

**Environment and Sustainability Standing Committee  
November 14, 2011**

**TO:** Chair and Members of Environment and Sustainability Standing Committee

**SUBMITTED BY:**   
Phillip Townsend, Director, Planning & Infrastructure

**DATE:** October 12, 2011

**SUBJECT:** **Lighting Projects with Efficiency Nova Scotia**

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**INFORMATION REPORT**

**ORIGIN**

- 2011-2012 Capital Budget, Infrastructure and Asset Management, Efficiency Projects Efficiency Nova Scotia – Small Business Energy Solutions Program; and
- 2012 HRM Council Greenhouse Gas Reduction Targets

**BACKGROUND**

In October of 2010, Halifax Regional Municipality (HRM) retained the services of Efficiency Nova Scotia Corporation (ENSC) approved contractors to perform energy audits at municipally owned facilities under the *Small Business Energy Solutions* (SBES) Program. The program is designed for buildings that use less than 300,000 kWh per year (approximately \$30,000). HRM currently has over 250 buildings corporately, most of which comprise smaller facilities and qualify for this program. Under the SBES Program, no investment of capital is required for the undertaking of the audits, and all procurement of labour and material is managed by ENSC. The primary focus of the audits is to identify and quantify potential opportunities to upgrade interior and exterior lighting and associated controls.

One particularly motivating factor for this initiative is the eligibility for financial incentives of up to 80% of total project costs from the ENSC's SBES Program. Undertaking Energy Management Opportunities (EMOs) offers reductions in greenhouse gas emissions, operation and maintenance costs, while also providing improved conditions for occupants of the facilities.

Significant (non-lighting) EMOs and associated financial incentives exist throughout HRM's facilities. ENSC offers significant financial incentives through the delivery of programs that target activities related to routine maintenance, facility expansion and new construction. It is important to consider efficiency and conservation opportunities in the early stages of the decision making process in order to be potentially eligible for significant financial incentives from ENSC.

**DISCUSSION**

To date, the total cost of all (32) approved projects is \$274,279. The municipal contribution of \$81,067 equals 30% of total project costs, while the \$193,211 contribution from ENSC equals 70% of total project costs.

Retrofit work has been completed at fourteen different facilities.

**Table 1: Summary of Lighting Projects - Associated Costs and Savings**

<b>Number of Facilities</b>	<b>Total Project Cost</b>	<b>Total HRM Cost</b>	<b>Annual Savings</b>			<b>Simple Payback</b>
32*	\$274,279	\$81,067	\$87,462	745,083 kWh	654,183 kg eCO <sup>2</sup>	0.93 years

(\* A detailed list of identified facilities for participation in the SBES Program is attached).

These energy efficiency projects encompass a holistic approach to energy and sustainability. Multiple intertwined environmental and economic benefits are created through an ongoing annual reduction (to-date) of 745,083 kWh of highly carbon intensive electricity, translating into savings of \$87,462 and more than 650 tonnes of carbon dioxide equivalent. These numbers will grow substantially in the coming months with the approval of additional projects.

**112.7% Return on HRM Taxpayer's Investment:**

Based on contracts approved to date, the estimated annual savings of \$87,462 offers an attractive simple payback (before financial incentives) of 3.1 years, using total project costs. After factoring in financial incentives from ENSC, the simple payback of all contracts approved to-date is reduced to only 0.93 years (approximately 11 months), after which time the annual savings offers an excellent return of 112.7%\* on HRM taxpayer's investment.

*(\* Based on \$81,067 of HRM capital cost, \$0 of avoided capital costs, financing costs of 4% over 10 years, electricity savings of \$87,462 per year, energy escalation of 5% per year, and \$10,000 in new incremental maintenance savings for four years).*

Maintenance costs are generally reduced as energy efficient equipment offers increased life expectancy. Although savings in replacement costs are currently not quantified and are included in the estimated annual savings, they should not be underestimated due to the considerable logistics and specialized personnel often required to replace lighting at the end of life. Many energy efficient lighting technologies (i.e. LEDs) do not 'burn-out' completely at the end of life as older technologies (i.e. metal halide) do but rather degrade much more slowly, thus offering additional time (and hence cost savings) before replacement is required. Lighting controls such as occupancy sensors, timers and/or photocells installed where appropriate, extend the useful operating lifetime of the lighting units, creating further savings by extending time between replacements and reducing expenditures on both material and labour.

In most cases, lighting upgrades also offer improved lighting conditions for occupants (workers, clients and/or visitors where applicable) of the facilities.

Although not a focus of this report, HRM staff continues to work with Efficiency Nova Scotia on not only the SBES Program but other programming targeted towards larger buildings, LED street lights, solar hot water and new construction.

**BUDGET IMPLICATIONS**

There are no budget implications in this report. As per HRM Council policy, the estimated annual electricity operating savings of \$87,462 are being directed to the Energy and Underground Services Reserve to fund future capital energy efficiency projects.

**FINANCIAL MANAGEMENT POLICIES/BUSINESS PLAN**

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Project and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Project and Operating reserves, as well as any relevant legislation.

**COMMUNITY ENGAGEMENT**

With a substantial number of visitors to HRM's facilities and an increasing number of energy

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efficiency upgrade projects being undertaken, there will be an increasing level of exposure to our new lighting and controls systems. To increase public awareness, a case-study signage panel will be developed that will provide information about the Efficiency Nova Scotia's SBES Program, and the associated benefits of the program and corresponding energy efficiency upgrades. The Woodside Ferry Terminal was chosen as the ideal case study location.

## Woodside Ferry Terminal – Cost and Payback

Total Project Cost	Total HRM Cost	Annual Savings (kWh/yr)	GHG Reduction (kg/yr)	Annual Savings	Simple Payback (years)
\$21,736	\$4,347	81,343	71,419	\$9,761	0.4

## ATTACHMENTS


- 1) Detailed list of identified HRM Facilities targeted for SBES participation.

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A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/cagenda.html> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

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**Facilities Identified for Participation in Efficiency Nova Scotia's *Small Business Energy Solutions* Program**

Number	Facility Name	Address	Total Project Cost	Total HRM Cost	Green	Project Completed		
					Blue	Already Audited and Efficient		
					Yellow	Contract Approved, Project Pending		
					Annual Savings (kWh/yr)	GHG Reduction (kg/yr)	Annual Savings	Simple Payback (years)
1	Chocolate Lake Community Centre Building	14 Purcell's Cove Road	\$8,712	\$1,742	25,680	22,547	\$2,825	0.6
2	Fire Station #2	5988 University Avenue	\$0	\$0	0	0	\$0	
3	Fire Station #4	5830 Lady Hammond Road	\$0	\$0	0	0	\$0	
4	Fire Station #5	7090 Bayers Road	\$0	\$0	0	0	\$0	
5	Fire Station #6	245 Herring Cove Road	\$0	\$0	0	0	\$0	
6	Fire Station #7	45 Knightsridge Drive	\$0	\$0	0	0	\$0	
7	George Dixon Recreation Centre	2501 Gottingen Street	\$0	\$0	0	0	\$0	
8	Needham Centre	3372 Devonshire Avenue	\$0	\$0	0	0	\$0	
9	St. Andrews Centre	6955 Bayers Road	\$11,687	\$2,337	30,203	26,518	\$3,322	0.7
10	St. Mary's Boat Club	1641 Fairfield Road	\$1,884	\$1,319	1,873	1,645	\$206	6.4
11	Youth Live St. Margaret's Warehouse	1300 St. Margaret's Bay Road						
12	Maintenance Garage	150 Thornhill Drive	\$17,619	\$3,524	65,186	57,233	\$7,822	0.5
13	Fire Station #8	15 Convey Run	\$8,597	\$1,719	24,357	21,386	\$3,166	0.5
14	Fire Station #9	1 Metropolitan Avenue	\$13,007	\$5,203	25,408	22,308	\$3,303	1.6
15	Fire Station #10	1156 Sackville Drive	\$4,611	\$2,767	5,881	5,164	\$765	3.6

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16	Fire Station #11	479 Patton Road	\$3,472	\$2,083	4,983	4,375	\$648	3.2
17	Fire Station #12	45 Highfield Park	\$2,380	\$476	8,201	7,200	\$1,066	0.4
18	Fire Station #13	86 King Street	\$9,760	\$1,952	26,524	23,288	\$3,448	0.6
19	Fire Station #14	39 Walker Street	\$2,509	\$1,004	4,727	4,151	\$615	1.6
20	Fire Station #15	331 Pleasant Street	\$2,348	\$1,174	4,162	3,654	\$541	2.2
21	Fire Station #16	1807 Caldwell Road	\$10,367	\$5,183	13,519	11,870	\$1,757	2.9
22	Fire Station #17	1150 Cole Harbour Road	\$8,142	\$2,443	19,142	16,807	\$2,488	1.0
23	Fire Station #18	690 Main Street						
24	Findlay Community Centre	26 Elliot Street	\$11,550	\$5,775	16,447	14,440	\$1,973	2.9
25	Dartmouth North Community Centre	134 Pinecrest Drive/ 105 Highfield Park Dr	\$4,877	\$1,463	11,843	10,399	\$1,765	0.8
26	East Preston Recreation Centre	24 Brooks Drive	\$10,909	\$5,454	14,975	13,148	\$1,947	2.8
27	Woodside Ferry Terminal	Off Pleasant Street	\$21,736	\$4,347	81,343	71,419	\$9,761	0.4
28	North Preston Community Centre	44 Simmons Road	\$3,978	\$1,591	7,642	6,710	\$917	1.7
29	Northbrook Community Centre	2 Chapman Street	\$5,089	\$1,018	13,575	11,919	\$1,765	0.6
30	Sackville Heights Community Centre	45 Connolly Road	\$0	\$0	0	0	\$0	

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31	Dartmouth Heritage Museum	26 Newcastle Street	\$1,406	\$562	2,651	2,328	\$318	1.8
32	Beechville Recreation Centre	1492 St. Margaret's Bay Road	\$0	\$0	0	0	\$0	
33	Fire Station #50	2050 Hammonds Plains Road	\$0	\$0	0	0	\$0	
34	Bloomfield Centre	2786 Agricola Street						
35	Wallace Lucas Community Centre	596 Lucasville Road	\$2,948	\$1,179	5,785	5,079	\$636	1.9
36	Fire Station #3	5663 West Street	\$18,922	\$3,784	70,957	62,300	\$7,805	0.5
37	Fire Station #51	948 Pockwood Road	\$0	\$0	0	0	\$0	
38	Fire Station #52	2101 Prospect Road						
39	Fire Station #53	80 Sandy Cove	\$2,650	\$1,855	2,440	2,142	\$268	6.9
40	Fire Station #54	3610 Prospect Road	\$0	\$0	0	0	\$0	
41	Fire Station #62	1070 Old Sambro Road	\$0	\$0	0	0	\$0	
42	Fire Station #65	17 Scholars Road	\$0	\$0	0	0	\$0	
43	Halifax Ferry Terminal	5077 George Street	\$5,025	\$1,005	16,126	14,159	\$1,774	0.6
44	Kyber Arts Building	1588 Barrington Street						
45	Larry O'Connell Playground Building	6691 Fourth Street						
46	Parks Depot Bell Road Building	1680 Bell Road						

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47	Public Gardens Brick House Building	1606 Bell Road						
48	Works Depot MacKintosh Street Building	3825 MacKintosh Street	\$25,479	\$5,096	72,268	63,452	\$7,950	0.6
49	Central Commons Building	0 Cogswell						
50	Citadel Community Centre	1955 Trollope St.	\$0	\$0	0	0	\$0	
51	HRM City Field	3825 MacKintosh Street	\$5,001	\$1,500	10,404	9,135	\$1,144	1.3
52	RPO/Parks Depot	375 Cowie Hill Rd	\$16,173	\$3,235	54,295	47,671	\$5,972	0.5
53	Halifax Police Station**	1975 Gottingen St	\$15,634	\$3,127	68,700	60,319	\$7,557	0.4
54	Northcliffe Centre	111 Clayton Park Dr						
55	Adventure Earth Centre	69 Parkhill Road						
56	Upper Hammonds Plains CC	711 Pockwood Road	\$3,069	\$2,148	2,866	2,516	\$315	6.8
57	Harrietsfield Williamswood CC	1138 Old Sambro Road						
58	Fire Station #60	57 Ketch Harbour Road						
59	Fire Station #63	West Pennant Road						
60	J.D. Shatford Library	10353 St. Margaret's Bay Road						



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61	Hubbards Rec Centre	9856 St Margarets Bay Road						
62	Fire Station #61	964 Ketch Harbour Road						
63	Fire Station #59	4408 St Margarets Bay Road	\$0	\$0	0	0	\$0	
64	The Bay Community Centre	11 Station Road	\$5,133	\$3,080	5,711	5,014	\$628	4.9
65	Fire Station #58	26 Myra Road						
66	Fire Station #48	1581 Beaverbank Rd						
67	Scott Manor House	15 Fort Sackville Road						
68	Carroll's Corner Community Centre	9 Milford Road						
69	Fire Station #23	5543 Highway #7						
70	Fire Station #35	39 Corbett Rd						
71	Fairbanks Centre	54 Locks Rd						
72	Evergreen House	26 Newcastle Street						
73	Riverline Community Centre	80 Grono Road						
74	Fire Station #31	Highway #7						
75	Tallahassee Rec Centre	168 Redoubt Way						
76	Fire Station #37	5802 Highway 357						
77	Gordon R. Snow CC	1359 Fall River Rd						

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78	Fire Station #45	1359 Fall River Rd						
79	Fire Station #47	2040 Old Guyborough Road						
80	Fire Station #43	22 Lakeside Drive						
81	Fire Station #26	Oyster Pond						
82	Lake Echo Community Centre	3168 Highway 7						
83	Fire Station #21	3035 Highway 7						
84	Lakeside Community Centre	1492 St Margarets Bay Road						
85	Fire Station #19	2385 Crowell Road						
86	Fire Station #20	2931 Lawrencetown Rd						
87	Fire Station #36	4413 Highway 357						
88	Devonshire Arena	3395 Devonshire Ave	\$9,605	\$1,921	27,207	23,888	\$2,993	0.6
<b>Totals</b>			<b>\$274,279</b>	<b>\$81,067</b>	<b>745,083</b>	<b>654,183</b>	<b>\$87,462</b>	
<b>Payback before incentives (years)</b>								<b>3.1</b>
<b>Payback after incentives (years)</b>								<b>0.93</b>