









### Department of Defense Installation Energy Resilience

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## **DoD Energy Resilience** Base-Level Critical Loads Example – Commercial Grid

Acquisition, Technology and Logistics

Example Case – Not an actual installation 🔔 .



• Continued prioritization understanding for collaboration and planning of emergency response activities

There is no requirement in our installation energy resilience policy to pay a premium/tariff for additional delivered power to the installation, given we are prioritizing critical loads on our military bases and that resilience considers disruptions to the commercial electric grid. Guidance does encourage inclusion of the appropriate reliability savings, and tariff & security savings/cost avoidance in life-cycle cost analysis (LCCA).



## Energy Resilience Overview Inclusion of Mission-Based Decision-Making

#### Acquisition, Technology and Logistics

Critical Mission Operations (Sample - For Training Purposes Only)			
Global Intelligence, Surveillance, and Reconnaissance (ISR)	Power/Force Projection – Mobilizing, Deploying, and Demobilizing	Strategic Command Communication - Command and Control	Life, Health, and Safety Operations

# □ Step 1 – Criticality of mission and supporting functions

- Services and Defense Agency provided during Power Resilience review in 2014
- Validated through MIT-LL was the need for broader and strategic energy resilience framework, inclusive of:
  - Service and Defense Agency Warfighting Missions
  - Emergency, Recovery, and Response Missions
  - Supporting Installation Infrastructure (those needed based on outage risks and interdependencies)

## □ Step 2 – Mission requirements of those critical mission operations

In terms of 'resilience' – what disruption risk is appropriate? (e.g., availability, downtime, etc.) Important questions:

- Mission operator coordination?
- Were mission dependencies evaluated?
- Were mission-to-mission solutions reviewed and identified?
- Were risk-based mission requirements developed and considered?
- Is an infrastructure solution required or needed?

DoDI 4170.11 requires alignment to critical mission operations and expanding solutions beyond standby generators.

Resilience allows for a comprehensive, strategic framework and extends beyond traditional "building-by-building" or "generator-bygenerator" designation for resilient designs. Important to establish a holistic and strategic resilience framework that integrates mission and installation stakeholder communities that encourage mission-based decision-making.



## DoD Energy Resilience Base-Level Critical Loads Example – Base Grid

Acquisition, Technology and Logistics

#### Example Case - Not an actual installation

• OM&T and right-sizing (generation)

- Consider upgrading/improving distribution system, equipment, and fuel for critical loads (not typically industry system standards – but mission-based standards)
- Consolidated/distributed generation at the critical feeder on the base
- Spot generators/UPS at specific critical facilities could still be required
- Essential to ensure mission-specific security requirements are met (resilience requirements allows for lower surface area protection)

▲ Substation
▲ Distributed Gen
♦ Critical Loads
● Spot Gen / UPS
▲ Mobile Gen

A = Availability – Is the availability at my critical loads in alignment with what my mission requires?



Current authorities were developed for alignment to industry, not mission-based metrics and standards.

Generally, this was found to be a good option to improve resilience affordably (MIT-LL study).

- Renewable energy options can also be considered to help offset fuel related costs and vulnerabilities (however, batteries beyond UPS generally difficult to support thru LCCA)
- Typically, we look at "fixed" energy systems evaluation of flexible options (e.g., duel-fuel) and even mobile generation (lowers vulnerability surface area and risks further)