See It All in Action

Set up a tour of ecomaine's waste-to-energy plant, recycling facility, or landfill by calling 207-773-1738 or emailing info@ecomaine.org.

Recyclopedia

ecomaine RECYCL@PEDIA

Learn how to best dispose of your waste by downloading the free ecomaine RECYCLOPEDIA app to your smart phone, or visit: ecomaine.org/RECYCLOPEDIA.

By reducing the trash down to just 10% of its original volume, we're able to maximize the lifespan of our landfill.

90% REDUCTION

Printed on 100% post-consumer recycled paper.

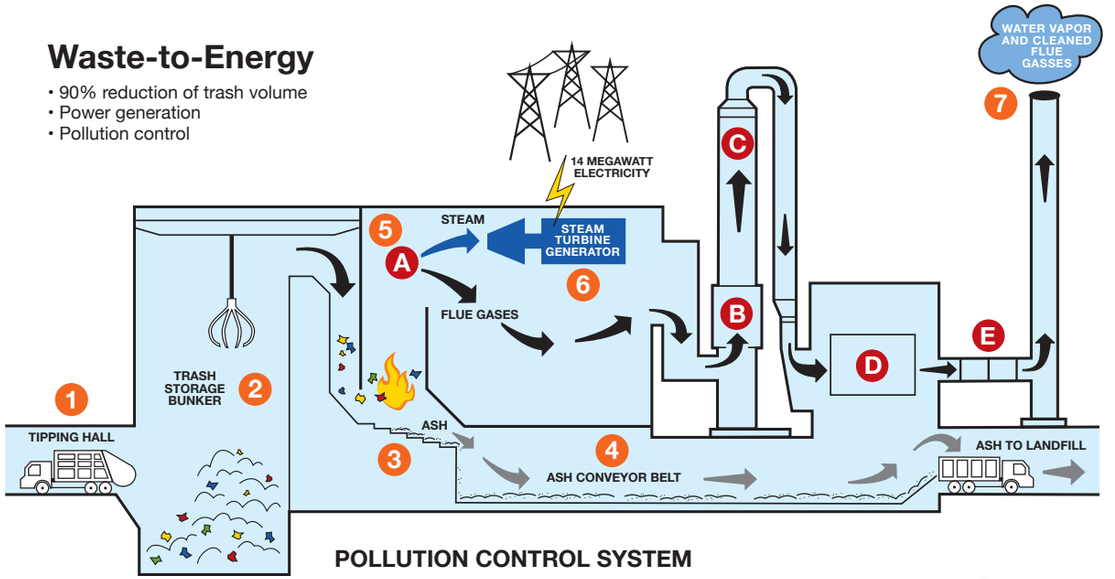
ecomaine

Waste-to-Energy

What It Does, How It Works

Waste-to-Energy

- 90% reduction of trash volume
- Power generation
- Pollution control



POLLUTION CONTROL SYSTEM

A	B	C	D	E
NITROGEN OXIDE REMOVAL SYSTEM	MERCURY & DIOXIN REMOVAL SYSTEM	ACID GAS REMOVAL SYSTEM	PARTICULATE REMOVAL SYSTEM	POLLUTION CONTROL TESTS

What Happens to Your Trash at ecomaine?

1 Tipping Hall

Trash generated by more than a third of Maine's residential population is trucked to ecomaine's waste-to-energy plant for final disposal. When combined with businesses, that adds up to approximately 175,000 tons per year. (Only material brought to ecomaine as trash is included in the annual figure; an additional 35,000+ tons of material brought to ecomaine as recyclable is processed at our recycling facility, right next door.)

Garbage trucks arrive at ecomaine six days a week, where we weigh each load before trucks dump the trash they are carrying on our tipping hall floor. Each compactor truck holds an average of 8–10 tons of trash. Trucks are weighed again after they are emptied to calculate the tonnage of their deliveries.

We also receive nearly 5,000 tons of food waste annually in a segregated section of our waste-to-energy tipping hall floor. This is picked up from supermarkets, large institutions and restaurants as well as some municipal locations, then transported by a tractor trailer truck from ecomaine to an anaerobic digester where it is converted to electricity, crop fertiziler and animal bedding.

2 Storage Bunker

The loader pushes waste into ecomaine's seven-story storage bunker, which measures 110 feet by 50 feet and is 77 feet high. When full, the storage bunker can hold more than 4,000 tons of waste, which would take our WTE plant about a week to process.

Crane operators on the sixth floor of the bunker use a large mechanical claw to grab one to three tons
of waste at a time. Grabbing a diverse mix of waste ensures the high temperature needed to have minimal environmental impact through complete combustion and reduces the trash to ash.

The crane operators feed two chutes that flow into two identical boilers, which burn trash as fuel.

3 Burning Fuel

Gravity pulls trash down the chute until it reaches a ram, which then pushes the waste onto stepped metal grates and moves the trash (aka fuel) along a downward escalator into a giant fire. Unless there are needed repairs or improvements, the boilers continue to run 24 hours a day, every day of the year.

A combination of the right trash recipe and oxygen flow work together to achieve the optimal combustion temperature between 1,800 and 2,000 degrees (F). Highly trained staff in our control room monitor all aspects of the operation around the clock.

4 Ash Conveyor Belt

Burning waste with the support of rigorous pollution control systems not only reduces the material by 90% of its original volume, it also stabilizes potentially harmful chemicals by burning at such a high temperature and trapping the chemicals in the ash.

Ash moves from the grates through a cooling water tank and then onto a conveyor belt where any remaining metal is removed by electromagnet and set aside to be recycled. The ash continuously loads a dump truck that delivers it to ecomaine's ashfill, just three miles away. By reducing the trash to 10% of its original volume, that means we are sending 1/10 of the waste to our ashfill as compared to traditional landfills that bury raw trash.

5 Making Steam

The walls inside each boiler are lined with miles of metal tubes that hold a total of 15,000 gallons of water. The intense heat from burning trash rapidly turns the water into steam, which is captured to spin a turbine. Generating at 3,500 rotations per minute to create electricity.

6 Making Electricity

ecomaine produces over 100,000 megawatt hours of electricity every year. About 15% of that powers ecomaine's waste-to-energy and recycling plants, while the remaining 85% is sold onto the grid. Revenue from the sale of electricity covers some of the operating costs of ecomaine.

7 Emissions Control

Waste brought to ecomaine by communities and businesses include many natural and synthetic materials we all use every day. Some of these materials contain more pollutants than others and some, such as mercury, are illegal to deposit in everyday trash.

ecomaine is held responsible for final disposal of what comes to the waste-to-energy plant, and for the task of minimizing and capturing related emissions. Along with federal, state, and local governments, we carefully monitor our emissions. And ecomaine has taken the extra step of earning ISO (International Organization for Standardization) 14001 certification for excellence in environmental management.

Meeting these rigorous standards include controlling flue gases that result from the burn process. The air pollution control system includes five major steps:

A Adding urea to reduce nitrogen oxide

B Adding activated carbon to remove mercury and dioxin furans

C Adding lime slurry to remove acid gasses, such as sulfur dioxide

D Ionically neutralize particulate matter with an electrostatic precipitator

E Continuous emission monitoring system (CEMS)

Each one of these steps includes a complex series of procedures. In turn, ecomaine regularly meets its emission control limits established by the Maine Department of Environmental Protection.

In service to its more than 65 member communities, ecomaine has made protecting the environment an integral part of our mission.

Each member of the public holds important responsibility to dispose of hazardous or toxic materials, such as solvents, pesticides, TVs, computers, and CFLs (compact fluorescent lights) in environmentally responsible ways.

Safety Corner

Our Safety managers, engineers and plant managers worked together to achieve the ISO 45001 certification for Health & Safety Management, a rigorous standard that ecomaine opts into each year. This shows our commitment to being a safe environment, in what is often one of the most dangerous fields to work in.