

How Does CHP + Microgrid Provide Resiliency to Healthcare Facilities?

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Today's Topics

- Impact of Energy Supply in Hospital Operations
- Benefits of Onsite Power in the Healthcare Environment
- Berkshire Medical Center Overview
- Summary and Lessons Learned



Impact of Energy Supply in Hospital Operations

Healthcare is critical infrastructure that cannot suffer a power outage

For every cancelled surgery, **hospitals can lose \$150 per minute of revenue, or \$9,000 an hour**

New legislation (ex: Florida) requiring redundant power to protect the health and safety of patients

Hospitals balance declining margins, while addressing increased costs



Impact of Energy Supply in Hospital Operations



Energy interruption impacts patient outcomes, lost revenue due to cancelled services, legal liability, and damaged reputations

Recent ASHE survey: providers identified power outages (66 percent), winter storms (47 percent) and hurricanes/flooding (each 19 percent) as the top three disaster-related incidents that impact their patient care

Benefits of Onsite Power in the Healthcare Environment

Reduced Energy Costs



- Early adopters of self-generation are seeing operational cost reductions of between 8% and 28% and a return on investment of between 3-7 years.

Reliability & Resilience



- Hospitals place high value on Resiliency - Distributed Energy solutions often bolster resiliency
- Microgrid and localized generation supports reliability while improving the bottom line

Healthcare CHP



- Hospitals are often ideal CHP candidates due to electrical load and thermal energy (steam, hot water, chilled water) demand.

Outsourcing on the Rise



- Healthcare is faced with lowering costs and improving healthcare services
- Outsourcing of non-core energy & utility supply services can be compelling value proposition

Enhanced Control



- Have the power of a complex energy system—using advanced microgrid controls
- Optimize power usage based on demand, utility prices, and other factor

Flexibility and control over power supply enables less costly and more reliable healthcare.

Berkshire Medical Center Overview

- Location: Pittsfield, MA
- Private, non-profit 307-bed community teaching hospital
- Rely on diesel generators for backup power
- If outage is long, or generator is down during grid outage, the hospital would have to evacuate.



BMC CHP Microgrid Objectives

“New distributed energy system at BMC to provide continuous, affordable, and reliable on-site power during regular operations and black-outs / emergencies.”

- Continuously provide medical services through long-duration electricity outages by using clean energy technologies.
- Reduce overall energy, both electrical and thermal, costs -- \$500,000 expected reduction in annual energy costs.
- Reduce the dependency of diesel backups.



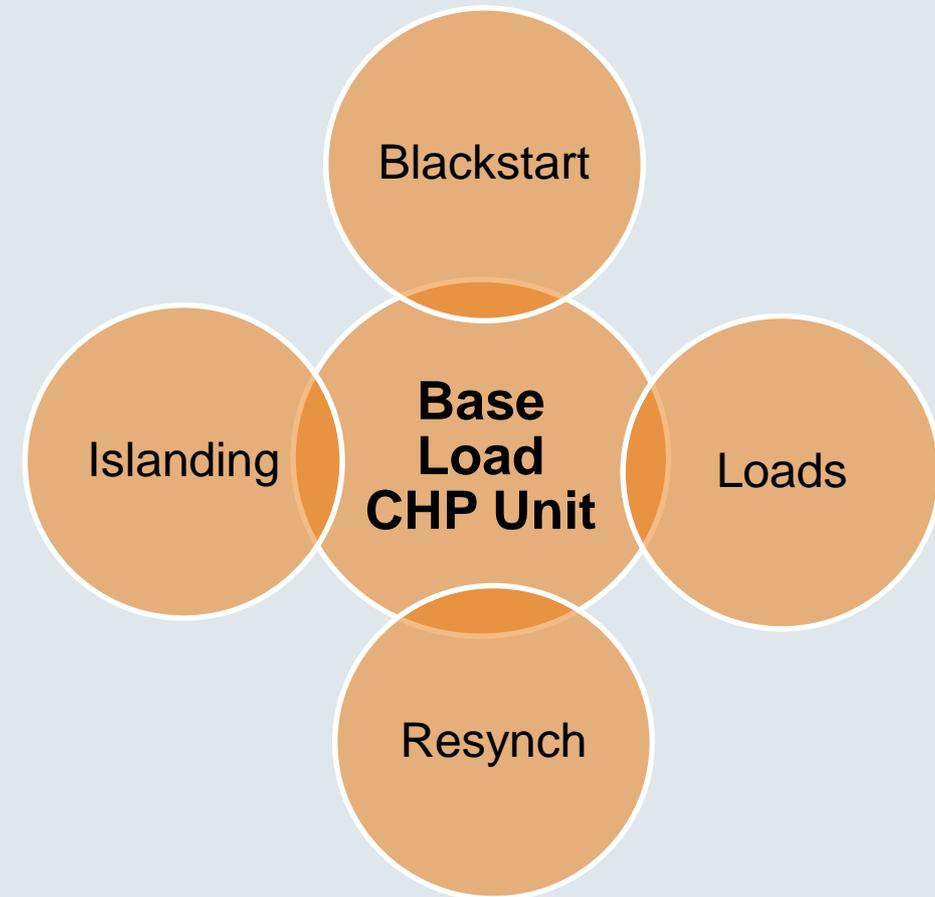
BMC CHP Microgrid Project Overview

Project Team Members:

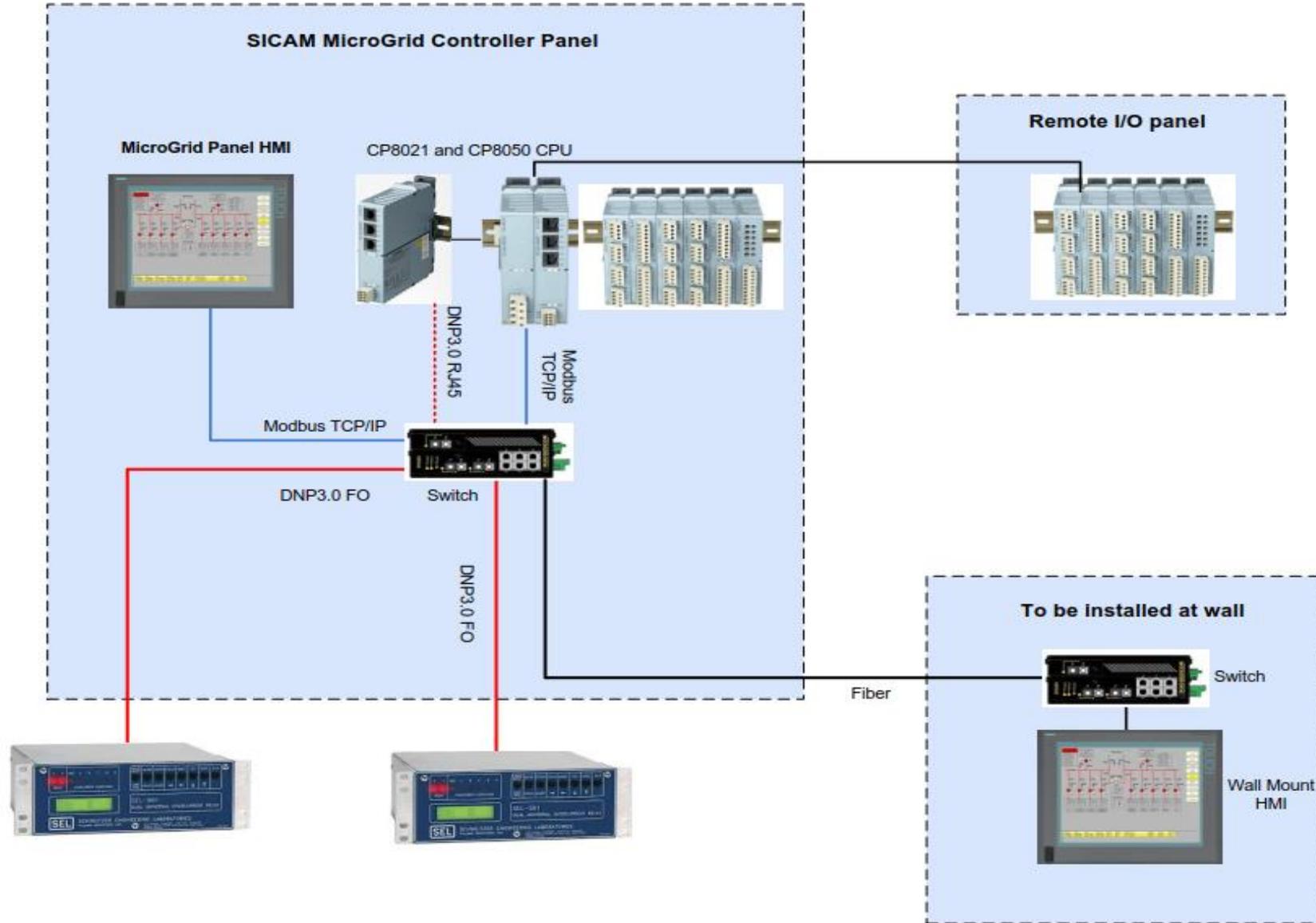
- Berkshire Medical Center
- AZ Corp
- Siemens
- Martin Energy
- Mass Department of Energy Resources

Project Main Scope:

- Design, Engineering, Construction, Commissioning and Start up
- 725kW Siemens Guascor Engine
- Siemens SiCAM Microgrid Controller



BMC CHP Microgrid Project Overview



Summary and Lessons Learned

- Strong leadership both at hospital and state level
- EPC with similar project experience
- Major component (such as microgrid controller, generation asset) vendors with proven technology and project experience
- 3 Cs: Committed, Collaboration & Communication
- Nothing is too small for a microgrid
- KIS (Keep it Simple) to start with
- It takes a village!

