

# 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 285,000 tonnes per year) of the region's waste and turns it into a valuable energy source.

The Facility receives its waste primarily from the Cities of Burnaby, New Westminster and the North Shore.

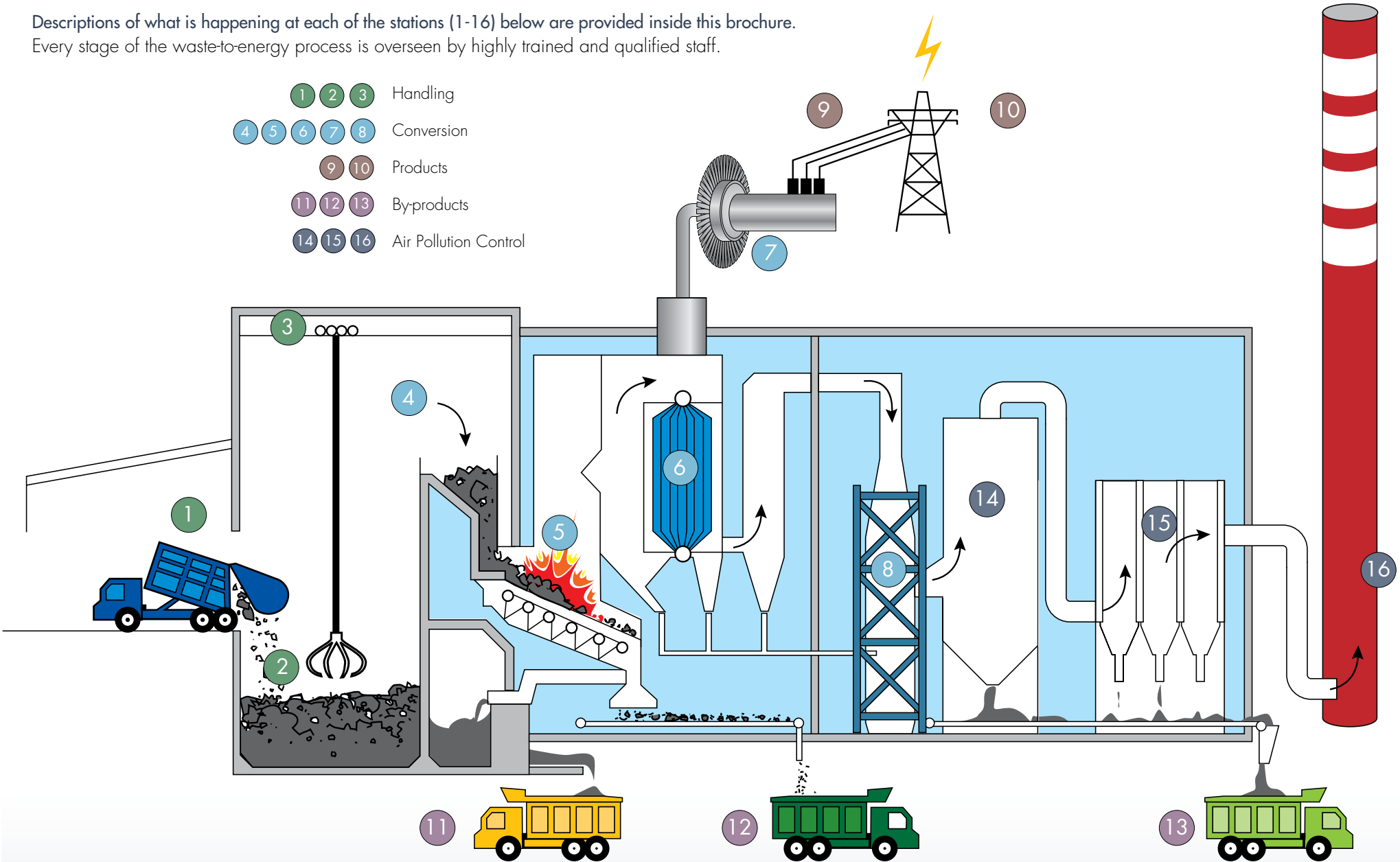


# Waste-to-Energy Facility

## An efficient, environmentally responsible waste disposal process

Descriptions of what is happening at each of the stations (1-16) below are provided inside this brochure. Every stage of the waste-to-energy process is overseen by highly trained and qualified staff.

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# Systems Control



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.

## Handling to remove material and manage waste for combustion

**1** An average of 80 trucks 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 which transfer waste to a furnace where it is combusted.



**3** The grapple is manually controlled by a facility operator. The operator keeps waste in the bunker at a manageable level and keeps oversized materials out of the feed chutes.



## Conversion converting garbage into energy

**4** The grapple drops waste into one of three feed chutes which transfer it to a furnace where it gets combusted. 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 pass into a boiler area where it heats tubes filled with water. The water boils to become steam while the gas goes through a process of air pollution control.



**7** The steam produced in the boiler area is used to power a turbo generator which converts the steam into energy in the form of electricity.



**8** Depending on the local infrastructure, there is potential to use the steam in a nearby district heating network which provides a water heating system for homes, businesses, hospitals etc.



## 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.

## Products energy

**9** The electricity produced at the Facility is transported to an on-site sub-station by a series of cables.



**10** The electricity generator is connected to the local transmission grid. The energy 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 secondary materials for beneficial use

**11** Bottom ash is a material resembling crushed rock that remains after combustion. It collects at the bottom of the furnace and is reused as aggregate in asphalt, as a daily landfill cover and for building roads.



**12** Metal is recovered during the waste-to-energy process. Every year about 8,500 tonnes of ferrous metal is recovered at the Facility. This metal is sold to private industry and recycled into reinforcing steel.



**13** Fly ash comes from the small particles of incinerated waste that become airborne. The fly ash is captured in the baghouse and tested before finally being disposed in a landfill.



## Air Pollution Control continuous monitoring

**14** Lime and carbon are added to the cooled flue gas (i.e. gas exiting to the atmosphere via a flue or stack as it's known at the Facility) to react with acid gases and vaporous metals allowing them to be captured.



**15** After lime and carbon are added, the flue gas is then passed through the fabric filter baghouse which captures acids, metals and particulate matter.



**16** The filtered air exits the Facility through a stack with continuous air emissions monitoring. Independent stack testing is also done.





## 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 provide feedback:

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(search: generating energy from waste)

### Book a tour:

Call the Facility at 604.521.1025



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