Generating Energy from Waste

Metro Vancouver’s Waste-to-Energy Facility

Owned by Metro Vancouver, the Waste-to-Energy Facility is operated and maintained by Covanta Burnaby Renewable Energy ULC in Burnaby.

Since its opening in 1988, the facility has been responsible for the environmentally safe disposal of over 25% (around 250,000 tonnes per year) of the region’s waste, turning it into a valuable energy source.

The facility receives its waste primarily from the cities of Burnaby, New Westminster, and the North Shore.
Waste-to-Energy Facility
An efficient, environmentally responsible waste disposal process

Descriptions of what is happening in areas 1-16 are provided inside this brochure. Every stage of the waste-to-energy process is overseen by highly trained and qualified staff.

For more information on waste-to-energy recovery, visit metrovancouver.org (search “waste-to-energy facility”).
Industry Leading Safety & Emissions Controls

All staff working at the Waste-to-Energy Facility are highly trained and qualified. Operations staff are Certified Power Engineers and the maintenance staff is comprised of certified electricians, instrument mechanics and certified millwrights. The qualification requirements for operations and electrical staff are regulated by the BC Safety Authority.

All aspects of the waste-to-energy process are monitored 24 hours a day, seven days a week, 365 days a year from a control room located on site. Facility emissions data and compliance reports are available on Metro Vancouver's website in real time. The range of emissions monitored is broad, including common air contaminants such as nitrogen oxides (NOx) and particulate matter (PM), as well as acid gases, trace metals, trace organics, and dioxins / furans.

Waste Handling to manage waste for combustion

1. An average of 80 trucks per day arrive at the facility, seven days a week, and empty their loads into a large garbage bunker.
2. An industrial-sized grapple shifts the waste and drops it into one of the facility’s three feed chutes.
3. The grapple is controlled by an operator who keeps waste in the bunker at a manageable level and keeps oversized materials out of the feed chutes.
4. The grapple drops waste into one of three feed chutes. Every hour, about 11 tonnes of waste are sent down each chute.
5. Waste moves down the feed chute to a furnace where it is burned at temperatures of more than 1,000° Celsius.
6. The hot gas from the combustion process passes into a boiler area where it heats tubes filled with water. The water boils to become steam while the gas goes through an air pollution control process.
7. The steam produced in the boiler area is used to power a turbine that converts the steam into energy in the form of electricity.
8. Metro Vancouver is currently exploring the development of a district energy system, which uses steam generated in the facility to provide heat to nearby homes.

Energy Generation converting garbage into electricity

9. The electricity produced at the facility is transported to an on-site substation by a series of cables.
10. The electricity is sold to BC Hydro where it is distributed to end users. The electricity produced at the facility is enough to power about 16,000 homes every year.

By-products & Recycling secondary materials for beneficial use

11. Every year about 6,000 tonnes of ferrous metal is recovered during the waste-to-energy process. This metal is sold into the recycling market.
12. The facility has a non-ferrous system that utilizes an eddy current separator to recover non ferrous metal (mainly aluminum and copper). The system captures about 500 tonnes of non-ferrous metal per year, and has increased the recovery of ferrous metals by 10%. This metal is sold into the recycling market.
13. Bottom ash is material resembling crushed rock that remains after combustion. It collects at the bottom of the furnace and is tested before being beneficially used as fill or a construction product or disposed in a landfill.

Electricity Sales & Distribution

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Air Pollution Control On-site equipment is used to continuously monitor emissions for signs of environmental impact. These emissions are verified by independent testing multiple times a year.

14. Lime and carbon are added to the cooled flue gas to react with acid gases and vaporous metals, allowing them to be captured. After lime and carbon are added, the flue gas is then passed through a fabric filter baghouse.
15. Fly ash is composed of small particles which contain acids and metals. The fly ash is captured in the fabric filter baghouse. The fly ash is tested before being disposed in a landfill.
16. The filtered flue gas exits the facility through a stack with real time, continuous air emissions monitoring. The monitoring system uses analytical equipment to track specific things such as opacity, total particulate matter, and gaseous compounds. The real time data measured is available on the Metro Vancouver website. Independent manual stack testing is completed multiple times per year.
LEED® PLATINUM BUILDING

The administration building at Metro Vancouver’s Waste-to-Energy Facility has the highest sustainability recognition a building can attain.

In 2010, the building was awarded platinum status by the Canada Green Building Council, which administers the Canadian Leadership in Energy and Environmental Design program (LEED®).

The LEED® green building rating system is a third-party certification program and an internationally accepted benchmark for the design, construction and operation of high performance green buildings.

CONTACT US

For more information about the Waste-to-Energy Facility or to book a tour:

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(search “Waste-to-Energy Facility”)

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