

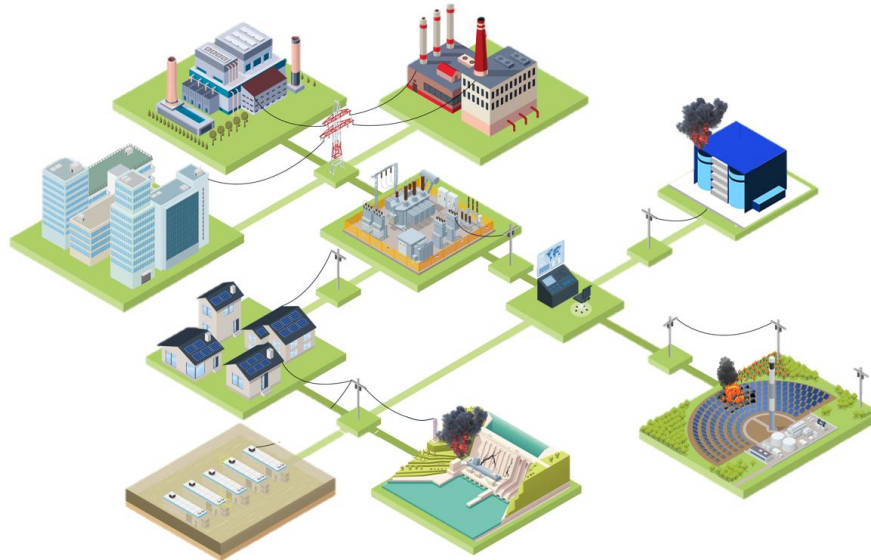
Sandia National Laboratories

Handout 2: Key Features of Disaster-Resilient Microgrids

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Examples of Resilient Microgrid Technologies



Microgrid Implementing Several Hardening Techniques.

Why Do Microgrids Matter for Disaster Resilience?

Natural disasters such as hurricanes, wildfires, earthquakes, and floods can cause widespread power outages.

Microgrids improve resilience by:

- ☒ Providing backup power when the grid fails
- ☒ Operating independently (islanding mode) during disruptions
- ☒ Integrating clean energy sources to reduce reliance on fossil fuels

Key Natural Disasters Affecting Microgrids

Hurricanes & High Winds → Damage to power lines & infrastructure

Wildfires → Heat damage to energy storage & electrical equipment

Flooding & Tsunamis → Submerged equipment, short circuits

Earthquakes → Structural damage, loss of communication systems

Ice Storms & Extreme Cold → Equipment freezing, loss of efficiency

How Can Microgrids Adapt?

Designing systems for durability (elevated platforms, fireproof enclosures)

Using smart controls & automation to manage energy use

Deploying advanced forecasting to anticipate disasters & respond effectively

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