



## SOCIAL FAMILY HOUSING GRAND PRAIRIE, ALBERTA, CANADA

“Installing two Yanmar 35kW Cogeneration Systems has substantially reduced our operational costs year-round for all of us to enjoy, while giving our tenants energy security and resiliency. Onsite power and thermal energy generation not only helps us avoid peak billing demand charges during extreme weather conditions, but it also eliminates blackouts due to weather or utility malfunctions, including emergencies, adding increased residential comfort and safety that is also shared with our commercial tenants.”



### PROJECT OVERVIEW

The CARIN apartment building has 82 rental apartments ranging from 300 to 1,300 sq. ft. The building is 6 floors with 66,000 sq. ft., with the bottom floor as commercial retail space. LSM Energy Solutions installed (2x) 35 kW Yanmar

(cogeneration) CHP units in May of 2020 and the units have run for 7,500 hrs. without any trouble. The first oil and filter change were completed in March of 2021.

### REASON FOR CHOOSING YANMAR

The Yanmar CHPs have been able to eliminate electrical usage for the building, with an additional 24,000 kWh being sold to the grid for a credit of approximately \$1,350 per month. In previous years, the electricity bill was approximately \$5,500 per month.

The two 35kW CHP units consume 720,000 BTUs. The CHPs inject into the existing boiler loop and run constantly. A plate heat exchanger in the boiler loop feeds two domestic hot water storage tanks combined with a building thermostatic mixing valve for anti-scald safety. Approximately 50% of the heat from the CHPs are used for domestic hot water production. In

addition to the electrical savings, the lifespan of the existing boilers has been extended.

The building's heat is hydronic-based radiant heat, with two 750,000 BTU boilers and three 250,000 BTU domestic hot water tanks. Constant heat output of the CHP allows it to satisfy the heat demand of the space heating for the 66,000 sq. ft. building, as well as 5,500 cfm of outdoor air from the hallway pressurization unit and all the domestic hot water production with an input of only 800,000 BTUs.

### ABOUT YANMAR AMERICA ENERGY SYSTEMS

Yanmar America Energy Systems is the North, Central and South American headquarters for the company's Variable Refrigerant Flow and Combined Heat and Power systems. Yanmar Energy Systems Canada is located in

Hamilton, Ontario, and supports variable refrigerant flow and combined heat and power systems sales and service for Canadian customers. Our team and products are focused on sustainability, reliability, and efficiency.





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### QUICK FACTS

**APPLICATION:** Social Housing  
Residential & Commercial

**LOCATION:** Grand Prairie, AB

**COMMISSIONING DATE:** May 2020

**PRODUCT INSTALLED:** 35kW CHP Systems x 2

### OVERVIEW

Annual savings of more than \$65,000.00  
Electrical loads eliminated with a surplus  
Utility net-metering credit of \$16,200  
Increased comfort, lower costs, and reduced building emissions  
Average monthly use of 26,500kW  
Average monthly operation of 720 hours during the first year



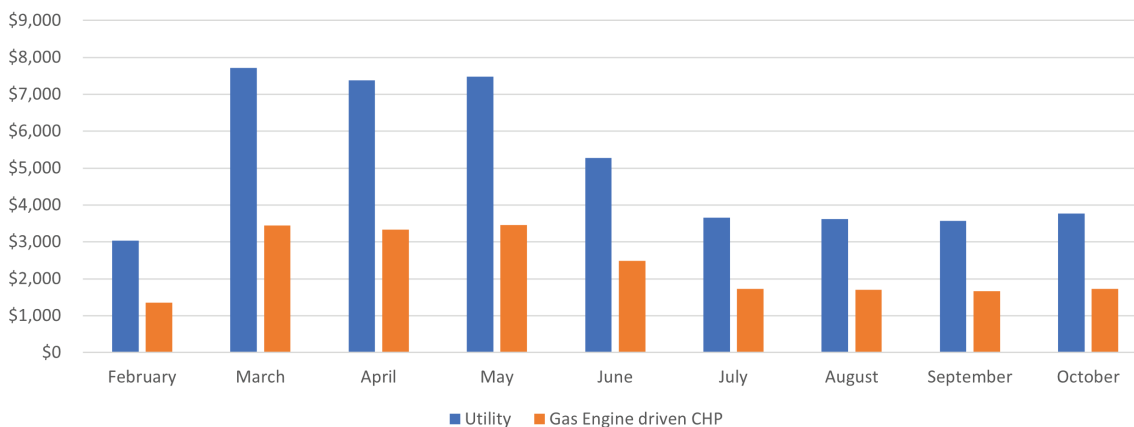
### RESULTS

The two, whisper-quiet units provided, can provide 100% of the 66,000 square foot Carin Building's total electricity while being credited for any excess by the local utility, as well as supplies all the domestic hot water and most of the heat, for the hydronic heating and ventilation systems.

The existing boilers are only needed in extremely low temperatures below -20 deg C (-4 F) extending their useful lifespan.

Environmentally, green house gas emissions dropped substantially, an estimated 30 %. Simply by upgrading a very common mechanical room with the Yanmar CHP systems.

YANMAR CHP Operating Costs from February to October 2021



Operating costs data is a calculated estimate based only on remote monitoring data and local average utility costs or bills.

Net metering based on \$0.0575/ kwhr Alberta regulated rate | Electrical savings based on \$0.125 kwhr including transmission and electricity costs.

