



Future Power—Building the Energy Resilience of Tomorrow

**Mr. Michael McGhee, P.E.
Executive Director, Army Office of Energy Initiatives**

Association of Defense Communities National Summit

Wednesday, June 20, 2018

Assistant Secretary of the Army (Installations, Energy & Environment)



Army Vision in Multi-Domain Battlefield



*“The Army of 2028 will be **ready to deploy, fight, and win** decisively **against any adversary, anytime and anywhere**, in a joint, multi-domain, high-intensity conflict, **while simultaneously deterring others and maintaining its ability to conduct irregular warfare.**”*

*The Army will **do this through the employment of modern** manned and unmanned ground combat **vehicles, aircraft, sustainment systems, and weapons**, coupled with robust combined arms formations and tactics based on a modern warfighting **doctrine** and centered on **exceptional Leaders and Soldiers** of unmatched lethality.”*

Energy and water resilience are vital to sustain the Army mission and vision.



Above: Secretary of the Army
Mark T. Esper

Below: Army Chief of Staff
General Mark A. Milley



Assistant Secretary of the Army (Installations, Energy & Environment)



Guiding Energy and Water Resilience



- Congress: 10 U.S. Code § 2911 & 101
 - The Secretary of Defense shall ensure the **readiness** of the **armed forces** for their military missions by pursuing **energy security** and **energy resilience**.
 - Energy Resilience is the **ability to avoid, prepare for, minimize, adapt to, and recover from anticipated and unanticipated energy disruptions** in order to **ensure energy** availability and reliability sufficient to provide **for mission assurance and readiness**, including task critical assets and other mission essential operations related to readiness, and to execute or rapidly reestablish mission essential requirements.
- President: Executive Order 13834 Regarding Efficient Federal Operations

*Section 1. ... It is the policy of the United States that agencies shall meet such statutory requirements in a manner that increases efficiency, optimizes performance, eliminates unnecessary use of resources, and protects the environment. In implementing this policy, each agency shall prioritize actions that reduce waste, cut costs, **enhance the resilience of Federal infrastructure and operations**, and enable more effective accomplishment of its mission.*
- Secretary of Defense: Department of Defense Instruction (DoDI) 4170.11

*3. c. Energy Resilience. The DoD Components shall take necessary steps to ensure energy resilience on military installations. DoD Components shall plan and have the capability to **ensure available, reliable, and quality power** to continuously accomplish DoD missions from military installations and facilities.*
- Secretary of the Army:

*“My first priority is **Readiness** -- ensuring the Total Army is **ready to deploy, fight and win** across the entire spectrum of conflict, with an immediate focus on preparing for a high-end fight against a near-peer adversary.” - Mark Esper*
- HQDA: Army Directive 2017 – 07, 23 FEB 17:
 - The Army will reduce risk to critical missions by being capable of **providing necessary energy and water for a minimum of 14 days**.
 - The Army will improve resilience at installations, including planning for restoration of degraded energy and water systems and reducing risk of future disruptions.



2017 Army Energy and Water Universe



Energy and water security/resilience ensure available, reliable, and quality power and water to continuously sustain critical missions for a minimum of 14 days.

Army Universe

Installation Population:	3,002,873
Total Army Installations:	156
National Guard & Reserve Centers:	>2,800
Total Land (acres):	13,591,251
Buildings (ft ²):	982,668,264

Army Directive 2017-07,
Installation Energy & Water Security Policy
(February 23, 2017)

Office of Energy Initiatives (OEI)

11 Awarded Energy Projects
325 MW Onsite Generation Capacity
42% Islandable Projects (*onsite generation, storage & controls*)

9.6% Energy Use Intensity since FY15 vs 5% FY17 Goal

32% Water Use Intensity since FY07 vs 20% FY17 Goal

FY 2017 ARMY
Energy & Water Cost / Consumption

\$1.1B Energy 71.8T BTUs/year
\$86.9M Potable Water 31.2B GALs/year

Utilities Privatization: 145 Privatized Systems

Water	34
Wastewater	33
Electric	42
Gas	34
Heat/Power	2

Combined Heat & Power (CHP) Strategy

14 Projects / 109.2 MW

Sustainable Buildings: ≥ LEED Silver (FY05-17)

919 Buildings

Demand Response: 16 Installations Participating

Enterprise Metering System

> 21,000 Electric, Gas & Water Meters

Facility Related Control Systems

Energy / Resource Energy Managers: 179

FY 2017 Energy Sources:

- Electricity: 45.2%
- Natural Gas: 34.6%
- Fuel Oil 4.4%
- Other 15.8%

Installation Energy & Water Plans: In Progress

Energy Resilience & Conservation Investment Program (ERCIP):

FY 2019: 6 Projects / \$31.2 M

Energy Savings Performance Contracts (ESPCs)/

Utility Energy Service Contracts (UESCs)

\$2.8 B Total Third-Party Investment
637 Total Task-Orders and Mods
FY 2017: \$289.3M Investment



Assessing & Planning for Energy & Water Security and Resilience



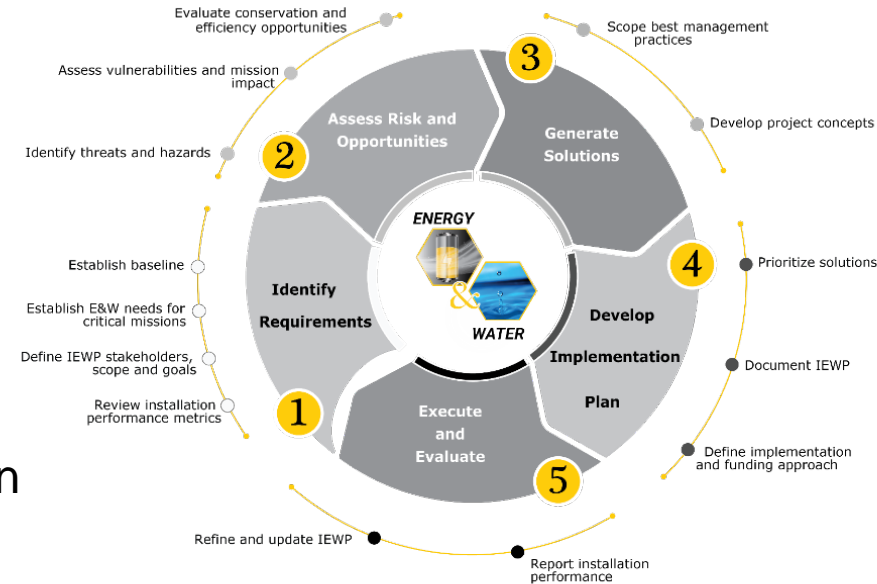
Objectives:

- Assess energy and water risks and opportunities efficiently and effectively
- Generate prioritized list of solutions to support development of an installation energy and water plan (IEWP)

Deliverables:

- Integrated assessment method
- Supporting data collection and decision support materials

IEWP Framework



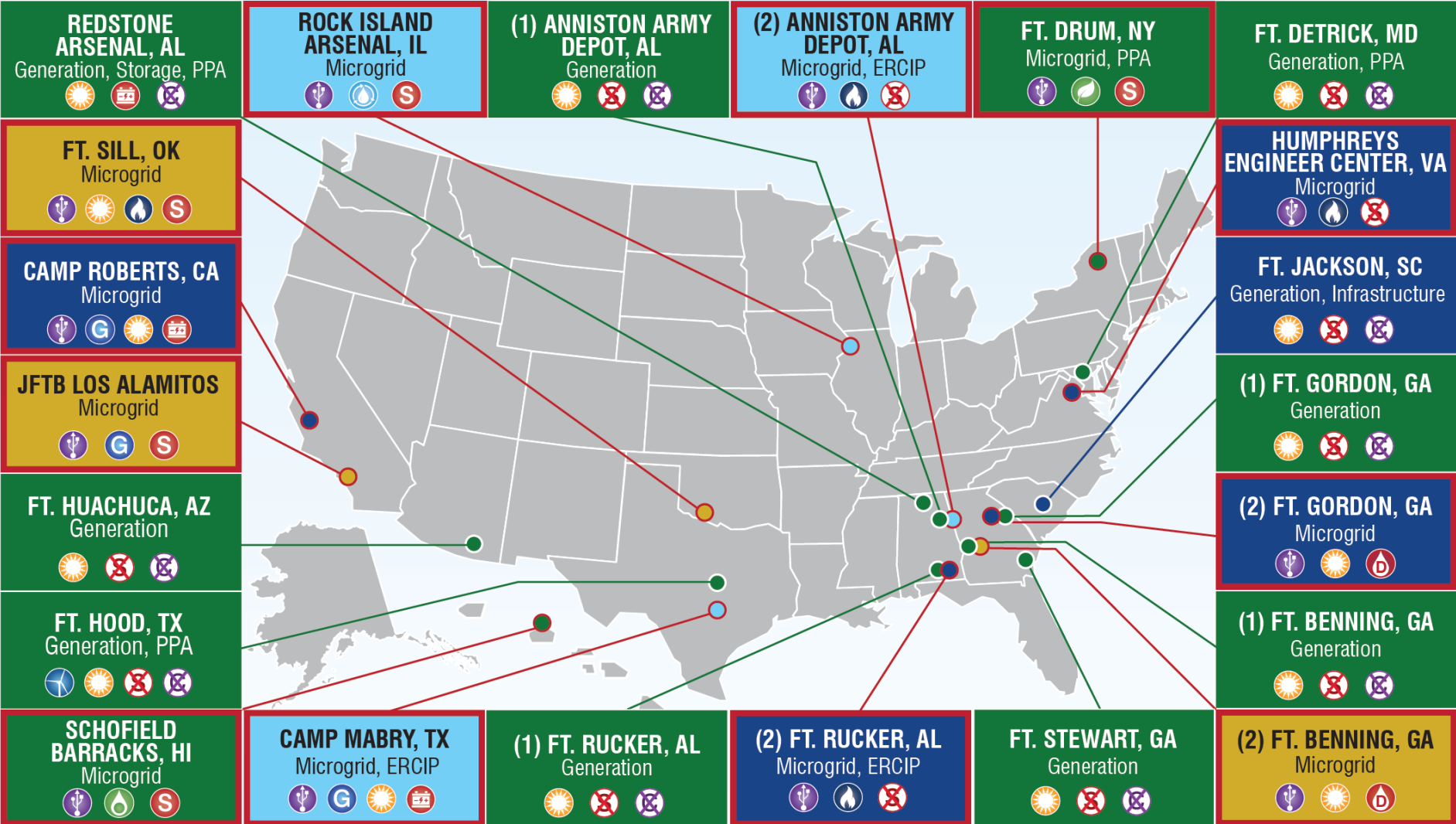
Installation Energy and Water Assessment, Planning, and Risk Reduction



Assistant Secretary of the Army (Installations, Energy & Environment)



Army Office of Energy Initiatives (OEI) Renewable and Alternative Energy Resilience Projects



Project Status

- Phase 1: Assessment
- Phase 2: Validation
- Phase 3: Contracts and Agreements
- Phase 4: Construction
- Phase 5: Operational

Renewable and Alternative Energy Key

- Biomass
- Biofuel
- Diesel
- Generation
- Hydro
- Natural Gas
- Solar
- Wind
- Battery Storage
- Storage / Supply
- Controls
- No Storage
- "Islandable"
- No Controls



Energy Security Project, Operational: Schofield Barracks, HI



Project: 50 MW / 30 Day Contingency Microgrid
Hawaiian Electric constructed, owns, operates and maintains a 50 MW biofuel/multi-fuel power generation plant, fuel storage tanks, and controls, on Schofield Barracks



Construction

As of September 2017

Army Benefit Plant can provide 50 MW of “first call” and “black start” capability to three Army installations simultaneously; 5 days of fuel storage onsite, 30 days of fuel storage on island



Completion

As of April 2018

Utility Benefit Hawaiian Electric will gain a critical generation facility above the tsunami strike zone, which will power the Oahu grid during normal operations

Community Benefit As the only baseload power generation facility on Oahu located above the tsunami strike zone, this project enhances grid resiliency and could provide power to part of the surrounding community in the event of a grid outage

Status Operational since May 2018



Energy Security Project Concept: JFTB-LA, CA



Current Status:

- Project solicitation – 16 May 2018
- Industry Day – 30 May 2018
- RFP closing – 20 July 2018
- Contract award target – end of FY2018
- COD target - November 2019

Project Concept: 3 MW / 14 Day Minimum Contingency Microgrid

Developer-constructed, owned, operated and maintained energy resilience capabilities, which may include power generation assets, energy storage, and microgrid components to “island” JFTB Los Alamitos in the event of a grid disruption

Army Benefit Project will enhance energy security by providing “islandable” capability to power critical missions for a minimum of 14 days, during grid emergency

Developer Benefit During normal operations, the developer will benefit from selling power or services to customers via the electrical grid

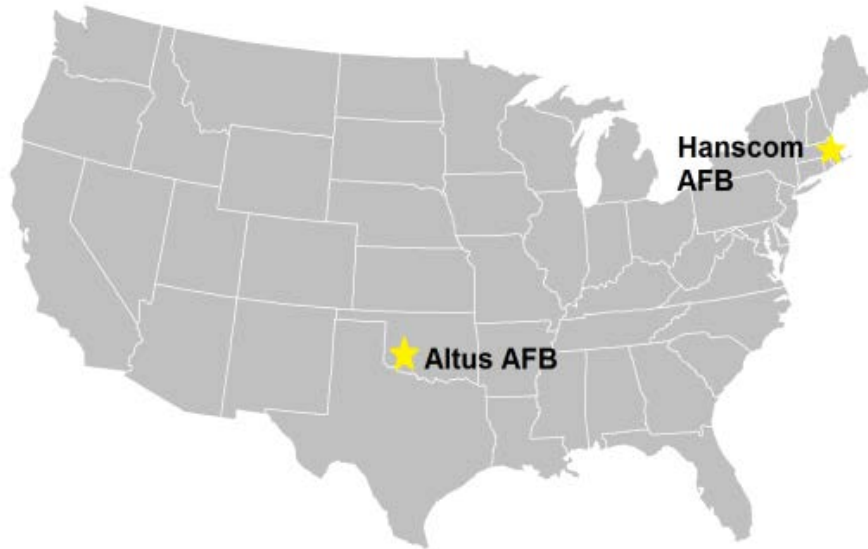
Community Benefit The project may enhance grid reliability by alleviating transmission line congestion or provide other electrical grid quality-enhancing services

Potential Project Sites
Available for mission and environmentally compatible technologies providing energy resilience capabilities





Air Force Energy-as-a-Service (EaaS) Update



Altus AFB (OK)

- Regulated environment
- Good utility relationship
- Readiness mission

Hanscom AFB (MA)

- Deregulated environment
- Extensive energy projects
- Need for integrator

- **EaaS Definition:** A long-term arrangement with a single entity to meet comprehensive electric power needs of a USAF installation using necessary acquisition authorities.
- USAF selected two pilot sites; each is anticipated to have a different acquisition pathway.
- EaaS RFI closed in fall 2017; initial solicitations anticipated by end of CY 18.



OEI Contact Information



Mr. Michael McGhee

Executive Director

703-697-4100

Michael.F.Mcghee.civ@mail.mil

www.OEI.army.mil

Ms. Krista Stehn

Opportunity Development Director

703-697-4004

Krista.R.Stehn.civ@mail.mil



@ArmyOEI



@ArmyOEI