



WELCOME TO EPIC

Nov. 14-15, 2016 - University Club

The Electric Power Industry Conference at the Swanson School of Engineering continues to lead the way in exploring energy production and delivery potential.



2016 Theme: The Grid in Transformation

New Power Resiliency Trends and the Application of Microgrids

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With increasing grid complexity... *Reliability* is no longer enough

Reliability: “ a more *reliable* grid is one with fewer and shorter power interruptions”



Retiring Fossil Fuel Plants



Growing Distributed Generation



Aging Grid & Weather Events

Resiliency: “a more *resilient* grid is one that is better able to **sustain** and **recover** from adverse events ...”

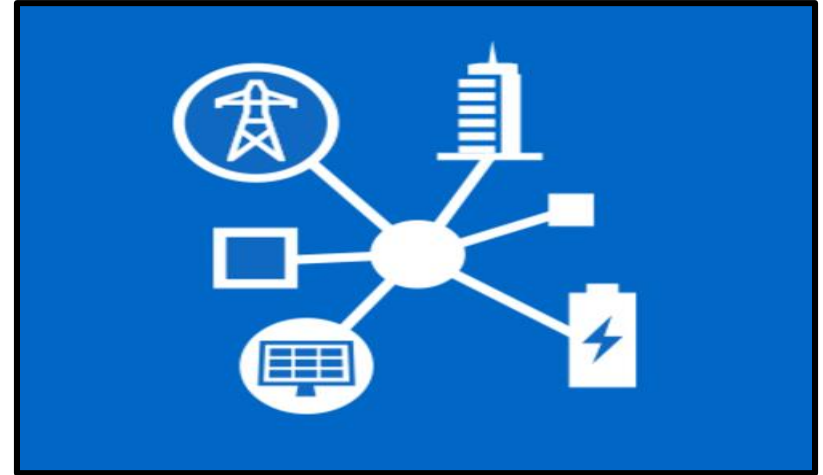


Cyber Threats

The value of resiliency varies



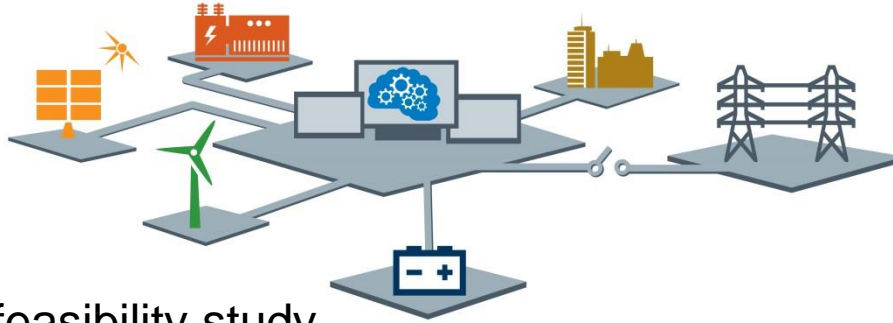
Microgrids combine reliability and resiliency with potential for greater payback



An **investment** in a traditional back-up generation **supports** reliability

An **investment** in microgrid controls **supports** reliability and resiliency, with the possibility of greater returns on local generation

If the key functionality of the microgrid is resiliency, then... we need to get it right



- Undertake a feasibility study
- Define expectations for technical and financial performance
- Perform dynamic system modeling before implementation
- Apply a microgrid controller capable of managing your defined loads and generation sources

Portland General Electric: High Reliability Zone



The Yellow line is a 2.5 mile 12kV over head line

Portland General Electric Microgrid



Transformation of Pittsburgh



Come visit our Power Systems Experience Center
in Warrendale, PA



Thank you

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