

City of Vancouver Energy Modelling Guidelines: Impact of Proposed v3 Updates

This document outlines the high-level impact of the proposed EMG v3 updates on three representative buildings that characterize commonly constructed new Part 3 buildings in Vancouver.

Background

Focal Engineering has been retained by the City of Vancouver to assist with updating the Energy Modelling Guidelines (EMG). The project timeline has included the following stages; the proposed EMG v3 updates are currently open for public review, available at the links below.

Workshop 1 Apr 6, 2023	Workshop 2 Oct 13, 2023	Public Review Period Oct 13 - Nov 17	Public Review Extension to Nov 24
<ul style="list-style-type: none"> Industry gave feedback on key areas to inform project team analysis & proposed updates. 	<ul style="list-style-type: none"> Energy Modelling Guidelines v3 – Draft provided, summarizing proposed updates. Project team described key updates & reasons/ methodology behind proposals. 	<ul style="list-style-type: none"> Feedback Survey provided to gather public responses. Industry encouraged to share examples of how the proposed EMG v3 impact projects versus v2. 	<ul style="list-style-type: none"> EMG v3 Impact Analysis (this document) provided for public review on Nov 16. Survey period extended to allow for public commentary on the above.

Summary of performance metrics for 3 representative buildings

A summary of the key results for each building is provided in Table 1, with a brief commentary beneath. Note these are actual Lower Mainland projects being modelled with the proposed guidelines to better understand the scale of change to the performance limits; they are not being evaluated for compliance (e.g., the High-Rise MURB was not initially subject to GHGI limits, which is why it doesn't comply with current VBBL limits).

Table 1. Impact of Proposed EMG v3

Building	Mid-Rise MURB			High-Rise MURB			High-Rise Office		
	5 storeys, wood-framed			27 storeys, concrete			18 storeys, concrete / curtain wall		
Description	v2	v3	Change	v2	v3	Change	v2	v3	Change
TEUI	98.5	114.0	16%	109.0	117.3	8%	90.0	93.2	4%
TEDI	16.6	16.4	-1%	28.8	25.7	-11%	19.2	16.8	-13%
CEDI	6.5	7.9	22%	10.8	12.9	19%	20.8	22.9	10%
GHGI	1.0	1.3	30%	7.8	9.0	15%	1.2	1.2	0%
Notes	TEUI increases primarily due to DHW and elevator changes. Small TEDI decrease (-0.2) due to warmer weather file, but capped corridor adjustment (-2.8).			TEUI and GHGI increase primarily due to DHW load increase; elevators have a smaller impact. TEDI decrease (-3.1) due to warmer weather file.			TEUI increase (+4.0) due to elevators. Overall TEUI increase is lower (+3.4), due to reduction from revised climate file. TEDI decreases (-2.4), also due to climate file.		

Summary of Inputs for modelled Buildings

Table 2 provides a summary of the relevant changes between the EMG v2 and the proposed EMG v3 for each building modelled.

Table 2. Summary of Key Changes

Summary of Changes		v2 Building	v3 Building
Mid-Rise MURB			
Project Basics	MFA (m ²)	2,633	
	Description	5 storeys, wood-framed	
	VFAR	0.67	
Codes & Standards	Guidelines	CoV EMG v2	CoV EMG v3
	VBBL	VBBL 2019	Anticipated VBBL 2024
	NECB	NECB 2015	NECB 2020
Inputs	Weather File	YVR CWEC 2016	YVR PCIC 2020s RCP8.5
	DHW loads	NECB (suites per CoV)	NECB (all)
	Elevators	CoV EMG 2.0	BC Hydro CNC
Results	Corridor Adj (TEDI and TEUI)	7.8	5.0
High-Rise MURB			
Project Basics	MFA (m ²)	30,928	
	Description	27 storeys, concrete	
	VFAR	0.64	
Codes & Standards	Guidelines	CoV EMG v2.0	CoV EMG v3.0
	VBBL	VBBL 2019	Anticipated VBBL 2024
	NECB	NECB 2015	NECB 2020
Inputs	Weather File	YVR CWEC 2016	YVR PCIC 2020s RCP8.5
	DHW loads	NECB (suites per CoV)	NECB (all)
	Elevators	CoV EMG 2.0	BC Hydro CNC
Results	Corridor Adj (TEDI and TEUI)	5.7	5.0
High-Rise Office			
Project Basics	MFA (m ²)	13,342	
	Description	18 Storeys, concrete / curtain wall	
	VFAR	0.50	
Codes & Standards	Guidelines	CoV EMG v2.0	CoV EMG v3.0
	VBBL	VBBL 2019	Anticipated VBBL 2024
	NECB	NECB 2015	NECB 2020
Inputs	Weather File	YVR CWEC 2016	YVR PCIC 2020s RCP8.5
	Elevators	CoV EMG 2.0	BC Hydro CNC

This document is intended as a summary only for public feedback purposes.

The CoV and Focal team continue to encourage industry to share examples of how the proposed EMG v3 may impact specific projects and designs compared to v2.