

# NPS Defense Energy Seminar: Fostering the Interagency for Collaborative Energy Research and Programs

April 12, 2019



# Discussion Agenda

- DOE/EERE Overview
- Energy Transitions Initiative (ETI) Overview
- History of Interagency Collaboration
- Current Interagency Efforts
- Looking Forward
- Questions/Discussion



# Energy Efficiency and Renewable Energy (EERE)

EERE promotes affordable and reliable energy to enhance America's economic growth and energy security. Priority focus areas include:

- Energy Affordability –continuing to drive down costs of the energy technologies in our portfolio
- Energy Integration –facilitate the integration of new sources of generation and consider opportunities from greater flexibility in energy consumption
- Energy Storage –technological advances to provide more flexible generation and more flexible load through a comprehensive approach to energy storage with smart buildings, pumped hydro, hydrogen storage, and batteries



# ETI Overview

DOE's Energy Transitions Initiative (ETI) supports islands and remote communities to address high energy costs, reliability, and other challenges through the development of cost-effective and resilient energy infrastructure and associated governance and institutional frameworks.

Additionally, ETI enables DOE to better meet its requirements in support of the insular areas and informs disaster response and recovery missions in remote and island territorial locations, such as hurricane/typhoon recovery efforts in the U.S. Virgin Islands, Puerto Rico, and the Commonwealth of the Northern Mariana Islands.



# ETI Overview

- ETI takes a collaborative approach both within DOE and with other federal agencies.
- ETI has a long history of close collaboration with the Department of Interior's Office of Insular Affairs and the State Department's Energy Resources Bureau. In fact, ETI was used by the State Department as the platform for the Caribbean Energy Security Initiative.
- New collaborations with FEMA and the Naval Post Graduate School have resulted from recovery efforts in Puerto Rico and the USVI from the 2017 storm season.



# History of Interagency Collaboration: Hawaii Clean Energy Initiative

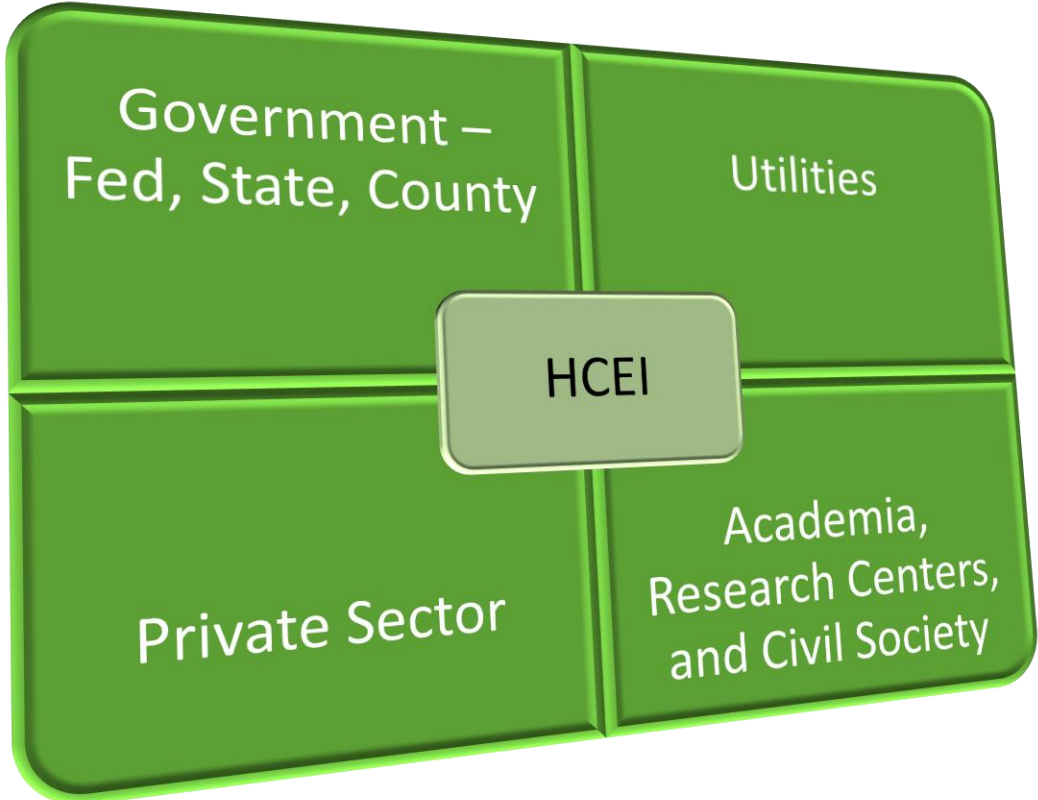


The goal of the Hawaii Clean Energy Initiative is to achieve 100 percent clean energy by 2045. Build upon the dynamic, ongoing work of public and private organizations at the national, state, and county levels to achieve the following key objectives:

- Define the new infrastructure
- Foster and demonstrate innovation
- Create economic opportunity
- Establish an “open source” learning model
- Build our workforce with new skills



# History of Interagency Collaboration: Hawaii Clean Energy Initiative



# HCEI: SPIDERS\* Project

Sponsored by U.S. Department of Defense, in collaboration with the U.S. Departments of Energy and Homeland Security, SPIDERS JCTD focused on four critical requirements needed to demonstrate enhanced electrical power surety for national security:

- Protect task critical assets from loss of power due to cyber-attack
- Sustain critical military operations during prolonged power outages
- Integrate renewable and other distributed energy generation concepts to power critical military assets in times of emergency
- Manage electrical power installation and consumption efficiency to reduce petroleum demand, carbon "boot print," and cost.



\*Smart Power Infrastructure Demonstration for Energy Reliability and Security (SPIDERS) Joint Capability Technology Demonstration (JCTD)



# HCEI: SPIDERS\* Project

Each of the three phases of the SPIDERS JCTD program takes place at a different site with progressively more complex and larger scopes of execution.

- Phase 1 was a single circuit demonstration of a cyber-secure microgrid for waste water treatment at Joint Base Pearl Harbor-Hickam, Hawaii.
- Phase 2 was a multi-building demonstration at Fort Carson, Colorado. It included integration of a large solar photovoltaic (PV) array and microgrid connected electric trucks.
- Phase 3 at Camp Smith, Hawaii, was DOD's first installation-wide microgrid. The Camp Smith microgrid was designed to provide for full operation of the base during an extended electrical outage with cyber-attack defense baked into the design.



# HCEI: Elemental Excelerator

The Hawaii Energy Excelerator, initially hosted by the University of Hawaii's Pacific International Center for High Technology Research to help startups scale and sustainably modernize the energy infrastructure.



The Office of Naval Research and Department of Energy worked together to support the establishment of the Excelerator to use innovation and people to create transformative change.

Using a place-based innovation approach, the Elemental Excelerator looks at the challenges of a specific place and then works with the community and startups to solve these challenges in innovative ways.



# Current Interagency Efforts: Focus on the USVI



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The federal government has provided substantial support to the USVI in the wake of Hurricanes Irma and Maria.

In the energy sector, DOE was able to leverage its existing relationships within the utility and the energy office to provide project management development and support to FEMA for energy recovery projects being conducted by NREL, SNL, and the Naval Post Graduate School including the planning for microgrids and other technology solutions and parallel institutional, governance, and technical reforms.

This work is also closely coordinated with and supported by the Department of Interior's Insular Affairs Office.



# Looking Forward

## Key Questions

- How can we leverage the knowledge and experiences gained through work in islands and remote communities to further the resilience of DOD installations?
- Is there an opportunity to jointly assess gaps and identify research areas to further support this work?
- Are there locations that should be prioritized from a national security perspective?
- What other agencies are missing from this discussion?

