

Summary for Delegation to the City of Burnaby Council

Background on the Metro Vancouver Case Study

To prepare for the solid waste plan update, Zero Waste BC conducted an analysis of the data available on the Metro Vancouver Waste to Energy Facility as well as the solid waste management system for Metro Vancouver. Complete sets of data were available from 2010 until 2020 (as of Dec 2023).

Findings

1. Total Waste: Total waste disposed has declined from 2010 to 2020 representing a per capita decline of 172 kg/person which would be equivalent to over 476,000 tonnes in 2020. Note that waste incinerated represents 20% of the total waste and the waste eliminated is equivalent to shutting down the need for almost two incinerators.
2. Costs: Zero Waste is the most economical way to prevent and manage waste. Waste-to-energy is by far the most expensive option. Operating costs have been increasing between 2010 and 2020, up 4% for landfilling and 22% for waste-to-energy but are forecast to go up even more, to 10% for landfilling and 74% for waste-to-energy by 2027. Capital costs are significant for the incinerator and will be increasing over the next several years as the incinerator is rebuilt piece by piece and air quality requirements are increased. The Zero Waste Committee learned in July 2023 that the waste-to-energy facility was the key driver of the solid waste capital plan and by November, predicted capital costs had risen another \$92.9 million.

Table 1 Comparison of Operating and Capital Costs by Method

Costs	Incinerator	Landfills	Zero Waste -Not wasting
Operating Costs /t (2020)	\$96.64	\$47.97	\$8.58
Operating costs total (2020)	\$24M	\$33M	\$4M
Capital (2010-2027)	\$224M	Included in above	0
Proportion of Waste	1/5	4/5	Negative
Tonnes	244,362	904,096	476,435 avoided

3. GHGs: A focus on GHGs should lead to a strong attempt to move towards Zero Waste (upstream consumption-based emissions savings) and the closure of the incinerator with savings from both ceasing emissions as well as stopping the use of fossil fuel gas and electricity at the facility. Given that this is meant to be the decade of climate action, every tonne of GHGs (both non-biogenic and biogenic -that from materials that are plant-based) should be avoided.

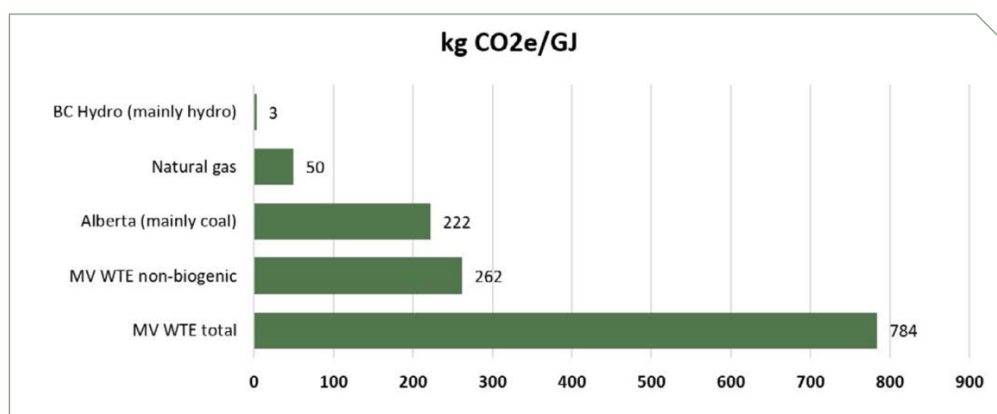
Landfill emissions have been declining for Metro Vancouver, 72% **less** than in 2010 due to decreasing organic content and better landfill gas capture. On the other hand, the incinerator has **increased** the non-biogenic emissions (the emissions from burning non-plant or grown materials like plastic, metal and glass) by 101% over the same time period. The Burnaby incinerator has been one of the top 25 industrial point sources of GHGs for the past ten years. When Zero Waste practices are used, the materials that do not get used, replaced or wasted represent upstream savings of GHGs and are thus the best solution for managing waste.

Table 2 Comparison of GHG Emissions by Method

GHGs - 2020	Incinerator	Vancouver Landfill	External Landfill	Waste prevented
Non-biogenic GHG (tCO ₂ e/t waste)	0.58	0.26	0.08	negative
Including biogenic GHG (tCO ₂ e/t waste)	1.28	0.32	0.14	negative
Percentage of GHGs (total)	64%	36%	<1%	negative
Percentage of waste	21%	56%	3%	-16%

For an energy source, waste to energy is the most GHG intense form of energy.

Figure 1GHG emissions by energy source



- Age: The Metro Vancouver incinerator is of an age to be retired. US incinerators showed that incinerators are closing due to the rising costs to maintain them and for replacement parts, as well as the expense and challenges to keep up with evolving health and environmental standards. Continued raising of standards can be expected with more research on impacts and new best practices being set such as continuous emissions testing. The average life expectancy of an incinerator is 30 years and Metro Vancouver's is currently 35 years old. The Covanta contract expires in 2025 and the BC Hydro power purchase agreement in 2026.
- District Energy: District energy systems should be pursued but only using truly clean and renewable energy sources, of which waste incineration is neither. District energy using incineration locks in to producing and burning waste and means more people will be living at risk closer to the facility.
- A Zero Waste alternative exists to burning waste that can help Metro Vancouver to meet its goals: reduce energy consumption and GHG emissions; save capital and operating costs; save staff time managing, monitoring and reporting on waste-to-energy; no longer require ash disposal; decrease environmental and health impacts and risks; improve air quality; enhance resilience and avoid the opportunity costs of missed alternatives.

Conclusion:

This is the perfect time to re-evaluate the incinerator and attaching it to a district energy system.

Complete report at <https://www.zerowastebc.ca/about-us/our-work/#Research>.