Renewable Energy Program Office

U.S. NAVY

FUPWG Fall 2016

Mr. John Kliem, Executive Director, REPO

02 November, 2016

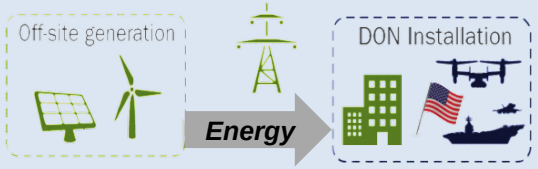
REPO Overview

- In May 2014, Secretary of the Navy Mabus established the Renewable Energy Program Office (REPO) to help the DON bring ***1 gigawatt (GW)*** of renewable energy into procurement by the end of 2015

- With ***1.1 GW*** of renewable energy in procurement through three models, REPO has surpassed this ambitious goal

Model 1

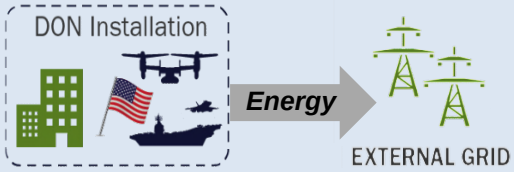
Off-base Generation for On-base Consumption *(Acquisition: USC/PPA)*



~ 383 MW

Model 2

On-base Generation for Off-base Consumption *(Real Estate: Outgrant)*

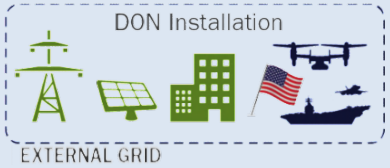


~ 575 MW

Model 3

On-base Generation for On-base Consumption *(Acquisition: PPA)*

+ Existing Renewable Energy



~ 165 MW

1.1 Gigawatts

DoD/DON Shore Energy Consumption

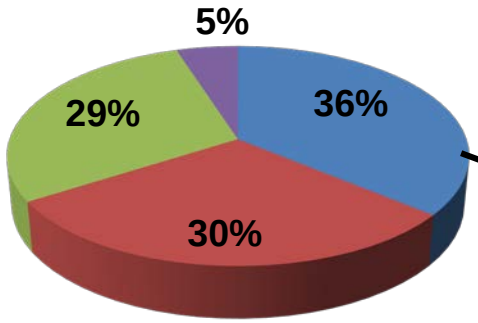
211,095 B BTUs

of installation energy consumed by DoD in FY15

30%

of total DoD energy consumption attributable to installations

DoD FY15 Installation Energy Consumption



29%

of DoD's installation energy consumption attributable to DON

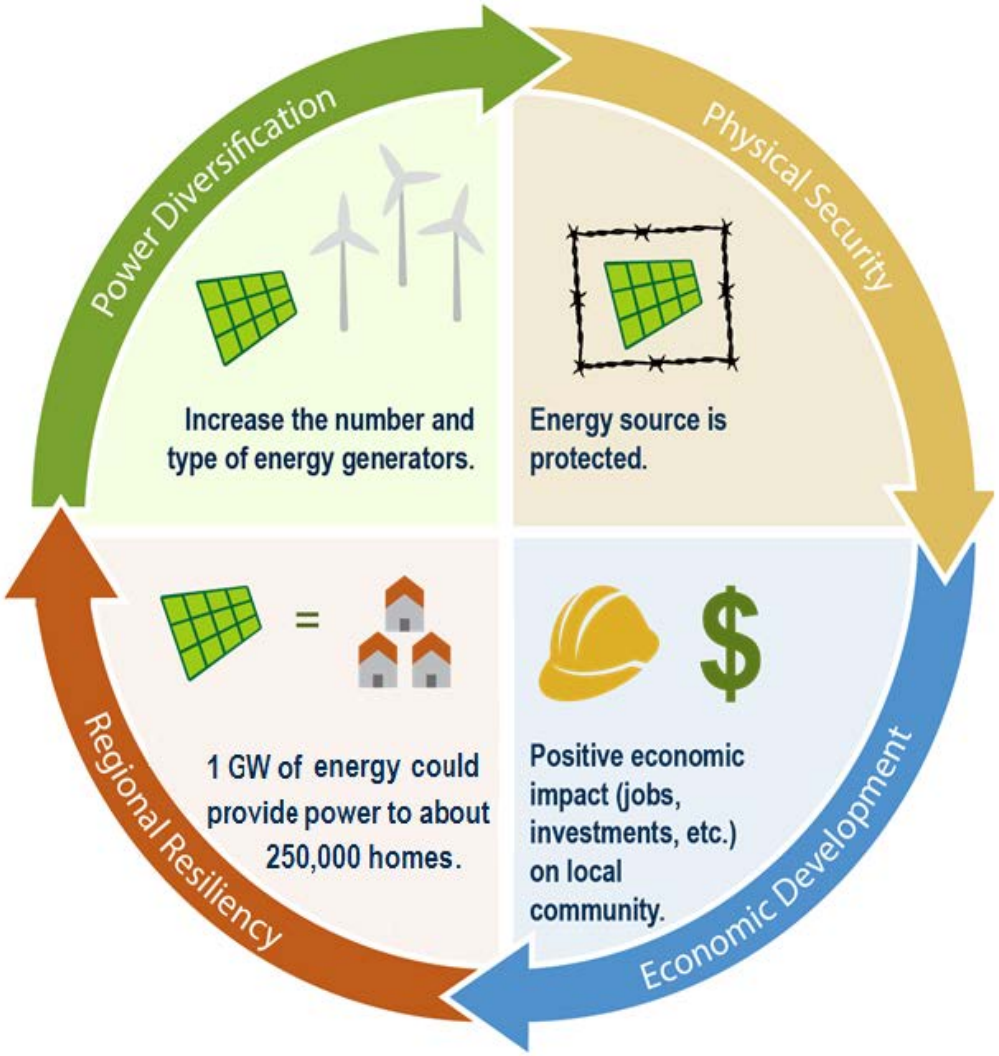
21.8%

of DON facility electricity consumption is produced or procured from renewables

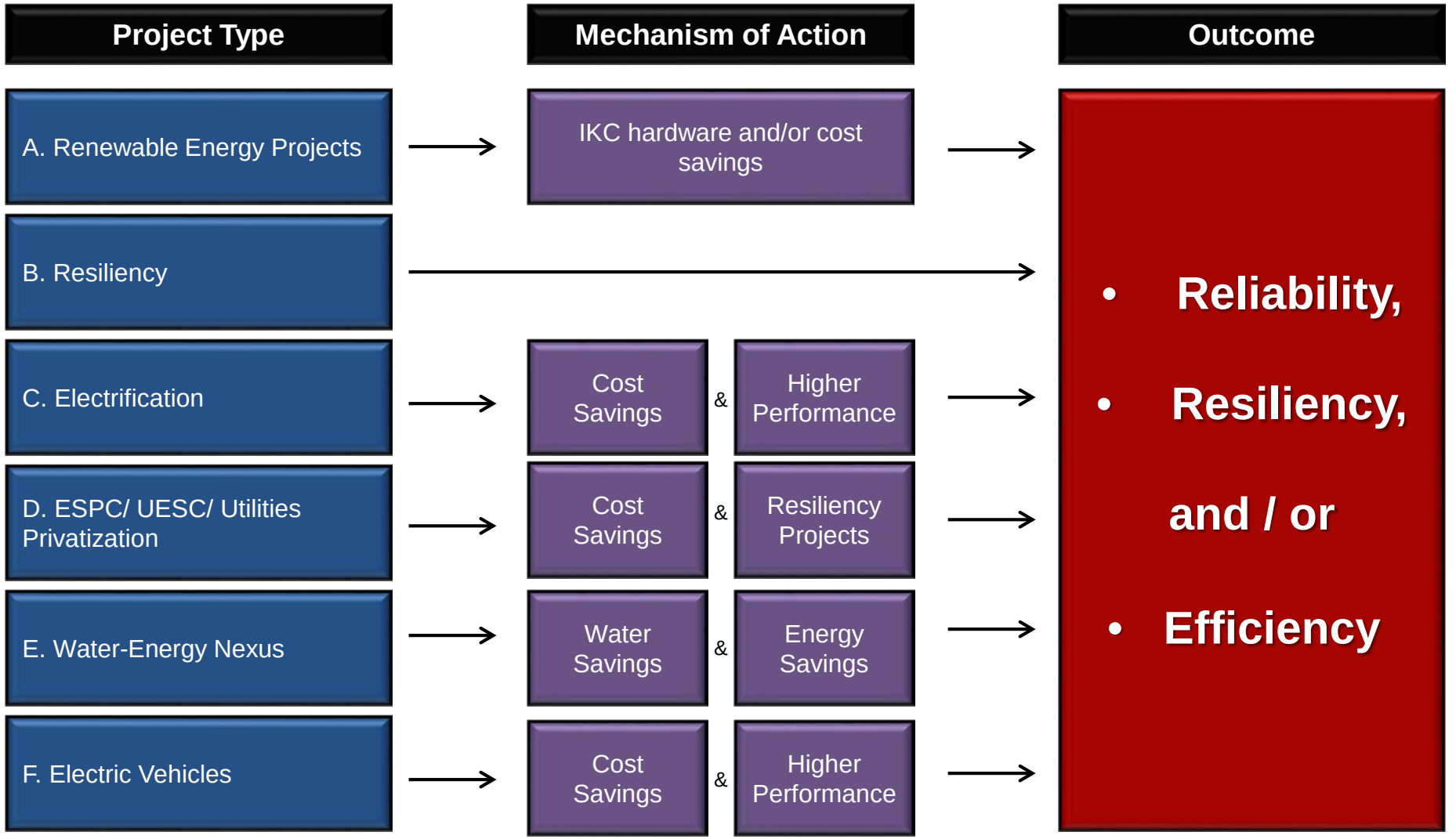
Benefits of RE for the DON

Deploying new renewable energy generation will enhance the DON's energy security posture:

- Long-term contracts for RE at a set price provides **cost-stability**
- **Power diversification** to increase the availability of local energy sources
- Locating facilities on-base to provide **physical security**
- **Collaborating with local communities** to provide regional resilience



REPO Way Ahead Projects Will Result in Reliability, Resiliency, and/or Efficiency



Energy Security Benefits

Placement of energy generation and distribution assets within DoD security perimeters reduces their physical vulnerability and helps assure reliable electrical service.

- Physical attacks or accidents can disrupt electrical service.
- Although the grid has many redundancies, single points of failure can make operation vulnerable.
- Locating energy generation and distribution assets on military bases reduces their vulnerability to deliberate or accidental physical disruption.
- Locating energy generation on military bases increases future energy.

Current Focus and Project Highlights

1. Bring renewable energy projects in procurement online
2. Utilize third-party financing to build DON resiliency by leveraging technologies such as battery storage, fuel cells, microgrids and distributed generation. Examples include:

NWS Seal Beach (solar + storage)

The base will host 50-100 MW of grid-integrated battery storage and will receive a PV array and smaller battery for its use.

NSA Ventura County (battery storage)

The base will receive emergency access to onsite renewable energy, battery back-up and microgrid controls for critical facilities.

MCAS Yuma (microgrid)

Arizona Power will provide unlimited access to onsite backup power, eliminating up to 42 USMC emergency diesel generators.

SUBASE New London (microgrid)

A “community microgrid” which would power the base and the community’s critical assets in the event of a grid outage.

NAS Corpus Christi

REPO is assessing the potential to host an on-base geothermal project with associated resilience investments.

NAS Crane (battery repurposing)

By integrating sub batteries into the electrical grid, battery capacity is expected to grow, reaching a total of 44 MWh by 2019.

Microgrid at SUBASE New London

In coordination with our partners, the DON has made significant progress toward establishing a microgrid to support the Atlantic submarine fleet at SUBASE New London. The microgrid will provide enhanced resilience to mission critical operations and support for community emergency services.

- A “community microgrid,” the project would enable the DON to push power to the community’s critical assets, such as hospitals, in the event of a grid outage.
- Two fuel cell projects located on-base totaling an estimated 16 MW will ensure power continuity for the critical assets of the base.

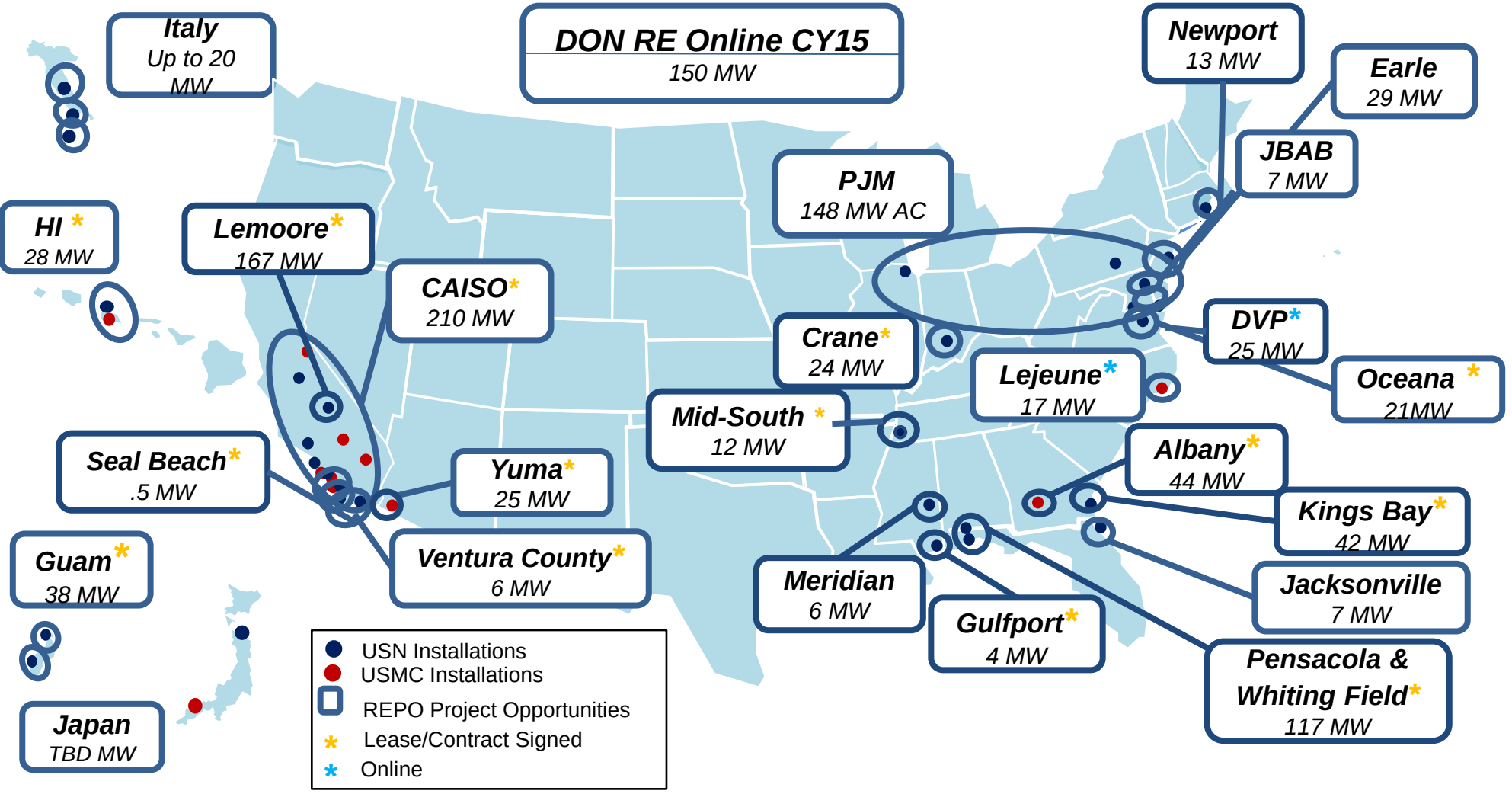
Making SUBASE New London a “Win-Win-Win”

The DON, the state, and our project developer, once selected, will work together to ensure this project is a win-win-win for all involved.

- SUBASE New London’s location and function are critical to our national security mission, and enhancing the energy resiliency at the base is just as critical.
- The developer will have a new generation asset which will contribute to regional energy requirements, provide base-load power to service the community and the base during normal grid operation, support critical loads on-base and in the community during outages, and be secured within the base’s fence line.
- For the state, the base has been an integral community partner for 100 years.

REPO Projects

(as of October 2016)



*All estimates for wattage in DC unless otherwise noted

*Project size are estimates that are subject to change.

Questions?

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