

Testimony on the Alpine Project and Lease

Delivered to the Senate Committee of the Whole

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Senate President Ronald Russell, other Senators present this evening, other testifiers, and to the listening and viewing audience, I wish us all a productive and prosperous New Year. My name is Karl Knight, and this written testimony is submitted in my capacity as Director of the Virgin Islands Energy Office, under the Office of the Governor.

The Virgin Islands Energy Office fully supports the utilization of waste-to-energy technology as a component of the Virgin Islands' energy portfolio. The conversion of municipal solid waste to usable fuel represents a commercially-proven, renewable source of energy and provides a desirable alternative to oil-burning generating units for meeting base load requirements. The Energy Office is presently leading efforts to reduce the Territory's dependence on fossil fuel as a source of energy by 60% from the benchmark established in 2009. In achieving this goal, we anticipate that by 2025, 8% of our energy needs can be met through waste-to-energy conversion of municipal solid waste.

There are currently 87 waste-to-energy facilities in commercial operation throughout the United States. The state of Florida is the leader amongst the other states with 11 of these facilities in current operation. The island state of Hawaii is expanding the capacity of its waste-to-energy facility in Honolulu. There are over 400 facilities operating in Europe where waste-to-energy has emerged as a preferred alternative to landfilling due to tighter emissions standards. In the Caribbean, the island of Bermuda has had an operational waste-to-energy facility since 1994. The Government of Bermuda is now pursuing the expansion of this facility to 20 MW. Several other Caribbean nations are also aggressively pursuing waste-to-energy as critical components of their national energy policies. Curacao, St. Kitts, Jamaica, Barbados, St. Maarten, St. Lucia, and the Bahamas have all recently announced plans for the development of waste-to-energy facilities in their countries. The neighboring island of Puerto Rico is developing a \$500 million, 80 MW waste-to-energy project in Arecibo in conjunction with Energy Answers International and the Energy Investors Fund.

Waste-to-energy has been recognized as renewable source of energy by the federal government under a variety of statutes, regulations, and policies. These include the regulations of the Federal Energy Regulatory Commission, the Internal Revenue Code, the Public Utility

Regulatory Policy Act, the Energy Policy Act of 2005, and most recently by the American Recovery and Reinvestment Act of 2009. Waste-to-energy meets the two basic criteria for establishing what a renewable energy resource is—the fuel source -- trash, is sustainable and indigenous.

Unlike other sources of renewable energy, waste-to-energy has the additional advantage of being dispatchable. Dispatchable energy refers to an energy source that can generate power constantly day and night at a consistent level. The intermittent nature of wind power and solar power causes these sources of energy to be considered non-dispatchable.

In addition to the potential energy production from municipal solid waste, the Energy Office anticipates that another 2% of our energy demands can be met by processing other forms of biomass. In the Virgin Islands, biomass can consist of rum “bottoms” from the local rum distilleries or the production of energy crops. One such energy crop with significant energy content is the *Leucaena leucocephala*, known locally as tan tan. This plant is an invasive species that grows well in tropical climates and also serves as a nitrogen fixer. The Australian pine (*Casuarina equisetifolia*) is another fast-growing invasive species that grows locally and has potential as a biomass energy crop. These plants could be converted to wood pellets or simply shredded and used as fuel in a waste-to-energy plant. This source of energy is complementary and potentially supplemental to waste-to-energy as it can be processed in the very same combustion facilities used to process municipal solid waste.

While it may seem counterintuitive to suggest that clean energy can be derived from burning garbage, real world experience and environmental monitoring demonstrates this to be the case. The waste-to-energy industry in the United States changed dramatically in 1995, following EPA’s development of Maximum Achievable Control Technology (MACT) standards under the Clean Air Act for municipal solid waste combustors. Modern waste-to energy plants, on average produce 95% less pollutants than the pre-1990 facilities. Waste-to-energy facilities also emit significantly less pollutants than fossil fuel power plants burning coal, petroleum coke, or oil. As an example, the proposed Alpine Energy Group facility would immediately produce less harmful air pollutants than any of the Water and Power Authority’s current power generating facilities. Furthermore, waste-to-energy facilities are recognized as cleaner alternatives to even properly designed landfills. Again, while it may seem counterintuitive, the combustion of biodegradable products such as wood, paper and food wastes produces comparatively less greenhouse gas emissions, than if that waste was allowed to decompose. The decomposition of biomass produces methane gas, a potent contributor to global climate change. European Union countries have acknowledged waste-to-energy as the preferred means

of preserving valuable land space and achieving compliance with Kyoto Protocol mandates to reduce greenhouse gas emissions, while producing valuable energy.

Yes, waste-to-energy projects are expensive undertakings. The more stringent environmental requirements implemented in the 1990s also greatly increased the cost of project development. The more sophisticated emissions control systems on modern waste-to-energy plants add significantly to the project costs. Additionally, the Alpine Energy Group proposal includes additional costs that are uniquely designed to address the needs of the Virgin Islands. The proposal calls for construction of two Refuse-Derived Fuel processing facilities instead of one which is not necessary for most waste-to-energy projects, but essential for a project in the Virgin Islands. The proposal includes upgrades to the transmission and distribution system on the island of St. Croix to accommodate the project. This proposal also includes the cost of ash disposal which is typically disposed of at a functioning landfill. The Waste Management Authority has effectively passed this responsibility to the project developer. Finally, most waste-to-energy projects offset their costs through the sale of power. Recognizing the high costs of energy in the Virgin Islands, the energy costs has been negotiated to the lowest rate possible, passing on the benefits of that rate relief to the ratepayers without the offset of the service fee on the solid waste side of the operation.

Waste-to-energy projects often generate criticism from proponents of recycling initiatives. However, strong recycling programs are not incompatible with waste-to-energy technology. Recycling and reducing excessive consumption should be our first priorities, but for as long as we keep producing trash, generating energy should be an important part of any waste management strategy. There are no jurisdictions in the United States that have achieved zero waste production. We can increase recycling and reuse, but at some point, we're going to end up with waste that cannot be recycled economically or residual waste that will need to be landfilled or otherwise disposed of. With energy rates being what they are in the Virgin Islands we cannot afford to bury this commodity when an opportunity exists to convert it to low-cost electricity. Furthermore, while the majority of recyclable materials are currently buried at the landfills, a waste-to-energy facility will capture a considerable amount of those recyclables. The reality is, upon the start of its operations, the Alpine waste-to-energy facility would essentially become the largest recycler in the Territory.

There has been considerable concern expressed about the lack of project experience for the Alpine Energy Group as a corporate entity. It should be noted however, that waste-to-energy utilizing direct combustion as proposed is not an experimental technology. The proposed waste-to-energy project consists of two primary components, the conversion of municipal solid waste to a refuse-derived fuel (RDF) and the combustion of that fuel to make electricity.

There are already 11 waste-to-energy facilities in the United States utilizing refused-derived fuel as a feedstock. The technology is essentially the same at each facility with only slight variations in the developers' claims on the efficiency of the conversion process utilizing their proprietary technology. Furthermore, the exact technology proposed by the Alpine Energy Group is presently in use on the island of Aruba.

The combustion of the refuse-derived fuel is typical of the hundreds of power plants throughout the nation that burn solid fuels such as wood pellets, coal, petroleum coke, and municipal solid waste to produce electricity. The fuel is burned, releasing heat. The heat turns water into steam. The high-pressure steam turns the blades of a turbine generator to produce electricity.

Putting these two components together does not pose any significant technological challenges that have not been fully addressed through numerous commercial deployments of these technologies.

It should be further noted, that 55 of the 87 waste-to-energy facilities currently operating in the United States are operated by one of two companies, Covanta Energy and Wheelabrator. Several of the other facilities were constructed and are operated by a utility company. Unlike Europe, there is not an abundance of experienced waste-to-energy companies seeking to do business in the United States. Most proposed projects are developed by one of these two large players or by small start-ups like the Alpine Energy Group.

The federal Department of Energy's National Renewable Energy Laboratory evaluated the Alpine Energy Group's proposal in August 2011 and published a report which stated the following conclusions:

- The proposed facility has economics similar to WTE facilities in the continental United States in terms of waste disposal fees and overall life-cycle costs to the community (higher costs in the USVI are expected due to lack of economies of scale)
- It offers a lower life-cycle impact on the environment (in terms of energy consumption and net greenhouse gas emissions)
- It has the potential to meet all EPA emissions standards (based on similar WTE plants in the United States).

The Virgin Islands Energy Office has done its due diligence on the potential for waste-to-energy technology here in the Virgin Islands and is convinced that it must be considered as part of our energy future sooner than later. The entire Caribbean region is simultaneously arriving at the

same conclusion. The Alpine Energy Group proposal is in line with what we would expect in the development of a modern waste-to-energy project for the Virgin Islands. I congratulate the Water and Power Authority and the Waste Management Authority on the thoroughness and effectiveness of the contracts they have negotiated with AEG on behalf of the people of the Virgin Islands. I urge your full support of the project and the supporting legislation.

All politics aside, our utilities need help. The opportunity to purchase electricity at 14 cents per kilowatt-hour is too valuable a proposition to reject without sound, rational alternatives. Development of a modern waste-to-energy facility in the Virgin Islands promises to be less polluting than the current 60's vintage generating units at the power plants and to break the stranglehold that our dependence on fuel oil has on the territory's economy. A modern waste-to-energy facility would also definitively answer our concerns about solid waste disposal in the Territory for the first time in over a generation. The options throughout this period of time have remained the same, build more landfills, start shipping our trash off-island, or develop a waste-to-energy project as part of an integrated solid waste solution.

I thank you for the opportunity to offer testimony.