%
Libraries and Community Services	\$363,345	\$338,761	\$339,295	6.6%	-0.2%
Fire Stations	\$151,700	\$134,639	\$134,709	11.2%	-0.1%
Streetlights	\$4,240,140	\$2,129,760	\$2,129,760	49.8%	0.0%
Total	\$8,187,068	\$5,539,316	\$5,566,356	32.0%	-0.5%

Energy Cost Summary



*Does not include cost of streetlights

Key Project 2019: Centre200

Completed

- New LED Ice Lighting; saves energy, high quality, met standard for television (i.e. Scotties)
- Efficient Ammonia Refrigeration that heats building with Waste Heat
- HVAC Control Installation
- Approximately \$200,000/yr. in savings

2019 Projects

- Complete LED retrofit of non-ice lighting
- Re-commission building HVAC system for increased energy efficiency and spectator comfort



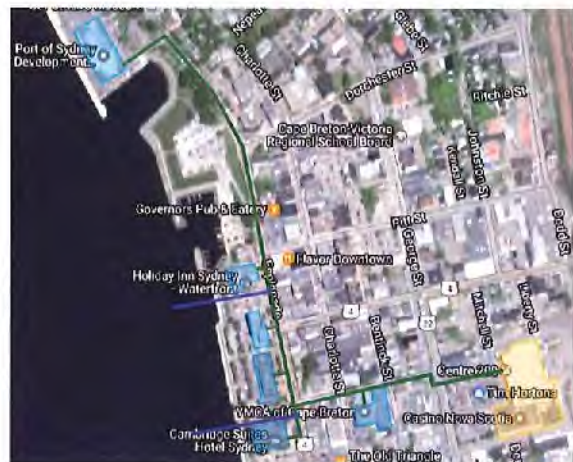
Key Project 2019: Sydney WTP

- Currently has the highest utility costs among CBRM facilities
- HVAC system is at end of life. Opportunity to install high efficiency system to reduce future operating costs
- Electricity costs for well field pumps are ~\$300,000/year. Use of Variable Frequency Drives (VFD) can significantly reduce power and maintenance costs.
- Continue to explore funding options for on-site solar array



Key Project 2019: District Energy

- Private Company, Enwave, is prepared to build and operate district energy facility in downtown Sydney
- Feasibility Study is complete, awaiting submission to CBRM
- Studied multiple options to determine most environmentally friendly and most financially viable.
- Piping treated wastewater from Battery Point to facility downtown is best option financially, biomass facility is best option environmentally.
- Next step, Enwave will attempt to “de-risk” project by securing customers and obtaining additional funding



Key Project 2019: Compost Facility

- Conveyor & Screening System to reduce overage at compost facility (3500 tons of organics are being transported to landfill in Guysborough)
- Upgraded Ventilation Units and building envelope will significantly reduce odors
- Operating savings of ~\$400,000/year
- 3870 tons per year of GHG Savings (equal to removing 695 vehicles from the road)
- Construction beginning in 2019



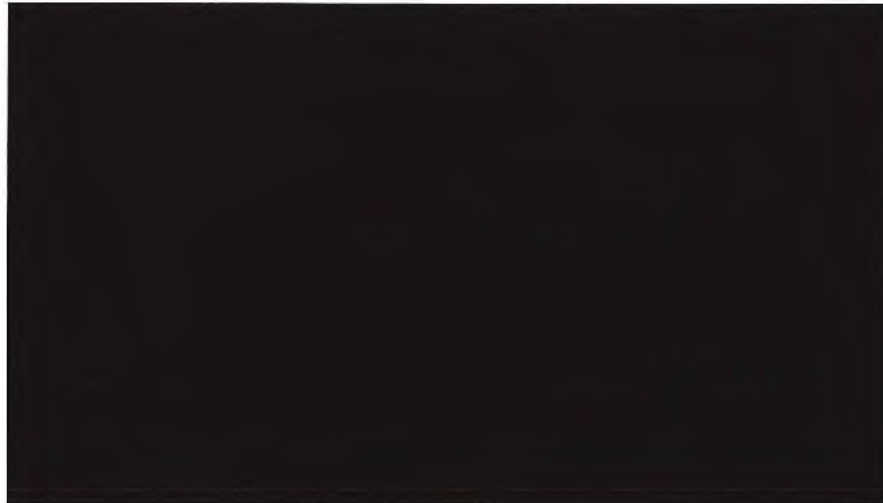
Key Project 2019: Recreation Lighting

- Replaced 60 of 440 decorative lights in 2018. Plan to complete retrofit in coming years
- Replaced lighting at Sydney River Tennis Club with LED in 2018, will complete New Waterford and Cromarty Tennis Clubs early 2019
- Replace lighting at Susan B. MacEachern Ballfield with specialty LED sports lighting in 2019
- Ageing lights result in significant maintenance costs yearly. New fixtures have expected lifetime in excess of 20 years. Maintenance Free!



Key Project 2019: Leak Detection

- Collaborative effort of WTP operators, leak detection crew, and public works, to identify, locate, and repair leaks in timely manner
- \$150,000/year savings to date. Includes utilities, chemicals, and maintenance.
- Expanded to Glace Bay and New Waterford in 2019
- Project will be used as a template for other municipalities throughout Nova Scotia



Questions?

Enjoy the
good things
efficiency
brings.



Cape Breton Regional Municipality

Energy Plan 2020-2024

A Vision

The Cape Breton Regional Municipality Energy Master Plan 2020-2024 builds on 25 years of municipal work to create an energy efficient and environmentally sustainable institution. In 2009, the municipality commissioned CBCL Ltd to conduct an emissions inventory and energy audits of municipal facilities. Following this report CBRM began prioritizing energy efficiency and worked to install energy efficient products with the financial help of Efficiency Nova Scotia's rebate programs. Then in 2014, CBRM commissioned Stantec to complete a Municipal Climate Change Action Plan. Within the recommendations were actions related to energy reduction and efficiency. To address these recommendations the municipality partnered with Efficiency Nova Scotia again to implement the energy manager program and have an ENS employee on-site to work with CBRM staff in pursuit of a common energy reduction goal of 15% within five years.

As seen in this report, these energy reduction targets were met and exceeded within three years. The success of the program is a combination of progressive leadership among management, a desire throughout the organization to incorporate energy efficiency into daily operations, and a willingness from council to invest in energy efficient infrastructure. The program began with the buildings group installing LED lighting throughout the municipality, work that continues to this day. This has expanded to major heat recovery projects at Center 200 and the Miner's Forum, building HVAC automation at the Civic Center, high efficiency pump upgrades at water treatment plants, LED upgrades to municipal street lighting, and the exploration of waste to energy solutions at solid waste and wastewater facilities. Our success to date could not have been accomplished without CBRM staff's commitment to innovation.

With the implementation of the energy manager program in 2015, CBRM began managing and tracking energy use on an on-going and continuous basis by using Portfolio Manager. Portfolio Manager is a free web-based software developed by the United States Environmental Protection Agency (EPA) and Energy Star, while being administered locally by Natural Resources Canada. It is a benchmarking program that allows the user to input utility bills and basic building information such as size, age, and function and then compare energy use to similar building types throughout the country and in similar climate zones. Staff are now able to see sudden spikes in energy use or gradual increases over time, as utility data is uploaded monthly. Reports are easily generated displaying key performance indicators (KPI) such as total energy use, energy use per meter squared (kWh/m^2), and greenhouse gases per meter squared ($\text{tons CO}_2/\text{m}^2$). This data is easily compared to median energy use nationally and gives a good indication of progress to date. These KPI's also allow staff to target facilities that are less efficient so that capital funds achieve maximum energy and utility cost savings.



As the timeframe (2015-2019) for the original goals and targets comes to an end, CBRM is in a good position to build on past successes by developing new efficiency goals and energy reduction targets. This energy plan will provide information regarding actions taken to date and environmental and financial results of the energy program to date. It will also provide ways in which the municipality can reduce energy use in the future and funding opportunities to accomplish these goals. Additionally, the plan will suggest ways CBRM can work with external groups to pursue climate change initiatives within the broader community. Finally, recommended energy and carbon reduction targets will be presented that are both ambitious but attainable.

Actions

As discussed earlier, the Municipal Climate Change Action Plan developed by CBCL in 2014 contained four (4) main climate change mitigation measures to reduce greenhouse gas emissions generated by municipal operations. The following section presents each recommendation and the corresponding actions taken by CBRM staff to date.

Climate Change Mitigation Recommendations:

1. Establish a no-idling policy for vehicles, including contractors

The CBRM fleet policy for use of vehicles states that “No vehicle is to be left running while unattended”. This policy was approved by council February 20th, 1996 and amended March 17th, 2005. The policy is strictly enforced and plays a central role in reducing idling time of municipal vehicles. The average idling time for municipal vehicles in 2018 was 29% of total engine run-time. This idling consumes approximately \$163,000 worth of fuel annually and results in 407 tonnes of CO₂e emissions. According to Municipal Green Fleet Management in Ontario, municipal fleet vehicles idle on average 40% of the total run time. This indicates that CBRM is performing above average regarding overall idling. However, there is still room for improvement and CBRM would benefit environmentally and financially from reduced idling.

2. Reduce energy consumption through use of new technology and additional insulation

CBRM began using new technology to reduce energy consumption prior to the MCCAP. After an energy and emissions inventory was completed by CBCL in 2010, the municipality began converting low efficiency “T12” fluorescent lighting to the newer T8 technology. These fixtures reduced energy consumption by 25%-50%. A standard 4ft T12 commercial lamp uses 40-59W, while a T8 fluorescent uses 28-32W. By 2015, CBRM had engaged Efficiency Nova Scotia to start the energy manager program. At the same time LED lighting was becoming widespread, so with the help of the on-site energy manager, CBRM aggressively pursued LED retrofits as these projects resulted in a 1-2 year payback when accessing ENS rebate programs. To date, CBRM continues to pursue new, more efficient lighting technology. In 2019, the Buildings Maintenance department has replaced several 400W high bay lighting fixtures with 123W LED fixtures with lifespans of over 50 years. These fixtures will not only save the municipality utility costs, but also reduce the maintenance load of staff.

3. Retrofit existing facilities to maximize efficiency

The primary consumer of energy in a building is usually the heating, ventilation, and air conditioning (HVAC) system. But replacing an oil-fired boiler or electric baseboard is much more costly than replacing lightbulbs. However, this has not prevented CBRM from attempting to retrofit existing HVAC systems. Shortly after the submission of the MCCAP, Center200 completed a large scale retrofit of the ice plant. The new infrastructure recycles heat generated from the process of cooling the ice. This recycled heat is used to heat the building. This retrofit reduced CBRM's use of fuel oil by ~200,000 liters annually. There was also a building automation system installed, helping operators ensure the plant continued to achieve optimal performance.



The Central Police station also received significant upgrades to maximize efficiency. A high-performance air handling unit (AHU) was installed along with a building automation system. This system, variable air volume, allows the AHU to provide just the right amount of air at the right temperature to each individual space depending on occupancy and temperature setting within each space. This type of system is very efficient and especially useful in buildings such as a police station because occupants come and go at unpredictable intervals. Intelligent buildings that react to the needs of occupants in real time results in significant energy savings.

The Civic Center continues to undergo significant energy saving upgrades. A new building automation system allows operators to setback the temperature during non-business hours. Outside of 7:00am-5:pm M-F, the building AHU is turned off to conserve energy, and back up sources keep the spaces at a temperature much lower than during business hours. The building is also currently upgrading windows and seals to triple glaze panes. Given the number of windows in the building, this will significantly reduce energy losses.

There have also been on-going small-scale retrofits throughout the municipality. Low flow faucets and shower heads have been installed where applicable. Circulation pumps for heating and domestic hot water have been replaced with variable speed drive motors, ductless heat pumps have been installed to offset electric baseboard, buildings have been re-caulked and sealed to decrease air leakage, and occupancy sensors have been installed in stairwells and bathrooms to reduce the burn time of lighting. Each of these measures on their own result in minor savings, but as a whole they are indicative of a municipality that maximizes efficiency and minimizes utility costs.

4. Ensure any new infrastructure is designed to current standards for energy efficiency

Since the release of the MCCAP, there has been one newly constructed building, and two currently under construction. The newly constructed building is Sydney Fire Station #2 on Victoria Rd. This building was constructed with energy efficiency in mind. It contains two high efficiency heat pumps with a variable air volume system similar to that described at the Central Police Station, it contains a heat recovery unit that recycles treated air to mix with fresh to reduce energy needs, and there is LED lighting throughout the facility. There is also a building automation system that allows maintenance staff off-site to make adjustments as required.

The Miner's Forum, former Bayplex, is currently undergoing major renovations, while a new Glace Bay Police station is also under construction. The Miner's Forum will continue to utilize mine water wells as a geothermal energy source. There will be several heat recovery ventilators in place to recycle heat and minimize energy use. While the back-up heat source will be provided by propane, a cleaner source of fuel than the previous oil-fired heat.

The new Glace Bay Police station included efficiency considerations from the conceptual phase through detailed design. The contractor is required to not only meet current standards for efficiency but exceed them but at least 25%. This figure will be proven through energy modelling software. It is anticipated that this increased efficiency will reduce operating costs by approximately \$150,000 over a 20-year period.

The Numbers

As discussed earlier, CBRM has recognized the energy, carbon, and cost saving potential of new lighting technology. The table below, Lighting Projects Completed Since 2011, presents data related to lighting retrofits since 2011. The data shows that cost savings to date have already surpassed capital costs invested by CBRM. These savings will continue to increase as they are cumulative each year the new technology has been installed. The table on page 5, Streetlight LED Conversion, shows the enormous impact of converting CBRM streetlights to LED. The municipality saves \$1,664,256 annually and has reduced their annual carbon emissions by 4,789 tons of CO₂e. This initiative demonstrates CBRM's willingness to embrace new technology as the municipality collaborated with Nova Scotia Power in a pilot project to install these fixtures. In 2015, when the program began, LED streetlights were an emerging technology, however CBRM recognized their potential environmental and financial impacts and approached NSP to be a part of the first wave of LED retrofits in the province.

Lighting Projects Completed Since 2011 (Part 1)

Location	Year	Energy Savings (kwh)	Capital Cost	ENS Rebate	CBRM Cost	Savings to date	Cumulative kwh saved	GHG Reduction (ton CO ₂ e)
Fire - Dominion	2011	21,000	\$7,890	\$6,310	\$1,580	\$22,680	189,000	125.5
Fire - Sydney Mines	2011	10,000	\$5,275	\$4,220	\$1,055	\$10,800	90,000	59.8
Fire - Sydney	2011	8,500	\$3,600	\$2,550	\$1,050	\$9,180	76,500	50.8
Fire - Glace Bay	2011	23,200	\$11,930	\$9,540	\$2,390	\$25,056	208,800	138.6
PW - Central	2012	52,000	\$21,260	\$17,000	\$4,260	\$49,920	416,000	276.2
PW - East	2012	33,000	\$14,700	\$11,750	\$2,950	\$31,680	264,000	175.3
PW - Transit	2012	51,000	\$11,460	\$9,170	\$2,290	\$48,960	408,000	270.9
PW - New Waterford	2012	22,000	\$8,700	\$6,090	\$2,610	\$21,120	176,000	116.9
Police - Glace Bay	2012	26,700	\$15,070	\$9,040	\$6,030	\$25,632	213,600	141.8
Town Hall - Louisbourg	2012	15,000	\$5,950	\$4,760	\$1,190	\$14,400	120,000	79.7
WWTP - Battery Point	2015	15,000	\$5,500	\$1,640	\$3,860	\$9,000	75,000	49.8
SW - Transfer Station	2015	102,000	\$31,600	\$12,655	\$18,945	\$61,200	510,000	338.6
Library - Sydney	2015	37,700	\$39,000	\$14,470	\$24,530	\$22,620	188,500	125.2
Fire - New Waterford	2015	20,000	\$13,370	\$7,500	\$5,870	\$12,000	100,000	66.4
PW - Central	2015	83,000	\$46,600	\$28,400	\$18,200	\$49,800	415,000	275.6
Fire - Sydney	2015	32,200	\$18,000	\$10,600	\$7,400	\$19,320	161,000	106.9
P&G - NW	2015	9,550	\$15,270	\$2,000	\$13,270	\$5,730	47,750	31.7
PW - NW	2015	19,800	\$11,300	\$6,780	\$4,520	\$11,880	99,000	65.7
Library - GB	2015	16,000	\$13,700	\$5,475	\$8,225	\$9,600	80,000	53.1
SW - Recycling	2015	149,500	\$58,500	\$35,000	\$23,500	\$89,700	747,500	496.3
PW - East Water	2015	13,000	\$11,600	\$4,425	\$7,175	\$7,800	65,000	43.2
Library - NW	2015	44,600	\$24,800	\$15,100	\$9,700	\$26,760	223,000	148.1
PW - North	2015	49,800	\$33,900	\$19,000	\$14,900	\$29,880	249,000	165.3
P&G - Sydney	2015	20,000	\$14,250	\$6,500	\$7,750	\$12,000	100,000	66.4

Fire - Louisbourg	2015	24,800	\$23,200	\$8,100	\$15,100	\$14,880	124,000	82.3
Arena - C200	2016	213,300	\$117,825	\$23,270	\$94,555	\$102,384	853,200	566.5
Arena - Bayplex	2016	45,000	\$26,533	\$5,770	\$20,763	\$21,600	180,000	119.5
Police - Sydney Mines	2016	21,000	\$13,000	\$2,305	\$10,695	\$10,080	84,000	55.8
5W - Transfer Station	2016	40,000	\$22,400	\$11,690	\$10,710	\$19,200	160,000	106.2
Police - G8	2016	47,000	\$28,150	\$15,485	\$12,665	\$22,560	188,000	124.8
Northside Pool	2016	25,000	\$22,400	\$8,800	\$13,600	\$12,000	100,000	66.4
Arena - County	2017	21,000	\$7,000	\$2,103	\$4,897	\$7,560	63,000	41.8
WTP - Sydney	2017	22,000	\$20,050	\$2,200	\$17,850	\$7,920	66,000	43.8
WTP - Louisbourg	2017	15,400	\$14,590	\$1,600	\$12,990	\$5,544	46,200	30.7
Arena - C200	2017	310,000	\$464,400	\$49,280	\$415,120	\$111,600	930,000	617.5
Police - Sydney	2017	36,500	\$10,970	\$2,411	\$8,559	\$13,140	109,500	72.7
5W - Compost	2017	100,000	\$24,810	\$3,380	\$21,430	\$36,000	300,000	199.2
Fire - Sydney #2	2017	40,000	\$20,000	\$4,540	\$15,460	\$14,400	120,000	79.7
Community Center	2017	41,000	\$44,700	\$13,400	\$31,300	\$14,760	123,000	81.7
Decorative Street Lights	2018	35,000	\$25,000	\$6,750	\$18,250	\$8,400	70,000	46.5
Arena - Centennial	2018	50,000	\$24,000	\$5,000	\$19,000	\$12,000	100,000	66.4
Arena - County	2019	20,000	\$8,500	\$4,000	\$4,500	\$2,400	20,000	13.3
WTP - New Waterford	2019	33,000	\$7,587	\$2,536	\$5,051	\$3,960	33,000	21.9
WTP - North Sydney	2019	25,000	\$5,126	\$1,730	\$3,396	\$3,000	25,000	16.6
PW - East	2019	5,000	\$4,700	\$2,310	\$2,390	\$600	5,000	3.3
Parks - Sydney	2019	5,500	\$3,500	\$1,785	\$1,715	\$660	5,500	3.7
PW - Transit	2019	14,500	\$12,750	\$5,100	\$7,650	\$1,740	14,500	9.6
Total		2,064,550	\$1,394,416	\$433,520	\$960,896	\$1,073,106	8,942,550	5,937.9

Streetlight LED Conversion

Year	Fixture	# of CBRM Streetlights	Monthly N5P Rate	Yearly Energy Use per light (kwh)	Total Annual Cost	Total Annual Energy Use	Total GHG Emissions (tons CO2e)
2015	150W Sodium Vapor	17336	\$18	657	\$3,744,576	11,389,752	7,563
2020	55W LED	17336	\$10	241	\$2,080,320	4,177,976	2,774

Total Annual Savings \$1,664,256 7,211,776 4,789

The municipality has also pursued several non-lighting energy saving projects. These encompass a variety of measures specific to operations at individual facilities. Some of the measures include water treatment at CBRM-owned ice rinks, high efficiency HVAC systems, and building automation system re-commissioning. A summary of some of these projects is below.

Non-Lighting Energy Saving Projects

Location	Measure	Year	Energy Savings (kwh)	Capital Cost	ENS Rebate	CBRM Cost	Savings to date	Cumulative kwh saved	GHG Reduction (ton CO2e)
Police - Central	Motor VFD's for AHU	2012	40,994	\$4,520	\$4,520	\$0	\$39,354	327,952	217.76
C200	Water Treatment (De-mineralizer)	2012	60,000	\$31,772	\$6,000	\$25,772	\$57,600	480,000	318.72
County arena	Water Treatment (De-mineralizer)	2012	56,916	\$31,772	\$5,692	\$26,080	\$54,639	455,328	302.34
Centennial Arena	Water Treatment (De-mineralizer)	2012	56,916	\$31,772	\$5,692	\$26,080	\$54,639	227,664	151.17
Police - Central	Controls	2014	91,368	\$106,094	\$10,964	\$95,130	\$65,785	548,208	364.01
Civic Center - Round Rm	VRF Heat Pumps: Round Rm	2015	106,576	\$109,800	\$9,100	\$100,700	\$63,946	532,880	353.83
Solid Waste Compost	VFDs	2016	42,529	\$5,463	\$3,000	\$2,463	\$20,414	170,116	112.96
North Sydney WTP	Tank Insulation	2017	62,261	\$7,500	\$2,717	\$4,783	\$22,414	186,783	124.02
Sydney and PL WTP	Leak Detection	2017	747,364	\$340,566	\$88,800	\$251,766	\$269,051	2,242,092	1488.75
Civic Center	Building Optimization	2017	150,832	\$15,025	\$11,471	\$3,554	\$54,300	452,496	300.46
Sydney WTP	Well Field VFDs	2020	883,722	\$350,000	\$228,372	\$121,628	\$0	0	0.00
Total			2,299,478	\$1,034,284	\$376,328	\$657,956	\$702,142	5,623,519	3,734

Figure 1 below demonstrates CBRM electricity reduction across sectors from 2015-2018. Electricity use was reduced in all but

two sectors; the being police and fire which are the municipalities lowest energy consumers. Overall electricity use fell from 35,218,379 kwh to 26,864,541 kwh; a reduction of 23.7%. Figure 2 shows the rate at which electricity cost and usage was rising prior to 2015 and where CBRM was projected to be in 2018 if actions were not taken. It also shows the increasing gap between a business-as-usual scenario with no energy actions and the results achieved by investing in efficiency.

Figure 1: CBRM Cross-Sector Electricity Usage 2015 vs. 2018

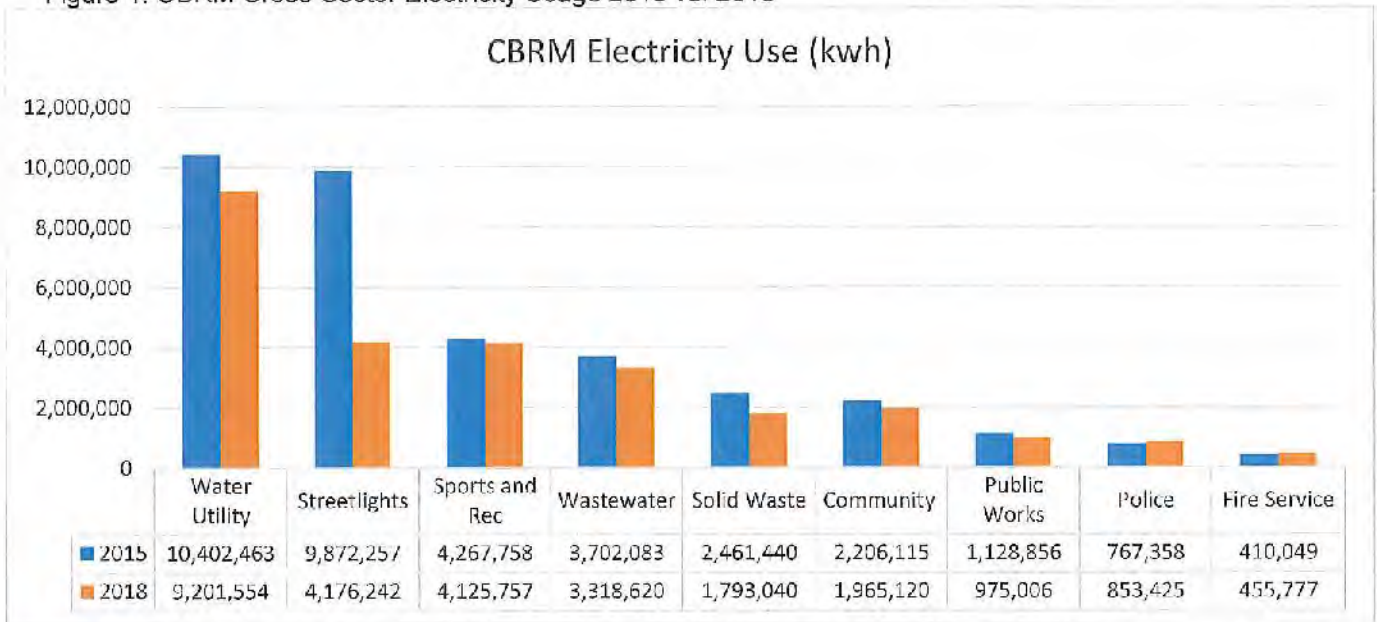


Figure 2: CBRM Overall Electricity Cost and Usage 2008-2018

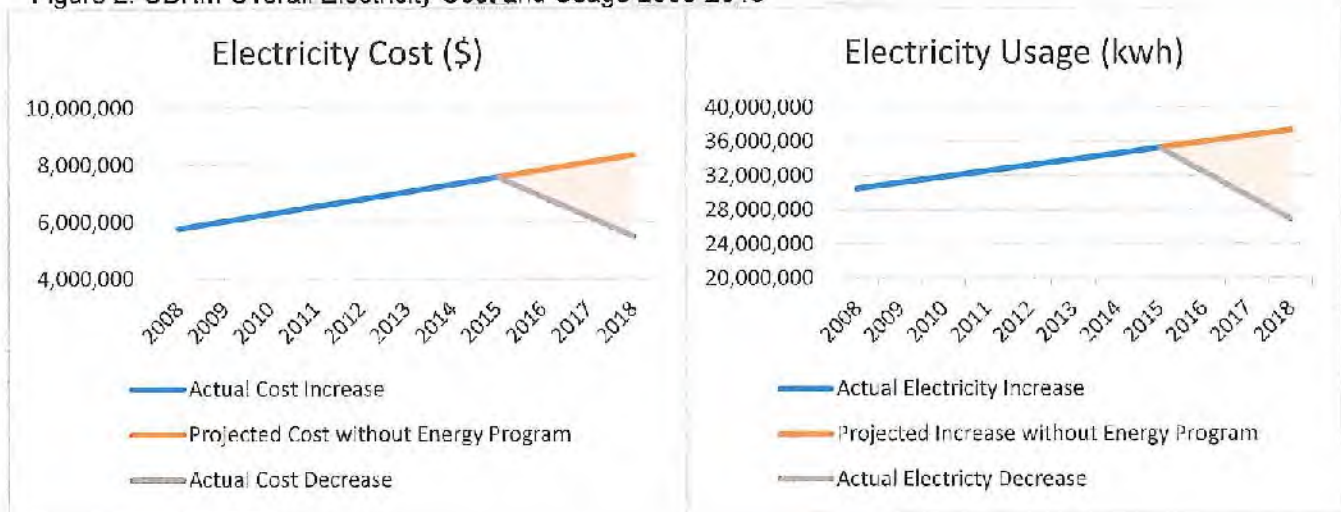


Figure 3 demonstrates the various sources of GHG emissions from CBRM operations. It is apparent that electricity accounts for a great deal of the overall carbon impact, 74.7%. Figure 3 also shows the rate at which emissions have decreased within

CBRM and the impact of energy conservation measures. Finally Figure 4 provides insight into how transportation fuel is used in various CBRM departments. Overall, fuel usage has remained constant since 2015, falling from 1,827,858 liters to 1,827,139, a change of 0.04%. There is good news within that however as Cape Breton Transit has increased its service significantly over this time frame. That means that CBRM was able to maintain current emission levels while providing transportation to citizens that would otherwise be using personal vehicles, thereby indirectly reducing community emissions.

Figure 3: CBRM Cross-Sector GHG Emissions 2015 vs 2018 and GHG Emission change 2008-2018

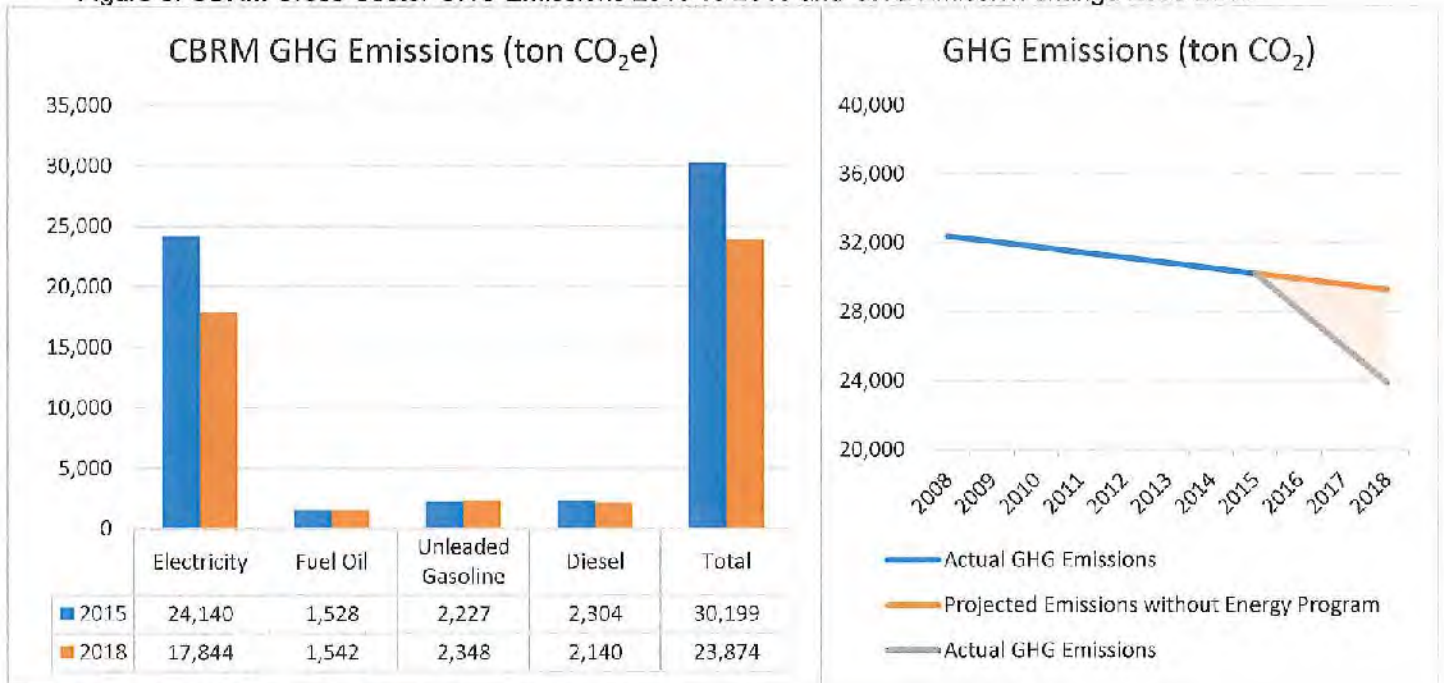
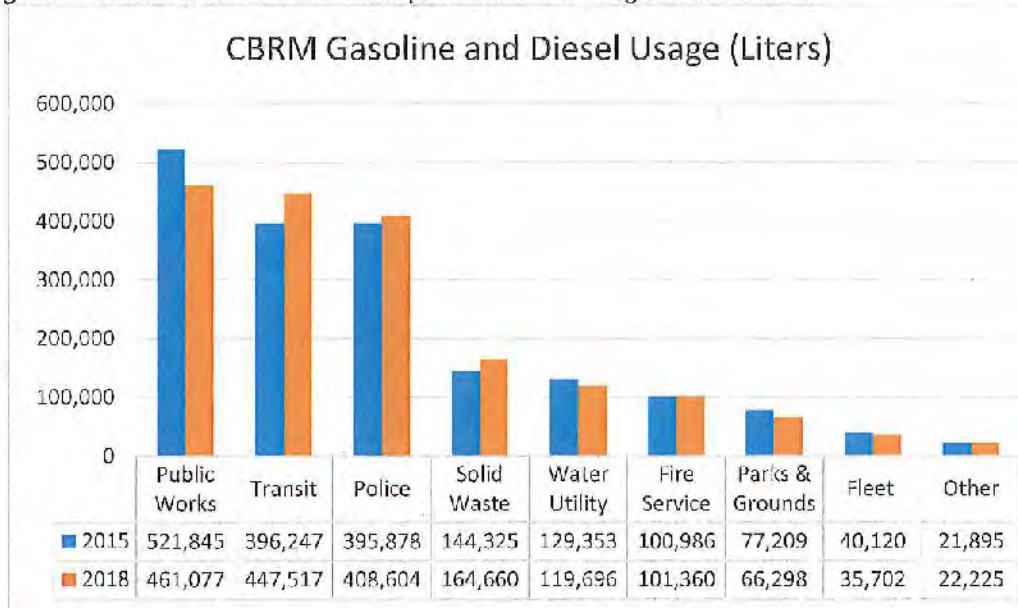


Figure 4: CBRM Cross-Sector Transportation Fuel Usage 2015 vs 2018



Moving Forward

Corporate

The work of CBRM staff has led to exceptional results. Through an awareness and commitment to energy efficiency our energy use has decreased by 14.7%, electricity has been reduced by 24.9% and GHG emissions have reduced by 20.9% since 2015. The main target for this reduction has been electricity. By utilizing Efficiency Nova Scotia rebate programs, CBRM has been able to make great strides within a limited budget. Given the fact electricity still accounts for over 50% of CBRM's energy consumption, there is more that can be done. But we have also seen an increase in energy consumption regarding other sources. These all include the combustion of fossil fuels and should not be ignored if the municipality is going to continue to move toward a greener, more sustainable operation.



Municipal staff have not been idle regarding fossil fuel reduction, however. There are currently several initiatives being pursued that have potential to reduce our overall emissions. A cross-departmental plan to integrate electric vehicles into the municipal fleet is currently underway. Led by the Transit/Fleet division, CBRM has applied for funding of a feasibility study to assess the viability of replacing combustion engine vehicles with EV's in Transit, Fleet, Solid Waste, Building Maintenance, and Public Works. The study would determine the environmental impact,

additional costs of maintenance/training, compare life cycle costs of EV to traditional vehicles, and gauge public perception of electric vehicles and if the municipality should invest in fleet conversion. A study of this kind is essential to ensure that EV integration is done in the most cost-effective manner.

The Water and Wastewater departments have recently been awarded funding for energy reducing projects at Sydney WTP and Battery Point WWTP. The projects will allow both facilities to utilize treated process water for heating and cooling. This will eliminate the use of 100,000 liters of fuel oil per year. The funding will allow the Sydney WTP to install CBRM's first solar array and upgrade to high efficiency pumping. The pumping upgrades will reduce electricity cost by approximately \$150,000 annually.

It is important for the municipality to pursue ambitious projects even if some are not ultimately viable. In 2018, the wastewater department explored the use of anaerobic digestion to treat a waste stream from Battery Point. This process would be able to produce natural gas that could then be used to generate heat and electricity for the facility. Essentially using waste to create energy. It was determined that the low volume of waste made the process very costly and there was very little land available on the property for the necessary expansion. In the end, the project did not move forward, however it was a valuable process for the engineering department to consider alternative uses of municipal waste. Despite the setback, the department continues to pursue ways to process waste in a smart and environmentally sustainable way. This courage to do things differently and the resilience to continue after setbacks will be absolutely vital if CBRM is going to reach its energy goals.

As discussed throughout this report, the CBRM has made great progress toward energy and carbon reduction and continues to pursue a continued downward trend. In five years the municipality has reduced its carbon footprint by 20.9%, its electricity usage by 24.9%, and its overall energy use by 14.7%. This has outpaced the original goal of reducing electricity consumption by 15% set at the beginning of the energy program in 2015. To continue investment and maintain motivation, new targets should be set that are ambitious but also attainable. Due to the expected onboarding of renewable energy in the Nova Scotia electricity grid, CBRM's carbon footprint is expected to reduce to 31.5% of 2015 levels by 2024 simply through the cleaning of the grid by Nova Scotia Power. The municipality also has several projects in design phase that will result in significant energy savings.

On the contrary, CBRM will be constructing several wastewater treatment facilities and will be opening the Miner's Forum in the near future. This will result in additional energy use regardless of efficiency measures taken. Previous targets focused on electricity reduction rather than energy as a whole. However, electrical technology is becoming much more efficient than fossil fuel technology. This is seen in heat pumps vs oil boilers and electric vehicles vs combustion engines. It is likely CBRM will move



toward electrification for its energy sources rather than fossil fuels to achieve increased efficiency, therefore energy reduction targets will be a better representation of success than electricity reduction. "Energy" refers to all of electricity, fuel oil, gasoline, and diesel.

The federal and provincial governments have set ambitious carbon reduction targets. The GoC is attempting to reduce national emissions by 30% from 2005 levels by 2030 and the PNS has recently announced plans to reduce emissions by 53% of 2005 levels by 2030. To achieve these targets, both levels of government have committed significant funding amounts. Some of

these programs include:

- *Investing in Canada Infrastructure Program* → A bilateral agreement between Canada and Nova Scotia providing \$828,493,161 of federal funding for specific infrastructure investment. The agreement also requires PNS to provide additional funding when allocated to municipalities. The municipal funding structure is 40% federal, 33% provincial, and 27% municipal. The specific streams of the agreement include:
 - *Public Transit* - \$289,589,324
 - *Rural and Northern communities* - \$105,743,756
 - *Community, Culture, and Recreation* - \$51,245,475
 - *Green Infrastructure* - \$381,914,606 (with a requirement that a minimum of \$171,861,573 be allocated to climate change mitigation projects resulting in reduced GHG emissions.)
- *Nova Scotia Green Fund* → The provincial cap and trade program will result in revenue from emission allowance auctions, sales of reserve emission allowances, and administrative penalties. The Fund will be managed and administered by the NS Dept. of Environment and will be used to support a broad range of measures that help reduce GHG emissions, mitigate social and economic impacts, or adapt to the impacts of climate change. Preliminary estimations are that the fund will administer and allocate approximately \$30,000,000 annually.

- Just Transition for Canadian Coal Power Workers and Communities → The GoC established a task force to provide recommendations to provide support for individuals and communities affected by the federally mandated phase-out of coal fired electricity generation. In 2019 the task force delivered a report which included 11 recommendations. Among these are three initiatives that could result in funding for energy related projects:
 - Identify, prioritize, and fund local infrastructure projects in affected communities.
 - Establish a dedicated, comprehensive, inclusive, and flexible just transition funding program for affected communities.
 - Meet directly with affected communities to learn about their local priorities, and to connect them with federal programs that could support their goals

To achieve our own ambitious energy and carbon reduction targets in the most efficient and cost-effective way, the municipality must be prepared to access these and other funding programs by having a strategy for the type of projects they want to pursue. Below are several initiatives that may be pursued by CBRM to reduce energy, carbon, and/or address climate change in general.

- Increase the use and supply of renewable energy at municipally owned buildings
- Reduce emissions from the municipalities corporate and transit fleet
- Invest in low carbon and alternative modes of transportation within the community
- Pursue opportunities to collaborate with community groups and organizations to accelerate clean energy and energy reduction projects
- Perform deep energy retrofits in municipally owned buildings
- Waste reduction and diversion
- Utilize cogeneration in appropriate facilities
- Create an urban forestry management plan with goal of increasing urban canopy
- Establish urban gardens
- Establish a fund for a Property Assessed Clean Energy Program (PACE)
- Invest in electric vehicle charging stations throughout the municipality

Note: The above points are still in draft form. The final plan intends to provide a more comprehensive list, with further detail of each point.

Finally, It is important for the energy program and operations & maintenance staff to be aware of ongoing potential energy conservation measures. It is in these details that our progress has been made. CBRM buildings and facilities still constitute approximately 70% of the municipality's emissions, therefore a success program that positive cost savings will need to seek continuous improvement through monitoring and assessment. One way to do this is install building automation systems and/or smart thermostats that can be monitored and operated remotely, then train a staff member to identify buildings that can be optimized and make changes when appropriate. The current system requires staff that have other responsibilities to also monitor these systems. The staff that do this are capable, but generally do not have the time to adequately devote to optimizing each buildings optimization. Also, the majority of CBRM buildings do not have systems that can be operated remotely and therefore maintenance staff do not have the resources to ensure efficient operation. Energy conservation measures are also being identified to enhance the operation of HVAC systems. These upgrades are generally not within operational budgets and capital budgets are being prioritized by infrastructure deficit spending that does not relate to energy conservation. This is understandable as not all capital work can be energy related, however an increased energy capital budget would allow for larger scale projects that can have large and immediate impact on building energy use and building comfort. Examples include heat recovery units and the replacement of

boilers with water-to-water heat pumps. The following table provides a list of potential energy conservation measures at CBRM buildings and facilities.

	Center 200	County Arena	Centennial Arena	Civic Center	Sydney WTP	North Sydney WTP	Glace Bay WTP	New Waterford WTP	Louisbourg WTP	Battery Point WWTP
Energy Conservation Measures										
Lighting										
Retrofit interior fixtures to LED	x		x	x						x
Retrofit exterior fixtures to LED		x								
Occupancy and daylight harvesting controls	x			x						x
Mechanical										
Heat recovery for HVAC systems		x	x	x		x			x	
CO2 monitoring for demand control ventilation				x						
Variable speed drive pumps and motors	x				x			x	x	
Convert oil fired boilers/furnaces to heat pump system							x	x		x
Replace aging oil-fired boilers/furnaces with high efficiency multi-stage boilers							x	x		
Replace electric baseboard heating with heat pump systems		x	x		x				x	
Utilize geothermal energy for heating/cooling			x	x	x					x
Envelope										
New caulking, seals, sweeps, and/or windows	x			x						
Increase level of insulation	x									
Controls										
Programmable thermostats with remote operation capability										
DDC control system		x	x		x	x	x		x	x
Re-commission and optimize controls for energy efficient operation	x	x		x				x		x
Optimize heating/cooling schedules	x	x	x	x	x	x	x	x	x	x

	Dominion WWTP	SW Compost Facility	SW Recycling Facility	SW Transfer Station	SW Administration	Glacé Bay PW	Glacé Bay PW (Water)	Louisbourg PW	New Waterford PW	Central PW
Energy Conservation Measures										
Lighting										
Retrofit interior fixtures to LED	x						x	x	x	
Retrofit exterior fixtures to LED										
Occupancy and daylight harvesting controls		x	x	x			x			x
Mechanical										
Heat recovery for HVAC systems			x		x					x
CO2 monitoring for demand control ventilation						x				x
Variable speed drive pumps and motors	x	x								
Convert oil fired boilers/furnaces to heat pump system	x				x		x	x		
Replace aging oil-fired boilers/furnaces with high efficiency multi-stage boilers	x						x	x		
Replace electric baseboard heating with heat pump systems			x	x					x	
Utilize geothermal energy for heating/cooling	x									
Envelope										
New caulking, seals, sweeps, and/or windows			x	x		x	x		x	x
Increase level of insulation			x			x	x		x	
Controls										
Programmable thermostats with remote operation capability		x	x	x	x		x	x	x	
DDC control system	x					x				
Re-commission and optimize controls for energy efficient operation						x				
Optimize heating/cooling schedules	x	x	x	x	x	x	x	x	x	x

	North PW	Transit	Central Police	Glance Bay Police (old)	Sydney Mines Police	New Waterford Police	Sydney Library	North Sydney Library	Sydney Mines Library	New Waterford Library
Energy Conservation Measures										
Lighting										
Retrofit interior fixtures to LED		X	X	X			X			
Retrofit exterior fixtures to LED										
Occupancy and daylight harvesting controls	X	X	X	X			X			
Mechanical										
Heat recovery for HVAC systems	X	X		X		X	X			
CO2 monitoring for demand control ventilation	X		X							
Variable speed drive pumps and motors										
Convert oil fired boilers/furnaces to heat pump system			X	X			X			
Replace aging oil-fired boilers/furnaces with high efficiency multi-stage boilers			X							
Replace electric baseboard heating with heat pump systems				X		X		X	X	X
Utilize geothermal energy for heating/cooling										
Envelope										
New caulking, seals, sweeps, and/or windows	X			X		X	X			
Increase level of insulation				X		X				
Controls										
Programmable thermostats with remote operation capability		X				X	X	X	X	X
DDC control system	X									
Re-commission and optimize controls for energy efficient operation	X		X		X					
Optimize heating/cooling schedules	X	X	X	X	X	X	X	X	X	X

	Glance Bay Library	Sydney Fire (Esplanade)	Sydney Fire (Victoria)	Sydney Mines Fire	North Sydney Fire	New Waterford Fire	Louisbourg Fire	Glance Bay Fire	Dominion Fire
Energy Conservation Measures									
Lighting									
Retrofit interior fixtures to LED				X		X			X
Retrofit exterior fixtures to LED									
Occupancy and daylight harvesting controls		X		X	X	X	X	X	X
Mechanical									
Heat recovery for HVAC systems		X			X			X	X
CO2 monitoring for demand control ventilation									
Variable speed drive pumps and motors		X		X	X	X	X	X	X
Convert oil fired boilers/furnaces to heat pump system		X			X	X	X	X	X
Replace aging oil-fired boilers/furnaces with high efficiency multi-stage boilers									
Replace electric baseboard heating with heat pump systems				X					
Utilize geothermal energy for heating/cooling		X							
Envelope									
New caulking, seals, sweeps, and/or windows		X		X	X	X	X	X	X
Increase level of insulation									
Controls									
Programmable thermostats with remote operation capability	X	X		X	X	X	X	X	X
DDC control system									
Re-commission and optimize controls for energy efficient operation									
Optimize heating/cooling schedules	X	X	X	X	X	X	X	X	X

Community

The CBRM prides itself on being a community of communities, and in that spirit it's important to remember that we cannot reach ambitious goals on our own. If the municipality is going to be a leader in energy reduction and sustainable operations, we must work collaboratively with local institutions and community organizations. The Water Utility has shown what can be accomplished through their partnership with Cape Breton University, the Cape Breton Island Wildlife Association, and Unama'ki Institute of Natural Resources (UINR) by hosting "Wet Loss, Net Loss: The Impact of Policy and Climate Change on Wetlands", a symposium and workshop focused on management planning and policy change around Wetlands. External partnerships such as these allow CBRM to access a wealth of knowledge and expertise to tackle important community issues. There are several potential grassroots and institutional partnerships within the local community. These could include CBU, Verschuren Center, ACAP, and others as identified. These collaborations will allow CBRM to achieve more within our limited resources.

The CBRM may also benefit from joining national and international programs that focus on climate action and energy reduction. One such program is the Partnership for Climate Protection (PCP) run by the Federation of Canadian Municipalities (FCM). This program is free to join, and there are currently over 350 municipal members, making up over 2/3 of the national population. PCP provides free software tool specially made to create a GHG emission inventory of all municipal activities, and the whole community if desired. There is also a peer to peer hub that allows municipalities to connect to other municipal members to share insight and ideas for climate action and energy reduction. This is a great way to utilize knowledge and expertise at no cost. The program follows a five-step sequence that includes creation of an emission inventory, setting emission reduction targets, and the development, implementation, and monitoring of a local climate action plan. It is with ambitious projects such as this that collaboration and



partnership with local organizations will be key.

In addition to external expertise, the energy program will need to pursue external funding to continue its success. To date, a large part of that funding has been through Efficiency Nova Scotia and electricity reduction initiatives. To fund fossil fuel reduction initiatives, we must diversify. There will be large scale capital opportunities available through the federal governments Investing in Canada Program. There will also be opportunities for smaller, but impactful, funding, such as post-secondary and new graduate wage funding. These types of programs can allow CBRM to build GHG emission inventories and/or climate change impact and vulnerabilities databases that are important first steps in identifying areas of concern.

Recommendations

1. Train staff for Building Automation System (BAS) monitoring

There are currently several municipal employees that are capable of operating CBRM building automation systems. Each have shown the ability to operate the systems as designed, respond to alarms, and some have received specialized training. However, all these employees have other primary responsibilities that prevent them from monitoring the system regularly. It is recommended that CBRM hire a new employee or train a current employee for the specialized skills of BAS operation and monitoring. An individual devoted to monitoring systems in all municipally owned buildings will be able to identify when energy use is increasing and act accordingly. A dedicated individual will be able to communicate with building occupants to ensure occupant comfort is met and also the building heating/cooling schedule is optimized. An individual specializing in BAS will eventually be able to perform minor programming changes that currently require a 3rd party vendor.

2. Expand use of BAS and/or smart thermostats

Even without dedicated operators, the BAS systems currently deployed have provided significant capability to manage energy use and occupant comfort in buildings. CBRM has approximately 40-50 buildings large enough to justify a BAS or remotely controlled smart thermostat, six have a BAS installed. Expansion of these systems will give greater control to maintenance staff and provide a clear picture of conditions at each location. These systems will also provide feedback regarding equipment condition and provide notifications for required maintenance.

3. Infrastructure database for building system equipment

The municipality has an infrastructure deficit issue; this applies to building infrastructure as well. Because of this deficit, staff are regularly forced to deal with corrective maintenance as equipment ages beyond its recommended life cycle. End of life is a great time to consider energy efficient upgrades, as the capital expenditure is already required. However, if equipment fails suddenly, maintenance staff doesn't have the ability to make significant structural changes that would result in long lasting energy savings. If management can predict when equipment will need to be replaced, capital planning can occur multiple years in advance and alternative options can be considered.

4. Pursue student funding to help establish database and schedule

Municipal staff are already stretched. Programs are in-place to fund student wages. It is a natural fit to hire student term positions to complete these tasks.

5. Initiative to decrease idling to <20%

Idling of vehicles uses approximately 5 liters of fuel per hour. It is important to reduce idling as it has very little benefit to operations. There are times when it is necessary, especially in cold weather months to maintain heat. But the common perception that starting a vehicle uses more fuel than idling is only true for > 30 seconds of idle. Beyond that, it is more costly to idle. Currently CBRM vehicle average idling time is 29% of total vehicle run time. This uses 161,000 liters of fuel. If the municipality

can reduce idling to 20% of vehicle run time, it would save ~\$53,000/yr and 132 tons of CO₂ emissions.

6. Explore viability of EV's

Electric vehicle technology is becoming more widespread and more cost effective on an annual basis. There is already evidence that EV's are less expensive when considering full life cycle costs. Currently capital costs are more than combustion engine vehicles, while operating costs are significantly lower. Environmentally, electric buses have a 50% smaller carbon footprint than diesel buses. Also, the footprint of EV's will continue to decrease as our grid electricity becomes cleaner with renewable energy. It makes sense for CBRM to pursue EV integration from both a long-term financial and environmental standpoint.

7. Pursue partnerships with local institutions, non-profit, and community org's

Municipal governments specialize in delivery of core services. Taking on energy reduction and environmental issues is not something we've developed significant expertise in thus far. However, there are several institutions and organizations within the community that have extensive knowledge in these fields and are doing extraordinary work. CBRM would benefit greatly by collaborating with these groups to complete ambitious energy projects.

8. Expand capital energy project funding to allow for large scale projects (>\$50,000)

CBRM has made great progress through small projects such as lighting retrofits and heat pump installations. However, there are also large capital projects that can produce significant energy savings immediately. An increased energy capital budget would give staff the ability energy consumption and decrease utility costs at an even greater rate than currently.

9. Utilize alternative funding mechanisms (e.g. EPC, PACE)

CBRM has a limited capacity to borrow funds, so rather than increasing the capital energy budget, the municipality could benefit from exploring alternative financing mechanisms. This could include energy performance contracting (EPC), a form of financing that equalizes energy savings to capital costs so that the recipient is cash flow neutral for the duration of the loan and then sees the utility savings after amortization. This is similar to a PACE program for commercial and residential properties. In this scenario, the municipality makes small loans up to \$10,000-\$15,000 to property owners for energy efficient upgrades. Owners only qualify if the energy savings equal the capital cost, similar to an EPC. The owners can access capital at reduced rates while the municipality assists in home improvements that increase valuation.

10. Collaborate with community groups, organizations, and institutions that are pursuing local climate change and energy reduction initiatives

Municipal government is the most accessible level of government for local citizens. Folks usually know their councilor, and government buildings are generally driving distance from their home. For these reasons, the public comes to municipalities for issues that may not be in our jurisdictions such as climate change mitigation and adaptation. CBRM is in a position to act as a focal point to bring together organizations, community groups, and individual stakeholders that are interested in taking

action. By acting as a facilitator in this work, CBRM can use its strengths and allow others to use theirs to achieve common goals.

11. Join Partners for Climate Protection

Earlier in this report potential energy and carbon reduction targets for municipal operations were discussed. We've also discussed CBRM helping to facilitate climate action at a community level. Finally, the 2014 MCCAP recommended community level data collection for climate change mitigation and adaptation. The Federation of Canadian Municipalities (FCM) Partners for Climate Protection program can help facilitate all of these goals. The GHG emission inventory tool would allow CBRM to track exactly where corporate and community level emissions are coming from. Tracking this data allows for smarter decision making, similar to how Portfolio Manager has allowed CBRM to make smarter electricity decisions. The tool will allow for CBRM to project future emissions and how certain activities will affect the total. This ability will allow CBRM to set ambitious reduction targets but also establish a roadmap for how to achieve them.

12. Set Greenhouse Gas (GHG) and energy reduction targets

A key driver for success in the first five years of the energy program was the establishment of hard targets. Having key performance indicators provides a focal point for management and staff to work towards a common goal. This practice should continue in the future. As discussed previously, CBRM will likely be moving toward electrification, therefore overall energy use and carbon emissions will be appropriate performance indicators. Given the 20.9% reduction to date, and Nova Scotia Power's work to de-carbonize the grid, an ambitious but attainable GHG reduction target would be 40% below 2015 levels. To date, energy use has been reduced by 14.7%. Due to onboarding of wastewater treatment facilities in the near future, CBRM will have to work hard to maintain this accomplishment. However, targets should not be easy to attain, therefore an ambitious but attainable target for energy reduction would 20% below 2015 levels.

Given this reasoning and discussions throughout this energy plan, it is recommended Cape Breton Regional Municipality adopt a GHG reduction target of 40% below 2015 levels, and an energy reduction target of 20% below 2015 levels.



CAPE BRETON
REGIONAL MUNICIPALITY



2017

CAPE BRETON REGIONAL
MUNICIPALITY ENERGY UPDATE

Dec 5, 2017

David Brushett



Summary of Organizational Energy Usage

ORGANIZATIONAL ENERGY USAGE

CBRM Energy Usage Summary 2015 Baseline vs Last 12 Months				
Category	ekwh (2015)	ekwh (Current)	ekwh Savings	ekwh Savings
Water Treatment Plants	10,967,482	10,280,882	686,600	6.3%
Solid Waste Facilities	2,463,000	2,235,496	227,504	9.2%
Wastewater Treatment Plants	4,490,183	3,919,043	571,140	12.7%
Public Works Garages	1,606,295	1,352,336	253,959	15.8%
Police Stations	2,003,009	1,787,433	215,576	10.8%
Parks and Recreation Facilities*	6,404,296	4,392,722	2,011,574	31.4%
Libraries and Community Services	2,924,394	2,576,687	347,707	11.9%
Fire Stations	1,630,206	1,403,257	226,949	13.9%
Streetlights	12,257,745	5,114,390	7,143,355	58.3%
Transportation**	21,697,857	20,564,826	1,133,031	5.2%
Total	66,444,467	53,627,072	12,817,395	19.3%

CBRM Energy Cost Summary 2015 Baseline vs Last 12 Months				
Category	Cost (2015)	Cost Current	Cost Savings	Cost Savings
Water Treatment Plants	\$1,290,561.00	\$1,180,673.00	\$109,888.00	8.5%
Solid Waste	\$346,550.00	\$313,820.00	\$32,730.00	9.4%





Facilities				
Wastewater Treatment Plants	\$535,035.00	\$455,386.00	\$79,649.00	14.9%
Public Works Garages	\$218,358.00	\$185,549.00	\$32,809.00	15.0%
Police Stations	\$200,545.00	\$181,476.00	\$19,069.00	9.5%
Parks and Recreation Facilities*	\$819,998.00	\$592,230.00	\$227,768.00	27.8%
Libraries and Community Services	\$410,274.00	\$363,058.00	\$47,216.00	11.5%
Fire Stations	\$151,700.00	\$121,421.00	\$30,279.00	20.0%
Streetlights	\$4,240,140.00	\$2,363,808.00	\$1,876,332.00	44.3%
Transportation**	\$2,142,549.00	\$1,780,930.00	\$2,817,351.00	16.9%

Total	\$10,355,710.00	\$7,538,359.00	\$2,817,351	27.2%
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*2014 Baseline for Centre200 to reflect refrigeration upgrade

**Transportation numbers compare 2015 to 2016. Final 2017 usage tbd.

Summary of Buildings and Facilities

BUILDING AND FACILITY ENERGY USAGE SUMMARY

Baseline (2015)/Current Energy Usage 32,488,865 /27,947,856 ekWh	Baseline (2015)/Current Energy Cost \$3,973,921/\$3,393,613
Energy Savings / Reduction 4,541,009 ekWh/13.9%	Cost Savings/Reduction \$579,408/ 14.5%





CBRM Streetlights

CBRM has seen major reduction in streetlight cost due to new LED streetlight rates that are now being paid on 17,000 streetlights as the transition is completed.



STREETLIGHT ENERGY SUMMARY

Baseline (2015)/Current Energy Usage 12,257,745 /5,114,390 ekWh	Baseline (2015)/Current Energy Cost \$4,240,140/\$2,363,808
Energy Savings / Reduction 7,143,355 ekWh/58.3%	Cost Savings/Reduction \$1,876,332/ 44.3%

CBRM Transportation

CBRM has experienced lower transportation costs since 2015 due to a lower price of fuel. Future landfill waste diversion projects will greatly reduce truck travel between CBRM and Guysborough and the overall fleet is undergoing review



TRANSPORTATION ENERGY USAGE SUMMARY

Baseline (2015)/Current Energy Usage 21,697,857 /20,564,826 ekWh	Baseline (2015)/Current Energy Cost \$2,142,549/\$1,780,938
Energy Savings / Reduction 1,133,031 ekWh/5.2%	Cost Savings/Reduction \$361,611/ 16.9%

*2015 Baseline vs 2016 Current for Transportation. Waiting for 2017 final energy usage





CBRM Water Treatment Plants:

In 2015 CBRM embarked on an ambitious project to fix the real water losses in its distribution system. CBRM used the latest technology and methodology to measure losses, scan for leaks, repair leaks, and implement organizational process improvements. At the end of the project savings of \$325,000 and 3.6 Billion Liters/Yr. of water are expected. CBRM has also installed Interior and Exterior LED's w/ Occupancy Sensors, Heat Pumps, Variable Frequency Drives, Tank Insulation and Direct Product Install.



FACILITY ENERGY USAGE

Baseline (2015)/Current Energy Usage 10,967,482 /10,280,882 ekWh	Baseline (2015)/Current Energy Cost \$1,290,561/\$1,180,673
Energy Savings / Reduction 686,599 ekWh/6.2%	Cost Savings/Reduction \$109,887/8.5%

*Usage temporarily up in Glace Bay WTP due to compromised tank which is being operated at suboptimal head. Will be replaced in 2018'

KEY PROJECTS TO DATE:

Real Water Loss Reduction 747,364 ekWh/\$77,898	Interior + Exterior LEDs + Occupancy Sensors 100,000 ekwh/\$10,000
Heat Pump/Tank Insulation 100,000 ekWh, \$10,000	Variable Frequency Drives 150,000 ekWh/\$15,000

FUTURE PROJECTS/ADDITIONAL SAVINGS:

Sydney Raw Water Geothermal Heat Pump 300,000 kwh/\$300,000	Phase 2 of Water Loss Reduction 2,000,000 ekwh/\$200,000
Sydney Solar Installation 55,000 ekwh/\$5,500	Phase 2 of Water Loss Reduction 3.25 Billion Liters/Year of Water





CBRM Energy Management Update

CBRM Solid Waste Facilities:

CBRM's solid waste facilities have implemented a number of energy saving projects over the last 2 years including interior and exterior lighting at all facilities. This included timers that have drastically reduced the run time hours of high bay lighting at compost and the transfer station. In addition, programmable thermostats and roof insulation were added at the recycling facility and variable frequency drive was installed on a compost blower. There are plans to install new screening and conveyor equipment at the compost facility that will reduce the organic material trucked to the landfill in Guysborough by 2800 tons/year. This will eliminate associated trucking diesel+tipping fees and landfill gas emissions.



FACILITY ENERGY USAGE

Baseline (2015)/Current Energy Usage 2,463,000/2,235,496 ekWh	Baseline (2015)/Current Energy Cost \$346,550/\$313,820
Energy Savings / Reduction 227,503 ekWh/9.2%	Cost Savings/Reduction \$32,730/9.4%

KEY PROJECTS TO DATE:

All Facilities Interior + Exterior LED Lighting 200,000 ekwh	Recycling Building Programmable T-Stats 5000 ekwh
Compost Variable Frequency Drive 30,000 ekwh	Recycling Building Roof Insulation 20,000 ekwh

FUTURE PROJECTS:

Compost Screening and Conveyor Project 3,800 tons CO2/\$150,000	Recycling Building Air Sealing 40,000 ekWh/\$4,000
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**CBRM
Wastewater
Treatment
Plants:**

Energy costs are down significantly at CBRM's two wastewater treatment plants. An upgrade to the control system/recommissioning at Battery Point resulted in significant oil savings this year as the run time hours of two air handling units were reduced significantly and the facility's heat recovery system was repaired. Lighting upgrades were completed at both facilities and all lift stations. A rooftop heat pump was installed at Battery Point. A study is underway to install an anaerobic digester that will produce gas for electricity and heating and prevent 1800 tons of sludge from being added to landfill.



FACILITY ENERGY USAGE

Baseline (2015)/Current Energy Usage 4,490,183/3,919,043 ekWh	Baseline (2015)/Current Energy Cost \$535,035/\$455,386
Energy Savings / Reduction 571,139 ekWh/12.7%	Cost Savings/Reduction \$79,648/14.8%

KEY PROJECTS TO DATE:

Controls+Recommissioning at Battery Point 199,000 ekwh	Interior and Exterior Lighting Dominion+BP 45,000 ekwh
Rooftop Heat Pump at Battery Point 30,000 ekwh	Direct Product Install 2,000 ekwh

FUTURE PROJECTS:

Anaerobic Digester in Battery Point 600,000 kWh/60,000 L Oil	Anaerobic Digester at Battery Point 1750 Tons Sludge out of Landfill
Anaerobic Digester Significant Reduction in Odor	Energy Efficient new WWTPs In progress





CBRM Public Works Facilities:

CBRM has completed several projects to reduce energy consumption in its Public Works Facilities. Interior and Exterior Lighting was replaced at North Public Works, New Waterford Public Works, Louisburg Public Works. A new control system was installed at North Public Works. Energy efficient products were installed at all facilities.



FACILITY ENERGY USAGE

Baseline (2015)/Current Energy Usage 1,606,295/1,352,336 ekWh	Baseline (2015)/Current Energy Cost \$218,358/\$185,549
Energy Savings / Reduction 253,958 ekWh/15.8%	Cost Savings/Reduction \$32,808/15.0%

KEY PROJECTS TO DATE:

Interior and Exterior Lighting 150,000 ekwh/\$15,000	New Control System in North Sydney 25,000 ekwh/\$2,500
Direct Efficient Product Install 2,000 ekwh	Recommissioning of Glace Bay Public Works 20,000 ekwh





CBRM Police Stations

CBRM has done major work to make its police facilities energy efficient. The central police station was recommissioned with new controls and new interior + exterior lighting. The North Police moved to the new efficient retrofitted office in Sydney Mines. A new energy efficient facility is being planned for Glace Bay.



FACILITY ENERGY USAGE

Baseline (2015)/Current Energy Usage 2,003,009 /1,787,433 ekWh	Baseline (2015)/Current Energy Cost \$200,545/\$181,476
Energy Savings / Reduction 215,575 ekWh/10.8%	Cost Savings/Reduction \$19,068/9.5%

KEY PROJECTS TO DATE:

Police Central Control System 185,000 ekwh/\$15,200	Interior and Exterior 170,000 ekwh
Energy Efficient Pumping at Police North 10,000 ekwh	Direct Product Install 2,000 ekwh

FUTURE PROJECTS:

New Glace Bay Police Station
Energy Modeling being complete to design state-of-the art facility





CBRM Parks and Recreation Facilities

Centre200 has been one of the biggest energy successes in the municipality. Oil usage is down by 180,000 liters per year as a result of a new ammonia refrigeration system with heat recovery that heats the building. The facility also received a new HVAC control system, new interior/exterior lighting, energy efficient dishwasher and new state-of-the-art LED ice lighting is capable of lighting shows for Screaming Eagles Games.



FACILITY ENERGY USAGE

Baseline (2015)/Current Energy Usage 6,404,296 /4,392,722 ekWh	Baseline (2015)/Current Energy Cost \$819,998/\$592,230
Energy Savings / Reduction 2,011,573 ekWh/31.4%	Cost Savings/Reduction \$227,767/ 27.8%

KEY PROJECTS TO DATE:

Refrigeration and Heat Recovery at Centre200 1,700,000 ekwh/\$150,000	Centre200 Ice Lighting and Controls 225,000 ekwh/\$25,000
Centre200 Interior and Exterior Lighting 257,000 ekwh/\$25,700	LED Ice Lighting at County Arena 30,000 ekwh/ \$3,500

FUTURE PROJECTS:

Downtown Sydney District Energy Savings tbd	Further Upgrades to County Arena 100,000 kWH
Major Retrofit to Bayplex Savings tbd	Repurposing of Centennial Arena Savings tbd





CBRM Libraries and Community Services

CBRM's Libraries and Community Buildings have seen a significant drop in energy usage. Recommissioning of the Civic Centre saved \$25,000/year with a less than 1 year payback. Most buildings have received new interior and exterior lighting, energy efficient products and programmable thermostats. There was a new VRF system installed in the Civic Centre. The food bank got new freezers and insulation, and the Whitney Pier Pensioners club was air sealed, insulated and equipped with heat pumps. A pilot was also undertaken to do blower door testing on the Civic Centre and other CBRM buildings.



FACILITY ENERGY USAGE

Baseline (2015)/Current Energy Usage 2,924,394 /2,576,687 ekWh	Baseline (2015)/Current Energy Cost \$410,274/\$363,058
Energy Savings / Reduction 347,706 ekWh/11.9%	Cost Savings/Reduction \$47,215/ 11.5%

KEY PROJECTS TO DATE:

Civic Centre Recommissioning 228,000 ekwh/\$25,000	Civic Centre VRF System 106,000 ekwh/\$10,600
Food Bank Freezers and Insulation 44,200 ekwh/\$4,420	Insulation+Heat Pump at Pensioners Club 27,175 ekwh/\$2,717





CBRM Fire Stations

In 2016 CBRM completed construction on a new energy efficient fire station in Whitney Pier complete with controls, heat pumps, occupancy sensors, LED lighting, heat pump hot water, and building envelope. CBRM has also undertaken interior and exterior lighting upgrades and direct product install.



FACILITY ENERGY USAGE

Baseline (2015)/Current Energy Usage 1,630,206 /1,403,257 ekWh	Baseline (2015)/Current Energy Cost \$151,70035/\$121,421
Energy Savings / Reduction 226,949 ekWh/13.9%	Cost Savings/Reduction \$30,279/ 20.0%

KEY PROJECTS TO DATE:

New Whitney Pier Fire Station 75,000 ekwh/\$7,500	Interior+Exterior Lighting Upgrades 100,000 ekwh/\$10,000
Programmable Thermostats 15,000 ekwh/\$1,500	Direct Product Install 2,000 ekwh/\$200

FUTURE PROJECTS:

LED Lighting at Sydney Fire 40,000 kWh/\$4,000	LED Lighting at Glace Bay Fire 45,000 ekwh/\$4,500
--	--



January 13, 2020

Cape Breton Regional Municipality
320 Esplanade
Sydney, Nova Scotia
B1P 7B9

Re: Clean Energy Financing Program Presentation Request

To Whom it May Concern,

My name is Katie Giles and I work with Clean Foundation, an environmental non-profit based in Dartmouth, Nova Scotia as the Senior Lead for our Clean Energy Initiatives. I am writing to request an opportunity to speak to council about our Clean Energy Financing program, which is our version of a PACE program. We are working with the Department of Energy and Mines to expand PACE to more municipalities and would be happy to have Cape Breton Regional Municipality involved.

The purpose of the presentation would be to provide background information about PACE-style programs and more specifically the Clean Energy Financing program which is administered by Clean Foundation. It will also provide information on how to get involved in the program and funding available from the province to cover start-up costs should the municipality be interested.

I am wondering if it would be possible for us to present to council at the upcoming meeting on January 21, 2020. Please let me know if there is any additional information you require.

Sincerely,

Original Signed By

Katie Giles
Senior Lead, Clean Energy Initiatives - Clean Foundation

Clean Foundation

Inspiring environmental change



Clean Energy Financing (PACE)

1

About Us

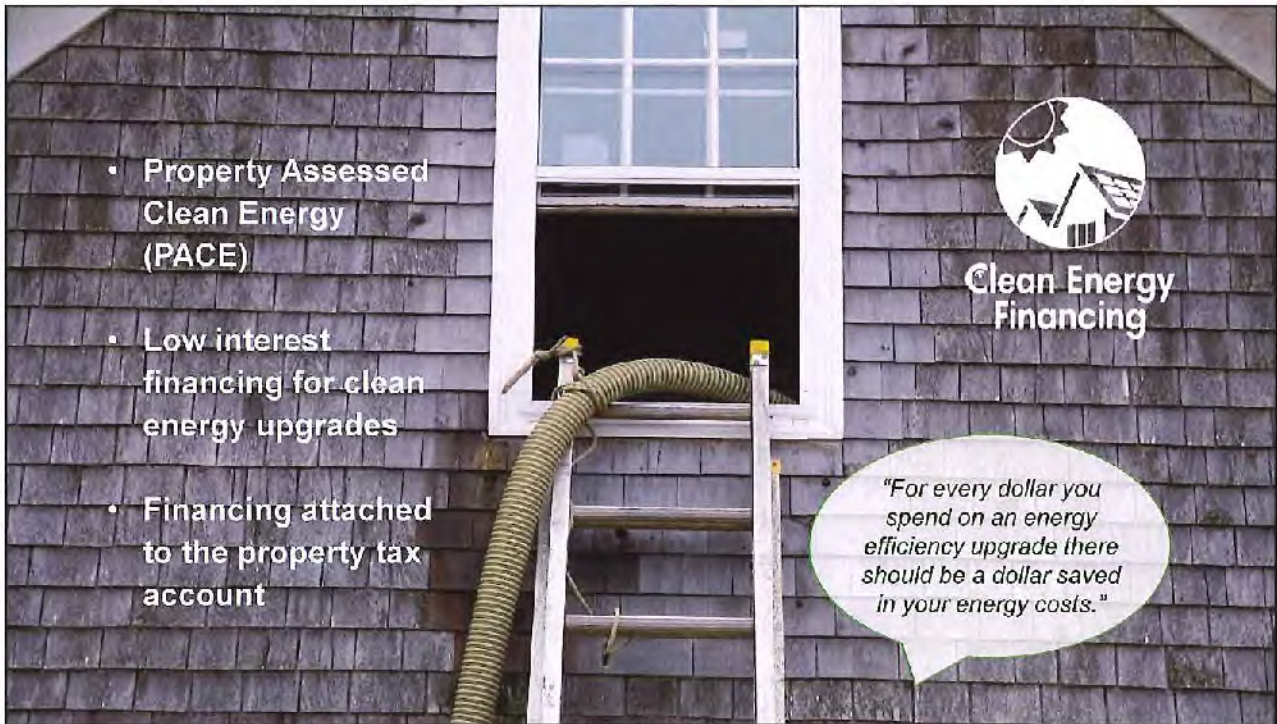
- We are a non-profit, non-government environmental organization created in 1988
- Our work focuses on Clean Energy & Clean Climate
- Money raised for our many programs and projects, can come from agencies, businesses, government departments, foundations and individual citizens.



2



3



4

What makes our Clean Energy Financing different?

Accessibility

- Own a single detached, semi-detached or row house
- Live in a participating municipality
- No municipal arrears

Affordability

- 4% - 5% interest over 10 years (depending on your municipality)
- Money saved through energy upgrades meets or exceeds the cost of the financing.
- Investment pays for itself over the payback period.

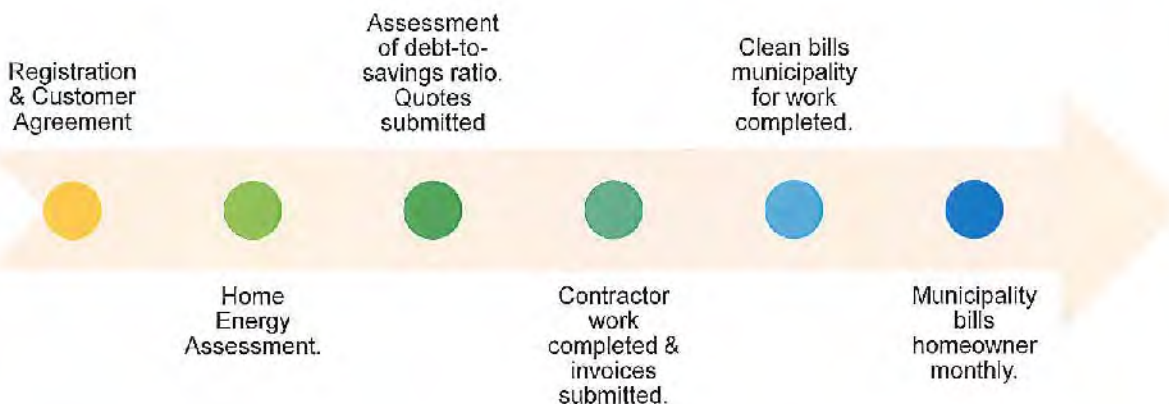
Expertise

- Recommendations based on an NRCan Home Energy Assessment
- Evaluated by a Certified Energy Advisor.
- Co-design and delivery of HomeWarming program
- Clean Foundations Advisors have performed over 20,000 Energy Assessments



5

Clean Energy Financing Steps for Homeowners



6

Homeowner Service Fees

\$150	• Customer agreement signed
\$99	• HEA is completed
\$200	• Contractor quotes (received by Clean Foundation)*
\$100	• Contractor invoices (received by Clean Foundation)

*For upgrades that require a Supplemental Assessment (e.g. solar photo voltaic) there is an additional fee of \$75.



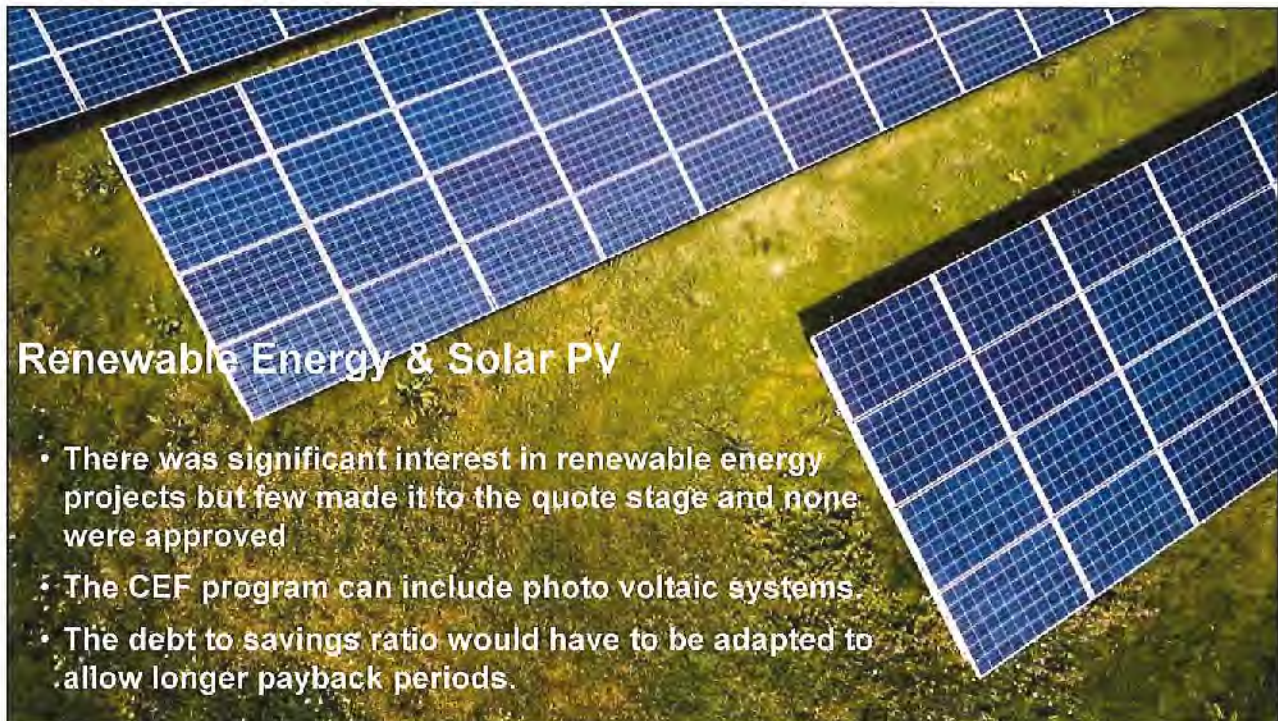
7



Upgrades

- Upgrades completed:
 - Insulation
 - Draft-Sealing
 - Windows
 - Heat Pumps
 - Hot Water Tank
 - HRV
 - Enabling Upgrades
- CEF allows for many other retrofits
- Average completion time:
 - 5 to 7 months from registration to completion
- Homeowners are utilizing 75% of their available financing, on average

8






Renewable Energy & Solar PV

- There was significant interest in renewable energy projects but few made it to the quote stage and none were approved
- The CEF program can include photo voltaic systems
- The debt to savings ratio would have to be adapted to allow longer payback periods.

9

Participation & Energy Savings

“Get cleaner energy for your home...and pay for it at a pace you can afford.”

- The CEF program launched on July 12, 2016
- To date 52 participants have completed the program.
- Average payback = 6.5 years
- Estimated GHG Savings Per Year = 314.67 (tonnes CO₂e)
- Estimated Annual Energy Savings = 2990.4 GJ
- Currently we have 33 participants in year four.
- Interest from other municipalities across NS

Clean

10



11

Foundation
Clean

Start Up Information

Three small images are arranged horizontally. The first image shows a small, single-story house with a gabled roof. The second image shows a brochure titled "Clean Living" with a green leaf icon. The third image shows a window with blue curtains and a view of a snowy landscape.

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Municipal Process

By-Law	Onboarding	Financing Payments
<ul style="list-style-type: none"> Municipalities must approve a PACE by-law that allows the municipality to offer financing to property owners. 	<ul style="list-style-type: none"> Clean Foundation will collaborate with the municipality to create a program tailored to each municipality's needs. 	<ul style="list-style-type: none"> Financing payments are collected by the municipality monthly.

13

Onboarding Package

- **One-time start-up fee of \$13,300.00**
- **Marketing package** (see next slide)
- **Three to four phone conferences about start-up**
- **Two travel meetings** (one for start-up, one for year end)
- **Program Design & Customization**
- **Evaluation** (Interviews and report writing)

The Department of Energy can provide funding of up to \$15,000.00 which can be used to cover the onboarding fee for municipalities

14

Marketing & Communications

Clean is well positioned to design the marketing strategy. We have over 19 years of energy program experience, including marketing and delivery, a dedicated communications team, and references who will attest to our high standards of service and client engagement.

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Year One Marketing & Communications Package

- The Clean Energy Financing logo with the name of the local municipality
- Clean Energy Financing messaging guide
- Municipal info / page on the CleanEnergyFinancing.ca website
- Clean Energy Financing suggested social media posts
- 30 to 60 second video ad
- Suggested PSA text
- Municipality branded Clean Energy Financing promotional materials, specifically:
 - Newspaper ad template
 - Posters (in vertical and horizontal formats) (electronic copy as well as 100 print colour copies)
 - Production and placement of two print ads in local newspapers/publications
 - Rack card handout (electronic copy as well as 500 print colour copies)
 - Radio ad suggested script
 - Power Point Presentation template
 - Preparation and distribution of an introductory press release to all local media in the region
- A locally branded Clean Energy Financing pop-up display
- Leverage HomeWarming outreach opportunities
- Writing of a print story (with photos) based on a local participant's experience in the program.



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Customization

- Payback Period
- Interest rate
- Default interest rate
- Debt to savings ratio
- Total available funding
- Max financing per home
- Arrears or credit check
- Length of contract with Clean



17

Video - Clean Energy Financing Overview

“Doesn’t cost any money out of pocket and the homeowners see savings from day one.”



<https://www.youtube.com/watch?v=JNWOJtKBv4>

Clean

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Contact Us

Want more information about the Clean Energy Financing program?

- Visit our website:
cleanenergyfinancing.ca

Want to chat with someone about the Clean Energy Financing program?

- Call us toll-free:
1-844-727-7818
- Email us:
cleanenergyfinancing@clean.ns.ca



**Clean Energy
Financing**

Clean



Registration Form

Thank you for your interest in the **Clean Energy Financing** Program administered by Clean Foundation (“Clean”) on behalf of your municipality.

By registering, you are applying for low-interest financing from the municipality to help you complete eligible clean energy upgrades to your home.

Additional information about the Clean Energy Financing Program can be found at www.CleanEnergyFinancing.ca. Any questions can be directed to Clean by emailing CleanEnergyFinancing@clean.ns.ca or by calling 1-844-727-7818.

What's Next?

Upon receipt of your completed Registration Form, Clean will assess your home’s eligibility based on the following:

- Home type and location: your home must be a detached, semi-detached, or row house style home located within the municipality’s boundary;
- Verification of property ownership;
- Confirmation that you are not in default of any municipal taxes, rates, or charges.

Please note that by registering you consent to the municipality sharing the above information with Clean.

After you qualify for the Clean Energy Financing Program, you will need to sign the Customer Agreement. Once this is signed, Clean can help you book a certified Home Energy Assessment.

Note: All financing payments must be made through a pre-authorized payment plan set up through the municipality.

All contractor invoices need to be submitted to Clean Foundation by **February 15, 2019**.

One of the goals of this program is for the total cost of clean energy upgrades, program fees, and cost of borrowing to be *less than or equal to* the estimated energy savings over the financing period. Please note that this debt-to-savings ratio will limit the eligibility of upgrades.



Program Fees

Program fees will be added to your Clean Energy Financing as they are incurred. The schedule below indicates when a homeowner has incurred each program fee:

Stage	Cost
Customer Agreement is signed	\$150
Home Energy Assessment (HEA) is completed*	\$99 -425
Contractor quotes are received by Clean Foundation (assessment of debt-to-savings ratio)**	\$200
Contractor invoices received by Clean Foundation	\$100

* An electrically heated Home Energy Assessment costs \$99. The cost for a Clean Foundation non-electric assessment is \$425. The cost of assessments performed by Clean Foundation will be included in the Clean Energy Financing. The cost of an assessment performed by another service organization cannot be financed.

**Note: For upgrades that require Supplemental Assessment (e.g. solar photo voltaic): additional \$75

If a homeowner exits the Clean Energy Financing Program early, he or she will only be charged for the costs incurred to date.

For homeowners that do not complete clean energy upgrades, the program fees they incurred will become payable 30 days upon exiting the program.

How to Submit this Registration

Mail a hardcopy of this form to: or Email the form to:

Clean Foundation
c/o Clean Energy Financing Program
126 Portland Street
Dartmouth, NS B2Y 1H8

cleanenergyfinancing@clean.ns.ca



A – APPLICANT INFORMATION											
<i>The person to whom all communication will be directed.</i>											
Name of Primary Contact:											
Mailing Address:											
Email Address:											
Telephone Number:	Primary:		Alternate:								
Relationship to Home:	<input type="checkbox"/> Owner	<input type="checkbox"/> Other									
	If "Other", please specify:										
Preferred Method of Communication:	<input type="checkbox"/> Phone		<input type="checkbox"/> Email								
<p>Optional: You may qualify for participation in the HomeWarming program (www.homewarming.ca), which provides free energy efficient home upgrades for income qualified homeowners. To qualify, you must meet the following income eligibility criteria:</p> <table border="0" style="width: 100%; text-align: center;"> <thead> <tr> <th style="text-align: left;">Number of people in your home</th> <th style="text-align: left;">Maximum annual household income</th> </tr> </thead> <tbody> <tr> <td>1 person</td> <td>\$21,487</td> </tr> <tr> <td>2 to 4 people</td> <td>\$39,926</td> </tr> <tr> <td>5 or more people</td> <td>\$56,861</td> </tr> </tbody> </table>				Number of people in your home	Maximum annual household income	1 person	\$21,487	2 to 4 people	\$39,926	5 or more people	\$56,861
Number of people in your home	Maximum annual household income										
1 person	\$21,487										
2 to 4 people	\$39,926										
5 or more people	\$56,861										
Do you wish to be contacted about HomeWarming?	<input type="checkbox"/> Yes		<input type="checkbox"/> No								

B – HOMEOWNERS	
<i>Please identify all Homeowners listed on the registered title for the home. All registered owners of the home must be identified in this section <u>and</u> consent to participate in Clean Energy Financing.</i>	
Name of Homeowner 1:	
Name of Homeowner 2:	
Name of Homeowner 3:	

* If there are more than three property owners, please include remainder of property owners on the "additional property owners" document found at www.cleanenergyfinancing.ca



C – HOMEOWNER INFORMATION		
<i>Only homes located within the boundary of the municipality can participate in the Clean Energy Financing program. Only detached, semi-detached and row houses are currently eligible.</i>		
Street Address:		
Community:		
Postal Code:		
Current Heat Source:		
What upgrade(s) are you interested in making?		
Have you had a Home Energy Assessment completed within the last 12 months?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If "Yes", when was your assessment?	_____ (dd / mm / yy)	
If "Yes", have you completed any renovations since your Home Energy Assessment?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Assessment Role Number:		
* You can find your Assessment # on your property tax bill.		

D – CONSENT TO BE CONTACTED		
<i>Clean may wish to contact you to ask questions about your experience with the Clean Energy Financing Program and/or to evaluate its performance.</i>		
Are you willing to be contacted to discuss your experience with the program?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

This **AGREEMENT FOR SERVICES** made the ___ day of _____ 2018

BETWEEN

CLEAN NOVA SCOTIA FOUNDATION, a body corporate established pursuant to the *Clean Nova Scotia Foundation Act*, SNS 1988, c 7

(the “**Clean Foundation**”)

- and -

_____, a municipality continued pursuant to the *Municipal Government Act*, SNS 1998, c 18

(the “**Municipality**”)

WHEREAS

- A. Council for the Municipality had entered into a Residential Property Assessment Clean Energy (PACE) Program with Clean Foundation;
- B. Council for the Municipality passed a motion to award the administration of the Clean Energy Financing Program to Clean Foundation for a period of 1 year (subject to positive evaluation on an annual basis), ending March 31, 2019; which is to be known as Clean Energy Financing (the “**Program**”);
- C. According to the terms of this agreement, the municipality may, at their sole discretion, negotiate services for future years with Clean Foundation, according to the general terms contained in this agreement and all associated documents thereto;
- D. As part of the Program, the Municipality will offer eligible owners of properties within the Municipality financing to enable Eligible Clean Energy Upgrades (as defined below) to be made to qualifying properties;
- E. The objectives of the Agreement include the establishment of an agreement regarding services and payment terms for the Program; and
- F. The Municipality and Clean Foundation have decided to enter into this Agreement to further clarify their respective roles, rights and obligations in relation to the Program and their Agreement and otherwise.

NOW THEREFORE THIS AGREEMENT WITNESSES that in consideration of the promises and mutual covenants contained herein, the parties hereto covenant and agree with the others as follows

ARTICLE 1. INTERPRETATION

- 1.01 **Definitions** – in this Agreement, unless there is something in the context or subject matter inconsistent therewith, the following words and expressions shall have the following meanings:
- (a) **“Business Day”** means a day other than a Saturday or Sunday or any other day upon which the clerk’s office of the Municipality is not open for the transaction of regular business throughout its normal business hours;
 - (b) **“Eligible Clean Energy Upgrade”** means an installation affixed to a subject property within the Municipality, which:
 - (i) will result in improved energy efficiency, the generation of renewable energy, or reduced greenhouse gas emissions;
 - (ii) involves building envelope upgrades such as caulking and weather stripping, duct / air sealing, insulating, or energy efficient windows and doors; building heating, ventilation and air conditioning system upgrades such as heat pumps, wood or pellet stoves, or furnaces or boilers; renewable energy upgrades such as solar thermal panels, solar photovoltaic panels or wind turbines; or such other clean energy upgrades as are approved and agreed in writing; and
 - (iii) is identified as an eligible upgrade in the Municipality’s Property Assessed Clean Energy Upgrade Standards Policy, and meets or exceeds applicable energy efficiency standards as defined in that policy;
 - (c) **“Maximum Eligible Amount”** means the maximum amount that the Municipality notifies Clean Foundation in writing is eligible for the fiscal year for financing by the Municipality under the Program in respect of each Participant, Property or Clean Energy Upgrade;
 - (i) the maximum total annual financing ceiling is to be determined by the municipality;
 - (ii) Clean Foundation’s responsibility is to ensure that this financing amount is not exceeded through its management of the property owner Customer Agreements; and
 - (iii) Annual financing levels may change from year to year;
 - (d) **“Participant”** means a homeowner that enters into a Customer Agreement with the Municipality to participate in the Program;
 - (e) **“Program”** has the meaning assigned in Recital A above; and

(f) “**Term**” has the meaning assigned in paragraph 9.01 below.

1.02 **Governing Law** - This Agreement shall be governed by and construed in accordance with the laws of the Province of Nova Scotia and the federal laws of Canada applicable therein.

1.03 **Calculation of Time** - When calculating the period of time within which or following which any act is to be done or step taken pursuant to this Agreement, the date which is the reference date in calculating such period shall be excluded. If the last day of such period is not a Business Day, then the time period in question shall end on the first Business Day following such non-Business Day.

ARTICLE 2. SERVICES

2.01 **Ongoing Services** – During the Term, Clean Foundation shall:

- (a) screen applications from homeowners for eligibility to participate in the Program based on published criteria for the Program, including the absence of any arrears owing to the Municipality by the applicant homeowner;
 - (i) the Municipality may establish additional eligibility requirements whereby certain homeowners may not be eligible in the program;
- (b) arrange for the Customer Agreement to be signed by eligible homeowner applicants and approved and signed by the Municipality and ensure this document is updated whenever there are Program changes;
- (c) provide guidance to Participants about arrangements for home energy assessments and the availability of energy efficiency rebates and any other programs that may provide financial assistance to Participants that are available as of the date of the Participant’s Customer Agreement with the Municipality;
- (d) evaluate the home energy assessment report obtained by each Participant and advise each Participant about which recommendations within the report are Eligible Clean Energy Upgrades that are eligible for financing through the Program;
- (e) arrange and review any necessary supplemental assessments;
- (f) review contractor quotes supplied by Participants to confirm the scope of services is restricted to Eligible Clean Energy Upgrades, and confirm that the cost of the proposed Eligible Clean Energy Upgrade(s) will meet the savings to debt ratio required by the Municipality;
- (g) pay the full amount (including HST), or the Maximum Eligible Amount, whichever is less, of invoices from contractors that are consistent with quotes pre-approved pursuant to paragraph 2.01(f) above, upon receipt of a copy of the

invoice from a Participant and evidence satisfactory to Clean Foundation of substantial completion of the contemplated Eligible Clean Energy Upgrade. Any additional amount above the Maximum Eligible Amount will be the sole responsibility of the homeowner;

- (h) confirm / certify with the Municipality that the home energy upgrade process is complete;
- (i) provide evaluation services for the Program annually; including Participant interviews, and Program data summaries (such as cost and projected energy savings); and
- (j) communicate to Participants the option for a post-installation follow up audit and encourage their participation in an effort to provide post-installation verification.

ARTICLE 3. MARKETING

- 3.01 The parties understand that marketing and promotion is key to participant uptake and a successful program. In year one of The Program Clean Foundation agrees to provide the municipality with communications and marketing support as outlined in Appendix A. To support ongoing promotion beyond the initial year of the Program, Clean Foundation will provide existing on-brand marketing materials in electronic form, for use by the municipalities as they see fit. Clean Foundation will also commit to maintaining and updating the CleanEnergyFinancing.ca website, and responding to public and media inquiries about the Program.
- 3.02 The parties may or may not be able to dedicate funds to marketing. However, the parties will raise awareness of the Program through their general promotional efforts and relevant cross-promotional opportunities. They will also take advantage of other appropriate marketing opportunities as capacity allows.

ARTICLE 4. PRICE AND PAYMENT

- 4.01 **One Time On-boarding Fee** – In year one of the Program the municipality agrees to pay Clean Foundation an onboarding fee of \$13,300 which will be used to cover start-up costs and services as outlined in Appendix A. The fee and the outlined services are limited to the start-up year only.
- 4.02 **Ongoing Charges** – Throughout the Term, the Municipality shall pay to Clean Foundation all of the following amounts, plus any applicable taxes:
- (a) \$150 per Customer Agreement signed pursuant to paragraph 2.01(b) above;
 - (b) Applicable fees per home energy assessment, if conducted by Clean Foundation. Fees are currently \$99 for electrically heated homes and \$425 for the initial assessment of non-electric homes. Owners of non-electric homes will be provided with the option to finance the cost of their follow up visit; currently \$150. This fee structure is subject to change in accordance with current home

energy assessment pricing as dictated by Efficiency One for electrically heated homes and by Clean Foundation for non-electrically heated homes;

- (c) \$200 per savings-to-debt assessment completed pursuant to paragraph 2.01(d) above;
- (d) \$75 for evaluation of each supplemental assessment contemplated by paragraph 2.01(e) above;
- (e) Reimbursement for contractor invoices paid pursuant to paragraph 2.01(f) above; and
- (f) \$100 per home for processing of contractor invoices.

4.03 Invoicing and payment for services rendered under this Agreement shall proceed as follows:

- (a) On or before the 7th Business Day following the end of each calendar month during the Term, Clean Foundation shall deliver an invoice to the Municipality for all administrative fees due pursuant to section 4.01 above in respect of the preceding calendar month during the Term;
- (b) On a weekly basis Clean Foundation shall deliver an invoice to the Municipality for contractor payments due pursuant to section 4.01 above;
- (c) At the start of year one Clean Foundation shall deliver an invoice to the Municipality for onboarding fees basis pursuant to section 4.01 above; and
- (d) The Municipality shall pay the full amount of each invoice delivered by Clean Foundation within 30 days of the invoice date.

ARTICLE 5. RISK MITIGATION

5.01 Commercial Liability and Automobile Insurance

- (a) Clean Foundation shall, at its sole cost and expense, procure, maintain, pay for and keep in full force and effect for the entire duration of the project, Commercial General Liability Insurance against claims for bodily injury including death, personal injury and property damage including loss of use thereof. Prior to the commencement of any work, Clean Foundation shall provide a Certificate of Insurance to the Municipality evidencing commercial general liability in the minimum amount of \$2,000,000 naming the Municipality as additional insured and shall include cross liability and severability of interest clauses. The per occurrence deductible shall not exceed \$2,500, or in the case of a per claimant deductible, the deductible amount shall not exceed \$1,000. The certificate will also name the facilities/projects subject to this agreement and

contain a 30 day notice period of cancellation or material change detrimental to the Municipality.

- (b) Coverage for all operations and liability assumed under the contract shall include but not be limited to the following:
 - (i) Products & Completed Operations
 - (ii) Blanket Contractual
 - (iii) Pollution for a Hostile Fire
 - (iv) Broad Form Property Damage
 - (v) Employees as Additional Insured's
 - (vi) Contingent Employer's Liability
 - (vii) Non Owned Automobile Liability
 - (viii) Written on an occurrence form
- (c) Clean Foundation shall also provide the Municipality with a certificate of insurance evidencing vehicle insurance with minimum limits of \$2,000,000 for third party liability on all owned and operated vehicles.
- (d) Clean Foundation shall take out and keep in force Professional Liability (Errors and Omissions) insurance in the amount of \$1,000,000 minimum providing coverage for acts, errors and omission arising from their professional services performed under this Tender. The policy SIR/deductible shall not exceed \$5,000 per claim and if the policy has an aggregate limit, the amount of the aggregate shall be double the required per claim limit. The policy shall be underwritten by an insurer licensed to conduct business in the Province of Nova Scotia and acceptable to the Municipality. If policy is to be cancelled or non-renewed for any reason, 90 day notice of said cancellation or non-renewal must be provided to the Municipality. A certificate of insurance evidencing renewal is to be provided each and every year.
- (e) The insurance coverage must be maintained in force throughout the term of the agreement, and, if applicable, any renewal after, with evidence by way of a certificate of insurance provided to the Municipality yearly 10 days prior to the expiry of the insurance coverage. It is the responsibility of Clean Foundation to have this information provided to the Municipality.

5.02 Workplace Safety and Insurance Board

- (a) Clean Foundation shall provide the Municipality with a current WCB Clearance Letter. It is Clean Foundation's responsibility to provide current clearance letters to the Municipality for the duration of the Project or contract term.
- (b) Clean Foundation shall be fully responsible for ensuring contractors have workers' compensation insurance in place covering their own employees and general commercial liability insurance coverage with a limit of not less than \$2,000,000 per occurrence. Clean Foundation shall obtain proof that such insurance is in place. The proof may take the form of an insurance certificate, issued by the contractor's Broker or Insurer

5.03 Indemnity:

- (a) Clean Foundation (the "indemnifying party"), shall indemnify, defend and hold harmless the Municipality and its subsidiaries, affiliates, employees, and successors and assigns from and against, and in respect of, any and all actions, claims, suits, judgments, damages, liabilities, losses, penalties, costs and expenses (including, without limitation, legal fees and disbursements) of every kind whatsoever (collectively, "Damages") arising in any manner out of or from, or in connection with, any actual or alleged (i) patent, copyright, or trademark infringement, or violation of any other proprietary right, arising out of the use of the indemnifying party's brand and logos; (ii) breach by the indemnifying party of any term or provision of this Agreement; (iii) personal injury, wrongful death or property damage arising out of or relating to any products or any services provided by the indemnifying party pursuant hereto; and (iv) wrongful or negligent acts or omissions by the indemnifying party and its officers, directors, employees, and agents. This indemnification shall survive the expiry and/or termination of this Agreement.

ARTICLE 6. CONFIDENTIALITY AND PROTECTION OF PRIVACY

6.01 Providing this service involves the collection, use and disclosure of some personal information about Participants, in order to protect this personal information:

- (a) The purpose(s) for collecting personal information will be expressly communicated, either orally or in writing, at the time of collection or before the information is collected. The use of personal information collected will be limited to the purposes communicated to the Participant;
- (b) Participant information will only be disclosed where necessary to fulfill the purposes identified at the time of collection. Clean Foundation will not use or disclose Participant, member or volunteer personal information for any additional purpose unless we obtain consent to do so;
- (c) Participant lists or personal information will not be sold to or shared with other parties;

- (d) Personal information provided will be kept no longer than is necessary to retain the information for legal or business purposes; and
- (e) Participants may access their personal information, subject to the exceptions listed in PIPEDA, or request a correction of their personal information.
- (f) Clean Foundation will adhere to the Municipality's policy on records management, retention, and destruction.

ARTICLE 7. PACE PROGRAM BY-LAW

- 7.01 The service provided will adhere to the legal framework and regulatory requirements set out by the Municipality's By-Law as well as by any provincial and national legislation and regulations that may relate to it.

ARTICLE 8. COVENANTS OF THE MUNICIPALITY

- 8.01 The Municipality shall follow the process recommended by Clean Foundation pursuant to section 2.01 above in the administration of the Program during the Term.
- 8.02 The Municipality agrees that Clean Foundation will retain intellectual property rights to any materials created by Clean Foundation for The Program, and therefore covenants not to disclose, use or permit the use of those materials by any other party after the Term of this Agreement without the prior express written consent of Clean Foundation.

ARTICLE 9. TERM AND TERMINATION

- 9.01 Clean Foundation may arrange for Customer Agreements to be signed until the close of business on March 31st, 2019. Each day between the date of this Agreement and that day shall be part of the "**Term**" of this Agreement. If the parties agree to renew or extend the Term of this Agreement, then each day between March 31st, 2019 and the expiration date that may be agreed upon from time to time shall also be part of the "**Term**" of this Agreement.
- 9.02 The parties acknowledge that Customer Agreements between eligible homeowner applicants and the Municipality may not be fully performed prior to the end of the Term. If Clean Foundation incurs costs or provides services after the Term, which relate to a Customer Agreement entered into during the Term, then the Town agrees to honour the payment terms set out in sections 4.01, 4.02, and 4.03 and above in relation to those Customer Agreements, even after the expiration of the Term.

ARTICLE 10. GENERAL PROVISIONS

- 10.01 **Amendment** - This Agreement may not be amended or modified in any respect except by a written agreement signed by the parties.
- 10.02 **Waiver** - No waiver by any party of any breach of any provision of this Agreement by any of the other parties shall take effect or be binding upon that party unless in writing

and signed by such party. Unless otherwise provided therein, such waiver shall not limit or affect the right of the party not in default with respect to any other breach.

10.03 **Severability** - If any article, section or any portion of any section of this Agreement is determined to be unenforceable or invalid for any reason whatsoever, that unenforceability or invalidity shall not affect the enforceability or validity of the remaining portions of this Agreement and such unenforceable or invalid article, section or portion thereof shall be severed from the remainder of this Agreement.

10.04 **Enurement** - This Agreement shall enure to the benefit of and be binding upon the parties and their respective heirs, executors, administrators, successors, legal representatives and permitted assigns.

10.05 **Execution by Counterpart** - This Agreement may be executed by any person who is from time to time to become a party hereto by signing a counterpart hereof, each of which counterpart so executed shall be deemed to be an original and such counterparts together shall constitute a single instrument.

IN WITNESS WHEREOF the parties have properly executed this Agreement the day and year first above written.

SIGNED, SEALED AND DELIVERED
in the presence of:

Witness:

Witness:

CLEAN NOVA SCOTIA FOUNDATION

Per: _____
Scott Skinner, Executive Director

DISTRICT/TOWN OF _____

Per: _____
_____, _____

Appendix A

One Time On-boarding Fee – \$13,300

Clean Foundation charges an onboarding fee which covers start-up year costs. These costs and services are limited to the start-up year only and include:

- Pilot meetings:
 - Two in-person meetings at the municipal office.
 - One to agree on the processes for invoicing and sharing program documents as well as reviewing the frequently asked questions.
 - One to discuss pilot project evaluation at, or near, the pilot project year end.
 - 3-4 telephone conference meetings to finalize program details and processes.
- Design CEF program for the municipality.
- Create, review and finalize CEF agreement between Clean and the Municipality.
- Consult with municipality regarding program parameters (number of homeowners, loan amount, eligible upgrades, etc.).
- Customization of Customer Agreement, & Registration forms.
- Develop tracking system for participant files.
- Quarterly updates on participant progress.
- Pilot year evaluation will include interviews with participants and municipal administrators and a report of the overall pilot year.

This onboarding fee also contains a turn-key communications & marketing package that includes:

- The Clean Energy Financing logo with the name of the local municipality incorporated in it, in horizontal and vertical formats. (And we will include visual identity guidelines with colour palette and fonts.)
- Municipal webpages on the CleanEnergyFinancing.ca website
- 30 to 60 second video ad
- Municipality branded Clean Energy Financing promotional materials, specifically:
 - Posters (in vertical and horizontal formats) (electronic copy as well as 100 print colour copies)
 - Rack card handout (electronic copy as well as 500 print colour copies)
 - Power Point Presentation template
- A locally branded Clean Energy Financing pop-up display
- Clean Energy Financing messaging guide
- Clean Energy Financing suggested social media posts
- Suggested PSA text
- Newspaper ad template

- Production and placement of two print ads in local newspapers/publications
- Radio ad suggested script
- Preparation and distribution of an introductory press release to all local media in the region
- Leverage HomeWarming outreach opportunities (for example, community meetings or trade fairs) and offer Clean Energy Financing as an option for appropriate audiences in your region.
- Writing of a print story (with photos) based on a local participant's experience in the program This will be tailored for local media and social media

* Please note if the municipality requires additional marketing services in subsequent years these will be an extra cost. However as part of this agreement, all marketing design files will be provided to municipality for use in future years.



Frequently Asked Questions

1. What is the Clean Energy Financing Program?

The Clean Energy Financing Program is a program that helps a municipality provide low interest financing to qualifying homeowners interested in undertaking clean energy upgrades. Once the upgrades are completed, the homeowner repays the municipality over time on their property tax bill – which is why these types of programs are often referred to as Property Assessed Clean Energy (PACE) financing. Alternately, they are sometimes called Property Assessed Payments for Energy Retrofits (PAPER).

2. How does the program work?

Interested homeowners must register to participate in the Clean Energy Financing Program. After verifying that their property qualifies, the homeowner will enter into an agreement with the municipality to complete eligible clean energy upgrades. The municipality would then impose a Local Improvement Charge on the property equal to the cost of the upgrades, plus lender rate, and program fees.

3. Who is administering the program?

The program is being administered by Clean Foundation on behalf of the municipality. Questions about the program and how it works can be directed to Clean at 1-844-727-7818 or cleanenergyfinancing@clean.ns.ca

4. What are the program eligibility criteria?

Homeowners may qualify for low interest financing if:

- they own a detached, semi-detached, or row house (multi-unit buildings are not eligible for the program);
- all of the property owners' consent to participation in the program;
- the property has been in good standing with respect to municipal taxes, rates, or charges;
- the residence is in a participating municipality;
- note: The District of Lunenburg and Town of Amherst also require a credit check for each homeowner

5. What types of clean energy upgrades qualify for the program?

Homeowners can apply for Clean Energy Financing based on the clean energy upgrade recommendations from a Home Energy Assessment performed by an Energy Advisor certified by Natural Resources Canada.

Eligible clean energy upgrades include, but are not limited to, the following:



Frequently Asked Questions

Clean Energy Upgrade Type
A. Insulation for ceilings, floors, main walls, kneewalls, foundation walls, foundation headers, foundation slabs, and crawlspaces
B. Draftproofing including caulking, weather stripping, and duct sealing
C. Exterior doors
D. Exterior windows
E. Domestic Hot Water Tanks
F. Drain Water Heat Recovery Systems
G. Heat Pumps
H. Wood & Pellet Heating Systems
I. Exhaust Ventilation
J. Balanced Heat Recovery Ventilation
K. Electric Vehicle Charging Stations*
L. Electric Thermal Storage (ETS) Systems*
M. Solar Hot Water Systems*
N. Solar Hot Air Systems*
O. Solar Photovoltaic Systems*
P. Swimming Pool Heating & Circulation Systems*
Q. Well Pump**
Q. Supplementary work required to successfully complete the above listed upgrades. This may include but is not limited to removal of existing equipment or components, repairs and maintenance required, installation of vapour barriers and other water controls and freeze protection, testing and abatement of asbestos and vermiculite, and electrical upgrades

* These upgrades will require a supplementary assessment, in addition to a Home Energy Assessment, to determine if they meet the required savings-to-debt ratio

** Only available to participants in District of Lunenburg

To be eligible, the upgrades must also meet a 1:1 debt to savings ratio. This is described in more detail in question 6 below.



Frequently Asked Questions

6. What is the 1:1 debt-to-savings ratio?

The intent of this program is for the cost of clean energy upgrades, program fees, and cost of borrowing to be less than or equal to the estimated energy savings over the financing period. The program will only finance an upgrade or upgrade package that meets this debt-to-savings ratio.

7. What are the financing interest rates and terms?

The Clean Energy Financing Program offers upgrade financing for a period of up to 10 years. This rate is fixed and the municipalities will not negotiate different terms with homeowners. If a homeowner enters default, the interest rate will increase to the municipality's tax arrears rate.

Municipality	PACE interest rate	Default interest rate
Town of Bridgewater*	4.18%	12%
District of Lunenburg**	4%	10%
District of Digby	4%	12%
District of Barrington	4%	18%
District of Yarmouth	Based on the municipalities cost to borrow +1%	18%
Town of Amherst	Based on the municipalities cost to borrow +2%	12%
Municipality of Cumberland	Based on the municipalities cost to borrow +2%	15%

Interest rates may be subject to change.

* In Town of Bridgewater interest rates are charged as recorded in the Town of Bridgewater Fees Policy (policy 89) on the date the customer agreement is signed.

** In the District of Lunenburg the interest rate will be 4% per annum for the first 5 years. At the end of the first five years of the financing, the administrative charge will be adjusted to a fixed



Frequently Asked Questions

charge of Chartered Bank prime, of the Municipality’s contracted bank, plus 1.5% for the remaining balance of the financing period.

8. What is the maximum financing I can get through the program?

Municipality	Maximum Financing Amount
Town of Bridgewater*	\$15,000 – 20,000
District of Lunenburg	\$10,000
District of Digby	\$15,000
District of Barrington	\$10,000
District of Yarmouth	\$15,000
Town of Amherst	\$15,000 – 25,000
Municipality of Cumberland	\$15,000 – 25,000

*The Town of Bridgewater’s Maximum Eligible Amount is \$15,000 for homes with full assessed property values of less than or equal to \$150,000. For homes with full assessed property values of more than \$150,000, the Maximum Eligible Amount is lesser of \$20,000 or 10% of the full assessed property value.

*The Town of Amherst’s and Municipality of Cumberland’s Maximum Eligible Amount is \$15,000 for homes with full assessed property values of less than or equal to \$150,000. For homes with full assessed property values of more than \$150,000, the Maximum Eligible Amount is lesser of \$25,000 or 10% of the full assessed property value.

9. How do I apply to participate in the program?

You will first need to be pre-qualified by completing the Registration Form and submitting it to Clean Foundation, who will confirm your eligibility. After confirming your eligibility Clean will send you a Customer Agreement to read and sign.

10. Where do I find the Clean Energy Financing Program documents and forms?

Visit www.CleanEnergyFinancing.ca to download the forms. Look for the button for the municipality you live in. If you need assistance completing the forms, please contact CleanEnergyFinancing@clean.ns.ca or 1-844-727-7818.



Frequently Asked Questions

11. How do I book my Home Energy Assessment?

You can book a certified Home Energy Assessment (HEA) through Clean Foundation by phone or email. Clean Foundation's HEA fee will be added to your overall Clean Energy Financing charge. Alternatively, you can book a HEA through another Nova Scotian Service Organization. You can find service organization contact information at www.energycyns.ca/service/home-energy-assessment. If you book through another Service Organization, the fee is not covered by the Clean Energy Financing program.

12. Is the cost of my Home Energy Assessment covered by the program?

If you book an assessment through Clean Foundation, the cost will be included in your Clean Energy Financing Program charge. If you book through another Service Organization, you will be responsible for paying the assessment fee.

13. What Program Fees will I incur?

Some program admin fees will be added to your Clean Energy Financing as they are incurred. If a homeowner exits the Clean Energy Financing Program early, he or she will only be charged for the costs incurred to date. The schedule below indicates when a homeowner has incurred each program fee:

Stage	Cost
Customer Agreement is signed	\$150
Home Energy Assessment (HEA) is completed	\$99*
Contractor quotes are received by Clean Foundation (assessment of debt-to-savings ratio)**	\$200**
Contractor invoices received by Clean Foundation	\$100

* The cost of assessments performed by Clean Foundation will be included in the overall Clean Energy Financing. The cost of an assessment performed by another service organization cannot be financed through our program and will need to be paid directly by the homeowner.

**For upgrades that require a Supplemental Assessment (e.g. solar photo voltaic) there is an additional fee of \$75. Please note that there might also be a charge for the actual assessment done by the contractor. Contact us at any time if you need assistance or clarity.



Frequently Asked Questions

14. What if I enter the Clean Energy Financing Program but do not complete any clean energy upgrades?

For homeowners that do not complete clean energy upgrades, the program fees they incurred will become payable 30 days upon exiting the program. Program exit is either the end of program term or upon Clean Foundation receiving confirmation of the participant's exit.

15. What if I've already had a Home Energy Assessment completed?

If you have had a Home Energy Assessment completed on your home within the last 12 months and have not yet begun upgrades to your home, you may be able to participate in the program without getting a new Home Energy Assessment.

Please note that if you have renovated your home since receiving the Home Energy Assessment, you may be required to get a new assessment in order to participate in the program.

16. What is a Supplementary Assessment? When might I need one?

Home Energy Assessments focus on energy use in a home's building envelope and may not capture all of the information required to assess a home's suitability for certain upgrades, such as installation of a solar photovoltaic system.

In these cases, Clean Foundation may require that a homeowner arrange a supplemental assessment by a qualified expert to assess whether a certain upgrade is a good choice for your home. The homeowner may choose to complete the supplemental assessment or not, but if no supplemental assessment is completed, the upgrade cannot be approved for financing under the program.

Homeowners will be responsible for paying the cost of any supplemental assessments.

17. Who is responsible for getting quotes from contractors?

It is up to the homeowner to contact contractors to obtain quotes and to retain contractors to complete the approved clean energy upgrades.

18. Is there a list of contractors who can complete the clean energy upgrades?

Yes. Clean Foundation has a list of contractors on our Trade Partner Network page. Efficiency Nova Scotia also has a Partner Directory. Please note: Clean Energy Financing can only work with contractors with liability insurance and WCB clearance. We can also accept quotes from companies who do not appear on those lists; however, proof of the company's WCB clearance & liability insurance must be provided along with their quote(s).



Frequently Asked Questions

If you are unable to find a contractor who can do the work that you are interested in (for example, solar panels), please contact us. Unfortunately, the Clean Energy Financing program cannot finance the homeowner doing the work themselves.

Note: Neither Clean Foundation nor the municipality are responsible for the work quality of any contractors and assume no liability for the work undertaken.

19. Who is responsible for paying the contractor?

Homeowners are not responsible for paying contractors. As program administrator, Clean Foundation will make arrangements to pay the contractor.

However, where a homeowner has chosen to have additional work completed over and above the maximum financing amount, or an invoice exceeds the maximum approved financing limit, the homeowner will be responsible for paying the amount in excess of the maximum financing limit.

*Please Note: A suite of upgrades may only exceed the total financing amount by a maximum of \$5000. One invoice can be partially financed as long as the total additional cost of all upgrades doesn't exceed this \$5000 cap. The total amount financed will still be the pre-determined municipal maximum.

Clean will notify the affected contractor up-front so that they can issue a split invoice or Clean can arrange to make a down-payment on the invoice. It is the homeowner's responsibility to pay the remainder of the invoice directly to the contractor.

20. Is there a deadline for completing the program?

Participants are required to complete the program within 6 months of signing the Customer Agreement.

21. If I'm not satisfied with my contractor's work, who is responsible for making it right?

Homeowners are responsible for selecting a contractor to complete the recommended upgrades, and that contractor is solely and entirely responsible for the quality of the work completed. Neither Clean Foundation nor the municipality are responsible for any defects in workmanship or materials.

For this reason, it is strongly recommended that homeowners select contractors who are bonded, insured, and who offer warranties that are in keeping with the industry standard.

22. What if the quote from my contractor is greater than my approved financing amount? Can I still proceed with the work?

It is possible if the quote still meets the debt to savings ratio and is within the maximum financing limits. However, the homeowner is responsible for paying all costs in excess of the approved financing amount.



Frequently Asked Questions

23. Am I required to receive consent from my mortgage lender?

No, this program is not requiring lender consent. However, it is recommended that you notify your mortgage lender about your participation in this program.

24. Can I pay off my financing early?

Yes. Homeowners may choose to pay off the balance of their financing in full at any time during the term of their financing, without any penalties.

25. Can I make a partial lump sum payment?

Yes.

26. Can I change the terms of the financing once I have signed the Financing Agreement?

No. Once you have signed a Customer Agreement, the terms are locked and cannot be changed.

27. What is the effect of having Clean Energy Financing registered against my property?

Pursuant to the municipality's PACE By-Law, the Clean Energy Program financing constitutes a lien against the Property until the amount of the financing, applicable interest, administrative charges, and any penalties for missed payments, have been paid in full.

The PACE By-Law provides the municipality with a method of enforcing the payment of financing owing by the homeowner as is authorized by section 81A(1) of the *Municipal Government Act*. Under section 81A(1)(d) of the *Municipal Government Act*, this charge is a first lien on the property until the charge is paid in full.

28. How will I pay the PACE costs that I incur?

After you send Clean the invoice for your last Clean Energy Upgrade you will be asked to make equal monthly payments over a period of 10 years to repay the PACE Charge (i.e. upgrade costs, program fees, and interest accrued). Depending on your municipality, payments will be made through either a pre-authorized payment plan set up through the municipality or post-dated cheques. The payment schedule will be made available through the municipality.

If you exit the program without completing Clean Energy Upgrades, any incurred program fees will be due 30 days after you exit. The date of your exit is based on confirmation of Property Owner exit, or end of program term. If these program fees are not paid within 30 days, interest will be accrued on the outstanding balance and payable at the same rate applied by the Municipality for unpaid taxes.



Frequently Asked Questions

29. What happens if I sell my home before my payment term is up?

During the process of sale, the Property Owner must provide a copy of the Customer Agreement to the new owners. When the property is transferred to a new owner the lien is transferred to the new owner along with the property. At this time, the new property owner shall continue to be liable to the Municipality for all Property Owner obligations and liabilities under this Agreement unless a lump sum payment representing the outstanding balance of the Financing Charge plus accrued interest and any applicable late charges is received by the Municipality at the time of the sale.

Want to chat with someone about the Clean Energy Financing program?

Call us toll-free at 1-844-727-7818, or email us at cleanenergyfinancing@clean.ns.ca



1. Property Owner: _____
Name

2. Property Owner: _____
Name

3. Property Owner*: _____
Name

Civic Address: _____
House Number and Street

Community

RR# Postal Code

Property Tax Information: _____
Assessment Roll Number

* If there are more than three property owners, please include remainder of property owners on the "additional property owners" document found at www.cleanenergyfinancing.ca

THIS FINANCING AGREEMENT, is made this ____ day of _____ 2018 ("Effective Date").

B E T W E E N:

PROPERTY OWNER(S)

- and -

(hereinafter called the "Municipality" and, together with the Property Owner(s), the "Parties")

In consideration of the mutual covenants herein contained, the Parties agree as follows:

Definitions

1. In this agreement,
 - a. **"Program Service Fee"** refers to the costs incurred by the Program Administrator to administer the program;
 - b. **"Approved Quote"** means the Contractor quote for the completion of part or all of the approved Clean Energy Upgrades that has been obtained by the Property Owner(s) and provided to and approved by the Program Administrator;



- c. **"CAO"** means the Chief Administrative Officer for the Municipality, or his or her designate;
- d. **"Clean Energy Financing Program" or "Program"** means a program established by the Municipality under which owners of Properties may obtain financing for Clean Energy Upgrades;
- e. **"Clean Energy Upgrade"** means an installation that is affixed to the Property and which:
 - i. will result in improved energy efficiency, the generation of renewable energy, or reduced greenhouse gas emissions;
 - ii. involves building envelope upgrades such as caulking and weather stripping, duct / air sealing, insulating, or energy efficient windows and doors; building heating, ventilation and air conditioning system upgrades such as heat pumps, wood or pellet stoves, or furnaces or boilers; renewable energy upgrades such as solar thermal panels, solar photovoltaic panels, or wind turbines; or such other clean energy upgrades as are approved and agreed in writing by the Municipality; and
 - iii. is identified as an eligible upgrade in the Municipality's PACE Program Clean Energy Upgrade Standards Policy, and meets or exceeds applicable energy efficiency standards as defined in that Policy;
- f. **"Enabling upgrade"** means a non-clean energy upgrade that is necessary to enable a clean energy upgrade;
- g. **"Contractor"** means an insured person retained by the Property Owner(s) to complete the Clean Energy Upgrades;
- h. **"Manager of Finance"** means the Manager of Finance for the Municipality, or his or her designate;
- i. **"Effective Date"** means the date on which Final PACE Customer Agreement is signed;
- j. **"PACE Charge"** means the local improvement charge levied on the property pursuant to section 81A of the *Nova Scotia Municipal Government Act*, and is equal to the value of the Approved eligible upgrade(s) plus the Program Service Fee, up to the **Maximum Eligible Amount**;
- k. **"Maximum Eligible Amount"** means a general financing cap set by the municipality. The District of Yarmouth's Maximum Eligible Amount is \$ **_____**;
- l. **"PACE By-Law"** means the Property Assessed Clean Energy Program By-Law, approved by the Municipality on **_____**;
- m. **"Program Administrator"** means The Clean Nova Scotia Foundation, and includes its employees and agents;
- n. **"Repayment Period"** means the period from the date the Financing Charge first becomes due and payable to the date the final payment is due, and shall in no case be greater than **ten (10)** years; and



- o. **“Property”** means a residential property located within the Municipality that meets the eligibility criteria for participation in the Clean Energy Financing Program.

Term of Agreement

- 2. This Customer Agreement commences on the Effective Date and terminates at the end of the Repayment Period.

Clean Energy Upgrades

- 3. The clean energy upgrades must be estimated, by a qualified energy assessment, to achieve an overall savings-to-debt ratio greater or equal to 1:1. In other words, the cost of the clean energy upgrades, program fees, and cost of borrowing combined is less than or equal to the estimated energy savings over the 10 year financing period.
- 4. The Property Owner(s) acknowledges and agrees that only those Clean Energy Upgrades approved by the Program Administrator are eligible for financing through the Program, and that the Property Owner(s) shall be solely liable for the cost of any unapproved upgrades completed on the Property.
- 5. The Property Owner(s) further acknowledges and agrees that they shall be solely liable for the cost of any work in excess of the Maximum Eligible Amount, regardless of whether the excess costs were for the installation of approved Clean Energy Upgrades.
- 6. In the event that an enabling upgrade is recommended in order to enable a clean energy upgrade, the enabling upgrade and the enabled clean energy upgrade must be both be installed to be eligible for PACE financing.
- 7. Clean Energy Upgrade invoices must be submitted to Clean Foundation within 6 months of this PACE Customer Agreement being signed. Any invoices received after this period will not be eligible for PACE financing unless the Municipality has provided permission to extend the deadline in writing.

Payment to Contractor

- 8. Upon completion of the approved Clean Energy Upgrades, the Property Owner will send the contractor invoices, signed by the Property Owner, to the Program Administrator who will pay the Contractor the amounts owing for the completed work, up to the Maximum Eligible Amount.
- 9. In the case of disputes between the Property Owner(s) and a Contractor as to whether the Clean Energy Upgrades are complete, the Program Administrator reserves the right to make the final determination as to the completeness of the Clean Energy Upgrades.
- 10. If, after starting to install the Clean Energy Upgrades at the Property, a Contractor or the Property Owner(s) causes the installation of the upgrades to be stopped for any reason, including reasons related to safety (including structural deficiencies, hazardous materials or other safety hazards), or discovery of unforeseen conditions, this is a matter to be resolved between the Property Owner and the Contractor. The Property Owner acknowledges and agrees that in such circumstances the Program Administrator may pay to the Contractor any amounts which, in the reasonable opinion of



the Program Administrator, are properly due and payable to that Contractor at that point in time, and that the Property Owner(s) are responsible for any remaining amounts owing to the Contractor.

Reportable Deficiencies

11. If the Program Administrator or the Municipality discovers any deficiencies with the Property relative to compliance with codes, standards, or other applicable regulations, the Property Owner(s) acknowledges that the Program Administrator and/or the Municipality shall be obligated to report such deficiencies to the applicable regulatory authority. The Municipality's failure to discover or report any such deficiency will not be treated by the Property Owner or any other person or entity as the Municipality's acceptance or endorsement of such deficiency and is without prejudice to any person or entity's right or duty to cause or require the deficiency to be remedied, at any time.

Lien Against Property

12. The PACE charge shall become payable on completion of installation of the Clean Energy Upgrade in accordance with the PACE Customer Agreement.
13. If the Property Owner exits the program without completing the intended Clean Energy Upgrades, any incurred Program Service Fees and/or Clean Energy Upgrade costs will immediately be issued as a PACE Charge against the Property in accordance with Sections 12 and 14. Program exit is automatically triggered in four ways:
 - a. the Program Administrator receives a signed "Clean Energy Financing Program Exit Form" from the Property Owner(s);
 - b. the Property Owner(s) declares bankruptcy;
 - i. In this situation, the Municipality may decide, at the sole discretion of the Manager of Finance, not to trigger an automatic program exit and allow the Property Owner to complete all or part of their remaining intended Clean Energy Upgrades, as well as to revise the deadline for the submission of any remaining Clean Energy Upgrade invoices
 - c. the Property is sold before completion of upgrades;
 - d. **six (6)** months from the date this PACE Customer Agreement is signed, unless an extension has been granted by the Municipality as described in Section 8, in which case the extended deadline date will be date of program exit.
14. The PACE Charge may consist of:
 - a. The cost of Clean Energy Upgrade, including all materials, labour costs, permitting fees, and applicable taxes;
 - b. Applicable PACE Program service fees (tax included in quoted fee);
 - i. Registration and Customer Agreement: \$150
 - ii. Home Energy Assessment: \$99 for electrically heated homes. For non-electric heated homes, the assessment cost depends on service organization.



- iii. Savings-to-debt assessment:
\$200
- iv. Administering invoices: \$100
- v. Evaluation of Supplemental Assessment (when applicable): \$75
 - 1. Any contractor costs associated with the Supplemental Assessment must be paid by the Property Owner
- vi. Post-retrofit Home Energy Assessment (optional): free for electrically heated homes. For non-electric homes, the assessment cost depends on service organization. The post-retrofit assessment is recommended to verify quality of upgrades.
- c. Interest accrued on the charge including any additional interest arising due to any default of payment. Interest begins accruing when final invoice is received by Clean Foundation, or upon program exit.

Repayment

15. Payment of the PACE Charge shall occur as follows:

- a. The Property Owner(s) will make equal payments over a period of not more than 10 years to repay the outstanding PACE Charge, including interest payable on the unpaid PACE charge at the rate of 4% per annum, calculated monthly not in advance. Monthly payments must be made through post-dated cheques sent to the municipality on a yearly basis or pre-arranged electronic payments. The payment schedule will be made available through the municipality.
- b. Interest will begin accruing when the final clean energy upgrade is received by Clean, or upon program exit.

16. The Property Owner may at any time, and without prepayment and/or penalty charges, make a lump-sum payment to the Municipality toward the outstanding balance of the PACE Charge, plus accrued interest.

Late Payments

17. In the event of default of payment under the PACE Customer Agreement, the outstanding balance shall be immediately due and payable. Interest shall be accrued on the amount then due and payable at the same rate applied by the Municipality for unpaid taxes and charges in default (18%). Once in default status, the lien will be subject to the default rate until entirely repaid.

Sale and Release

- 18. The Property Owner(s) shall have the unfettered right to sell, transfer, charge, and mortgage, encumber or otherwise deal with the Property without the prior consent of the Municipality, subject to the Municipality's lien and Property's Owner's obligations under this Agreement.
- 19. The Property Owner(s) agrees to provide a copy of this Agreement to the new owners.
- 20. In the event the Property is transferred to a new owner the lien is transferred to the new owner along with the property. At this time, the new property owner shall continue to be liable to the Municipality for all Property Owner obligations and liabilities under this Agreement unless a lump



sum payment representing the outstanding balance of the PACE Charge plus accrued interest and any applicable late charges is received by the Municipality at the time of the sale.

Home Owner(s) initial _____

Disclaimer

21. Neither the Municipality, the Program Administrator, nor their respective affiliates, agents, successors and assigns shall be liable to the Property Owner(s) for any damages arising in, but not limited to tort, including but not limited to negligence, breach of contract, or under any other provision of law including property damage, direct and incidental losses, economic loss, or personal injury resulting from the installation, or use of the Clean Energy Upgrade or anything done in connection with the Program.

Property Owner Responsibilities

22. The Property Owner(s) will be responsible for:
- a. arranging for a Home Energy Assessment to be completed on the Property if:
 - i. one has not been completed within the prior twelve (12) months; or
 - ii. where a Home Energy Assessment was completed within the prior twelve (12) months but the Property Owner(s) has made changes to the Property since the date of the assessment that, in the opinion of the Program Administrator, necessitate that a new Home Energy Assessment be conducted;
 - b. providing complete and accurate information to the assessor during the Home Energy Assessment;
 - c. reviewing and approving the proposed Clean Energy Upgrades provided by the Program Administrator;
 - d. obtaining quotes from Contractors for the proposed Clean Energy Upgrades and submitting these quotes to the Program Administrator;
 - e. applying to the relevant government authority for the appropriate permit(s) to complete the Clean Energy Upgrades;
 - f. advising the Program Administrator without delay upon becoming aware if there are any hazardous substances at or on the Property, or other defects, deficiencies or impediments that might impact the installation of the Clean Energy Upgrades or that might present potential risk of harm to the Property, to the environment, or to any other person or property;
 - g. forwarding the Contractor invoices for the completed Clean Energy Upgrades immediately upon their receipt;
 - h. arranging for a post-upgrade Home Energy Assessment to be completed on the Property;
 - i. arranging and paying for all maintenance of the Clean Energy Upgrades after installation;
 - j. arranging and paying for any materials or labour costs required to repair or rehabilitate the Clean Energy Upgrades in relation to any defects or deficiencies;



- k. all costs incurred to move the Clean Energy Upgrade for maintenance and repair of the Property;
- l. telling his or her property insurance provider that the Clean Energy Upgrade is being installed and purchasing appropriate insurance coverage in this regard;
- m. telling, in writing, anyone who is negotiating with the Property Owner(s) to purchase, or will otherwise receive an ownership interest in the Property, about any unexpired lien that remains against the Property as a result of the installation of the Clean Energy Upgrades; and
- n. providing anyone who purchases or otherwise acquires title to the Property a copy of this Financing Agreement.

Assignment by Municipality

- 23. This Agreement binds the Property Owner(s) and their successors, heirs and assigns. The Property Owner(s) will allow the Municipality to assign this Agreement in whole or part, without notice, for any purpose.

Consent

- 24. The Property Owner(s) consents to the Program Administrator or its agents accessing the premises with reasonable notice for the purpose of quality assurance of the Program and/or the Clean Energy Upgrades.
- 25. The Property Owner(s) consents to the sharing and exchange of energy and water information collected from monitoring solar photovoltaic or solar hot water system installed in the course of the Program. Such information may be collected by the Municipality and the Program Administrator and their agents and consultants for the purposes of quantifying program impact and service delivery. This information will not be shared with third parties without the Property Owner's express prior permission. Such information may continue to reside on the Municipality's and/or the Program Administrator's computer system.
- 26. The Property Owner(s) consents to the sharing of photographs taken of their Clean Energy Upgrades for the purposes of marketing and/or education. No photographs displaying civic addresses, license plates or other information that would disclose the identity of the Property Owner(s) shall be used.
- 27. The property owner is consenting to the sharing and exchange of information between the Property Owner's utility providers for electricity, oil, propane, natural gas and water, the Municipality and the Program Administrator. This information may be used for the purpose of research and evaluation of the Clean Energy Financing Program and may include name(s), addresses, phone numbers, and utility usage both historical and during the course of the financing.

No Warranty

- 28. There is no implied nor express representation or warranty by the Municipality, the Program Administrator, or their respective affiliates, agents, successors and assigns related to the design, installation or operation of the Clean Energy Upgrades, and the Municipality, the Program Administrator and their respective affiliates, agents, successors and assigns expressly disclaim any and all warranties relating to the Clean Energy Upgrades, associated equipment or materials as to workmanship, quality, fitness for purpose or performance. For greater certainty, nothing in this



Agreement, in related Property Assessed Clean Energy (PACE) Program By-law, nor any action, omission or decision by the Municipality in connection with either, shall be treated as any form of evidence or acceptance by the Municipality of any liability to the Property Owner or a third person for any losses directly or indirectly arising from the Clean Energy Upgrades or work, materials or service provided in connection thereto.

Home Owner(s) initial _____

No Guarantee of Savings

- 29. Neither the Municipality nor the Program Administrator guarantee that the Clean Energy Upgrades will save any level of energy or result in a lowering of the Property Owner's utility or other bills.

Home Owner(s) initial _____

The Parties hereto acknowledge and agree that the communicating of this Agreement may be transmitted by way of e-mail transmission and that the Parties hereto agree to accept such signatures and documents as legal and binding on the parties.

Authorized Signature of Property Owner(s)

- 1. By signing below, the Property Owner(s) agree(s) to the terms and conditions described above, and hereby confirms that he or she is a registered property owner.
- 2. In signing this Agreement, the Property Owner acknowledges that he or she has been encouraged, and had a full and fair opportunity to obtain independent legal advice concerning his or her rights and obligations hereunder and other wise in law, and that his or her signature will be treated as conclusive evidence that the Property Owner has sought out independent advice to his or her own satisfaction, prior to signing and is entering this Agreement knowingly, voluntarily and without duress.
- 3. By sending the Program Administrator an eligible upgrade invoice the Property Owner(s) is confirming the upgrade is complete and the invoice dollar amount will be added to the PACE charge amount which includes PACE Program Service Fee, Supplemental Assessment Fee(s) if applicable, and any previously completed clean energy upgrade invoices.
- 4. If eligible Clean Energy Upgrade dollar amount (plus Program Service Fee and Supplemental Assessment Fees) surpasses the maximum financing limit, the surplus dollar amount is the sole responsibility of the Property Owner(s). The Clean Energy Upgrade dollar amount will be calculated based on the order in which eligible clean energy upgrade invoices are received by the Program Administrator. The Property Owner is responsible for making contractors aware that any invoice fee that exceeds the maximum financing limit will be the responsibility of the Property Owner.



PROPERTY OWNER 1	
Name (print):	
Signature:	
Date:	

PROPERTY OWNER 2	
Name (print):	
Signature:	
Date:	

PROPERTY OWNER 3	
Name (print):	
Signature:	
Date:	

* If there are more than three property owners, please include remainder of property owners on the "additional property owners" document found at www.cleanenergyfinancing.ca

Municipal Staff	
Name (print):	
Signature:	
Date:	
File Approval Number	

Please mail or email the completed Financing Agreement to:

Clean Foundation
Attn: Clean Energy Financing Program
126 Portland Street
Dartmouth, NS, B2Y 1H8
cleanenergyfinancing@clean.ns.ca



**extinction
rebellion**

CBRM Climate Action Plan Workshop

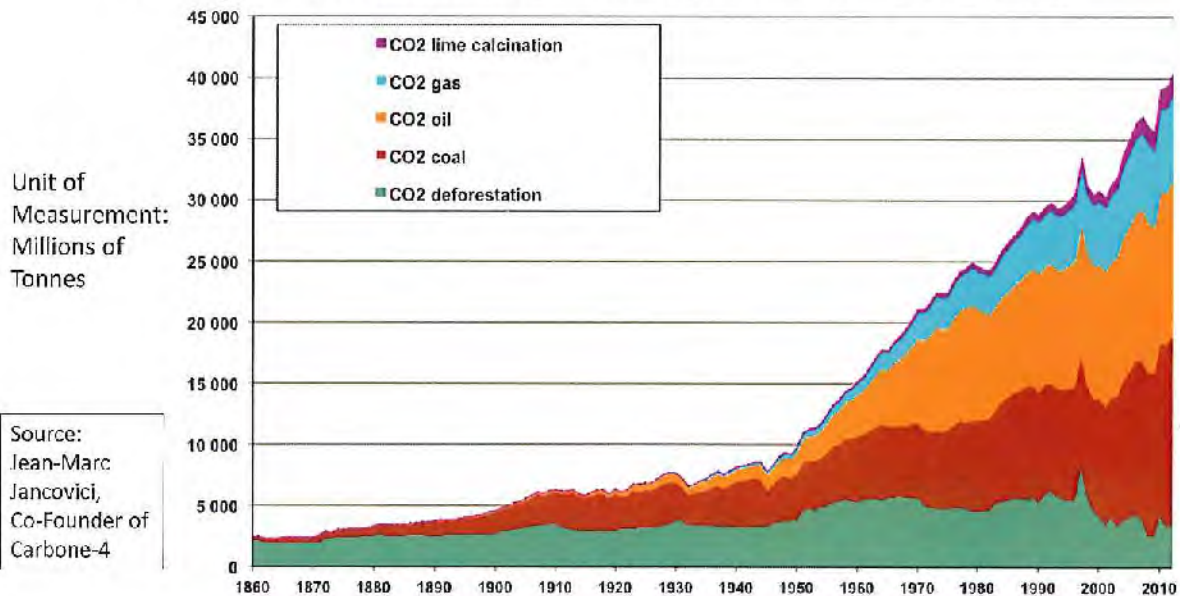
January 20, 2020

Scott Sharplin

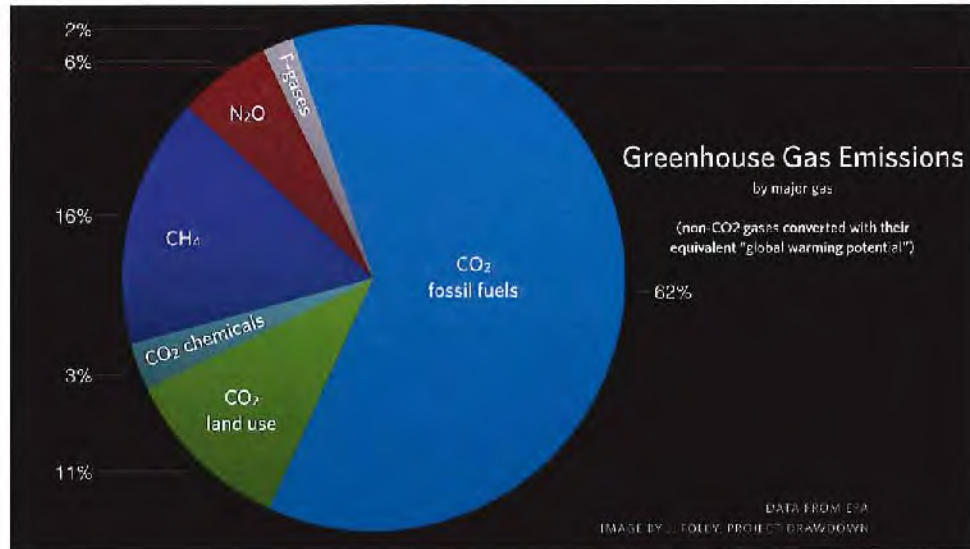
Coordinator, Cape Breton Extinction Rebellion

1. The Climate Facts
2. Cape Breton and the Climate Crisis
3. The 2014 Climate Action Plan
4. The 2020 Paradigm Shift

Progression of CO₂ emissions since 1860



Greenhouse Gases contributing to Global Warming



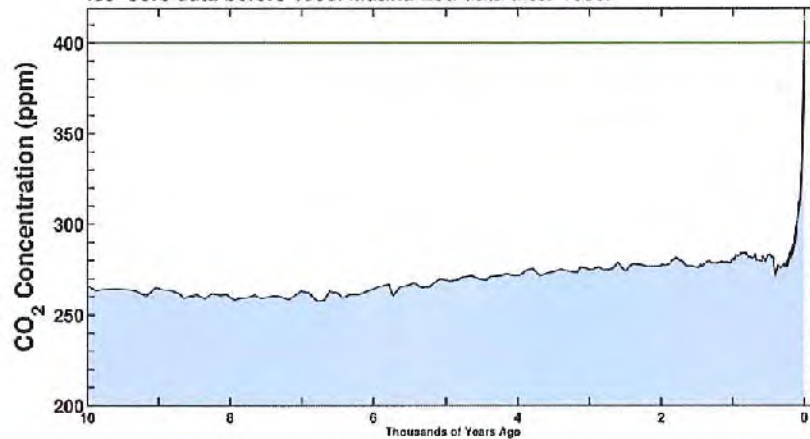
Source:
USA
Environmental
Protection
Agency

CO₂ Concentration in Atmosphere

Latest CO₂ reading
May 11, 2019

415.26 ppm

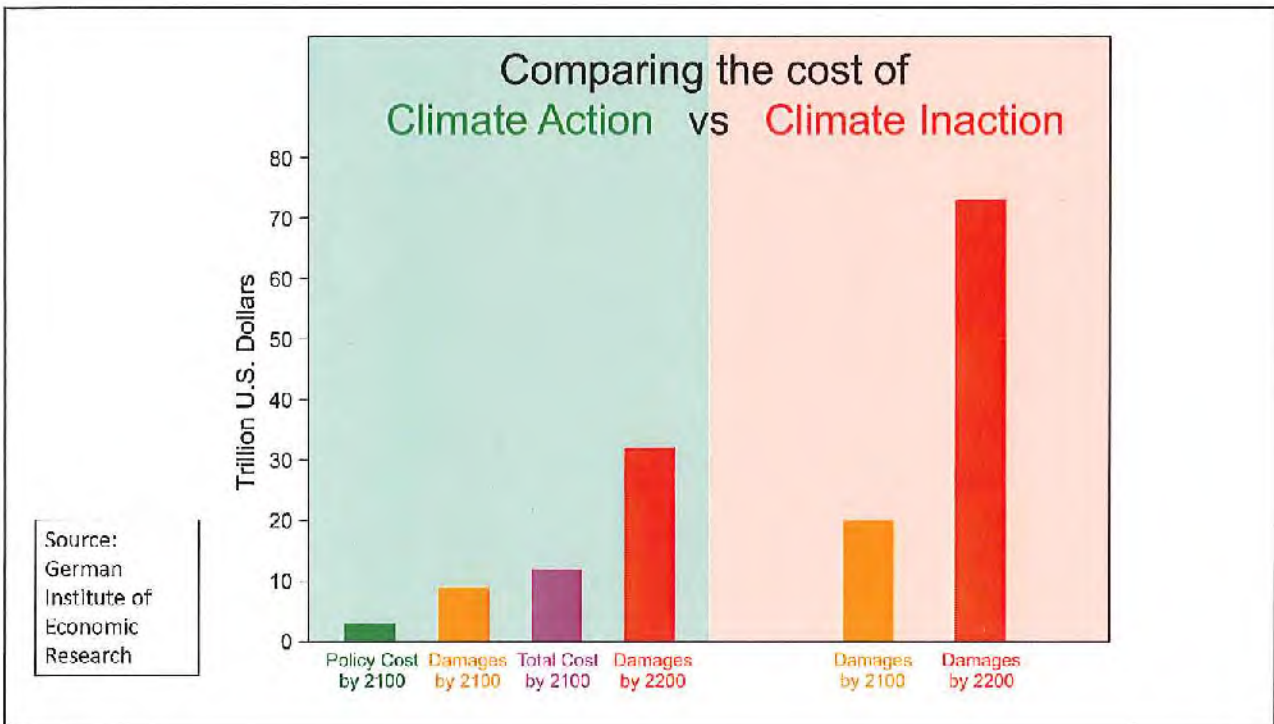
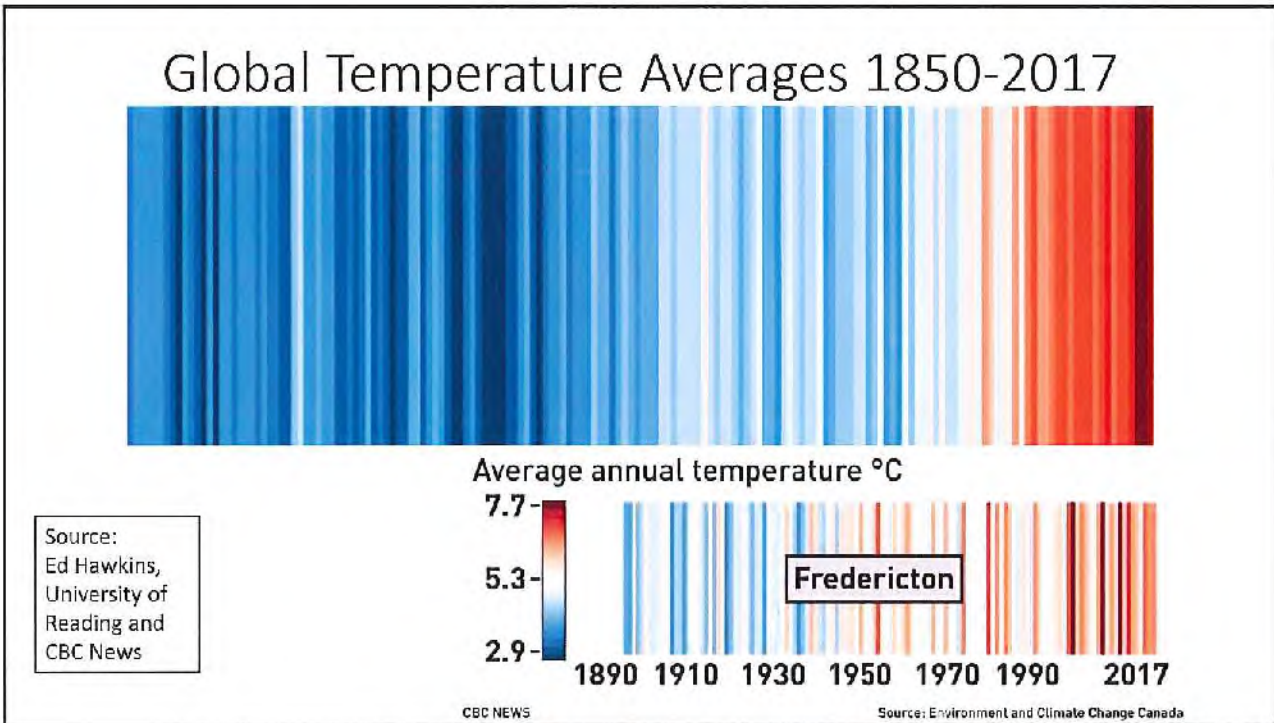
Ice-core data before 1958. Mauna Loa data after 1958.

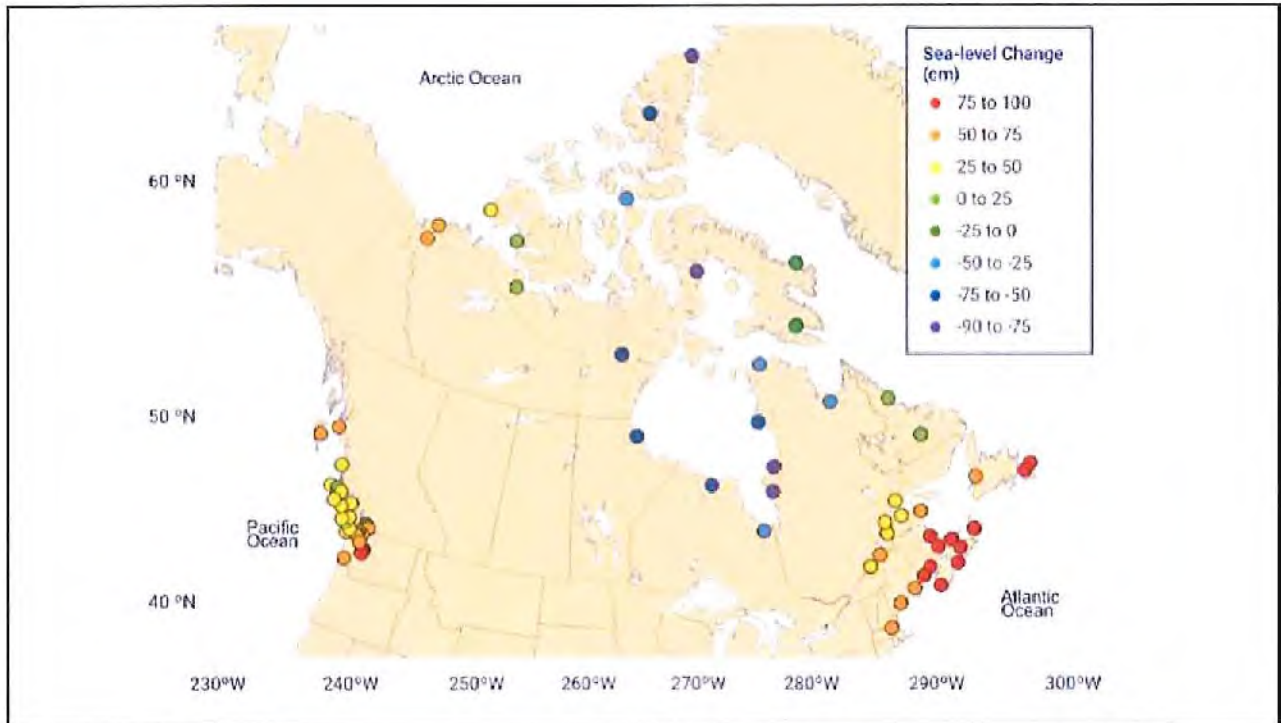
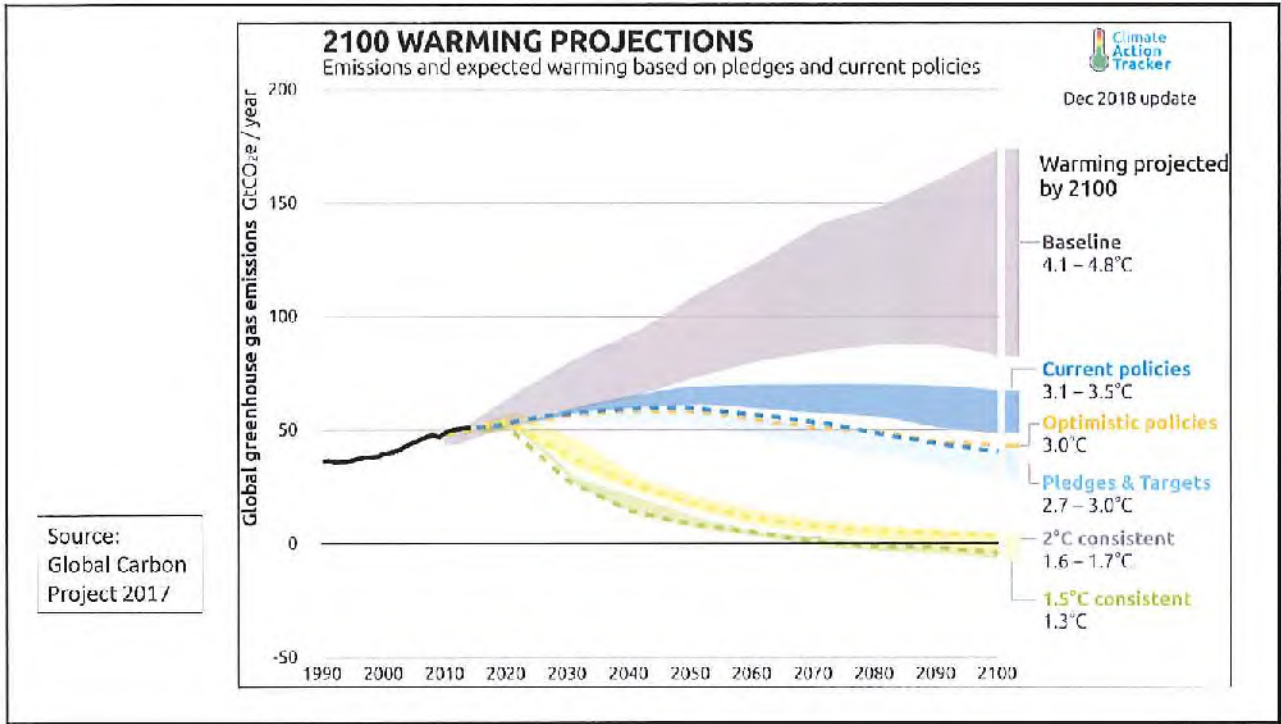


Unit of
Measurement:
Parts per Million

Source:
Scripps
Institution of
Oceanography

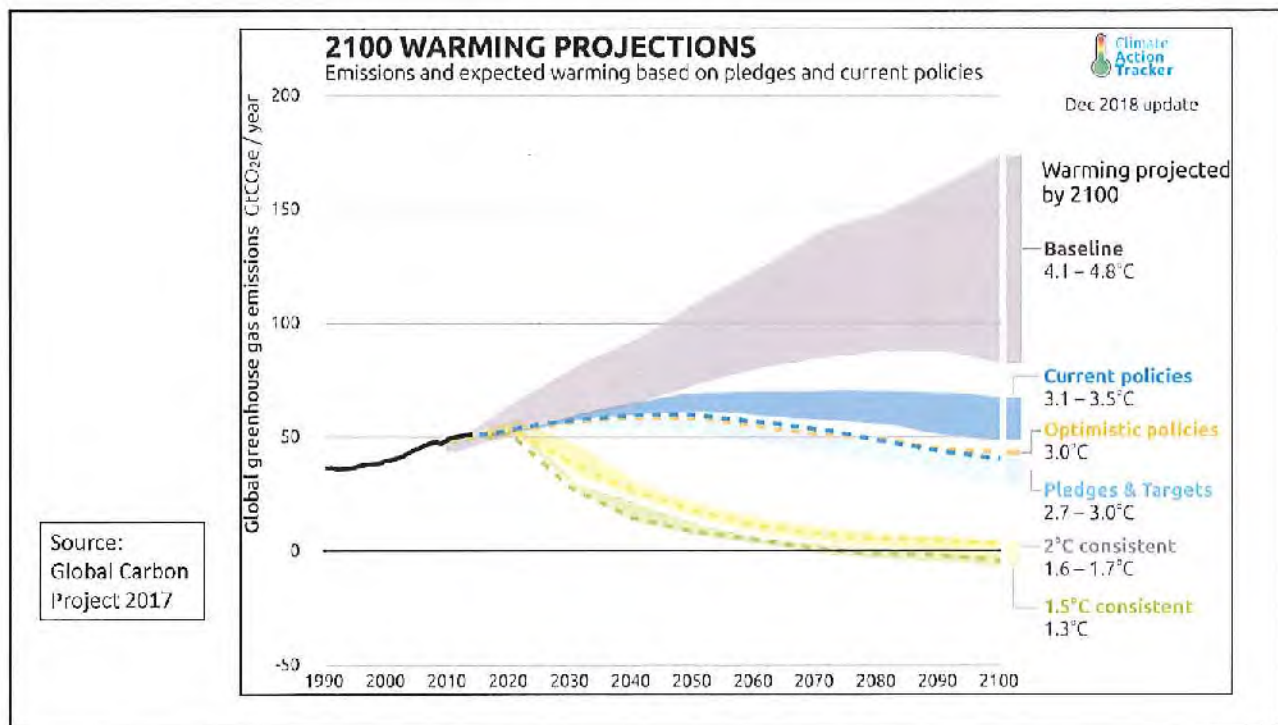
Unit of Measurement:
Thousands of Years Ago

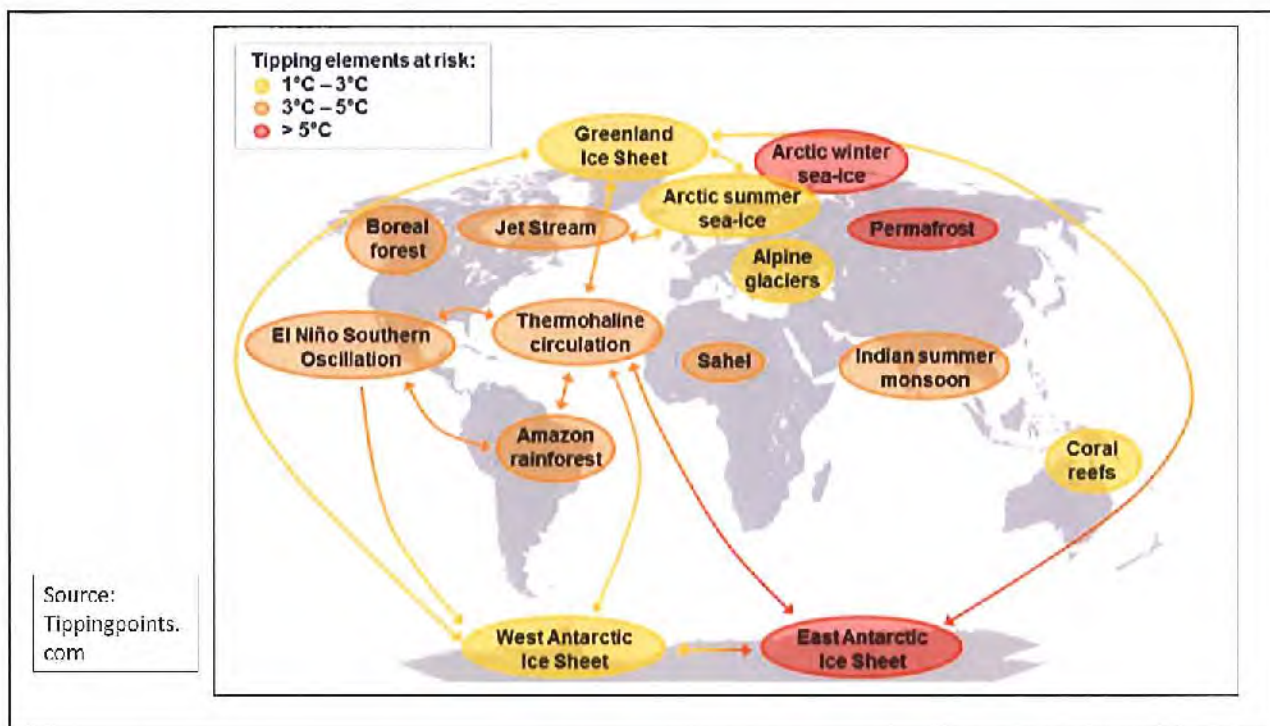


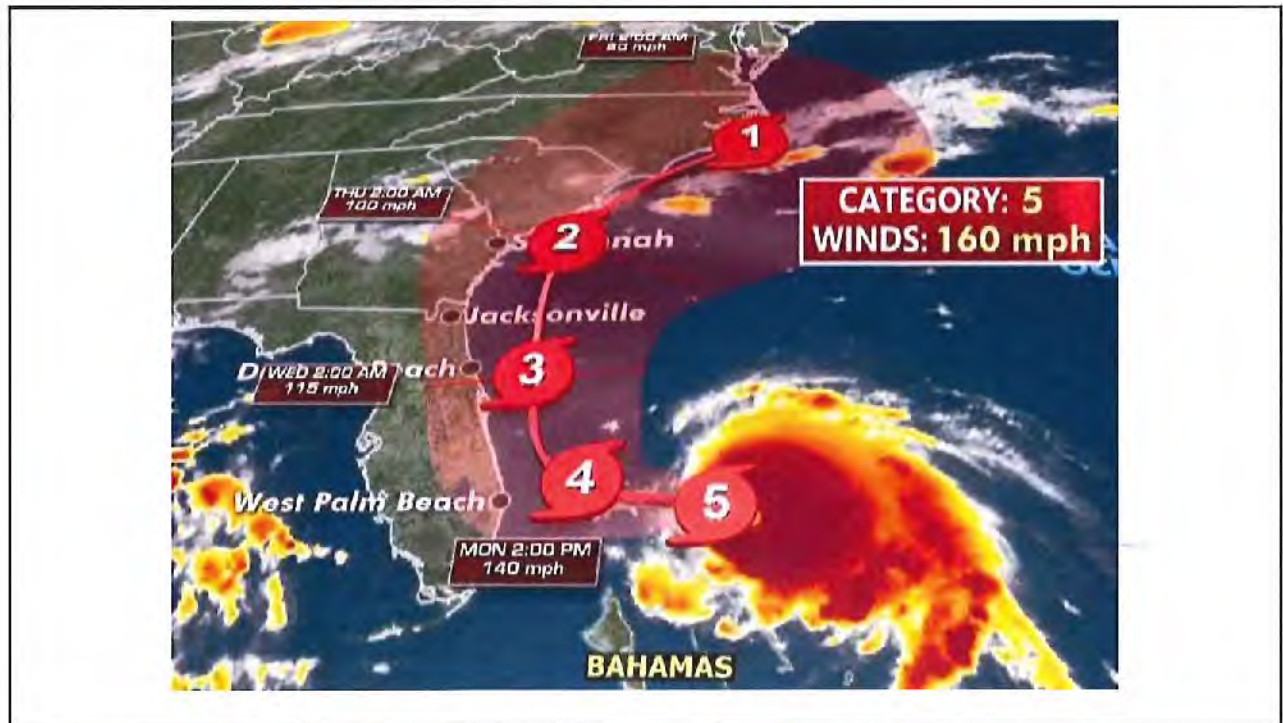
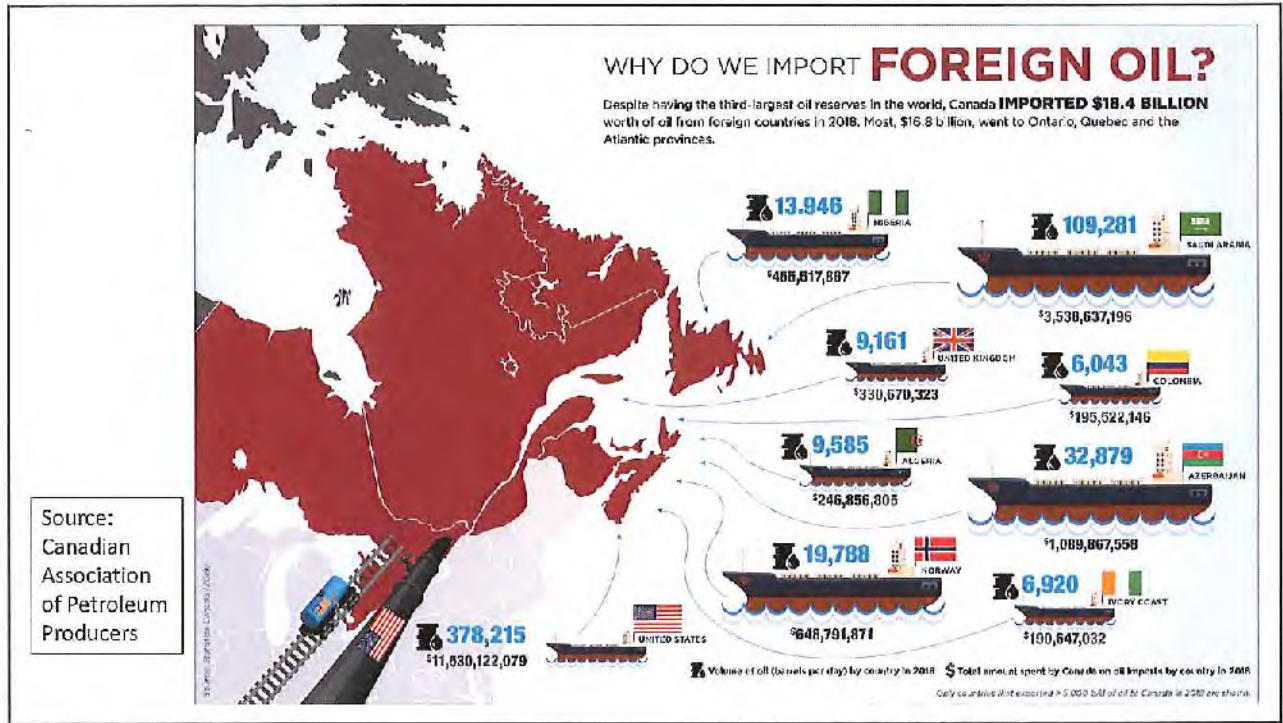


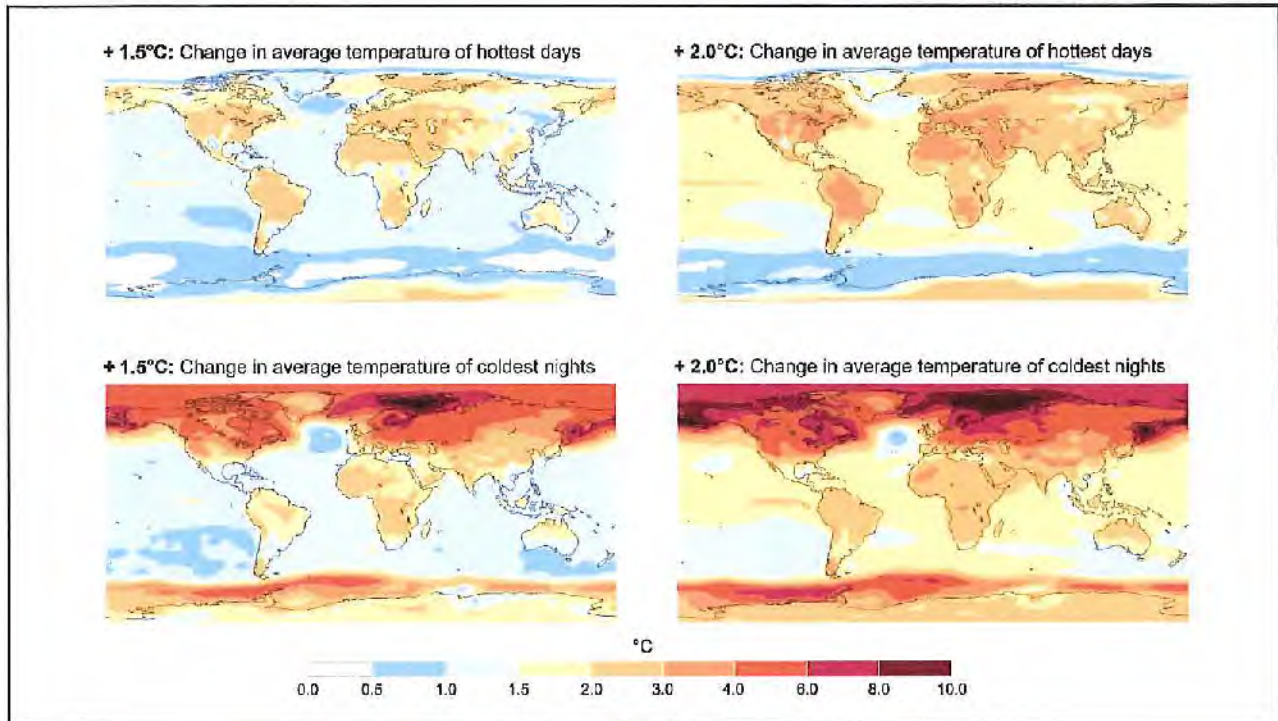
“Best-Case Scenario” Climate Effects 2019-2050

- Sea Level Rise (32-80 million people displaced)
- Clean Water Shortage (411 million people affected)
- Food Scarcity (821 million people affected)
- Poverty (120 million people affected)
- Flooding and Storm Surges
- Wildfires and associated Air Pollution
- Hurricanes and other Extreme Weather Events
- Lethal heatwaves









“We basically have three choices: mitigation, adaptation and suffering. We’re going to do some of each. The question is what the mix is going to be. The more mitigation we do, the less adaptation will be required and the less suffering there will be.”

—John Holdren

CBRM Climate Action Plan Report (2014)

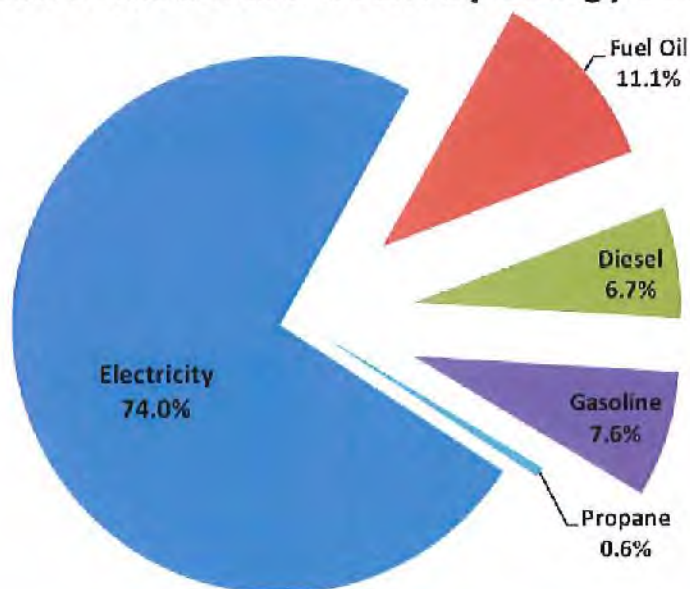
ADAPTATION: “Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects.” (SNSMRa 2011).” (p.2)

- Preserving natural resource and habitat lands
- Avoiding development in high-risk areas
- Protecting areas where development would increase risk
- Managing retreat from affected areas

7.2 Setting Goals and Actions for Mitigation

1. Establish a no-idling policy for the vehicle fleet and for contracted construction work.
2. Extend the actions to a public education program encouraging local businesses and organizations to follow CBRM's lead.
3. Install digital programmable thermostats in conditioned spaces.
4. Repair all windows with broken seals to prevent condensation in the interior glass and minimize heat loss in heated buildings.
5. Upgrade interior and exterior building lighting to new high efficiency type.
6. Install lighting occupancy sensors, where applicable (locker rooms, lunch rooms, kitchens, training rooms and other infrequently occupied spaces).
7. Install new sweeps and weather-stripping on exterior doors where missing or damaged.
8. Repair damaged building exterior cladding to stop unwanted air infiltration, snow and water leakage.
9. Where applicable, add fibreglass insulation to building walls and attics to increase energy efficiency.
10. Replace existing water closets with low flow flush tank type and replace existing lavatory faucets with automatic electronic controls type.

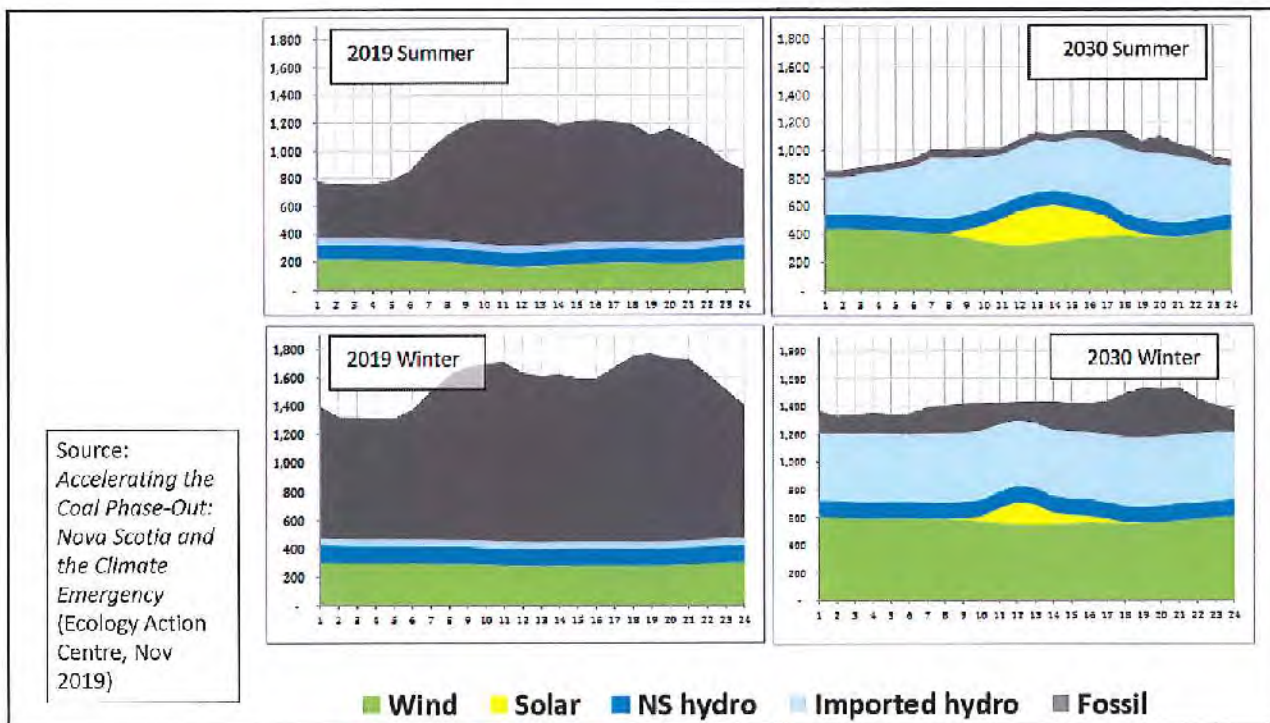
GHG Emissions Percent by Energy Source



7.2 Setting Goals and Actions for Mitigation

Other possible Energy Management Opportunities to investigate:

1. Install Energy Management Systems in principal buildings with high occupancy rates.
2. Install heat recovery systems on building exhausts.
3. Consider replacing existing boilers with multiple high efficiency, 3 pass boilers with modulating or 3 stage burners.
4. Utilize mine water from nearby mine workings (seawater, groundwater where applicable) to provide geo-energy for ventilation air, preheating DHW, space heating and air conditioning.
5. Consider installing heat recovery ventilator/ventilators to improve building ventilation.
6. Investigate adding full modulating control to electric heating coils.
7. Investigate replacing existing air conditioners with air to air heat pumps.
8. Investigate a district energy network for the downtown of Sydney including the Civic Centre.
9. Investigate the addition of vestibules to building without them currently to minimize infiltration / heat loss and to maintain positive pressure within the buildings.



Source:
Accelerating the Coal Phase-Out: Nova Scotia and the Climate Emergency
 (Ecology Action Centre, Nov 2019)

Environmental and clean technology (2017):

\$62 billion of GDP
 (3.0% of total GDP)

282,000 jobs representing
 1.5% of jobs in the Canadian economy

\$12.4 billion in exports

Of this, clean energy alone accounted for

1.3% of Canada's GDP

and employed
59,500 people.

Source:
 Natural Resources Canada

“We basically have three choices: mitigation, adaptation and suffering. We’re going to do some of each. The question is what the mix is going to be. The more mitigation we do, the less adaptation will be required and the less suffering there will be.”

- John Holdren



From: LA MacPherson
Sent: January-16-20 4:18 PM
To: ClerksOffice; Mayor's Office
Subject: CLIMATE ACTION PLAN UPDATE WORKSHOP

hackhumanity.net
Overture
Planet Earth
WorldSummit
Envienta Foundation

Mayor Clarke and Council:

My name is Lloyd Allan MacPherson and I'm a resident of the CBRM. In my spare time, I do light research on technology and innovation and for the last number of years have been aligning business interests with specific parties in and around the circular/regenerative economy sector. Governments are expecting that this new economy is going to create a response to a current ocean threat. The current ocean threat is well documented both by governments world-wide proclaiming plastics and synthetics to be out of control and by non-governmental organizations like IDUM – International Dialogue on Underwater Munitions who assures us that those plastics are only the tip of the iceberg. What is starting to decompose and off-gas at the bottom of the ocean is in the hundreds of millions of tonnes and the most current research is pointing towards that number likely being in the billions now.

Climate change has a strategy that coincides with the expansion of the blue and green reparative industry. Reparative industry is what governments are in charge of mostly, but not these two (federal and provincial need all the help we can get on plastics and munitions), it would appear. That gives our municipality an edge. What if suddenly, the province were to want to pilot projects in the blue and green sector? How would we know? Likely legislation would change on a provincial level and a coordinated response team would assemble the best top to bottom approach to stabilize the oceans. It's likely those players needed would have already assembled and were taking care of the heavy lifting in the background. That's always timely in these uncertain scenarios. The other timely item would be Bill 213, Royal Assent as of 30 October, 2019 – the Sustainable Development Goals Act which proclaims that Nova Scotia is heading into a period of the development of Netukulimk which should iron out any of our current sustainability issues. That is the plan it would appear.

It is not the easiest thing to execute. How do you become sustainable without decentralizing a whole host of things? You don't. That is OK because if we are looking to establish a new governance model, we can at least ensure that it is established as a decentralized entity – transparency in the digital age will allow for that. Is it possible to make government so large that the actual positions become obsolete? The internet has already allowed that to happen in much of the developed world. Our ability to provide a balanced, well-constructed society is under threat and our abilities as citizens to deliver this balance to future generations are being questioned, rightfully. Have we started something we can't completely stop?

The answer is no. We've just forgotten who we are for a small moment. We have never overburdened our oceans like this previously in terms of consumer-driven society and waste treatment. What we have all more than happily committed to can be stopped and new processes can start to alleviate the destruction. Sometimes the only way to come up with the appropriate producer response is to become the producer. This fits for this new makerSpace generation. We want local, high quality, long-lasting, low price. How is that produced? In a paradigm better explained by Jeremy Rifkin and what he proposes in zero-marginal-cost society. Rifkin explains zero-marginal-cost well but fails to connect the actual current architecture that makes it all happen. That's where the Envienta Foundation comes in. They have created

the marketplace. Did you know that the current CUPW-STTP is working on a transition from Crown Corporation to worker-owned entity and their plan includes the tech-hub footprint which represents low-cost, high-quality construction. That would be an impressive move. They need key infrastructure and it has already been created in different circles for different reasons.

This has a response – it is being worked on and we appreciate all you do for your communities and want to help you in any way we can.

I hope you enjoy the slideshow.

<https://prezi.com/view/y7ZYVHNNsDNCnTDbSz4L/?fbclid=IwAR1S0ayu7PaP-5uKRC0HUVJIQstMe6XhqyX2B6LY7wikPEfkteaHfuIA6I8>

Regards,

Lloyd Allan MacPherson
Alder Point Road
Alder Point NS

From: Bruce G. Hatcher
Sent: January 15, 2020 2:03 PM
To: ClerksOffice
Cc: Sheilah D. MacDonald
Subject: Re: CBRM Climate Action Plan Workshop

The Bras d'Or Lake Biosphere Reserve Association manages the UNESCO Man and the Biosphere Reserve that includes the Bras d'Or Lake and its Watershed (approx. 3,600km²).

Designation of the Biosphere occurred in 2011, and since that time the Association has advanced the three pillars of UNESCO's Man and the Biosphere Program in the community: Capacity-Building for Biodiversity Conservation and Sustainable Social-Economic Development. Twelve new roadway and waterway signs were recently erected by the Association this year to highlight the natural and cultural assets of the Biosphere.

A priority for the Canadian Commission for UNESCO, and the Bras d'Or Lake Biosphere, is functional adaptation to anthropogenic climate change. Towards that end, the Association, in partnership with the Collaborative Environmental Planning Initiative for the Bras d'Or Lake, convened a Climate Change Adaptation Forum in 2019 that brought together 100 active adaptors from the 18 Biosphere Reserves across Canada to consider opportunities and develop guidelines for adapting to Climate Change.

The results of that gathering are currently being formalized and finalized, but there is enough analysis completed to make a worthwhile presentation of the preliminary findings.

Hence, I write to request leave from the CBRM Council for a presentation from the Association on what a Climate Action Plan for the Bras d'Or Biosphere Reserve will involve. The working title of the presentation (subject to minor change) is:

"Planning for Climate Change Adaptation in the Bras d'Or Lake Biosphere: lessons from a Forum of Canadian Biosphere Reserves"

The presentation will be made by a spokesperson for the Bras d'Or Lake Biosphere reserve Association. Scott Hatcher, BLBR Climate Change Adaptation Scientist, will make the presentation. I will also be in attendance and may be able to answer some of the more general questions about the Biosphere.

Thank you for your consideration.
Sincerely,

Bruce G. Hatcher, Ph.D.
Chairman, Board of Directors
Bras d'Or Lake Biosphere Reserve Association
902-563-1988 (office)
902-488-0746 (mobile)

CBRM Council Climate Action Plan Update **Workshop**

Monday, January 20, 2020

CBRM Council Chambers

Climate changes are evident everywhere:

- More weather extremes in Nova Scotia in past years
- Changes in weather “norms” in Nova Scotia
- Ice conditions at North and South poles
- Ice conditions in Sydney Harbour

Studies and projections have been done ad infinitum, it is time for **ACTION**:

- Scientists of the world agree that we are on a course that will change our planet for the foreseeable future – in a negative way!
- Lack of action to change this course will doom future generations to drastically alter their lifestyles and expectations.

Action needs to be taken **NOW** by individuals, companies, communities, governments, and countries!

- Use less energy;
- Increase bio-organic processes;
- Decrease greenhouse gas production;
- Reduce consumption of packaging products that are not compostable;
- Stop, think, and consider the impact on the environment before changing existing processes or starting new initiatives;
- Include the environment in making purchase decisions – cheapest is not always the best;
- Do not let lack of action by another individual, company, community, level of government, or country be a crutch to support lack of action by us! Be a **steward** of our environment, not an abuser;
- Increase the use of solar energy for space and water heating applications and reduce reliance on carbon-emitting systems! Provide tax incentives for same;
- Change building codes for new construction or existing building upgrades to mandate use of solar energy and encourage net-zero building;
- Encourage backyard production of food products that do not need to be transported from around the world;
- Reduce, Reuse, And Recycle! Stop allowing products with remaining life cycle to be put in landfill;
- Identify and use more efficient methods of transport of goods and people;
- Consider the benefits and cost savings of electronic conferencing versus face-to-face meetings. The cost of individual travel, hotel stay, food, etc. is excessive, and there is very little or no extra benefit to be realized;
- Examine our carbon-emitting processes and look for options to reduce or eliminate these in our everyday life!

Scotia Rail Development Society

Comparative thoughts on land transport by truck versus rail:

- The maximum load on a semi & trailer combination is 30T, and the maximum load on a rail car is 90T
- Annual subsidy for roads maintenance and new construction in Nova Scotia is \$450 to \$500 million dollars, annual subsidy to rail operations in Nova Scotia is \$0.
- Wear and tear on roads by heavy trucks is not only expensive to repair, but creates dangerous driving conditions for smaller vehicles.
- Freight trains can often be comprised of 100 cars or more while trucks often have a driver and a helper.
- In Canada, rail can move one tonne of freight 215 kilometers on a single liter of fuel, according to the Railway Association of Canada. Trucks average 6-8 mpg which equates to 2.5S-3.4km/l. With a 30 T load and 215 km, that would equate to one tone for 215 km on 2.4 L of fuel. Less fuel consumed equates to less air pollution.
- Overall, on short haul trips, trucking is thought to be more efficient, especially time wise. On long haul trips, train is definitely more efficient.

Charlie MacLean

Co-Chair, Scotia Rail Development Society



ACAP CAPE BRETON

CBRM CLIMATE ACTION WORKSHOP

AMANDA MCDOUGALL, EXECUTIVE DIRECTOR

PRESENTATION OVERVIEW

- ACAP - COMMUNITY AND ENVIRONMENTAL PROJECT EXPERIENCE
- CBRM EFFORTS TO APPLAUD
- SMALL ACTIONS - BIG IMPACT
- LONG TERM VISION OF CBRM/ACAP CAPE BRETON ECO-PARTNERSHIP



ACAP CAPE BRETON

COMMUNITY AND ENVIRONMENTAL PROJECT EXPERIENCE

- HISTORY IN COMMUNITY – EVOLUTION OF WORK BASED ON NEEDS
- WIDE RANGE OF KNOWLEDGE AND PARTNERS
- EXPANDING TO WORK WITH ALL MUNICIPAL UNITS ON CAPE BRETON ISLAND
- GROWING PARTNERSHIPS WITH FIRST NATIONS
- PROVEN EXPERTISE IN COMMUNITY ENGAGEMENT, PROJECT DEVELOPMENT AND MEANINGFUL PROGRAMMING
- PREPARED TO FACILITATE COMMUNITY ACTION PLAN



CBRM EFFORTS TO APPLAUD

- ACTIVE TRANSPORTATION
- CONVERSION TO LED LIGHTS AT BALL FIELDS
- PARTNERSHIP WITH EFFICIENCY NOVA SCOTIA TO MEET ENERGY TARGETS
- WASTEWATER PUBLIC EDUCATION RE: FLOOD MITIGATION
- ECO-PARTNERSHIPS: WATER UTILITY AND SOLID WASTE



Add a little bit of body, eh?

SMALL ACTIONS, BIG IMPACT

TREES, ACTIVE
TRANSPORTATION,
HORTICULTURAL PRACTICES,
RAIN GARDENS, GREEN
INFRASTRUCTURE, SPECIES
PROTECTION, PROCUREMENT,
DAILY 'GREEN' ACTIONS





LONG TERM VISION: CBRM/ACAP CAPE BRETON ECO-PARTNERSHIP



From: Paul Strome
Sent: Thursday, January 16, 2020 10:00 PM
To: ClerksOffice
Subject: Climate Emergency Recommendations

Greetings - I first want to thank the CBRM council for their climate change initiatives and for declaring a climate emergency. Know that I think you are one of the more progressive municipal councils in Canada. In response to your - **STAKEHOLDERS INVITED TO SUBMIT REQUEST TO PRESENT AT COUNCIL'S CLIMATE ACTION PLAN UPDATE WORKSHOP** - The following is a short list for your perusal:

- Increase outdoor and environmental education in all schools at all levels with field trips outdoors.
- Encourage students/teachers to plant trees or gardens at school or at home or at an arranged public space.
- Encourage/demand Emera/Nova Scotia Power to shut down all their fossil fuel fired electric generating stations well before 2030.
- Encourage/demand greater provincial subsidizing of wind generator and solar farm installations all over Cape Breton Island. Wind turbines on the top of the highlands is a significant, positive geographical area to do that.
- Hold public, town hall meetings to garner the opinions of knowledgeable citizens.
- This is only 3:39 long but well worth viewing: Greta and George, the best short video of 2019
https://www.youtube.com/watch?v=aUCD_24cygQ&feature=youtu.be&fbclid=IwAR1KBCjIMPhY066BnH03FIIQz20zvBH6mOISB_3akYrl9vpstFcO7Kyoeak
- There are lots of very knowledgeable people on Cape Breton Island (Unama'ki) who could act as advisors to CBRM. The Mi'kmaq communities, Cape Breton University and the Nova Scotia Community College are a huge resource and it would be very timely to ask any/all of them if they would like to contribute to this effort.
- 350.org, Green New Deal, the Council of Canadians, David Suzuki Foundation, Extinction Rebellion all have a huge list of great ideas but Drawdown.org, (Paul Hawken) has the most influential ones costed out already.
- Show/sponsor the showing of critical environmental films to the public. I have a file of 25+ films that I am willing to share if you are interested.
- Climate Emergency: A 26-Week Transition Program for Canada
<https://thepracticalutopian.ca/2020/01/05/climate-emergency-a-26-week-transition-program-for-canada/>

I was en route to Ottawa when I read about this opportunity so I hope you will excuse my tardiness and allow these ideas to be read and heard. Thank you for allowing me to contribute to your request for ideas.

Paul Strome B.A., B.Ed.

