



# NARUC Critical Infrastructure Committee

## ***Rebuilding Resilient Infrastructure***

**1:30 Sunday November 11, 2018**

***Hurricanes Irma & Maria: U.S. Virgin Islands***



**Commissioner Johann A. Clendenin  
Virgin Islands Public Services Commission**

***U.S. Virgin Islands Public Service Commission***




# ***Rebuilding Resilient Infrastructure***

**Panel: 1:30 – Moderator Chairman Nick Wagner,  
Commissioner Johann Clendenin**

**A discussion on resiliency – looking at the aftermath of  
the 2017 hurricane season: Recovery and Rebuilding  
Resilient Infrastructure in the U.S. Virgin Islands**

2  What is still needed?

 Where are there opportunities for the private sector to engage and invest in grid revitalization across these islands?

 How has the approach to building back been shaped by the expectation of future and more frequent weather events?

# Commissioner Clendenin



**Commissioner Clendenin is Chairman Emeritus and the longest serving member of the U.S. Virgin Islands Public Services Commission. He serves on the National Association of Regulatory Utility Commissioners (NARUC)**

**Telecommunications Committee and is Chairman of the Mid-Atlantic (MACRUC) Telecom Committee. Clendenin is a member of the FCC's Intergovernmental Agency Committee. He was embedded on the FEMA DHS National Communications Center (NCC) Watch just prior to Hurricane Irma and formed the VI Hurricane Integrated Telecommunications (HIT) Team to coordinate Relief, Recovery, and Mitigation response efforts among the community, the utilities and the VI Government. He is President and CEO of Inner Circle Logistics, Inc., where he has been engaged internationally on Integrated Emergency Management (IEM) and cross-border disaster trade facilitation. He is a retired Xerox Executive and retired U.S. Marine Officer. As an inventor he holds US Patents and is a former Senior Faculty member of Harvard Business School.**



*Purchased in 1917 from Denmark for \$25 Million*

# Insular differences

**The Virgin Islands of the United States, is a group of islands in the Caribbean that is an insular area of the United States located 40 miles (64 km) east of Puerto Rico. We are classified by the United Nations as a Non-Self-Governing Territory, and are currently an organized, unincorporated United States territory. The U.S. Virgin Islands are organized under the 1954 Revised Organic Act of the Virgin Islands. In mid-February 2017, before the Hurricanes, the USVI was facing a financial crisis due to a very high debt level of \$2 billion and a structural budget deficit of \$110 million. This left us unable to meet the FEMA “Match” requirements. We are “Managed” by the U.S. Department of the Interior. We are U.S. citizens but do not have the right to vote for POTUS. We have a non-voting Congressional delegate.**



# NCC Watch

**Contacted early  
September 2017  
just prior to  
Hurricane Irma in  
preparation by  
DHS/FEMA NCC  
Watch – ESF2  
to provide USVI  
input and guidance**





## The Hurricane Integrated Telecommunications

(HIT) Team was formed by the USVI PSC Commission and Chairman Emeritus Johann Clendenin during the storms in September 2017 after learning of the critical information that needed to be gathered by the DHS FEMA National Communications Center Watch of ESF2. Clendenin called the entire spectrum of telecommunications providers from LMR, Ham operators, Radio, TV, Wireline, Wireless, Broadband and TV Whitespace together under the customer service provisions of the USVI PSC's jurisdiction. The HIT Team worked daily and later weekly until mid January 2018 to coordinate relief and recovery efforts. The Team disbanded and mitigation efforts commenced being led by Director Anthony Riddick of the USVI Bureau of Information Technology (BIT).

# Hurricanes Irma & Maria 2017



Hurricane Irma was an extremely powerful and catastrophic Cape Verde hurricane, the strongest storm ever to exist in the open Atlantic region. Irma was the first Category 5 hurricane to strike the Leeward Islands on record.

Hurricane Maria is regarded as the most intense tropical cyclone worldwide of 2017, second Category 5

# Hurricanes Irma & Maria 2017



**There were virtually no hotel rooms available! FEMA, contracted Carnival Corporation Cruise Line's 2,052-passenger ship “Fascination” as a floating hotel for relief workers. Fascination cost the agency \$74.7 million, according to the contract obtained by Cruise Industry News through a Freedom of Information Act (FOIA) request.**

# Hurricanes Irma & Maria 2017



**Many tornado / cyclone effects in the severe devastation.**

***(Clendenin Farm on Saint Croix.)***

# Hurricanes Irma & Maria 2017

10



**“Pole Attachments” in the Virgin Islands took on a whole new perspective!**

# Hurricanes Irma & Maria 2017

11



# Hurricanes Irma & Maria 2017

12



# Hurricanes Irma & Maria 2017

13



**Local Innovation!**

# Hurricanes Irma & Maria 2017



14

# Hurricanes Irma & Maria 2017

15



# Hurricanes Irma & Maria 2017

## SIX MONTHS AFTER MARÍA



FEMA

### COMMODITIES



POTABLE WATER

**16.99**

MILLION GALLONS



BOTTLED WATER

**72.57**

MILLION LITERS



MEALS

**63.16**

MILLION

### POWER-GENERATORS



**1,969**

TOTAL GENERATORS INSTALLED

**890**

TOTAL STILL IN USE

### DEBRIS CLEARED



**6.47**

MILLION CUBIC YARDS

### HOUSING, PUBLIC ASSISTANCE AND SBA

#### INDIVIDUAL AND HOUSEHOLDS PROGRAM



TOTAL REGISTRATIONS

**1.1** MILLION

TOTAL DOLLARS APPROVED

**\$1.15** BILLION

#### PUBLIC ASSISTANCE



TOTAL DOLLARS OBLIGATED **\$1.3** BILLION

DEBRIS REMOVAL **\$69** MILLION

EMERGENCY PROTECTIVE MEASURES **\$1.23** BILLION

#### SMALL BUSINESS ADMINISTRATION



TOTAL LOANS APPROVED **32,839**

BUSINESS **1,722**

HOMEOWNERS & RENTERS **31,117**

TOTAL DOLLARS APPROVED **\$1.2** BILLION

### DISASTER UNEMPLOYMENT ASSISTANCE



APPROVED

**7,179**

AMOUNT DISBURSED

**\$5.3** MILLION

### NUMBERS OF FEDERAL CIVILIAN EMPLOYEES AND MILITARY PERSONNEL

FEMA

**2,868**

INCLUDING PUERTO RICAN  
EMPLOYEES **1,515**

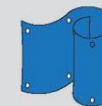
DEPARTMENT OF DEFENSE

**1,827**



**TOTAL 4,695**

### TEMPORARY ROOFING



FEMA  
SELF HELP TARPS

**125,981**

U.S. ARMY CORPS OF ENGINEERS  
BLUE ROOFS INSTALLED



**59,381**

Numbers as of March 15, 2018

# HIT Team



# Relief - Recovery - Mitigation

18



# Hurricanes Irma & Maria 2017





# FCC Collaboration

- 🌐 Met with FCC leadership in September 2017 to develop disaster POCs.
- 🌐 Met in October with FCC Disaster Team
- 🌐 USF and Customer Service provisions
- 🌐 New Edison LTE4 Network, numbers / cards
- 🌐 FCC Chairman HIT Team visit March 2018



# Energy Sector

**In addition to physical damage:**

- **Severe drop in Revenue – 15.6%**
- **Decrease in Customer Usage**
- **Disruption of “Systems”**
  - Timely Billing
  - Loss of AMI “Smart Meter”
- **Increase in Utility Expenses**
- **Reliance on FEMA DHS Community Disaster Loans (CDL)**

# Still Needed

- ③ **Access to Funding**
- ③ **Revised Integrated Resources Plan**
- ③ **Private Sector Opportunities**
- ③ **Grid Revitalization ~ Micro Grids**
- ③ **Renewable Energy Focus**
- ③ **Economic Development Focus**
- ③ **Future Weather Event Assessment**
  - Bury Fiber and Power Lines
  - Integration of Energy with Telecom Infrastructure
  - Caribbean Interconnection

# Best Practices

- ⦿ Exercised jurisdiction for overall unified Telecommunications during Disaster response by States and Territories
- ⦿ Consolidation of Disaster Information Reporting System (DIRS) network status updates by communications providers to the FCC
- ⦿ Focused recovery of Critical Telecommunications infrastructure including both government and private sector entities
- ⦿ Embedding of ESF2 & Bloomberg personnel into the HIT Team
- ⦿ Enabling FEMA authority for the private sector to ship supplies with priority to the Territory
- ⦿ Local government authority for FEMA fuel access to private Telecommunications providers during the relief phase
- ⦿ Enabling authority for Army Corps of Engineers (ACE) support for consolidating generators, maintenance, and security at Cell towers
- ⦿ Unified collaboration to support relief... hot spots, roaming, infrastructure support, debris removal, permits, equipment – cranes, dozers, billing suspension, Terrain maps, buried Fiber network location sharing, pole line identification

# Best Practices

- ④ **Providing telecommunications sector individualized company “Access” passes during imposed curfew periods**
- ④ **Unified Telecommunications integration for relief efforts with Ham Radio, Military networks, satellite phones, Garmin GPS units**
- ④ **Deploying drones for Cell Tower evaluations and status**
- ④ **Providing “Duty” and “Excise Tax” relief for consumables / retrograded items - trucks, generators, line crews**
- ④ **Advocating for immediate USF funding advancement versus additional funds.**
- ④ **Communication of Territory’s “Insular Rural” status and special needs due to geographical separation from mainland and unique difference for DHS / FEMA State response**
- ④ **Identifying the need for the CBP Automated Customs Environment (ACE) system available throughout the USA to be implemented in the USVI to eliminate the manual process and gain in transit visibility of critical relief shipments with trade facilitation provisions.**

# Transition ~ Critical Infrastructure



25



**The mitigation phase is being coordinated in the Governor's Emergency Operations Center (EOC). Infrastructure Resiliency is being championed by private sector initiatives for enabling an Energy efficient "Silicon Islands" vision. A USVI leadership team to prepare the Territory for 5G / IoT deployment and economic development.**



***Thank You!***

**John A. Clendenin**  
***Commissioner & Chairman Emeritus***  
**[jaclendenin@me.com](mailto:jaclendenin@me.com)**  
**617.480.0001**