

# What does Waste Management do with trash, anyway?



We **collect** it from nearly  
20 million residential, business,  
industrial and commercial customers.

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We burn it to **generate  
green energy.**

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We **recycle** paper, plastics, glass,  
and metals for a variety of new uses.

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We **dispose** of it safely.

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We use gas from the  
decomposition of trash in  
landfills as a **renewable  
energy source.**

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**Here's the inside story.**

# Follow the Waste Stream

The "waste stream" describes the entire life cycle of the garbage we produce – from putting out the trash and recycling for pickup to disposal, energy production and the reuse of recycled materials. Let's follow the journey . . .



## Recycling Facility



Collection trucks bring recyclables to a WM Recycle America facility. The recyclables are unloaded onto an area called the "tipping floor." Notice that this is a "single-stream" facility. That makes recycling easier for everyone in the community, since recyclables don't need to be separated for collection.

From the tipping floor, recyclables are placed on conveyor belts, where they are sorted by machine or hand into broad categories of paper, plastic, glass and metal.

## Waste-to-Energy Facility



In a waste-to-energy facility, through the use of extremely high-temperature combustion, trash is converted into clean, renewable energy that is used to light homes and heat buildings. Emissions from the waste-to-energy facility are thoroughly cleaned using state-of-the-art air quality control systems.

## Landfill



A landfill is an engineered system designed for safe, environmentally sound long-term waste disposal. Trash is deposited in the landfill and compacted. The landfill's liner and gas and leachate extraction systems protect the surrounding land, air and water supply, and operating procedures include regular environmental monitoring.



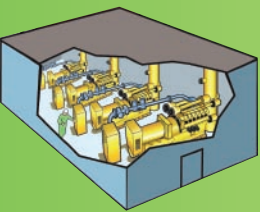
## Landfill-Gas-to-Energy

Residential and commercial waste is transported to Waste Management landfills for permanent disposal. Much of this waste, including food, paper and cardboard, is organic in nature. Bacteria digest this organic waste and produce methane gas and carbon dioxide as natural by-products.

The methane gas is recovered via a series of wells drilled into the landfill. These wells are connected by a common pipe system that collects the gas and delivers it to a fuel conditioner.



The fuel conditioner de-waters, filters, and pressurizes the gas so it can be used by the power-generating equipment.



The gas is piped to an electricity generating plant, on- or off-site, where it is used as fuel to turn engines or turbines to generate electricity.

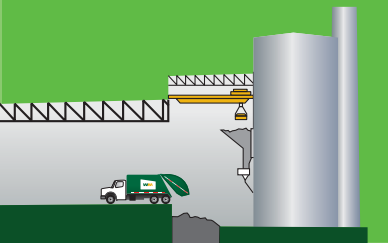


Landfill gas may also be piped off-site to industrial customers for use as an alternative fuel source.



## Green Energy

## Waste-to-Energy



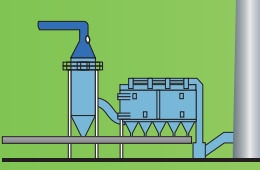
Trash brought to waste-to-energy plants is inspected to make sure it only contains acceptable municipal waste. This waste is deposited into a refuse pit. A crane picks up the trash from the refuse pit and loads it into hoppers. Hydraulic rams feed the trash into furnace boiler units.



The boiler units use the trash as fuel. Heat from combustion of the trash converts water in the boiler's walls into steam.



The high pressure steam is routed to a turbine generator to produce electricity, which is sold to the local utility.



Air pollution control equipment cleans the waste-to-energy plant's emissions. The cleaned exhaust gas exits the plant's stacks.



Iron and steel are separated from the waste-to-energy plant's inert ash residue and sent to recycling facilities.



All of the plant's functions are monitored in a state-of-the-art computerized central control room, manned 24 hours a day by trained operators.

## Green Energy

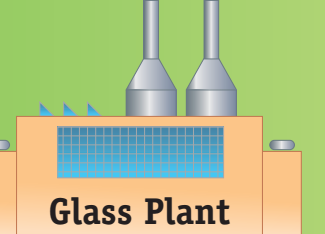
## Glass

Glass recyclables are crushed to form cullet, which is then cleaned of debris and contaminants. Depending on the facility, glass may be sorted by color before or after crushing, or it may be shipped to end users without sorting.

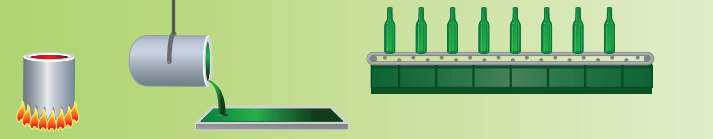
Cullet is loaded onto trucks for transport to a variety of customers. It's used in a number of applications, including new containers for consumer products, road bedding, sandblasting, counter tops, and other uses.



For use in making new glass containers, the cleaned cullet is mixed with sand, soda ash, feldspar and limestone at a glass plant.



This mixture is fed into a furnace and melted at temperatures reaching 2,700° Fahrenheit. Using recycled glass in this way reduces emissions and energy usage, extends the life of plant equipment, and conserves raw materials.



## Recycled Glass

## Plastics

Mixed plastic containers are sorted by type and color. Air is blown into the mix to separate heavier and lighter plastics. In some facilities, plastic containers are optically scanned for separation into types, such as PET, HSPE, etc.



Textile, plastic, bottle, carpet and other manufacturers use these commodities.



Baled, recycled plastics are sent to a plastics remanufacturing plant. The plastics are ground up, washed, melted and formed into plastic pellets. The pellets are used to make containers, bottles, paint, clothing, furniture and many other consumer goods.



## Recycled Plastic

## Paper

Paper recyclables are separated into four categories:

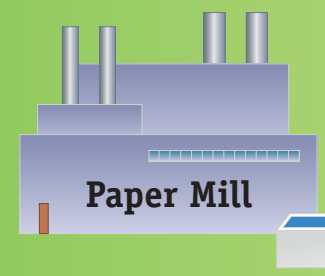
- Corrugated Boxes
- Old Newsprint (ONP)
- Mixed Paper
- Office Mix



Paper recyclables are baled and sold primarily to paper mills.



Old newspaper is de-inked by washing and rinsing it in large vats of water. This process also separates the short fibers from the long fibers.



Some mills are able to use 100% recycled paper, while in others, recycled paper (long fibers) is combined with wood scraps from lumber mills. This is mixed to a pulp and poured onto large rollers and drained. The sheet is lifted and fed through heated rollers, then trimmed and rolled. The rolls are sent to printing plants.



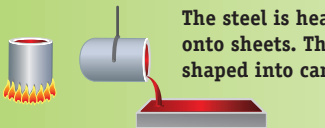
## Recycled Paper

## Recycled Glass

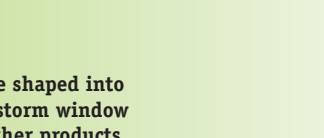
## Recycled Metal

## Steel Mill

Tin and steel are recovered through chemical and electrolysis baths. Then they are purified, melted and cast into ingots.

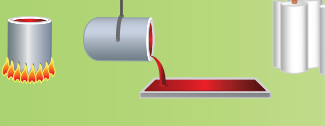


The steel is heated in large vats and poured onto sheets. The steel is coated with tin and shaped into cans.



## Aluminum Plant

Aluminum is melted and poured into ingot molds or rolled into sheets. The ingots are used by industries to make new aluminum products.



The sheets are shaped into cans, siding, storm window frames and other products.

## Closing the Loop

Green energy is delivered via utility transmission lines to residential and commercial customers.

Recycled materials are purchased by manufacturers, who use them to produce or package their products that are shipped to retailers.

Consumers buy the products from a wide variety of retail stores. As we use the products, we create waste that begins the cycle all over again.

## Responsible Disposal

Consumers can responsibly dispose of items like compact fluorescent light bulbs (CFLs), batteries, and electronics by using our convenient Think Green From Home<sup>SM</sup> recycling kits.

It's as easy as ordering the appropriate kit online, filling the box with recyclables and mailing it back with the pre-paid return shipping label.

[www.thinkgreenfromhome.com](http://www.thinkgreenfromhome.com)





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