

U.S. Virgin Islands



Challenges

- NEED FOR LOWER-COST ALTERNATIVE TO DIESEL FUEL WITH THE ABILITY TO SWITCH BETWEEN FUEL SOURCES SEAMLESSLY
- DIFFICULTY FINDING TECHNOLOGY CAPABLE OF BURNING LPG EFFICIENTLY
- GROWING GENERATING CAPACITY NEEDS

Background

In 2012, diesel fueled more than 95 percent of the U.S. Virgin Islands Water and Power Authority's (WAPA) generating capacity. After experiencing large fluctuations in diesel prices during the previous decade, WAPA began to evaluate alternative fuels for power generation. In 2013, WAPA decided to begin the process of shifting much of its generating capacity to liquid petroleum gas (LPG), citing its lower cost and reduced emissions. The next step would be to find a proven technology that could burn the fuel and be installed quickly but would not suffer the same power output de-rate as reciprocating engines running on LPG.

Solution

WAPA expanded APR Energy's existing contract – which was originally awarded in 2012 to operate a 20MW diesel-powered turbine on the island of St. Thomas – to provide an additional 50MW of capacity fueled by LPG. The expanded project features two modified GE TM2500+ mobile gas turbines, which have the ability to switch to diesel in the event of LPG / propane supply disruptions. In total, APR Energy's three units in St. Thomas deliver up to 70MW to the local power grid.

Outcome

As APR Energy works closely with WAPA to commission its mobile gas turbines on LPG, the technology proved its superior reliability when power was needed most. When Hurricane Maria hit the U.S. Virgin Islands in 2017, APR Energy was the only power source on the island that remained online, injecting power into the grid. Once APR Energy's turbines commission on LPG, WAPA expects to save millions of dollars a year. WAPA will also benefit from significantly lower emissions – including a 94% reduction in NOx emissions compared with diesel reciprocating engines typically found in the temporary power market – which is important to its tourist-based economy.

At a glance

3 TM2500+ & TM2500 gas turbines



- ONLY POWER SOURCE ON THE ISLAND THAT REMAINED ONLINE THROUGH HURRICANE MARIA IN 2017
- WILL BECOME FIRST LPG-FIRED GE TM2500+ MOBILE GAS TURBINE IN COMMERCIAL OPERATION
- MILLIONS OF DOLLARS IN FUEL COST SAVINGS ONCE COMMISSIONING ON LPG
- REDUCED EMISSIONS VS. DIESEL RECIPROCATING ENGINES