

Strategic Energy Management Plan (SEMP) Update

Council Meeting
July 7, 2020

14569950

Agenda

1. Strategic Energy Management Plan (SEMP) Overview
 - Brief description
 - Department commitments
2. SEMP Updates
 - Current and past activities
3. Going forward
 - MEM program
 - Future activities
4. Setting Target
 - Recommended target

Strategic Energy Management Plan (SEMP)

- Facility Services is developing a Strategic Energy Management Plan (SEMP) to reduce facility energy use, increase operational efficiency and adopt new technologies to help reduce our carbon footprint on the environment.
- Our mission is to improve the energy performance of facilities within Strathcona County through process, best practice and policy. We will work with stakeholders to exchange information and provide tools, strategies, and programs that build awareness and lead to action and positive results.

Department Commitment

- 2000 – Facility Services is responsible to procure electrical and natural gas supply contracts for the Corporation.
- 2009 - Council Approves Environmental Sustainability Framework
 - Sets electrical energy reduction target of 10%/KWh/Sqft by 2020.
 - Strive to increase % of energy supplied from renewable resources
 - Establishes building sustainability policy
- 2015 – 2018 – Department business plan
 - Create Strategic Energy Management Plan
- 2019 – 2022 - Department Business Plan
 - Energy performance & operation procedural improvements
 - Department processes & technology enhancements
 - Staff training & development
- 2020 – Receive grant funding for Municipal Energy Manager to complete the SEMP to include all departments, corporate wide.

Department Commitment

Facility Lifecycle and Maintenance Program

- Upgrade equipment based on age and condition, using energy efficient equipment where and when appropriate.
- Identifying appropriate funding opportunities
- Increase employee training to identify energy savings
- Build on existing Building Automation Systems (BAS) to continuously monitor equipment to realize energy savings opportunities, identify issues, and communicate successes.

Strategic Energy Management Plan

- Creates greater focus on energy use improvements and associated GHG reductions
- Builds accountability through role assignments and objectives
- Creates continuous improvement through benchmarking and reporting
- Involves monitoring for communication of results
- Assists in business case development for energy savings

SEMP Activities - Audits

- Audits have been completed at 14 County facilities.
- Created GHG inventory for facilities
- Represents roughly 54% of County's total consumption
- Identified Baseline energy use for benchmarking

2018						
Facility	Carbon	Others	GHG	GJ	KWh	Yearly Cost
SOC	1,408.89	338.13	1,747.02	10,254.0	2,848,338.0	\$184,732.03
GARC	2,745.03	658.81	3,403.84	18,423.3	5,117,752.0	\$272,880.03
SHPK	2,127.84	510.68	2,638.52	15,313.7	4,253,829.0	\$237,225.79
ARC	2,903.43	696.82	3,600.25	24,941.0	6,928,199.0	\$314,107.43
BPGC	698.51	167.64	866.15	5,504.3	1,528,981.0	\$84,864.75
EHLC	1,802.91	432.70	2,235.61	15,921.1	4,422,556.0	\$174,145.54
EHSP	307.42	73.78	381.20	2,635.0	731,988.0	\$42,227.37
MRC	696.13	167.07	863.20	5,806.7	1,612,982.0	\$94,473.16
RPC/SALTO	481.81	115.63	597.44	2,008.9	558,027.0	\$56,863.17
SAP	159.61	38.31	197.92		2,848,338.0	\$20,339.28
CC/CH	4,611.37	1,106.73	5,718.10	13,991.5	3,886,539.0	\$419,175.21
SPSY	2,323.03	557.53	2,880.56	22,870.1	6,352,844.0	\$250,007.10
MP	9,464.51	2,271.48	11,735.99	80,240.4	22,289,115.0	\$934,697.38
KLC	1,234.12	296.19	1,530.31	5,121.3	1,422,575.0	\$125,122.11

SEMP Activities - Opportunities

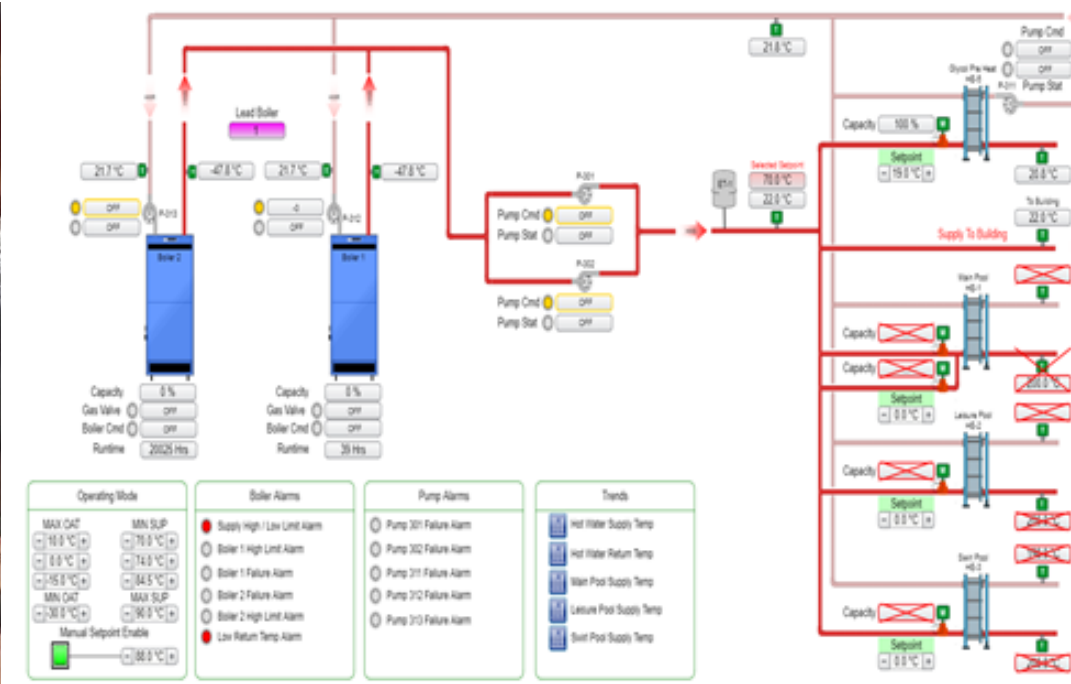
Facility	# of Opportunities	Project Costs
SOC	6	\$ 451,095
GARC	8	\$ 970,508
SHPK	6	\$ 1,148,072
ARC	19	\$ 2,764,770
BPGC	15	\$ 364,390
EHLC	10	\$ 1,594,540
EHSP	5	\$ 32,182
MRC	14	\$ 789,650
RPC/SALTO	8	\$ 661,410
SAP	6	\$ 119,474
CC/CH	4	\$ 22,495
SPSY	6	\$ 93,000
MP	4	\$ 55,760
KLC	4	\$ 22,680

- 139 identified GHG reducing opportunities for over 14 facilities
- Many opportunities dependent on target
- A range of mild to aggressive projects

SEMP Activities - Operations

Operational and Lifecycle improvements:

- Replacing lighting with LEDs
- HVAC units replaced with high efficiency units
- BAS upgrades for monitoring



SEMP Future – MEM Program

Municipal Energy Manager (MEM) Program

- Co-sponsored with Utilities and Facility Services
- Received Municipal Climate Change Action Centre (MCCAC) grant funding for 80% of wage for a Municipal Energy Manager
- Extend the current SEMP to include all other departments
- Complete a corporate wide GHG inventory
- Compile information to build a corporate wide SEMP including direction and strategies for the next five years
- Tracking, monitoring and communicating results



SEMP and MEM programs

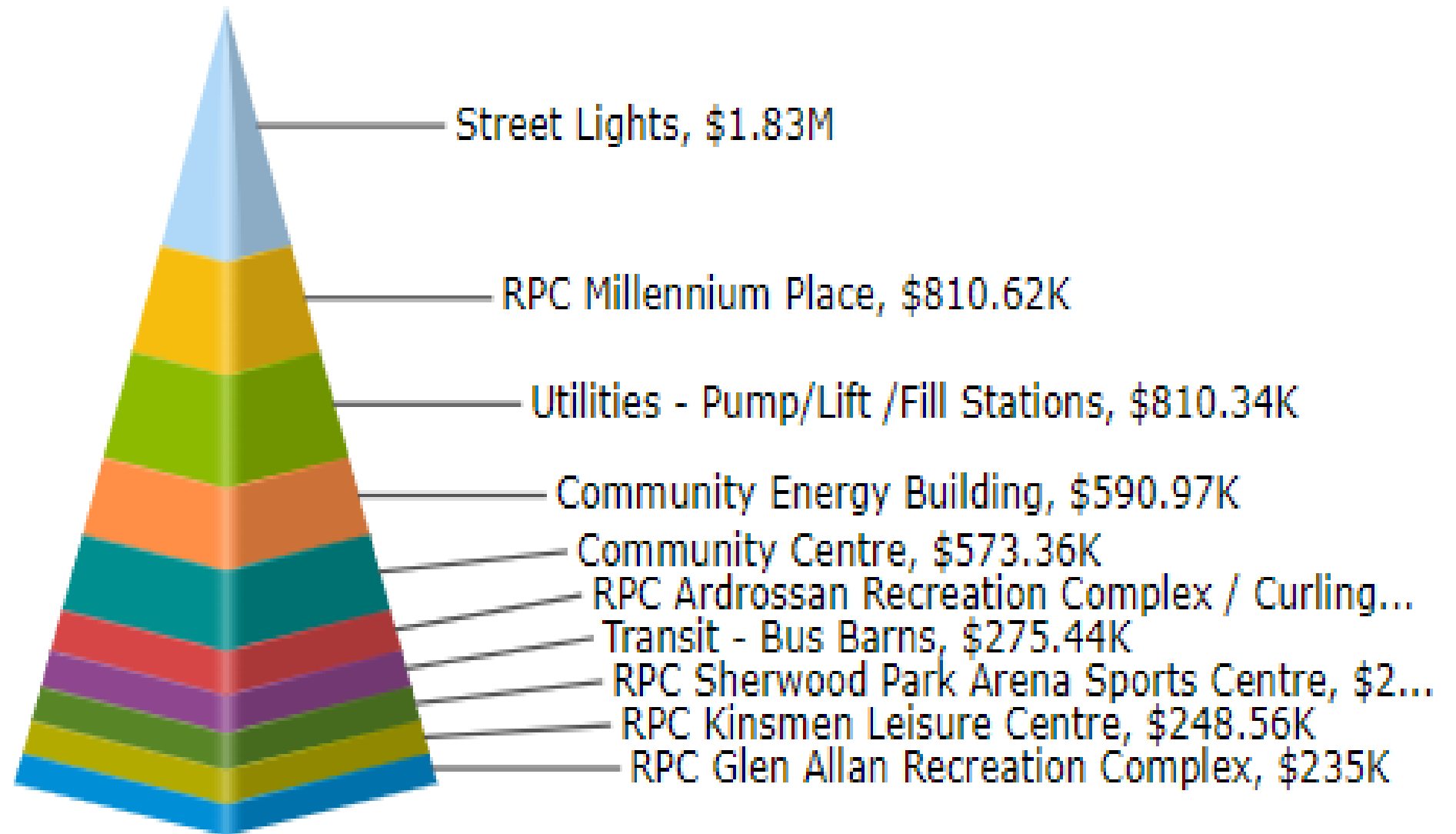
Working together to successfully update the Environmental Sustainability Framework (ESF), both programs fall in line through:

- Innovative process
 - Green House Gas emissions inventory
 - Energy efficiency audits
 - Using technology for understanding energy use/benchmarking
- Supportive plans
 - Help administer the Municipal Sustainable Building policy
 - Develop corporate wide SEMP; setting the course
 - Assist in department plans for energy reduction
- Strategic initiatives
 - Encourage, undertake and support alternative energy sourcing
 - Determine corporate energy use (vehicle fuel, natural gas, electricity)
 - Investigate Electric Vehicles (EV) technology, assist in planning

SEMP Future

- Collaborate with all other departments
- Current SEMP doesn't include Utilities, TAS (street & traffic Lights), Fleet, or Transit.
- Build energy efficiency team to identify areas of improvement and quick wins
- Work together to successfully update the Environmental Sustainability Framework

Top 10 energy saving areas by cost



SEMP Future

- Continue audits on appropriate County facilities
- Build out opportunity lists to include behaviour programs as well as technical projects
- Increase corporate energy literacy through communication, engagement and training
- Following the energy hierarchy, the intent is to better use the purchased energy to realize cost savings and reduce GHG emissions

Use less energy

Minimising the demand for energy & cut unnecessary use, for example switching off the television when not watching or boiling the required amount of water in a kettle

Use efficiently

consume optimally such as using energy efficient lights, insulating the loft, double glazing the windows, draft proofing doors and windows

Use renewable energy

use energy from renewable resources such as solar photovoltaic, solar hot-water panels, ground source heat pumps etc. or alternatively buying electricity from renewable energy suppliers

SEMP Next Steps

- Increase the use of the energy management module in Asset Planner
- Align opportunities with current life cycle program or available grant programs
- Develop community awareness of opportunity and investment outcomes
- Benchmark facilities against like facilities in the region
- Establish energy and GHG reduction targets to guide investments
- Continue facility audits and expand to other departments
- Develop project plan to reach potential target GHG reduction

Target Recommendation

In order to continue with the SEMP and related programs and projects, Administration requires guidance on developing an approved target. The target will be a percent of GHG emission reduction from a known point, over a period of years.

- With a target, Administration can propose projects and programs that aim to achieve the goal, eliminating time consuming activities of developing project and program business cases.
- Administration recommends a 15% reduction in GHG from 2018 levels by 2030 for the associated facilities.

Target Examples

Municipality	Reduction Target	Notes
Government of Canada	30% GHG reduction below 2005 levels by 2030	Paris Agreement
Province of AB	30% of Provincial electricity generation from renewable sources by 2030	Alberta Climate Leadership Plan
City of Calgary	20% GHG reduction below 2005 by 2020 80% GHG reduction below 2005 by 2050	Represent the emissions reductions necessary to limit global temp increase to less than 2°C.
City of Edmonton	50% GHG reduction below 2005 by 2030	Long-term goal of carbon-neutrality
City of Leduc	20% reduction below business as usual by 2030	Greenhouse Gas Reduction Action Plan 2019
City of St. Alberta	Recommended target 20% below 2008 levels by 2020	GHG Inventory Forecast and targets project, 2010

Target Recommendation

- From the audit of 14 facilities
- Based on audits, investment of \$975,000.00 annually
- Annual potential savings of roughly \$480,000.00 through energy savings

Facility energy data captured from audits					With 15% GHG Reduction			
2018					0.15			
Facility	GHG	GJ	KWh	Yearly Cost	KWh Reduction	GHG	Annual Cost Reduction Savings	New Target
SOC	1,747.02	10,254.0	2,848,338.0	\$184,732.03	427,250.7	262.05	\$27,709.80	2,421,087.3
GARC	3,403.84	18,423.3	5,117,752.0	\$272,880.03	767,662.8	510.58	\$40,932.00	4,350,089.2
SHPK	2,638.52	15,313.7	4,253,829.0	\$237,225.79	638,074.4	395.78	\$35,583.87	3,615,754.7
ARC	3,600.25	24,941.0	6,928,199.0	\$314,107.43	1,039,229.9	540.04	\$47,116.11	5,888,969.2
BPGC	866.15	5,504.3	1,528,981.0	\$84,864.75	229,347.2	129.92	\$12,729.71	1,299,633.9
EHLC	2,235.61	15,921.1	4,422,556.0	\$174,145.54	663,383.4	335.34	\$26,121.83	3,759,172.6
EHSP	381.20	2,635.0	731,988.0	\$42,227.37	109,798.2	57.18	\$6,334.11	622,189.8
MRC	863.20	5,806.7	1,612,982.0	\$94,473.16	241,947.3	129.48	\$14,170.97	1,371,034.7
RPC/SALTO	597.44	2,008.9	558,027.0	\$56,863.17	83,704.1	89.62	\$8,529.48	474,323.0
SAP	197.92		2,848,338.0	\$20,339.28	427,250.7	29.69	\$3,050.89	2,421,087.3
CC/CH	5,718.10	13,991.5	3,886,539.0	\$419,175.21	582,980.9	857.71	\$62,876.28	3,303,558.2
SPSY	2,880.56	22,870.1	6,352,844.0	\$250,007.10	952,926.6	432.08	\$37,501.07	5,399,917.4
MP	11,735.99	80,240.4	22,289,115.0	\$934,697.38	3,343,367.3	1,760.40	\$140,204.61	18,945,747.8
KLC	1,530.31	5,121.3	1,422,575.0	\$125,122.11	213,386.3	229.55	\$18,768.32	1,209,188.8
					9,720,309.5	5,759.42	\$481,629.05	55,081,753.6

Target Investment

The investment is based on the opportunities found from the completed audits. The costs of the opportunities represent the investments needed to achieve a 15% reduction in GHG for these buildings audited. As the SEMP grows corporate wide, opportunities will be found that align with the target. This will increase investment, savings, and GHG reduction.

The investment funding comes from multiple sources:

- Available grants
- Current life cycle replacement and maintenance programs
- Capital projects (brought through budget process)

Target Recommendation

Administration believes that this target is an achievable target, and as such will showcase Strathcona County as:

- Leading by example
- Accomplishing set out goals
- Reducing GHG emissions
- Attentive to how decisions can impact environment
- Using innovative strategies

Q & A