

Performance Assessment Report
CMHC Loan Insurance Application MLI Select
for New Construction



Merivale Apartment

917 Merivale Road
Ottawa, ON



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Prepared for Y Street Capital
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ENGINEERING DECLARATION

Issued for CMHC MLI-Select

This is to confirm that the Merivale Apartment project to be located at 917 Merivale Road in Ottawa, ON, is projected to result in a 44.7% reduction in annual energy use and a 62.6% reduction in annual greenhouse gas emissions relative to the CMHC Reference Building. The proposed project meets the energy efficiency criteria to achieve 50 points under CMHC’s MLI-Select program.


EVNA Engineering – Energy Modeler

By signing below, I certify the information provided in the following Energy Efficiency Report is accurate.

<u>Sean Sirgi, P.Eng.</u> <i>Full Name</i>	<u>Building Performance Analyst</u> <i>Title of Authorized Signatory</i>
 <u>Signed on behalf of the Project Energy Modeler</u>	<u>17/07/2024</u> <i>Date (DD/MM/YYYY)</i>

EVNA Engineering – Project Engineer

By signing below, I certify the information provided in the following Energy Efficiency Report is accurate.

<u>Sean Sirgi, P.Eng.</u> <i>Full Name</i>	<u>Building Performance Analyst</u> <i>Title of Authorized Signatory</i>
<i>PEO License #: 100619121</i>	
	
<u>Signed/Sealed on behalf of EVNA's Project Engineer</u>	<u>17/07/2024</u> <i>Date (DD/MM/YYYY)</i>

EXECUTIVE SUMMARY

EVNA Engineering was commissioned to prepare energy models for Merivale Apartment multi-unit residential building, located at 917 Merivale Road in Ottawa, to demonstrate the designed performance improvement relative to a CMHC NECB 2017 compliant reference building —as part of the CMHC MLI-Select program environmental efficiency requirement.

The proposed Merivale Apartment Apartments project is a 6-storey multi-residential building with 20 dwelling units, located in Ottawa, Ontario. The building has a total Modeled Floor Area (MFA) of approximately 1,455 m² (15,655 ft²). Energy simulations were prepared using eQUEST 3.65.

CMHC – MLI Select Multi-Unit Residential Building – New Construction

The energy analysis evaluates the performance of the Proposed Building design relative to a static CMHC NECB 2017 Compliant Reference Building, hereinafter referred to as Reference Building, or CMHC Reference Building.

This report aims to confirm that the proposed design will achieve an energy use and greenhouse gas emissions reduction of at least 40% relative to the Reference Building, qualifying the property for 50 MLI Select points.

The proposed project site demonstrates a 44.7% reduction in annual energy use and an 62.6% reduction in annual greenhouse gas emissions over the Reference Building.

Table 1.1 – Energy Use and Greenhouse Gas Emissions Reduction Summary

Description	Proposed Building	Reference Building	Savings
Total Annual Energy Consumption (GJ/year)	999.1	1,806.0	44.7%
Total Annual Greenhouse Gas Emission (tons of eCO ₂ /year)	29.5	79.1	62.6%

1.0 PROPOSED BUILDING SIMULATION OVERVIEW

The proposed Merivale Apartment Apartments project is a 6-storey plus basement multi-residential building with 20 dwelling units, located in Ottawa, Ontario. The building has a total Buildable Floor Area (BFA) of approximately 1,455 m² (15,655 ft²). The Modeled Floor Area (MFA) is equal to the BFA.

The following table summarizes the building's floor areas by space type:

Space Type	Area (m ²)	Area (ft ²)
Dwelling Units	948	10,202
Common Area (Corridor, Lobby, etc.)	482	5,188
Mechanical/Electrical	25	265
Parking	0	0
Total Buildable Floor Area (BFA)	1,455	15,655
Total Modelled Floor Area (MFA)	1,455	15,655

The energy simulations were performed using eQUEST 3.65. The CWEC2020 weather file for Ottawa, Ontario was used in the simulations, on the basis this weather file was the most representative of the project's location.

NECB 2017 Climatic Zone 6 (4000°C ≤ HDD18 < 5000°C) was applied to the Reference Building according to the 2017 NECB Division B Climatic Information, Table C-1.

The following is a list of Energy Conservation Measures (ECMs) that were incorporated into the Proposed Building design:

- In-suite heat recovery ventilators with a 65% sensible effectiveness @0°C
- High efficiency air-source heat pumps with a COP 4.1 (@47°F)
- Low window to wall ratio (≈ 21%).
- 90% efficient gas fired make-up air unit
- 96% efficient condensing gas fired domestic water heater
- Reduced domestic hot water load by 36.0% via low flow fixtures.
 - Lavatory: 0.5 gpm, Kitchen faucet: 1.0 gpm, Showerhead: 1.75 gpm

Lighting power densities were modeled using the Space-by-Space Area Method for a Multi-Unit Residential Building type per NECB 2017 Table 4.2.1.6.

The building operates 24 hours per day, 7 days per week. The NECB 2017 operating schedules applied are Type C, and G, per Table A-8.4.3.2. (2)-A.

2.0 CMHC ENERGY MODELLING SUMMARY

2.1 Building Envelope

The Reference Building envelope was modeled according to NECB 2017 for Climatic Zone 6. The energy simulations are based on the architectural design drawings dated June 24, 2024, prepared by the architectural design team at Biosis Design Inc.

The following tables are a side-by-side comparison of the building envelope input between the Reference and Proposed Building models:

Building Envelope	
Reference Building	Proposed Building
Climatic Zone	Climatic Zone
<u>NECB 2017 Division B - Table C-1</u> Province: Ontario Location: Ottawa Degree Days Below 18°C: 4500 HDD18 Design Temperature (Jan 2.5% °C): -25°C	<u>NECB 2017 Division B - Table C-1</u> Province: Ontario Location: Ottawa Degree Days Below 18°C: 4500 HDD18 Design Temperature (Jan 2.5% °C): -25°C
Exterior Walls ¹	Exterior Walls ¹
<u>NECB 2017 Division B - Table 3.2.2.2. (Zone 6)</u> Assembly Performance: USI-0.247 U-0.043	<u>Exterior Wall</u> Assembly Performance: USI-0.385 U-0.067 <i>Including the effects of thermal bridging</i>
Exterior Roof ¹	Exterior Roof ¹
<u>NECB 2017 Division B - Table 3.2.2.2. (Zone 6)</u> Assembly USI: 0.156 U-0.027	<u>Roof</u> Assembly Performance: USI-0.144 U-0.025
Slab Construction	Slab Construction
<u>NECB 2017 3.2.3.1.(5)</u> Same as Proposed Building.	<u>Uninsulated Concrete Slab</u> Treated as an adiabatic surface by modeling software.
Fenestration Type ¹	Fenestration Type ¹
<u>NECB 2017 Table 3.2.2.3. (Zone 6)</u> Assembly Performance: USI-1.9 SHGC (Other): 0.40 <i>Properties above include glazing and frame, and apply to fixed and operable windows, as well as glass doors</i>	<u>Glazing</u> Effective Assembly Performance: USI-1.9 SHGC-0.40 <i>Properties above applies to fixed and operable windows, as well as glass doors</i>
Fenestration & Door to Wall Area Ratio (FDWR)	Fenestration & Door to Wall Area Ratio (FDWR)
<u>NECB 2017 Section 3.2.1.4 (4000 < HDD ≤ 7000)</u> FDWR = (2000 - 0.2·HDD)/3000 = 36.6% <i>According to NECB 2017 8.4.4.5.(5)(c)</i>	<u>Vision Glass, Glass Doors & Opaque Doors</u> Proposed Building FDWR = 21%
Infiltration	Infiltration
Same as Proposed Building, no credit.	NECB 2017 Allowance: 0.25 L/s-m ² @ 5 Pa NECB Infiltration: 892 cfm Air Changes @ 50 Pa: 1.52 ACH50 Air Changes @ 12.2 Pa: 0.61 ACH12.2

All Reference Building space loads not addressed in NECB 2017 standard were modeled the same as the Proposed Building design.

¹ Effective thermal performance: USI units: W/m²-K | U-value unit: Btu/hr-°F-ft² | RSI units: m²-K/W | R-value units: hr-ft²-°F/Btu

2.2 Interior & Exterior Loads

The Reference Building's lighting system was modeled using the lighting power allowances prescribed by the NECB 2017 Space-by-Space Method. The Proposed Building's interior and exterior lighting loads were modeled in compliance with NECB 2017.

The following tables are a side-by-side comparison of the building electrical load input between the Reference and Proposed Building models:

Miscellaneous Plug Loads	
Reference Building	Proposed Building
Interior (Dwelling Units)	Interior (Dwelling Units)
NECB 2017 Table A-8.4.3.2.(2)-B Reference Equipment Power Density (EPD) input for dwelling units set to 5 W/m ² (0.46 W/ft ²) per NECB 2017 Part 8.	NECB 2017 Table A-8.4.3.2.(2)-B Proposed Equipment Power Density (EPD) input for dwelling units set to 5 W/m ² (0.46 W/ft ²) per NECB 2017 Part 8.

Exhaust Fans	
Reference Building	Proposed Building
Dwelling Units Exhaust Same as Proposed Building	Dwelling Units Exhaust Power per fan: 0.5 W/cfm Total Exhaust Power: 2.55 kW (2 h/day)

Lighting	
Reference Building	Proposed Building
Interior (Dwelling Units)	Interior (Dwelling Units)
Reference Lighting Power Density (LPD) input for dwelling units set to 5 W/m ² (0.46 W/ft ²) per NECB	Proposed Lighting Power Density (LPD) input for dwelling units set to 5 W/m ² (0.46 W/ft ²) per NECB
Interior (Other)	Interior (Other)
Reference Lighting Power Densities (LPDs) set to NECB 2017 prescribed Space-by Space LPD allowances. No credit taken for occupancy controls. Average adjusted LPD: 4.3 W/m² (0.40 W/ft²)	Space-by-Space Method was followed, as the electrical design drawings were not available at time of writing. Input was set to the LPDs prescribed in NECB 2017. Average adjusted LPD: 4.3 W/m² (0.40 W/ft²)

All Reference Building space interior/exterior loads not addressed in NECB 2017 standard were modeled the same as the Proposed Building design.

2.3 Air-side HVAC Systems

The Reference Building’s air-side HVAC systems were modeled according to the minimum compliance requirements defined by the NECB 2017, per the CMHC MLI Select program allowance.

The Proposed Building’s air-side HVAC systems were modeled based on the mechanical design briefs dated May 1, 2024, prepared by the mechanical design team at LRL Engineering, as well as energy savings measures recommended by EVNA Engineering.

The following tables are a side-by-side comparison of the building air-side HVAC input between the Reference and Proposed Building models:

Secondary Systems (Air-side HVAC)	
Reference Building	Proposed Building
Supply & Ventilation Air	Supply & Ventilation Air
<ul style="list-style-type: none"> ◦ Total supply air flow = 20,535 cfm ◦ Total min outdoor air flow = 2,000 cfm ◦ Total fan power = 2.9 kW (CS) 	<ul style="list-style-type: none"> ◦ Total supply air flow = 20,040 cfm ◦ Total min outdoor air flow = 2,000 cfm ◦ Total fan power = 2.1 kW (VFD)

Secondary Systems (Air-side HVAC)	
Fresh Air Systems	
Reference Building	Proposed Building
System	System
<p><u>NECB 2015 Table 8.4.4.7-B Note (2)</u> "For HVAC systems serving dwelling units, outside air requirements shall be met by a ventilation system identical to that of the proposed building."</p>	<p><u>System - Make-Up Air (MUA) Unit</u> One (1) 100% outdoor air MUA unit with air-cooled DX cooling and gas heating serving the building fresh air needs. MUA unit to supply supplementary outdoor air to dwelling units via corridor pressurization, at a rate of approximately 35 cfm/suite.</p>
<p><u>System Properties - Fans & Outdoor Air</u></p> <ul style="list-style-type: none"> ◦ Outdoor Air Supply: 600 cfm (to dwelling units) ◦ SF Control: Variable Volume SF Power: 1.00 kW (Per NECB 2015 8.4.4.18.(5)) ◦ No heat recovery required (Per SB-10 (2017) 5.2.10.1.) <p><u>System Properties - Cooling & Heating</u></p> <ul style="list-style-type: none"> ◦ Cooling: Air-cooled DX coils ◦ Cooling Cap: Sized to meet loads ◦ Cooling Efficiency: COP 3.17 ◦ Heating: Gas ◦ Heating Cap: Sized to meet loads ◦ Heating Efficiency: 80% <p><u>System Properties - Control Setpoints</u> Cooling Supply Air Temperature = 72°F Heating Supply Air temperature = 72°F Economizer: n/a (fixed fraction)</p>	<p><u>System Properties - Fans & Outdoor Air</u></p> <ul style="list-style-type: none"> ◦ Outdoor Air Supply: 2,000 cfm ◦ SF Control: Variable Volume SF Power: 0.50 W/cfm ◦ No heat recovery installed <p><u>System Properties - Cooling & Heating</u></p> <ul style="list-style-type: none"> ◦ Cooling: Air-cooled DX coils ◦ Cooling Cap: Sized to meet loads ◦ Cooling Efficiency: COP 3.43 ◦ Heating: Gas ◦ Heating Cap: Sized to meet loads ◦ Heating Efficiency: 90% <p><u>System Properties - Control Setpoints</u> Cooling Supply Air Temperature = 72°F Heating Supply Air temperature = 72°F Economizer: n/a (fixed fraction)</p>

Secondary Systems (Air-side HVAC)	
<u>Lobby Systems</u>	
Reference Building	Proposed Building
System	System
<p><u>NECB 2017 System 3 (Tables 8.4.4.7.A & 8.4.4.7.B)</u> Space Type: General Area max 2 storeys System Type: Packaged Single Zone Rooftop Unit w/ gas-fired furnace and electric baseboards</p>	<p><u>Air-Source Heat Pumps (ASHPs)</u> Amenities and lobbies are served by ASHPs, operating down to an outdoor temperature of -15°C with electric resistance backup. Fresh air to be supplied by MUA unit.</p>
<p><u>Supply & Return Fans</u></p> <ul style="list-style-type: none"> ◦ Total air supply: 650 cfm (auto sized) ◦ Supply Air per unit: 650 cfm/unit ◦ SF Control: Constant Volume ◦ SF Power: Fan power (kW) equal to Proposed <i>(Per NECB Sentence 8.4.4.18.(5))</i> 	<p><u>Supply & Return Fans</u></p> <ul style="list-style-type: none"> ◦ Total air supply: 800 cfm ◦ Supply Air per unit: 800 cfm/unit ◦ SF Control: Variable ◦ SF Power: 0.2 W/cfm per suite
<p><u>Ventilation</u></p> <ul style="list-style-type: none"> ◦ Outdoor Air Supply: 400 cfm 	<p><u>Ventilation</u></p> <ul style="list-style-type: none"> ◦ Outdoor Air Supply: 400 cfm (MUA Unit)
<p><u>ERVs</u></p> <ul style="list-style-type: none"> ◦ No heat recovery installed <i>In accordance with NECB Table 5.2.10.4.</i> 	<p><u>ERVs</u></p> <ul style="list-style-type: none"> ◦ Not installed
<p><u>Cooling & Heating</u></p> <ul style="list-style-type: none"> ◦ Cooling Source: DX cooling coil ◦ Cooling Cap: Sized to meet load (Auto sized) ◦ Cooling Efficiency: EER 11.8 ◦ Heating Source: Gas furnace ◦ Heating Cap: Sized to meet load (Auto sized) ◦ Heating Efficiency: 81% 	<p><u>Cooling & Heating</u></p> <ul style="list-style-type: none"> ◦ Cooling Source: Air-source DX cooling coil ◦ Cooling Cap: 24 MBH per unit ◦ Cooling Efficiency: EER 13.1 ◦ Heating Source: Air-source DX heating coil ◦ Heating Cap: 24 MBH per unit ◦ Heating Efficiency: COP 4.1 (@47°F)
<p><u>Control Setpoints</u></p> Cooling Supply Air Temperature = 55°F Heating Supply Air temperature = 109.4°F <i>(Per NECB Sentence 8.4.4.18.(2)(a)(b))</i>	<p><u>Control Setpoints</u></p> Cooling Supply Air Temperature = 55°F Heating Supply Air temperature = 109.4°F

Secondary Systems (Air-side HVAC)	
Residential Systems	
Reference Building	Proposed Building
System	System
<p><u>NECB 2017 Table 8.4.4.7-A & B</u> Dwelling Units are served PTACs. Outdoor air dampers provide 50 cfm of outdoor air per suite, with supplemental fresh air supplied by MUA unit via corridor pressurization at a rate of 30 cfm/suite.</p>	<p><u>Air-Source Heat Pumps (ASHPs)</u> Dwelling Units are served ASHPs. Fresh air to be supplied by ERVs at a rate of 50 cfm/suite, with supplemental fresh air supplied by MUA unit via corridor pressurization at a rate of 30 cfm/suite.</p>
<p><u>Supply & Return Fans</u></p> <ul style="list-style-type: none"> ◦ Total air supply: 18,456 cfm (auto sized) ◦ Supply Air per Suite: 326-710 cfm/suite ◦ SF Control: Constant Volume ◦ SF Power: Fan power (kW) equal to Proposed <i>(Per NECB Sentence 8.4.4.18.(5))</i> 	<p><u>Supply & Return Fans</u></p> <ul style="list-style-type: none"> ◦ Total air supply: 16,000 cfm ◦ Supply Air per Suite: 800 cfm/suite ◦ SF Control: Variable ◦ SF Power: 0.2 W/cfm per suite
<p><u>Ventilation</u></p> <ul style="list-style-type: none"> ◦ Outdoor Air Supply: 1,000 cfm (50 cfm /suite) 	<p><u>Ventilation</u></p> <ul style="list-style-type: none"> ◦ Outdoor Air Supply: 1,000 cfm (ERV: 50 cfm/suite)
<p><u>ERVs</u></p> <ul style="list-style-type: none"> ◦ No heat recovery installed <i>In accordance with NECB Table 5.2.10.4.</i> 	<p><u>ERVs</u></p> <ul style="list-style-type: none"> ◦ HRVs with a 65% sensible effectiveness @0°C recovery w/ power consumption of 38 W/ERV
<p><u>Cooling & Heating</u></p> <ul style="list-style-type: none"> ◦ Cooling Source: DX cooling coil ◦ Cooling Cap: Sized to meet load (Auto sized) ◦ Cooling Efficiency: EER 12.0 ◦ Heating Source: Hydronic heating ◦ Heating Cap: Sized to meet load (Auto sized) 	<p><u>Cooling & Heating</u></p> <ul style="list-style-type: none"> ◦ Cooling Source: Air-source DX cooling coil ◦ Cooling Cap: 24 MBH per suite ◦ Cooling Efficiency: EER 13.1 ◦ Heating Source: Air-source DX heating coil ◦ Heating Cap: 24 MBH per suite ◦ Heating Efficiency: COP 4.1 (@47°F)
<p><u>Control Setpoints</u> Cooling Supply Air Temperature = 55°F Heating Supply Air temperature = 109.4°F <i>(Per NECB Sentence 8.4.4.18.(2)(a)(b))</i></p>	<p><u>Control Setpoints</u> Cooling Supply Air Temperature = 55°F Heating Supply Air temperature = 109.4°F</p>

2.4 Water-side HVAC Systems

The Reference Building's water-side HVAC systems were modeled according to the minimum compliance requirements defined by the NECB 2017, per the CMHC MLI Select program allowance.

The Proposed Building's water-side HVAC systems were modeled based on the mechanical design briefs dated May 1, 2024, prepared by the mechanical design team at LRL Engineering, as well as energy savings measures recommended by EVNA Engineering.

The following tables are a side-by-side comparison of the building water-side HVAC input between the Reference and Proposed Building models:

Building Plant Equipment (Water-side HVAC)	
Reference Building	Proposed Building
Plant Heating	Plant Heating
<u>Reference Hot Water (HW) Loop</u> Reference HW loop serves the heating needs of the heating coils in the Reference Building. The loop is served by atmospheric gas-fired boilers. <ul style="list-style-type: none"> ◦ HW Loop Temperature: 180°F ◦ HW Loop Delta: 28.8°F ◦ Outdoor air reset: 180°F @ OA 3.2°F, 140°F @ OA 32°F 	<u>PB - Heating Plant Loop</u> There is no hot water loop in the Proposed Building as the building is DX heated and cooled.
Plant Heating Equipment	Plant Heating Equipment
<u>Reference Hot Water (HW) Loop</u> Boiler <ul style="list-style-type: none"> ◦ Boiler Type: 1 Gas-fired atmospheric boiler ◦ Capacity: Sized to meet loads ◦ Efficiency: 83.0% Loop Pumps <i>(Per NECB 2017 8.4.4.14.(2))</i> <ul style="list-style-type: none"> ◦ Pump Quantity: 1 Pump ◦ Pump Control: Constant Speed ◦ Pump Head & Efficiency: 75 ft @ 65% eff (22 W/gpm) 	There is no heating plant equipment in the Proposed Building as the building is DX heated and cooled with ASHPs.

Building Plant Equipment (Water-side HVAC)	
Reference Building	Proposed Building
Plant DHW Heating Loops	Plant DHW Heating Loops
<u>Reference Domestic Hot Water (DHW) Loop</u> Reference DHW loop serves the building’s service water loads. Same as proposed. <i>In accordance with NECB 8.4.4.20</i> <ul style="list-style-type: none"> ◦ DHW Loop Design Temperature: 140°F ◦ Loop DT: 100°F 	<u>Proposed Domestic Hot Water (DHW) Loops</u> Proposed DHW loop serves the building’s service water loads. <ul style="list-style-type: none"> ◦ DHW Loop Design Temperature: 140°F ◦ Loop DT: 100°F
Domestic Hot Water Heating Equipment	Domestic Hot Water Heating Equipment
<u>Equipment Serving Reference DHW Loop</u> Water Heaters <ul style="list-style-type: none"> ◦ Boiler Type: Atmospheric gas fired water heater ◦ Heating Capacity: 240 MBH (12 MBH/suite assumed) ◦ Storage Capacity: 120 gals (6 gal/suite assumed) ◦ Efficiency: 80% 	<u>Equipment Serving DHW Loop</u> Water Heaters <ul style="list-style-type: none"> ◦ Boiler Type: Condensing gas fired water heater ◦ Heating Capacity: 240 MBH (12 MBH/suite assumed) ◦ Storage Capacity: 120 gals (6 gal/suite assumed) ◦ Efficiency: 96%
Service Water Heating Loads	Service Water Heating Loads
<u>Water Fixtures</u> No low flow faucets/showerheads. NECB 2017 values used for loads. Standard Fixtures: <ul style="list-style-type: none"> ◦ Residential Lavatory: 1.5 gpm ◦ Residential Kitchen Faucet: 2.2 gpm ◦ Residential Showerhead: 2.0 gpm ◦ Reference Building DHW load = 2.325 GPM 	<u>Water Fixtures</u> 36.0% DHW reduction per LEED v4 calculator Low Flow Fixtures: <ul style="list-style-type: none"> ◦ Residential Lavatory: 0.5 gpm ◦ Residential Kitchen Faucet: 1.0 gpm ◦ Residential Showerhead: 1.75 gpm ◦ Proposed Building DHW load = 1.488 GPM

3.0 PROPOSED AND REFERENCE BUILDING ENERGY USE

3.1 Energy Use Breakdown

3.1.1 Electricity Use

The following graphs show the monthly electrical consumption and end use breakdown of the Proposed and Reference Buildings.

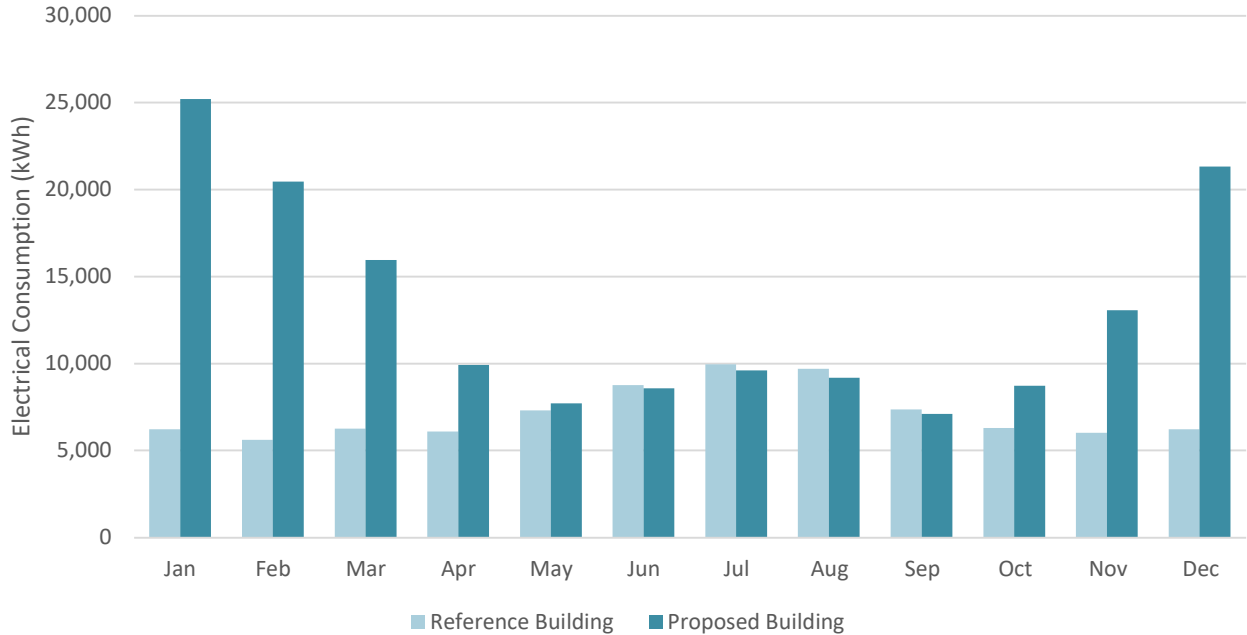


Figure 3.1-1 - Proposed and Reference Building Monthly Electrical Consumption

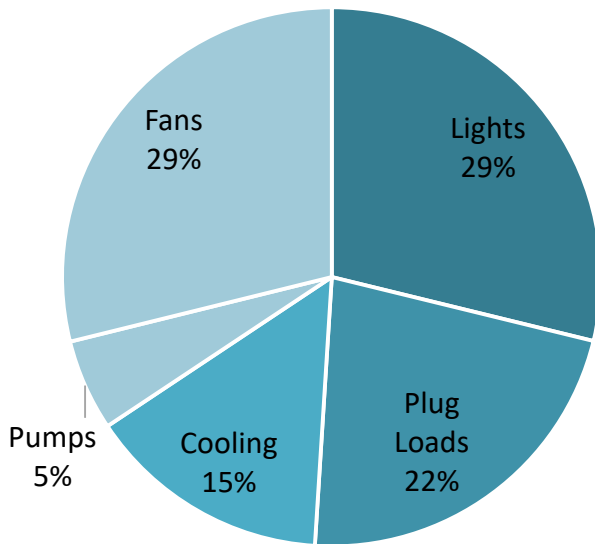


Figure 3.1-2 - Reference Building Electrical End-Use Breakdown

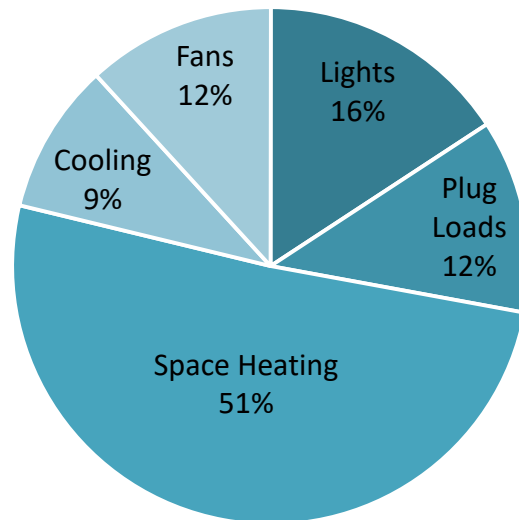


Figure 3.1-3 - Proposed Building Electrical End-Use Breakdown

3.1.2 Gas Use

The following graphs show the monthly natural gas consumption and end use breakdown of the Proposed and Reference Buildings.

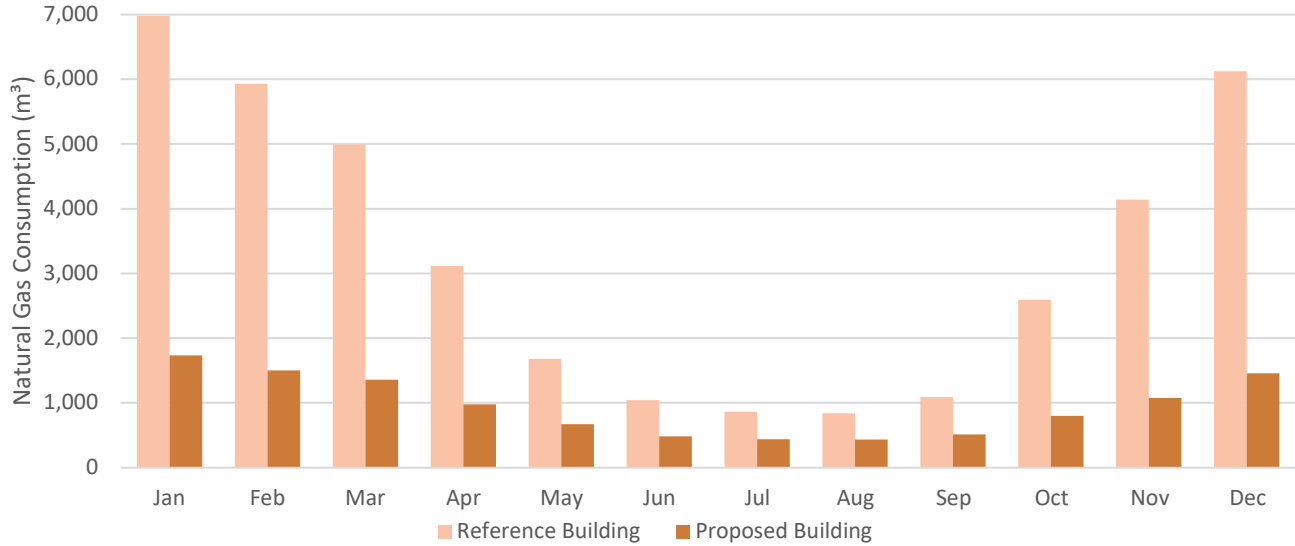


Figure 3.1-4 - Proposed and Reference Building Monthly Gas Consumption

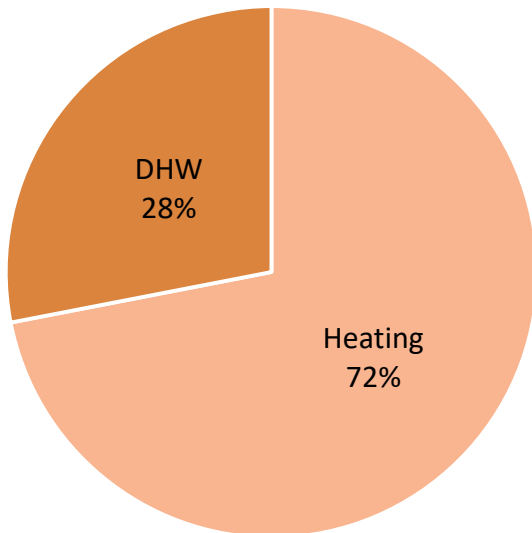


Figure 3.1-5 - Reference Building Gas End-Use Breakdown

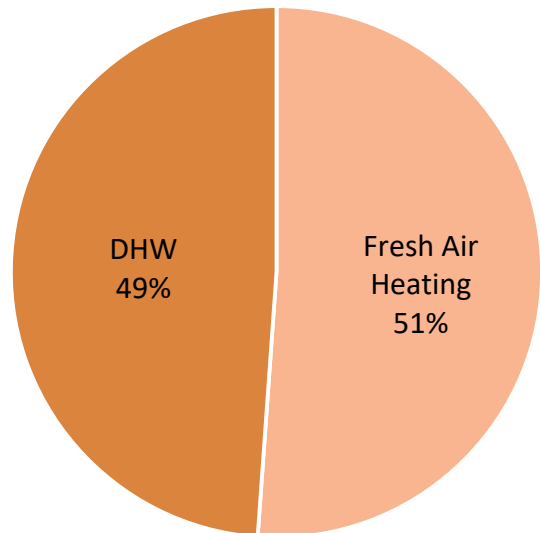


Figure 3.1-6 - Proposed Building Gas End-Use Breakdown

3.1.3 Building Energy Use Summary

The figure below shows the monthly total energy use of the Proposed and Reference Buildings.

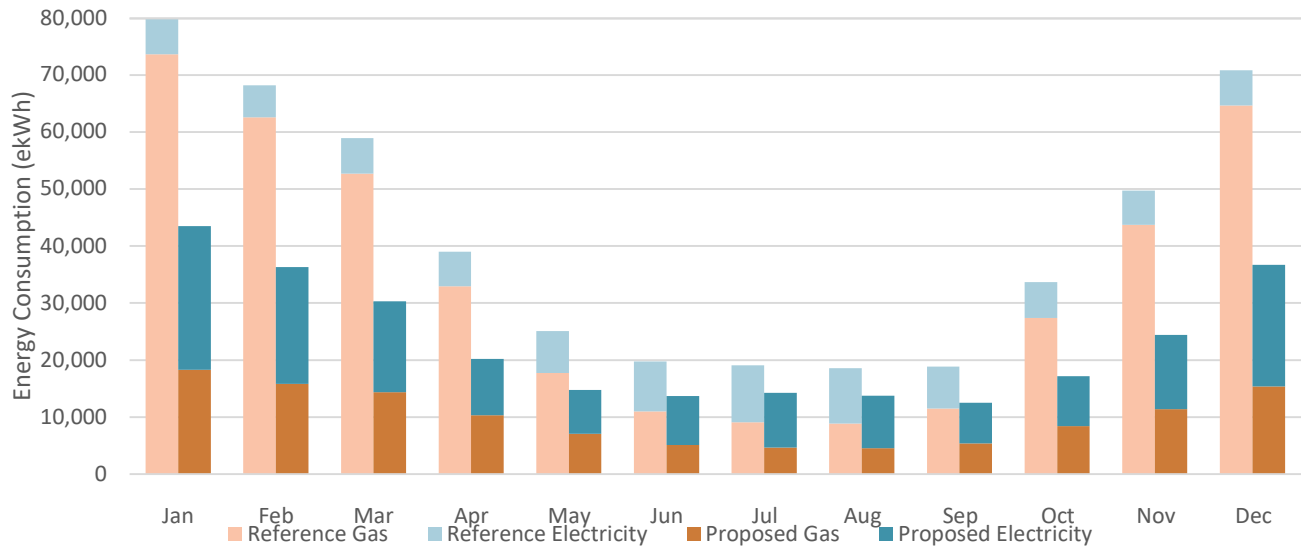


Figure 3.1-7 - Proposed and Reference Building Monthly Total Energy Use

4.0 MLI-SELECT – RELATIVE PERFORMANCE

CMHC's MLI-Select program for new and existing multi-unit residential buildings offers building owners access to reduced mortgage premiums and longer amortization periods based on building performance in three categories: affordability, accessibility, and energy efficiency.

The program has a point-based system and 3-levels of lending flexibilities. The insurance flexibilities for new construction are shown below:

New Construction - Insurance Flexibilities

	Premium	LTC	DCR ³	Amortization	Rental Achievement	Recourse or Limited Recourse	Replacement Reserve
Min. 50 pts	Fees and premiums at-a-glance	Up to 95%	Min. 1.1	Up to 40 years	Waived	Recourse	Discretionary
Min. 70 pts				Up to 45 years			
Min. 100 pts				Up to 50 years			

Figure 4.1 - Select Insurance Flexibilities

To achieve the maximum 100 points available, building owners can implement measures from all three improvement categories: affordability, energy performance, and accessibility. The point distribution for energy performance is shown below:

Table 4.1 - MLI-Select Energy Efficiency Point Distribution

Energy Efficiency and GHGs Reduction over NECB 2017		
20 Points	35 Points	50 points
20% reduction	25% reduction	40% reduction

This project aims to achieve 50 points based only on the energy performance pathway by reducing energy consumption and greenhouse gas emissions by 40% or more relative to the Reference Building.

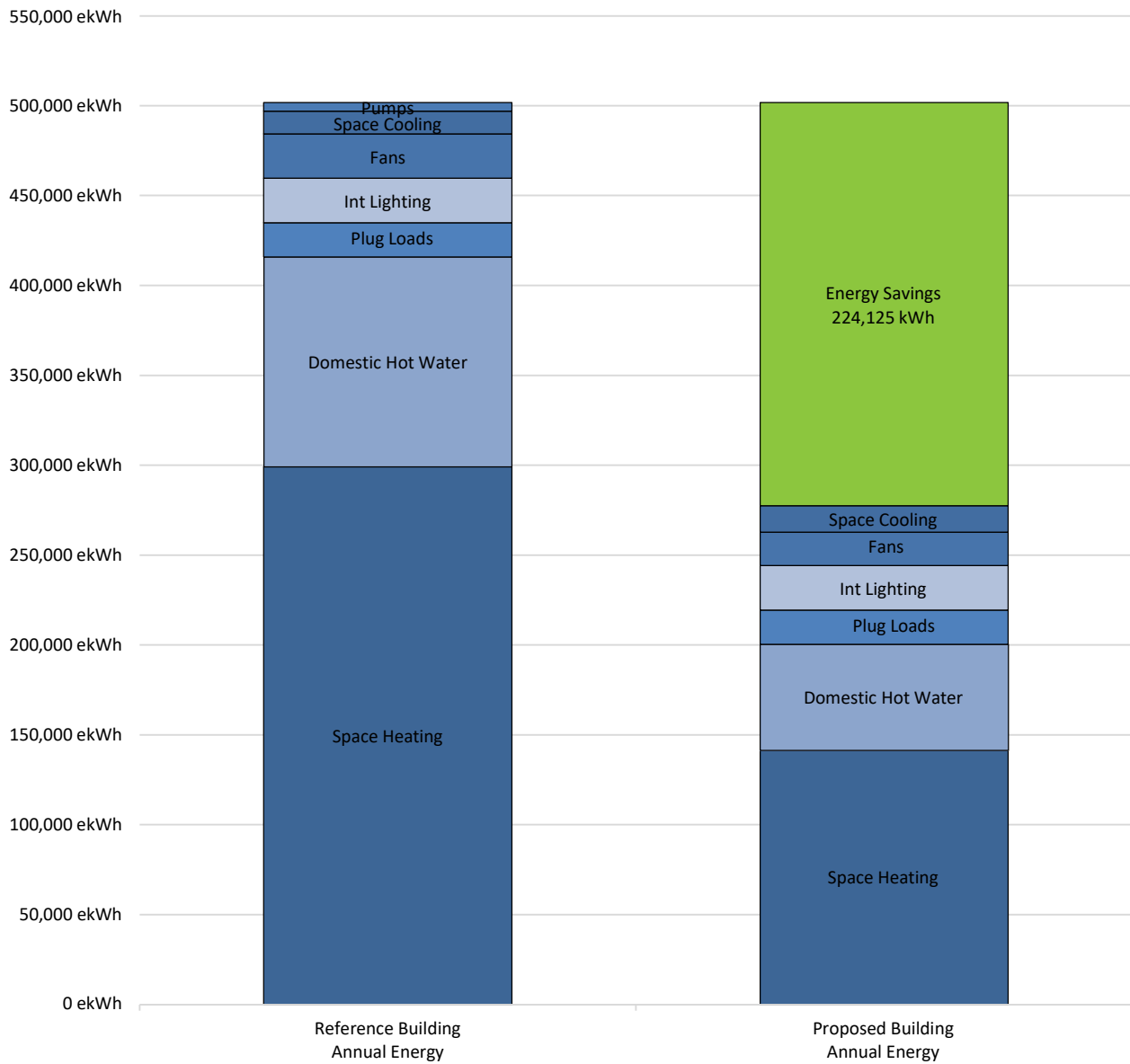
The following tables summarize the Proposed and Reference Building's annual energy use and greenhouse gas emissions.

Table 4.2- Energy Use and Greenhouse Gas Emissions Reduction Summary

Description	Proposed Building	Reference Building	Savings
Total Annual Energy Consumption (GJ/year)	999.1	1,806.0	44.7%
Total Annual Greenhouse Gas Emission (tons of eCO ₂ /year)	29.5	79.1	62.6%

4.1 MLI SELECT – SUMMARY OF PERFORMANCE RESULTS

The following graph and table summarize the energy by end-use and type of the Proposed and Reference Buildings:



Energy Model	Natural Gas (m ³)	Electricity (kWh)	Total Energy (ekWh)	CO ₂ Emissions* (ekg)
Reference Building	39,391	85,820	501,659	79,095
Proposed Building	11,430	156,865	277,528	29,549
Savings	71.0%	-82.8%	44.7%	62.6%

*GHG Conversion: 1 kWh electricity = 0.05 ekg CO₂ | 1 m³ gas = 1.899 ekg CO₂. Reference: Ontario MMA Supplementary Standard SB-10 2016

Based on these energy simulations results, the Proposed Building is expected to achieve energy and greenhouse gas savings of 44.7% and 62.6%, respectively, relative to the Reference Building, qualifying the project for 50 MLI Points under the Energy Efficiency and GHGs Reduction pathway.