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## Modernizing the Milwaukee Metropolitan Sewerage District Cogeneration Plant



The Milwaukee Metropolitan Sewerage District (MMSD) is moving forward with the modernization of the cogeneration plant located at the Jones Island waste water treatment plant in Milwaukee. For many years this plant has been processing the biosolids generated from the treatment of industrial and municipal waste to create an all-purpose fertilizer called Milorganite®.

Part of the process to make Milorganite® requires drying waste water sludge. To dry the sludge, exhaust gas from two General Electric Frame 5 natural gas-fired turbines, each generating approximately 20 MW of electrical power, was ducted to the sludge dryers.

The new project will ultimately retire the Frame 5's, now over 40 years old, and replace them with new landfill gas-fired turbines. The new turbines will be powered by landfill gas (LFG) piped in from a landfill approximately 19 miles away from the Jones Island facilities. The new gas turbines will be the Mercury 50 model manufactured by Solar Turbines in San Diego, CA. These gas turbines include state of the art technology for efficiency and emissions.

Initially, the plant will install 3 Mercury 50's, each with a rating of approximately 4.7 MW. The plant will be constructed to accommodate up to 5 units as the availability of landfill gas grows. Construction of the pipeline is scheduled to begin in May of this year. Construction of the gas turbine facility will begin early in the 4th quarter of this year. The current schedule calls for the plant to begin commissioning operating on landfill gas in June of 2012. By January of 2013 the MMSD hopes to be in full operation with the new plant.

Through these improvements, the District estimates net savings to taxpayers and system users will be approximately \$58 million over the 20 year life of the landfill gas purchase contract. The actual net savings will be dependent upon the final project costs, the actual amount of landfill gas produced and used, and the price of natural gas. *(Existing GE gas turbines are shown in photos.)*

