

# 1.NJBPU's Microgrid Policies

## 2.Utility of the Future - 2050

### My view of the Elephant

**Michael Winka**  
**Sr Policy Advisor**

**Association of Energy  
Engineers - NJ**  
**September 28, 2016**



## New Jersey BPU DER Goals

*Develop 1500 MW of Combined Heat and Power (CHP) and Distributed Generation (DG)*

*Increase the Use of Microgrid Technologies and Applications for Distributed Energy Resources (DER)*

*Create Long-Term Financing for Local Energy Resiliency Measures including Town Center DER microgrids Through an ERB and other financing mechanisms*

*The State should continue its work with the USDOE, the utilities, local and state governments and other strategic partners to identify, design and implement Town Center DER microgrids to power critical facilities and services across the State.*

*Improve and Enhance the EDC Smart Grid and Distribution Automation Plans*

## Definition of DER or DG

Distributed energy resources consists of a range of smaller-scale and modular generation and storage devices designed to provide electricity, and sometimes also thermal energy, in locations close to consumers or end user.

## Definition of Microgrid

A microgrid is a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected or island-mode.

# Not all Microgrid are the Same - Classification System

## **Level 1 or single customer microgrid.**

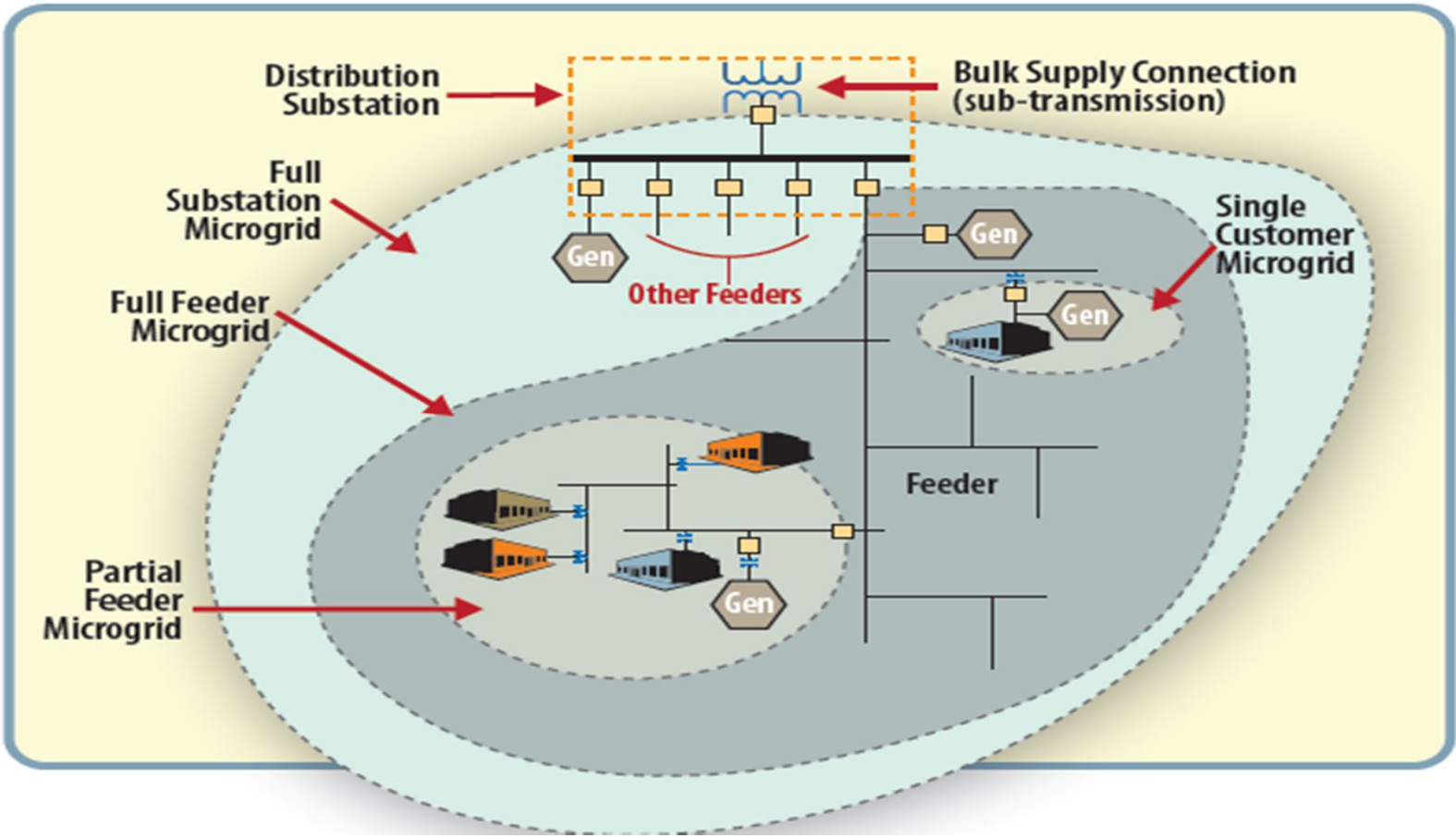
This is a single DER system such as a PV system, combined heat and power (CHP) or fuel cell system that is serving one customer and that is connected to and can island from the distribution grid.

## **Level 2 or single customer – campus setting.**

This is a single or multiple DER systems with multiple buildings, but controlled by one meter at the point of common coupling that is connected to and can island from the distribution grid.

## **Level 3 or multiple customers / advanced microgrid.**

This is a single or multiple DER system that serves several different buildings/customers that are not on the same meter or on the same site as the DER. An advanced microgrid would be designed with one point of common coupling (PCC). The individual buildings/customers may be independently connected to the larger distribution grid and through the microgrid PCC..



## **New Jersey Microgrids - Total 50 – all CHP**

**Level 1 or single customer microgrid --- 38**

**Level 2 or single customer – campus setting – 12**

**Level 3 or multiple customers / advanced microgrid.**

**Proposed - Town Center microgrids for critical facilities  
Hoboken and New Jersey Transit Grid**

**NJIT Town Center Mapping for 9 Sandy Designated counties - 24**

**Town Center MG in 17 municipalities**

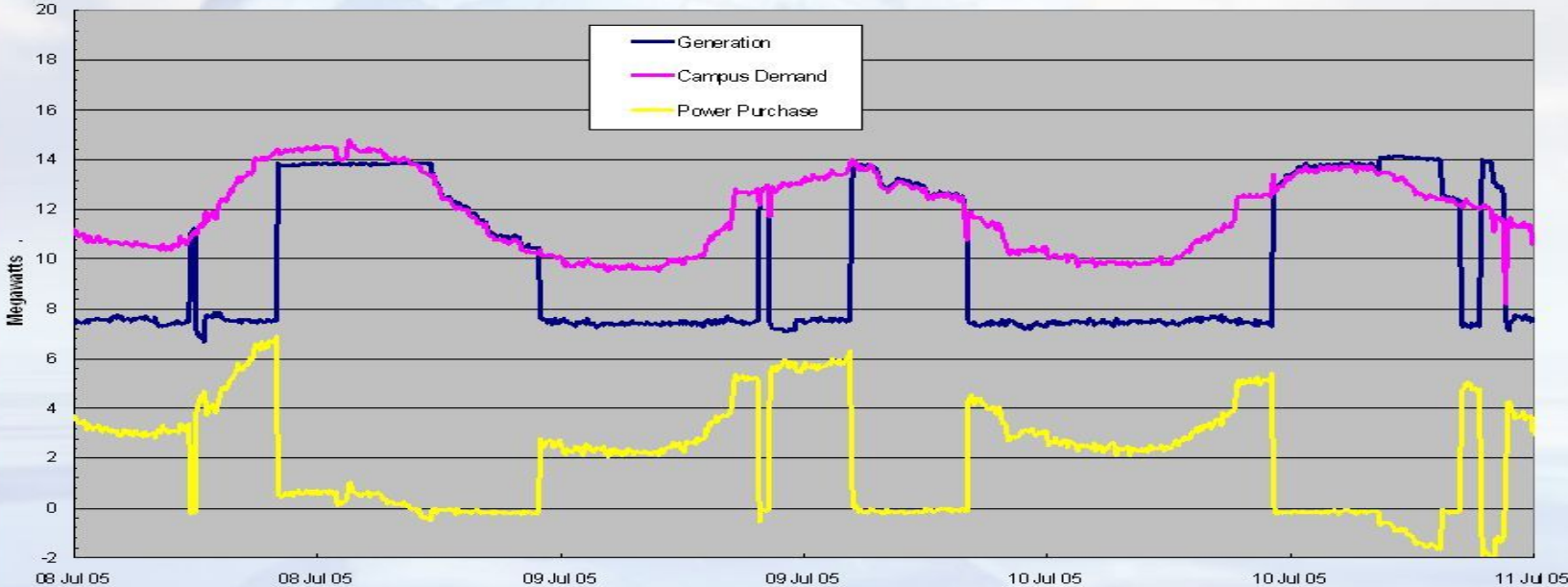
**2 Inter-District Thermal Plants – AC and Trenton**

**44 are Natural gas CHP and 6 are RE CHP**

DER	Number	MW
CHP/FC total	230	2,910
<b>CHP/FC DER</b>	<b>107</b>	<b>355</b>
<b>CHP/FC RE DER</b>	<b>21</b>	<b>31</b>
<b>PV total - all DER</b>	<b>59,105</b>	<b>1,535</b>
PV Behind the Meter	57,380	1,410
PV Grid Supply	146	445
<b>TOTAL DER</b>	<b>59,233</b>	<b>1,921</b>

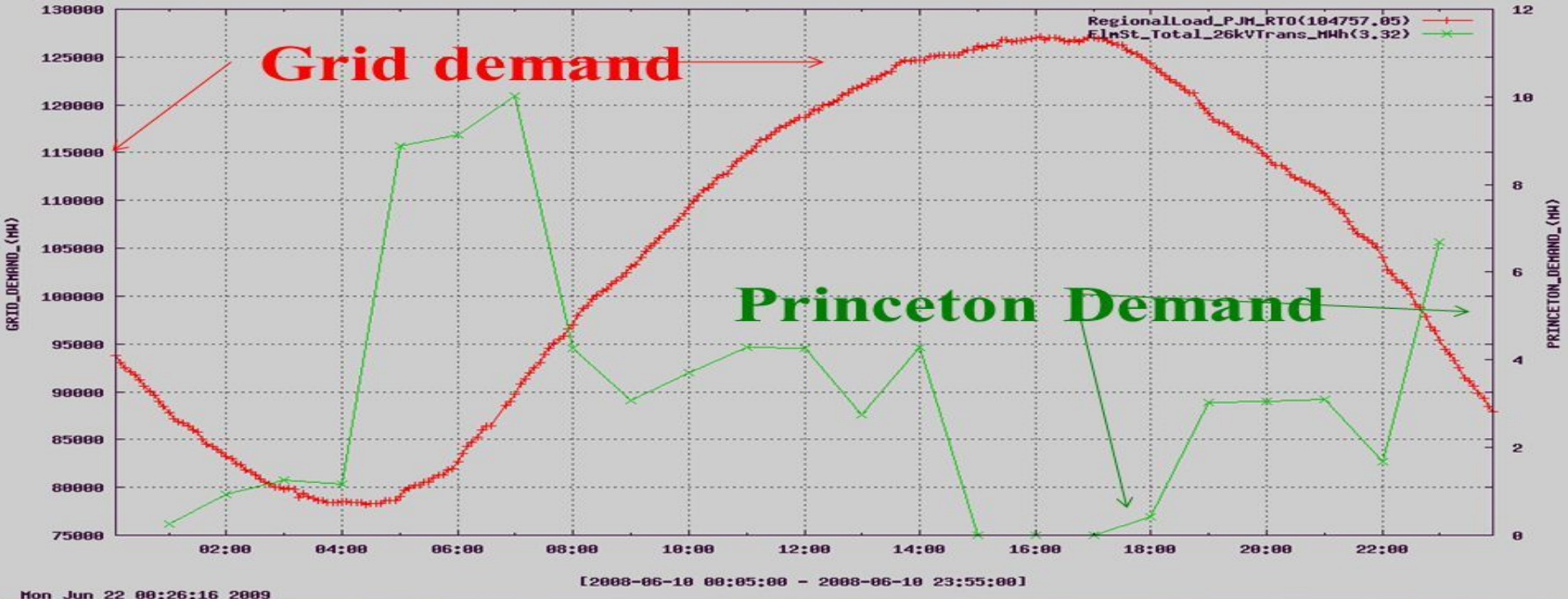
Over 10% capacity and 5% energy

# Princeton Micro-Grid Power Generation Dispatch To Optimize Savings – PJM Grid





# Princeton CHP/District Cooling Reduces Peak Demand on Local Grid



## Public Utility Commission's Mission Statements

State PUC regulate customers rates for the investment owner/private utilities

Balance the needs of Utilities and **All** Customers  
Protect customer – Protect the public interest

Ensure the delivery of adequate, safe, reliable Services at fair and reasonable rates for all customers

## **NARUC DER Tariff Guidance / RAP Designing DG Tariffs Well/ LBNL Distribution System Pricing w DER / Gridwise The Future of the Grid**

- 1. Net metering**
- 2. Valuation**
- 3. Value of Resource**
- 4. Value of Service**
- 5. Transactive Energy**
- 6. Demand Charges peak/nonpeak**
- 7. Fixed Charges**
- 8. Standby/backup Charges**
- 9. Interconnection /metering fees**

## **RAP DER Tariff Guidance John Sherot and Janine Midgen-Ostrander Designing Tariffs DG Customers**

- 1. Customers should be able to connect at the cost of connecting**
- 2. Customers should pay for grid services based on what they use**
- 3. Customers should be fairly compensated for the value of the power they supply**
- 4. Tariffs should balance the interest of all shareholders but not the incentive mechanism.**

## Town Center DER Microgrids Feasibility Incentive

- Multiple Critical Facilities – Public, NFP, Private (tier 1 and shelter)
- All public partners MOU and **LOS from EDC**
- Must be in one town and served by an IOU
- In the NJIT Report or met the mapping criteria (criticality & load)
- DER and interconnections electric and thermal points
- Overall costs and potential financing
- Timeframe
- **Modeling to be used for Cost/Benefit Analysis.**
  
- Cap \$200,000 and one per developer
- Total budget \$1 million