PROJECT: 4050 Yonge Street, Toronto

DEVELOPER: Easton's Group / Gupta Group
3100 Steeles Ave East (Suite 601)
Markham, Ontario L3R 8T3

MODELED FLOOR AREA: 71,841 [m^2]

DESIGN BASELINE ENERGY PERFORMANCE

END USE	ENERGY RESOURCE	EUI [ekWh/m^2/year]	ENERGY USE [ekWh/year]	PERCENT OF TOTAL [%]	GHG EMISSIONS [kg CO_2e/year]	PERCENT OF TOTAL [%]
Lighting	ELEC	17.5	1,255,798	14.6%	62,790	5.9%
Plug & Process Loads	ELEC	16.1	1,154,713	13.4%	57,736	5.4%
Plug & Process Loads	NG	2.5	181,426	2.1%	32,911	3.1%
Space Heating	NG	48.9	3,513,070	40.8%	637,271	59.6%
Space Cooling	ELEC	5.6	402,729	4.7%	20,136	1.9%
Pumps & Auxiliary	ELEC	5.0	357,167	4.1%	17,858	1.7%
Fans	ELEC	8.1	583,656	6.8%	29,183	2.7%
Service Water Heating	NG	16.3	1,169,949	13.6%	212,229	19.8%
Exterior Electrical	ELEC	0.5	32,406	0.4%	1,620	0.2%
TOTAL	ELEC + NG	120.0	8,618,507	100.0%	1,070,113	100.0%

TEDI [ekWh/m2/year] 42.1

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SUMMARY OF DESIGN BASELINE PERFORMANCE RESULTS (RELATIVE TO REFERENCE BUILDING)

PERFORMANCE METRIC	DESIGN BASELINE SAVINGS	COMPLIANT?
Energy Use Intensity [ekWh/m2/year]	120.4	YES
Greenhouse Gas Intensity [kg CO2e/year]	14.9	YES
Thermal Energy Demand Intensity [ekWh/m2/year]	42.1	YES

NOTES:

2. This building has been modeled with limited design information. Many assumptions have been made regarding design details (such as equipment performance ratings, controls systems used, and detailed operating parameters). Energy performance numbers will change as more detailed design information becomes available.

3. Modeling results are not predictions of actual energy consumption. Real world experience will differ from modeled energy performance for many reasons including (but not limited to) variations in building occupancy and operating patterns, equipment setup and maintenance issues, unexpected weather conditions, inaccurate modeling assumptions, modeling simplifications, and energy uses not modeled.

TOWARDS ZERO EMISSIONS DEVELOPMENT

To deign this building to have the potential to meet "Zero GHG Emissions" the design team should follow the following key recommendations:

OPTIMAL PERFORMANCE DESIGN:

1. REDUCE WINDOW-TO-WALL RATIO TO 25% (MAX) FOR EACH ELEVATION.
2. INCREASE WALL AND EXPOSED FLOOR R-VALUE TO R-30 (EFFECTIVE).
3. IMPROVE WINDOW ASSEMBLY PERFORMANCE BY SPECIFYING FIBREGLASS FRAMES AND TRIPLE-GLAZED INSULATED GLAZING UNITS.
4. MINIMIZE LIGHTING LOADS BY PROVIDING ALL LIGHTING FIXTURES IN THE SUITES AND SPECIFYING HIGH PERFORMANCE LED FIXTURES.
5. SPECIFY A GROUND SOURCE HEAT PUMP SYSTEM TO REDUCE DEPENDENCE ON CONVENTIONAL BOILER/CHILLER PLANT FOR HEATING/COOLING.
6. IMPLEMENT ADVANCED CONTROL SYSTEMS INCLUDING A "SUITE KILL SWITCH" TO TURN OFF ALL LIGHTING AND NON-ESSENTIAL LOADS.

ADDITIONAL MEASURES:

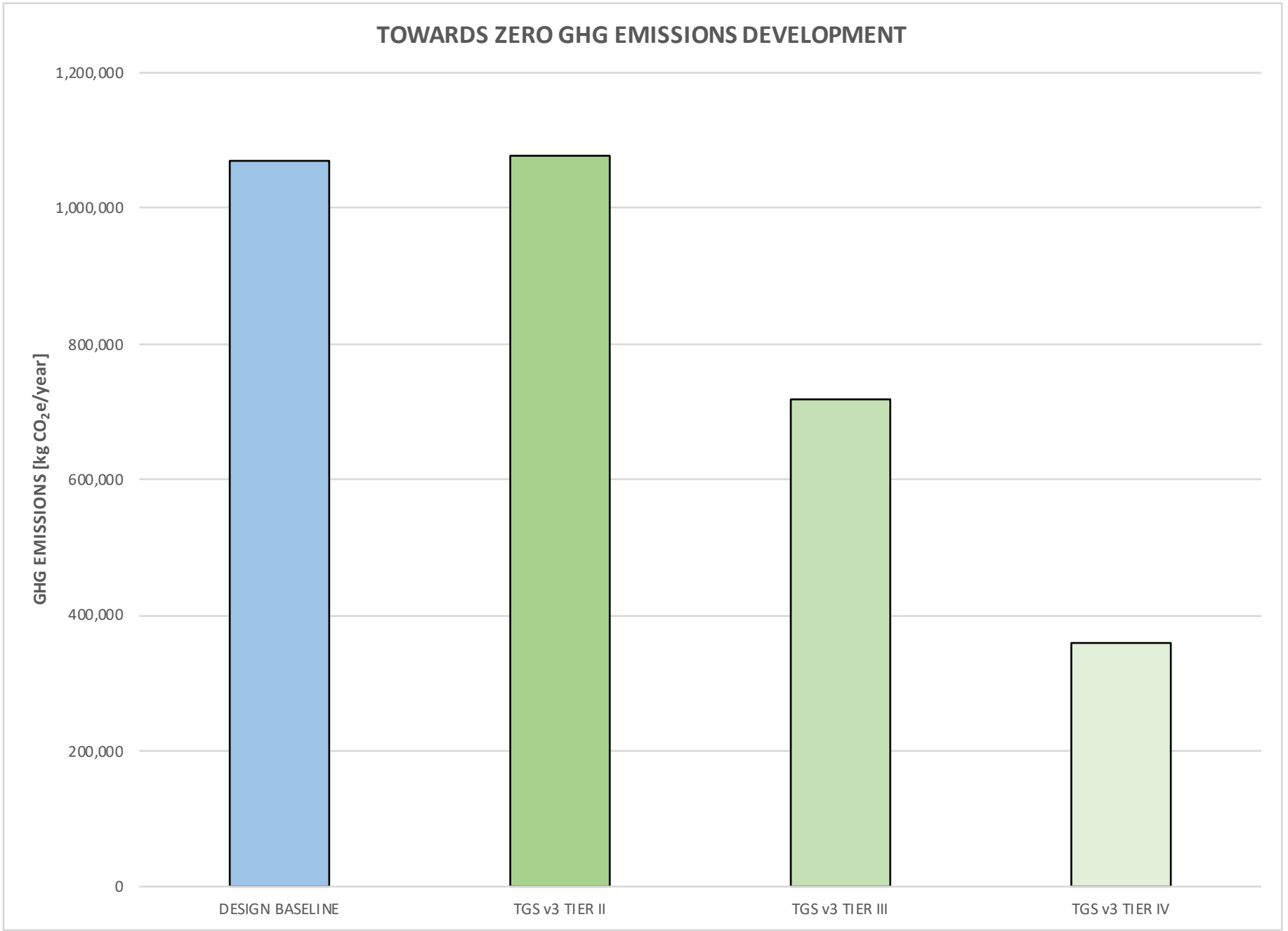
7. PROVIDE ONSITE RENEWABLES TO GENERATE CLEAN ENERGY ONSITE (E.G. ONSITE SOLAR PV SYSTEM).
8. CONSIDER SUPPORTING OFFSITE GHG MITIGATION STRATEGIES (E.G. OFFSITE SOLAR PV OR WIND ENERGY) TO OFFSET BUILDING EMISSIONS.

DESIGN SCENARIO	ENERGY USE [ekWh/year]	GHG EMISSIONS [kg CO2e/year]	THERMAL ENERGY DEMAND [ekWh/year]
DESIGN BASELINE	8,618,507	1,070,113	42
TGS v3 TIER II	9,698,535	1,077,615	50
TGS v3 TIER III	7,184,100	718,410	30
TGS v3 TIER IV	5,388,075	359,205	15

DESIGN SCENARIO	ENERGY USE [% Savings]	GHG EMISSIONS [% Savings]	THERMAL ENERGY DEMAND [% Savings]
DESIGN BASELINE	0%	0%	0%
TGS v3 TIER II	-11%	-1%	-16%
TGS v3 TIER III	20%	49%	40%
TGS v3 TIER IV	60%	198%	181%

CONCLUSIONS:

1. By implementing the Key Recommendations listed above, it is expected the Optimal Performance Design could achieve a TGS v3 TIER III performance level.
2. To achieve a TGS v3 TIER IV performance level, additional measures (e.g. onsite and/or offsite renewable energy systems) would be required to offset building emissions.


TOWARDS ZERO GHG EMISSIONS DEVELOPMENT
GHG EMISSIONS [kg CO_2e/year]
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
DESIGN BASELINE
TGS v3 TIER II
TGS v3 TIER III
TGS v3 TIER IV