



# INSIGHTS

## Microgrids as a Service

A New Approach to Unlock More Efficiency, Better Sustainability, and Higher Resiliency

Mark Feasel  
Vice President, Smart Grid  
Schneider Electric



## More ELECTRIC

**2X** faster growth of  
electricity demand compared to  
energy demand by 2040

Source : IEA WEO 2014

## DIGITIZATION

**10X** more incremental  
connected devices than  
connected people by 2020

Source : Cisco, Internet World Statistics

## DECARBONIZATION

**82%** of the economic  
potential of energy efficiency in  
buildings and more than half in  
industry, remains untapped

Source : World Energy Outlook 2012,  
Internal Analysis

## DECENTRALIZATION

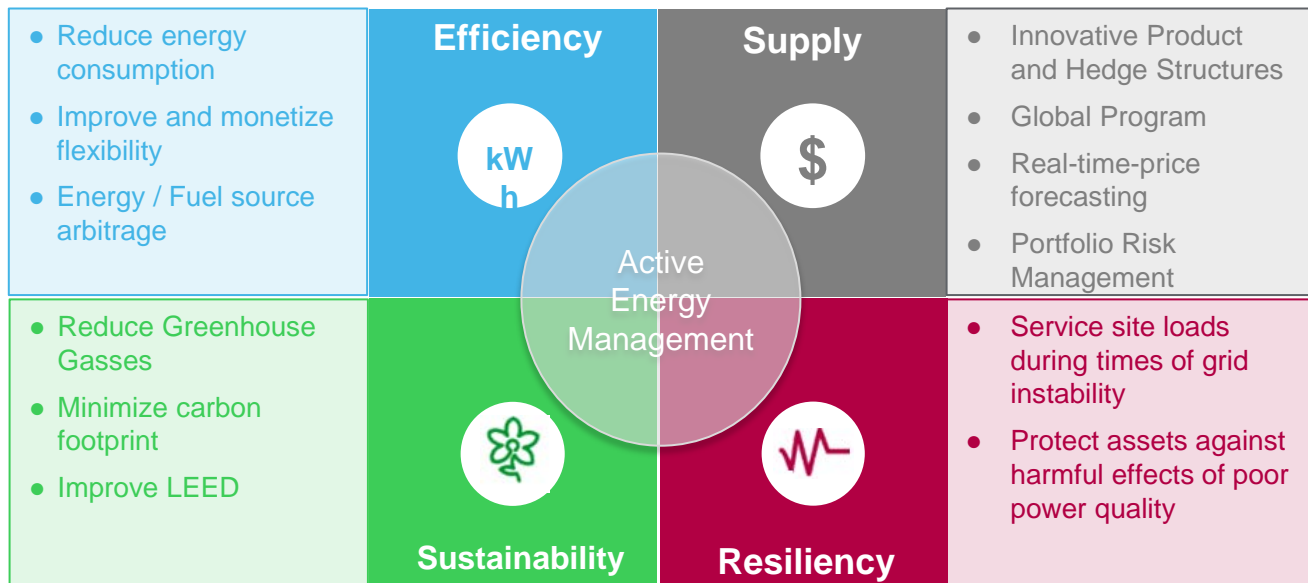
**70%** of new capacity  
additions will be in  
Renewables by 2040

Source : BNEF

Life Is On

**Schneider**  
Electric

# Historically Passive Energy Consumers are thinking about Energy in a New Way



...and taking control of their energy spend



From the Washington Business Journal:  
<http://www.bizjournals.com/washington/news/2017/02/10/montgomery-county-is-taking-two-large-buildings.html>

## Montgomery County is taking two large buildings off the energy grid

Feb 10, 2017, 1:40pm EST

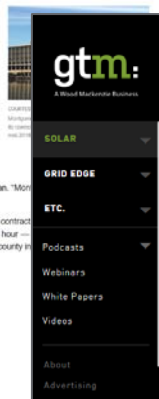
Montgomery County is taking its correctional facility and public safety buildings off the grid.

The county has entered into a public-private partnership with **Schneider Electric** and **Duke Energy Renewables** to construct microgrid systems at the 300,000-square-foot jail in Clarksburg and the nearly 50-year-old, 408,000-square-foot police and fire headquarters in Gaithersburg.

It's a first-of-its-kind move for the county, bringing environmental and other benefits and protecting the county from power outages, said **Eric Cofman**, chief of the county's office of energy and sustainability. The microgrids will generate clean power using solar energy systems and natural gas generators. The public safety buildings will operate independent of the electrical grid, which will enable the county to replace aging equipment, install other security measures and ensure uninterrupted service, Cofman said.

"This is the first advanced microgrid in this part of the state, to my knowledge," said Cofman. "Montgomery County's big power outages, and our facilities need to operate."

The buildings are expected to be on the microgrid by mid-2018, the county said. While the correctional facility will only pay for the energy it uses, which is expected to cost 12-13 cents a kilowatt hour — Peppco for its power now. The project emerged from a request for proposals issued by the county in 2015. Dozen firms responded.



# Ohio State's Endowment Gets \$1 Billion With Campus Energy Deal

by **Janet Lorin** and **Brian Eckhouse**

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## How MGM Prepared Itself to Leave Nevada's Biggest Utility

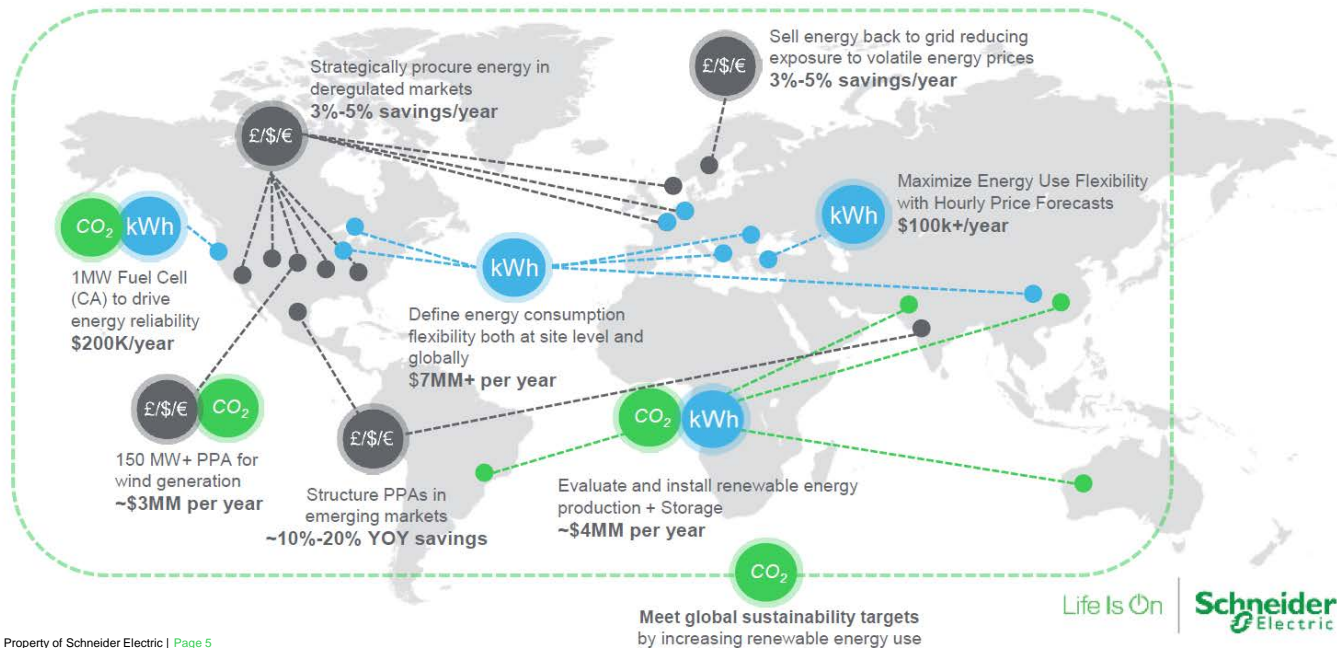


Photo Credit: NRG Energy

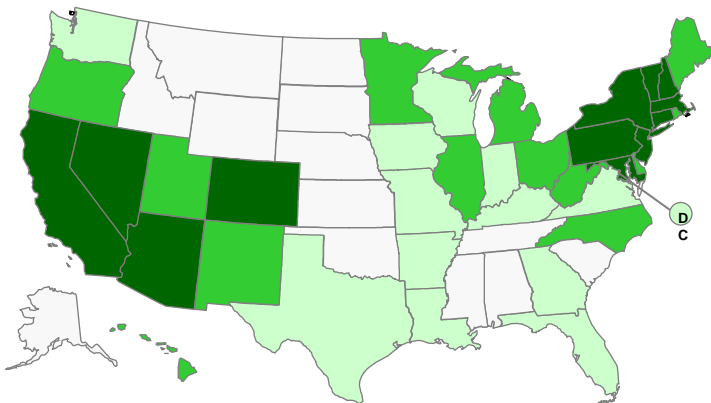
The casino conglomerate expects to double its use of renewable energy and earn payback within 7 years.

by **Julian Spector**  
September 16, 2016

## Each path to Active Energy Management is Unique

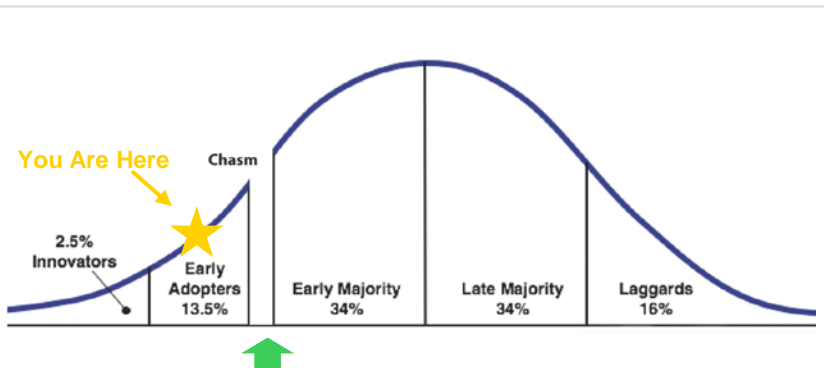


# Catalysts for a New Energy Landscape - USA



1. Levelized Cost of Energy at or below Grid Parity ([Deutsche Bank](#))
2. Credits for Net Excess Generation – Net Metering ([DSIREUSA](#))
3. Aggregated, Virtual, or Community Net Metering ([NCSL.org](#))
4. Prone to Power Outages / Severe Weather ([US Blackout Tracker](#))
5. High MWs per Net Meter ([EIA-826](#))
6. Forecasted Growth in non-Resi Solar PV systems ([GTM](#))
7. Potential for Self-Supply ([ScottMadden Mgmt Consultants](#))

# Crossing the Chasm in the New Energy Landscape



## The offer required to cross the chasm:

- Allows consumers to co-optimize for energy and process
- Aligns ownership of assets to those with a prospectus based upon long term stable returns.
- Delivers an enduring outcome for the economic useful life of the asset
- Shields consumers from technical risk of emerging technology

Early market participants are advanced energy prosumers who can quantify the value of improved reliability, flexibility, sustainability, and security to their corporate mission.

Reaching the larger market now requires overcoming high barriers to entry:

- Microgrids are expensive to deploy and require extensive engineering to implement.
- Optimized operation requires insight into:
  - Utility rate structures
  - Commodity energy trends
  - Weather and other correlated variables.
  - Analytics and Sophisticated Controls



# Montgomery County Maryland

Office Of Energy and Sustainability

## About Montgomery County

- Approximately 1 million people
- High tech knowledge based economy
- 400+ facilities
- Leader in Advanced Energy
  - 11 megawatts of solar across 18 sites
  - Procure 100 percent clean energy for County facilities
  - Inaugural Partner in the U.S. DOE's Combined Heat and Power for Resiliency Accelerator
  - First CHP system installed in 2016





# Montgomery County Maryland

## Project Objectives



- Improve resiliency of county operations
  - Upgrade existing aging electrical distribution infrastructure
  - Ability to island operations for >7 days without grid support
- Mitigate risk of escalating energy price over 15 years.
- Upgrade infrastructure without capex
- Reduce greenhouse gas and other emissions
- Create replicable models for other facilities and governments

### Public Safety Headquarters

- Large electrical upgrades
- New 2 MW Solar
- Load management with BAS
- New Cogen
- Integrate Existing gas generator

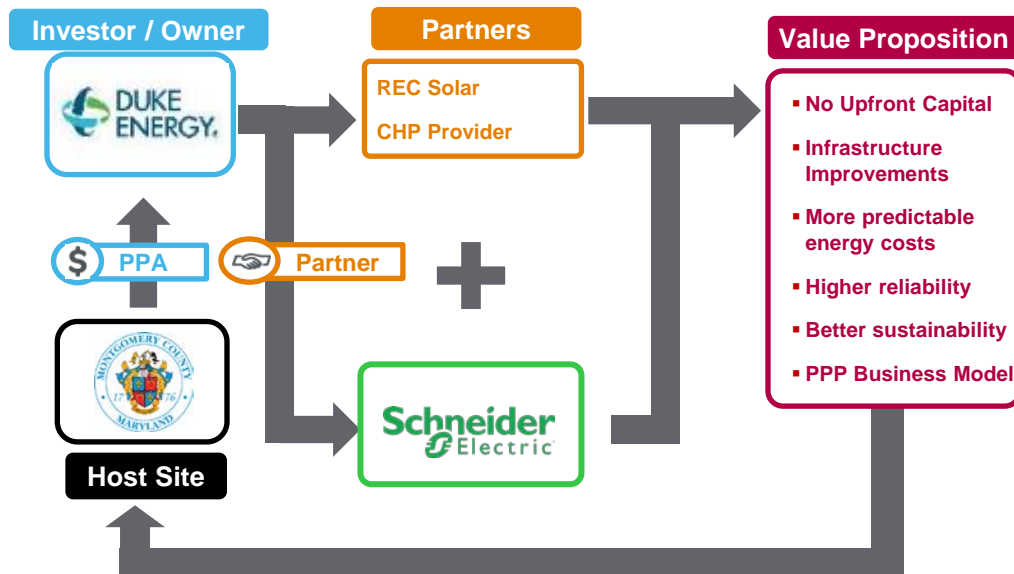


### Correctional Facility

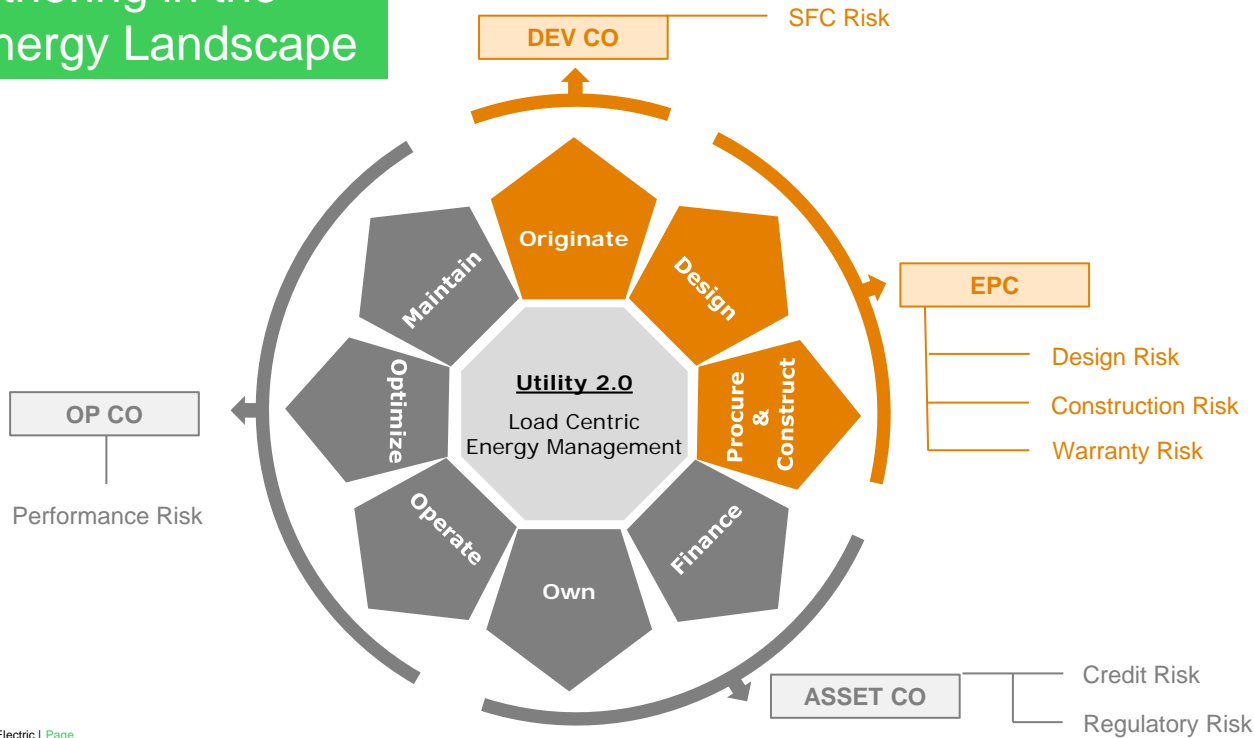
- Minor Electrical Upgrades
- New 250 kW Cogen
- Integrate existing Diesel



# Microgrid as a Service



# Partnering in the New Energy Landscape



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