

## NAWTEC18-35%

### BEHIND THE SCENES: HISTORIC AGREEMENT TO DEVELOP U.S. VIRGIN ISLANDS' FIRST ALTERNATIVE ENERGY FACILITIES

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#### ABSTRACT

In the summer of 2009, Governor John P. DeJongh, Jr. announced that the Virgin Islands Water and Power Authority (WAPA) had just signed two 20-year Power Purchase Agreements, and the Virgin Islands Waste Management Authority (VIWMA) had signed two 20-year Solid Waste Management Services Agreements with affiliates of Denver-based Alpine Energy Group, LLC (AEG) to build, own, and operate two alternative energy facilities that will serve the residents of St. Croix, St. John, and St. Thomas. The alternative energy facilities, to be built on St. Croix and St. Thomas, have a projected cost of \$440 million and will convert an estimated 146,000 tons per year of municipal solid waste into refuse-derived fuel (RDF) using WastAway Services® technology, which will be combined with petroleum coke as fuel in fluidized bed combustion facilities to generate steam and electric power.

These sustainable projects will provide 33 MW of electric power to St. Thomas and St. John and 16 MW of electric power to St. Croix, and will help to provide long-term cost stability for electric power and solid waste management in the Territory. Construction is expected to start in spring 2010 with an anticipated completion date during the fourth quarter of 2012.

This procurement is a significant achievement for the U.S. Virgin Islands. When the projects are fully implemented, they will allow the Territory to reduce its dependence on oil, recover the energy value and certain recyclable materials from its municipal solid waste, and divert this waste from landfill. Since VIWMA has the responsibility to collect and/or dispose of solid waste year-round, having a system incorporating multiple solid waste processing lines and an adequate supply of spare parts on hand at all times is crucial to meeting the daily demands of waste receiving and processing, and RDF production. Also, with the location of the US Virgin Islands in

a hurricane zone, and with only one or two combustion units available in each Project, the ability to both stockpile waste pre-RDF processing and store the produced RDF is very important.

Gershman, Brickner & Bratton, Inc. (GBB)'s work has included a due diligence review of the Projects and providing professional support in VIWMA's negotiations with AEG.

GBB's initial primary assignment centered on reviewing the design and operations of the RDF processing systems that will be built and operated under the respective Service Contracts. VIWMA needed to undertake a detailed technical review of the proposed RDF processing system, since this was the integration point of the waste collection system and waste processing/disposal services. GBB, in association with Maguire, was requested to provide this review and present the findings and opinions to VIWMA.

In the completion of this effort, which included both a technical review and participation in negotiations to advance the Service Contracts for the Projects, GBB made direct contact with the key equipment suppliers for the Projects proposed by AEG. This included Bouldin Corporation, the primary RDF processing system supplier, with its patented WastAway technology, and Energy Products of Idaho, the main thermal processing equipment supplier, with its fluidized bed combustion technology and air pollution control equipment. Additionally, since the combustion systems for both Projects will generate an ash product that will require marketing for use and/or disposal over the term of the Service Contracts, GBB made contact with LA Ash, one of the potential subcontractors identified by AEG for these ash management services.

Due to the nature of the contract guarantees of VIWMA to provide 73,000 tons per year of Acceptable Waste to each Project for processing, VIWMA authorized GBB to perform a

current waste stream characterization study. Part of this effort included waste sorts for one week each in February 2009 on St. Croix and March 2009 on St. Thomas, with the results shared with VIWMA and AEG, as compiled.

The 2009 GBB waste stream characterization study incorporated historical monthly waste weigh data from both the Bovoni and Anguilla Landfills that were received from VIWMA staff. The study has formed a basis for continuing to augment the waste quantity information from the two landfills with the additional current monthly results compiled by VIWMA staff going forward following the waste sorts. The final GBB report was published in December 2009 and includes actual USVI landfill receipt data through August 31, 2009. The information contained in this document provides the underpinnings to allow for better tracking and analysis of daily, weekly and monthly waste quantities received for recycling, processing and disposal, which are important to the overall waste processing system operations, guarantees and cost projections. GBB's annual projections are that the total waste on St. Croix is currently over 104,000 tons per year and over 76,000 tons per year on St. Thomas.

The thermal processing technology selected for both Projects is a fluidized bed process, employing a heated bed of sand material "fluidized" in a column of air to burn the fuel – RDF and/or Pet Coke. As such, the solid waste to be used in these combustion units must be size-reduced from the myriad of sizes of waste set out at the curb or discharged into the large roll-off boxes or bins at the many drop-off sites in the US Virgin Islands. While traditional RDF would typically have several days of storage life, the characteristics of the pelletized RDF should allow several weeks of storage. This will be important to having a sound and realistic operating plan, given the unique circumstances associated with the climate, waste moisture content, island location, lack of back-up disposal options and downtime associated with the Power Generation Facility.

During the negotiations between AEG and VIWMA, in which GBB staff participated, in addition to RDF and pelletized RDF as the waste fuel sources, other potential fuels have been discussed for use in the Projects and are included as "Opportunity Fuels" in the Service Contracts. These Opportunity Fuels include ground woody waste, dried sludges, and shredded tires, for example. Therefore, the flexibility of the EPI fluidized bed combustion boilers to handle multi-fuels is viewed as an asset over the long term, especially for an island location where disposal options are limited and shipping materials onto and off of each island is expensive.

This presentation will provide a unique behind-the-scenes review of the process that led to this historic agreement, from the due diligence of the proposed technologies, to implementation planning, to the negotiations with the contractor. Also discussed will be the waste characterization

and quantity analysis performed in 2009 and the fast-track procurement planning and procurement of construction and operating services for a new transfer station to be sited on St. Croix.