Oneida Seven Generations Corporation Renewable Energy Facility Update

The OSGC renewable energy facility continues to move forward; with work being conducted and gathered to submit to permitting agencies. It is anticipated that within the next month, the Department of Energy will hold a public hearing about the facility and technology.

OSGC has strong support for this facility, however a small but vocal opposition group remains active in its effort to stop the facility from ever being constructed or operated. OSGC strongly believes that most of the concerns are due to misinterpretation of the Pyrolysis/Gasification technology and misunderstanding of the proposed facility's goals and objectives. A few may simply be opposed because it is an Oneida project or they favor other forms of renewable energy.

The biggest misconception is that facility will be an incinerator. Incinerators have been in use as energy generators for decades and have been found harmful to the environment. This is why conversion technologies, such as Pyrolysis/Gasification emerged. Pyrolysis/Gasification is ***an*** alternative to incineration. It is not incineration.

A few definitions may help clarify the confusion:

- **Incineration:** is the burning of fuels in an oxygen-rich environment, where the waste material combusts and produces heat and carbon dioxide, along with a variety of other pollutants.
- **Gasification:** is the conversion of feedstock into their simplest molecules: carbon monoxide, hydrogen and methane forming a syngas, which then can be used for generating electricity or producing valuable products. *Source: http://www.gasification.org/page_1.asp?a=79*
- **Pyrolysis:** is different from incineration. There are a number of noteworthy, differences, including:
  - pyrolysis technology is an endothermic reaction (absorbs heat), while combustion is an exothermic reaction (releases heat).
  - pyrolysis occurs in the presence of no oxygen.
  Source: http://www.yosemite.epa.gov

While incineration could successfully burn off any combustible elements, it must do so at extremely high and costly temperatures. Incineration processes cannot control the release of dioxins, furans, NOx, Sox and other pollutants without considerable expense and difficulty due to inefficient furnace design, inconsistent furnace temperatures and failure to recirculate gases into the burner's high temperature zone.

Gasification, on the other hand is simpler, safer and controllable. The gasification process OSGC will be using (developed by ACTI) should not be confused with incineration or drying.

OSGC realizes the significance of alternative energy solutions and has been evaluating various technologies for the last year and half. Research demonstrates the main differences between incineration and conversion technologies in regards to technology, emissions and overall environmental impact. What many people do not realize about the proposed facility is the fact that it will serve as a recycling center first and then it will generate electricity by gasifying the waste that is not recyclable. Here's how it works:

- First, a ballistic separator will be used to part glass, aluminum, plastics and metals from the waste stream that will be going through the Pyrolysis/Gasification process.
- After the ballistic separator, the Municipal Solid Waste will be sorted manually to ensure all recyclables are properly removed.
- Magnetic valves will be removing all metals throughout the recycling process to ensure maximum achievable recycling rate.
- This facility will increase Brown County's recycling rates and significantly benefit the environment. What kind of benefits are there from recycling? Here are just a few:Aluminum: Recycling aluminum reduces energy use by 90% and air pollution by 95%
- Paper: Recycling 1 ton of paper saves 17-24 trees and 7,000 gallons of water. It reduces air pollution by 74% and water pollution by 35%.
- Glass: Recycling 1 glass bottle saves enough energy to operate a 100 watt bulb for 4 hours and saves 24-30% of the energy required vs. virgin glass.
- Plastic is 8% of our trash by weight but 24% of the volume.

Air Pollution

According to Los Angeles County Department of Public Works, conversion technologies, such as Pyrolysis/Gasification, are capable of fully complying with the most stringent air emissions standards. "Conversion technologies have been shown in actual operation to reduce dioxin and furan emissions in amounts dramatically below the already low EPA limits; conversion technologies actually make our air CLEANER. On a net-basis, conversion technologies can actually help make our air cleaner by offsetting higher emissions from other sources, including greenhouse has (GHG) emissions. Conversion technologies can help us address climate change: They have the potential to reduce GHG emissions each year by millions of tons of CO2 equivalent in California alone" (Los Angeles County Conversion Technology Demonstration Project).

Studied Facilities:

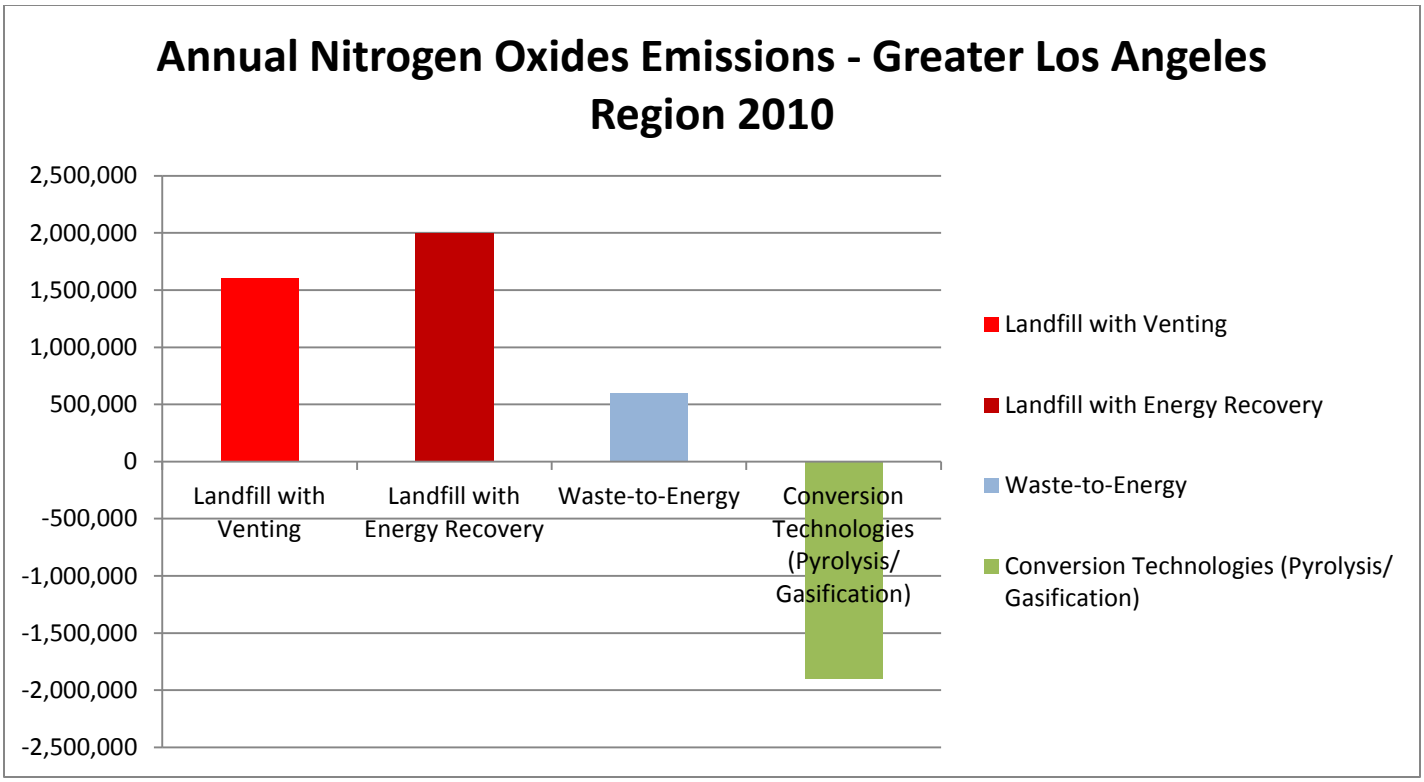
- International Environmental Solutions – Operates a Pyrolysis facility in Romoland, California that utilizes sold waste
- BRI Energy – Operates a gasification facility in Fayetteville, Arkansas that was tested with solid waste from California.
- Integrated Environmental Technologies – Operates a gasification process in Richland, Washington and other parts of the world that utilizes medical waste among other feedstocks.
- Entech – Operates gasification facilities in Poland, England, and Malaysia processing various forms of waste, including solid waste, medical waste, and mixed plastics.

The Pyrolysis facility in Romoland, California, operated by International Environmental Solutions (IES) along with BRI Energy and Integrated Environmental Technologies, shows emissions below US EPA limits:

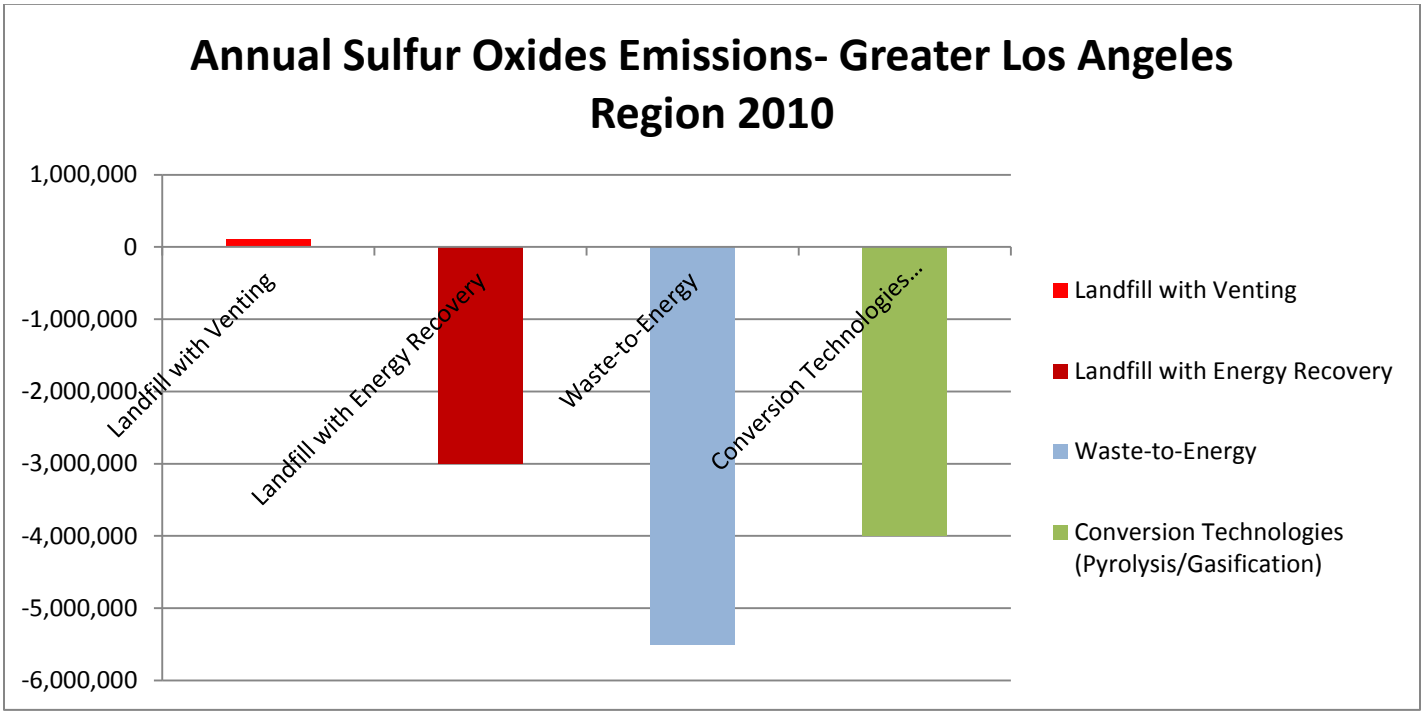
Regulatory Limits	Particulate Matter	Cadmium	Lead	Mercury
US EPA Limits	18.0	0.01500	0.15000	0.01500
German Limits	14.0	0.04200	0.70000	0.04200
Actual Facility Emissions				
International Environmental Solutions	3.9	0.000150	0.00028	0.00056
BRI Energy	2.0	0.005000	0.02000	0.00010
Integrated Environmental Technologies	<3.3	0.000027	0.01100	0.00067

Regulatory Limits	Dioxin/Furan
US EPA Limits (for new sources)	0.000000001617131 (1.62 x 10(-9))
Actual Facility Emissions	
International Environmental Solutions	0.000000000014174 (1.42 x 10(-11))
Entech Environmental	0.000000000087715 (8.77 x 10(-11))
Interstate Waste Technologies	0.000000000000081 (8.10 x 10(-14))

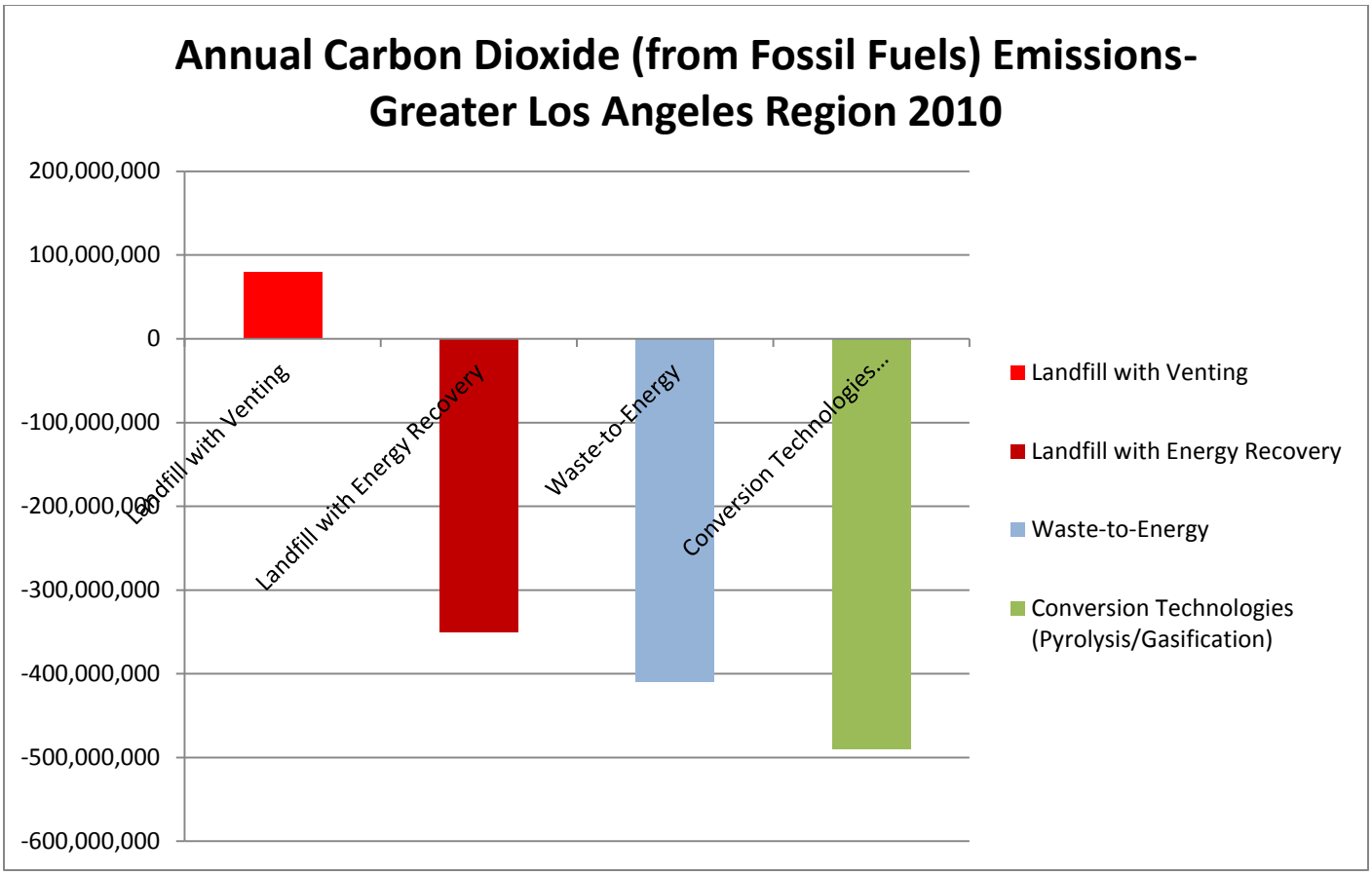
(All limits normalized to lbs dioxins/furans per ton municipal solid waste)



(Emissions – pounds nitrogen oxides)



(Emissions – pounds sulfur oxides)



(Emissions – pounds Carbon Dioxide)

CURRENT ENERGY PRODUCTION PRACTICES vs. CONVERSION TECHNOLOGIES

Air Emissions Comparison of Equivalent-Sized Coal and Conversion Technology Facilities

Pollutant	10 MW Coal Plant	10 MW IES Conversion Technology Facility
Sulfur Dioxide	400,000	230
Nitrogen Oxide	408,000	76,755
Carbon Dioxide	148,000,000	49,033,364
Small Particles	20,000	1,701
Hydrocarbons	8,800	1,555
Carbon Monoxide	28,800	0.00
Arsenic	4.50	0.03
Lead	2.28	0.01
Cadmium	0.08	0.01
Mercury	3.69	0.09

(All pollutants measured in pounds/year)

Detailed information and copies of key reports can be downloaded at: www.SoCalConversion.org
Today, most of the US electricity generation is obtained by operating coal power plants (almost 45%).In 2009 alone, 1,755,904 (thousand megawatt hours) were generated through coal power plants in the United States, releasing 2,269,508 (thousand metric tons) of Carbon Dioxide (CO2). *Source: http://eia.doe.gov/cneaf/electricity/epa/epates.html*
The prior table demonstrates the amount of emissions that could be reduced by substituting coal power plants with Pyrolysis/Gasification waste-to-energy facilities.

Proven Technology
Pyrolysis/Gasification is a proven technology and has been utilized around the world for more than a decade. According to the U.S. Department of Energy (DOE) 2010 Worldwide Gasification Database, there are 144 operating plants with a total of 412 gasifies. 65% of the gasification plants are located in Asia/Australia, 18% are in Europe and 17% in North America. 9 of these facilities generate electricity by Gasifying Biomass/Waste. *Source: http://www.netl.doe.gov/technologies/coalpower/gasification/worlddatabase/index.html*
North America has gained 63% of the total world planned capacity growth and will be leading the Gasification market by 2016. *Source: http://www.netl.doe.gov/technologies/coalpower/gasification/worlddatabase/2010_Worldwide_Gasification_Database.pdf)*

Energy Generation
- The amount of energy produced by the proposed facility will generate 5MW/h since it will be processing 150 tons of Municipal Solid Waste and no other feedstock will be used.
- The reason why there were variances in initial reports is because of the preliminary consideration of processing different feedstocks.

About ACTI
- ACTI's president and CEO, Dr. Abdul Latif Mahjoob is an engineer with over 15 years of experience in waste-to-energy technologies.
- The Gasification System will use ACTI's patented and proven Super-low NOx burner, which achieves the lowest level of NOx **in the world** (5 to 9-PPM) with cleaner emission levels than even the best low-NOx boilers. This burner passed not only the emissions standards of California's South Coast Air Board, but also was used to set up the standards for burner emissions.

Conclusion
OSGC strongly believes in the environmental benefits of the proposed facility and is ready to prove them to the WI Department of Natural Resources, Environmental Protection Agency and the Department of Energy. Officials from OSGC and independent environmental organizations have already seen the unit in operation and are confident in its aptitude and benefits.

Multiple studies and tests have already been conducted on modular systems designed by ACTI in California and will soon be public for review by government agencies and independent environmental organizations.

Once again, the proposed facility will obtain all necessary permits and prove its compliance with all US environmental standards. OSGC will start construction only if and when all necessary permits are in place and operation will only be allowed if OSGC meets all required state and federal standards set by the agencies that are entrusted to protect public health and safety.