

Managing Waste

Fly Ash Recycling

Release of fly ash into the air hurts the environment and is strictly regulated by clean air standards. Since the 1920s, DTE Energy's gray, talcum-powder-fine coal ash – the residue left from pulverized coal burned in our power plant boilers – has been used by concrete and asphalt companies as a beneficial additive. More than 1 million tons of ash were produced at our six coal-burning plants in 2006, with about half of the total coming from our Monroe Power Plant. The Belle River and St. Clair plants contributed approximately 175,000 tons each. Currently, we capture all of the fly ash produced by our plants, however, only 10 percent to 20 percent of our total ash gets recycled. The rest goes to landfills.

We are working to change that. We have partnered with several vendors that will be recycling a much greater percentage of our ash. These additional sales will bring us closer to the 50 percent to 55 percent ash recycling industry average rate, as a starting point. We plan to increase the recycling volume on a yearly basis to reach a target recycling range of 70 percent or higher.

Transformer Oil Spill Reduction

Detroit Edison recently initiated a successful pilot project to reduce the number of transformer oil spills occurring throughout its system.

Approximately 600 transformer oil spills occur throughout Detroit Edison's electrical system each year. The oil acts as a cooling fluid inside our transformer equipment, mounted on utility poles. These spills are the result of transformer overloads – an equipment failure that sometimes occurs within electrical systems.

The pilot program used specialized software to analyze a small portion of our electrical system and, from our analysis, 142 transformers classified as overloaded were fixed or replaced.

As a result, oil spills in the test area were reduced by 53 percent. If implemented across our system, this project has the potential to prevent 270 spills annually.

We've allocated additional funding toward this project in the coming years to address another 100 overloaded transformers.

PCB Waste Reduction

PCBs (polychlorinated biphenyls) were used for decades by electrical utilities as a fire retardant in the insulating oil in electrical equipment.

In keeping with its long tradition of going beyond environmental compliance regulations, Detroit Edison ceased purchasing any new PCB-containing equipment in

Manufactured Gas Plant Site Cleanup

Before the construction of major interstate natural gas pipelines, gas for heating and other uses was manufactured locally from processes involving coal, coke or oil. Some of these sites, called manufactured gas plant (MGP) sites, have been contaminated with chemicals used to produce this gas.

MichCon, DTE Energy's natural gas utility, currently owns or has previously owned 15 former MGP sites. Investigations have revealed contamination related to the by-products of gas manufacturing at each site.

In addition to the MGP sites, DTE Energy is also in the process of cleaning other contaminated sites, including the area surrounding an ash landfill and several underground and above-ground storage tank locations.

In compliance with federal and state regulations, we are committed to correcting this contamination. We've allocated funds toward cleanup and the remediation of this contamination is ongoing.

1976, before the passage of a law defining this substance as “toxic.” We also removed all PCB-containing equipment from public access areas in July of 1984 – four years ahead of the federal deadline.

We’ll continue phasing out PCB-containing equipment by retiring or replacing affected equipment as part of our participation in a voluntary EPA program.

During 2006, we disposed of the following PCB-contaminated material:

- 72 pieces of oil-filled electrical equipment
- 405,525 pounds of solids – most from oil spill cleanup
- 799,532 pounds of PCB-contaminated liquids

Southwest Detroit Site Cleanup

From 1913 to 1945, MichCon used a parcel of land, located in southwest Detroit, as a manufactured gas site.

After MichCon sold the site in 1945, it was used for charcoal production, blending of various hydrocarbon liquids, and scrap metal storage and processing. In 1995, the state of Michigan became owner of the parcel of land. In 1997, the site was purchased by the city of Detroit for potential redevelopment under the Brownfield Redevelopment Program.

As part of that process, MichCon removed and/or remediated environmentally hazardous material including more than 30 leaking drums and barrels, vehicle gas tanks, piles of asphalt shingles, containers of roofing compounds, abandoned vehicles and at least 200 old tires.

More than 2,400 tons of concrete, 34,000 tons of soil, and 76,500 pounds of scrap metal (which was recycled) was removed.

Today, the site is part of a Detroit Renaissance Zone and is targeted for urban redevelopment.



Claire Jennings, environmental compliance specialist, examines air samples at the Monroe Power Plant.

Water Use at Our Power Plants

DTE Energy’s electric power plants use water to create steam that produces electricity and also for cooling equipment. Our power plants use water, but do not consume it.

On average, Detroit Edison’s power plants used 3.78 billion gallons of water per day in 2006. Most of our plants withdraw the water for use and then return it immediately to the Michigan rivers and lakes from which it was drawn.

Two of our plants use closed-cycle cooling, which reduces the heat in the water and recycles it back into the plant thereby decreasing total water used. This type of cooling reduces water use. About 16 percent of our generating capacity comes from closed-cycle cooling.

The use of water in power plants can adversely affect aquatic systems and organisms. Water use and discharge at our plants is governed by the Clean Water Act.



In 2010, we will begin storing spent fuel in extremely secure containers onsite at our Fermi 2 nuclear plant.

The Environmental Protection Agency (EPA) is currently conducting a study of our industry's wastewater discharges for the purpose of assessing whether or not to revise its existing guidelines on water protection. The EPA is collecting samples at six coal-fired facilities and has administered a questionnaire to nine other utility companies. This information will contribute to the EPA's decision on whether or not to revise its wastewater guidelines. The future of these regulations is uncertain.

The future of EPA regulations governing the location, design, construction and capacity of cooling-water intake structures is also uncertain. Current EPA rules say that these structures must reflect the best technology available for minimizing adverse environmental impact. Recently, courts have struck down large portions of this rule, and at least one state is reconsidering its criteria for water cooling. This leaves other utilities, like Detroit Edison, facing increased scrutiny on water cooling issues.

Nuclear Waste

Through our electric utility subsidiary, Detroit Edison, DTE Energy operates the Fermi 2 Nuclear Power Plant, located near Monroe, Mich.

All spent fuel produced by Fermi 2 is stored in a spent-fuel pool which is located on the site of the plant. In late 2010, the plant's original spent-fuel pool will no longer have the capacity to hold a full fuel load from the reactor, should that become necessary.

To provide a more permanent solution for spent-fuel storage, DTE Energy supports the Department of Energy's recommendation that the Nevada-based Yucca Mountain site be developed as the federal deep geologic nuclear waste disposal facility. The site has been studied exhaustively for 20 years and those studies show that Yucca Mountain is a suitable site for construction of the nuclear waste management facility. To date, Detroit Edison customers have paid more than \$110 million to the federal government to fund construction and operation of a long-term disposal facility. The proposal is currently stalled in Congress.

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of office paper was recycled in 2007. This
is an 18 percent increase over 2004

Our plans for the future involve continuing to rely on dry storage until a more permanent nationwide solution is reached.

We are constructing a dry storage facility at the site of our Fermi 2 plant. This system will allow used fuel to be removed from the spent-fuel pool and stored in a massive steel and concrete storage system in a secure area at the plant site, beginning in 2010.

The storage system will feature 20-foot cylindrical containers constructed of carbon steel and concrete, with walls that are more than two feet thick. Spent fuel will be loaded into smaller cylinders made of stainless steel and permanently sealed and stored in the concrete containers. This system has been designed and tested to prevent the release of radioactivity even in earthquakes, tornados, hurricanes, floods and sabotage.

The cost of the spent-fuel storage project is approximately \$62.5 million, including the costs for loading fuel into the first 12 storage containers.

The spent-fuel storage facility will not increase radiation levels beyond the plant site boundaries, where levels are within the normal range for natural background radiation.

Reuse and Recycling

In 2007, we expanded our long-running recycling program to include all colors and types of paper, magazines, phonebooks, cardboard, and plastic bottles and cans. The project is continuing successfully and 42 separate locations are participating in this program.

We recycled 1,035,100 pounds of office paper, an 18 percent increase over 2004. Paper recycling conserves renewable and nonrenewable resources, prevents

pollution and is good for the environment. In 2006, our paper recycling program saved approximately:

- 3,647 trees
- 241,223 gallons of oil
- 3,622,513 gallons of water
- 305,827 pounds of air pollution
- 1,594 cubic yards of landfill space
- 2,124,117 kilowatt hours of energy.

We are also focusing on recycling from an industrial perspective.

Our recent efforts to embrace this commitment include:

- Finding a new use for the old bricks from the lining of the stack at our River Rouge Power Plant. The power plant replaced the lining of its stack last year and, instead of disposing of 1.5 million pounds of bricks, used them to create a base for our coal pile.
- Recycling more than 55 million pounds of concrete created by two demolition projects in 2006.
- Collecting and selling more than 17 million pounds of scrap steel, thanks to the efforts of our Investment Recovery organization. Breaking down and salvaging old materials is part of it's core mission. From telephones to transformers, this group finds new life for old materials, reducing the amount of plastics and contaminants that would otherwise be headed for landfills.

The amount of equipment and products we recycle or reuse is increasing yearly.

Additionally, the new food court in our downtown Detroit headquarters building uses food containers that are 100 percent recyclable and recycling stations within the space are highly visible.

This serves as a gentle, but constant reminder to our employees that our commitment to environmental stewardship is a vital part of who we are.

Material	Amount Recycled or Reused				
	2006	2005	2004	2003	2002
Paper (lbs)	1,035,100	1,043,328	846,683	812,100	993,310
Cardboard (lbs)	477,210	416,653	76,560	170,175	141,167
Metal (lbs)	11,548,884	17,129,769	11,695,745	9,836,066	8,548,833
Ash (lbs)	226,000,000	320,300,000	394,559,300	480,626,860	–
Porcelain (lbs)	467,320	497,088	–	785,320	–
Meters (lbs)	322,986	450,860	590,012	134,045	317,270
Batteries (lbs)	21,085	40,805	43,552	–	–
Bulbs (lbs)	104,769	65,086	55,095	30,780	–
Used Oil (lbs, energy recovery)	4,435,582	2,302,916	3,915,744	–	–
Wood (reels, poles, pallets)	2,790,627	221,425	382,660	210,275	443,000

Deconstruction

DTE Energy is quickly becoming a leader in the field of “deconstruction.”

Deconstruction is similar to demolition, however, this new and innovative process focuses on reuse and recycling of materials.

Our first deconstruction project focused on a now-defunct 20,000 square-foot-office and warehouse space in New Hudson, Mich.

As a result of the deconstruction process, we reused or recycled nearly 100 percent of the materials from the building. More than 600 pounds of material was sent to a waste-to-energy recovery center. The only waste sent to the landfill from this entire project was the asbestos.

The process eliminated our challenges concerning dust control and produced a totally “clean” site ready for sale and redevelopment.

We are now incorporating deconstruction into our demolition bidding process and have been contacted by other local corporations interested in learning from our experience.

Reducing Emissions

Use of Biodiesel

DTE Energy has been involved in the use of alternative fuel vehicles since 1995, when MichCon launched its first compressed natural gas fueling station in Gaylord, Mich. Now, biodiesel will join our alternative-fuel mix.

Biodiesel is simple to use, biodegradable, and nontoxic. It’s the best greenhouse gas mitigation strategy for today’s medium and heavy-duty vehicles and it’s helping us move toward a “green” fleet.

Biodiesel is a clean-burning alternative fuel produced from domestic, renewable resources. It contains no petroleum, but can be blended at any level with petroleum diesel to create a biodiesel blend. This can be used in diesel engines with no major engine or fuel-system modifications required.

We are integrating biodiesel into our fleet gradually, starting in March 2008, with a blend of fuel of which 5 percent will come from renewable resources. The remaining 95 percent will be petroleum based.

Ultimately, 20 percent of the renewable portion will come from biodiesel. This is fairly standard for our industry. About 665 diesel-fueled vehicles will be converted by 2011.

Biodiesel in Power Generation

We're currently investigating the use of biodiesel fuel in our power plants. We are considering the risks and challenges involved in several areas:

- The use of biodiesel fuel for igniting the boilers at our power plants has the fewest technical challenges, but poses the greatest risk
- Use of biodiesel for mobile equipment (bulldozers, scrapers, etc.) has great technical challenges, but less risk associated with storage or equipment availability

To explore these options, we've scheduled a pilot project to confirm how the use of biodiesel will affect the operation and reliability of our power plants.

Vehicle Idling Restrictions

Sometimes environmental stewardship is as easy as turning a key.

Early in 2007, DTE Energy employees concerned about wasting resources and increasing emissions, suggested placing an idling restriction on company-owned fleet vehicles.

Our employees rightly suggested that emissions from idling vehicles are needless and can be easily prevented.

In March of the same year, the policy went into effect. Idling time for company vehicles is now limited to five minutes, unless work is in progress or employee safety is compromised.

As a result of the new policy, we expect to reduce:

- Nitrogen oxide emissions by 1,538 pounds per year
- Particulate matter emissions by 440 pounds per year
- Carbon monoxide emissions by 10,256 pounds per year
- Hydrocarbon emissions by 2,747 pounds per year



Automotive mechanic Billy Ferguson tops off a bucket truck during morning fueling. This vehicle will be among hundreds slated to use a new biodiesel fuel blend.