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Power Outages Across Territory Caused By “A Lot Of Different Things,” CEO Andrew Smith Tells WAPA Board

Executive Director Andrew Smith cites severe weather, equipment malfunctions, and maintenance delays as culprits behind recent power disruptions

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Janeka Simon **May 24, 2024**

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WAPA's Richmond Powerplant By. ERNICE GILBERT, V.I. CONSORTIUM

As V.I. Water & Power Authority Executive Director Andrew Smith listed the contributing factors to the weeks of power outages and rotations in the territory, fans of children’s literature might have begun to recall the title of a series of books popular in the early 2000s – A Series of Unfortunate Events.

Mr. Smith explained to WAPA board members during a meeting on Thursday that “it’s not been one thing, it’s been a sequence of a lot of different things that have been causing these repeated outages.” The first in the sequence, Mr. Smith said, was the wave of “very heavy weather” that [rolled through the territory](#) approximately three weeks ago. “As a result of that, we suffered quite a few outages,” he said, noting that the Randolph Harley power plant had suffered a lightning strike during that period of stormy weather.

In that first week, WAPA also began to suffer from what Mr. Smith described as “nuisance trips” – when key equipment gets turned off by faulty sensors as part of wrongly-triggered failsafe mechanisms. Amidst the “nuisance trips”, WAPA also had to contend with a failsafe device in one of the Wäritsilä generators itself failing in a spectacular manner.

“There’s a disc that sits in the shaft of the generator between the generator and the engine,” Mr. Smith explained, noting that there are immense angular pressures being brought to bear on the spinning drive shaft. “There’s a coupling in there that’s designed [so that] when that torque exceeds certain limits, that coupling is designed to fail.” The [loud noise that jolted St. Thomas](#) weeks ago was the sound of that disc failing, Mr. Smith explained, who said that there was not actually anything wrong with the generator to trigger that dramatic failure. “We think it’s just a time of use failure that the part ...disintegrated,” he told board members.

That was just the first week. As Mr. Smith continued to move through the timeline of events, he said that one of the units on St. Thomas “developed a leak in the propane supply valve to the plant.” As a result, Unit 15 had to be converted to operate on diesel, which caused the rate of WAPA’s diesel consumption to increase significantly. Having recently admitted to operating with [smaller-than-comfortable fuel inventory stores](#) due to financial constraints, WAPA faced the prospect of running out of diesel before the next scheduled delivery. While expediting the cargoes, “we had to do rotating outages during peak because unit 15 was not available,” Mr. Smith said. After the rotating outages at the end of the second week, the expedited delivery of diesel arrived, and WAPA was able to restore a steady supply of electricity to the territory.

This week, however, issues still persist. Unit 15 is still operating on diesel, as WAPA currently waits for the damaged propane valve to be repaired in New York and shipped back to the territory. “We think...starting early next week, we’ll get that back and put that in service,” Mr. Smith anticipated. On Wednesday, Unit 23, the largest on St. Thomas, tripped twice, causing islandwide outages. “Essentially, the match went out, if you want to think about it that way,” Mr. Smith told board members. After the unit tripped the second time, engineers discovered that the fuel filter had failed and collapsed inward, blocking the fuel supply to the plant.

Four inches of rain on Wednesday night did not help matters either, and as Mr. Smith spoke on Thursday morning the power on St. John was out, with staff frantically trying to troubleshoot the underground transmission line that supplies the island. As Chief Operating Officer for Electric Systems Ashley Bryan later explained, water intrusions can cause “transient outages” at various points on the distribution system as the liquid seeps into spaces and disrupts the flow of electricity.

Asked to address the issue of maintenance, which Mr. Smith agreed accounts for several of the issues experienced in recent weeks, he said that “everybody knows” about WAPA’s chronically strained financial position. Explaining that gas turbines are supposed to go through a major maintenance overhaul every two years, he disclosed that “our generators are anywhere from seven to 12 years past due for major maintenance overhauls.” Basically, “we don’t have the funds to do major maintenance for all of the units right now,” Mr. Smith declared.

What WAPA is trying to do, the CEO said, is to perform some level of assessment on the units. Noting that an outside vendor recently evaluated Unit 27, Mr. Smith said that these assessments would be used “to understand what we need to do,” in terms of maintenance work on the units. WAPA is also scheduling preventative maintenance tasks that can be done without requiring the full major maintenance procedure. Mr. Smith said the company has been using the unfortunate occurrence of outages to have a secondary team perform these minor maintenance tasks while the main team works on restoring the generator to service.?

Adding to the fragility of a grid that relies on poorly maintained generating equipment for its supply of power, Mr. Smith said heat is also a compounding factor. High ambient temperatures make it more difficult for transformers, which themselves generate heat, to stay within specified operating temperatures. Additionally, hot days create more demand on the system, as consumers fire up fans and air conditioning units to beat the heat.

Even with excellent weather and properly maintained units, WAPA’s maximum uptime can never reach the 99.9% reliability touted by some statewide utilities. As Mr. Smith explained, WAPA does not have a lot to buffer it against shocks. “We’re essentially in some instances a single redundancy utility. In some instances we’re a double redundancy utility,” he said, contrasting that with the triple redundancy systems operated by utilities on the mainland. Additionally, the Virgin Islands’ tiny consumer market means that an outage on one generator represents a significant loss of overall generation capacity, as opposed to a grid which may contain thousands of generators, depending on the market.

To solve the fragility problem, Mr. Smith said that WAPA should become proactive about vegetation management. “We need to trim trees, we need to clean the lines and all of that.” Keeping a larger inventory of spare parts is also crucial. “We need to be able to drive to the warehouse and go pick up a spare for 95 or 99% of the equipment that we have, and we just don’t have that,” Mr. Smith lamented.

However, the main task to be accomplished is major maintenance for all the generators. “They absolutely need to be opened up,” Mr. Smith said. However, at costs of around \$2 million, which may increase up to \$5 million for the larger units, WAPA must grapple with the perennial question of where the money will come from.