

Waste-to-Energy Facilities Provide Significant Economic Benefits

White Paper

The Solid Waste Association of North America (SWANA)

Background

Waste-to-energy is a reliable and renewable form of energy that has become the basis for many of the most successful solid waste management systems in the country. More than 80 plants throughout the United States have allowed municipalities to reduce their greenhouse gas emissions and the amount of waste sent to landfills, while also benefitting the communities financially. These facilities require a significant capital investment and are typically financed through the sale of municipal revenue bonds. Waste-to-energy facilities then generate revenues through tipping fees and the sale of recovered metals and renewable energy and these revenues are then used to repay the principal and interest on the bonds.

Despite their history of being environmentally and economically sound technologies, recent news stories about the waste-to-energy facility in Harrisburg, Pennsylvania, have raised questions about the financial performance of these operations. As this paper will demonstrate, the Harrisburg situation is an anomaly and there are many examples of financially sound and successful waste-to-energy facilities across North America. This paper will summarize some of those successful operations.

Lancaster County, Pennsylvania

The Lancaster Solid Waste Management Authority's (LCSWMA) waste-to-energy facility performs a critical role in Lancaster County, Pennsylvania's integrated system. With the primary goal of minimizing landfill consumption, the waste-to-energy facility boasts a functional value of protecting one of the area's most valuable resources---farmland. Additionally, the facility reduces the volume of waste processed by 90 percent. This has extended the life of Lancaster County's landfill by more than 20 years.

The waste-to-energy facility provides a revenue stream from the sale of electricity and powers over 30,000 area homes. On average, 500 tons of ferrous metal and 16 tons of non-ferrous metal are removed from the processed waste and recycled each month, offering an additional revenue source. Because of long term operating contracts and a fixed debt payment structure, the waste-to-energy facility offers stable tipping fees for municipal waste. Lancaster County's tipping fee is \$62 per ton, \$7 per ton less today than it was when the waste-to-energy facility first opened in 1991.

The following is a list of achievements over the past 20 years:

- Processed over 7.5 million tons of waste which, if landfilled, would have occupied 190 acres of farmland, 100 feet deep
- Recovered and recycled over 128,000 tons of ferrous metal and 800 tons of non-ferrous metal
- Generated 4.4 billion kilowatt-hours of electricity, enough to power all Lancaster County homes for three years
- Produced over \$256 million in electric revenue

The original cost of the facility was \$135 million and the final payment will take place in 2015. The facility's bonds are currently rated A3 from Moody's.

York County, Pennsylvania

The York County Solid Waste and Refuse Authority owns the York County Resource Recovery Center, which has processed the county's combustible municipal waste since late 1989. The facility, currently operated by Covanta York Renewable Energy, LLC, processes approximately 430,000 tons of waste per year; approximately 75 percent of which is generated in York County. Waste processing capacity in excess of county needs is filled through a combination of long and short term contracts with other

municipal entities and private waste haulers. The facility typically sells approximately 30 megawatts of electricity to Metropolitan Edison.

In 2010, Standard and Poor's raised its issuer credit rating on the Authority to AA from A+, and Moody's affirmed its A2 rating on the Authority's outstanding bonds. Those agencies cited the Authority's strong liquidity position, key contracts for waste supply, facility operations and electric sales, the Authority's history of strong debt service coverage, and competitive tipping fees as the basis for those ratings. Due to successful facility operations and favorable contracts, the Authority is well positioned to reinvest in the facility in order to provide long term waste processing capacity for York County.

Palm Beach County, Florida

The Solid Waste Authority of Palm Beach in West Palm Beach, Florida, is currently building a second waste-to-energy facility that will increase its capacity by an additional 3,000 tons per day and generate an estimated 97 megawatts of electricity. The success of the authority's original waste-to-energy facility allowed for the current expansion, which is scheduled to be finalized in 2015. The new waste-to-energy facility is being financed through a series of bond sales, Authority operating funds, and a capacity payment from the power purchaser, Florida Power & Light Company.

Repayment of the bonds will be from revenues of the Authority, which include revenues from the sale of electricity, recovered materials, commercial tipping fees and non-ad valorem assessments. The current annual non-ad valorem assessment for a single family homeowner is \$166. This assessment is estimated to increase to only between \$180 and \$185 per year in 2015 with the development of the new waste-to-energy facility.

In October, Standard & Poor's upgraded the authority's bonds to AA+ after a thorough evaluation of the authority's operations and financial history.

Pinellas County, Florida

Pinellas County Solid Waste is an enterprise fund with four primary funding sources: tipping fee revenue, electrical sales revenue, capacity payments from the energy company, and revenue from recycling. The tipping fee has been \$37.50 per ton since 1986, a significantly lower rate than any of the surrounding facilities and competitive with area landfills. Revenues are used to pay for salaries and operating costs, to build reserves and fund capital projects for both the plant and landfill, and to pay off debt. The County owns, but contracts out operation of, the waste-to-energy plant. And the per ton cost for processing waste at the waste-to-energy plant is approximately \$28.00 per ton, which includes contractor payments, utilities, chemicals, insurance, etc.

Electricity sales and other revenues bring total revenues up to about \$80 million against a total operating budget, including allocations, of about \$58 million, showing a significant revenue stream each year. The solid waste system in Pinellas is so successful that the county board authorized up to \$80 million to be borrowed from the solid waste reserve fund to help fund the county capital improvement projects.

Marion County, Oregon

Marion County has utilized a waste-to-energy facility to process the solid waste generated within the county since 1986. The Marion County facility generates approximately 11 megawatts of renewable electricity---enough to power about 7,000 homes, reducing the volume of material to be ultimately disposed of by 90 percent. Additionally, waste-to-energy has helped to reduce the amount of greenhouse gases produced locally from solid waste sources.

The revenues generated from the sale of renewable energy to Portland General Electric help to fund the County's integrated solid waste management program. This program includes extensive waste reduction, reuse, recycling, and composting programs, which have enabled Marion County to regularly have the highest recovery rate in the state, currently at 58.2 percent.

Spokane, Washington

The Spokane Regional Solid Waste System has just completed its first 20 years of operation, and became "debt free" with the last bond payment on December 1, 2011. During those 20 years, Spokane increased its recycling rate from 28 percent to approximately 50 percent. Of the waste remaining after waste reduction and recycling efforts, Spokane has combusted about 80 percent and composted 10 percent, leaving only 10 percent to be landfilled. Their waste to energy facility has recovered over 200,000 tons of ferrous metal and over 2.8 billion kilowatt hours of electricity.

As other communities in the state and region have relied increasingly on long haul transportation to distant regional landfills, most of Spokane's disposal needs are handled locally, retaining the wages and economic benefits within the community. Currently, private industry is developing a regional materials recovery facility adjacent to the waste-to-energy facility, which will contribute an additional \$10 million per year to the local economy.

Portland, Maine

Portland, Maine's solid waste is handled by *ecomaine*, a non-profit waste management company owned and operated by 21 municipalities in Southern Maine. With an additional 23 contracted communities, *ecomaine* provides services to a combined population of 335,000. The company owns and operates three facilities---a waste-to-energy plant, a single-stream recycling facility, and a landfill/ashfill operation---that are all ISO 14001 certified for excellence in environmental management.

The waste-to-energy plant was built in 1988 and processes 175,000 tons per year. Its two mass burn water wall boilers produce over 100,000 megawatts-hours of electricity annually, enough to serve all the homes in South Portland and Gorham. The plant, which averaged 94% availability last year, employs the use of CEMS, SDA, SNCR, carbon injection, and electrostatic precipitator technology for emissions control and monitoring. The company's investment in waste-to-energy has reduced the volume of waste by 90 percent, leaving only ash to be buried at the landfill. The facility, which cost \$93 million to build, will be paid off in 2015.

Lee County, Florida

The Lee County waste-to-energy plant is the focal point of its integrated solid waste management system. The facility recently underwent a major expansion and in 2010 became the first waste-to-energy facility in the United States to generate carbon credits based on its emissions reductions. The facility, located in Fort Myers, processes 1,800 tons per day, generating 59 megawatts of electricity. The strength of the system is exemplified in the upgrade of over \$85 million in bonds from A- to A in 2011. Fitch Ratings decided to upgrade the rating based on the County's solid waste system's strong and overall consistent financial position, deleveraging of the system resulting in improved debt service coverage, and a strong cash position.

Hillsborough County, Florida

The waste-to-energy facility in Hillsborough County underwent a 50 percent expansion in 2009, increasing its capacity to 1,800 tons per day, while generating nearly 47 megawatts of renewable energy. Fitch Ratings has upgraded nearly \$150 million worth of Hillsborough solid waste bonds from A-to A+, citing the system's strong financial operations, ample surplus revenues to service debt, above-average reserve levels, and the County's covenant to raise rates at minimum levels as per the series 2006 bond ordinance.

SWANA's Applied Research Foundation Report Conclusions

SWANA's Applied Research Foundation has released a report, titled "The Economic Development Benefits of Waste-to-Energy Facilities". The report concludes that

- Over the lifespan of a waste-to-energy facility, communities can expect to pay less for MSW disposal than at a regional landfill.
- Monies spent on waste-to-energy facilities remain within the communities, while 90 percent of the monies spent on landfills will be transferred out of the local economy.
- Waste-to-energy facility construction generates high-paying jobs that cannot be outsourced.
- Waste-to-energy facilities generate significant amounts of baseload renewable energy which can be sold to the local power grid.

Conclusion

Waste-to-energy facilities are economically sound investments that provide multiple financial and environmental benefits to the communities that utilize them. Today, the majority of the nation's waste-to-energy facilities are owned by local governments that have invested in this critical municipal infrastructure to achieve long-term solid waste management solutions. These facilities produce clean, renewable energy while reducing waste volume by 90 percent, making them a great option for communities seeking the most advanced technology to manage their waste.

As shown in this paper, when properly managed, waste-to-energy facilities offer a multitude of benefits to the communities that utilize them. They generate revenue through the sale of electricity, tipping fees, and profits from the sale of recovered metals, which allows for the repayment of their municipal bonds, as well as financing of other important aspects of MSW management, such as extensive recycling programs. The economic success of waste-to-energy for several decades throughout the country should provide confidence to other communities considering this economically and environmentally sound technology.

Sources:

This white paper was authored by Shannon Crawford, Manager of Government Affairs for the Solid Waste Association of North America, to illustrate the financial successes of waste-to-energy facilities in the United States. Ms. Crawford would like to thank the following people for their input and assistance:

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SWANA's Applied Research Foundation