

# Landfill Gas to Energy Facility and Environmental Education Facility

## Renewable, Green Biogas Technology and Education

### Green Energy -----

St. Clair County, at its Smiths Creek Landfill (SCL), collects valuable landfill gas, a type of green energy biogas, via a network of underground pipes from the decomposing waste. This network of pipes includes the innovative septage bioreactor included in the County's Research, Development, and Demonstration Project (RDDP).

SCL's peak gas collection rate, including the septage bioreactor, is approximately 1,300 standard cubic feet per minute (SCFM). About forty percent (40%) of this gas is extracted from the bioreactor cell. In other

words, less than 10% of the total landfill area is producing 40% of the total gas collected. Measured methane concentrations in SCL's collected gas are greater than 50% while the balance gas concentration is below 10%, indicating high-quality landfill gas. The bioreactor gas generation rate is increased 700% over conventional landfill cells according to three-phase gas generation model studies.

Due to the additional landfill gas from the bioreactor cell, SCL's overall gas quantity and quality will be sufficient to support two electric generators generating up to **3.2 megawatts (MW)** of electricity – more than enough energy to power **1900 homes**. By burning this gas for power, St. Clair County is turning methane, a powerful greenhouse gas, into useful power while reducing the community's dependence on outside sources of fuel.

### Environmental Education Facility -----

St. Clair County's landfill gas to energy facility includes an education and training center to fulfill several community environmental education and training objectives. Programs within the education and training center include

- Wildlife habitat at the landfill
- Protection of the environment from water pollution, air pollution, and disease through stewardship of the landfill
- Green energy generation from biomass
- Green energy (direct use) from wind
- Life-cycle and cost of municipal solid waste
- Stormwater management and non-point pollution reduction initiatives
- Recycling initiatives, costs, and energy benefits
- Energy conservation
- Bioreactor technology and development
- Energy technology development in St. Clair County
- Septage receiving facility training and rules for haulers

These programs are a natural extension of St. Clair County's leadership in this innovative, green energy technology. Through its education and training outreach, members of the community will have access to the first-hand knowledge regarding the many ways that the County is using this resource to enhance residents' quality of life, control operating costs, generate useful energy, protect public health, and conserve the natural environment for future generations.



Landfill Gas Generation

