



Waste to Energy

City of West Lafayette

Dave Henderson, Utility Director



The U.S. Environmental Protection Agency applauds the City of West Lafayette's Waste Water Treatment Plant for its generation and use of on-site biogas.

GREEN POWER—ENERGIZING COMMUNITIES



West Lafayette Facility

- ✱ 10.5 MGD Activated Sludge Plant with 2 Mesophilic Anaerobic Digesters (approximately 1million gallon volume).
- ✱ Co-generation process online since May 2009.
- ✱ Located near Purdue University.

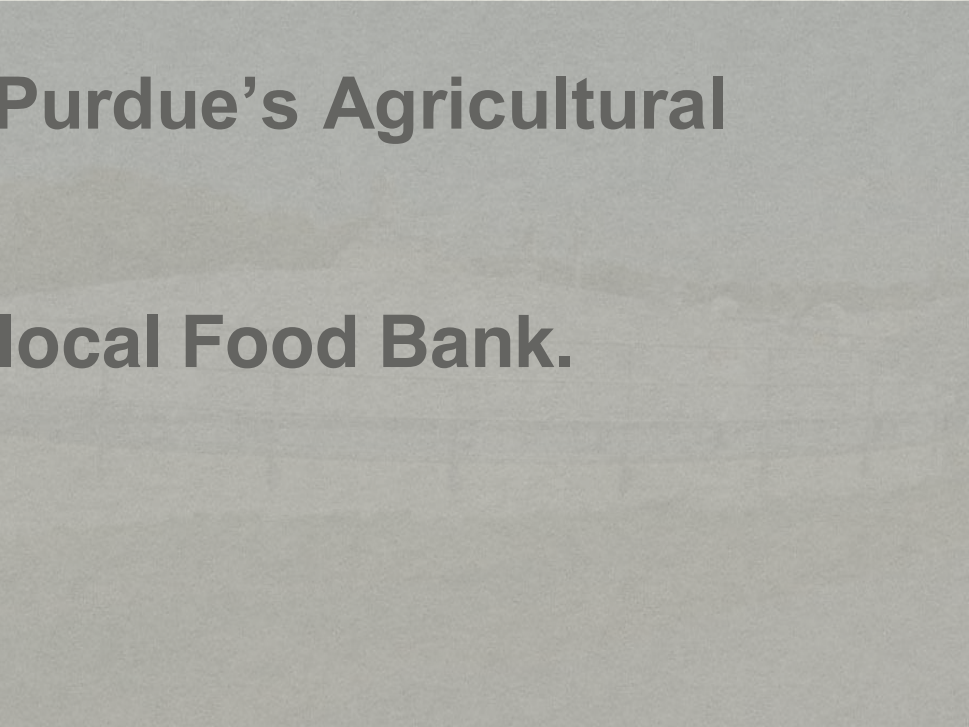


Combined Heat and Power

- ✱ Capstone Microturbines
 - ✱ Two 65 kW units installed.
 - ✱ Space and gas conditioning capacity for a total of 4 microturbines.



Co-Digestion Feedstock

- * **Fats, Oil, and Grease (FOG).**
 - * **Food Waste from Purdue University Dining Courts.**
 - * **Vegetable waste from Purdue's Agricultural Research.**
 - * **Spoiled produce from local Food Bank.**
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Fats, Oil, & Grease (FOG)

Grease sources are plentiful, however . . .

- * PER estimated 3,000 gallons/day available from haulers.
- * Deliveries have decreased.
- * Other outlets and uses providing competition.



FOG Receiving Station



Residential Service

- * Keep cooking oil and grease out of sewers.
- * Keep it out of landfills, too!
- * Free service to residents.

Save your home's pipes, save the earth

Recycle your cooking oil in free containers



It's easy and free to recycle your used cooking oil, fats and grease.

Stop by West Lafayette City Hall, 609 W. Navajo, and pick up a free collection bottle. When it's full, exchange it for an empty bottle at:

**West Lafayette Recycling Center
705 S. River Road, West Lafayette**

The city will feed your used cooking oil and grease to the digesters at the Wastewater Treatment Plant and convert it to electricity.

You'll save your home drains from clogging, reduce landfill waste and help curb city electric costs—all while protecting our environment.



609 W Navajo
West Lafayette, IN 47906
765/775-5100
www.westlafayette.in.gov

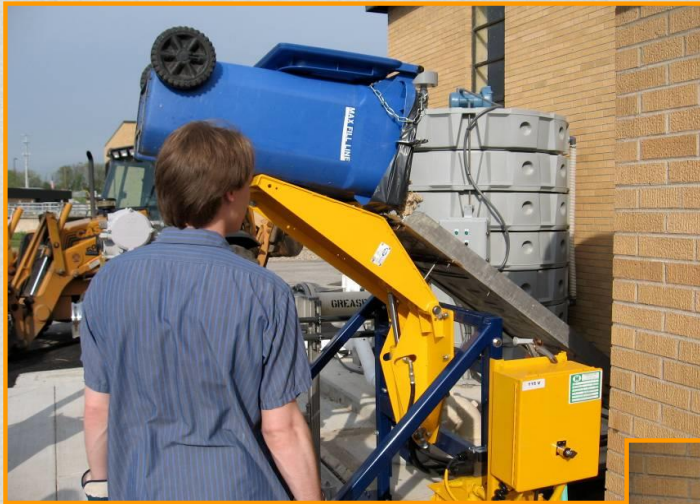


Another Fuel Source: Food Waste

- ✱ Additional digester capacity
- ✱ High quality food waste available from Purdue
- ✱ Food waste separated at dining halls.



Pilot Project with Purdue University



Food Waste Receiving Station



Food Waste Potential

- ✱ West Lafayette Sanitation Department picks up 25-30 tons of Municipal Solid Waste each day.
- ✱ Based on EPA data, 18% of the MSW may be food waste (4.5 - 5.4 tons each day from WL residences).
- ✱ Our digesters currently receive 1-2 tons each day from Purdue University Dining Courts.



Digester Renovation and CHP Project Overview

- \$10.4 million in SRF Loan.
- Provided upgrades to existing digesters, new building to house microturbines, mixing pumps, and control equipment.
- Included FOG receiving station.

COSTS FOR FOOD WASTE STATION

Engineering	\$18,155
Construction	\$17,000
Grinder	\$50,000
Platform and Cart Tipper	\$13,011
Total	\$98,166



Electricity & Natural Gas : Savings

- * Up to 20% of wastewater plant's electricity needs.
- * Generates 679 MWh/year
- * 40 % reduction in natural gas usage. 24,900 therms/year in heat recovered from microturbines.



Food Waste is Everywhere. . .



● Food Waste

● Other MSW

- * Schools
- * Hotels
- * Prisons
- * Stadiums
- * Military Bases
- * Restaurants
- * Stadiums
- * Universities
- * Food Stores

Room for Improvement

- ✱ Better mixing of the receiving tank.
- ✱ Heavy object trap added to FOG inlet. Better screening ahead of pumps.
- ✱ Separate receiving tank for Food Waste in the future.
- ✱ Cleaning the food carts.



What is Next?

- * Electric Vehicles using Green Energy.
- * Excess biogas produced. Need for a 3rd microturbine is being evaluated.
- * Sources of grease, food waste, and other high strength waste are plentiful. May use extra biogas in CNG vehicles.
- * Separate waste receiving stations for liquids and solids.



Contact Information

- Dave Henderson, Utility Director
City of West Lafayette Water Resource
Recovery Facility
- dhenderson@wl.in.gov
- 765-775-5145

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