

# Audit Case Studies

## Longos South Brampton - Refrigeration

The Longo's Brampton store is renovated to optimize the Refrigeration System whilst upgrading the Refrigeration Control. Existing Racks, Cases and Condensers are replaced with higher efficiency models.

The Energy Efficient case has lower capacity and higher efficiency four (4) Compressor Low Temperature Rack replacing the existing five (5) Compressor Rack and a six (6) Compressor Medium Temperature Rack replacing the existing eight (8) Compressor Rack. And all ninety five (95) cases are being replaced by higher efficiency cases with similar capacities.

Also, the control system is being changed to a MicroThermo Control System and Evaporator Coils are being replaced.

Measure	Incentive Metric (kW or kWh)	Base Case		Energy Efficient Case		Estimated Savings		Calculated Participant Incentive (\$800/kW of Demand Savings or \$0.10/kWh of Energy Savings)
		electricity demand (kW)	annual electricity consumption (kWh)	electricity demand (kW)	annual electricity consumption (kWh)	Demand Savings (kW)	Energy Savings (kWh)	
Compressor Upgrade and Controls	kWh	152.38	694,002	204.37	511,867	-51.99	182,134	\$18,213.44
	<b>TOTAL</b>	<b>152.38</b>	<b>694,002</b>	<b>204.37</b>	<b>511,867</b>	<b>-51.99</b>	<b>182,134</b>	<b>\$18,213.44</b>

## Longos South Brampton - HVAC

The existing 4 Keeprite rooftop units are approximately 20 years old, exceeded their life expectancy and ready for replacement. Overall cooling capacity is 25Tons and average system cooling efficiency is 1.33 kW/ton. In addition, there is a one 50Ton Keeprite split unit with two gas fired Reznor unit heaters used for heating, cooling and ventilation of retail space. The unit is 20 years old and ready for the replacement.

The 4 new high efficiency Lennox units have a cooling capacity of 27T and average system cooling efficiency of 0.96kW/ton. New units are having enthalpy economizers and DDC control. The new 50T dual path CES rooftop unit is having 4 stage of heating and cooling and VFD on the supply.

Measure	Incentive Metric (kW or kWh)	Base Case		Energy Efficient Case		Estimated Savings		Calculated Participant Incentive (\$800/kW of Demand Savings or \$0.10/kWh of Energy Savings)
		electricity demand (kW)	annual electricity consumption (kWh)	electricity demand (kW)	annual electricity consumption (kWh)	Demand Savings (kW)	Energy Savings (kWh)	
Replacement of 4 old Keeprite rooftop units with new 4 high efficiency Lennox units	kW	33	41097	21.6	24691.8	11.4	16,405	\$9,120.00
Replacement of 50T Keeprite split unit with CES dual path unit	kWh	56.6	157474.6	49.14	89953.46	7.46	67,521	\$6,752.11
	<b>TOTAL</b>	<b>89.6</b>	<b>198,572</b>	<b>70.74</b>	<b>114,645</b>	<b>18.86</b>	<b>83,926</b>	<b>\$15,872.11</b>

## Costco 526 – 5900 Rodeo Drive

### Controller upgrade and re-commissioning:

Scope of work: Remove all existing Compressor and install new Bitzer Compressors in a new Rack.

Upgrade the Controller with advance Floating head control.

A reduced compressor load from using EC motors on all of the Condenser fans is expected.

A savings of 20% can be expected according to similar projects done previously.

Rack C will be split in two rack to provide better control of different temperature instead.

### Using a VFD on Compressor

Scope of work: Old Condenser will be removed and 4 new condensers will be installed with EC motors

Every single fan on the condenser will be an EC motor with VFD control to maximize the floating head control to reduce the energy requirement of Compressor.

Each and every fan will only work as hard as it is required. According to manufacture the energy saved is over 70% of the energy a condenser normal used.

### Using VFD/ECM on each Condenser fan:

Scope of work: Old Condenser will be removed and 4 new condensers will be installed with EC motors.

Every single fan on the condenser will be an EC motor with VFD control to maximize the floating head control to reduce the energy requirement of Compressor.

Each and every fan will only work as hard as it is required. According to manufacture the energy saved is over 70% of the energy a condenser normal used.

### Door on produce room, Freezer #1 and POS:

Scope of work: Air curtain on the loading dock is working 24/7. A door will be installed to shut the air curtain off for 8 hours peer days.

HCR door with Evap. coil PD98691101 AC w-EVAP 120610

The average power used by the motor is 0.67kW (metered data)

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		electricity demand (kW)	annual electricity consumption (kWh)	electricity demand (kW)	annual electricity consumption (kWh)	Demand Savings (kW)	Energy Savings (kWh)	
Controller Upgrade and Recommissioning & VFD on Compressors	kW	163.26	883573	128.18	625433	35.08	258,140	\$28,064.00
<b>TOTAL</b>		<b>163.26</b>	<b>883,573</b>	<b>128.18</b>	<b>625,433</b>	<b>35.08</b>	<b>258,140</b>	<b>\$28,064.00</b>

## GoodnessMe Uppergage

The GoodnessMe store will be renovated to optimize the Refrigeration System whilst upgrading the Refrigeration Control. Individually operating compressors will be replaced with a more efficient, centralized Compressor Racks.

The existing system consists of nine (9) Medium Temperature Cases and six (6) Low Temperature Cases. Each case has a self-contained refrigeration system with a Compressor(s) and Evaporator Fan/Coil.

The Energy Efficient Case proposes to replace the individual Compressors with a centralized Compressor Rack for both the Low Temperature and Medium Temperature systems. Each case will keep its existing Evaporator Fan/Coil. In addition a new MicroThermo Control System will be installed to provide improved control of the new Compressor Racks.

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		electricity demand (kW)	annual electricity consumption (kWh)	electricity demand (kW)	annual electricity consumption (kWh)	Demand Savings (kW)	Energy Savings (kWh)	
Low Temp & Med Temp Compressors to Family Rack	kWh	65.7	411389	61.4	127674.7	4.3	283,714	\$28,371.43
	<b>TOTAL</b>	<b>65.7</b>	<b>411,389</b>	<b>61.40</b>	<b>127,675</b>	<b>4.3</b>	<b>283,714</b>	<b>\$28,371.43</b>

**ECO<sub>2</sub> FRIENDLY SOLUTIONS**  
**REFRIGERATION**  
**ENGINEERING**  
**ENERGY**  
**HVAC**

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