US EPA ARCHIVE DOCUMENT

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2009-2011 INDIANA ENERGY MANAGEMENT PILOT

Logansport Municipal Utilities Wastewater Treatment Plant

United States Environmental Protection Agency

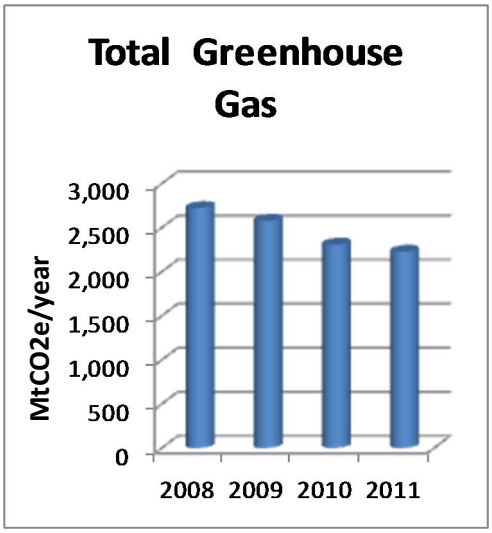
Who we are

Logansport Municipal Utilities (LMU) operates an activated sludge wastewater treatment plant (WWTP) with effluent chlorination/dechlorination. Primary sludge and waste activated sludge are gravity thickened, dewatered via filter press landfilled. The WWTP design average flow is 9.0 million gallon per day (MGD) and has a peak design flow from the combined sewer system of 18 MGD.

Electricity Usage

2008: 3.749 mWh
2009: 5.430 mWh
2010: 4.873 mWh
2011: 4.915 mWh

Greenhouse gas (GHG) avoided: 414 metric tons of carbon dioxide equivalent (2900 compared to 2008 baseline) .*



Project Success Story

LMU completed and funded two major projects during the Pilot: an upgrade to influent (raw sewage) pumps and improvements to the secondary aeration system. An Energy Efficiency Conservation Block Grant (EECBG) from the Indiana Office of Energy Development helped fund these projects.

The influent pump project included an overhaul of the pumps, reconditioning of the electrical motors, and installation of new control systems for the three units. Typically, two units operate at any one time, with the third unit designated as an emergency back-up. Equipment staging is rotated each month. For the project, each pump unit was pulled one at a time. The pump was cleaned, inspected, and verified to be operating at factory specifications. The motor was overhauled and rewound to accept the new energy control system. The motor control center was gutted and new variable frequency drive (VFD) controls were added in place of the existing control mechanism. An automatic controller and monitoring system were installed in the wet-well of the plant headworks, which was connected to pump VFD controllers by way of the existing supervisory control and data acquisition system.

The air blower system was similar in that four air blowers were taken off-line one at a time. Typically, one to two blowers are running at any time, with the remaining two blowers serve as emergency stand-by units. During summer months two air blowers are used while during winter months one blower is usually enough to meet oxygenation needs. Each blower assembly was cleaned, inspected, and verified to be working at factory specifications. The motor was replaced with a high-efficiency unit capable of being controlled by VFD. The motor control panel for each unit was gutted and replaced by VFD control units.

Greenhouse gas emissions avoided are equivalent to

Removing 76 vehicles from the road for a year

Electricity for 48.3 homes for a year

2.1 Railcars of coal

901 Barrels of Oil

*Green House Gas Equivalencies calculated using USEPA calculator (http://www.epa.gov/cleanenergy/energy-resources/calculator.html

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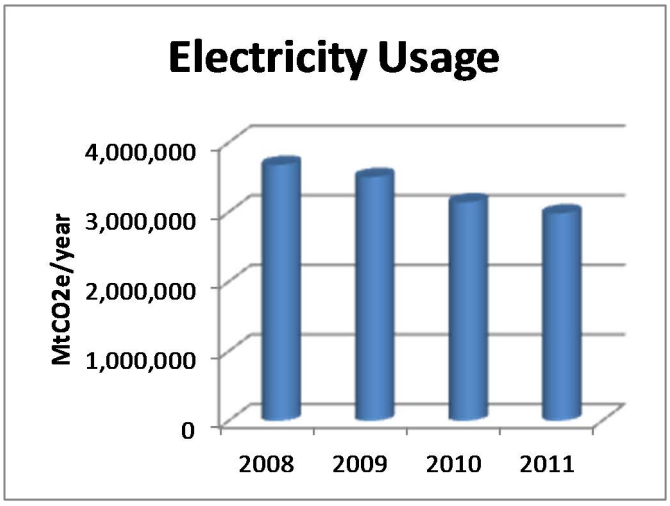
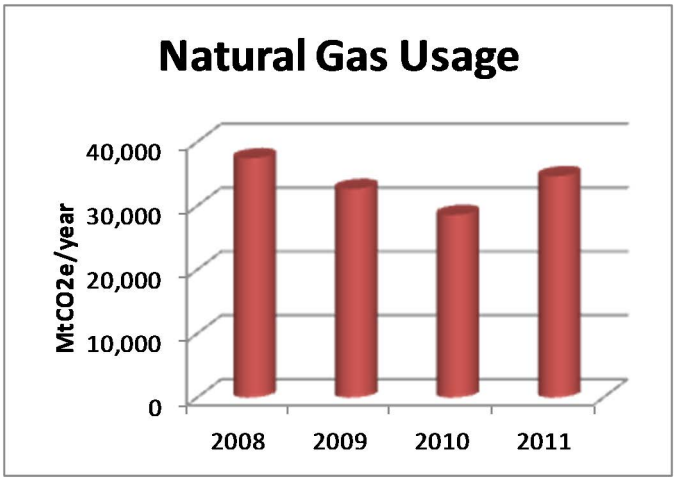
Documented Improvement





Key Improvements

Goal	Improvement Process	Annual energy saving (kWh)	Implementation cost	Annual cost saving	Simple pay-back, years
Install influent pump VFD	Raw influent pumps				
Install aeration blower VFD	Aeration blowers				
	TOTAL PROJECT	~ 500,000	$238,000.	~ $25,000	~ 9.5 yrs.

Project Results

LMU measured energy consumption (both pre- and post-project) to quantify improvements. A notable reduction in energy consumption was realized as a result of these two projects. Greenhouse gas emissions were reduced and the plant's Energy Star™ performance rating improved. A large improvement in power factor (energy demand) was attained with improvements going from the mid-seventies to the mid-nineties percentile in terms of power efficiency. Improvements in treatment efficiencies for both of these stages were equally realized.

Flow through the plant was much more efficiently controlled which allowed for better treatment (instead of large, immediate changes), better use of the plant's design hydraulic capacities, improvements of the hydraulic conditions in the collection system, and much less wear-and-tear on the pumps, motors, and controls from the constant pre-project start-stop cycling. The blower project allowed the WWTP to dial-in *exact* air requirements which allows it to use only one blower at all times of the year, as well as improved treatment efficiencies by no longer over-aerating the wastewater. The treatment efficiencies achieved by these two projects are as desirable as the energy savings recorded thus far.

Overall, the WWTP reports that participating in the Pilot has been a very rewarding experience in terms of knowledge about energy efficiency programs and ideas to further expand on these two energy conservation measures. It brought a together a network of resources and professional contacts which to support continuous improvement. Results achieved in energy efficiency, money savings, and treatment plant improvements exceeded expectations.