

Fact Sheet

Biosolids Injection Program- Terminal Island Renewable Energy (TIRE) Project

The Terminal Island Renewable Energy project, the nation's first full scale demonstration project, demonstrates an innovative technology to convert biosolids into clean energy by deep well placement and geothermal biodegradation. The project places biosolids into depleted subsurface geological formations where the earth's high temperature would biodegrade the organic compounds to generate methane gas that can ultimately be used to produce an environmentally safe renewable energy.

Process

- Biosolids are placed 5300 ft into permeable sandstone
- High temperature (114° – 159°F) of saline environment in deep geologic formation sterilizes the biosolids and allows them to undergo anaerobic biodegradation
- Biosolids are converted to methane, carbon dioxide, and some residual solids
- Carbon dioxide remains dissolved in the brine solution, while high-purity methane migrates up and becomes trapped in a reservoir
- Ultimately methane gas will be recovered to provide a clean, renewable energy source

Timeline

- November 2006: 5-year U.S. EPA Class V experimental permit issued
- June 2007: Construction began
- July 2007: Two wells completed
- August 2008: First placement of digested organic residuals
- September 2008: First placement of dewatered biosolids (wet cake)
- July 2010: Completed two years of biosolids injection operations of at least 50 tons/day
- July 2008 – Oct. 2010: Placed over 80 million gallons of bio-slurry material
- June 2010: Completed drilling of third well
- October 2010: Analysis of sample to determine methane production

Environmental Benefits (based on 150 wet tons of biosolids)

- Reduction in air emissions due to decrease in number of trucks transporting biosolids
- Reduction of 84 tons of NO_x and 13 tons of carbon monoxide per year from reduced transportation
- 83,000 tons of carbon dioxide sequestered per year
- Ultimately provides a clean, renewable energy source of about 3.5 MW (3000 homes)
- Further protection of groundwater

Other Information

- 2010 Winner of National League of Cities Award for Municipal Excellence
- Capital cost of TIRE project: \$8 million
- Nearest residential area is 1.5 miles away
- Reduces transportation costs of biosolids by \$1.6 million annually
- Reduces beneficial use cost
- State of the art monitoring equipment and data collections monitor pressure, temperature, material amount, and seismicity to ensure protection of the environment and public health