Energy Model Report for warehouse and office headquartered at 45 Blowers Cres, Ajax

Prepared by:

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Executive Summary

Energy modelling report is for the industrial shell building and headquarter office located at 45 blowers Crec, Ajax, Ontario.

The total floor area of the modelled building 15,187 sq ft and attached headquarter office of two floors with floor area 3800 sq ft each level, with

The energy modeling software that is used for simulation is eQUEST 3.64
The NECB 2015 Reference energy model includes all requirements outlined in the Ontario Building Code SB-10 Building Energy Performance Compliance Path (NECB Part 8 with additional requirements in chapter 3 of SB-10. Refer to table for summary of simulation inputs

The total annual consumption of the proposed building is 1211.5 MBTU and total emissions co2 is 39,184 kg co2. Electrical demand is 94.8 KW

The total annual consumption of the proposed building is 1264.3 MBTU and total emissions co2 is 40,616 kg co2. Electrical demand is 100.5 KW

The Building Energy Performance Summary simulation file outputs have been included in this report

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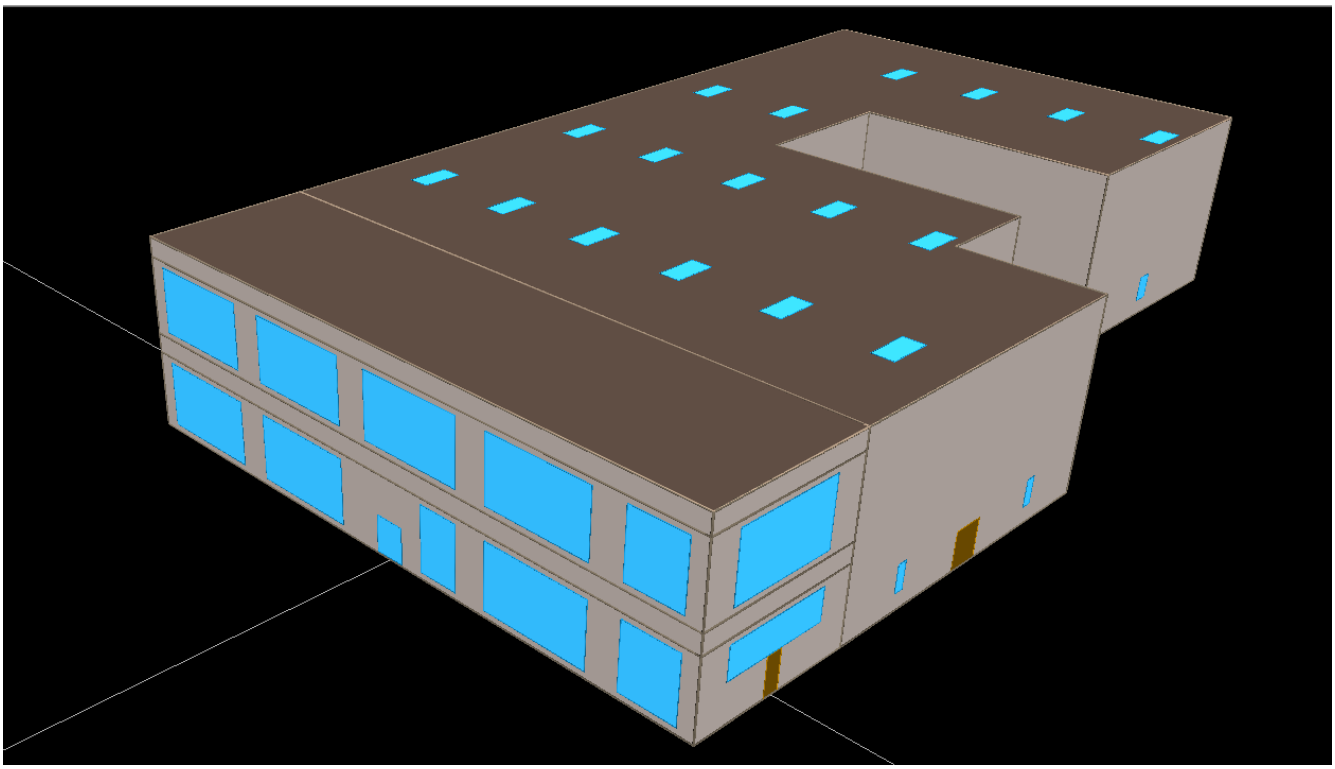

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Summary of energy modelling inputs used for simulation.

Description	Proposed Design	NECB 2015 Reference
Exterior Wall Construction (U-value)	Spandrel Back Pan: R-Value: 6 (considered all thermal bridges) Mass walls: R-value:20.4	Exterior Mass Walls and Spandrel U-value: 0.049 (R-Value 20.4)
Roof Construction (U-value)	R-value: 37	R-value: 37
Foundation/Slab Insulation	NECB/SB-10	NECB/SB-10
Fenestration and skylights U-value	0.29	0.335
Fenestration and skylights SHGC	0.38	0.40
Opaque Doors U-value	0.387	0.387
Infiltration Flow	0.04 CFM/ft^2	NECB
Interior LPD	SB-10-Table SB 4.2.1.5.-2017	SB-10-Table SB 4.2.1.5.-2017
Exterior LPD	0.04 W/sq ft of uncovered area	0.04 W/sq ft of uncovered area
Miscellaneous Plug Loads	0.5 W/ft^2	Used Value as proposed
Heating / Cooling Setpoints	Warehouse (heating only): 70 F	Used same value as proposed
HVAC System Type	Warehouse: Gas Fired unit heaters Headquarter office: Roof top unit, DX hybrid heat pump	Office: NECB System 3 Warehouse: MNECB system 4
Fan Control	Constant Volume	Same as proposed

Ventilation air flow rates	As per AS per ASHRAE 62.1	As per ASHRAE 62.1
Economizer Control	AHUs: Enthalpy	NECB: Enthalpy
Cooling	RTU: EER: 11.8	RTU: EER 10.8
Heating	Office: Heat Pump COP 3.61 With terminal electric baseboard heaters Warehouse: Unit Heaters 80% efficiency	Office: Heat Pump COP 3.2 With terminal electric baseboard heaters Warehouse: Unit Heaters 80% efficiency
Water Heating	Tankless water heater EF=0.93	SB-10 Table 6.2.2.1..A-2017 0.7-0.00189V =0.59 EF