

EXECUTIVE SUMMARY

MARION COUNTY, OREGON WASTE-TO-ENERGY FACILITY

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ENERGY RECOVERY CASE STUDY: MARION COUNTY, OREGON

The Marion County waste to energy facility (WTEF) is the only such plant in Oregon. Owned and operated by Covanta Energy Corporation, it has been operating successfully without disruption for 24 years. The WTEF services Marion County with a population of 318,000 persons and also processes some waste from Portland Metro as well as neighboring Linn and Polk Counties. The County itself generates about 487,000 tons of refuse, of which about 50% is recycled 13% is landfilled and 36% or about 171,000 tons is treated through the energy recovery facility. An additional 12,000 tons per is processed at the WTEF from generators outside the county. The County has also routinely been in the top two counties in the state with respect to recycling and is continuously working to reduce its waste generation and increase its recycling.

Economic Impacts

- **Energy Efficiencies:** The 183,000 tons of waste processed at the WTEF produces about 86,154 Mwh (megawatt-hours) of electricity sold to the grid enough to service about 7800 homes and displace about 51,000 barrels of crude oil annually. About one-quarter of the energy recovered is from residual or non-recycled plastics.
- **Employment:** The plant offers employment to 38 permanent skilled workers. These workers contribute about \$2,000,000 to the local economy annually. In addition, the facility contributes an additional \$1,250,000 to the region annually through purchases of goods and services.
- **Impact on the Public Budget:** The County receives about \$6,000,000 in electricity and materials sales revenues from the plant. This covers about two-thirds the cost of the operations and maintenance of the facility. In conjunction with flow control, the tip fees the county collects at the WTEF and its other solid waste facilities allows it to finance a wide array of recycling, composting and educational programs.
- **Real Estate Footprint:** The WTEF is centrally located in the county, nine miles from the state capital of Salem. It occupies 16 acres to treat 183,000 tons of waste per year. A

landfill capable of taking this amount of waste would occupy at least 10 times this amount of space.

Environmental Impacts

- **Recycling Levels:** Marion County ranks first or second in recycling rates across all counties in Oregon, depending on whether one includes the additional credit given by the state for converting non recyclables wastes into energy. Since the plant has been in operation, the county has vastly expanded its recycling programs. Urbanized areas of the county have automated or semi automated curbside collection of yard waste, commingled recyclables, as well as usable latex paints, cooking oil and dry cell batteries. The County is currently piloting a commercial/institutional food composting program with the plan to expand a food waste collection program to all households. Since 1992, the county's recycling rate has nearly doubled from about 26% to 48%.
- **Metal Recovery:** The facility recovers about 4200 tons per year of ferrous metals at a value of approximately \$850,000. The facility operator is examining an improvement in this recovery system and is also evaluating adding a non-ferrous metal recovery system.
- **Landfill Diversion:** Over the plant's life, about 4.3 million tons have been kept out of landfill. The county reduced its need for landfill space by about 90%. In addition, by keeping wastes out of a landfill, it diminishes the production of leachate as well as the emission of hazardous gases at the landfill. Because of the waste to energy plant, the county avoids a 30 to 60 mile round trip to out-of-county landfills, contributing to a reduction of truck traffic and harmful automotive emissions and saving on the consumption of gasoline. fossil fuels
- **Reduction of Reliance on Fossil Fuels:** The plant combusts the non-recyclable portion of the waste stream and generates energy. This energy is sold onto the grid and is enough to service about 7800 households as well as meet the in house energy needs of the plant. In addition, if the county had to truck its waste to out of county landfills, it would be consuming an additional about 83,300 gallons of gasoline per year.
- **Greenhouse Gas Reductions:** The processing of 183,000 tons of waste at the WTEF contributes to the net reduction of Greenhouse Gas (GHG), if one assumes that without the WTEF, this waste would be landfilled. Using the US EPA's WARM model, one can calculate that the WTEF is contributing to a net reduction of 28,240 MTCEs (Metric Tons Carbon Equivalents), which is comparable to taking about 18,965 cars off the road.
- **Air Emissions:** The WTEF operates under strict federal and state air emissions and operating standards. Air emissions as well as plant operating procedures are monitored and tested on a regular basis. The WTEF was the first in the United States to be regulated for dioxin levels under state law and the first to install a scrubber/baghouse combination for dioxin/furan and particulate matter control. Dioxin/furan emissions at the plant are only a quarter of the new state standard, which is more stringent than the federal standard. Particulate, lead, cadmium and mercury emissions as well as heavy metal emissions are hundreds or thousands of times below the standards. A recent study of the impact of the WTEF on particulate matter concentrations in the Salem area found that the plant contributed 1/40,000 of the total particulate emissions or a nearly negligible percentage.

Political/Institutional Impacts:

- **Community Support:** The plant has operated without significant opposition over the last 24 years. In fact, Randy Franke, a county commissioner and the person who was most instrumental in persuading the county to construct a waste to energy facility, went on to become a national expert on solid waste issues. He was elected president of the National Association of Counties in 1995 and National County Leader of the Year in 1997. He considers the plant his pride and joy and one of his major accomplishments.
- Jeff Bickford, Environmental Services Division Manager has indicated that not only has the plant allowed the county to manage the majority of its waste within its boundaries, but it has permitted the Division to focus on its priorities of reducing and recycling waste.
- **Industry Recognition:** Covanta has been recognized by the State of Oregon for its outstanding record on worker safety at the WTEF. In addition the Marion County plant was granted membership in US EPAs Performance Track Program, which recognizes ongoing environmental programs and a high level of environmental performance.