



An Exelon Company

# ComEd's Vision of Energy Storage

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## Our Customers:

- 3.9 million customers in northern Illinois, including the City of Chicago

## Our Company:

- One of four utilities owned by Exelon
  - Exelon also owns generation and energy sales businesses
- ~6,000 Employees
- Service Territory: 11,428 square miles

## Our Grid:

- Peak Load: 23,753 MW (7/20/2011)
- 526,000 distribution transformers
- 65,000 circuit miles of primary distribution
  - 53% overhead, 47% underground
- 5,800 circuit miles of transmission
- Including 2nd largest underground network in the U.S.



There will be **viable** energy storage solutions for different applications, which will yield positive outcomes with confidence under the prevalent economic, regulatory, climate, and energy conditions in our service territory.

**viable** = cost competitive + reliable & safe + embraced by regulators + industry accepted

# ComEd Strategy for Energy Storage

Document and share performance of installed systems

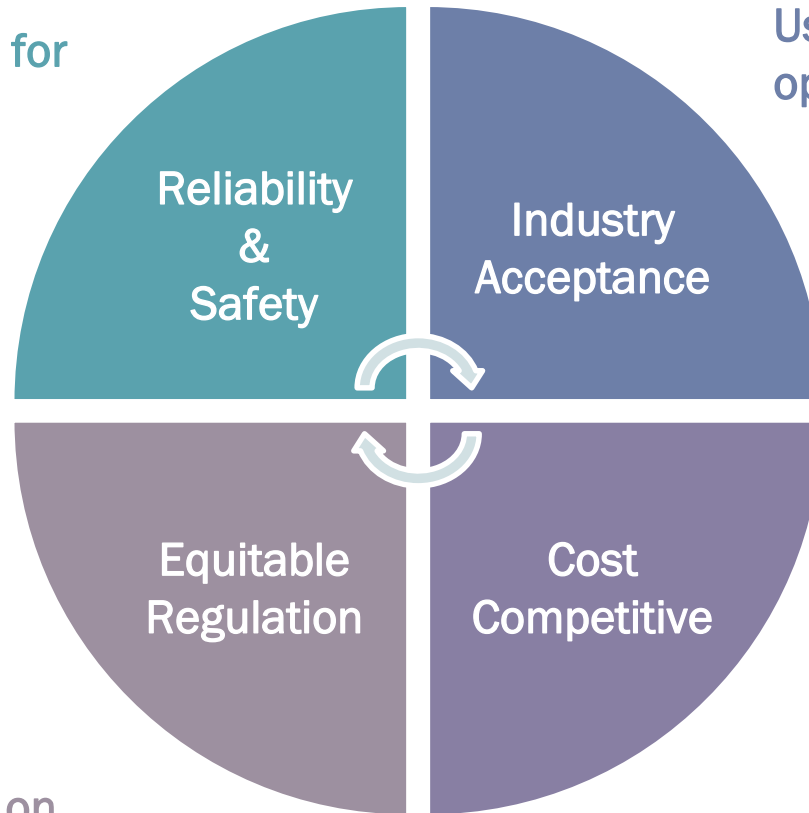
Validate testing protocols for utility use cases

Track degradation and failure mechanisms

Perform field-trials and pilots

Use existing planning and operational tools

Design tools for multiple grid services



Support development of consensus based codes and standards

Disseminate information on storage status, experience and realizable benefits

Characterization and evaluation of grid benefits of storage

Develop cost-benefit analytical models



## Energy Storage Pilot Program

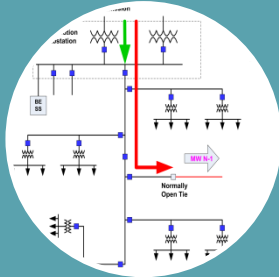
Distribution Applications

## Research, Development, and Demonstration

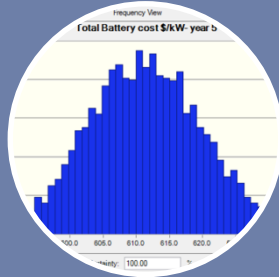
Research Grants

## Energy Storage Roadmap

10-year Plan



Time-series  
Power Flow  
Simulations



Storage Cost  
Forecast  
Model

Total	Battery \$/MWh	Cost of battery	Battery's cost reduced by update	Benefit \$/MWh
1116	3.75	4.75	15.444	11.16
1116	3.00	3.00	15.450	11.16
1116	2.25	2.25	15.456	11.16
1116	1.50	1.50	15.462	11.16
1116	0.75	0.75	15.468	11.16
1116	0.00	0.00	15.474	11.16

Cost-Benefit  
Analysis

1116:

$$V_{0i} - R\%_{Repr}$$

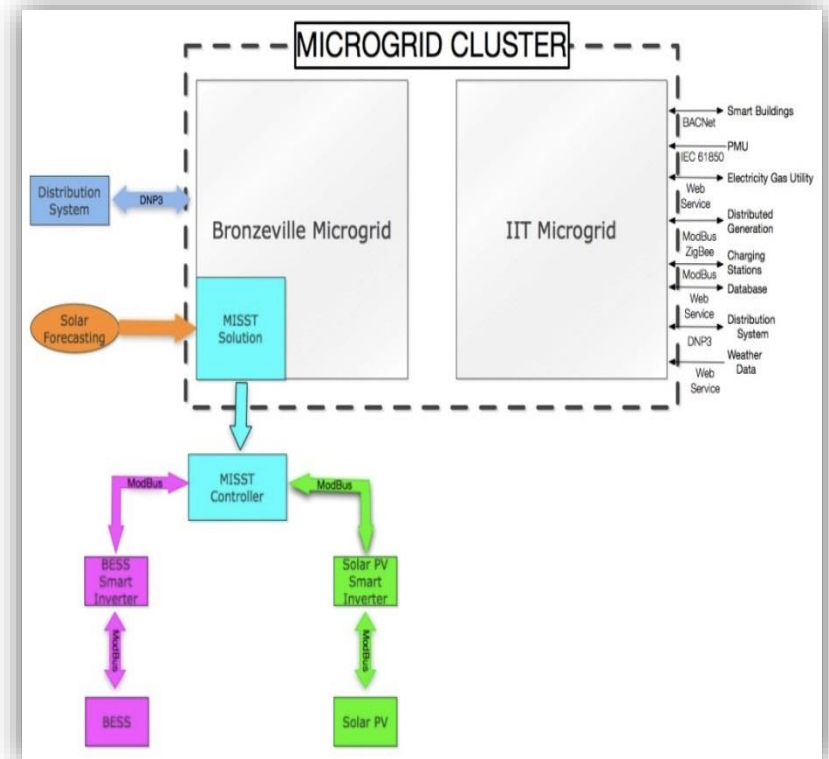
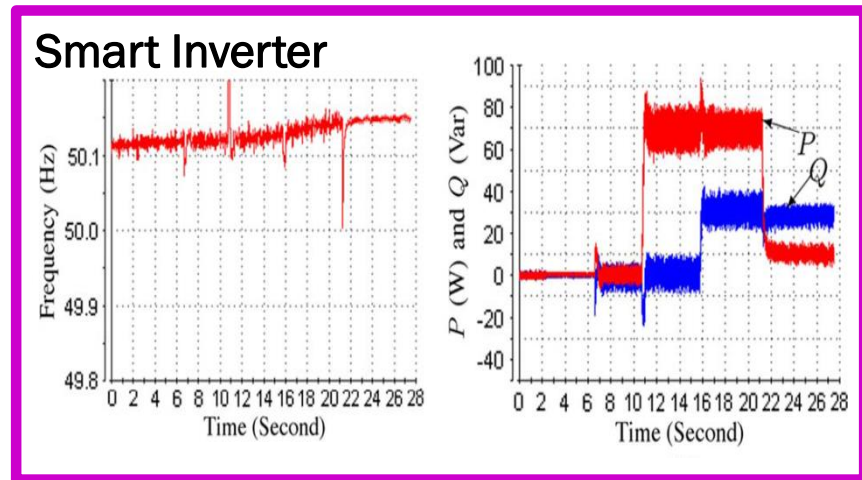
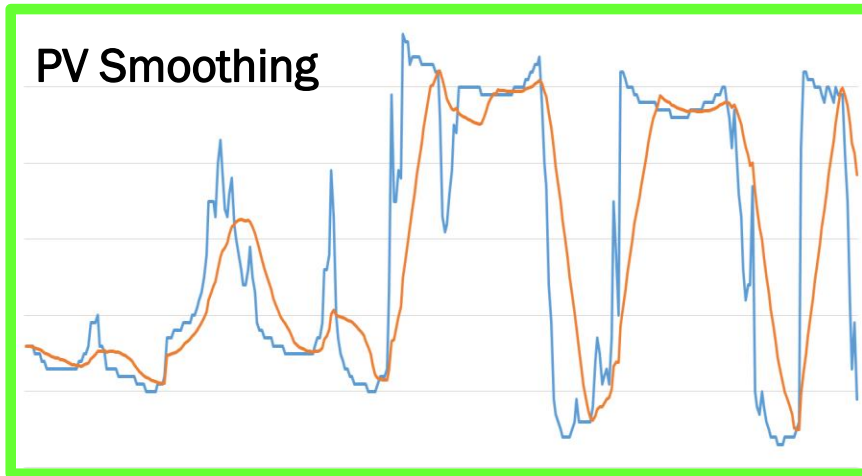
$$V_{0i} - C\%_{Repr}$$

$$- I\%_{Repr}$$

Extrapolation  
to ComEd  
System

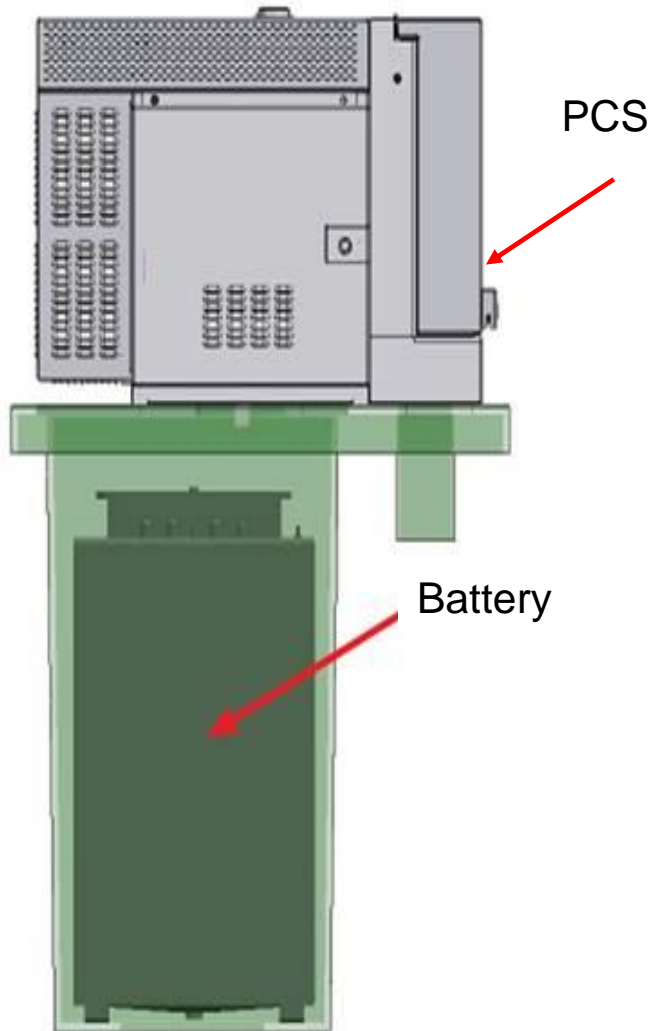


## US DOE – Sustainable and Holistic Integration of Energy Storage and Solar (SHINES)



Source: Synchronverters: Inverters That Mimic Synchronous Generators

## Community Energy Storage for Pocket Reliability



## Megawatt-scale Energy Storage for Capacity Deferral

