

# ***Headquarters U.S. Air Force***

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*Integrity - Service - Excellence*

## **Installation Energy Resilience Policies and Strategies**

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# Energy Threats Compromise Missions

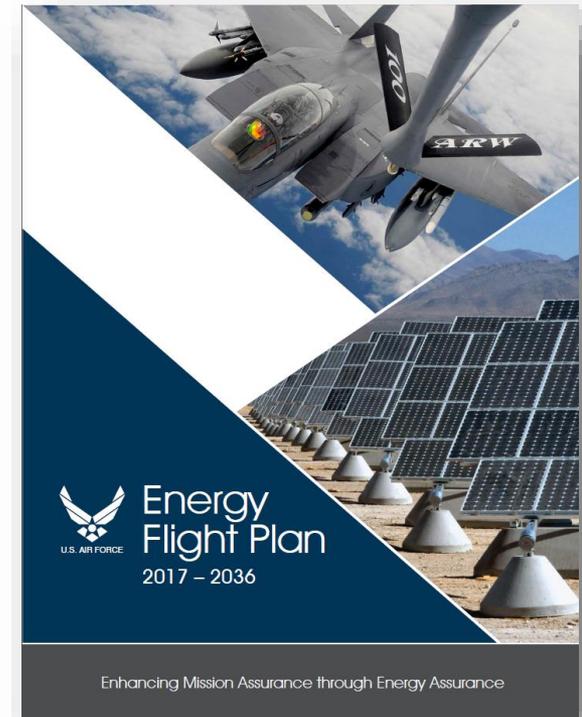




# Air Force Energy Flight Plan

Air Force Energy Vision: ***Mission assurance through energy assurance***

**Energy assurance** involves activities across the operational and installation spectrums designed to ensure the Air Force has energy when and where it is needed to accomplish its mission.



## Air Force Energy Strategic Goals

1

Improve Resiliency



2

Optimize Demand



3

Assure Supply



*Mission Assurance through Energy Assurance*



# Energy Flight Plan Goal 1: Improve Resiliency

## Intent

*Identify vulnerabilities* to energy supplies, such as physical and cyberattacks or natural disasters

*Mitigate impacts* from disruptions in energy supplies to critical assets, installations, and priority missions

Develop ability to *prioritize resources* against risks to the mission

Advance physical and cyber security solutions to *protect critical energy assets* and secure industrial controls systems



## Outcome

*Improved responsiveness* to disruptions to energy supplies

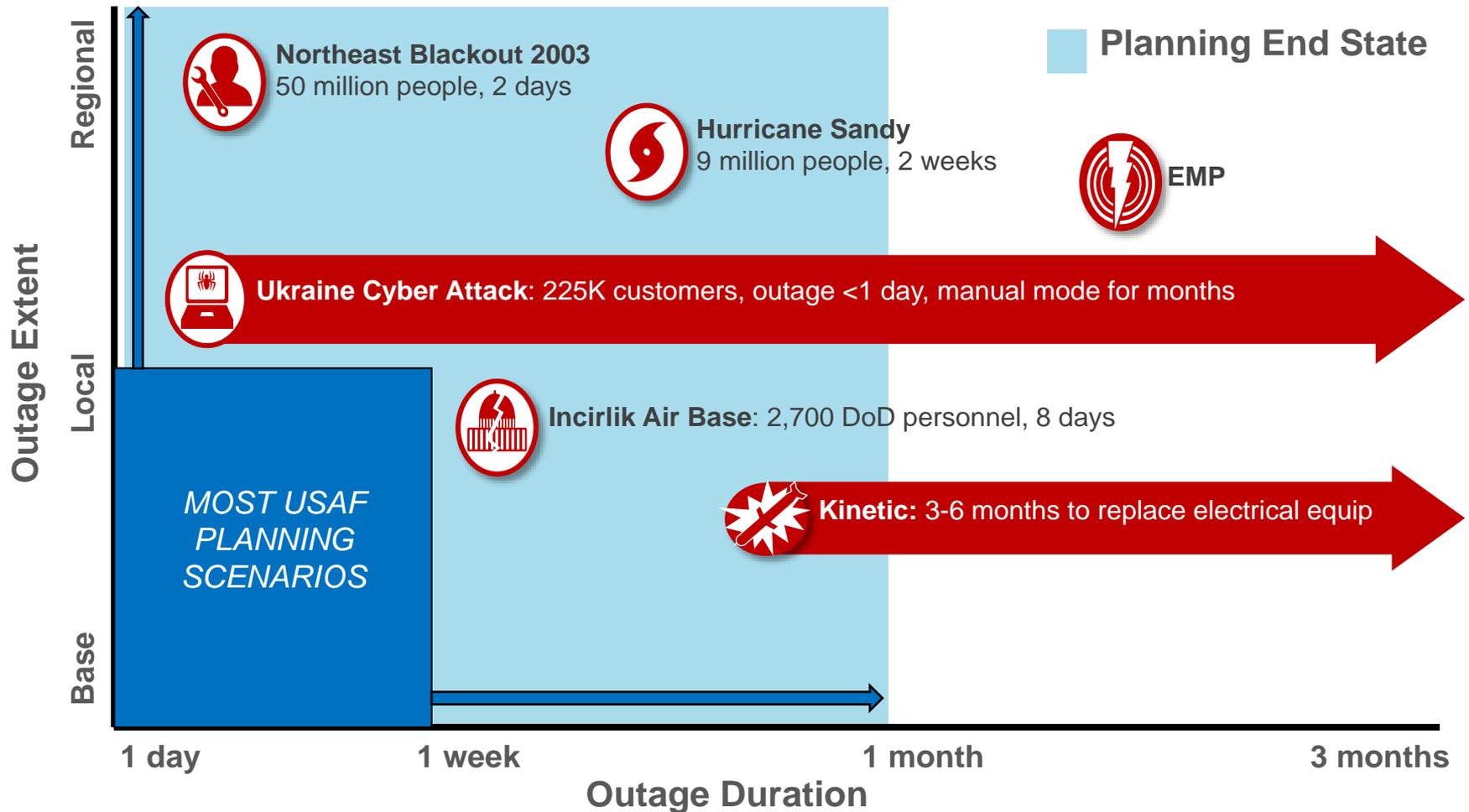
*Increased ability to quickly resume normal operations* and mitigate impact to the mission

*Prioritized response plans and solutions* to mitigate risks from tail (logistics supply chain) to tooth (energy demand in operations)

*Assured ability to provide energy* for mission-critical function

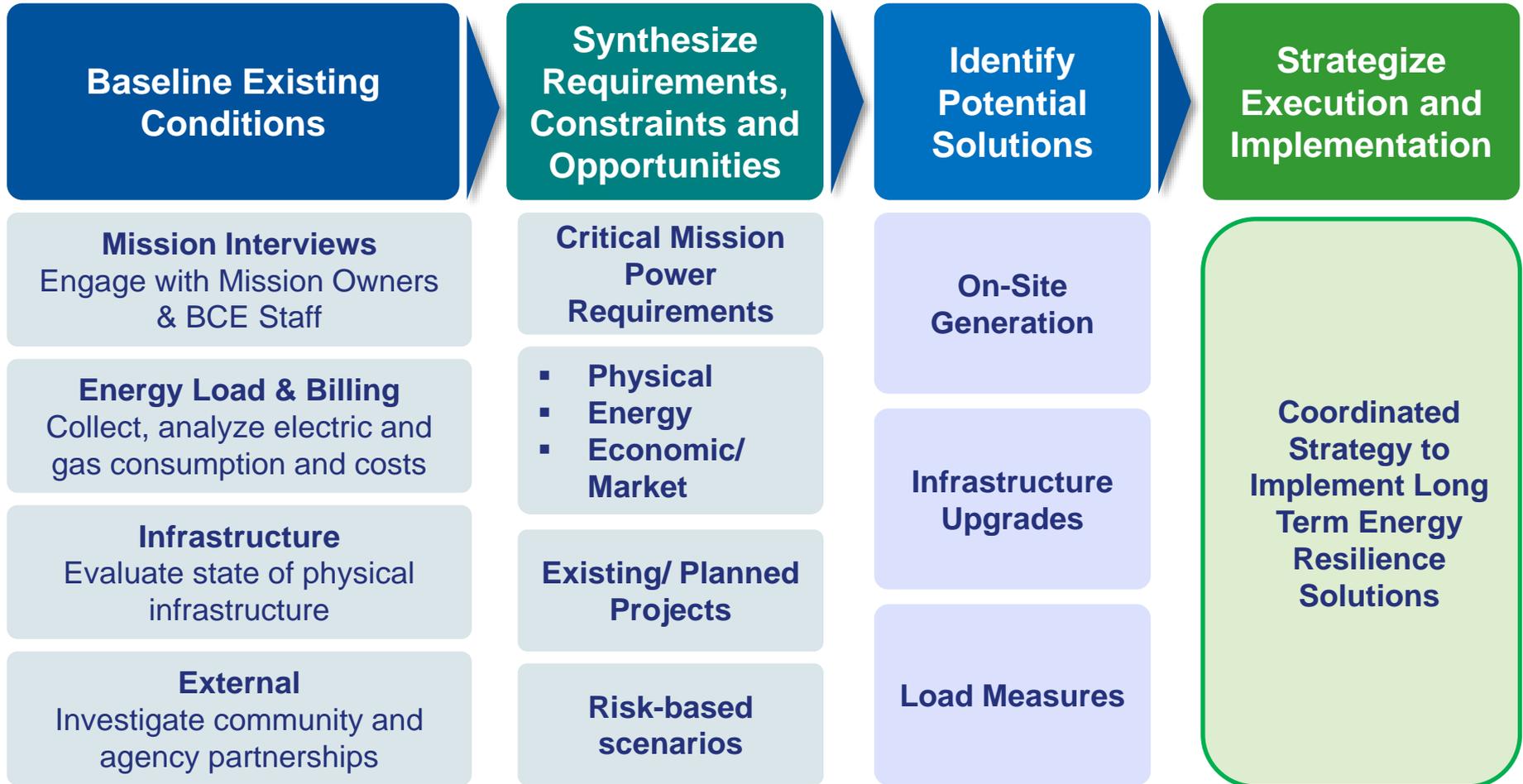


# Air Force Planning End State





# Energy Resilience Analysis Framework





# Data / Metrics on Existing System Conditions

Data and metrics are necessary to identify and develop resilience measures



## Energy Use & Cost Information

- Electric, Thermal (Steam, Natural Gas, Cooling), Water; most granular data intervals available
- Planned Load Growth / Reduction
- Utility Bills (tariff structure, unit and capacity costs)



## Systems & Infrastructure

- Distribution Infrastructure (electric, gas, thermal)
- EnMS/BMS
- Backup generation / UPS / mobile power
- Existing on-site power generation / central plant
- Available land / resources



## Loads

- Facilities' loads
- Prioritization of critical loads



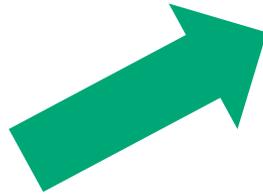
## Performance Metrics

- Outage frequency, duration and cause
- Power Quality



# Procurement and Funding Strategies

**Solutions or  
Courses of Actions  
will drive  
procurement  
strategies**



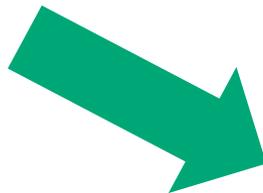
## Third Party Financing

- Land Outgrants
- PPA
- ESPC/UESC



## Partnerships

- Tenants
- Local Communities
- Utilities



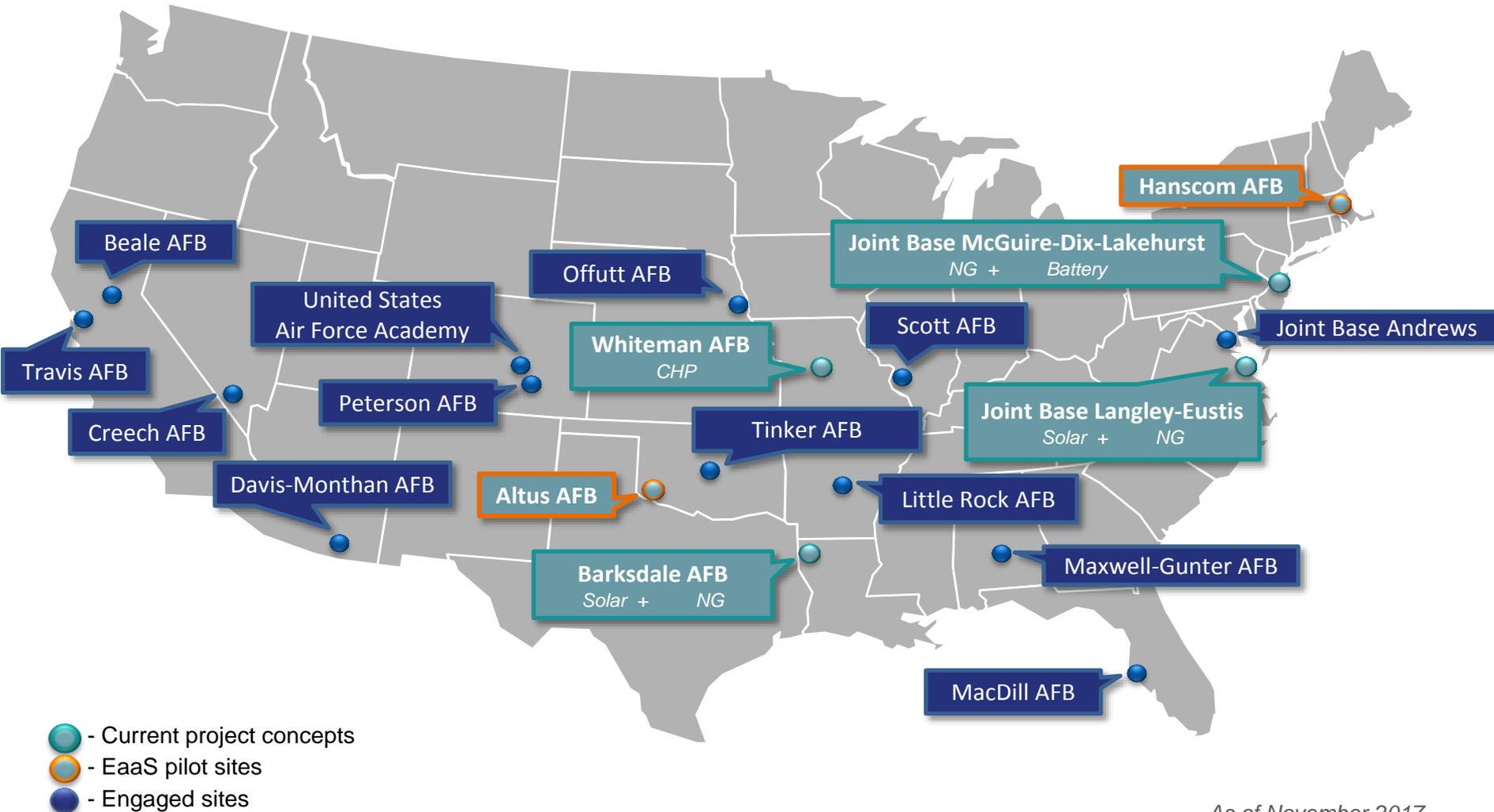
## Programmed Funding\*

- Research and Development Grants
- MILCON/SRM Funds
- ERCIP

*\*if available*



# OEA Project Concepts and Opportunities



As of November 2017



# Shared Resilience Benefits: Barksdale AFB, LA



## Project Concept

AEP/Southwestern Electric Power Company (SWEPCO) will construct, own, and operate two new rate-based generation assets at Barksdale AFB; a 27MW natural gas fueled facility and a 40MW solar array.

## Air Force Benefit

During grid outage the generation assets could be turned inward to support critical missions. The project will enable Barksdale to electrically “island” from the grid.

## Utility Benefit

AEP/SWEPCO will be building these assets as part of their IRP to support generation for their entire customer base. Building within Barksdale’s perimeter affords additional physical security of the assets.

## Community Benefit

In addition to providing generation flexibility to support the local community the assets will likely be able to black-start other AEP/SWEPCO assets in the event of grid outage.



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