



# RESILIENT

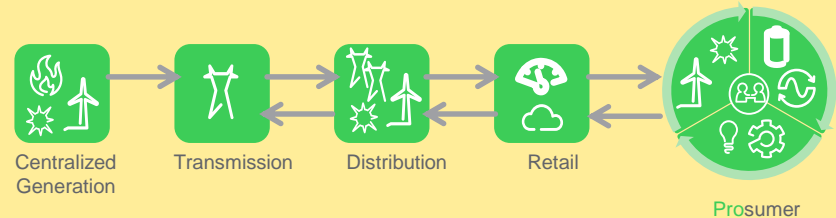
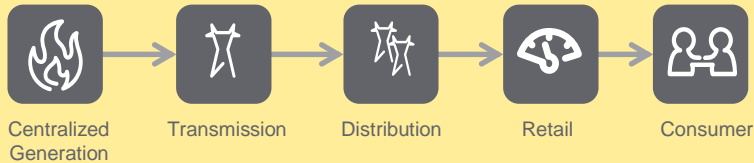
## Schneider Electric: *New Energy Landscape*

Introduction to Microgrids, June 7<sup>th</sup> 2018

Andy Haun, Chief Technology Officer  
Schneider Electric Microgrids Business

# We have an opportunity to co-create the future

## Historical Energy Value Chain vs. “The New Energy Landscape”



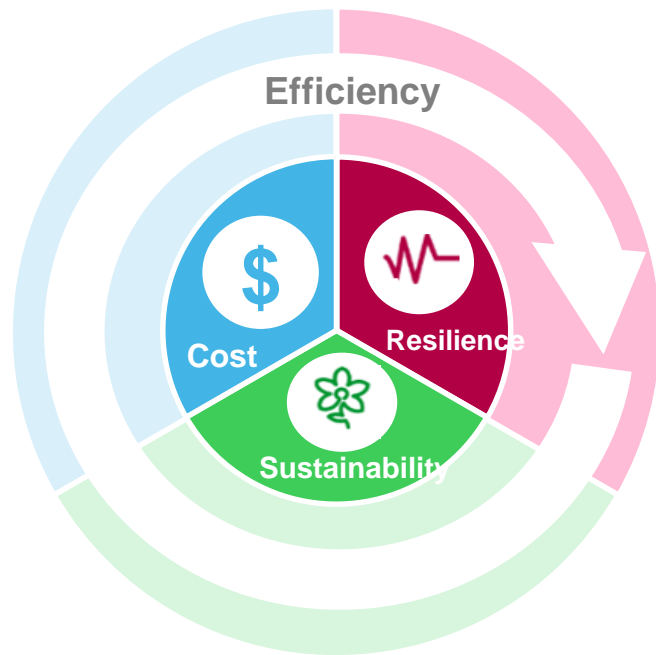
# What is an *Advanced* Microgrid?

An **integrated energy system** consisting of **interconnected loads** and **distributed energy resources**...

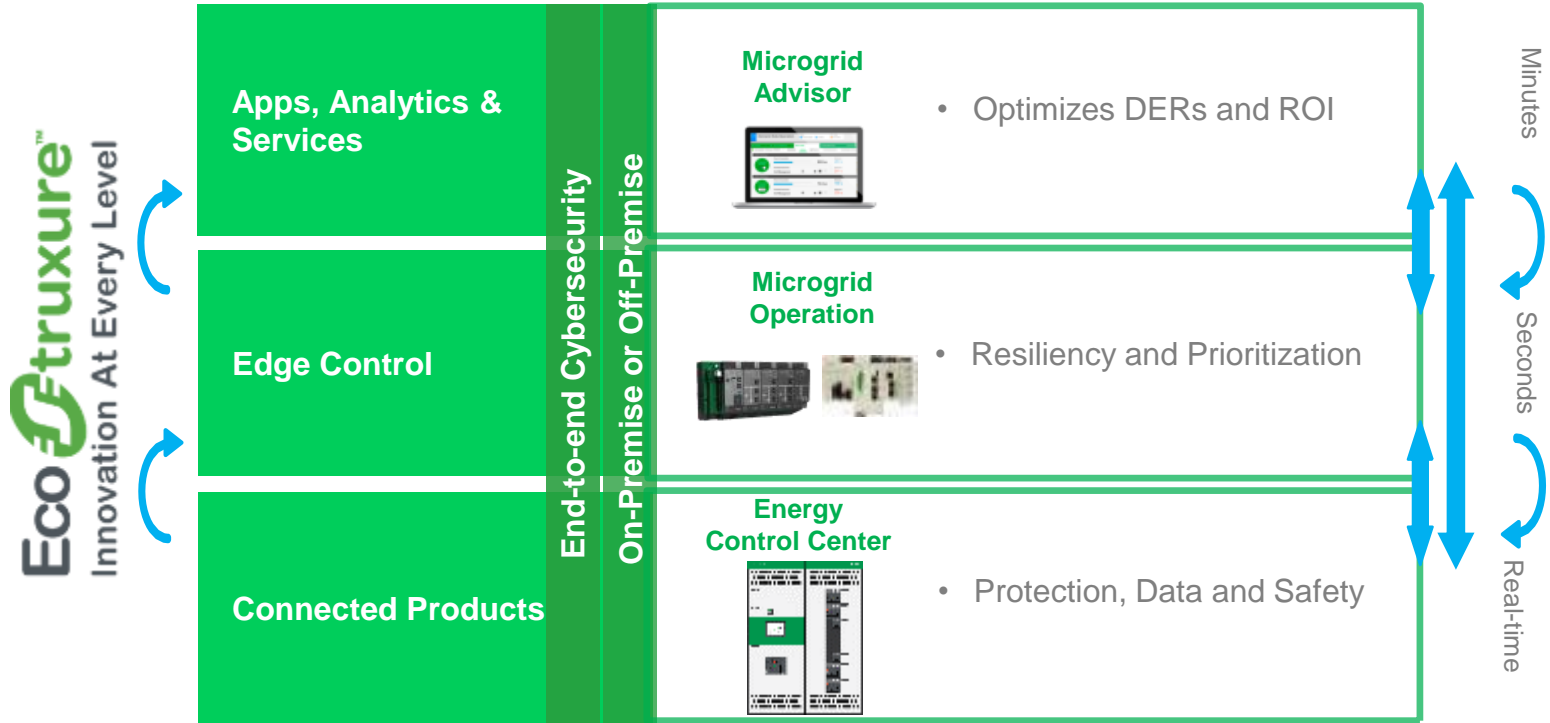


...which can be **controlled as a single entity** and operate in **parallel with the grid** or in an intentional *islanded* mode.

*“It’s about making wise choices at the intersection between energy smartly acquired, locally produced and efficiently consumed!”*



# Distributed Energy Resource Management Layers

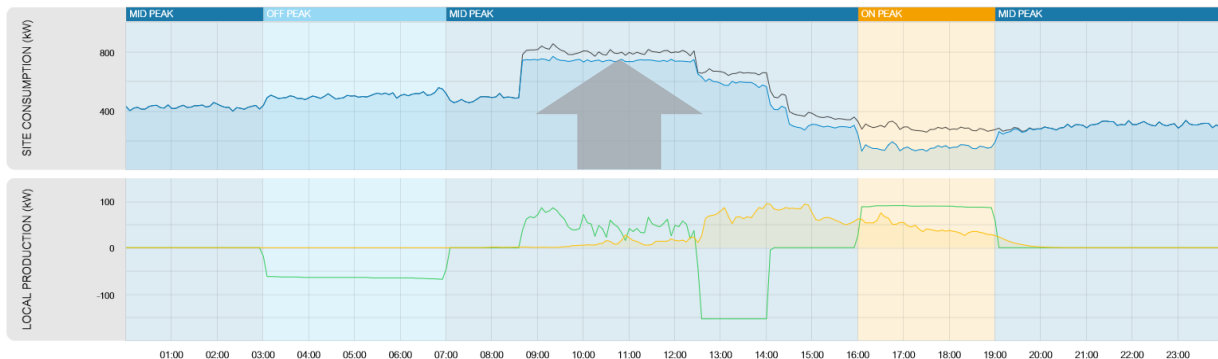




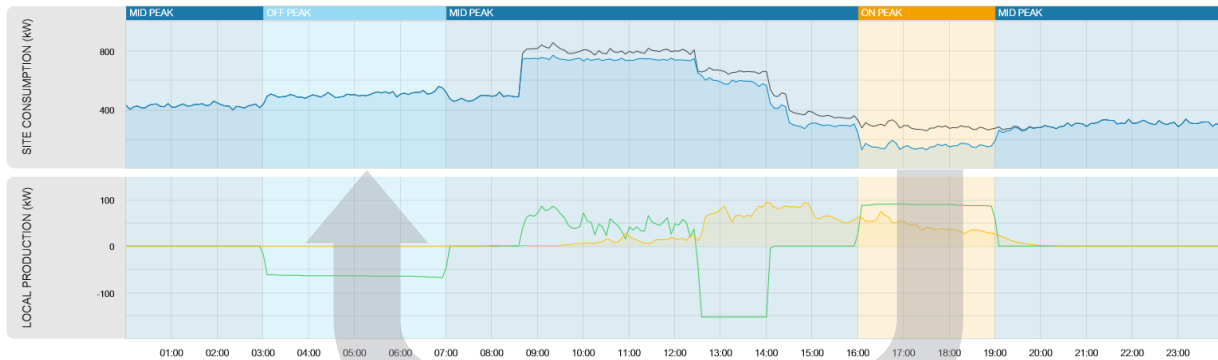
# Automated Peak Demand and Tariff Management

Minimize or avoid costs by shaving peak demand and leverage off-peak pricing

Peak Management



Tariff Management

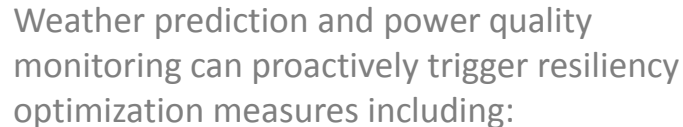


— Solar PV — Battery Storage — Actual kW — Forecasted kW



#EcoStruxure #Microgrid

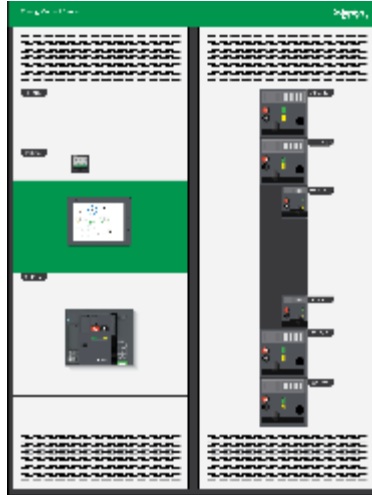
## Optimize for resiliency when weather threatens site operation



- 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



Life Is On

**Schneider**  
Electric



*“Microgrid in a Box”*

# Energy Control Center

Simplifying implementation of microgrids and integrating DER's



# Battery Energy Storage System (BESS)

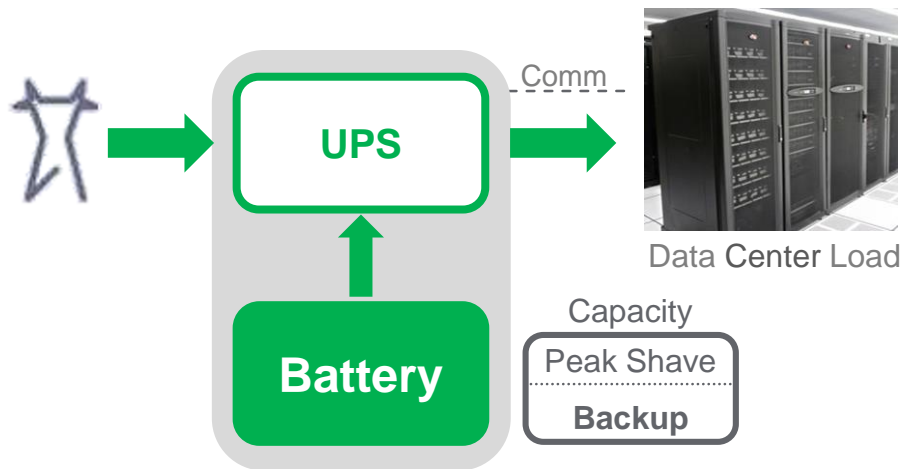
Schneider Electric's **BESS** hardware solution is best-in-class in terms of energy density, footprint and efficiency.

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

# Save your CAPEX, Energy-as-a-Service!



## Financing Partners can simplify these energy investments

**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

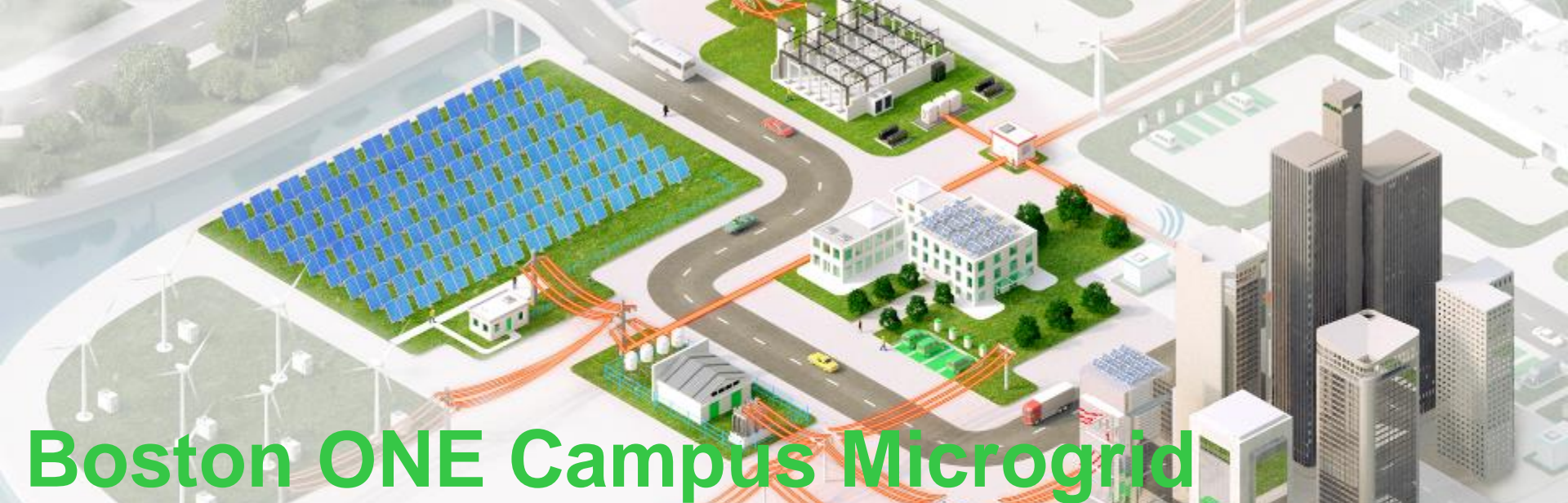


ONE CARLYLE

### 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







# Boston One Campus North American R&D Headquarters

## 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](http://www.schneider-electric.us/microgrid)

In **partnership** with Duke Energy Renewables and REC Solar, the Schneider Electric built a **microgrid to power critical operations.**



Apps,  
analytics,  
and services

EcoStruxure  
Microgrid  
Advisor



Edge  
control

EcoStruxure  
Microgrid  
Operation



Connected  
products

Energy  
Control  
Center



Life Is On

**Schneider**  
Electric



Take our virtual  
tour to see how  
a microgrid works



Visit [microgrids.schneider-electric.us](https://microgrids.schneider-electric.us)

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