

August 2011

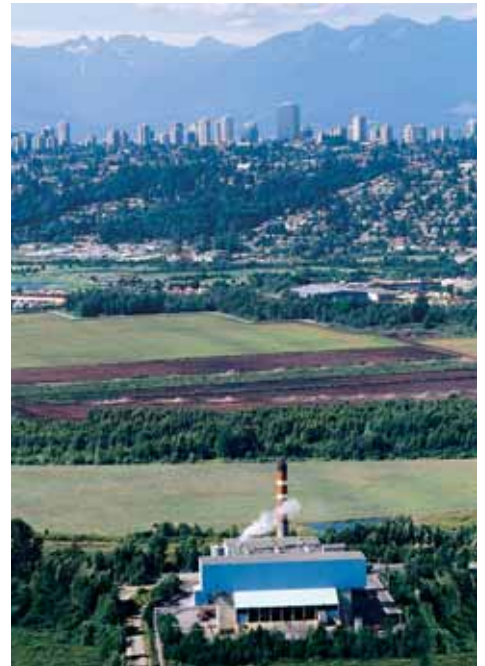
# Waste-to-Energy Facility

***Since opening in 1988, Metro Vancouver's Waste-to-Energy Facility (WTEF) has played an essential role in the region's solid waste management system. Owned by Metro Vancouver, the facility is operated and maintained by Covanta Burnaby Renewable Energy Inc. The facility ensures that garbage is managed in an environmentally safe manner, and generates renewable and valuable energy sources: steam and electricity.***

The Waste-to-Energy Facility (WTEF) is located in the commercial/industrial area of south Burnaby. It receives waste from Burnaby, New Westminster, and the North Shore and is responsible for the environmentally safe disposal of over 25 per cent of the region's waste.

Each year the WTEF turns 285,000 tonnes of garbage into steam and electricity. The steam is sold to a paper recycling facility, while the electricity sold to BC Hydro is enough to power 15,000 homes.

Strict regulations and environmental monitoring confirm 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.



The WTEF in Burnaby.



This photo shows the WTEF with the steam line, which carries steam to an adjacent paper recycling mill and displaces their use of fossil fuel.



**What goes in during a typical day:**

- 800 tonnes of garbage
- lime (to control acid gas emissions)
- ammonia (to control nitrogen oxide emissions)
- activated carbon (to control mercury emissions)
- phosphoric acid (added to stabilize metals in the fly ash and bottom ash)



**What comes out during a typical day:**

- 2740 tonnes of steam to supply the turbo generator, of which 600 tonnes is extracted and sold to the nearby paper recycling facility
- 400 megawatt-hours of electricity sold to BC Hydro to power homes and businesses
- 130 tonnes of bottom ash (used in road building and landfill cover)
- 30 tonnes of fly ash (disposed at landfill)
- 25 tonnes of metal (recycled into reinforcing steel)



Strict environmental testing and continuous emission monitoring show that the WTEF meets all regulatory standards.

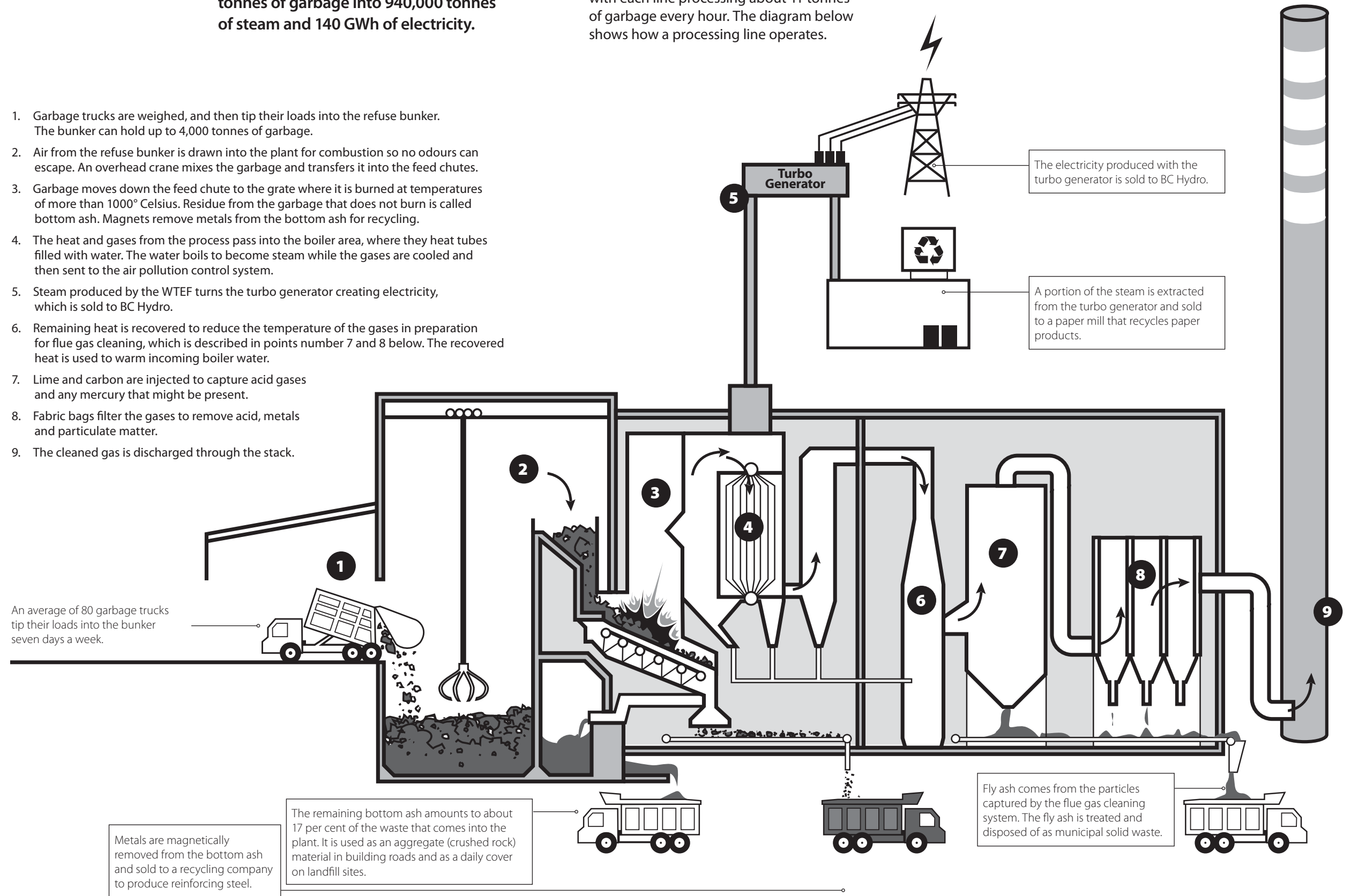
**The Waste-to-Energy Facility:**

**an efficient, environmentally responsible disposal process.**

Each year the WTEF turns 285,000 tonnes of garbage into 940,000 tonnes of steam and 140 GWh of electricity.

This facility has three processing lines, with each line processing about 11 tonnes of garbage every hour. The diagram below shows how a processing line operates.

1. Garbage trucks are weighed, and then tip their loads into the refuse bunker. The bunker can hold up to 4,000 tonnes of garbage.
2. Air from the refuse bunker is drawn into the plant for combustion so no odours can escape. An overhead crane mixes the garbage and transfers it into the feed chutes.
3. Garbage moves down the feed chute to the grate where it is burned at temperatures of more than 1000° Celsius. Residue from the garbage that does not burn is called bottom ash. Magnets remove metals from the bottom ash for recycling.
4. The heat and gases from the process pass into the boiler area, where they heat tubes filled with water. The water boils to become steam while the gases are cooled and then sent to the air pollution control system.
5. Steam produced by the WTEF turns the turbo generator creating electricity, which is sold to BC Hydro.
6. Remaining heat is recovered to reduce the temperature of the gases in preparation for flue gas cleaning, which is described in points number 7 and 8 below. The recovered heat is used to warm incoming boiler water.
7. Lime and carbon are injected to capture acid gases and any mercury that might be present.
8. Fabric bags filter the gases to remove acid, metals and particulate matter.
9. The cleaned gas is discharged through the stack.



An average of 80 garbage trucks tip their loads into the bunker seven days a week.

Metals are magnetically removed from the bottom ash and sold to a recycling company to produce reinforcing steel.

The remaining bottom ash amounts to about 17 per cent of the waste that comes into the plant. It is used as an aggregate (crushed rock) material in building roads and as a daily cover on landfill sites.

Fly ash comes from the particles captured by the flue gas cleaning system. The fly ash is treated and disposed of as municipal solid waste.

The electricity produced with the turbo generator is sold to BC Hydro.

A portion of the steam is extracted from the turbo generator and sold to a paper mill that recycles paper products.

## 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 regulatory compliance, ongoing monitoring and continual improvements.

Fifty-five per cent of the waste generated in Metro Vancouver is currently recycled, and Metro Vancouver is committed to increasing this to seventy per cent by 2015.

To help all of us reduce our impact on the environment, the Metro Vancouver Board has adopted the "Zero Waste Challenge." The Zero Waste Challenge includes initiatives to encourage or require residents and businesses to reduce the amount of waste going in the garbage by creating less waste, recycling more, and reusing all that we can.



### Dioxins and Furans

Canada has the most stringent standard for dioxins and furans in the world. The WTEF's emissions are significantly below this level; so low that Environment Canada considers them unquantifiable by modern laboratory techniques.

### Mercury control

The WTEF has a carbon injection system designed to reduce mercury emissions. Mercury emissions at the plant are one-tenth of the Canada Wide Emissions Standard.

### 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 sewer system.

### Air emission control

Strict control over combustion conditions, such as temperature and air flow, minimizes the amount of emissions. Environmental protection technology is then used to treat air emissions. These emissions are continuously monitored and regulated under provincial legislation.

Monthly reports are submitted to the Provincial Ministry of Environment, the City of Burnaby and the Fraser Health Authority.

Independent stack tests are performed on each processing line 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.

### For more information

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

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