OBJECTIVE

The Targeting EUI Calculator **BETA** v3.037
(for use with MS Excel Only. Arctic Edition)

2025.04.10

Blue = Required User Input Cells
Plum = Defaults but Editable
Black = Locked - Calculated
Red = Reference Values

		SECTION 1. Key Values		**Reference**			**Target**			**Actual**				
		Lifetime Emissions Intensity kgCO2e/m²/Service Life (Yrs)		Reference	100% (Baseline)		Targeted (Design)	71% Reduction		Actual (Utility Bills)		Reference %		
	T.1	**Lifetime Carbon**		40.6			11.7			11.7		N/A		
		Annual Operational Emissions Intensity kgCO2e/m²		Reference	100% (Baseline)		Targeted (Design)	86% Reduction		Actual (Utility Bills)				
	T.2	**Annual Carbon**		33.6			4.7			4.8		✓ 14%		
		Total Annual Operational Energy Use Intensity kWh/m²/yr		Reference	100% (Baseline)	$ 16.22/m2	Targeted (Design)	59% Reduction		Actual (Utility Bills)	$ 12.11/m2	Reference %		
	T.3	**TEUI**		226.9	tier1		93.0	tier3		93.1		✓ 41%		
		SECTION 2. Building Information								**T.6.7 Cost of Energy by Source**				
	B.1	Major Occupancy	A - Assembly		D.1	Reporting Period	2022			Electricity	$0.1300	/kWh		
	S.1	Reference Standard	OBC SB12 3.1.1.2.C4		D.2	Service Life (yrs)	50			Gas	$0.5070	Gas/m³		
	S.2	Actual (Bills) or Targeted (Design) Use	Utility Bills		B.2	Project Name	Your Project Name			Propane	$1.6200	Propane/kg		
	S.3	Carbon Benchmarking Standard	Self Reported		B.3	Conditioned Area	1,427.20	(Net m2)		Wood	$180.00	Wood/m³		
	S.4	Embodied Carbon Target	345.82	kgCO2e/m2	A.1	Certifier:	Your Company Name, Inc.			Oil	$1.5000	Oil/litre		
					A.2	Licence No:	XXXX							
		SECTION 3. Climate Calculations	°C	°F			°C	°F						**Reference**
	L.1.1	Province	ON		L.1.2	City	Alexandria	Climate Zone	6.0		L.3.3	Days Cooling		120
	L.2.1	Heating Degree Days (HDD)	4600		L.2.2	Current or Future	Present		HDD Reference Lookup			HDD - Energy Star		
	L.2.3	Cooling Degree Days (CDD)	196		G.4.2	Capacitance	Capacitance	50%	CDD Reference Lookup			CDD - Energy Star		
	L.2.4	Ground Facing **GF** HDD	1960		L.2.5	**GF** CDD	-1680							
	L.3.1	Coldest Days (Location Specific)	-26	-22	B.1.2	Tset Heating	18	66						✓ 122%
	L.3.2	Hottest Days (Location Specific)	34	98	B.1.3	Tset Cooling	24	78						✓ 108%
		SECTION 4. Actual vs. Target Energy &	**ACTUAL ENERGY** (Utility Bills)		**ACTUAL NET** ekWh	**E.1 EMISSIONS** kgCO2/yr	**TARGET ENERGY** (Design)		**TARGET NET** ekWh	**E.1 EMISSIONS** kgCO2/yr	**EMISSION FACTORS** per Reporting Period/TAF			
	T.3.1	Total Electricity Use	132,938.00	kWh/yr	132,938.00	6,779.84	132,765.65	kWh/yr	132,765.65	6,771.05	51.00	gCO2e/kWh		
	T.3.2	Total Fossil Gas Use	0.00	m³/yr	0.00	0.00	0.00	m³/yr	0.00	0.00	1,921.00	gCO2e/m3		
	T.3.3	Total Propane Use	0.00	kg/yr	0.00	0.00	0.00	kg/yr	0.00	0.00	2,970.00	gCO2e/kg		
	T.3.4	Total Oil Use	0.00	litres/yr	0.00	0.00	0.00	litres/yr	0.00	0.00	2,753.00	gCO2e/litre		
	T.3.5	Total Wood Use	0.00	m³/yr	0.00	0.00	0.00	m³/yr	0.00	0.00	150.00	kgCO2e/m3		
	E.1.1	Operational GHG & Energy Subtotals			132,938.00	6,779.84			132,765.65	6,771.05				
	T.3.6	Total Net Energy	478.58	GJ/yr			477.96	GJ/yr						
	T.3.7	Annual Percapita Energy	1,055.06	kWh *Actual*	3.80	GJ *Actual*	1,053.70	kWh *Target*	3.79	GJ *Target*	53.74	kWh/pp		
	T.3.8	Primary Energy	132,938.00	kWh/yr	93.15	kWh/m²/yr	1.0	PER Factor						N/A
		SECTION 5. CO2e Emissions (E.1 = Scope 1&2, E.3 = Scope 3)				**kgCO2e/m²**		**kgCO2e/m²**						
	E.1.2	GHGI Operational (B6) Emissions/yr	6.78	MT CO2e/yr		4.75		237.52	(B6 Annual Emissions * Service Life)					N/A
	E.3.1	Typology-Based Carbon Intensity (A1-3)	Pt.3 Mass Timber		E.3.2	Typology-Based Cap (TGS4)		350.00					✓	99%
	E.3.3	Total Embedded Carbon Emitted (A1-3)	390.82	MT CO2e/Service	S.4	Embodied Carbon Target		345.82					✓	69%
	E.1.3	Lifetime Avoided (B6) Emissions	2,057.05	MT CO2e	E.3.4	Modelled Value (A1-3)		345.82					✓	100%
		SECTION 6. Renewable Energy	**kWh/yr**					**kWh/yr**						**kWh/yr**
	R.1	Onsite Energy Subtotals	0.00		R.5	Offsite Renewable (REC)		0.00	P.5	Exterior/Site/Other Loads				0.00
	R.2	Photovoltaics	0.00		R.6	WWS Electricity		0.00						
	R.3	Wind	0.00		R.7	Green Natural Gas		0.00	ekWh/yr	0.00	m³			
	R.4	Remove EV Charging from TEUI	0.00		R.8	Reserved (other removals)		0.00						
		SECTION 7. Water Use (B7)	Targeted				litres/pp/day	litres/yr	**Annual** kWh/yr	**Annual** kWh/yr				**Reference**
	W.1.0	Total Hot+Cold Water Use (Method)	User Defined	40.00	l/pp/day IF User Defined		40.00	1,839,600					✓	15%
	W.1.2	DHW Use (40% of W.1.0)		10,000.00	kWh/yr IF By Engineer		16.00	735,840	38,484.43				✓	15%
	W.3.1	DHW or SHW Energy Source	Heatpump	0.00	Gas m³/yr	W.3.2	ekWh/yr Net Thermal Demand		12,828.14	12,828.14	W.3.3 Net Electrical Demand			
	W.4	DHW or SHW Efficiency Factor (EF)	300%	3.00	COPdhw	W.5.2	(W2DN) Net Demand -Recovered		12,828.14				✓	333%
	W.5.1	Drain Water Heat Recovery Efficiency	0%	0.00	kWh/yr	W.5.3	(W.2.W) SHW Wasted		12,828.14				!	0%
	W.6.1	System Losses (% → W.1.3 Eqpt Gains)	0.00	kWh/yr		W.X	Exhaust (if Gas or Oil)		0.00	0.00	W.3.4 Net Oil Demand Litres			
		SECTION 8. Indoor Air Quality	Targeted		Guidance Limits							% per Health Canada/NBC		
	A.2	Radon (annual avg.)	50	Bq/m³	150	Bq/m³							✓	33%
	A.3	CO2 (annual avg.)	550	ppm	1000	ppm							✓	55%
	A.4	TVOC (annual avg.)	100	ppm	400	ppm							✓	25%
	A.5	Rel. Indoor Humidity (annual avg.)	45%	RH	30-60	%							●	45%
	A.6	**Atmospheric Offsets**	0.00	MT/yr CO2e										
		SECTION 9. Occupant + Internal Gains	**Unit Qty**				**Annual** kWh/yr	**Htg Gain** kWh/yr	**Htg Gain** %	**Cooling Gain** kWh/yr	**Htg Gain** %			**Reference**
	G.1.1	Occupants per Building (declared)	126		G.1.3	Occupied Hrs/Day	12	4380	/ 8760					
	G.1.2	Occupant Activity	Normal		G.1.4	Watts/pp (S+L)	117	64,696.02	43,426.10	43.39%	21,269.93	43.39%		
	P.1	Plug Loads	7					43,757.95	29,371.78	29.35%	14,386.18	29.35%	✗	71%
	P.2	Lighting Loads	1.5					9,376.70	6,293.95	6.29%	3,082.75	6.29%	✓	133%
	P.3.1	Equipment Loads	5.00		P.3.3	Equipment Spec	Efficient	31,255.68	20,979.84	20.96%	10,275.84	20.96%		
	P.3.2	Elevator Loads (W/m² → Eqpt Gains)	No Elevators											
	W.1.3	DHW System Losses						0.00	0.00	0.00%	0.00	0.00%		
	G.2	Plug/Light/Eqpt. Subtotals						84,390.34	56,645.57		27,744.77			
		Internal Gains Totals						149,086.36	100,071.67	100%	49,014.69	100%		
		SECTION 10. Radiant Gains		**Orientation** Alter if Skewed	**SHGC** 0.5 is Default	**Winter Shading** %	**Summer Shading %**	**Solar Gain** Heating kWh/yr	**Solar Gain** Heating %	**Solar Gain** Cool Load kWh/yr	**Solar Gain** Cool Load %	**Gain Factor** kWh/m2/yr		
	G.7	Doors	7.50	Average	0.50	0%	100%	375.00	2.56%	0.00	0.00%	50		
	G.8.1	Window Area North	81.14	North	0.50	0%	100%	106.29	0.73%	0.00	0.00%	1.31		
	G.8.2	Window Area East	3.83	East	0.50	0%	100%	294.68	2.01%	0.00	0.00%	76.94		
	G.8.3	Window Area South	159.00	South	0.50	0%	100%	11,247.66	76.90%	0.00	0.00%	70.74		
	G.8.4	Window Area West	100.66	West	0.50	0%	90%	2,603.07	17.80%	130.15	100.00%	25.86		
	G.8.5	Skylights	0.00	Skylight	0.50	0%	80%	0.00	0.00%	0.00	0.00%	75		
	G.1	**Subtotal Solar Gains**						14,626.70	100%	130.15	100%			
	G.2	Gains Utilization Factor (n-Factor)	NRC 40%	114,698.37	Total Gains	40.00%		45,879.35	G.3 Net Usable Gains by Method Selected					
	G.4	Net Usable Heating Season Gains	PH Method	114,698.37	Total Gains	94.43%		108,307.67	Net Usable Gains by PHPP Method (Reference)					
	G.5	Net **UN-usable** Htg. Gains						68,819.02						
		SECTION 11. Transmission Losses	**Areas m2**	**Rimp** ft²F•hr/Btu	**RSI** K•m²/W	**U-Value** W/m2•K	**% of Ae & Ag**	**Heatloss** kWh/yr	**Heatloss %**	**Heatgain** kWh/Cool Season	**Heatgain %**	**Reference**		
	B.4	Roof	1,411.52	53.09	9.35	0.107	56.99%	16,666.50	21.53%	710.14	21.56%	✓		192%
	B.5	Walls Above Grade *(Exclude Openings!)*	712.97	37.99	6.69	0.149	28.79%	11,765.60	15.20%	501.32	15.22%	✓		159%
	B.6	Floor Exposed	0.00	54.05	9.52	0.105	0.00%	0.00	0.00%	0.00	0.00%	✓		169%
	B.7.0	Doors	7.50	6.31	1.111	0.900	0.30%	745.20	0.96%	31.75	0.96%	✓		178%
	B.8.1	Window Area North	81.14	6.31	1.111	0.900	3.28%	8,062.07	10.41%	343.51	10.43%	✓		178%
	B.8.2	Window Area East	3.83	6.31	1.111	0.900	0.15%	380.55	0.49%	16.21	0.49%	✓		178%
	B.8.3	Window Area South	159.00	6.31	1.111	0.900	6.42%	15,798.24	20.41%	673.14	20.44%	✓		178%
	B.8.4	Window Area West	100.66	6.31	1.111	0.900	4.06%	10,001.58	12.92%	426.15	12.94%	✓		178%
	B.8.5	Skylights	0.00	6.31	1.111	0.900	0.00%	0.00	0.00%	0.00	0.00%	✓		178%
	B.9	Walls Below Grade (Conditioned Space)	0.00	22.71	4.00	0.250	0.00%	0.00	0.00%	0.00	0.00%	✓		108%
	B.10	Floor Slab (Conditioned Space)	1,100.42	21.01	3.70	0.270	100.00%	13,990.20	18.07%	-5,995.80	-182.05%	✓		189%
	B.11	B.11 Interior Floors (incl. garages)	29.70	-	-	-	-	-	-	-	-			
	B.12	Thermal Bridge Penalty (min. 5-70%)	20%	(Assume Code Minimum Construction at 50%)				15,481.99	20.00%	-658.71	-20.00%			
		Envelope Totals	3,577.04	17.51			100%	77,409.95	100%	-3,293.57	100%			
		SECTION 12. Volume and Surface Metrics				**U-Value** W/m²•K	**Loss Rate** kWh/m²	**Heatloss** kWh/yr	**Gain Rate** kWh/m²	**Heatgain** kWh/Cool Season	**Heatloss %**	**Reference**		
	B.16	Total Area Exposed to Air (**Ae**)	2,476.62	m²	U-Val. for ***Ae***	0.278	30.73	76,103.69	1.31	3,242.68	65.57%			
	B.17	Total Area Exposed to Ground (**Ag**)	1,100.42	m²	U-Val. for ***Ag***	0.324	15.26	16,788.25	-13.08	-14,389.92	14.46%			
	B.18.3	Heating Natural Air Leakage Heatloss	1.5	Stories	B.18.3 Shielding	Normal	16.24	23,178.39	0.69	987.60	19.97%			
	T.4	**Building U-Value Combined Total & Transmission Losses & Gains**				0.292		116,070.33		-3,293.57	100%			N/A
	B.13	Total Conditioned Volume	8,000.00	m³	Volume/Area	323%	Area/Volume	31%						
	B.14	Total Floor Area (Cond. + Uncond.)	1,130.12	m² - *Only used in E.3.2*										
	B.15	Window:Wall Ratio (WWR)	33.06%										✓	61%
	B.18.1	NRL_{50} Target Method NBC2025 (Part 9)	AL-1B	B.18.1	Target	1.17	L/s•m²							
	B.18.2	ACH_{50} Target (Converts B.18.1)	1.30	B.18.2	Measured	1.50							✓	100%
	B.18.4	Ae_{10} or ELA_{10} (m²)	2.898	B.18.5.1	n-Factor	16.7	B.18.3	Ae_{10} Zone	2				✓	173%
		SECTION 13. Mechanical Loads	**kWh/yr**								**kWh/yr**			**Reference**
	M.1.0	Primary Heating System	Heatpump	M.1.1 HSPF	12.5	M.1.2 COPheat	3.66	M.1.3 COPcool	2.7	M.1.4 Sink	86,642.65		✓	176%
	M.2.1	Heating System Demand	32,529.13					M.1.5. CEER	9.1	M.1.6 Sink	5,020.63			
	M.2.2	Heating Fuel Impact (ekWh/yr)	0.00	M.2.3 Oil l/yr	0.00	M.2.4 Gas m3/yr	0.00	M.2.5 AFUE	0.98	M.2.5 Exhaust	-		✓	109%
	M.3.0	Heatpump or Dedicated Cooling System	Cooling			M.3.3 COPcool ONLY when Dedicated Cooling			2.7	M.3.4 Sink	5,009.95		✓	124%
	M.3.5	Heatpump Cool Elect. Load	3,018.04		2.11	kWh/m²/yr		M.3.6 CEER	9.1				✓	4%
	V.1.1	HRV/ERV/MVHR Efficiency (SRE)	89.00%		V.1.2 Ventilation Method		Volume by Schedule		V.1.3	ACH (Only if Volu	3		✓	162%
	V.1.4	Per Person Ventilation Rate	14.00	l/s per person	29.66	cfm	50.40	m³/hr	V.1.5	Summer Boost	None		✓	112%
	V.1.6	Volumetric Ventilation Rate	3,333.33	l/s	7,062.93	cfm	12,000.00	m³/hr						
	V.2.1	Heating Season Ventil. Energy	445,280.00	V.2.2	Heating Season Ventil. Energy Recovered			396,299.20	V.2.3	Net Htg Season Ventil. Lost		48,980.80		
	V.3.1	Incoming Cooling Season Ventil. Energy	30,257.37	V.3.2	Latent Load Factor (Calculated on Cooling Worksheet)			159%						
	V.3.3	Outgoing Cooling Season Ventil. Energy	26,929.06											
	V.4.1	Ventilation **Free Cooling**/Vent Capacity	54%	V.4.2	Free Cooling Limit		41,469.81	kWh/yr	Days Active Cooling Required (Experimental)				✓	-31
		SECTION 14. TEDI & TELI *Targeted*	**kWh/yr**				**kWh/m² /yr**							**kWh//yr**
	T.4.0	TED Targeted	119,171.78		T.4.1	TEDI	83.50		*Includes V.5 Net Ventilation Losses, Excludes T.7.3 CEDI Ae*				✗	60%
	T.4.2	TED Envelope (Excludes Ventilation)	70,190.98		T.4.3	TEDI (Excludes V	49.18							
	T.4.4	CED Cooling Load *Unmintigated*	76,437.53		T.4.5	CEDI *Unmitigated*	53.56		T.5.2 less Free Cool. & Vent. Exhaust			8,038.67		
	T.4.6	CEDI Cooling Load	6.11	W/m² *Unmitigated*	T.4.7	CEDI *Mitigated*	0.64	W/m² *Mitigated*						
	T.5.1	TEL Total Envelope Heatloss	116,070.33		T.5.2	TELI	81.33							
	T.5.3	CEG Cooling Envelope Heatgain	-2,964.68		T.5.4	CEGI	-2.08							
		SECTION 15. TEUI *Targeted*												
	T.6.0	TEU *Targeted Electricity*	219,408.30	ekWh/yr	T.6.1	TEUI	153.73	kWh/m²/yr			*Excludes ekWh of any Gas or Oil loads*			
	T.6.2	TEU *Targeted Electricity if HP/Gas/Oil Bldg.*	132,765.65	kWh/yr	T.6.3	TEUI	93.03	kWh/m²/yr	*Excludes ekWh of any Gas loads, and Applies COP for HP Equipment*					
	T.6.4	Peak **Heating** Load (Enclosure Only)	46.03	kW	T.6.4	TEUI-imp			157,076	BTU/hr				
	T.6.5	Peak **Cooling** Load (Enclosure Only)	10.46	kW	T.6.6	Peak Cooling Imp	2.97	Tons-Cooling	35,699	BTU/hr				
	T.6.7	Peak **Cooling** Load (Enclosure + Gains)	48.04	kW	T.6.7	Peak Cooling Imp	13.66	Tons-Cooling	163,912	BTU/hr				
	T.6.8	Max. Heating Load Intensity	32.26	W/m²	T.6.8	Heat Load Imp	7.33	T.6.6 Mx. Cool Intsty in W/m² (Enclosure Only)					✓	65%
	T.7.1	Annual Cost of Electricity	$28,523.08		T.7.2	*pre and*	$17,259.53	*post heat pump*		T.7.3	∑ Other Energy	$0.00		
	T.7.4	Cost Premium of HP Equipment	$30,000.00		T.7.5	ROI	2.66	Years to Amortize						
	T.3.1	TEUI Reference (Performance Gap)	226.86	*Reference*	T.3.2	Targeted TEUI	93.03	*Target (Design*	T.3.3	Actual	93.15	*Actual (Utility Bills)*		
	T.8.1	TEUI Energy *Reduction from Reference*	59%		T.8.2	Target % of Utility	100%	*of Utility Data*	T.8.3	Actual	100%	*of Targeted Design*		
	T.9.1	GHGe *Reduction from Reference*	86%											

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