

Closure of the City of Key West, Southernmost Waste to Energy Facility

Dan Shabat, P.E.

Dvirka and Bartilucci Consulting Engineers

3000 Hadley Road

South Plainfield, NJ 07080

Telephone: (908) 668-4747

Fax: (908) 668-4658

E-mail: danshabat@att.net

ABSTRACT

The Southernmost Waste-to-Energy Facility, is a 150 ton per day, stoker fired, mass burn facility located on Stock Island in the City of Key West, Florida. The facility is owned and operated by the City of Key West and is categorized as a Small MWC, Class II facility under the Emission Guidelines for Existing Small Municipal Waste Combustors, 40 CFR 60 subpart BBBB. In order to reliably comply with the requirements of the small MWC regulations, the facility air pollution control trains were required to be retrofitted to include acid gas control and improved particulate control through the installation of scrubbers and baghouses. Additional controls for metals including mercury may have been added in order to assure compliance with these regulations. Other facility upgrades including combustion enhancements may have been required to assure compliance with allowable carbon monoxide limitations of the Small MWC regulations.

The need for the air pollution control retrofit project represented a major expenditure for the City of Key West. Faced with a decision regarding its long term future waste handling and disposal methods, the City examined various options for future solid waste handling and disposal including the option to proceed with retrofitting the waste-to-energy facility and relying on waste-to-energy as a long-term major component of Key West's solid waste handling and disposal plans. Alternatively, the City explored the option of building a transfer station, either privately or publicly operated, and contracting the hauling and disposal of the City's waste to a private firm. The transfer station option would require a conversion of the waste-to-energy facility to a transfer station through a major demolition and reconstruction project.

The City also considered available alternative technologies such as gasification for example.

In order to help the City sort through the many issues associated with the solid waste handling and disposal options, a Technical Advisory Committee was formed consisting of engineering and legal consultants, City commission members, and other City representatives. Dvirka and Bartilucci Consulting Engineers, as a member of the Technical Advisory Committee, was responsible for estimating the costs associated with the design, construction and operation of a waste-to-energy facility air pollution control retrofit project.

This paper describes the facility and discusses the decision making process of the technical advisory committee and the ultimate decision of the City Commission to close the Southernmost Waste to Energy Facility. The paper includes the requirements for closure of the facility and discusses how the City arrived at its final decision.

Facility Description

The Southernmost Waste to Energy Facility, which began operations in 1986, is located on a site contiguous with an inactive 20 acre landfill. The facility has two identical boiler trains of mass burn design. The rating of each of the two combustion units is 75 tons per day. The boilers were each designed to generate approximately 21,000 pounds per hour of steam at 675 psig and 500 degrees F but have since been modified to generate superheated steam at 675 psig and 580 degrees F. The steam is utilized to generate approximately 3,500 kilowatts at 4,160 volts using a multistage condensing turbine and an 1,800 rpm generator. An air-cooled condenser is utilized for condensing turbine exhaust and is