Considerations in Regulating Microgrids

Regulatory Insights

Presented at the Third Workshop for FC 1130 - Investigation into Modernizing the Energy Delivery Structure for Increased Sustainability (MEDSIS)

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Microgrids can take many forms and definitions are critical

Defining "microgrid":

A collection of interconnected loads served with distributed energy resources, including load management, within a clearly defined geographic area and electrical system which can be connected or disconnected at a Point of Common Coupling (PCC) from the local franchise utility and operated independently from the grid.

Some guiding principles for consideration in regulatory oversight of microgrids:

1. Microgrid ownership must not result in excessive market power for any single entity
2. If privately-owned and operated, islanded, and selling commodity and services to retail customers, then the microgrid business model is that of a regulated utility
3. If utility-owned, microgrid investment must be prudent, and provide economic or public policy benefit to customers (similar to other capital investments)
4. Physical and cyber security of microgrid assets is the responsibility of the owner/operator – when owner and operator are not the same entity, regulation is required to define such responsibilities and reporting requirements
5. The location of a microgrid on the utility system (transmission or distribution interconnection) will define the appropriate roles of FERC and state regulators

West Monroe looked to lessons learned from projects elsewhere to address questions posed by DC PSC (1 of 2)

1. Ownership structure

- To avoid excessive market power, avoid total ownership by any one party
- Regulation should allow for flexibility of ownership structures – structures should depend on the type of microgrid, technologies deployed, and the necessary balance between reliability/safety and resilience/innovation
- In NY, developers and regulators are looking to a hybrid ownership structure (where third-party developers and utilities jointly own parts of the structure)

2. Regulatory barriers to development of public-sited microgrids

- Potential barriers or limitations in the DC Code include the lack of microgrid definition and sizing limits for customer generation facilities
- Microgrid developers recommend using existing regulation for oversight (*e.g.*, current D.C. Code §34, IPP and EGU regulations)
- Important to consider different regulations and requirements holistically, not one-by-one (PSC, utility, ISO, federal)

West Monroe looked to lessons learned from projects elsewhere to address questions posed by DC PSC (2 of 2)

3. Safety considerations of nonutility/utility assets are critical

- Microgrids must consider different types of security; each have different definitions and necessary guidelines:
  - Physical security: Look to existing analogues such as regulations for IPPs and distribution system
  - Interconnection and reliability: Look to existing analogues such as regulations for IPPs and DERs
  - Cyber security: Federal guidance exists including NIST's " Framework for Improving Critical Infrastructure Cybersecurity" and DOE's " Electricity Subsector Cybersecurity Capability Maturity Model" (ES-C2M)

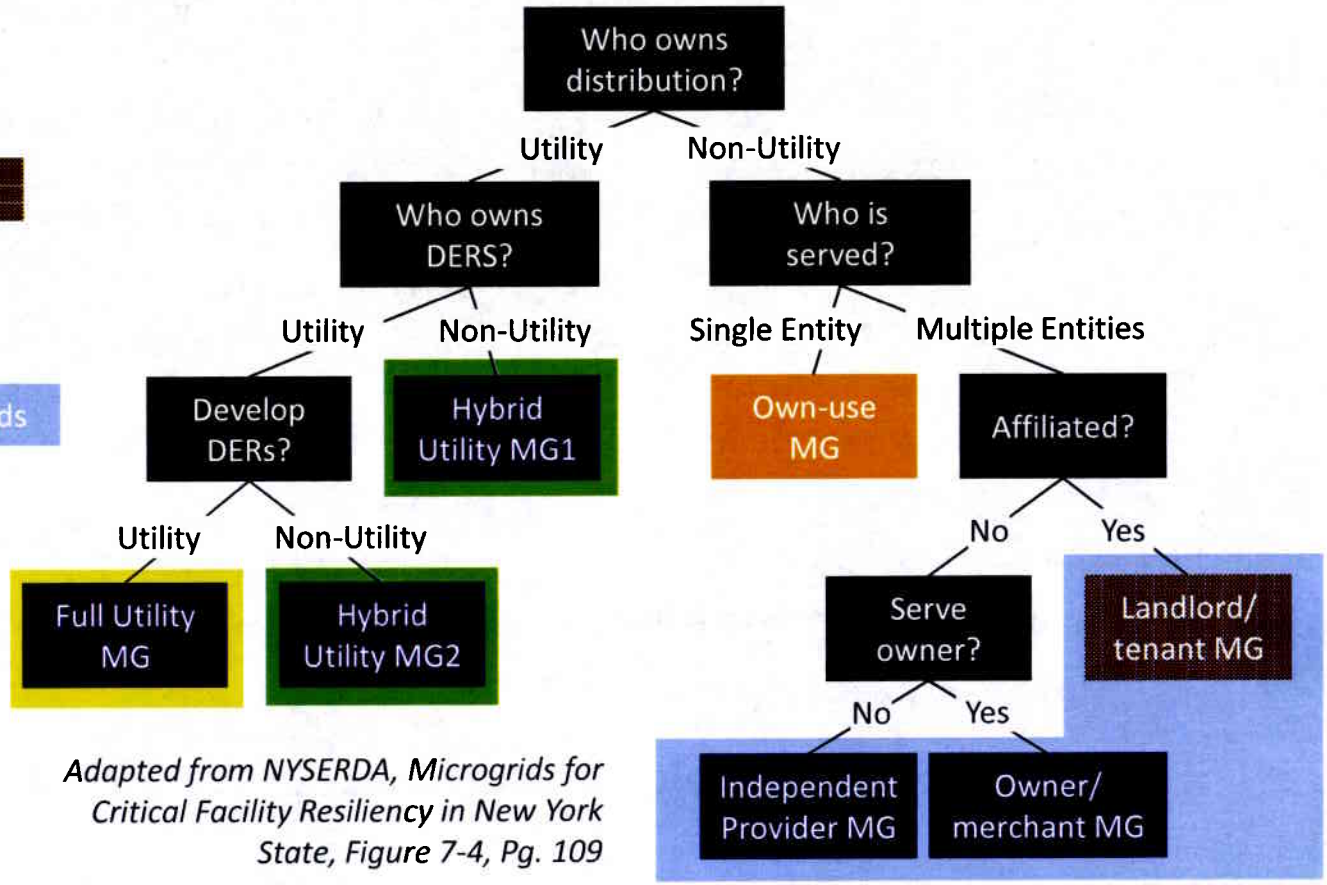
4. Additional considerations beyond those posed

- Support demonstration projects with various configurations and ownership/operating models
- Solicit feedback from stakeholders early and often, regarding experience with microgrids
- Define microgrids within context of current laws and regulations

Microgrids can take many forms based on combinations of technology, interconnection, participants, ownership, and other factors

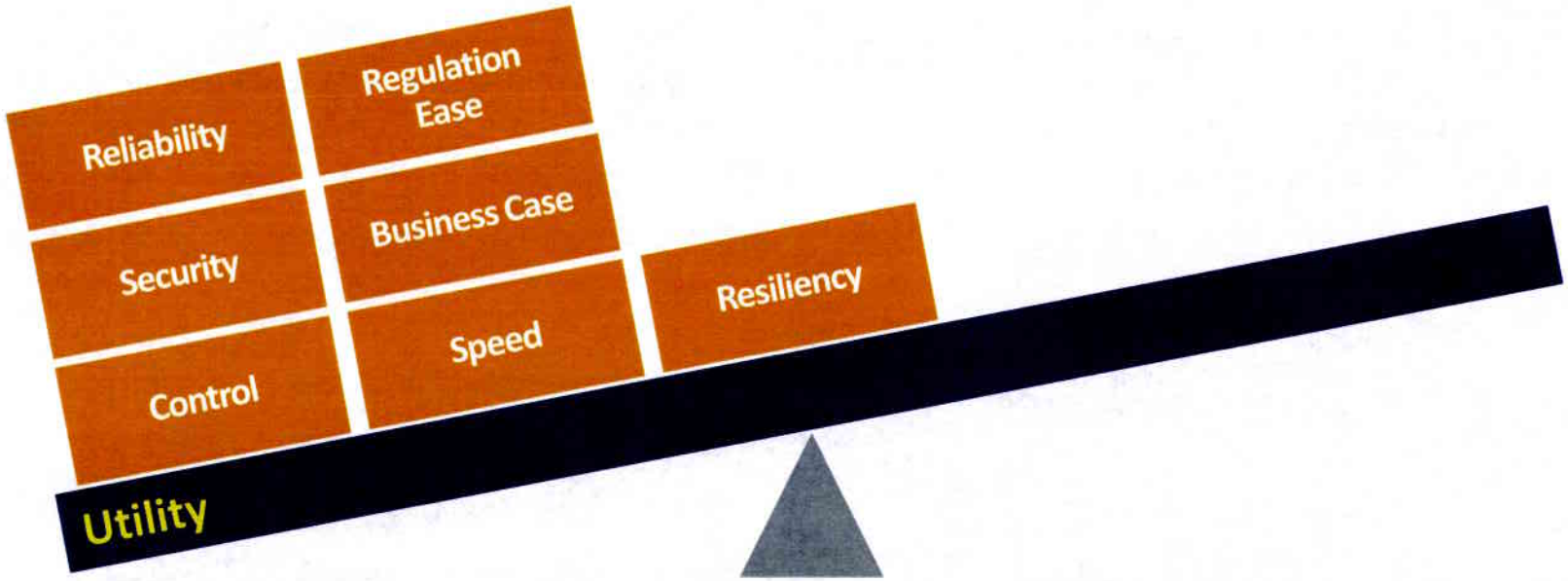
A collection of interconnected loads served with distributed energy resources, including load management, within a clearly defined geographic area and electrical system which can be connected or disconnected at a Point of Common Coupling (PCC) from the local franchise utility and operated independently from the grid

- Community Microgrid
- Campus Microgrid
- Community or Campus Microgrid
- Utility Community Microgrid
- Hybrid Community Microgrid
- Third-party Community Microgrids



Adapted from NYSERDA, Microgrids for Critical Facility Resiliency in New York State, Figure 7-4, Pg. 109

It has been argued that utility ownership of microgrids could lead to rapid, efficient deployment and control, perhaps at the expense of innovations



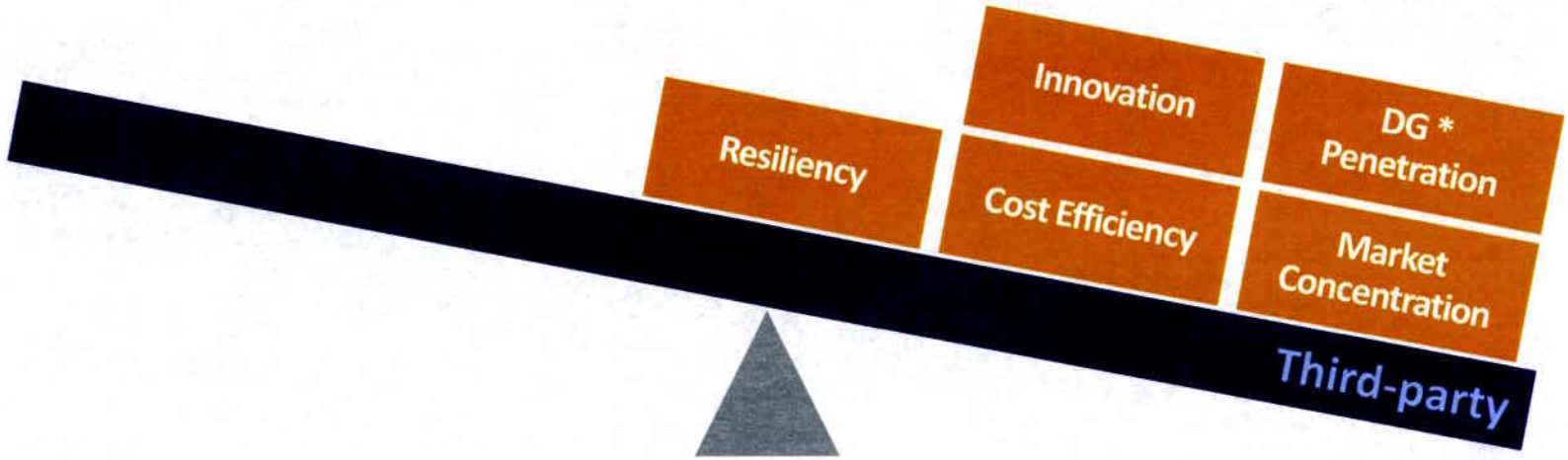
Pros

- Ease of sight into grid resources (control, security, and reliability)
- Already regulated for distribution and energy markets (PSC / FERC)
- The utility can more easily realize many potential benefits (infrastructure and capacity savings)
- Utility can get started faster

Cons

- Utility entry may prevent third-party innovation (technology, business models)
- Less opportunity for DERs
- Regulation may hinder utility ownership of DERs (generation), requiring changes
- Utility control of DERs may concentrate market power to the chagrin of stakeholders

It has been argued that third-party ownership could promote innovations while reliability, security, and regulation might be a challenge



Cons

- Increased oversight of third-party providers needed to ensure reliability and security (utility or regulators)
- Challenge of regulating third-parties (distrib. / wholesale) and hurdle to entry
- Hard to capture benefits to utility or society
- May take more time to get first projects

Pros

- Third-parties will test technology and speed innovation, with better long-term results
- Market-based development and offerings to customers will drive cost-efficiency
- Third-parties will look beyond the most strategic grid locations, spreading DG
- Less market power for any one player

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