

How It Works

Energy-from-waste is an efficient renewable energy solution



Detroit Renewable Power is a modern energy-from-waste (EFW) facility – a power plant – that combusts Municipal Solid Waste in a highly controlled and efficient combustion system that recovers energy from the combustion process. DRP's facility is equipped with acid gas scrubber/fabric filter air emission control systems, which are proven technologies to minimize emissions. Modern EFW facilities such as DRP work very differently from old-fashioned municipal "incinerators" that burned trash inefficiently, had minimal (if any) air emission control systems, produced smoke, and did not recover any of the energy released during the combustion process. Our EFW facility produces steam and electricity that reduces burdens on landfills, recycles waste metals, doesn't smoke, and cuts greenhouse gas emissions.



The energy-from-waste process at DRP is clean, safe, and efficient.

What is a Refuse-Derived Fuel Facility?

DRP is a Refuse-Derived Fuel (RDF) facility. RDF plants process municipal solid waste before it is combusted into a uniform fuel. A typical RDF plant will remove and recycle metals and remove other undesirable materials that people discard, such as automobile batteries and BBQ grill propane tanks. The remaining solid waste is then sorted and shredded into smaller pieces for combustion. RDF plants perform more sorting and handling than mass burn facilities, and DRP efficiently recovers recyclables and removes potentially environmentally harmful materials prior to combustion. DRP was designed as an RDF facility with technology incorporated to process incoming waste prior to combustion, improving its energy recovery efficiency.

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What goes in on a typical day?

Trucks deliver up to 3,300 tons per day of municipal solid waste from Detroit and surrounding cities.

WHAT IS PRODUCED?

Clean, renewable energy – up to **68 megawatts of electricity**.

- Enough electric power to supply **60,000 homes** year round.
- Each of three boilers is capable of delivering **362,800 pounds of recovered steam** per hour for district energy and electricity.
- Steam that heats **more than 140 commercial and private customers** in downtown and midtown Detroit via an underground steam-distribution system provided by Detroit Thermal.

If you have questions about this fact sheet or for more information, please contact:

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The Energy-From-Waste Process

1

Trucks deliver municipal solid waste throughout the work week, with a reduced delivery schedule on Saturdays. After weighing and preliminary screening, we deposit the waste in a fully enclosed receiving area. Trained workers use front-end loaders and excavators to sort and recycle oversized and other unacceptable material before feeding the waste onto continuous belt conveyors.



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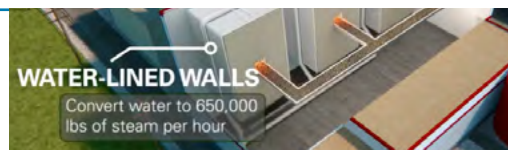
The facility then prepares the waste via a series of conveyers and shredders.

- These conveyors feed the waste through massive primary shredders, where we reduce the material in size to prepare for its use as fuel.
- After the primary shredders, we use industrial magnets to extract ferrous metal from the waste stream for recycling.
- A secondary shredding process then further reduces the waste material to a consistently sized, readily handled fuel stream, which we then feed into one of three specially designed waterwall-lined furnaces.



3

As the fuel is moved through the furnaces by horizontal traveling grate stoker systems, it thoroughly combusts at temperatures consistently exceeding 1,800 degrees. Demineralized water in the waterwalls is converted to up to 362,800 pounds of steam each hour in each boiler.



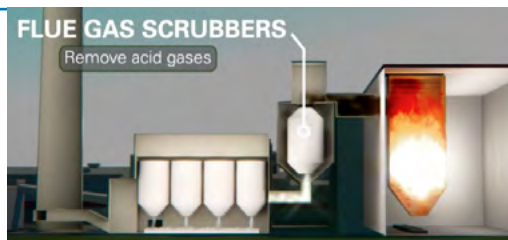
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Most of the steam is delivered to more than 140 Detroit buildings through a major city steam loop operated by DRP's sister company, Detroit Thermal. Some of the steam drives a turbine generator system and produces up to 68 megawatts of electricity. DTE Energy receives the majority of this renewable electricity for distribution to the electricity grid for use in the Greater Detroit area. DRP also uses the electricity it generates to run the plant – about 9 megawatts are required to operate the facility each day.



5

Using state-of-the-art flue gas scrubbers and fabric filters, we thoroughly clean the combustion gases passing through our furnaces after energy recovery. We carefully combine the fly ash from these systems with ash residue from the combustion process, landfilling only about 10% of the incoming waste's original volume and dramatically reducing Detroit's dependence on traditional landfill capacity.



6

Finally, optimizing our energy and material recycling, we separate both fine ferrous and non-ferrous metals from this ash residue stream – returning to commerce between approximately 25,000 and 30,000 tons of metal every year.

