



CARILEC



Workshop: “RE in SIDS: How to Strengthen Resilience & Accelerate RE Deployment”

Panel Session 1: How to increase resilience in the power sector?

Aruba 28-30 November, 2018.

1. Overview of CARILEC

Services Provided

- ✓ Training & Development
- ✓ Networking and Knowledge Sharing: Conferences & CAREC
- ✓ Technical Studies and Surveys
- ✓ Disaster Restoration Coordination (CDAP)
- ✓ Advocacy



CARILEC: **Renewed** Vision

To be the Premier Association of **Energy Service Providers** and their partners, facilitating the development of world class **sustainable** electric energy **solutions** for all peoples of the Caribbean **Region**

Renewed Bye Line:

**An Association of Electric Energy
Solution Providers**

Renewed Mission

CARILEC will enhance the effectiveness of its members by providing industry related services, creating regular networking, training and knowledge sharing opportunities; supporting mutual assistance programs and **accelerating the Caribbean Region's energy sector transition, through innovation and advocacy**

Renewed Values

Collaboration

We foster and celebrate team work across the Caribbean region and beyond; bridging gaps between private and public sector, local, regional and international organizations, technical and policy expertise.

Innovation & Agility

We are catalysts for change in our region: we create multiples opportunities for our stakeholders to experience and adopt the latest technologies and opportunities in the fields of energy solutions

High Ethical & Professional Standards

We cultivate trust from all our stakeholders by maintaining highest quality of service and integrity standards

Social & Environmental Responsibility

We ultimately work for the benefits of the people of our region and the welfare of our planet: we orient our decisions to increase the prosperity and sustainability of the Caribbean way-of-life

Strategic Objectives

2018 to 2022

- 1. Re-position CARILEC as the premier facilitator of energy solutions in the Caribbean region.**
- 2. Revise CARILEC business model for greater sustainability, resilience and impact.**
- 3. Restructure Secretariat and build capacity at institutional and individual levels.**

Strategic Objectives

2018 to 2022

- 4. Become the leading advocate and partner for energy solutions in the region.**
- 5. Act as a catalyst for the adoption of green and innovative business models for energy solution providers.**
- 6. Enhance networking, business opportunities and engagements for our members.**

2. Caribbean Power Sector Resilience

Demystifying Resilience

The term ‘resilience’ has a number of definitions. With regards to hazard events, it has been defined as “the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events” (McAllister, 2013).

Demystifying Resilience

The Electrical Power and Research Institute (EPRI) has identified three elements that define the concept of grid resilience:

- 1. Prevention***
- 2. Recovery***
- 3. Survivability***

Demystifying Resilience

1. ***Prevention*** - the protection of the grid from damages.
2. ***Recovery*** - the rate at which the grid is restored.
3. ***Survivability*** - the ability to provide an essential level of electricity service to allow communities to continue functioning in instances where the normal power sources are disrupted.

Drivers for Enhanced Resilience in the Caribbean Power Sector:

- Vulnerability to the effects of climate change and natural hazards.
- Vulnerability to oil price shocks due to dependence on imported fossil fuels for power production despite tremendous renewable energy resources

Drivers for Enhanced Resilience in the Caribbean Power Sector:

- The very high cost to rebuild the electricity grid annually.
- Critical services infrastructure interdependencies (telecommunications water, electricity and transport) and the associated impacts of supply disruption.
- The socio-economic and financial effects of lengthy power outages on the economies of SIDS

Table 1 showing a partial list of CARILEC Member utilities that received restoration assistance from CARILEC 2003-2016.

Year	Disaster (H=Hurricane; TS = Tropical Storm)	Utility(ies) Affected	Severity of Impact to Electricity Infrastructure	Approx. Duration of Restoration Assistance	Joint Manpower Assistance Provided by CARILEC
2003	H Fabian	Bermuda Electric Light Company Ltd	Significant	3 weeks	41 Linesmen from 6 utilities
2004	H Frances	Grand Bahama Power Company	Significant	6 weeks	37 Linesmen from 4 utilities
2004	H Jeanne	Grand Bahama Power Company	Significant	3 weeks	19 Linesmen from 5 utilities
2004	H Frances	*Bahamas Electricity Corporation	Significant	9 days	8 Linesmen from 1 utility
2004	H Ivan Grenada	Grenada Electricity Services Limited	Significant	6 weeks	75 Linesmen from 9 utilities
2004	H Ivan	Caribbean Utilities Company Limited	Significant	6 weeks	14 Linesmen from 2 utilities

Table 1 showing a partial list of CARILEC Member utilities that received restoration assistance from CARILEC 2003-2016.

2008	H Ike	*Turks and Caicos Utilities Ltd	Significant	4 weeks	39 Linesmen from 8 utilities
2011	H Irene	*Bahamas Electricity Corporation	Significant	3 weeks	20 Linesmen from 2 utilities
2014	TS Fay Gonzalo	Anguilla Electricity Company Limited	Significant	1 week	10 Linesmen from 1 utility
2014	TS Fay	Bermuda Electric Light Company Ltd	Significant	2 weeks	19 Linesmen from 4 utilities
2016	H Matthew	Bahamas Power and Light Company	Significant	5 weeks	35 Linesmen from 7 utilities
2016	H Matthew	Grand Bahama Power Company	Significant	2 weeks	10 Linesmen from 2 utilities

*Bahamas Electricity Corporation (BEC) is currently Bahamas Power and Light (BPL)

*Turks and Caicos Utilities Ltd is currently Fortis TCI Limited

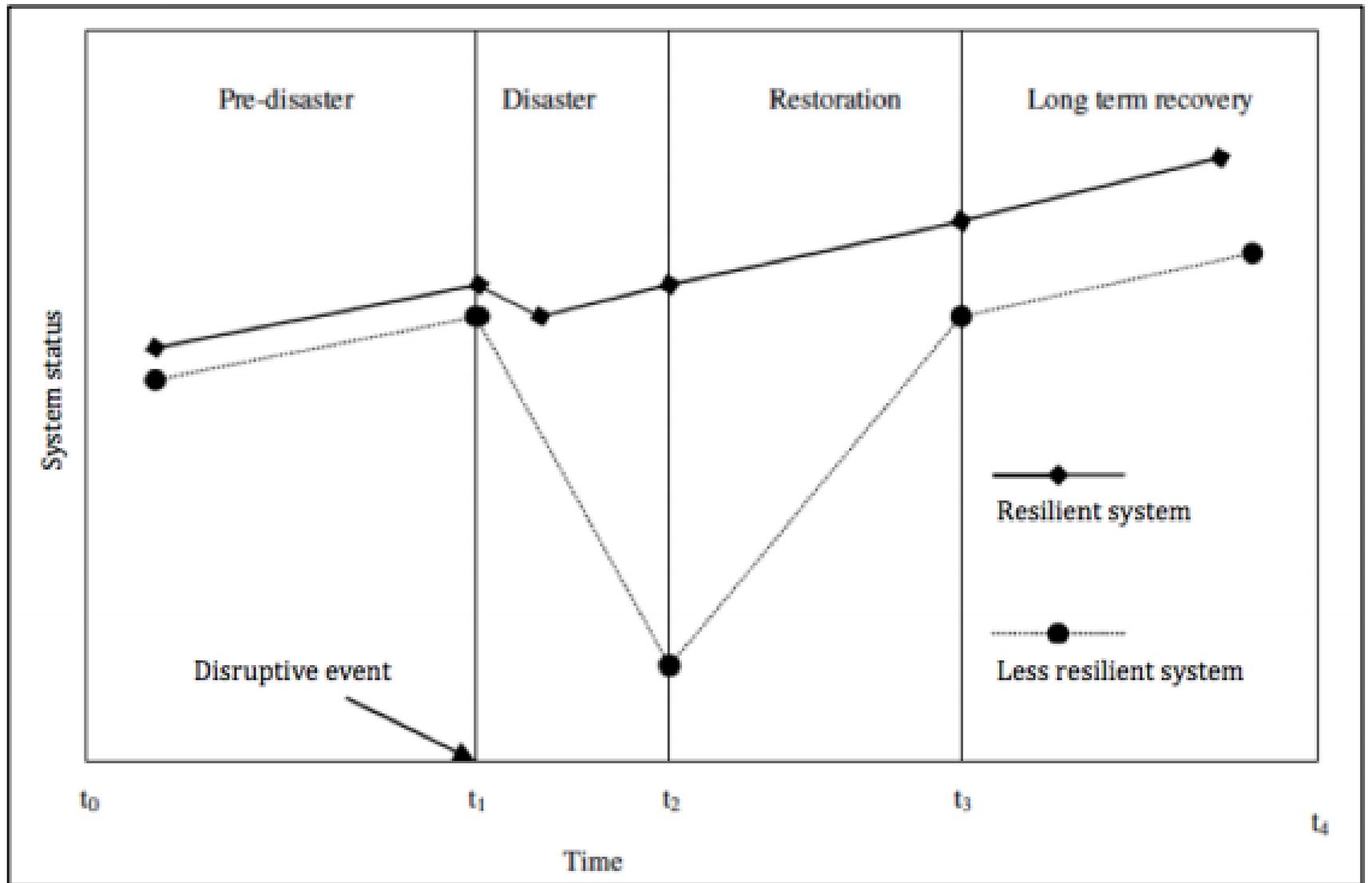


Fig 1. A resilient system vs a less resilient system. (Source: Clark-Ginsberg, 2016)

Barriers to Enhanced Resilience in the Caribbean Power Sector:

- Lack of financial capacity
- Lack of enabling policy & regulatory mechanisms to facilitate an adequate level of resilience improvements: build back better (RE, microgrids, et.)
- Lack of Regional Capacity to: (1) respond to (multi-island impacts); and (2) reduce the restoration time for electricity customers

Barriers to Enhanced Resilience in the Caribbean Power Sector:

- The lack of technological innovations in and modernization of the power sector result in reliance on outdated, sometimes inefficient and unreliable power infrastructure.
- Fragmentation, lack of economies of scale and opportunities for system interconnection

5. Current Efforts & Plans for the Future

CARILEC - leveraging a collaborative, and integrated approach to build resilience:

- **RMI & CWR** (Survivability - CAREC)
- **CARICOM** (C-SERMS, IRRP, IUS, Energy Resilience Task Force, Knowledge Management & Data sharing; Finance and Policy)
- **CDEMA** (Response Time & Cost)
- **Caricom and OOCUR** (regulatory Reform)

5. Current Efforts & Plans for the Future

CARILEC - leveraging a collaborative, and integrated approach to build resilience:

- **CANTO** (Telecommunication, Smart Grid)
- **Association of Caribbean States** (Response Time & Cost)
- **CHTA** (Response Time & Cost)
- **IDB** (Survivability – CCA & SE programme)
- **WB & CDB** (Projects conceptualized)

**The Caribbean power sector must act
now to enhance its resilience,
tomorrow will be too late!**



THANK YOU!
CARILEC

