Township of Perth South CDM Plan 2013-2018

20 December 2013

Energy Management Plan

Township of Perth South

From: 2013-01-01 To: 2018-12-31

Commitment

- ***Declaration of Committment:*** The Township of Perth South will use existing resources and leverage outside agencies where appropriate to develop and implement a strategic energy management plan that will reduce our energy consumption and fulfill our regulatory obligations.

- ***Vision :*** We will strive to reduce our energy consumption through the wise and efficient use of resources, while still maintaining an efficient and effective level of service for our citizens. We currently define energy consumption as to the electricity and fossil fuel use associated with maintaining our corporate facilities as defined under Regulation 397/11 of the Green Energy Act but also including streetlights.

- ***Policy:*** The Township of Perth South continues to face rising costs to maintain and repair aging infrastructure, to deliver services to the community and to obtain the necessary energy to power its facilities. The generation and use of energy also contributes to climate change through greenhouse gas (GHG) emissions. The implementation and renewal of this comprehensive energy management program will ensure that energy conservation and efficiency is a key consideration in the township facility renewal actions. The implementation of conservation measures will reduce corporate GHG emissions and mitigate energy cost increases through decreased energy consumption.

- ***Goals:*** To maintain our current assets and improve the energy efficiency of our facilities and processes where feasible to reduce energy consumption, greenhouse gas emissions, and maintenance costs while improving the reliability of equipment.

- ***Overall Target:*** We will reduce the energy intensity of our facilities by 3% between now and 2018. The first reporting year under Regulation 397/11, 2011, will be used as the baseline. 2018 was chosen as the target year because it corresponds with the end of a Council term and provides appropriate context for the renewal of this energy conservation and demand management plan in time for 1 July 2019 as required.

- ***Objectives:*** The following are the strategic objectives of this energy plan: (1) Demonstrate leadership within the Corporation and community via the commitment to energy management (2) To improve the energy efficiency of our facilities by utilizing best practices to reduce our operating costs, energy consumption and greenhouse gas emissions (3) To create a culture of conservation. (4) To increase the comfort and safety of staff and patrons of the Township's facilities. (5) To improve the reliability of the Township's equipment and reduce maintenance.

Organizational Understanding

- ***Our Municipal Energy Needs :*** We need reliable, low-cost, sustainable energy sources delivering energy to the most efficient facilities and energy-consuming technology feasible. It is essential for the Township to do its utmost to reduce energy consumption and consider cleaner sources of generation whenever possible to minimize the economic, environmental, and social outcomes of this energy use.

- ***Stakeholder Needs:*** The Township of Perth South understands that its internal stakeholders (Council, CAO, staff) need: (1) An up-to-date energy management plan with clear vision, goals, and objectives in order to clearly communicate the corporate commitment to energy management and fulfill the regulatory requirement;

(2) Timely, regular reports to maintain awareness of energy use; (3) Training and support to develop the skills and knowledge required to implement energy management best practices. The Township of Perth South understands that its external stakeholders (the Province, community citizens and groups) need: (1) The municipality to be accountable for energy performance and to minimize the energy component of the costs of municipal services; (2) The municipality to reduce the greenhouse gas emissions associated with its corporate energy use.

- ***Muncipal Energy Situation :*** Our current assessment of staff awareness and energy management capacity is included in Appendix B. This assessment will be updated along with the energy plan in at least 5 year intervals. Staff will be equipped with the knowledge necessary to make informed decisions as the understanding of corporate energy consumption improves.

- ***How We Manage Energy Today:*** The management team will continue to incorporate energy management into is ongoing municipal management practices. This will include: (1) Integrating best practices into daily operations, where feasible, to reduce energy consumption (2) Provide a forum for discussion on energy management strategies that may benefit all departments (3) Increase corporate awareness of the consumption of energy; (4) Provide semi-annual (January and July) reports to Council. The management of our energy is a combination of energy data management, energy supply management, and energy use management. Our municipal energy data is managed through the Treasurer, tracked and/or monitored using the LAS Energy Planning Tool (EPT), and communicated out to staff and council.

- ***Summary of Current Energy Consumption, Cost and GHGs:*** The total annual energy consumption for the years 2011 and 2012 are provided in Appendix A. Staff will continue to report on energy consumption as required to the Ministry of Energy before the annual July deadline. The Township relies on its utility bills to establish the numbers in this baseline year and all future years (pending some technological enhancement).

- ***Trends In Energy Consumption :*** Our energy intensity continues to decrease as a result of a number of energy efficiency initiatives and diligent energy management. For instance, our overall energy consumption dropped by 10% from 2011 to 2012.

- ***Summary of Current Technical Practices :*** Our assessment of operations and maintenance practices, facility and equipment condition, and energy performance indicators establishes the following priorities: (1) Development of standard operating procedures incorporating energy efficiency optimization; (2) Enhancement of preventative maintenance procedures; (3) Upgrade and retrofit according when feasible.

Strategic Planning

- ***Links with other municipal plans :*** As an integral component of the management structure, the energy management plan is coordinated with the municipality's asset management, capital management, and budget planning processes. This will make it possible to implement effective conservation and demand management programs, processes, and projects that support other key municipal objectives.

Structure Planning

- ***Consideration of energy efficiency for all projects :*** We will incorporate life cycle cost analysis into the design procedures for all capital projects as well as procurement decisions for equipment and other municipal assets. Life cycle cost analysis is a technique to assess environmental impacts associated with all the stages of a product's life from-cradle-to-grave. LCA can help avoid a narrow outlook on environmental concerns by: (1) Compiling an inventory of relevant energy and material inputs and environmental releases; (2) Evaluating the potential impacts associated with identified inputs and releases; (3) Interpreting the results to help make a more informed decision. Township policies will require that all contracted entities and other third parties providing good and services submit an LCA of their good and/or service as part of the standard procurement

procedures.

Resources Planning

- ***Energy Leader :*** The Director of Public Works has been designated as the energy leader with overall responsibility for corporate energy management.

- ***Energy Team:*** All municipal employees have a responsibility to contribute to overall municipal energy management objectives. We recognize that technology along will not achieve our energy conservation and demand management objectives. Everyone in the Township will benefit when they realize how everyday actions can reduce energy waste, decrease operating costs and increase competitiveness. Simple actions such as turning off lights, computers and printers, installing weatherstripping, ensuring that filters on heating and cooling coils are clean and dust-free, etc., all contribute to reduced energy use and energy costs in the workplace.

- ***Energy Skills Training :*** Where feasible we will develop and deliver skills training for operators, maintainers and other employees that have "hands-on" involvement with energy consuming systems to enhance their capacity to achieve energy efficiency improvements. Training such as the Dollars to $ense workshops offered by Natural Resources Canada's Office of Energy Efficiency will help Township staff and council: (1) lower operating costs, (2) improve your competitive position, (3) reduce greenhouse gas emissions, (4) increase operational efficiency, and (5) create a better work environment.

- ***Internal Resources:*** We will incorporate energy efficiency into standard operating procedures and the knowledge requirement for operational jobs.

- ***External Consultants and Suppliers :*** We will establish criteria in our Procurement Policy based on our energy goals and objectives for the selection of external consultants and energy suppliers.

Procurement Planning

- ***Energy Purchasing :*** We will investigate utilize purchasing groups and/or cooperatives to procure diesel, gas, natural gas, and electricity. This investigation will include the analysis of cost considerations, available energy services, energy quality, and other performance factors. Perth South's energy procurement goal will continue to be the pursuit of optimal rates while achieving an appropriate level of cost certainty.

- ***Consideration of energy efficiency of acquired equipment :*** Our Procurement Policy will be modified as required to incorporate energy efficiency and life cycle costing into the criteria for selection and evaluation of materials and equipment.

Implementation Planning

- ***Building Standards :*** in the possibility that the Township decides to construct a new building, we will develop criteria for the design and/or acquisition of new buildings that include energy performance factors and that use as appropriate the principles embedded in performance standards such as LEED or the Model National Energy Code for Buildings.

Investment Planning

- ***Internal Funding Sources:*** Investment criteria: We will develop and/or clarify as necessary the financial

indicators that are applied to investment analysis and prioritization of proposed energy projects, taking due consideration of the priority given to energy efficiency projects versus other investment needs (life cycle versus simple payback). Budgetary resources for energy projects: Energy projects will be integrated into our capital planning and budget development procedures. Capital: Savings and incentives from previous energy efficiency projects will be incorporated into our annual capital planning procedures as a separate envelope.

- ***Creative Approaches :*** The Energy Team will be mandated to investigate, document, and communicate funding sources for energy projects, including government and utility grants and incentives.

Implementation Planning

- ***Business Procedures :*** We will carry out a comprehensive review of all business processes, including all third party contracts, and modify them as necessary in order to incorporate energy efficiency considerations.

Projects Execution

- ***Municipal Level :*** All work completed on the plan to date culminates in the development of actions for execution. Generally, the action can be classified as a program, process, or project. A list of recent suggested programs, processes, and projects is included in Appendix C. All actions are linked back to particular objectives developed earlier in the plan to ensure that they support the objectives. It is important to note that Township staff have already completed a number of energy efficiency projects in recent years including but not limited to: (1) Retrofitted all existing light fixtures in the two works yards with new ballasts and T8 lamps in 2010 through the Hydro One Power Savings Blitz; (2) Modified the controls for the AC/Heating system in the municipal office (geothermal system).

- ***Asset Level :*** The first step in implementing an energy management program is the completion of energy audits for corporate facilities. Audits involve a technical review of a facility and its operations, the development and analysis of a baseline energy profile for the facility and identification of energy management opportunities and savings. Staff have recently retained our local LAS EESP to provide some recommendations for improvements. Staff commit to re-examining key facilities on a regular basis to be determined by technological change and available resources. We will work with utilities, LAS, and any other outside agencies that may provide assistance.

Review

- ***Energy Plan Review :*** The results of our energy management plan will be evaluated by monitoring our progress towards our targeted performance, and by reporting the findings to Council. Our evaluation will include a review and update of the energy plan as necessary but at least every 5 years as required by provincial regulation.

Evaluation Progress

- ***Energy Consumption :*** Staff will ensure that accurate and timely reporting occurs for the following three groups: (1) Reporting for the GEA: Reporting requirements for the Green Energy Act and other pertinent provincial legislation will be factored into our reporting procedures. (2) Reports to Council: Semi-annual (January and July) energy performance summary reports will be generated to apprise Council of the progress made towards our corporate energy goals and objectives. (3) Reports to stakeholders (community): The general public will be apprised of energy performance of municipal facilities and the impact of implemented energy management measures where appropriate.

- ***Green House Gas Emission :*** In 2012 our corresponding greenhouse gas emissions was 50 389.50 kg CO2e. whereas in 2011 it was 57 985.5 kg CO2e. This represents a 13% reduction. We believe we can further reduce greenhouse gas emissions by another 3% by the end of 2018.

Appendix A:
Consumption Reports

Township of Perth South CDM Plan 2013-2018

Energy Consumption and GHG Emmissions

From: 2011-01-01 To: 2011-12-31

Facility Name	Address	Total Area (m2)	Average Hours/Day	Fuel Types	Consumption	Cost ($)	Energy (ekWh/yr)	GHG Emissions (kg CO2e/yr)	GHG Intensity (kg CO2e/m2)	Energy Inte
Facility Primary Type: Office										
Municipal Office	3191 Road 122	316	5.71	Elect.	46614.00 kWh	6646.90	46614.00	3729.12	11.80	147.51 (ekV
Old Municipal Office	3204 Road 122	96	5.71	NG	2726.00 m3	872.97	28971.32	5172.91	53.88	301.78 (ekV
				Elect.	2204.00 kWh	784.79	2204.00	176.32	1.84	22.96 (ekV
Facility Type Total:						**8304.66**	**77789.32**	**9078.35**		
Facility Primary Type: Public Works										
St. Pauls Workshop	3193 Road 122	428	5.71	NG	5995.00 m3	1571.63	63713.52	11376.23	26.58	148.86 (ekV
				Elect.	18512.00 kWh	2924.73	18512.00	1480.96	3.46	43.25 (ekV
Rannoch Workshop	1766 Perth Road 139	465	5.71	NG	11107.00 m3	2708.32	118042.72	21076.87	45.33	253.86 (ekV
				Elect.	16898.00 kWh	2803.00	16898.00	1351.84	2.91	36.34 (ekV
Facility Type Total:						**10007.68**	**217166.24**	**35285.90**		
Facility Primary Type: Other										
Park Pavillion	3189 Road 122	281	5.00	Elect.	4115.00 kWh	1009.85	4115.00	329.20	1.17	14.64 (ekV
Facility Type Total:						**1009.85**	**4115.00**	**329.20**		
Facility Primary Type: Water Treatment Facility										
St. Pauls Water Supply System	3204 Road 122	21	24.00	Elect.	18684.00 kWh	2964.24	18684.00	1494.72	71.18	2286.34 (ekV
Sebringville (Black Creek) Water Supply System	199 Boyce Street	21	24.00	NG	874.00 m3	461.21	9288.68	1658.52	78.98	734.57 (ekV
				Elect.	15691.00 kWh	2512.63	15691.00	1255.28	59.78	1240.89 (ekV
Facility Type Total:						**5938.08**	**43663.68**	**4408.52**		
Facility Primary Type: Streetlights (optional)										
Sebringville Streetlights	4600 Perth Line 34	1	12.00	Elect.	51700.00 kWh	7645.54	51700.00	4136.00	4136.00	51700.00 (ekV
Woodham Streetlights	1650 Perth Road 164	1	12.00	Elect.	13607.00 kWh	1950.34	13607.00	1088.56	1088.56	13607.00 (ekV
Kirkton Streetlights	1900 Perth Road 164	1	12.00	Elect.	29689.00 kWh	4344.04	29689.00	2375.12	2375.12	29689.00 (ekV

Energy Consumption and GHG Emmissions

From: 2012-01-01 To: 2012-12-31

Facility Name	Address	Total Area (m2)	Average Hours/Day	Fuel Types	Consumption	Cost ($)	Energy (ekWh/yr)	GHG Emissions (kg CO2e/yr)	GHG Intensity (kg CO2e/m2)	Energy Inte
Facility Primary Type: Office										
Municipal Office	3191 Road 122	316	5.71	Elect.	44133.00 kWh	6604.39	44133.00	3530.64	11.17	139.66 (ekV
Old Municipal Office	3204 Road 122	96	5.71	NG	2829.00 m3	810.70	30065.98	5368.37	55.92	313.19 (ekV
				Elect.	2000.00 kWh	764.80	2000.00	160.00	1.67	20.83 (ekV
Facility Type Total:						**8179.89**	**76198.98**	**9059.01**		
Facility Primary Type: Public Works										
St. Pauls Workshop	3193 Road 122	428	5.71	NG	4789.00 m3	1227.24	50896.42	9087.70	21.23	118.92 (ekV
				Elect.	17683.00 kWh	2897.76	17683.00	1414.64	3.31	41.32 (ekV
Rannoch Workshop	1766 Perth Road 139	465	5.71	NG	8435.00 m3	1929.72	89645.30	16006.42	34.42	192.79 (ekV
				Elect.	14609.00 kWh	2603.59	14609.00	1168.72	2.51	31.42 (ekV
Facility Type Total:						**8658.31**	**172833.72**	**27677.49**		
Facility Primary Type: Other										
Park Pavillion	3189 Road 122	281	5.00	Elect.	4572.00 kWh	1087.52	4572.00	365.76	1.30	16.27 (ekV
Facility Type Total:						**1087.52**	**4572.00**	**365.76**		
Facility Primary Type: Water Treatment Facility										
St. Pauls Water Supply System	3204 Road 122	21	24.00	Elect.	15673.00 kWh	2625.74	15673.00	1253.84	59.71	1915.08 (ekV
Sebringville (Black Creek) Water Supply System	199 Boyce Street	21	24.00	NG	559.00 m3	333.94	5940.93	1060.77	50.51	442.59 (ekV
				Elect.	16018.00 kWh	2670.93	16018.00	1281.44	61.02	1193.32 (ekV
Facility Type Total:						**5630.61**	**37631.93**	**3596.05**		
Facility Primary Type: Streetlights (optional)										
Sebringville Streetlights	4600 Perth Line 34	1	12.00	Elect.	56400.00 kWh	8842.61	56400.00	4512.00	4512.00	56400.00 (ekV
Woodham Streetlights	1650 Perth Road 164	1	12.00	Elect.	14844.00 kWh	2233.17	14844.00	1187.52	1187.52	14844.00 (ekV
Kirkton Streetlights	1900 Perth Road 164	1	12.00	Elect.	32388.00 kWh	4989.59	32388.00	2591.04	2591.04	32388.00 (ekV

Appendix B:
Energy Management and Awareness Matrices

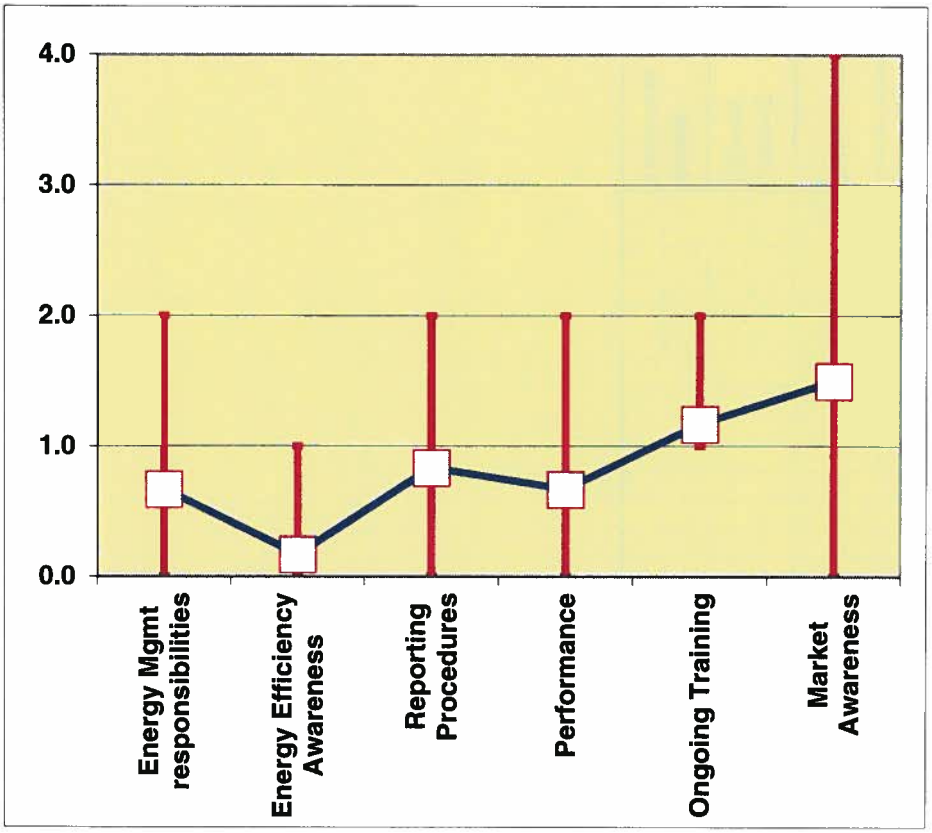
Township of Perth South CDM Plan 2013-2018

High-Level Matrix – Energy Management

Level	Commitment	People	Planning	Financing	Communication	Tracking
4	Energy policy, action plan and regular review have commitment of top management as part of an energy or environmental strategy. ☐	Energy management is fully integrated into the management structure with clear delegation of responsibility for energy consumption. ☐	A comprehensive Energy Master Plan exists and is being implemented by all departments with full support from senior management. ☐	Actively pursue "green" funding using detailed investment appraisal of all new build and refurbishment opportunities. ☐	The value of energy efficiency and the performance of energy management are reported and marketed both within the organization and outside on a continuous basis. ☐	Comprehensive system sets targets, monitors use, identifies faults, quantifies savings and provides budgeting information. ☐
3	A formal energy policy exists but lacks active commitment from top management. ☐	Energy committee used as main channel together with direct contact with major users. ☐	All departments are represented on the planning team with some senior management support. ☐	Investment using life cycle costing and/or internal rate of return. ☐	An ongoing program of staff awareness exists with progress reported through regular publicity campaigns. ☐	M&T reports for major users, but savings not reported to users effectively. ☐
2	Un-adopted energy policy set by energy champion/manager or senior department head. ☐	Energy champion or manager in post but no clear responsibility or authority. ☐	Only technical persons or technical managers are involved in developing an Energy Master Plan. ☐	Investment using short-term or simple payback criteria only; no consideration for life cycle costing. ☐	Occasional, ad hoc staff awareness. ☐	M&T reports based on supply meter data with ad hoc use of findings. ☐
1	An undocumented set of guidelines or procedures. ☐	EM is a part-time responsibility with limited authority. ☐	One person delegated to develop an Energy Master Plan. ☐	Only low-cost measures considered for financing. ☐	Informal contacts employed to promote energy efficiency. ☐	Cost reporting based on invoice data. ☐
0	No guidelines or procedures. ☐	No motivation or contact with users. ☐	No Energy Master Plan. ☐	No investment in energy efficiency. ☐	No promotion of energy efficiency. ☐	No information system. ☐

Adapted by Prism Engineering Ltd. and TdS Dixon Inc. from *Good Practice Guide 306: Energy Management Priorities* produced by BRECSU as part of the U.K. government's Energy Efficiency Best Practice Programme.

Analysis for: **Perth South**



Matrix Type:	Monitoring & Targeting

Energy Management Matrix - Energy Mgmt Analysis f

Response	Commitment	People	Planning	Financing	Communication	Tracking
1	0	1	0	3	1	0
2	1	1	1	3	1	1
3	2	3	0	1	2	1
4	0	1	0	3	0	0
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Appendix C:
Programs, Processes, and Projects

Township of Perth South CDM Plan 2013-2018

Our Execution – Action List

All work completed on the plan to date culminates in the development of actions for execution. Generally, the action can be classified as a program, process, or project. All actions are linked back to particular objectives developed earlier in the plan.

Type	Objective	Action	Annual Savings Estimate (if applicable)	Owner	Target Date
Program	2	Add energy awareness to management meetings Energy reports to be distributed to directors and managers on a semi-annual basis	No Cost for these items Expected Annual Savings = 1-2%	Director of Public Works and Treasurer	In Progress
Program	3	As part of Orientation Program – provide new staff with energy management training		CAO	Q4-2013
Program	3	Improve staff education and awareness such as *Dollars to $ense* Workshops. Make use of visual displays in lunchrooms to demonstrate to staff the implications of current behaviours		Director of Public Works	Ongoing

Type	Objective	Action	Annual Savings Estimate (if applicable)	Owner	Target Date
Program	1,2,3	Communicate to the organization the name of the Energy Leader and distribute the Energy Management Plan	Free / NA	CAO	Immediate
Program	2,4,5	Employee participation program: Identification of improvements	Very minimal	All	Ongoing
Program	2,4,5	Have different staff walk through facilities	Free	Commence with PW Staff	Q3, 2014
Process	2,3	Use power bars on all computers – place on desks for awareness Disconnect UPS units where laptops in use	Savings: $100/yr	CAO	Q2, 2014
Process	2,3	Turn off all electronic devices such as coffee makers, printers, calculators, phone chargers etc. at night and on weekends	Savings: $200/yr	CAO	Q2, 2014
Process	1,2,5	Incorporate life-cycle costing into procurement process (see # 1 below)	Free	Treasurer	Q2, 2014
Process	1,3	Lights off campaign for staff at all facilities (signage, emails, awareness)	Very minimal	Director of Public Works	Q2, 2014

Type	Objective	Action	Annual Savings Estimate (if applicable)	Owner	Target Date
Project	2,4,5	Programmable Thermostat in St. Pauls Workshop Office	$150 Cost $75-100 Savings	Director of Public Works	Q4, 2014
Project	2,4,5	Upgrade lighting in Old Municipal Office Under SMALL BUSINESS LIGHTING qualifying businesses can get up to $1,500 in energy-efficient lighting and equipment upgrades and gain access to further incentives.	Small Business Lighting	Director of Public Works and LAS EESP Jeff Barten	Immediate
Project	2,4,5	Identify unnecessary plug loads (like plug-in phantom power)	Free	Everyone	Immediate
Project	2,4,5	Replace fridges in workshops with Energy Star appliances	$800-1200 Cost $120 Savings	Director of Public Works	2015
Project	2,4,5	Upgrade exterior lighting at Rannoch and St. Pauls workshops	$2500-3500 Approx. 2500 kWh/yr	Director of Public Works	2015
Project	2,4,5	Upgrade exterior lighting at Municipal Office	TBD	Director of Public Works	2016-18

Project	2,4,5	Upgrade lighting in St. Pauls Office to T8 fixtures	$150 Cost Minimal Savings	Director of Public Works	Q4, 2014
Project	2,4,5	Seal around garage doors in Rannoch Garage	minimal	Director of Public Works	Q4, 2014
Project	2,4,5	Convert to radiant heat in Rannoch garage	TBD	Director of Public Works	2016-18

1. Life Cycle Costing

Incorporate life-cycle costing into procurement process. Modify Township's procurement by-law to demand that suppliers provide a full life cycle costing with responses to tenders and that energy-consuming appliances must meet or exceed the Energy Star standards.

When evaluating capital investment options, using Life Cycle Costing (LCC) can help you determine the option which is most cost effective. Rather then evaluating projects solely on the basis of initial costs, LCC looks at the total cost of owning, operating and maintaining a project over its useful life (including its fuel, energy, labour and replacement components). Life cycle costing calculates operating and maintenance costs incurred during the lifetime of the project plus the initial capital costs.

Life cycle costing often shows that a project with a higher initial cost may be more financially beneficial in the long run. It is especially useful for evaluating energy efficiency projects since they often require a higher initial investment but have lower operating and maintenance costs over the life of the project.

By overlooking the purchase of energy-efficient products because their initial costs maybe higher, businesses may save money in the short-term but will end up paying more for the project through higher energy costs and other operating costs over the life of the project.

LIFE CYCLE COST =

INITIAL COST + (ANNUAL COSTS x PROJECT LIFE x DISCOUNT FACTOR)

2. Projects

Most of the Projects recommended above that relate to the St. Pauls and Rannoch workshops have been detailed in the *Energy Audit Report* prepared by LAS EESP Jeff Barten and submitted to Township staff on 6 February 2013. This report is also attached immediately following this section for reference.