Microgrids for hurricane-prone regions

Sid Suryanarayanan
Professor, Dept. of ECE
Colorado State University

PANEL Session: Microgrids for Resilience
FORT COLLINS 2019 SYMPOSIUM ON MICROGRIDS

NSF ECCS 1903726
Motivation

Hurricane-prone grids
Hurricane Michael

- Affected 1.2M electric customers in SE USA in Oct. 2018
- Florida Panhandle was majorly affected
- 90% of customers in Tallahassee, FL lost supply
- Worsened by loss of interconnection with neighboring utility
- Underscores need for self-reliant, local, and resilient electric systems during hurricanes

Source: Nat’l Oceanic & Atmospheric Agency (NOAA)
State of the art in resilience plan
Enabling resilience with microgrids

Resilient microgrids for critical infrastructures

- Resilience: Awareness, endurance, adaptation, & recovery
- \( \mu \text{grid} \): Self-contained, single controllable entity for grid, & islanded/grid-connected
- Multimodal: Capable of handling varying operating objectives
WISH LIST

- Sophisticated models for event prediction
- Evolutionary models of impacts on infrastructures
- Community input
- Extensive field work and surveying
- Metrics, test beds, and visualization tools

CONVERGENCE

- Resilient Microgrids Team
- Cultural anthropologists
- Atmospheric scientists
- Data scientists
- Domain engineers
- Organizational experts
- Utility personnel

Short & long term needs
Thank you!

Q&A?