



The BioWatz Project Q & A's

What is BioWatz?

BioWatz is a new and innovative way to generate electricity on a small scale. It also reduces our dependence on foreign oil and reduces waste by keeping surplus, expired and used cooking oil out of landfills. BioWatz can generate its own power (off-grid) without using Connecticut Light and Power (CL&P) resources, or can add power to the CL&P grid power (grid-connected). The project provides electrical power using biodiesel in a clean, green, low-impact, and highly efficient method.

What is different about this program?

BioWatz:

- Reduces waste by recycling cooking oil (yellow grease)
- Conserves resources such as oil, gas, and coal
- Provides maximum efficiency test data that will be used for years to come
- Delivers electricity to the local CL&P power grid.
- Can operate without using power from the CL&P grid.
- Does not disturb the surrounding area.
- Re-uses waste products to power a generator.
- Captures and uses waste heat from the generator(s) for other uses in the facility and in the biodiesel manufacturing process.
- Produces clean, enriched, biodegradable diatomaceous earth that is used for fertilizer.
- Captures the waste glycerol (glycerin) for useful applications including running greenhouse space heaters to prolong the Connecticut growing season.
- Studies maximum efficiencies of different feedstocks, percentages of blends, generator load and various environmental pollutants including mono-nitrogen oxides (NO_x, a component of smog), carbon monoxide (CO), and airborne particulates.

What are the plans for BioWatz?

1. Collect accurate, usable data and other relevant findings for the U.S. Department of Energy (USDOE). The findings will ensure optimization models can be built for other, similar projects.
2. Generate power to operate the biodiesel manufacturing plant --a sustainable operation using environmentally friendly fuel for power production.
3. Generate power for the local community through the CL & P grid.
4. Monitor traditional pollutants from pure diesel and biodiesel blends using varying feedstocks, and power demands and ratios of varying feedstocks and diesel fuel.

Highly accurate and calibrated instruments and control systems will monitor and calculate:

- Optimal biodiesel blends and cooking oil derivatives to detect efficiencies under specific generator loading.
- Peak efficiencies to reduce biodiesel combustion emissions.
- Optimum temperatures for biodiesel blending and combustion.
- Feedstock comparisons for optimal energy blends and easiest blending methods.
- Baseline profitability studies comparing varying fuel blends and generator configurations.
- Emission profiles.

How much did it cost to complete this project?

The BioWatz project, a public/private partnership, will spend approximately \$1.5 million dollars, with \$738,000 of that coming from the USDOE. Project funds have been used for:

- Site improvements
- Procuring and installing equipment, including three-phase power at the site
- Testing
- Developing technical operation information
- Feasibility monitoring and detailed technical and economic analysis and modeling
- Developing and delivering educational materials
- Hosting multiple outreach events
- Program management and reporting as required by the USDOE

The BioWatz project is funded in part by a grant from the USDOE and is managed by the Greater New Haven Clean Cities Coalition.

Information gathered and results published through the BioWatz project will provide an implementation roadmap for future power production facilities and implementation. This information will be made available via www.biowatz.com, the project Web site, as it is obtained.

What is the duration of the BioWatz demonstration?

The official “demonstration” phase of the USDOE sponsored project will last for 12 months. BioPur Light & Power, a sister company of BioPur, Inc., plans to continue power production with the original generator and is already planning for additional generating capacity which should be installed about the time the USDOE project concludes.

Is BioWatz profitable?

Yes, or at least it will be in the near future! The system employs a recycling program, using previously used or expired oils that cannot be used commercially. This process of recycling will allow BioPur to provide fuel for power generation to BioPur Light & Power at a rate that should all but ensure profitability for the new company.

Over the next 12 months, the project team will collect and analyze data that will provide key economic information. This data will be published and made available at www.biowatz.com. The BioWatz project is funded in part by a grant from the USDOE and is managed by the Greater New

Haven Clean Cities Coalition. The leading biodiesel producer in Connecticut — BioPur, has an exceptional record of engaging in green or environmentally responsible projects.

What feedstocks are being used?

Currently there are plans to render:

- Tallow
- Vegetable oil
- Olive oil
- Waste fry oil (yellow grease)
- Soy
- Corn
- Canola oil
- Sunflower oil
- Other feedstocks that may become available, including jatropha oil

How is BioWatz different from methanol/ethanol manufacture?

Methanol/ethanol products are a combustible alcohol that can be blended with gasoline.

The BioWatz product is a clean, volatile oil blended with diesel fuel. BioWatz biodiesel is safer, more stable and has many other advantages over an E 85 (ethanol) blend.

BioWatz biodiesel is prepared in a water-free process ensuring low water content: water content is a common problem with E 85 ethanol blends.

What are the generator(s) consumption/output rates?

The generator produces a baseline 225 kW of power at a consumption rate of 18.2 gallons of diesel per kWh. Biodiesel consumption vs. power generated is one of the main variables being explored in the BioWatz project.

Each biodiesel tank holds 330 gallons of fuel (2,409 lbs.). At 100% load fuel consumption rate of 18.2 gallons per hour, the expected time that the genset can run on one tank is 18.1 hours.

For more information on results, check out www.biowatz.com. This site will publish statistics from various blend combinations and loading requirements as they become available.

Are there plans for expansion?

Currently there is one generator operating at the facility. Apart from the DOE phase of this project, BioPur light and power has plans to add three to four more generators.

Who are the vendors associated with this project?

The project is managed by the Greater New Haven Clean Cities Coalition with assistance from Innovation Drive. Technical support providers include Sabre Engineering, master control system; Caterpillar, the generator set manufacturer; Powerhouse Electrical, on-site electrical contractor; Kuegler Associates, site modification and electrical/switching equipment engineering services; ASCO, soft-switch and relays manufacture and, BioPur, Inc.,

How can I get more information?

Go to www.biowatz.com and view our Web site. Points of contact are listed there.