



# IPERC<sup>®</sup>

## **Stakeholder Engagement for Success and PEER as a Tool for Microgrid Performance**

► **November 6<sup>th</sup>, 2017**

ADVANCING *THE POWER OF ENERGY*

## Why people are important in building a microgrid



**“What Do Today’s Microgrid Customers Want?”**

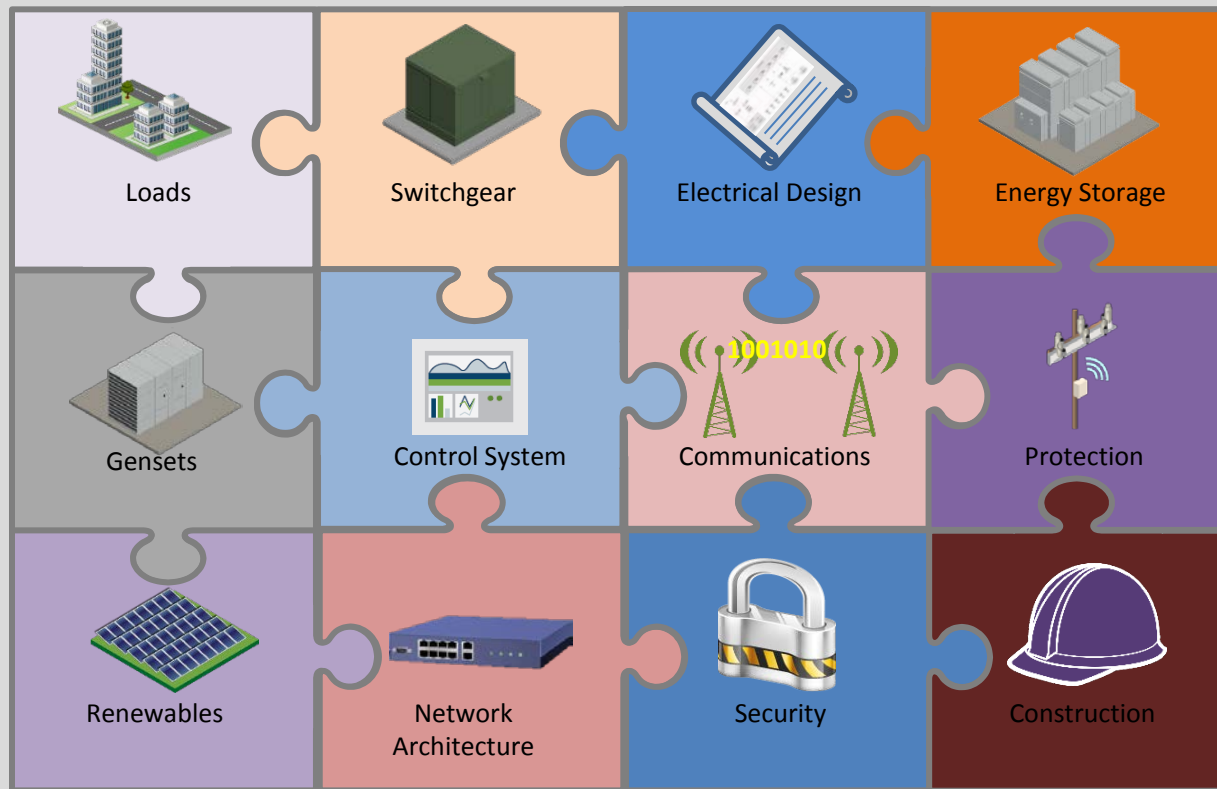
**“Campus Microgrids Pushing New Generation of Development”**

**“DOE Invests up to \$50M for Microgrids, Grid Resilience & Cybersecurity”**

**“Lessons from Natural Disasters Spur New Microgrids in Japan”**

**“Utility Microgrids Make Progress in Arizona and Ohio”**

## Elements of a Microgrid



# Microgrid Applications and Benefits



## Islanded Operations

- ✓ Optimum solution for energy resilience and cybersecurity
- ✓ Preemptive storm mode
- ✓ Renewables-only modes
- ✓ Optimizes for time-of-day-use for prolonged islanding

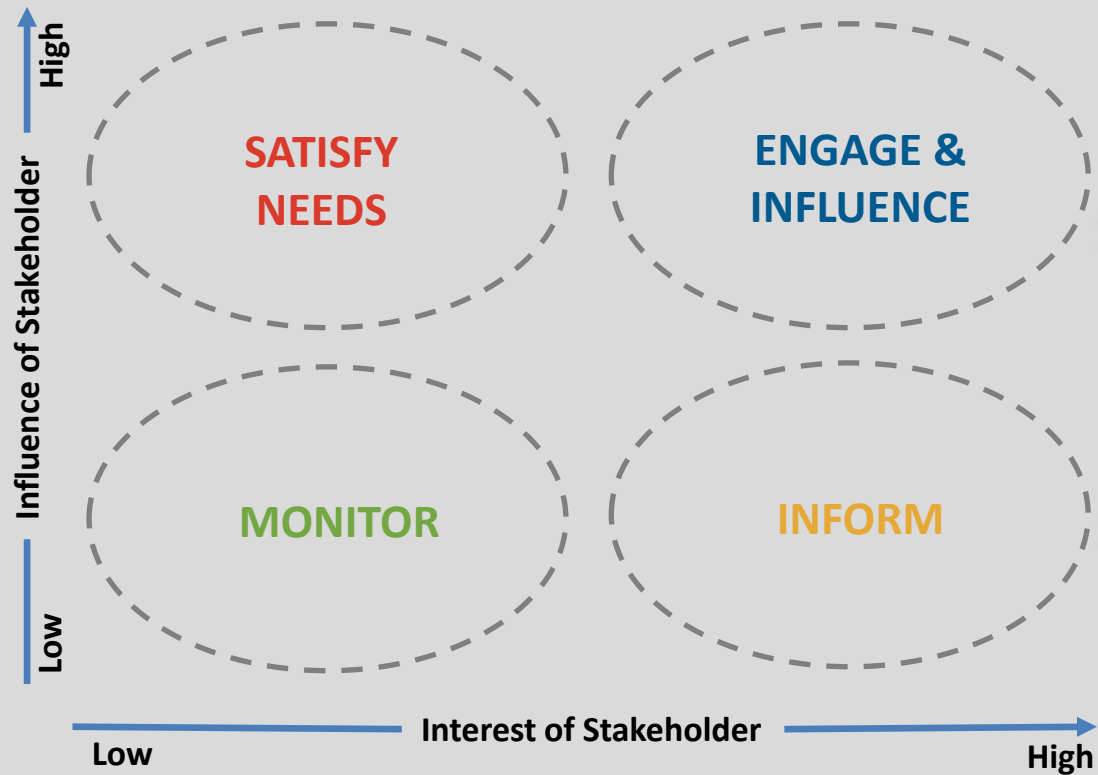
## Grid-Connected Optimization

- ✓ Cost optimization across generation sources
- ✓ Economic Optimization and Forecasting capability
- ✓ Reduced fuel costs and carbon footprint
- ✓ Improved customer and end-user satisfaction

## Remote Site Power

- ✓ Quickly integrates DERs and renewables
- ✓ Easily scalable

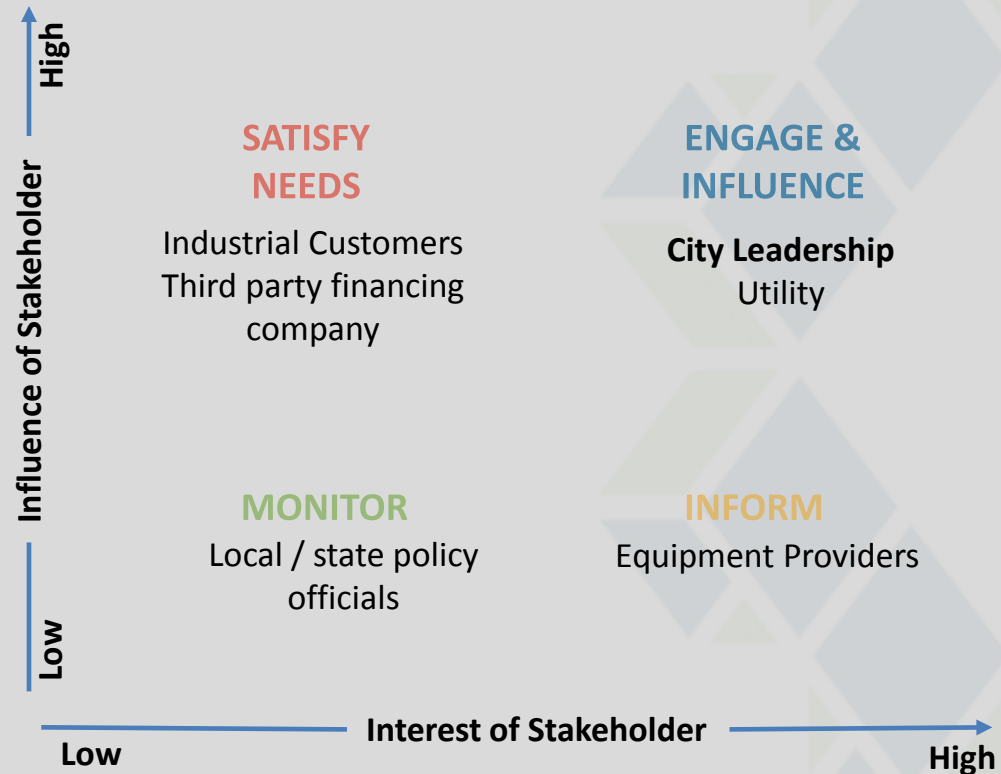
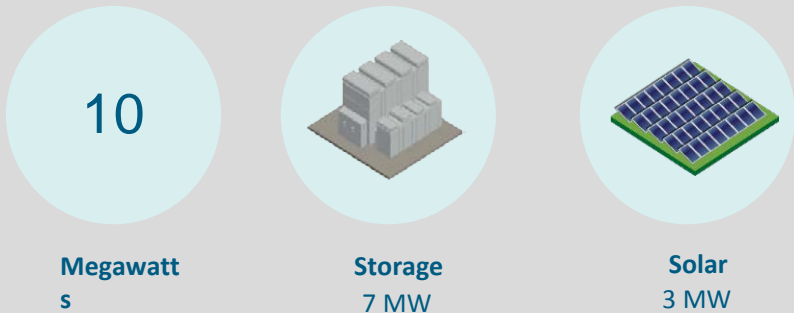
## Evaluate and Identify the Roles of Stakeholders



# Municipal Utility-Owned Microgrid

## Minster, OH

Solar plus storage microgrid – Completed 2015



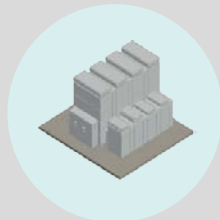
# Utility Driven, Consumer Focused Microgrid

## City of Field Microgrid

Utility project highlighting effectiveness of battery storage – Completed 2013



Megawatts



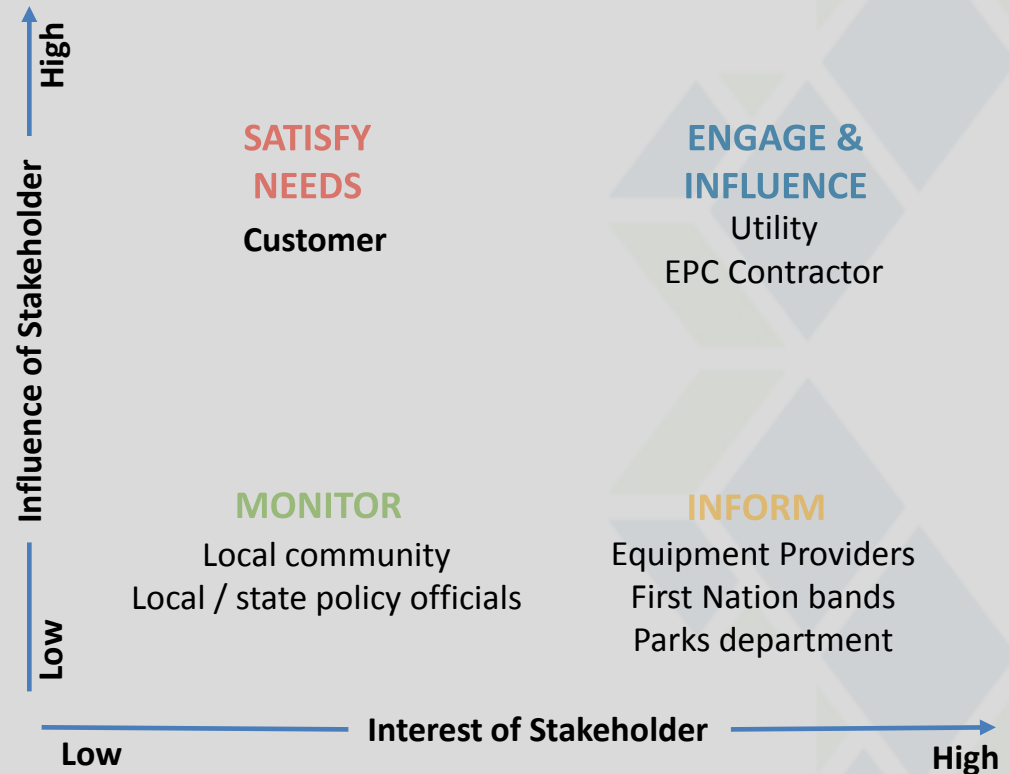
Storage  
1 MW / 7 MWh



Field\_Outage\_Status  
@FieldOutageInfo

Follow

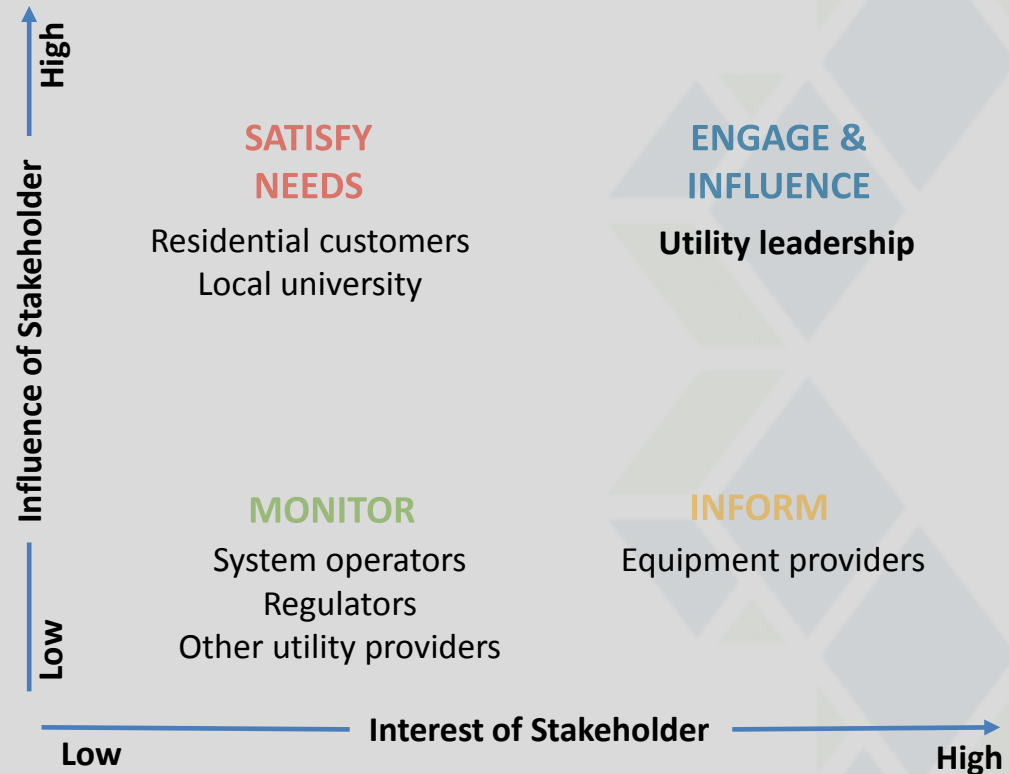
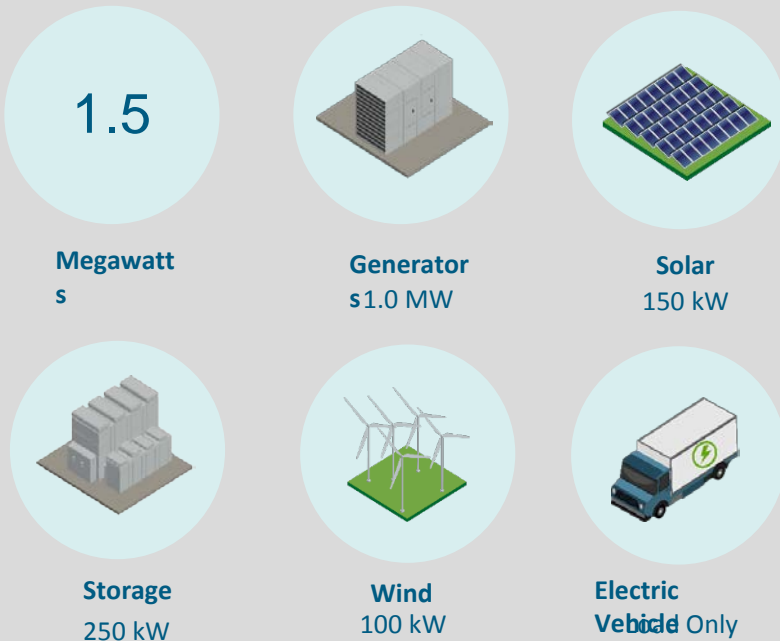
Loss of Grid Power Update, Battery State: ON since 7/17/2017 2:51:09 PM  
Hours Remaining: 4hr(s), 37min(s)  
Capacity: 20%  
Average Load: 281kW



# Pushing the Envelope with a Next Generation Utility Microgrid

## Ameren Technical Application Center, IL

Utility prototype with 15 use cases – Completed 2017





# The Complexity of a Military Microgrid

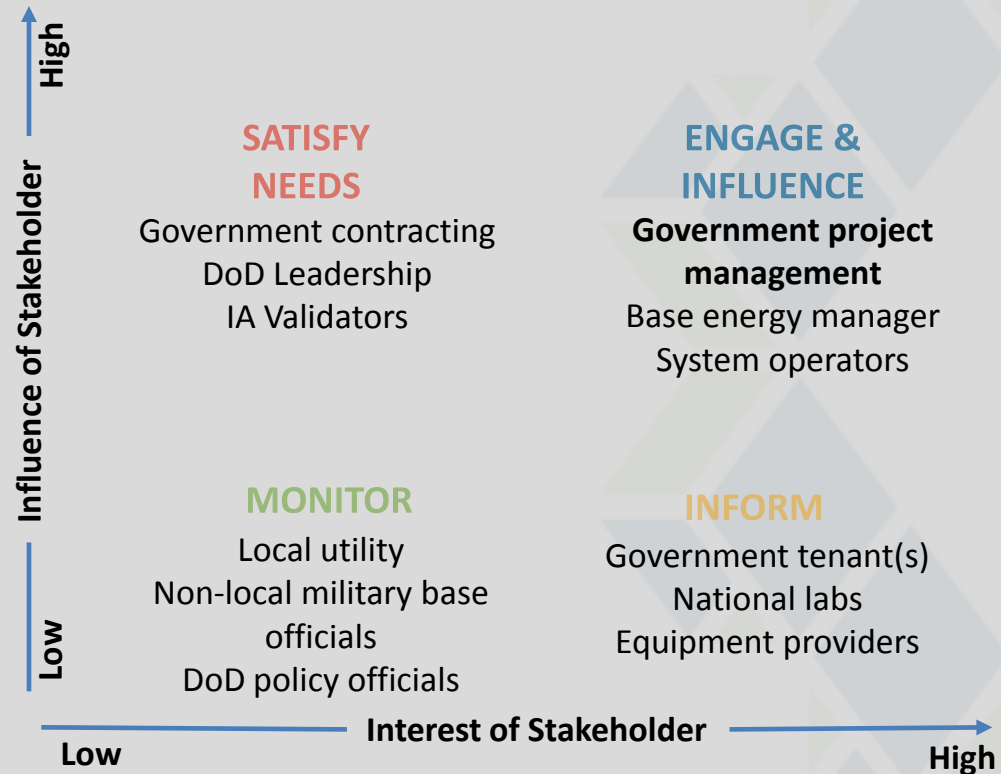
## Fort Carson, CO

SPIDERS II – 4<sup>th</sup> ID HQ and data center – Completed 2015



## Camp Smith, HI

SPIDERS III - Entire PACOM HQ base – Completed 2015



## Practical Tips to Consider



Project Management



Make Time



Smarten Up



Who's Who



Hidden Helper

## Start your Microgrid with PEER



### RELIABILITY & RESILIENCY

Examines metering, communications, SCADA, emergency response plan, SAIDI, SAIFI, power quality, islanding capabilities, etc.



### OPERATIONAL EFFECTIVENESS

Examines system energy efficiency, cost savings, demand charge reduction savings, opportunity costs, etc.



### ENVIRONMENTAL

Examines renewable portfolio standard, local permit requirements, emissions, local renewable generation, environmental impacts.



### CUSTOMER CONTRIBUTION

Examines data privacy, cybersecurity, consumer engagement programs, access to real-time data, access to dynamic pricing, incentive programs, etc.



THANK YOU

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