

## High Performance Development Standard – Emissions Impact Estimate

This document provides background on estimated annual emissions associated with new buildings based on the Energy Evolution model and the expected reductions associated with the HPDS. Assumptions for this analysis are provided on the second page of this document.

[Energy Evolution](#)'s Business as Planned Scenario for all buildings built between 2021 and 2030 is projected to add 1339kT of eq. CO<sub>2</sub>e total GHG emissions by 2031. This equates to an increase of 220kT CO<sub>2</sub>e in annual emissions in 2030, for context, the annual GHG emissions for all existing Ottawa buildings in 2020 was estimated at 2,545 kt CO<sub>2</sub>e. To achieve Energy Evolution's target related to new buildings, Ottawa needs to reduce emissions to 302kT of CO<sub>2</sub>e. As proposed, the HPDS is expected to contribute about 224kT of CO<sub>2</sub>e, or ~74 per cent of the emission reductions required. Further reductions could come from voluntary or market driven improvements in performance or reductions in average home size.

**Table 1 Annual Emissions Associated with New Construction<sup>1</sup> in Ottawa in kT CO<sub>2</sub>e**

Emissions year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total emissions 2022-2031
Construction year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
	(kT CO <sub>2</sub> e per year)										(kT eq. CO <sub>2</sub> e)
<b>Business as Planned</b>	27	54	81	108	135	152	169	186	203	220	<b>1,339</b>
<b>EE Target Estimate</b>	22	44	66	88	110	120	131	142	152	163	<b>1,037</b>
<b>Reduction called for in EE</b>	6	11	16	21	26	32	38	45	51	58	<b>302</b>
<b>Reduction from HPDS Tier 1</b>	0	0	2	5	16	20	25	29	34	38	<b>168</b>
<b>Reduction from HPDS Tier 2</b>	0	0	0	2	4	6	8	10	12	14	<b>56</b>
<b>Cumulative reduction from HPDS</b>	0	0	2	7	20	26	33	39	46	52	<b>224</b>
	<b>Gap not addressed by HPDS</b>										<b>78</b>

<sup>1</sup> Annual emissions include emissions associated with the energy to heat cool and operate the building only. Emissions associated with; material embodied carbon, waste, construction operations, and occupant transportation are not included here. These estimates are based on assumptions associated with average emissions per sq. m, and projected construction, this is intended to give a sense of scale of impact, it is not a prediction of future emissions.

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### Assumptions

New Construction Estimates in the tables below follow the Growth Management Strategy (GMS) and Energy Evolution assumptions.

- Annual construction rates from the 5-year periods in the GMS were assumed to be consistent year over year.
- 20% of low-rise (single-detached, semi-detached and rowhouses) and 100% of new apartment and commercial estimated to be reached by Tier 1 of the standard in construction time between June 2023 and December 2025
- 10% of building gross floor area estimated to reach Tier 2 performance level beginning construction year 2024 onward
- 90% of greenfield low-rise units and built-up area commercial and apartment buildings and 20% of built up area low-rise units achieving Tier 1 in construction years 2026-2030

### Construction Years 2021-2025

		Single-Detached	Semi-Detached	Rowhouse	Apartment	Commercial	Total
<b>Newly Constructed Residential (Units)</b>	<b>Greenfield</b>	3,222	716	5,549	8,234	N/A	17,900
	<b>Built-Up Area</b>	3,222	716	5,549	8,234	N/A	17,900
	<b>Total</b>	7,078	1,727	12,007	17,989	N/A	38,800
<b>Average Gross Floor Area per Unit (m<sup>2</sup>/unit)</b>		223	159	147	104	223	N/A
<b>Newly Constructed Gross Floor Area (m<sup>2</sup>)</b>		1,578,288	274,633	1,764,958	1,870,826	1,475,038	6,963,742
<b>Average GHG Emission Intensity</b>	<b>Baseline</b>	16	17	17	23	23	N/A
	<b>Tier 1</b>	12	13	13	19	19	N/A
	<b>Tier 2</b>	2.3	3.1	3.1	16	12	N/A

## High Performance Development Standard – Emissions Impact Estimate

### Construction Years 2026-2030

		Single-Detached	Semi-Detached	Rowhouse	Apartment	Commercial	Total
<b>Newly Constructed Residential (Units)</b>	<b>Greenfield</b>	3,222	716	5,549	8,234	N/A	17,900
	<b>Built-Up Area</b>	3,222	716	5,549	8,234	N/A	17,900
	<b>Total</b>	6,444	1,432	11,098	16,468	N/A	35,800
<b>Average Gross Floor Area per Unit (m<sup>2</sup>/unit)</b>		223	159	147	104	223	N/A
<b>Newly Constructed Gross Floor Area (m<sup>2</sup>)</b>		1,437,012	227,688	1,631,406	1,712,672	1,475,038	6,483,816
<b>Average GHG Emission Intensity</b>	Baseline	10	11	11	20	11	N/A
	Tier 1	2.3	3.1	3.1	16	12	N/A
	Tier 2	0	0	0	0	0	N/A