



Issue Brief

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PLASTICS AND ENERGY RECOVERY

Energy recovery is a term that can be used to describe high-tech processes that convert waste into alternative energy (electricity or liquid fuels). In some cases, waste can be used to make chemical feedstocks, or substances that can be used to make other materials. Non-recycled plastics can play an important role in energy recovery systems because of their high energy value. Energy recovery is happening right now, powering homes and businesses here in the United States, helping to reduce the volume of material going to landfills by up to 90 percent and reducing greenhouse gas emissions.¹

Energy recovery is one component of ACC's Plastics Division's overall sustainability plan. ACC members support the EPA's waste management hierarchy that advises Americans to reduce, reuse, recycle and recover in order to send as few resources, including plastics, to landfill as possible. Plastics make up about 12 percent of municipal solid waste and are a valuable resource that should be mechanically recycled wherever possible. Plastics remaining in the waste stream should be recovered for their energy value through one of many energy recovery options.²

Background

Energy recovery is not new. Currently in the United States, there are 86 energy recovery facilities that process about 97,000 tons of materials per day, with the capacity to generate 2,700 MW of electricity (enough to power approximately 2 million homes), saving an equivalent of 30 million barrels of oil per year and preventing the release of 40 million tons of CO₂ equivalents annually.³ A recent national survey found that 97 percent of opinion leaders support expansion of energy recovery in the United States and 89 percent would prefer remaining plastics to go to energy recovery facilities instead of landfills.⁴

Energy recovery technologies are known by a number of names. **Waste to Energy (WTE)** or **Energy from Waste (EFW)** typically describe controlled combustion of municipal solid waste (MSW) to produce electricity and recycle metals. **Waste to Fuels** or **Feedstock Recycling** uses thermal treatment processes, such as pyrolysis or gasification, to convert industrial scrap or post-consumer waste plastics into liquid fuels, syngas, or chemical feedstocks. **Solid Recovered Fuel (SRF)** or **Refuse Derived Fuel (RDF)** is obtained through a mechanical process that separates high energy components of waste streams such as plastics for use as a fuel source in cement kilns and coal utility plants.

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Energy Recovery and Recycling

Recycling and energy recovery are complementary end-of-life resource management options. U.S. communities with waste-to-energy facilities typically have an average recycling rate of 33 percent, compared to the national average of 28 percent.⁵ More than 770,000 tons of ferrous metals are recovered each year from combustion ash residue.⁶

Energy Recovery

In the United States, modern energy recovery facilities meet some of the most stringent environmental standards and employ some of the most advanced emissions control equipment available. Facilities report their emissions, and the American Council on Renewable Energy reports that emissions are well within government standards.⁷

Energy recovery creates well-paying jobs. Each energy recovery facility operating in the United States has the equivalent of 50-60 full time employees and spends an average of \$4.3million on local goods and services each year.⁸

ACC Plastics Division's Perspective:

- **Effective waste management strategies should include efforts to optimize mechanical recycling.** Where feasible and cost-effective, materials like plastics, glass, paper and metals should go on to live second and third lives as useful products. However, the reality is that there are economic and technical limitations to recycling of certain products or materials. In those situations, life cycle studies indicate that energy recovery, if feasible, is clearly a better option than landfilling.
- **Energy recovery and recycling are complementary.** Communities with waste-to-energy facilities typically extract recyclable materials like plastics, paper and glass before sending nonrecycled wastes to waste-to-energy (or energy recovery) facilities. In fact, studies in the United States, Canada, and Europe show that communities with energy recovery facilities often have both a higher total level of diversion from landfill and higher mechanical recycling rates. Single stream recycling – whereby plastics and other post-use materials are commingled then collected and sorted by a materials recovery facility (MRF) – allows communities to collect more materials for both recycling and energy recovery diversion options and make choices based on local needs.
- **As the United States seeks to increase its energy security and protect the environment through domestic, renewable alternative sources of energy, energy recovery should be part of the mix.** Definitions of “renewable energy” should be based on available supply, not narrow definitions of biomass sourcing. Many governmental bodies, laws and regulations already recognize energy recovery as a source of renewable energy, including



the U.S. Environmental Protection Agency, the Energy Policy Act of 2005, and twenty-four states and the District of Columbia.

About the Plastics Division

The American Chemistry Council's Plastics Department represents leading companies dedicated to providing innovative solutions to the challenges of today and tomorrow through plastics. Ongoing innovations in plastics have led to medical advances and safety equipment that make our lives better, healthier and safer every day. ACC members are finding innovative ways for plastics to help save energy, reduce greenhouse gas emissions and decrease waste. Since plastics are a valuable resource, too valuable to waste, the Plastics Department is at the forefront of efforts to reduce litter through increased access to recycling, advancements in recycling technology, and public education. www.americanchemistry.com/plastics

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The American Chemistry Council (ACC) represents the leading companies engaged in the business of chemistry. ACC members apply the science of chemistry to make innovative products and services that make people's lives better, healthier and safer. ACC is committed to improved environmental, health and safety performance through Responsible Care®, common sense advocacy designed to address major public policy issues, and health and environmental research and product testing. The business of chemistry is a \$674 billion enterprise and a key element of the nation's economy. It is one of the nation's largest exporters, accounting for ten cents out of every dollar in U.S. exports. Chemistry companies are among the largest investors in research and development. Safety and security have always been primary concerns of ACC members, and they have intensified their efforts, working closely with government agencies to improve security and to defend against any threat to the nation's critical infrastructure.

¹ American Society of Mechanical Engineers, Municipal Waste Management Association, Solid Waste Association of North America, Integrated Waste Services Association. *America's Own Energy Source*, p. 3. Downloaded September 2009. See: http://www.swana.org/pdf/swana_pdf_635.pdf

² U.S. Environmental Protection Agency, *Municipal Solid Waste Generation, Recycling and Disposal in the United States: Facts and Figures for 2008*

³ Energy Recovery Council, *The 2010 ERC Directory of Waste to Energy Plants*, American Society of Mechanical Engineers, Municipal Waste Management Association, Solid Waste Association of North America, Integrated Waste Services Association; *America's own Energy Source*

⁴ APCO Insight, *ACC Waste to Energy Survey*, July 2010

⁵ E. Berenyi, Governmental Advisory Services. *Recycling and Waste to Energy – Are They Compatible*, 2009 Update

⁶ American Society of Mechanical Engineers, *Waste-to-Energy: A Renewable Energy Source from Municipal Solid Waste*, page 4

⁷ American Council On Renewable Energy, *Waste to Energy*, Downloaded December 2010 See: http://www.acore.org/what_is_renewable_energy/waste_to_energy

⁸ Study by Veris Consulting on behalf of the American Chemistry Council.

