Siemens helps Three Rivers Solid Waste Authority generate new revenue stream and use for wasted methane gas

Client background
In Aiken, South Carolina, the Three Rivers Solid Waste Authority (TRSWA) is a regional solid waste management agency that provides solid waste services and promotes environmentally responsible waste handling and disposal for nine counties. The agency measures its success by the savings it delivers to taxpayers and customers, while striving to be environmentally friendly. TRSWA manages a large Municipal Solid Waste landfill in Aiken County.

As solid waste decays in the landfill, bacteria breaks down the waste and produces landfill gas. This gas is approximately 50 percent methane. Prior to Siemens' involvement, the landfill flared (burned) the landfill gas so the methane would not be released into the environment. In June 2007, TRSWA engaged Siemens Industry, Inc., to identify potential end-users for the gas and to design and install the system that cleans, compresses and delivers the gas to a local end-user, Kimberly-Clark Corporation.

Client objectives
TRSWA established the following objectives for this project:

- Capture and convert landfill gas, a wasted resource, into a sellable commodity
- Identify potential end-users for the methane
- Generate a long-term revenue stream for TRSWA that would provide income greater than the agency's debt service and operating costs
- Design, build, operate, and maintain a pipeline to transport the landfill gas from TRSWA to its end-user and operate at the highest possible availability
- Save the local customer money by reducing its fuel cost
- Produce as much energy as possible from a wasted resource while improving air emissions
- Stay within the project's budget and meet the project's schedule

Siemens solution
According to Colin Covington, General Manager at TRSWA, Siemens was essential in helping overcome the challenge of financing for this project. Siemens helped develop a Gas Purchase Agreement and guaranteed the operational costs for the gas processing and conveyance system with a Total Maintenance Repair and Replacement package, which places the responsibility of running the system on Siemens and guarantees the system is functioning properly at least 83 percent of the time. This guarantee along with Siemens strong reputation as a company helped make the financing package very attractive for the bond underwriters and buyers.

Siemens surveyed and analyzed various industries and customers in the area to determine the best use of, and end-user to receive, the methane energy source. Kimberly-Clark was identified as the local company that would benefit

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the most due to a reduction in its overall fuel cost. The sale of gas to Kimberly-Clark also generates a long-term revenue stream for TRSWA, which was an important factor in financing the transaction. Kimberly-Clark can take all of the gas that TRSWA is currently producing and, as the landfill grows, will continue to take incremental volumes so that TRSWA does not have to flare any gas. According to Bill Cummings, Energy Supply Lead at Kimberly-Clark, having Siemens involved in the design, installation, and ongoing operations significantly contributed to the success of the project. "Siemens was excellent to work with. They understood we had not worked with landfill gas before and they made themselves available to answer questions. We are looking forward to the landfill growing so we can continue to get more gas, and we are actively seeking future projects with Siemens."

Using state of the art compressors and speed dryers, the compression and dehydration station compresses the landfill gas and removes moisture to produce a gas that is suitable for transport and combustion. Siemens was able to overcome several technical challenges, such as designing a compression station that allows TRSWA to increase their product flow to their buyer over time and retrofitting Kimberly-Clark's boiler to burn the landfill gas, which is approximately half the heat value of natural gas.

Siemens designed and built a 15.8 mile pipeline, the second largest ever constructed in the United States, to connect the Authority with Kimberly-Clark at their Beech Island, South Carolina, manufacturing facility. This part of the project took several months and required Siemens to educate property owners and work with outside municipalities to get the pipeline installed. "We were not overly concerned with the technical aspects of the project," explained Covington. "We liked the idea of working with Siemens because they had done this before and had a strong reputation behind the project."

Client results
Siemens was able to meet the unique challenges of the project on-time and on-budget with the following results:

- $10+ million in total savings expected for TRSWA over the life of the project
- $900,000 in first year savings for Kimberly-Clark without any capital investment required
- 97 percent+ pipeline availability since it became fully operational in June 2008

Siemens has a 15-year operations and maintenance contract for the project and will guarantee the availability for the pipeline on an annual basis. The project began construction in October 2007 and was operational in April 2008.

The relationship between Siemens, TRSWA and Kimberly-Clark is on-going. Siemens employs a full-time operator at TRSWA and, as the landfill grows, there may be opportunity to retrofit Kimberly-Clark's second boiler to accept more gas. Covington is pleased with the partnership and said, "Siemens is easy to work with because they are on the same wavelength with our business and environmental goals. They have been responsive, involved, and so far it has been a very good relationship."

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