

WASTE-TO-ENERGY: Reducing Emissions of Greenhouse Gases with Clean, Reliable, Renewable Power

What is “waste-to-energy”?

Waste-to-energy facilities produce **clean, renewable energy through the combustion of municipal solid waste in specially designed power plants equipped with the most modern pollution control equipment to clean emissions.** Trash volume is reduced by 90% and the remaining residue is regularly tested and consistently meets strict EPA standards allowing reuse or disposal in landfills. There are 89 waste-to-energy plants operating in 27 states managing about 13 percent of America’s trash, or about 95,000 tons each day. Waste-to-energy facilities generate about 2,500 megawatts of electricity to meet the power needs of nearly 2.3 million homes, and the facilities serve the trash disposal needs of more than 36 million people. The \$10 billion waste-to-energy industry employs more than 6,000 American workers with annual wages in excess of \$400 million.

How does waste-to-energy reduce Greenhouse Gases emitted into the atmosphere?

The use of waste-to-energy technology **prevents the release of forty million metric tons of greenhouse gases in the form of carbon dioxide equivalents that otherwise would be released into the atmosphere on an annual basis,** according to an analysis developed by the U.S. Environmental Protection Agency and the Integrated Waste Services Association (IWSA) using EPA’s Decision Support Tool program. Annual reporting by IWSA to the U.S. Department of Energy’s Voluntary Reporting of Greenhouse Gases Program confirms that waste-to-energy also **prevents the release each year of nearly 24,000 tons of nitrogen oxides and 2.6 million tons of volatile organic compounds from entering the atmosphere.**

America’s waste-to-energy facilities dispose of trash, and are an alternative to land disposal that releases methane (a potent greenhouse gas) as trash decomposes. Waste-to-energy also produces electricity, lessening reliance on fossil fuel power plants that release carbon dioxide, another greenhouse gas, into the atmosphere when coal or oil are burned. Operation of waste-to-energy plants **avoid the release of methane that otherwise would be emitted when trash decomposes, and the release of CO₂ that would be emitted from generating electricity from fossil fuels.**

In addition to the analysis using EPA’s Decision Support Tool, and eight years of reporting by the IWSA to the U.S. Department of Energy, **a detailed, project analysis of a facility’s contribution to solving the threat of global warming has been completed** for a 1500-ton-per-day waste-to-energy facility in the northeast. Researchers used information regarding alternative landfill disposal, plant emissions, trash composition and other plant-specific data and analyzed the information using the EPA Decision Support Tool. The study determined that about **270,000 tons of carbon dioxide equivalent emissions are avoided annually because of this one plant’s operations.** Company officials currently are talking to greenhouse gas credit brokers about marketing the reductions to buyers of GHG credits.

How does Greenhouse Gas credit trading work?

The U.S. Senate has not ratified the Kyoto Treaty, a multi-national treaty calling upon signature nations to set in place emissions caps and trading programs that would reduce greenhouse gases emissions. America does not have a formal market in greenhouse gas credits, nor can our country participate in European or other market-trading programs designed to comply with Kyoto. However, **individual organizations and companies, and a few states are conducting some, limited transactions to buy and sell greenhouse gas credits.** Emission credit brokers can assist parties with negotiations and sale or trading of these credits.

There is no single accreditation procedure in the United States to ensure that an analysis used to determine the amount of greenhouse gas credits attributable to a source is appropriate. However, reputable agencies, such as the U.S. EPA or U.S. DOE, and organizations that have developed effective accounting methods have the best chance of validating credits for sale in the marketplace.

Buying and selling of greenhouse gases emissions credits has yet to “take off” in America, but a future marketplace nonetheless is expected to be robust. **Waste-to-energy facilities play an important role, and studies have quantified greenhouse gas avoidance credits attributable to the industry and individual facilities that can be traded in a future marketplace.**

How can I learn more?

IWSA can provide important reports detailing how waste-to-energy avoids the release of greenhouse gases emissions into the atmosphere. **The Impact of Municipal Solid Waste Management on Greenhouse Gas Emissions In the United States**, by K.A. Weitz, *Research Triangle Institute, S.A. Thorneloe, U.S. Environmental Protection Agency, and M. Zannes, IWSA, 2001* discusses the overall contribution, including waste-to-energy’s part, in reduction of greenhouse gas emissions from proper solid waste management practices. IWSA also has reported for eight years to the U.S. Department of Energy. Copies of recent reports may be acquired from IWSA or the **U.S. Department of Energy Information Agency, Voluntary Reporting of Greenhouse Gases Program**. A recent presentation at the 2004 North American Waste-to-Energy Conference (NAWTEC), **Accrediting Greenhouse Gas Credits for Marketing – The Saugus Experience**, explains how the EPA’s Decision Support Tool was used to quantify the amount of greenhouse gas emissions avoided through the operation of the Saugus, Massachusetts waste-to-energy facility. Other studies documenting the significant positive impact waste-to-energy facilities offer towards lowering greenhouse gas emissions include **Municipal Waste-to-Energy Facilities Reduce Greenhouse Gas Emissions**, by Hunter F. Taylor (1990); **Incineration Waste and The Greenhouse Effect**, by K.L.E. Nystrom (1993); **The Waste-to-Energy Sector and the Mitigation of Greenhouse Gas Emissions**, by S. Fotis and D. Sussman (1996); and **Greenhouse Gas Abatement: Assessing WTE and landfill disposal**, by D. Batchelor, D. Eraerts and P. Smits (2002). The **Waste-to-Energy Research & Technology Council (WTERT)** is another excellent source of information regarding greenhouse gases emissions reductions. Visit the WTERT website at <http://www.seas.columbia.edu/earth/wtert/>.