

NZEB/NZEC

MOUNT DENNIS DAYCARE CENTRE

First in Ontario



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BUILDING DATA:

GFA: 1684.3m² (18,123 FT²)

DESIGN: [RMA Integrated Mechanical/Electrical/GeoExchange® Engineering.](#)

MODELING: RMA using eQUEST modeling software.

ENVELOPE:

- Designed to Passive House Standards

MECHANICAL FEATURES:

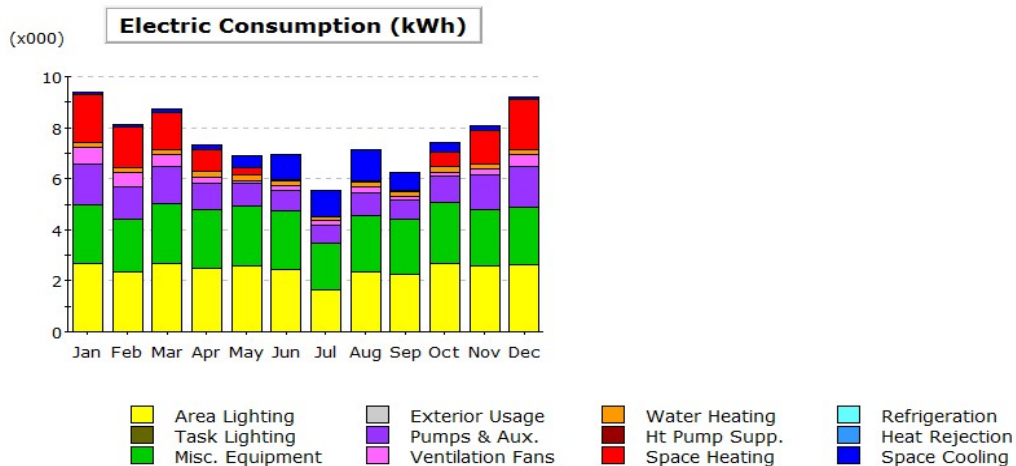
- GeoExchange System with Vertical Closed loop Ground Heat Exchanger
- Ground exchanger also serves as a Borehole Thermal Energy Storage System accepting heat energy from PVT panels
- Ventilation on a zone demand basis with variable flow
- Energy recovery using a passive house rated ERV
- Distributed geothermal heat pump system using inverter compressors and ECM variable speed fan motors
- Variable speed fluid pumping systems
- Intelligent BAS System

ELECTRICAL FEATURES:

- Roof mounted Photovoltaic (PV) and Photovoltaic/thermal (PVT)
- Battery Energy Storage system (BESS)
- Electrical service set up in a net metering configuration
- LED lighting throughout
- High efficiency electric motors

MODELLED ANNUAL ENERGY PERFORMANCE:

TOTAL ENERGY USE INTENSITY: 54.02 kWh/m² (5.02 kWh/ft²)
THERMAL ENERGY DEMAND INTENSITY: 7.97kWh/m² (2.6 kWh/ft²)
PEAK ELECTRICAL DEMAND: 35.84W/m² (3.3W/ft²)
GREENHOUSE GAS INTENSITY: 2.38kg CO_{2e}/m² (1.08 kg CO_{2e}/m²)



Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	0.09	0.08	0.10	0.18	0.44	0.96	1.01	1.24	0.71	0.37	0.18	0.11	5.47
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	1.89	1.58	1.45	0.85	0.29	0.05	0.02	0.03	0.06	0.56	1.30	1.98	10.06
HP Supp.	0.00	0.00	0.00	0.00	-	-	-	-	-	-	0.00	0.00	0.00
Hot Water	0.22	0.20	0.23	0.22	0.22	0.21	0.14	0.19	0.19	0.21	0.20	0.21	2.42
Vent. Fans	0.65	0.57	0.44	0.23	0.13	0.18	0.18	0.22	0.14	0.15	0.23	0.48	3.61
Pumps & Aux.	1.58	1.25	1.44	1.07	0.86	0.81	0.70	0.90	0.73	1.04	1.37	1.59	13.33
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	2.31	2.09	2.38	2.28	2.37	2.28	1.86	2.24	2.16	2.37	2.22	2.25	26.81
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	2.67	2.34	2.67	2.49	2.57	2.45	1.62	2.33	2.28	2.68	2.56	2.62	29.28
Total	9.40	8.11	8.71	7.32	6.88	6.94	5.54	7.15	6.26	7.40	8.07	9.22	90.99

The Toronto Green Standard Version 3:

The system modeled meet the following requirements:

Item	Geothermal
Thermal Energy Demand Intensity (TEDI)	TIER 2
Total Energy Use Intensity: (TEUI)	TIER 4
Greenhouse gas Intensity	TIER 4