FPL BESS and Microgrid Update

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Who am I and why am I here?

- **Experience & Tenure**
  - 29+ years of service with Florida Power & Light Company
  - 17+ years specialized expertise in renewable energy and distributed generation
- **Current Position: Senior Manager – Interconnections**
- **Key Areas of Responsibility:**
  - **Generation Interconnections** – Oversee statewide DER projects, net metering and SGIA processes
  - **Safety Leadership** – Ensure compliance with NFPA, NEC and FPL safety standards
  - **Reliability & Grid Integration** – Support grid modernization and system reliability initiatives
  - **Standards Development** – Active participation in IEEE 1547, AEIC, NFPA and FCG committees

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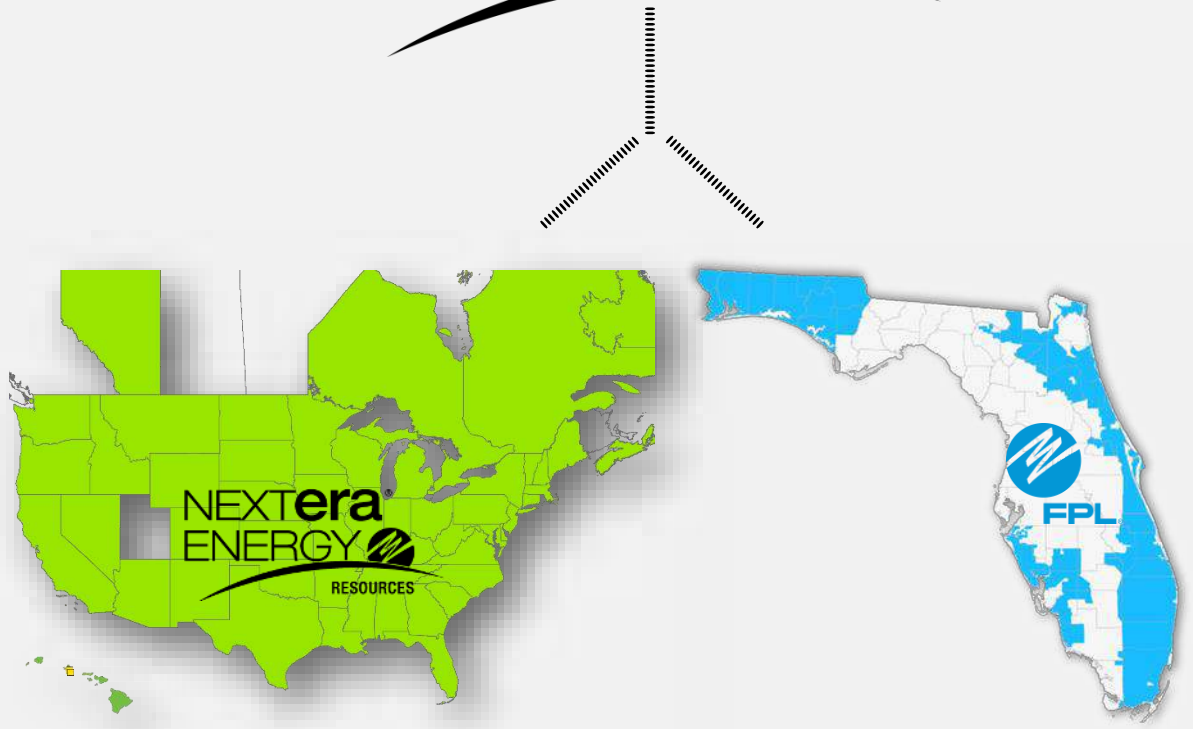
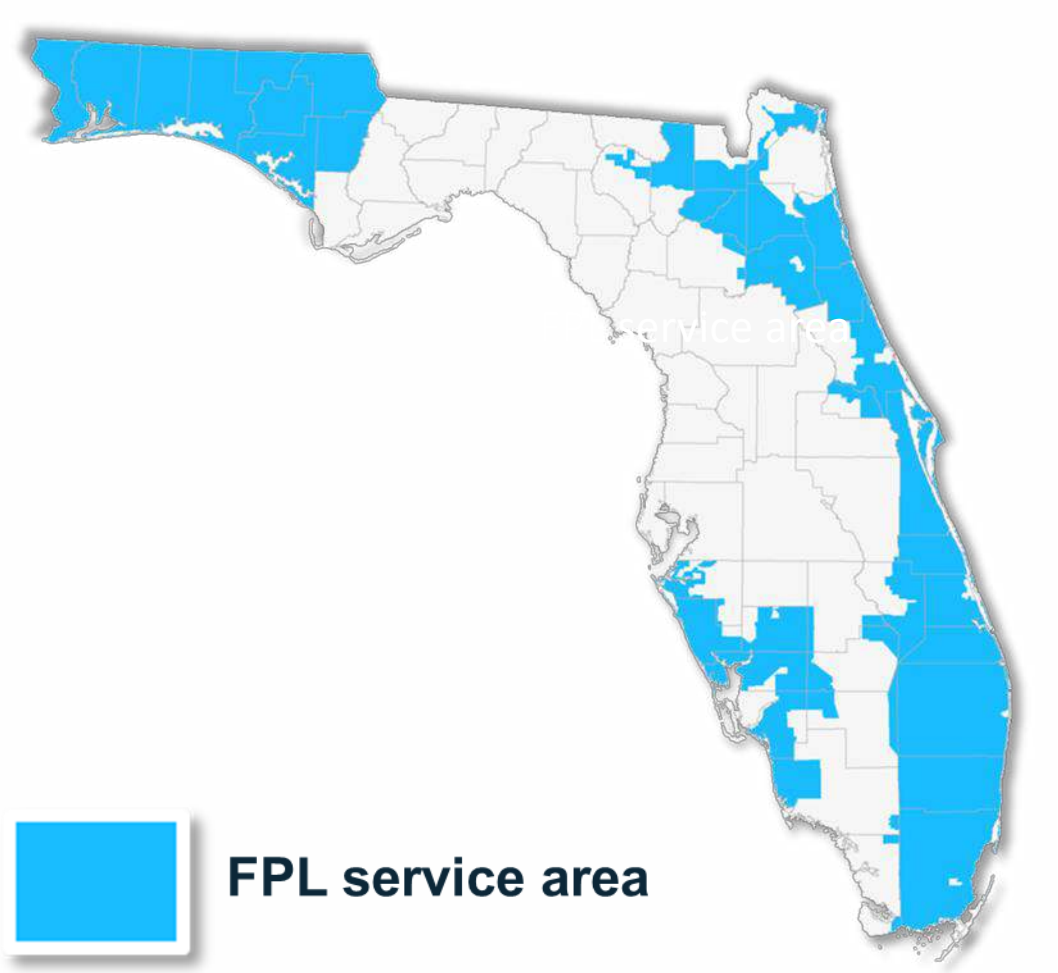
NextEra Energy Overview

- Ranked No. 1 in 2025 in the electric and gas utilities industry on Fortune's list of "Most Admired Companies" for the 17th time in 19 years
- Named to Newsweek's list of America's Greatest Workplaces, America's Most Responsible Companies and America's Greatest Workplaces for Diversity
- One of Forbes 2024 America's Best Large Employers, marking the seventh time we have received this recognition
- Headquartered in Florida, with a presence in 49 states and Canada



FPL is the largest electric utility in the U.S., serving more than six million customers across 43 counties



- 35,070 square miles
- 9,537 miles of transmission lines
- 81,823 miles of distribution lines
- 921 substations
- 83,573 transmission structures
- 1.4 million distribution poles
- 1.15 million transformers
- 35,552 MW Generation Resources
- 8,054 MW Solar/500 MW BESS
- 28,633 MWh System Peak Load

“Learning by doing” is the best way for us to develop capabilities in-house

FPL Storage Vision

Current Philosophy:

- Understand lessons learned in Germany, Hawaii, California and Texas
- Understand Florida specific challenges and how storage benefits
- Implement pilot projects NOW that:
  - Solve today’s problems
  - Define goal
  - Simulate and develop solutions for tomorrow’s problems
- Learn about storage capabilities and technology
- Develop operational guidelines
- Propose a vision for high penetration FPL storage and stackable value streams

A series of small, near-term pilots to provide insight on how to create a competitive advantage as storage markets develop and costs decline

FPL continues the journey of integrating Energy Storage systems into the grid

Executive Summary

- Public Service Commission allowed FPL to develop a 50 MW Energy Storage pilot.
- There have been several lessons learned throughout the interconnection process .
- Defining internal roles for equipment operation is key for a successful pilot program.
- Leveraging corporate partnerships enable the research component of the pilot.

A series of small, near-term pilots to provide insight on how to create a competitive advantage as storage markets develop and costs decline

FPL's first wave of battery pilots focused on power quality and grid applications

Current FPL battery pilots

Pilot Name	Location	Pilot Objectives	MW	MWh
Community Energy Storage	Tri-County Area (3 locations)	Test reduction of momentaries, provide backup power to residential customers	0.1	0.2
Mobile UPS Battery	Key Biscayne (Miami Open) Manufacturing facility	Test mobile Uninterruptible Power Supply (UPS) device	0.8	0.1
Southwest Storage	Miami-Dade	Test 2nd life batteries, integrating of batteries into PD	1.5	4.0
Florida Bay	Everglades National Park	Test electrical islanding on remote load, peak shaving	1.5	1.5
FIU Microgrid	FIU Engineering Campus	Test integration of storage and PV in a microgrid application	3	9
Total			**6.9**	**14.8**

In Service

Through these pilots, FPL has developed standard practices for design, application, protection and interconnection of batteries

Community Energy Storage was the first Battery Energy Storage System (BESS) on the FPL system

Community Energy Storage (CES)

Overview

- Backs up 120/240V load on customer transformer
- Secondary use of peak shaving

Technical Learning

- Transition time and Inverter setting detail for PQ
- Interactions with existing FPL Equipment

Business Learning

- Easements are challenging
- Functionality for customer, utility side application expensive
- Behind the meter more cost effective and more readily accepted by customers

Units are reliable and effective, but very expensive

Premium power to televised Miami Open Tennis Tournament and Health Manufacturing Facility

Mobile battery for C&I

Overview

- Behind the meter 277/480V Back up

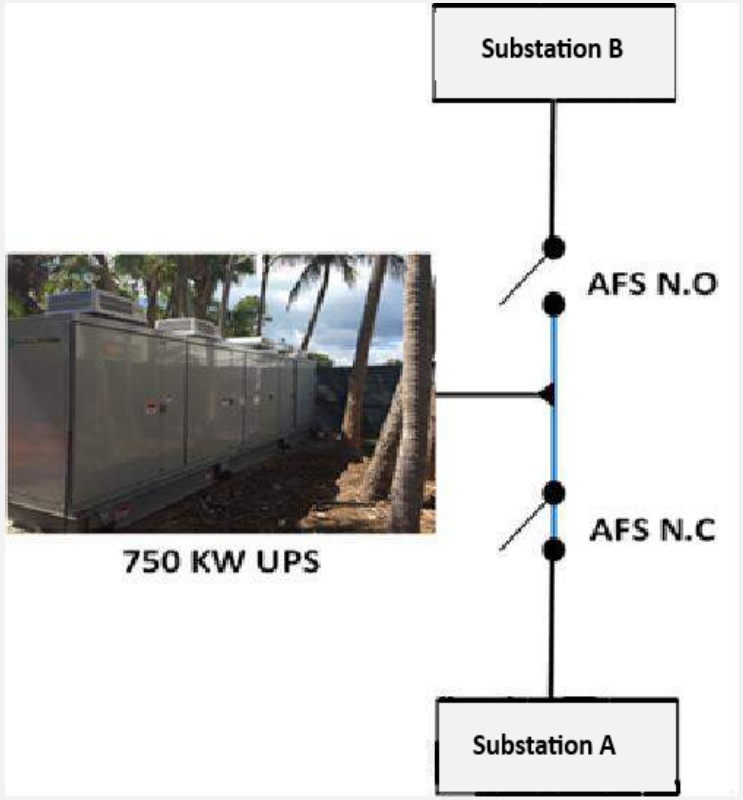
Technical Learnings

- Provides continuous power to customer during AFS transition
- Process for quick connect / disconnect without affecting customer
- Transfer sequence occurs typically within four milliseconds

Business Learnings

- UPS leverages AFS team to provide customer seamless transition between two sources

Momentaries	Power Quality
8	38



UPS backups up stadium lights / sensitive manufacturing loads

Southwest project incorporates second life BMW batteries and designed as a Peaker for grid services I

Southwest BESS

Overview

- 1.5 MW / 4 MWh / 2.7 hour
- Primary use of peak generation
- 1st large BESS in FPL service area

Technical Learning

- New – Old Battery system
- 1st FPL BESS used for Grid Services
  - Priority-based Generation Control installed and being tested

Business Learning

- Integration of 2nd life batteries is costly
- Distributed connected batteries can provide grid services

15 – 100kW Inverters X 10 = 1.5MW

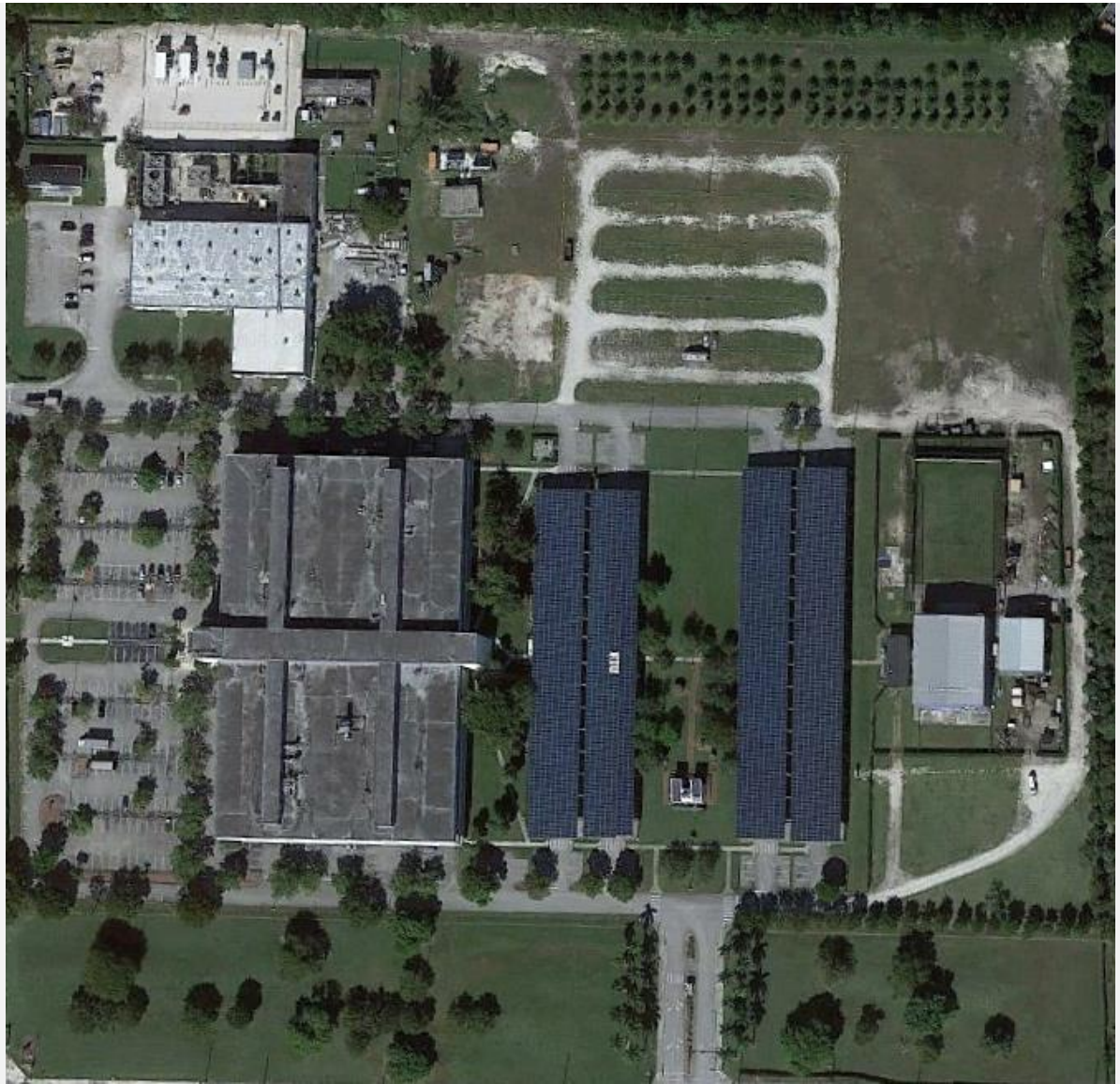
Second-life EV BESS is high labor and low material cost used for generation services

Florida International University Microgrid

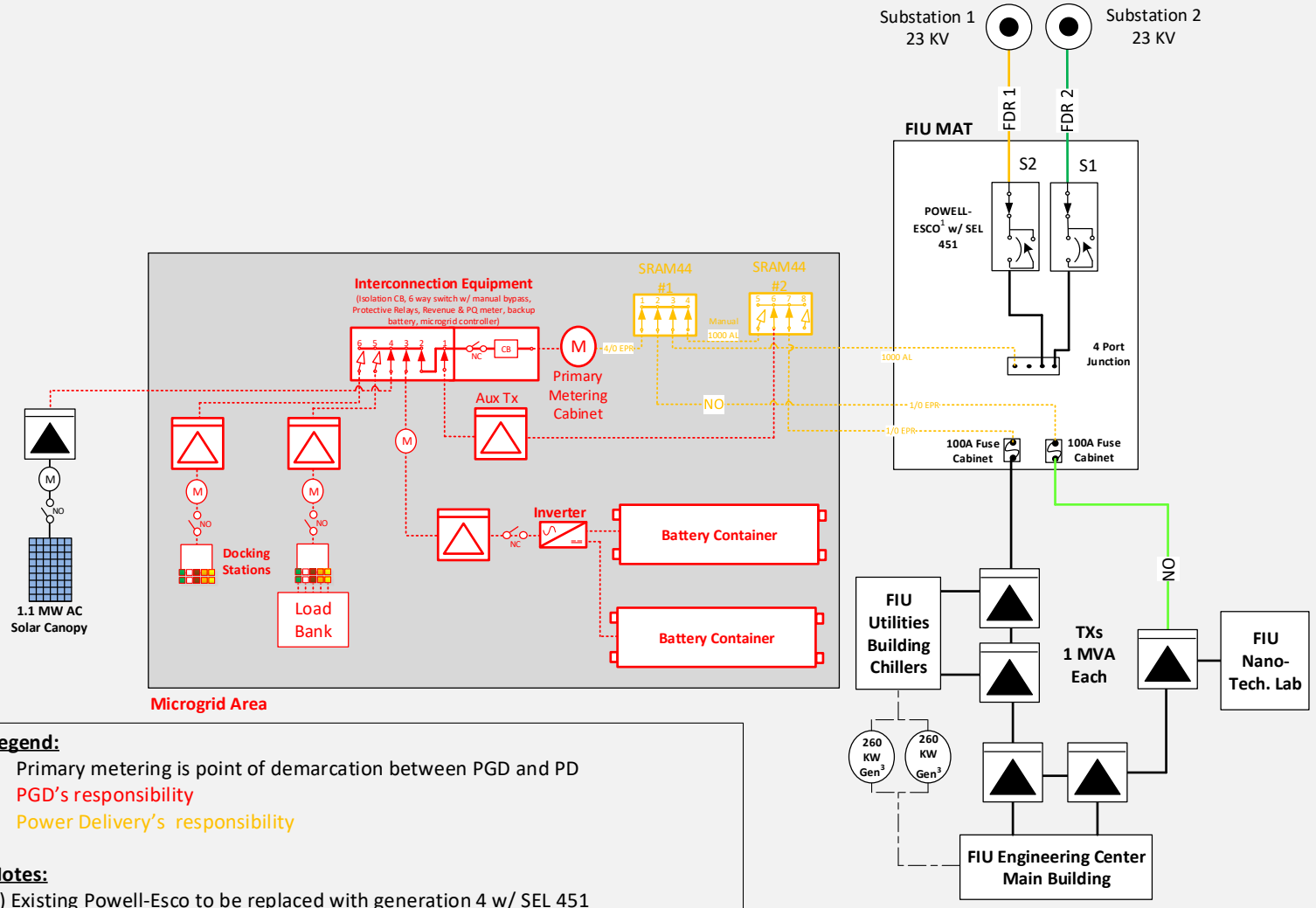
- **Location: FIU's Engineering Campus, 10555 W Flagler St. Miami**
- **System Size: 1.4 MW Solar + 3 MW BESS**
- **Interconnection: Substation 1-23KV (Primary), Substation 2-23KV (Backup)**
- **Pilot Objectives:**
  - Install and evaluate performance of grid-tied microgrid comprising of PV system and BESS for backup
  - In an outage on FDR 1, Powell ATS will throw to FDR, the microgrid will transition to island mode from FPL's grid with power from:
    - 1.4 MW PV system (46 SMA 24000TL-US Inverters) – Existing
    - 3 MW / 9 MWh battery energy storage system (BESS) – New
    - 2 – 260 KW Diesel generators–Existing
    - Paralleled 260 KW generators are behind the meter and pick up emergency loads in both buildings; microgrid controller to activate gensets when operating

Site layout

#	Equipment	Purpose
1	BESS Inverter	Microgrid Storage
2	Diesel Generator	Backup
3	Main Building	Load
4	Solar Canopy	Microgrid Generator



Single line diagram



Legend:

- Primary metering is point of demarcation between PGD and PD
- PGD's responsibility
- Power Delivery's responsibility

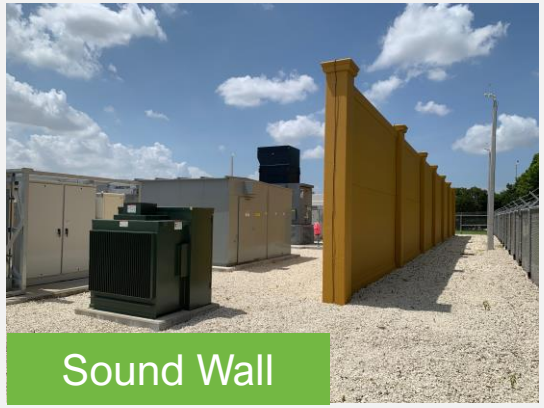
Notes:

1) Existing Powell-Esco to be replaced with generation 4 w/ SEL 451
2) Manual bypass to be used in the event microgrid equipment needs to be serviced
3) Additional conduit from MAT to SRAM #2 not shown
4) Fiber from SEL in ATS inside MAT to Microgrid Controller / SEL 451 not shown

Site pictures

Solar Canopy

Battery Enclosures



Sound Wall

Load Bank + Inverter

PMC

Refining battery storage strategy

Lessons learned

- **Pre-Development**
  - Start small
  - Engage all stakeholders in pre-design phase (external and internal)
  - Establish and verify power quality parameters based on industry standards
    - Harmonics (IEEE 519)
    - Voltage fluctuations (IEEE 1453)
    - Voltage imbalance (ANSI C84.1)
  - Verify sound levels and the impact to surrounding environment (sound wall)
- **Design**
  - Include load bank for testing micro-grid operation
  - Fire Suppression
  - Breaker settings need to coordinate with downstream protection
- **Operational**
  - Conduct pre-commission walk down with field personal / area
  - Establish ownership and procedures especially for restoration activities
  - Establish regular reviews with all stakeholders

Lessons learned have helped to establish the roadmap for future battery & microgrid interconnections