

# **APPENDIX I**

## **SUSTAINABILITY GOALS FOR CITY OF VANCOUVER CAF ALIGNMENT**

# Memo



**Date:** March 27, 2023  
**Project:** VIC Sustainability Master Planning  
**Project Number:** 22-1362  
**To:** Pedro Polanco, Jennifer Rabina, Marc Esrig  
**From:** Forest Tanier-Gesner, Ned Greene  
**Subject:** Sustainability Goals for City of Vancouver CAF Alignment

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The Vancouver Innovation Center (VIC) development is determining sustainability goals for site infrastructure and future phase developments and is working to align to the Vancouver Climate Action Framework (CAF) that has recently been released by the City of Vancouver.

## **GOALS OF THE CLIMATE ACTION FRAMEWORK**

One of the primary goals of the City of Vancouver's Climate Action Framework is aggressive reductions in the Greenhouse Gas (GHG) emissions associated with the City and Community operations:

- By 2025 – Achieve 80% Reduction in GHG emissions associated with municipal operations.
- By 2030 – Achieve 80% Reduction in GHG emissions associated with community operations.
- By 2040 – Achieve 100% Reduction in GHG emissions (Carbon Neutrality) associated with municipal and community operations.

PAE understands that the VIC development team is in favor of these performance-based standards over arbitrary certification programs that do not guarantee the City's desired outcome for emission reduction as set forth in the CAF.

To that end, PAE has developed life-cycle emissions and life-cycle cost assessments of several heating, cooling, and domestic hot water (DHW) system options and cooking appliance options for the VIC campus. PAE's recommended baseline design option was then benchmarked against the City of Vancouver's CAF. Based on this analysis it is estimated that the non-industrial process loads<sup>1</sup> on the VIC campus could be within 2% of the CAF reduction targets by 2030 and within 1% of the total CAF target by 2040.

PAE identified additional potential measures to address the minor gap in the emissions reductions estimates versus the CAF targets. These measures serve as a menu of options and can be implemented incrementally and discretely during the course of the VIC development. The quantifiable impacts of these options are also summarized in the following table.

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<sup>1</sup> It is understood that the campus currently houses industrial processes that rely on natural gas fuel. These operations are currently outside of the scope of the systems options analysis and emissions reduction estimates. Alternate fuel sources should be considered by the Development Team as these become more readily available for the types of industrial processes.



	Reference Year	2024	2030	2040
<b>BENCHMARK:</b>				
Existing Building Stock and Forecasting Future buildings per today's Standards				
	MT CO2e/year	20,743	20,743	20,743
<b>BASELINE DESIGN for new buildings:</b>				
All Electric heating, cooling, and domestic hot water for all asset types.				
All Electric appliance requirements for all residential buildings (all-electric cooking and laundry)				
Efficient heat pump selections for space heating and domestic hot water (DHW) in all new buildings				
	MT CO2e/year	7,075	4,530	289
	( % reduction from benchmark )	66%	78%	99%
<b>UPGRADES BY 2030 - OPTIONS TO CONSIDER</b>				
Increase campus Photovoltaic (Solar) installations as needed to reach emission reduction goal. Consider exceeding code minimum if needed.			A	
Material selections and construction practices could further reduce the emissions associated with the campus development, through reductions in the embodied emissions for the buildings and site infrastructure. Design teams could help address marginal reductions needed to achieve goal by 2030			B	
Consider committing to provide more EV charging for residential parking and/or more residential spaces provisioned as EV ready if market demand supports that investment			C	
<b>A+B+C = 390 MT CO2e/year</b>	MT CO2e/year	7,075	4,140	289
	( % reduction from benchmark )	66%	80.0%	99%
<b>UPGRADES BY 2040</b>				
Phase out use of non-industrial gas use from the VIC Campus - enforce all electric cooking in commercial buildings, upgrade existing buildings, phase out other gas uses by 2040 if required by code.				-289
	MT CO2e/year	7,075	4,140	0
	( % reduction from benchmark )	66%	80%	100%

**Table 1: Emissions Reduction Estimates for VIC Campus**



## **VIC SUSTAINABILITY GOALS**

As shown in Table 1, site emissions estimates for the recommended baseline design approach closely aligns with the City's CAF emissions reductions targets. Below is a summary of PAE's recommended baseline design for the campus:

- BOD - "Building by Building Heating and Cooling – All Electric" systems approach for all new construction.
  - Efficient heat pump selections for space heating and domestic hot water (DHW) in all new buildings
  - Electrification phase in plan for all existing buildings heating and DHW heating systems by 2040, if required under City CAF.
    - Central heating update requires consideration of low temp heating coils for end-of-life upgrades with current heat pump technology.
  - All Electric appliance requirements for all residential buildings (all-electric cooking and laundry)

To close the minor gap between the baseline design approach and the CAF targets, PAE recommends the following possible options to be evaluated at the time of each new development project:

- Recommend to future commercial tenants to strive for All Electric appliance requirements for all commercial buildings (i.e. all-electric commercial cooking by 2040 if required by code). It is understood that restaurants and some industrial tenants who have commercial grade kitchens within their premises, may not be willing to comply with this requirement today given current industry standards.
- Increase onsite Photovoltaic (solar) installations as needed to reach emission reduction goal. This may require exceeding code minimum to achieve the desired target.
- Material selections and construction practices could further reduce the emissions associated with the campus development, through reductions in the embodied emissions for the buildings and site infrastructure. Design teams could help address marginal reductions needed to achieve goal by 2030.
- Evaluate demand for Increasing percentage of Electrical Vehicle charging stations for residential neighborhoods. Exceeding existing code if demand warranted that could help meet the CAF targets.