

## Residential Cost Comparison - Outside NEU Areas: Current Rezoning vs Proposed Rezoning Policy

*Based on a 100,000ft<sup>2</sup> residential archetype, 102 units, 850ft<sup>2</sup>/unit avg.*

This document is intended to be reviewed by stakeholders interested in greater detail on costs after attending consultations on the proposed update to the Green Building Policy for Rezoning. If you have questions about this document please follow up with [Green.Buildings@vancouver.ca](mailto:Green.Buildings@vancouver.ca). The data compiled below represents one example of a building that meets the proposed performance limits (GHGI, TEDI, EUI), and the performance approach allows for many other solutions. The construction cost data compiled by the city was provided by BTY Group, based on archetypes prepared by Integral Group, Morrison Hershfield, and Enersys Analytics. The operating costs were compiled by the city using published utility rates and maintenance cost data provided by local service contractors and asset managers.



### Construction Costs

#### Envelope

Case	Type	Description	Area (ft <sup>2</sup> )	Cost (\$/ft <sup>2</sup> )	Cost (\$)
Current Rezoning	Glazing	Glazing 60% U-0.36	34,020	62.00	2,109,240
	Wall	Steel stud opaque wall, overall R7.2 nominal, R4 effective	21,728	59.60	1,295,051
	Balcony	Balcony area (slab edge)	952	71.37	67,947
				<b>Total:</b>	<b>3,472,238</b>
Proposed Rezoning	Glazing	Glazing 50% U-0.36	28,350	62.00	1,757,700
	Wall	Steel stud opaque wall, overall R9 effective	27,398	61.09	1,673,871
	Balcony	Balcony area (slab edge with outboard insulation)	952	88.44	84,198
				<b>Total:</b>	<b>3,515,769</b>
<b>Envelope Cost Difference (\$):</b>					<b>43,532</b>
<b>Envelope Cost Difference (\$/ft<sup>2</sup>):</b>					<b>0.44</b>

#### Lighting

Case	Type	Description	Area (ft <sup>2</sup> )	Cost (\$/ft <sup>2</sup> )	Cost (\$)
Current Rezoning	Interior	Lighting - Interior 0.6W/ft <sup>2</sup> common/0.84W/ft <sup>2</sup> suites	100,000	3.48	348,386
	Parking	Lighting - Parking 0.25W/ft <sup>2</sup>	40,000	1.15	46,000
				<b>Total:</b>	<b>394,386</b>
Proposed Rezoning	Interior	Lighting - Interior + 22% savings	100,000	4.01	400,644
	Parking	Lighting - Parking + 22% savings	40,000	1.32	52,900
				<b>Total:</b>	<b>453,544</b>
<b>Lighting Cost Difference (\$):</b>					<b>59,158</b>
<b>Lighting Cost Difference (\$/ft<sup>2</sup>):</b>					<b>0.59</b>

#### HVAC

Case	Type	Description	Area (ft <sup>2</sup> )	Cost (\$/ft <sup>2</sup> )	Cost (\$)
Current Rezoning	Heating	Hydronic heating	100,000	3.72	371,612
	Heating	Boiler (4 unit 300 MBH each) 80%-85% efficiency	100,000	1.00	100,000
	MUA	85% efficient MUA + distribution	100,000	2.70	270,000
	HRV	Heat recovery ventilator 52% efficiency	100,000	4.50	450,000
	DHW	DHW (2 unit 300 MBH each) 80-84% efficiency	100,000	0.50	50,000
	Mech Rm	Larger Mechanical Room (avg. across building)	100,000	0.40	40,000
				<b>Total:</b>	<b>1,281,612</b>
Proposed Rezoning	Heating	Electric baseboard	100,000	0.80	79,897
	MUA	94% efficient MUA + distribution	100,000	3.24	324,046
	HRV	Heat recovery ventilator 78% efficiency	100,000	6.00	600,000
	DHW	DHW (2 unit 300 MBH each) 94% efficiency	100,000	0.65	65,000
				<b>Total:</b>	<b>1,068,942</b>
<b>HVAC Cost Difference (\$):</b>					<b>(212,670)</b>
<b>HVAC Cost Difference (\$/ft<sup>2</sup>):</b>					<b>(2.13)</b>

#### TOTAL

Envelope Cost Difference (\$/ft <sup>2</sup> ):					0.44
Lighting Cost Difference (\$/ft <sup>2</sup> ):					0.59
HVAC Cost Difference (\$/ft <sup>2</sup> ):					(2.13)
<b>TOTAL Construction Cost Difference (\$/ft<sup>2</sup>):</b>					<b>(1.10)</b>

## Operating Costs

### Energy

Case	kWh/m <sup>2</sup>	Description	kWh	\$/kWh	Cost (\$)
Current Rezoning	86	Annual Natural Gas (2016)	797,569	0.031	24,725
	55	Annual Electricity (2016)	514,222	0.103	52,965
	-	Annual NEU Heat (2016)	-	0.103	-
<b>Total:</b>					<b>77,690</b>
Proposed Rezoning	27	Annual Natural Gas (2016)	250,253	0.031	7,758
	83	Annual Electricity (2016)	767,035	0.103	79,005
	-	Annual NEU Heat (2016)	-	0.103	-
<b>Total:</b>					<b>86,762</b>

**Annual Energy Cost Difference (\$):** **9,073**

**Annual Energy Cost Difference (\$/ft<sup>2</sup>):** **0.09**

**Monthly Energy Cost Difference in 850ft<sup>2</sup> Unit (\$):** **6**

**Monthly Emissions Reduction in 850ft<sup>2</sup> Unit (kgCO<sub>2e</sub>):** **70**

### Maintenance and Replacement

Case		Description			Cost (\$)
Current Rezoning		Annual Basic Maintenance (filters, fan belts, backflows, etc.)			6,000
		Annual Boiler Maintenance (cleaning, performance checks, etc.)			6,000
		Annual Hydronic Maintenance (pumps, chemical treatment, etc.)			2,000
		Annual Capital Reserve Contribution for Boiler Replacement (\$100k /25yrs)			4,000
		Avg. Annual Replacement of Heating Valves (\$500 /unit /25yrs)			2,040
<b>Total:</b>					<b>20,040</b>
Proposed Rezoning		Annual Basic Maintenance (filters, fan belts, etc.)			6,000
		Annual Electric Baseboard Maintenance			-
		Annual Capital Reserve Contribution for Baseboard Replacement (\$80k /25yrs)			3,200
<b>Total:</b>					<b>9,200</b>

**Annual Maintenance and Replacement Cost Difference (\$):** **(10,840)**

**Annual Maintenance and Replacement Cost Difference (\$/ft<sup>2</sup>):** **(0.11)**

**Monthly Maintenance and Replacement Cost Difference in 850ft<sup>2</sup> Unit (\$):** **(8)**

### TOTAL

Annual Energy Cost Difference (\$/ft<sup>2</sup>): 0.09

Annual Maintenance Cost Difference (\$/ft<sup>2</sup>): (0.11)

**TOTAL Operating Cost Difference (\$/ft<sup>2</sup>): (0.02)**