MICROGRID KNOWLEDGE

Virtual Conference

Utilities at the Forefront:

Microgrids for Resilience, Customer Service, Cost Savings & Sustainability

Agenda

Moderator: Lola Infante (Edison Electric Institute) Senior Director, Clean Energy Technology and Policy

Speakers:

1. Bennett Chabot (Pacific Gas & Electric) Principal Product Manager Grid Innovation
2. Chuck Hookham (CMS Energy/Consumers Energy) Executive Director
3. Juan Rodriguez (Commonwealth Edison) Principal Project Manager

Resources:

- Speaker Bios
- Ask the Experts: Q&A at End
- Microgrid Resources Library

PG&E Reducing Wildfire Risk with Distributed Grid Resilience

Bennett Chabot | Principal Product Manager, Grid Innovation | Pacific Gas & Electric Company

Extreme wildfire conditions in Northern California demand a new level of grid resilience.

Transmission PSPS

Distribution PSPS

System Hardening

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Transmission PSPS	**Substation Microgrids**	Safe-to-energize substations Reach thousands of meters
Distribution PSPS	**Temporary Microgrids**	Energize "main street" With rapid response tools
	Community Microgrid Enablement Program	Community-driven projects With PG&E technical support
System Hardening	**Remote Grid Initiative**	Stand-alone power systems As a new utility service

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Transmission PSPS	**Substation Microgrids**	Safe-to-energize substations Reach thousands of meters	Substations to be prepared with make-ready connection upgrades Mobile temporary generation reserved for 2020 deployments
Distribution PSPS	**Temporary Microgrids**	Energize "main street" With rapid response tools	Pre-Installed Interconnection Hubs Pre-designed energization plans Mobile temporary generation in 2020
	Community Microgrid Enablement Program	Community-driven projects With PG&E technical support	Community selects critical loads and provides generation Utility supports grid integration & operations
System Hardening	**Remote Grid Initiative**	Stand-alone power systems As a new utility service	Hybrid renewable, 24/7/365 islands Replacing overhead distribution lines

Utility-Developed Microgrids – Anticipating Hurdles

Chuck Hookham PE, CMS Energy, Executive Director

Challenges:

1. Nascent OEMs
2. Personnel Training
3. Anticipating "Hurdles" and Deploying Creative Solutions

Solutions

- **#1** – OEMs (suppliers, packagers, contractors) are not experienced with owning Microgrids. Verify experience before contracts let and execution plans defined.
- **#2** – Train stakeholders on all facets of microgrid operation, safety, maintenance, and management (including POI interface and "what could go wrong") up-front.
- **#3** – Use microgrid "pilot" to understand hurdles, from parallel/island transfers and meeting customer goals to technology shortfalls. Require contingencies in all plans.

MG Results / Recommendations*

1. Case History #1 – Include internal stakeholders in project planning (e.g., distribution interfaces, safety, use cases)
2. Case History #2 – Learn from industry experience, (Li-ion fires, OEM bankruptcies, evolving codes/technologies, AHJ/insurance uncertainty, staff knowledge gaps, OEM incompatibility, contracting terms, cybersecurity)
3. Case History #3 – Understand how "Use Cases" that validated the investment will be recognized in Operations, through OT, Historian, Sequence-of-Events

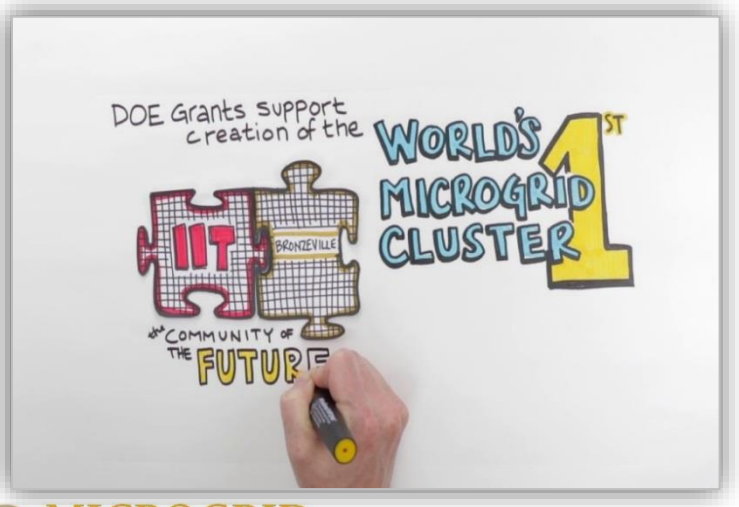
*Active participation in key industry groups (MK, ESA, EEI, EPRI, DOE, NFPA, others) is essential to build the knowledge base required to successfully build/operate an effective Microgrid

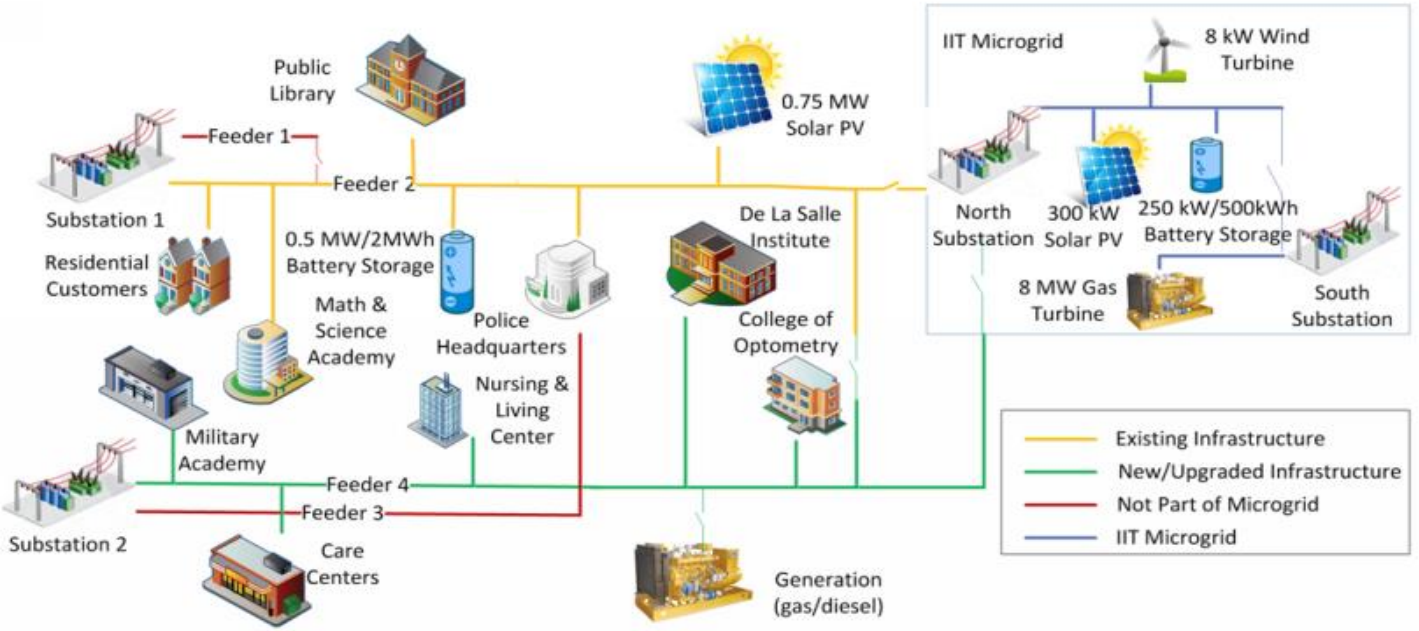
Bronzeville Community Microgrid

Juan Rodriguez, Manager of Project Management, ComEd

Challenges:

1. Microgrid Clustering
2. Critical Loads
3. Urban Setting





Solutions

- #1 Create a cluster between Microgrids to share resources during an outage or planned event
- #2 Identify and analyze critical loads and their location in respect to generation
- #3 Generation location challenged for restoration, speed and communication. Protection settings and islanding synchronization is critical for the sequence of operation

Results / Recommendations

1. Partnering with IIT to create the nation's first utility operated clustered microgrid

2. Prioritize load restoration, protection schemes, and partnerships to locate generation within the MG footprint

3. Restore loads and add tie ins, DA devices, fiber installation to facilitate CEC protection.

Load blocks to be used to restore according to critical loads and creating subislands.

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Ask the Experts: Q&A Session

Type your questions in to the Q&A box

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Microgrid Knowledge Virtual Conference Resource Library

Recommended Resources

Microgrid Resource Library

- www.ThinkMicrogrid.com

Network with the MGK Community on LinkedIn

Microgrid 2020 LIVE Conference – Nov. 18-20

Philadelphia, PA

Finance Session: *How Utilities are Enhancing the Grid and Improving Customer Service with Microgrids*

- Plus 90 speakers in 30+ sessions on best practices
- 35 exhibitors
- Networking opportunities

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Thank You!

Next Session: *Electrifying and Microgridding Transportation Systems: A Natural Pairing @ 3 PM Eastern*

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