

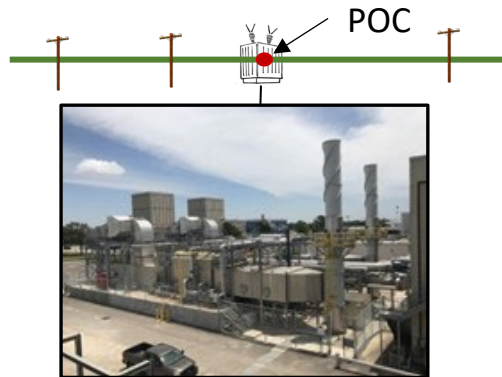
Resilient Community Grid and Microgrids What's the difference?

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Resilient Community Grids (RCGs) and microgrids: *What's the difference?*

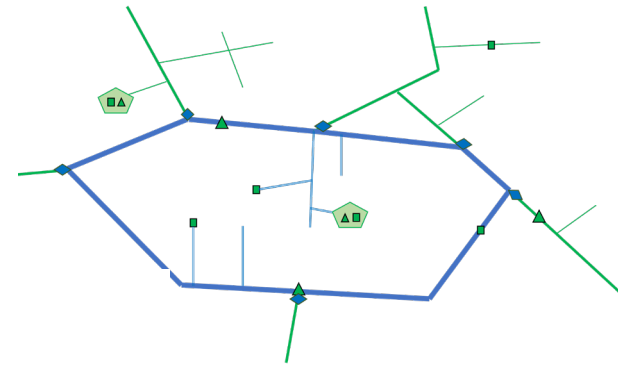
Microgrids

Design and Standards



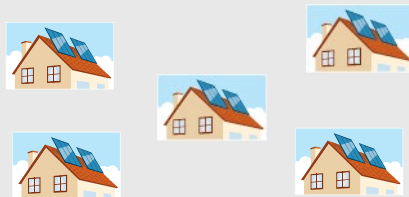
Connected to T&D grid
at point of common coupling (POC)
IEEE 1547 standard

RCG



A Section of T&D grid
not a separate entity connected to the grid
NERC and ISO/RTO standards

Resources:



Distributed Energy Resources (DERs)



Central Station, DERs, and even Microgrids

Operation:

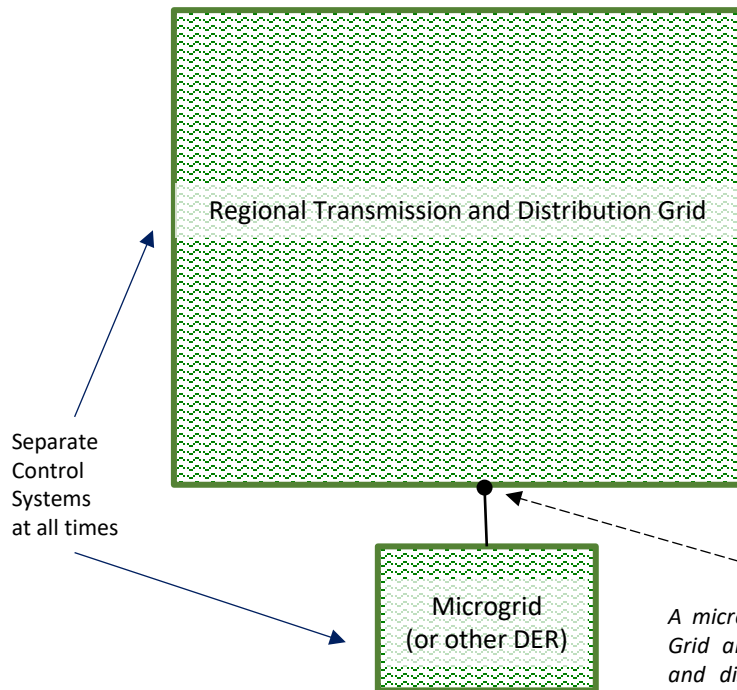
Continuous during normal
and outage grid conditions

Alternative cybersecurity during grid outages;
Regular cybersecurity under normal conditions

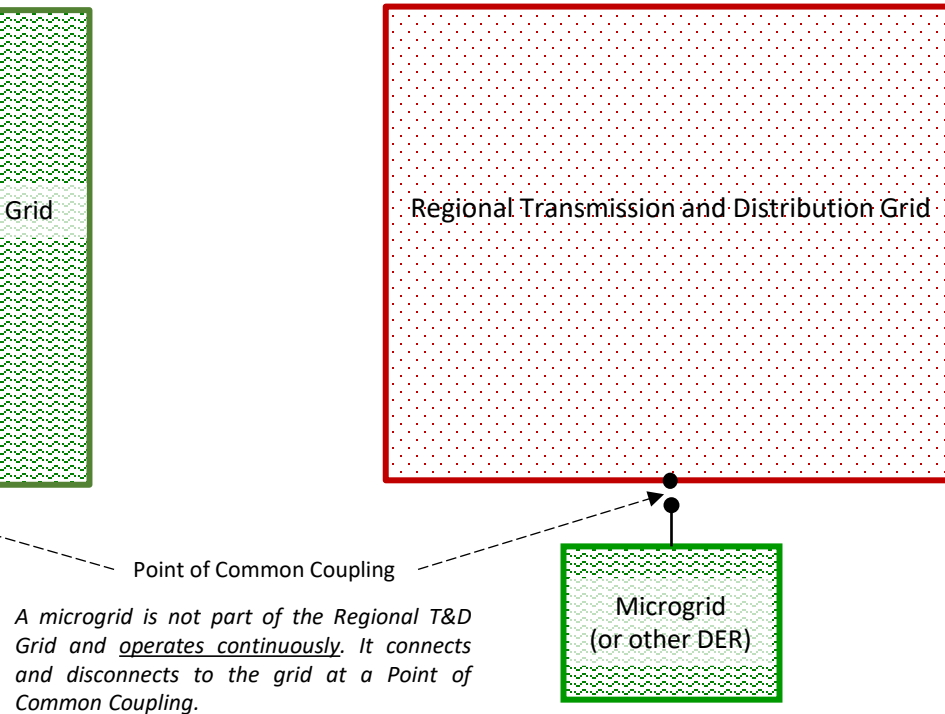
Microgrids and RCGs can complement each other.

How a Microgrid Works

Normal Regional T&D Grid Operation
Both the Regional T&D Grid and Microgrid Operate

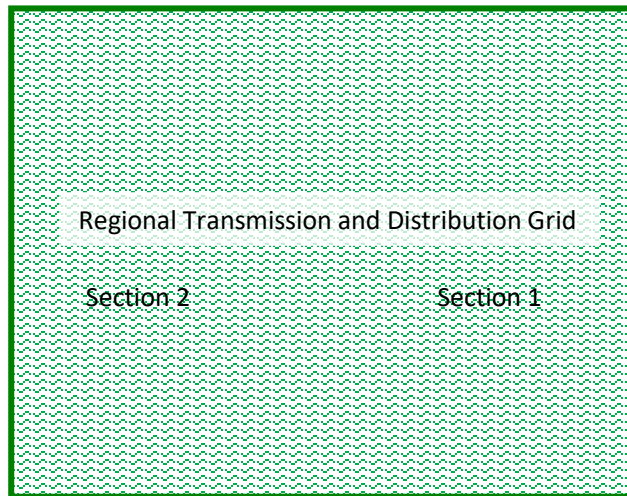


Problem with Regional T&D Grid
Only the Microgrid Operates



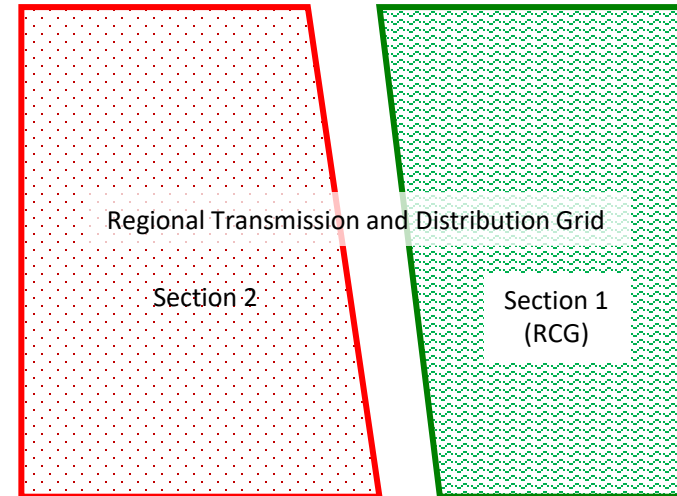
How a Resilient Community Grid Works

Normal Regional T&D Grid Operation
Regional T&D Grid Operates Normally



← Unified Control System →

Problem with Regional T&D Grid
*Regional T&D Grid Splits into Two Sections
Only the Enclave Section Operates*



*The Enclave is a part of the
Regional Transmission Grid that
operates only during problems.*

Only RCGs address risks of black sky outages.

Interdependence of critical infrastructure magnifies those risks.

Chemical

Commercial Facilities

Communications

Critical Manufacturing

Dams

Defense Industrial Base

Emergency Services

Energy—especially Electricity

Financial Services

Food and Agriculture

Government Facilities

Healthcare and Public Health

Information Technology

Nuclear Reactors, Materials & Waste

Transportation

Water and Wastewater Systems

Black sky impacts on communities could be disastrous.

“Community microgrids” vary in scope and objectives.

Examples:

Borrego Springs (CA) – SDG&E



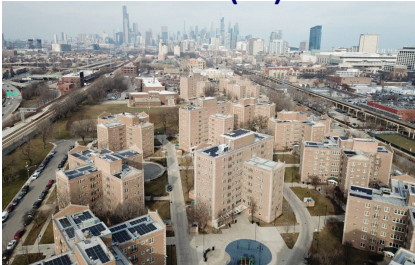
*Remote
Community*

Blue Lake Ranchera (CA)—PG&E



*Reliability
Improvement*

Bronzeville (IL)—Com Ed



*Nested
Microgrids
Demonstration*

Philadelphia Navy Yard (PA)—PECO



*Economic
Development*

Brooklyn Microgrid (NY)—LO3



*Blockchain
Trading**

Reynolds Landing (AL)—AL Power



*Residential
Community
Demonstration*

* Promoted as a “microgrid,” this is a trading platform, not really a microgrid.

Unlike RCGs, community microgrids usually:

- Do not serve critical infrastructure,
- Connect to the grid at points of common coupling,
- Only use the distribution system,
- Aggregate only renewables and other DER,
- Are demonstration projects developed by a utility, and
- Face more development challenges than a one-customer microgrid.
 - Obtaining participants and aligning interests
 - Regulatory challenges of “who pays”

RCGs uniquely benefit communities in ways microgrids cannot.

Protects Interdependent Critical Infrastructure



Different Sites and Different Ownership

Better Renewables/DER Platform



Coordination and Greater Value

Developed Collaboratively



Improved Relationships

Stimulates Economic Development



Attracts Electricity-Critical Facilities