

Bill Taylor
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CPES MicroGrids

Honeywell

Micro-Grid Definition

“Intelligent management of local (electric) power generation supplying local (electric) loads”

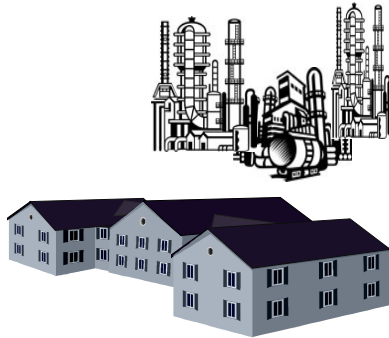
- Can operate totally independent of a utility grid (isolated)
- Can interface with a utility grid and have islanding capability

Customers who primarily need to interface with a utility grid and have islanding capabilities to support critical functions when necessary:

- *University Campuses*
- *Fixed Military Installations/Bases*
- *Commercial Building Complexes (e.g., Industrial parks, corporate headquarters)*
- *Data Centers*
- *Hospitals*
- *Communities with a utility infrastructure, but experience power shortages*

Micro-Grids: Modernizing Electric Power Grid

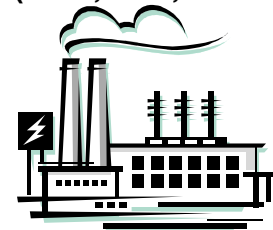
Residential, Commercial, Industrial loads



Transmission & Distribution System



Public Utilities
Bulk Power Generation
(Coal, Gas, Nuclear,...)



Traditional Electric Grid:
Centuries old design with 1-way electricity flow

- **Micro-Grid Benefits**
 - Energy security
 - Increased reliability
 - Improved efficiency

Storage
(batteries,
chemical,
thermal)



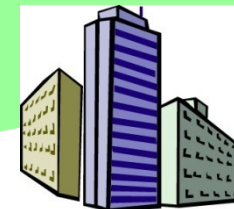
Interface to Utility Grid

Micro-Grid
Interconnected Local generation & distribution

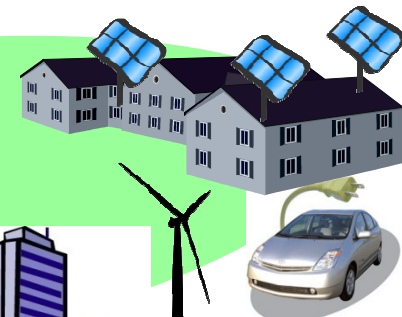
Local
Multi-fuel
generation
(Backup)



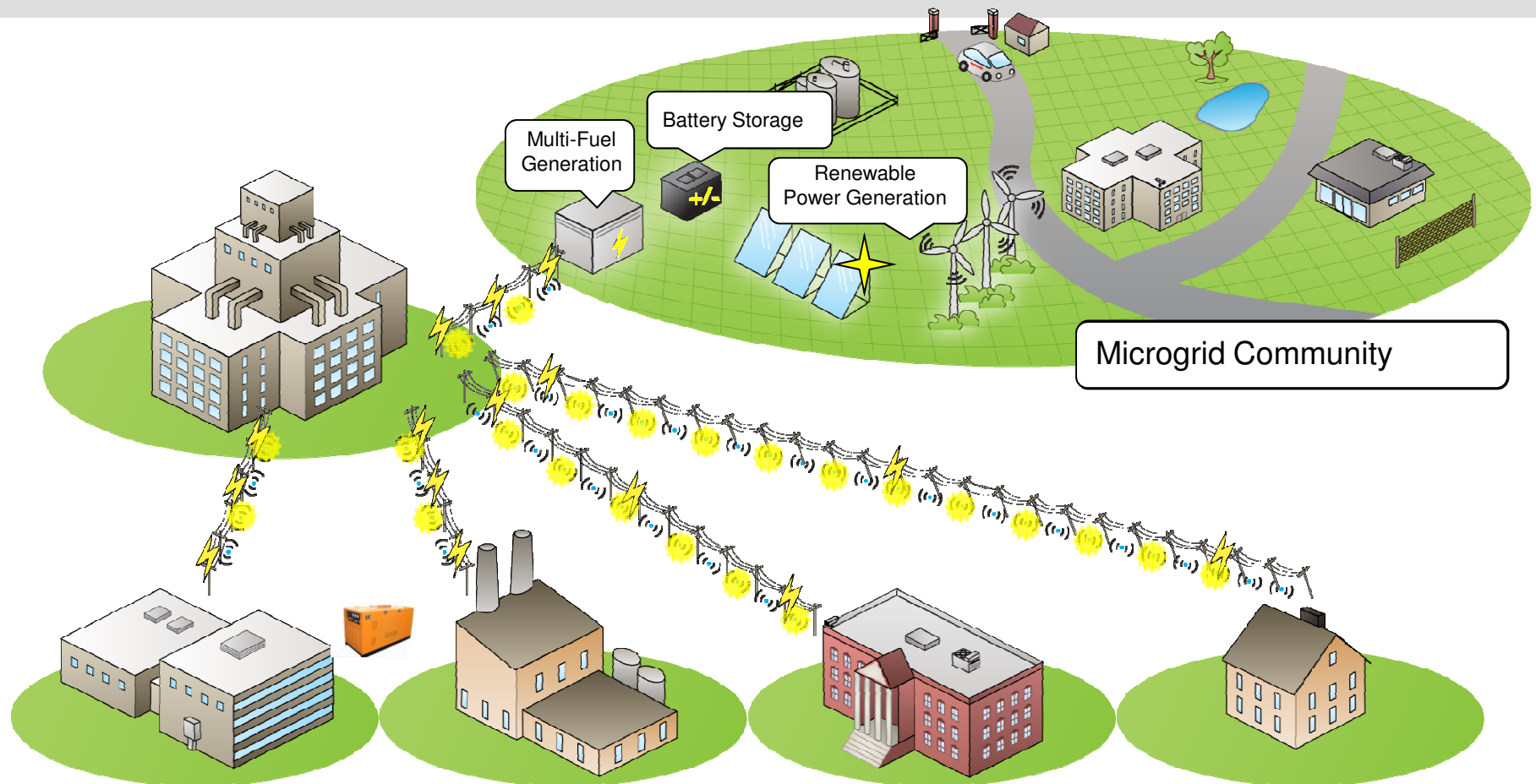
Electricity,
heating,
cooling
(CHP)



Distributed
Renewable
Generation &
Storage



MicroGrid Vision



***Microgrids enable energy security and reliability
needed to keep and attract large employers***

Recommendations

- Short-Term
 - Educate relevant constituency (target verticals) about what exactly a microgrid is, and where it can be cost-effectively implemented to help a customer meet their energy goals as part of an integrated solution that includes energy efficiency and demand management.
 - Work with utilities to identify parts of their utility grid that are problematic in regards to reliability and identify potential customers who could implement microgrids that would have technical and financial feasibility.
 - Identify other solutions (such as standby generation) that are not truly microgrids, but that help improve energy security and can be implemented where microgrids are not technically or financially feasible.
- Long-Term
 - Direct the utilities to undertake a thorough investigation of microgrids as a cost-effective means to improve energy reliability as part of the integrated solution and consider incentive programs that speed their adoption.
 - Ensure that utility interconnection requirements continue to place safety of employees, external and host customers as paramount, using methods that are as cost effective and timely as possible.
 - Continue to publicize public benefits of microgrid installations.

Federal Research Center at White Oak, MD



What was Needed

- Energy Infrastructure Master Planning
- Establishment of Microgrid
- Critical Load Redundancy/ Firm Capacity
- Demand Response Capability
- Energy VE of Building Designs
- Phased Energy Infrastructure Development
- Adaptive Reuse of Historic Building
- Support to Building LEED Certification

About the Project

The Food and Drug Administration (FDA) and the General Services Administration (GSA) are working together to consolidate FDA operations at the government owned White Oak site in Montgomery County, Maryland. A series of ESPC projects were used to accelerate the timeline for the move, reduce the costs associated with the mechanical systems in the new buildings, and provide a reliable and efficient energy infrastructure to support the White Oak campus.

Energy & Environmental Benefits

Annual Energy Savings:

- 640,000 MBtu (Current)

Pollution Prevention (annual):

- 50,000 metric tons CO₂-equivalent (Current)

THANK YOU!

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