



June 2007

Waste-to-Energy Facility

Since its opening in 1988, the Greater Vancouver Regional District's (GVRD) Waste-to-Energy Facility (WTEF) has played an essential role in the region's integrated waste management system. Operated and maintained by Montenay Inc., the facility ensures that garbage is disposed of in an environmentally safe manner, and generates renewable and valuable energy sources: steam and electricity.

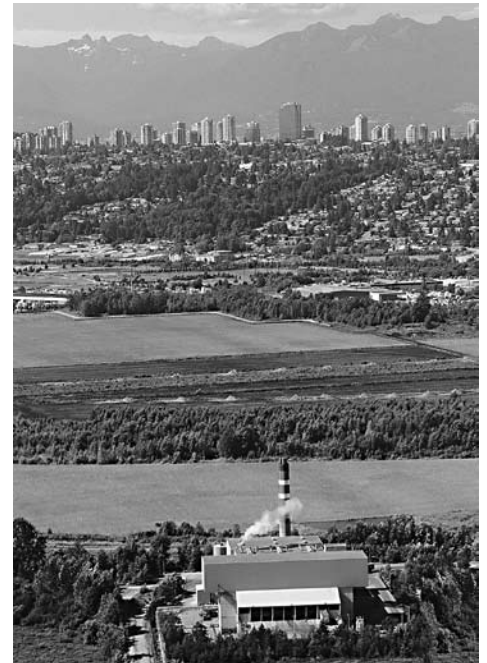
Located in the commercial/industrial area of South Burnaby, the WTEF processes about 20 per cent of the Lower Mainland's garbage, mainly from the North Shore, Burnaby and New Westminster.

Every year, the WTEF turns approximately 280,000 tonnes of garbage into 900,000 tonnes of steam, providing both economic and environmental benefits. A portion of this steam is then sold to a nearby paper recycling facility, helping eliminate the use of fossil fuels.

In 2003, the GVRD installed a turbo generator that uses the steam to produce electricity, which is then sold to BC Hydro. In 2006, a \$7 million upgrade was completed to increase the amount of heat recovered from the waste and therefore the amount of electricity produced. The revenue from steam and electrical sales offsets the operational costs of the solid waste management system.

This photo shows the Waste-to-Energy Facility with the steam line in the foreground.

The steam line sends steam to an adjacent paper recycling mill for operational purposes, and displaces their use of fossil fuel.



The Waste-to-Energy Facility (WTEF) in Burnaby is one of the most efficient facilities on the continent, processing about 20 per cent of the Lower Mainland's garbage, and playing an essential role in the region's integrated waste management system.

Strict environmental monitoring confirms that the WTEF is one of the cleanest facilities of its kind. The Solid Waste Association of North America (SWANA) recognizes it as one of the best facilities on the continent.

In 2003, the Association of Professional Engineers and Geoscientists of B.C. (APEGBC) presented its first Sustainability Award to the GVRD, in part for the installation of the turbo generator.



What goes in every day:

- 830 tonnes of garbage
- 6 tonnes of lime (to control acid gas emissions)
- 50 megawatt-hours of electricity
- 850 kilograms of ammonia (to control nitrogen oxide emissions)
- 144 kilograms of activated carbon (to control mercury emissions)
- 2200 kilograms of phosphoric acid (added to stabilize leachable metals in the fly ash)



What comes out every day:

- 960 tonnes of steam sold to nearby paper plant
- 400 megawatt-hours of electricity
- 135 tonnes of bottom ash (used in road building and landfill cover)
- 28 tonnes of fly ash (disposed at landfill)
- 27 tonnes of scrap metal (recycled into reinforcing steel)



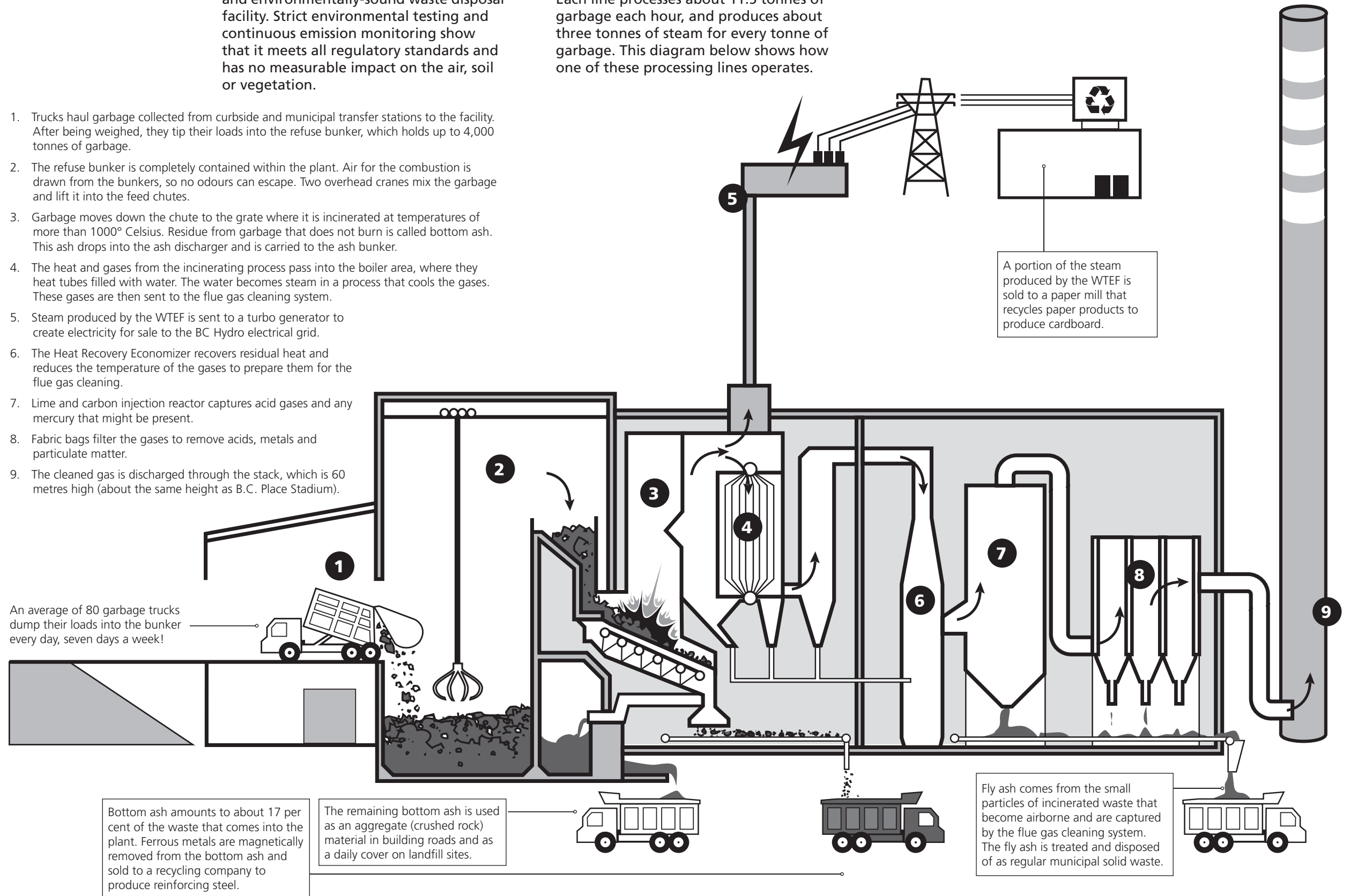
The Burnaby Waste-to-Energy Facility:

an efficient, environmentally-responsible disposal process.

The WTEF has been designed as a safe and environmentally-sound waste disposal facility. Strict environmental testing and continuous emission monitoring show that it meets all regulatory standards and has no measurable impact on the air, soil or vegetation.

This plant has three processing lines. Each line processes about 11.5 tonnes of garbage each hour, and produces about three tonnes of steam for every tonne of garbage. This diagram below shows how one of these processing lines operates.

1. Trucks haul garbage collected from curbside and municipal transfer stations to the facility. After being weighed, they tip their loads into the refuse bunker, which holds up to 4,000 tonnes of garbage.
2. The refuse bunker is completely contained within the plant. Air for the combustion is drawn from the bunkers, so no odours can escape. Two overhead cranes mix the garbage and lift it into the feed chutes.
3. Garbage moves down the chute to the grate where it is incinerated at temperatures of more than 1000° Celsius. Residue from garbage that does not burn is called bottom ash. This ash drops into the ash discharger and is carried to the ash bunker.
4. The heat and gases from the incinerating process pass into the boiler area, where they heat tubes filled with water. The water becomes steam in a process that cools the gases. These gases are then sent to the flue gas cleaning system.
5. Steam produced by the WTEF is sent to a turbo generator to create electricity for sale to the BC Hydro electrical grid.
6. The Heat Recovery Economizer recovers residual heat and reduces the temperature of the gases to prepare them for the flue gas cleaning.
7. Lime and carbon injection reactor captures acid gases and any mercury that might be present.
8. Fabric bags filter the gases to remove acids, metals and particulate matter.
9. The cleaned gas is discharged through the stack, which is 60 metres high (about the same height as B.C. Place Stadium).



Strict standards for environmental protection

ISO 14001

The WTEF is International Standard Organization (ISO) 14001 certified. This is an international environmental management protocol to ensure compliance, ongoing monitoring and continual improvements.

Mercury control

The WTEF has one of the first carbon injection systems installed in North America to reduce mercury emissions. Mercury emissions at the plant are one-tenth of the allowable limit.

NOx control

An ammonia injection system reduces nitrogen oxide (NOx) emissions.

Zero liquid discharge

The WTEF has no discharges (excluding washrooms) to the sewer system. This means reduced impacts to the environment by minimizing water use and lowering demand on the sewerage system.

Air emission control

Strict control over combustion conditions, such as temperature and air flow, minimizes the amount of pollutants created. Environmental protection technology is then used to treat air emissions. These emissions are continuously monitored and regulated under provincial legislation, which is among the most stringent found in the world today.

Monthly reports are submitted to the Provincial Ministry of Environment.

Independent stack tests are performed three times a year to test for acid gases, total hydrocarbons, metals, and particulate matter.

The Lower Fraser Valley Air Quality Monitoring Network continuously monitors the ambient air environment at 30 sites throughout the Lower Mainland. No measurable impact has ever been found from the WTEF.

Fifty per cent of the waste generated in the GVRD is recycled, and we are working hard to increase that number.

To help all of us reduce our impact on the environment, the GVRD Board has adopted a "Zero Waste Challenge." This challenge is a step toward developing a new Solid Waste Management Plan and an opportunity to educate our residents about waste reduction.



For more information, please visit www.gvrd.bc.ca/zerowaste.

To arrange a tour

To arrange a tour of the Waste-to-Energy Facility, please contact Montenay Inc. at:

Phone: 604-521-1025

Write: 5150 Riverbend Drive, Burnaby, B.C. V3N 4V3

Fax: 604-521-2140

Website: www.montenay.com

For more information

For more information about the Waste-to-Energy Facility or to provide feedback, contact the GVRD Information Centre at:

Phone: 604-432-6200

Write: GVRD Contracted Services

7th floor, 4330 Kingsway, Burnaby, B.C. V5H 4G8

Fax: 604-451-6180

E-mail: icentre@gvrd.bc.ca



GVRD

www.gvrd.bc.ca/recycling-and-garbage

