Schneider Electric: New Energy Landscape

Introduction to Microgrids, June 7th 2018

Andy Haun, Chief Technology Officer
Schneider Electric Microgrids Business

We have an opportunity to co-create the future


...Advanced Microgrids Can Help!
What is an Advanced Microgrid?

An integrated energy system consisting of interconnected loads and distributed energy resources…

...which can be controlled as a single entity and operate in parallel with the grid or in an intentional *islanded* mode.

“It’s about making wise choices at the intersection between energy smartly acquired, locally produced and efficiently consumed!”
Distributed Energy Resource Management Layers

**Apps, Analytics & Services**
- Microgrid Advisor
  - Optimizes DERs and ROI

**Connected Products**
- Edge Control
  - Microgrid Operation
    - Resiliency and Prioritization

**On-Premise or Off-Premise**
- Energy Control Center
  - Protection, Data and Safety

---

EcoStruxure
Innovation at Every Level

---

Confidential Property of Schneider Electric | Page 4 #EcoStruxure #Microgrid
Automated Peak Demand and Tariff Management
Minimize or avoid costs by shaving peak demand and leverage off-peak pricing

Peak Management

Tariff Management

Source: Oncor Electric Delivery Company
Microgrid Resiliency Benefits: **Storm Hardening**

Optimize for resiliency when weather threatens site operation

Weather prediction and power quality monitoring can proactively trigger resiliency optimization measures including:

- Charge the battery to full capacity
- Warm and pre-lube emergency generation
- Adjust protective relay settings
- Proactively island the site
- Shed non essential load
- Electrically isolate sensitive equipment
Our solution to simplify Optimization and Control of On-site Distributed Energy Resources

Pathway to resilience, sustainability and efficiency
Simplifying implementation of microgrids and integrating DER’s

“Microgrid in a Box”

Energy Control Center
Simplifying implementation of microgrids and integrating DER’s
Battery Energy Storage System (BESS)

Schneider Electric’s BESS hardware solution is best-in-class in terms of energy density, footprint and efficiency.

Coupled with Schneider Electric’s intelligent and dynamic control system, EcoStruxure Microgrid Advisor (EMA), Schneider Electric’s storage solution and power distribution can meet all your storage needs for commercial and industrial applications.
Uninterruptible Power Supply (UPS) with Peak Shaving Capability

High performance UPS including Li-Ion storage and dispatch flexibility

• With the Right UPS...
  ➢ Software adjusts UPS input power limit to maximize ROI
  ➢ Load power beyond input power limit is drawn from batteries
  ➢ Only a portion of battery capacity is used for peak shaving to ensure reserve for full backup time

Higher resiliency ➔ Battery issues can be detected BEFORE backup needed
Dynamic Energy Networks, backed by the Carlyle Group, is a global independent energy infrastructure platform that owns and operates microgrids and distributed energy resources (DER). We are leading the energy industry’s revolutionary shift from one-way static power grids to two-way dynamic power infrastructure to deliver:

- Resilience - business continuity, community hub during natural disasters, and cyber security
- Cost efficiency - more predictable costs, flexibility, and ancillary services allowing companies the freedom to reinvest in their own business
- Sustainability - reduce carbon footprint, and enhance brand image
- Ability to scale - projects can start smaller then be added on and expanded as your company grows

Best-In-Class Alliances

“We are committed to forging long-term reliable partnerships to exceed our customers’ objectives. Working with select industry leaders to ensure the most cost-effective, efficient, and resilient outcomes.”
Boston ONE Campus Microgrid

“Eating our own Cooking”

http://microgrids.schneider-electric.us
Boston One Campus

240,000+ square feet

Serves as North American HQ

2 Building Campus

750+ employees

1 of 5 Global R&D Centers
Customer Challenge
Schneider Electric’s new headquarters experienced utility-related outages.

The Solution
Pre-configured microgrid solutions with site optimization platform owned and operated by third-party capital partners.

Customer Benefits
Greater electrical reliability, resiliency, demand-side efficiency, and sustainability at no upfront cost.

The Results: Life is On with...
When we collaborate with partners to develop real-world solutions that enhance the electric reliability, boost use of clean energy, and manage energy economically—all while sparing customers from paying any upfront capital costs.

“The sustainability aspects of the microgrid create savings, and equipment upgrades can be funded by those savings.”

Mark Feasel,
Vice President Smart Grid, Schneider Electric

www.schneider-electric.us/microgrid
Take our virtual tour to see how a microgrid works

Visit microgrids.schneider-electric.us