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STATEMENT BEFORE THE COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

HEARING ON

Remote and Isolated Energy Systems, Including Energy and Infrastructure Challenges and Opportunities in Alaska, Hawaii and the U.S Virgin Islands. JULY 13, 2015

Good day Honorable Chairperson Lisa Murkowski, and other honorable members of the Committee on Energy and Natural Resources. My name is Hugo V. Hodge Jr., and I am the Executive Director/Chief Executive Officer of the Virgin Islands Water and Power Authority (VIWAPA). In addition I am the chairperson of the Caribbean Electric Utilities Service Corporation (CARILEC) for the 2015-2016 term, and was recently selected to serve on the Board of Directors of the American Public Power Association (APPA). On behalf of the Governor of the Virgin Islands, the Honorable Kenneth E. Mapp, the Virgin Islands Delegate to Congress, the Honorable Stacey Plaskett, the members of the 31st Legislature of the Virgin Islands, and the Governing Board of the VIWAPA, we thank you for the invitation to provide testimony on the plight of remote and isolated energy systems.

SECTION 1. INTRODUCTION

To say that volatile oil prices have placed an undue burden on the businesses and residents of the US Virgin Islands and the overall economy of the Territory is an understatement. Since approximately 2003 when fuel oil prices began an unprecedented climb, electric customers have struggled to pay for electric services, spending approximately 9% of their income on these services verses the 2% paid by their mainland counterparts. At one point in time, the average price of electricity paid by U.S. Virgin Islands consumers climbed to a high of 50 cents per kilowatt-hour, five times the U.S. average. While the Territory has received some relief in recent months due to the recent decline in oil prices, which has reduced the current electric rate to 32 cent per kilowatt hour for residential customers, and 35 cents per kilowatt hour for commercial customers, analysts are divided on how long this respite from high fuel prices will last. One thing is certain however, prices will elevate again, and so the urgency remains the same.

Like most other Caribbean islands, the USVI has no conventional energy resources to meet its energy needs. While U.S. mainland utilities can connect to grids to purchase power from other utilities in the continental United States, island utilities are small, isolated and are not interconnected to a grid comprised of other utilities. This is primarily due to their separation by water and the depth of the ocean floor, which makes interconnection via underwater electric cables technologically and economically unfeasible. As a result, island utilities have historically purchased small simple-cycle generating units that are oil fueled. From the mid-1980s to approximately September of 2003, the inflation-adjusted price of a barrel of crude oil on the NYMEX was generally under $25/barrel. The attraction of low cost fuel combined with the economies of scale provided the framework for island utilities to purchase these small generation systems. In many islands that are comprised of several small islands separated by water, duplicate generation systems and increased reserves are required to meet the need for electrical services. VIWAPA for example has two separate generation systems. One system to serve the islands of St. Thomas, St. John, Water Island and Hassel Island and another separate system serves the island of St. Croix. The islands of St. Thomas and St. Croix are 36 miles apart and are not interconnected electrically due to the topography of the ocean floor.

During 2003, fuel oil prices globally began a steady rise. In 2003, the price per barrel of oil paid for by the Authority was approximately $22.00. At its highest, the VIWAPA paid $141.00 per barrel. The result of these massive spikes caused operating cash shortfalls, flat to declining electricity sales and larger outstanding receivables, resulting in deferred maintenance on VIWAPA's generating units.

The chart below demonstrates that while the amount of fuel that the Authority used for its operation has remained somewhat consistent over the years and has dropped in recent years, the price for fuel still remains high.

Figure 1 – Historical Fuel Purchase and Costs

Fuel Purchased	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12
Barrels-Mill	2.33	2.36	2.34	2.46	2.43	2.39	2.44	2.26	2.18
Paymts-$Mill	$76.80	$111.80	$149.20	$165.30	$214.60	$190.30	$184.60	$207.30	$264.60
Price Per Bbl	$32.96	$47.37	$63.76	$67.20	$87.23	$79.63	$75.66	$94.03	$121.33
Sales-GWh	741.2	763.8	767.5	776.4	775.9	724.3	754.8	755.8	723.9

Fuel Purchased	FY 13	FY 14	YTD (Apr 15)
Barrels-Mill	1.96	1.75	1.43
Paymts- Mill	$247.47	229.94	141.749
Price/bbl	128.94	131.23	94.72
Sales	680.5	641.04	518.5

SECTION 3. HOW VIWAPA IS REDUCING RATES

Since fuel prices began skyrocketing in 2003 VIWAPA has pursued every available option to reduce the cost of electric services to its customers and jump start the island economy. We have pursued alternative and renewable sources tirelessly for almost 10 years now, and tangible relief is finally on the horizon. VIWAPA could not, however, have made the advances that is has without a number of Strategic Public and Private Partnerships. Chief among our supporters has been the Department of Interior (DOI), the Department of Energy ~~thought~~ through its National Renewable Energy Laboratory (NREL), the Federal Emergency Management Agency (FEMA) and the US Department of Agriculture, Rural Utilities Services (RUS) which have provided the following assistance:

- DOE through NREL helped to identify the Territory's baseline energy use and how the USVI could best meets its goal to cut fossil fuel use by 60% by 2025.
- VIWAPA, as an EDIN project partner, has been able to tap into a broad spectrum of technical assistance and project development support from DOE and NREL,
- DOI provided a $500,000 grant for VIWAPA to prepare an Integrated Resource Plan (IRP) that will provide the road map for responding to future generation needs.
- FEMA has provided funding for hazard mitigation projects that have assisted VIWAPA with burying power lines that serve areas critical to the Territory's infrastructure.
- RUS has approved a loan that will allow VIWAPA to implement Distribution Automation Technology, a Smart Grid capital improvement project, and Advanced Metering Infrastructure and Automated Meter Reading (AMI/AMR). The closing on this loan has, however, been delayed. Any assistance the Committee can provide to close the loan would be appreciated.

Outlined below are the projects that VIWAPA has implemented, and is implementing, to reduce the cost of electric services to the Territory:

1. Until October of 2014, VIWAPA was 100% dependent on fuel oil to produce power. Since that time, VIWAPA has placed on its grid approximately 8.2 MW of solar power through partnerships with Toshiba International Corp, and Mainstreet Power Company/Morgan Stanley. The result is that approximately 8% of VIWAPA's peak demand generating capacity comes from renewable sources. The cost to the Authority to purchase power from these sources is $0.15 per kWh and $0.17 per kWh respectively.

2. In December of 2014, the Authority issued an RFP for 6 more MW of solar power on St. Croix and 3 more MW of power on St. Thomas. On January 22, 2015, the Authority signed contracts for 6MW of power with St. Croix Solar and St. Croix Solar II, project entities that were the result of a proposal that was submitted via competitive bid by a local St. Croix company, Caribbean Energy Opportunities in conjunction Foresight Renewable Solution a US Mainland Company. The purchase price is $0.13 per kWh. This project, barring unforeseen delays is anticipated to be in

commercial operation in fifteen months With regard to the 3 MW Solar Facility for St. Thomas, the Authority has selected a bidder and contract negotiations have been substantially completed. An executed Power Purchase Agreement (PPA) is anticipated in the upcoming months.

3. The Authority has entered into a contract with Tibbar Energy, USVI, LLC, ("Tibbar"), a qualified facility approved by the Virgin Islands Public Services Commission via the Territory's Cogeneration and Small Power Production Act at 30 VIC section 46 et. al. Tibbar will design, construct, and operate a king grass-fed anaerobic digester facility that generates biogas, which will be fed into generators that will produce up to 7 MW of power to sell to VIWAPA, at or below the Authority's avoided cost. Tibbar is anticipated to be in commercial operation by December, 2016.

4. VIWAPA in conjunction with the Virgin Islands Energy Office has completed wind studies to determine the economic feasibility of wind power development in the Territory. VIWAPA is currently in negotiations with several qualified facilities proposing wind projects that were approved by the Virgin Islands Public Services Commission pursuant to the Cogeneration and Small Power Production Act.

5. One of the pivotal actions taken by the V.I. Government to aide VIWAPA was the passage of Act 7360, which was signed into law on May 14, 2012. The Act established the Virgin Islands Water and Power Authority Generating Infrastructure Fund (the "Fund"). This Fund contains the proceeds from the gasoline tax which, pursuant to the same legislation, was increased from $0.07 to $0.14 per gallon. The money deposited into the Fund is to be used exclusively by the Authority to fund new energy efficient power generating units and/or heat recovery steam generators. This legislation is an instrumental piece of a larger plan to reduce the high cost of energy in the Territory, and will be the source, after the completion of the Integrated Resource Plan, to purchase the first new generation for the Authority in approximately 11 years.

6. Perhaps the largest, most-anticipated and ambitious project that VIWAPA is undertaking to bring relief to the businesses and residents is the conversion of its generating facilities to burn Liquefied Petroleum Gas (LPG) and Liquefied Natural Gas (LNG). VIWAPA has partnered with the VITOL Group, a Swiss-based, Dutch-owned multinational energy and commodity trading company, to supply lower cost and cleaner burning LPG for power generation, with an anticipated 30% reduction in fuel costs. VITOL, through its project entity, VITOL, Virgin Islands Corp., will: (1) construct, own, operate, and transfer the LPG facilities; (2) supply LPG and (3) manage the repowering of certain combustion turbine units. To further the implementation of both the LNG and LPG projects, the combustion turbines (CTs) at VIWAPA's St. Croix and St. Thomas generating facilities are being converted to enable them to burn LPG and LNG in addition to fuel oil.

   The project has not been without its challenges as there have been a number of unforeseen circumstances that have forced adjustments to the project completion schedules and cost, such as:

- Adverse weather conditions.
- Undocumented soil conditions and underground obstacles.
- Challenges in coordinating the conversion of the power plants to safely burn propane while simultaneously operating power generating facilities to meet daily electricity demand.
- Additional work required for the design, procurement and installation of the necessary resources to upgrade the existing fire protection, controls and systems for the safe use of propane.
- The complexity of permitting and the contracting, demolishing and disposing of structures with lead-based paint.
- The reality of global sourcing of all the materials and equipment for the project.
- Additional regulatory requirements to be complied with to assure the safety and the security of the marine aspect of the project, including necessary redesigns.

Notwithstanding the aforementioned challenges, the projects have realized many accomplishments to include:

- Fabrication and the delivery, from Belgium, of 18 propane storage tanks to the Virgin Islands. Eight (8) storage tanks have been installed on St. Croix and 10 storage tanks have been installed on St. Thomas.
- Building and commissioning new propane delivery vessels to deliver liquefied propane to WAPA's facilities.
- Implementation of advance navigation simulation with the VI Port Authority marine harbor pilots to ensure safe transit of LPG vessels into and out of WAPA docking facilities.
- Commencement of the conversion work on the turbines by GE.
- Completion of a comprehensive Fire and Risk Assessment and Hazardous Area Classification Study.
- Finalizing, with the assistance of the Virgin Islands Territorial Emergency Management Agency and the US Department of Homeland Security, an independent vulnerability assessment study to ensure compliance with local and federal mandates for safety and security to protect the well-being of the general public, employees, and first responders.
- Completion of engineering of electrical, instrumentation automation, process design, civil design, structural design, piping and mechanical design.
- Secured air and construction storm water permits for both facilities.
- Secured Coastal Zone Management Major Land and Water Permits for the development of the projects in both districts.
- Secured the U.S. Army Corps of Engineers (USACE) permit for the St Croix project. The St. Thomas permit is pending.
- Awaiting final approval of the Waterway Suitability Assessment (WSA) Plan, which focuses on the water side safety & security aspect of the projects, by the US Coast Guard.

I am pleased to report that the St. Croix Power Plant will be operating on LPG within the next 30 days. The St. Thomas project is, however, lagging behind. This is due to remaining work that is directly linked to the issuance of the US Army Corps of Engineers Permit, which the island of St. Thomas has not yet received. The USACE is doing its utmost to process the permit, however the permitting staff for the region which reviews the permits is inundated with other permit requests. Because of the critical need for this permit, any assistance this Honorable Committee can provide in this matter will be appreciated.

I would like to thank you for the opportunity to appear before the Committee today. I am happy to answer any questions that you may have.