Perspectives on Microgrid Development

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Imagination at work.

Advanced Technologies Workshop
NREL - ESIF
July 9, 2015
Challenges

- Value Proposition
- Interoperability
- Interconnection Requirements
- Standards & Testing
- Asset ownership
- Application Engineering

Technology is only one piece of the puzzle
Major Developmental Efforts at GE

Bella Coola Remote Microgrid

29 Palms Grid-tied Microgrid

Potsdam Community Microgrid

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Remote Microgrid, Bella Coola

Clayton Falls 2.12 MW Renewable

Bella Coola 2.1/1.5MW

Hagensborg 2.6/1.7 MW

25 kV Distribution

Enervista

Multilink LAN

MDS iNET 900

Microgrid Controller

Ah Sin Heek - Diesel / Hydrogen Energy Storage Site

Electrolyzer 300 kW

Fuel Cell 125 kW

Flow or Conventional Battery 125 kW / 400 kW-hr

Storage 3.3 MW-hr

6.2 MW Diesel

Utility Service Vehicle

Minimize Diesel Use
Bella Coola Remote Microgrid
Grid-tied Microgrid at 29Palms Military Base
Microgrid Control Objectives

Phase I (Optimal Dispatch)
• Optimal Dispatch of DERs
• Co-optimization of Electrical and Thermal Loops
• Islanding Capabilities

Phase II (Integrated Volt/VAr Control)
• Peak Load Reduction using CVR
• Manage High PV Penetration
• Voltage Flattening
• Minimizing Utility asset operations

Phase III (Integration of Energy Storage)
Community Microgrid at Potsdam, NY
Microgrid at Potsdam, NY
Partners
Control Objectives

• Disconnection (IEEE 1547)
• Resynch and Reconnection (IEEE 1547)
• Protection (coordinate with utility breaker and assets)
• Steady State Frequency (utility), voltage (ANSI 84.1) and power quality (customer)
• Dispatch assets for optimized energy consumption and generation
• Provision of grid services like frequency regulation, demand response
• Community-defined resilience objectives