

Reduce, Resolve, Retrofit

Needing to reduce energy use, maintenance burden and resolve HVAC control limitations, Sturgeon County's energy manager found the ideal solution by retrofitting lighting fixtures and installing smart control technology.

THE CHALLENGE

The Sturgeon County Facility Services team faced two issues: nine facilities with aging lighting systems and seven remote facilities disconnected from the centralized HVAC Building Management System. The Municipal Energy Specialist needed to find cost-effective solutions to both issues.

THE SOLUTION

Working with the Facility Services team, the specialist developed a suite of Energy Conservation Measures that could reduce power demand by 36 kW and greenhouse gas emissions by 46.5 tonnes per year.

405 fixtures were upgraded with energy efficient LEDs. This included repurposing over 330 fluorescent lighting fixtures with ballast-free LED lamps. Extending the life of these fixtures resulted in better lifecycle costs per light, while also eliminating unplanned ballast replacements.

Seven remote facilities had their thermostats upgraded with web-connected smart thermostats. Now facility staff can better control heating and cooling set points using their mobile devices. This solution maximizes energy savings and resolves prior HVAC control/monitoring limitations in these buildings.

STURGEON COUNTY

Sturgeon County is a 2,100 km² municipal district in the Edmonton Metropolitan Region. Located on Treaty 6 Lands north of the City of St. Albert, the county is primarily comprised of rural farmland, residential acreages, and industrial developments. It is home to over 20,000 residents and is a home of the Alberta Industrial Heartland, a regional hub for petrochemical and oil and gas development.



GOAL	ACTIONS	MEASURES OF SUCCESS		
↓ 10%	17	↓ 46.5 t	↓ 9.5%	\$14,721
lower GHG emissions (below 2019 levels)	energy conservation measures completed	GHG emissions annual reduction	lower GHG emissions (below 2019 levels)	energy cost annual savings

MEET THE MUNICIPAL ENERGY MANAGER



Brandon Sandmaier, Municipal Energy Specialist

Brandon Sandmaier is an Alternative Energy Technologist and an AEE Certified Energy Auditor that has a private sector background in renewable energy and energy efficiency projects. In 2021, Brandon Sandmaier joined Sturgeon County to oversee and implement energy conservation projects, track and report on annual energy use, and encourage energy conscious practices with the organization.





LESSONS LEARNED

These projects were supported because they checked several operational boxes for the organization, reduced annual emissions, and aligned with the Sturgeon County Strategic Plan.

The projects would also have a healthy return on investment due to the energy cost savings. Additionally, there were significant co-benefits: optimizing building operation would result in less unplanned and ongoing maintenance, further reducing costs.

To give the Facility Services Manager confidence in the decision to proceed with these energy management projects, the Municipal Energy Specialist provided a detailed business case and lifecycle analysis. Commissioning site visits also ensured energy savings by confirming that thermostats and lighting controls were installed as specified and they were programmed and operating correctly.

OTHER PROJECTS IMPLEMENTED

-  Weatherstripping: keeping the cold air outside in winter and inside in summer saves on HVAC costs.
-  Triple pane windows: higher R value windows are better insulating.
-  Timers and sensors: for spaces that are only used 8 hours a day, timers and motion sensors can reduce plug load and lighting use when spaces are unoccupied.
-  Furnace upgrade: older furnaces may waste 20-40% of energy. High efficiency furnaces convert up to 95% of energy into useable heat.

Issue	Solution	Products	Cost	Expected Savings	Payback Period
Fluorescent lighting is higher energy and provides lower quality lighting.	Replace with equivalent LED lighting.	Ballast-free T8 LED lamps LED highbay fixtures LED wallpacks	\$28,634	\$13,996 42 t CO ₂ e	2 years
Buildings temperature at a constant set point Thermostats must be set on site.	Install internet-connected smart thermostats.	EcoBEE 3Lite	\$1,040	\$725 4.5 t CO ₂ e	1.4 years
			\$29,674	\$14,721 46.5 t CO₂e	1.7 years

THE MUNICIPAL ENERGY MANAGER PROGRAM

The Municipal Energy Manager Program provides funding for Alberta municipalities to hire an energy manager. Participating municipalities receive up to \$80,000 in salary to hire a professional to develop energy management plans, improve building performance, and produce noticeable energy savings.

The program was designed and delivered by the Municipal Climate Change Action Centre, a partnership of:

