Department of the Navy – Renewable Energy Program Office (REPO) Overview

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22 Sept 2015

The DON Shore-Based RE Goals

Federal Goal

- The Energy Policy act 2005 requires 7.5 percent of our electrical consumption in FY13 and beyond to come from renewable sources. Extended by Executive Order 13693 to 30 percent by FY25

DOD Goal

- 10 U.S.C. § 2911 requires the Department of Defense (DoD) to produce or procure ≥25 percent of the total quantity of facility energy from renewable energy (RE) sources beginning in 2025

SECNAV Goal

- By the end of 2015, the DON will bring one gigawatt of renewable energy into procurement for the shore-based load

What is a GW?

~6.7M solar panels

~17 days of power for Walt Disney World

~5M cyclists

~7 Boeing 747 passenger planes

~7B spinning hamster wheels

~13 Pentagons covered with panels

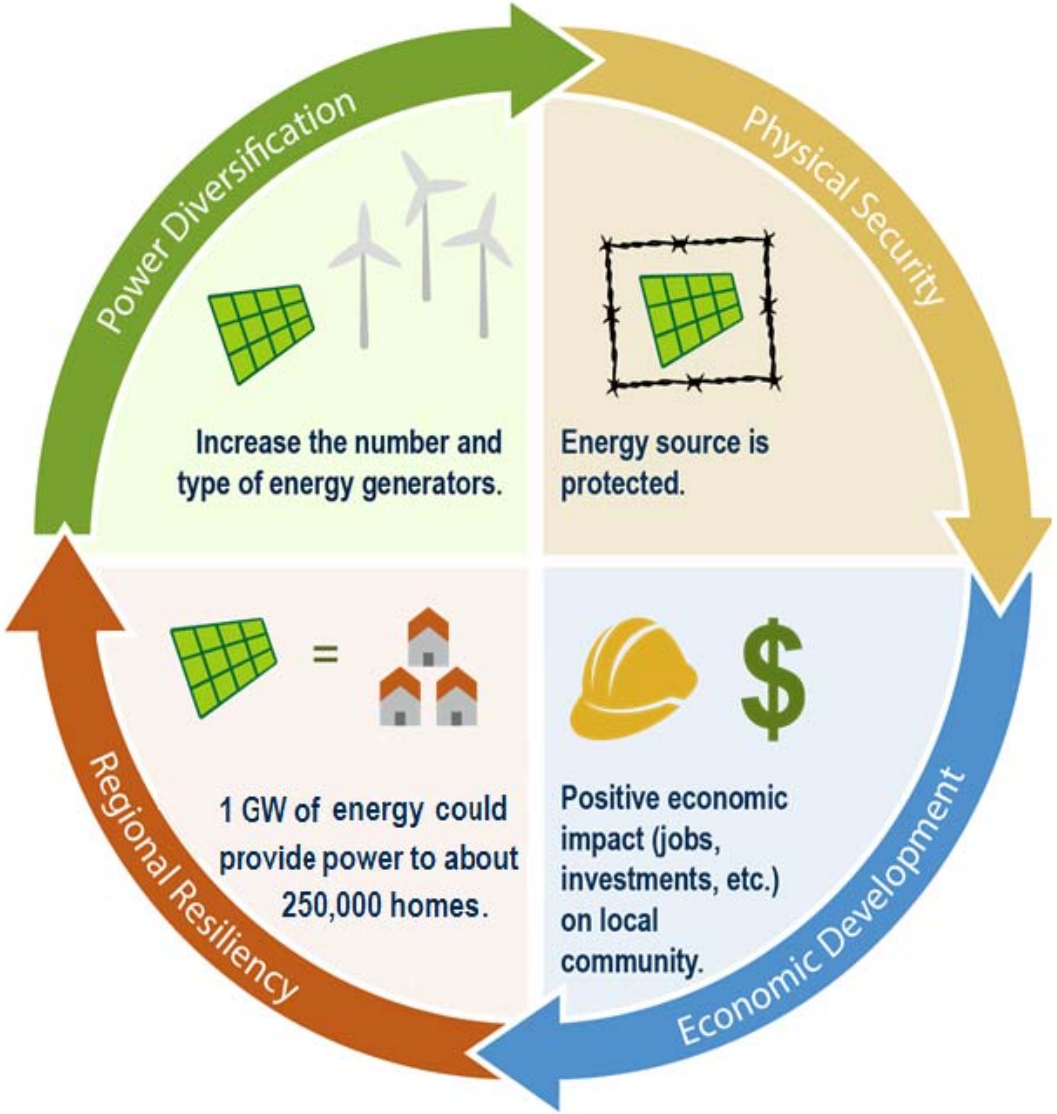
~1.3M horses

~5 Nimitz-class aircraft carriers

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 services in times of disaster or need



REPO Project Development Models

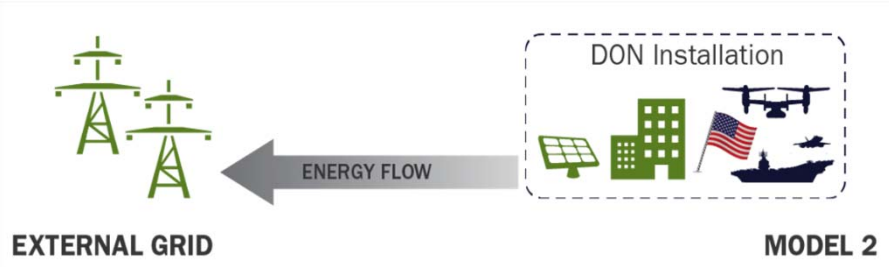
Different Development Models Accommodate for Diverse Requirements and Market Conditions

Model 1

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

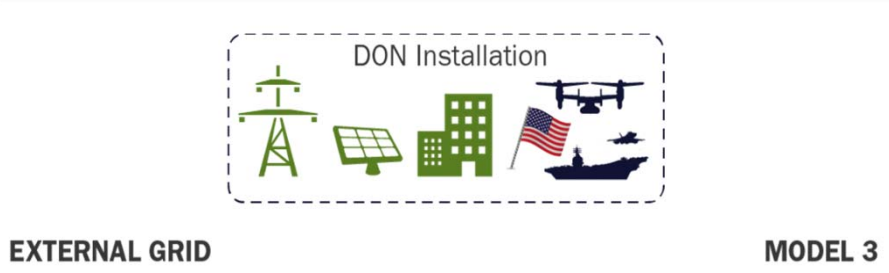
Model 2

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



Model 3

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



1.2 GW of RE Capacity in the Pipeline

Model 1 ~490 GW

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

Model 2 ~630 GW

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

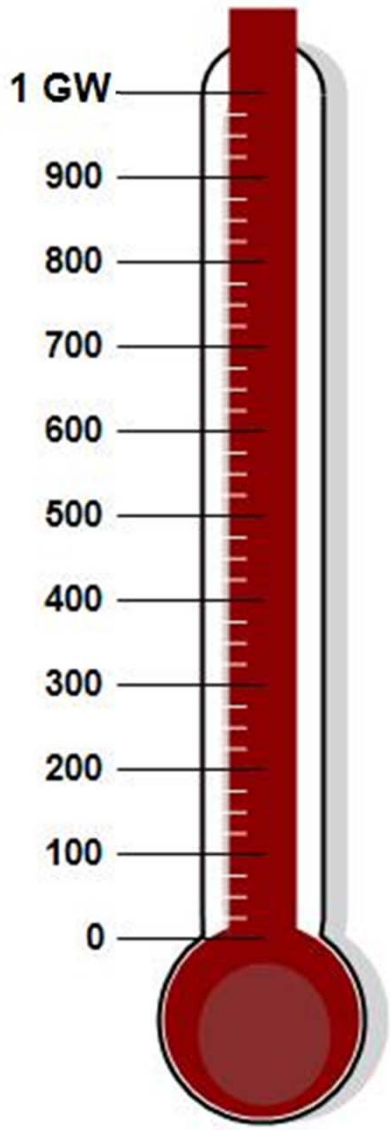
Model 3 ~54 GW

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

+

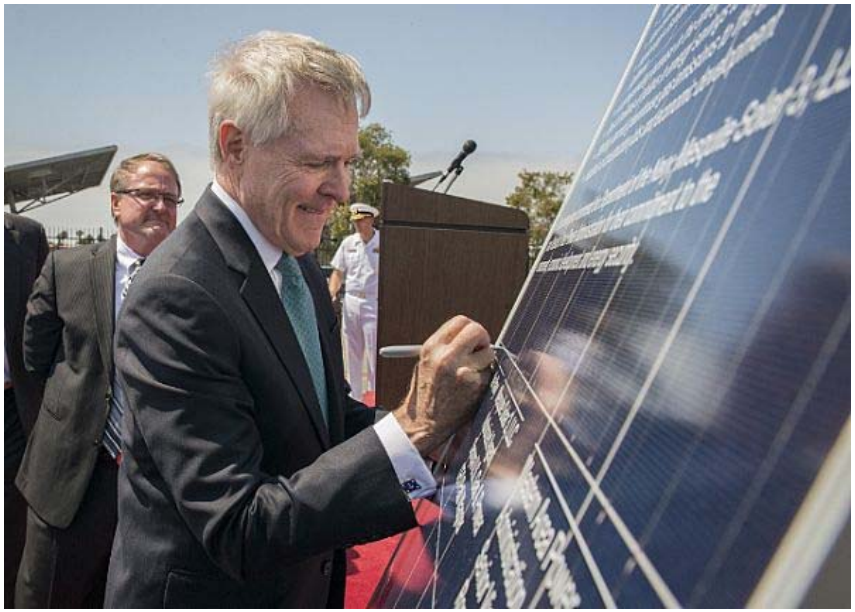
=

1.2 GW



Procuring Renewable Energy off Base

1. Understand consumption patterns and forecast long-term loads to “right-size” projects
2. Work with Acquisition, Counsel and other internal stakeholders early-on and throughout.
3. Achieve support and buy-in from Senior DoD leaders
4. Develop project schedule and Business Case Analysis to understand market timing and incentives
5. Create a successful model—CEQ adopted the REPO model for use in other Federal entities



Secretary of the Navy (SECNAV) Ray Mabus signs a solar panel during a ceremony commemorating an agreement with Western Area Power Administration and Sempra U.S. Gas & Power to construct a 210 megawatt direct current solar facility. The agreement is the largest purchase of renewable energy ever made by a federal entity.

Building Renewable Energy on Base

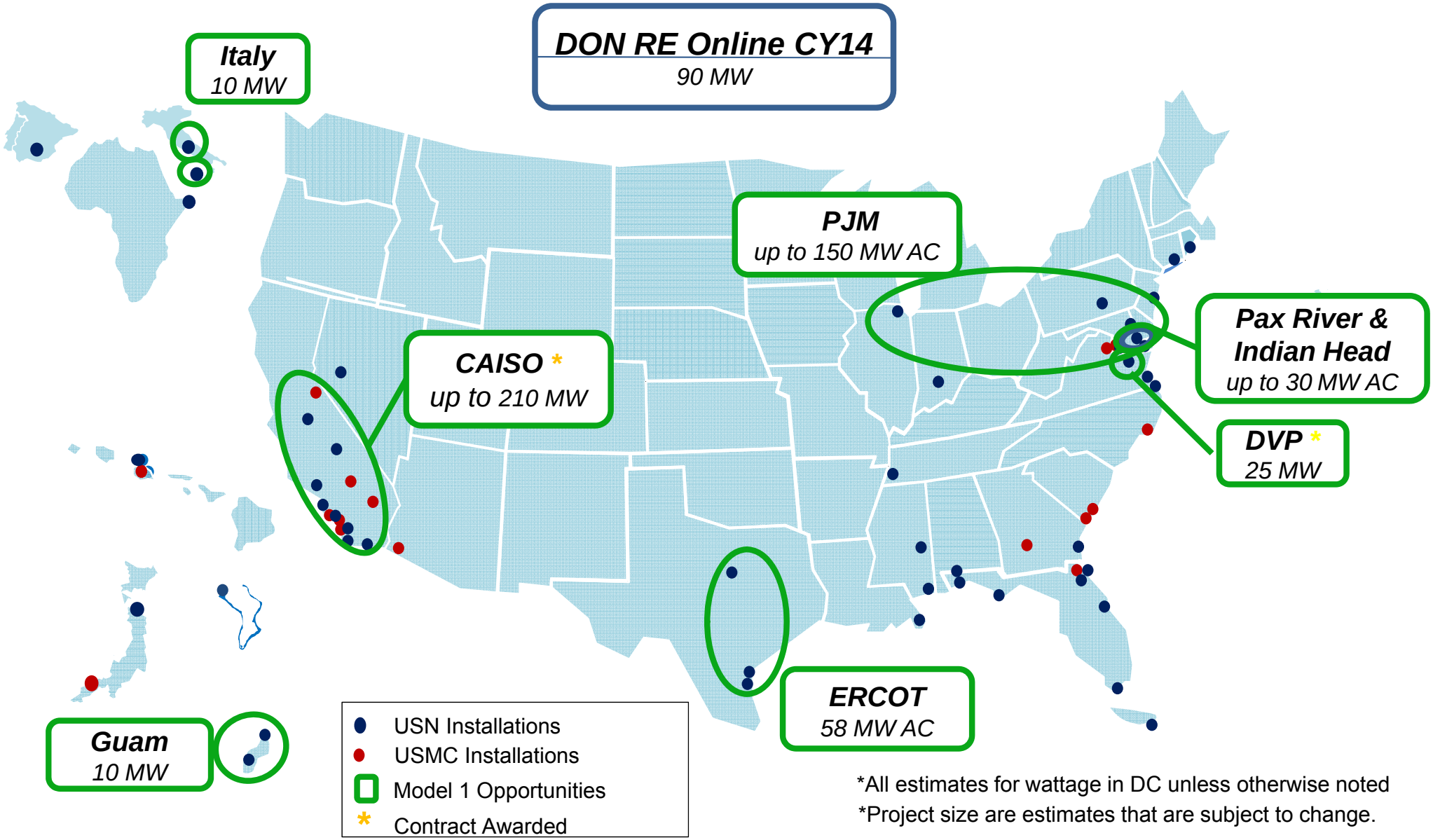
Critical path elements for success:

- Complete expedited NEPA process by Summer/Fall 2015
- Finalize in-kind consideration to maximize energy security benefits and lay the framework for further capabilities

MCB Camp Lejeune Model 2 Project:
The DON and Duke Energy broke ground on a 17 MW (DC) solar facility on 17 July 2015.
Construction to finish by December 31, 2015.

Model 1 Project Opportunities

(as of September 2015)

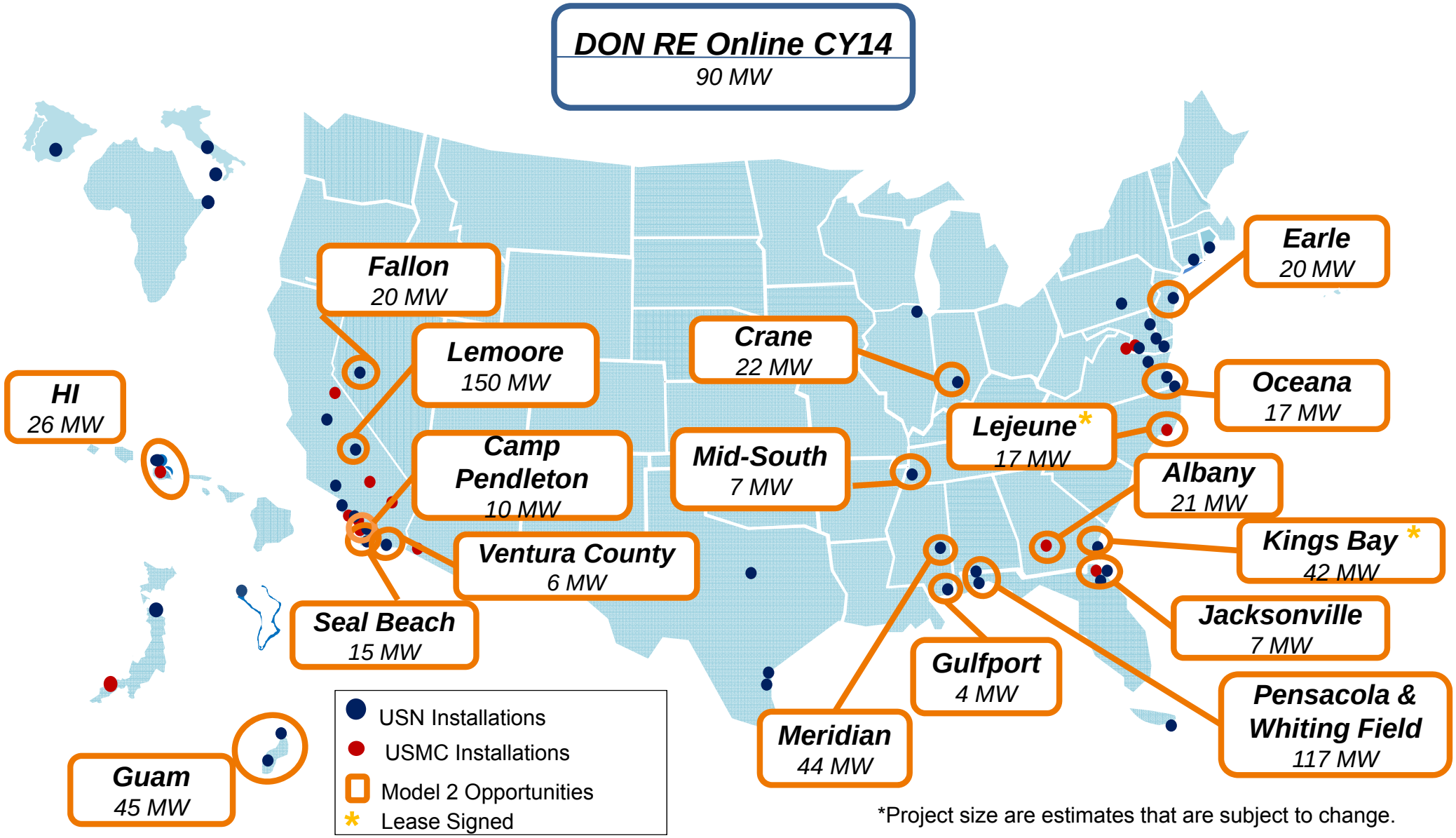


*All estimates for wattage in DC unless otherwise noted

*Project size are estimates that are subject to change.

Model 2 Project Opportunities

(as of September 2015)



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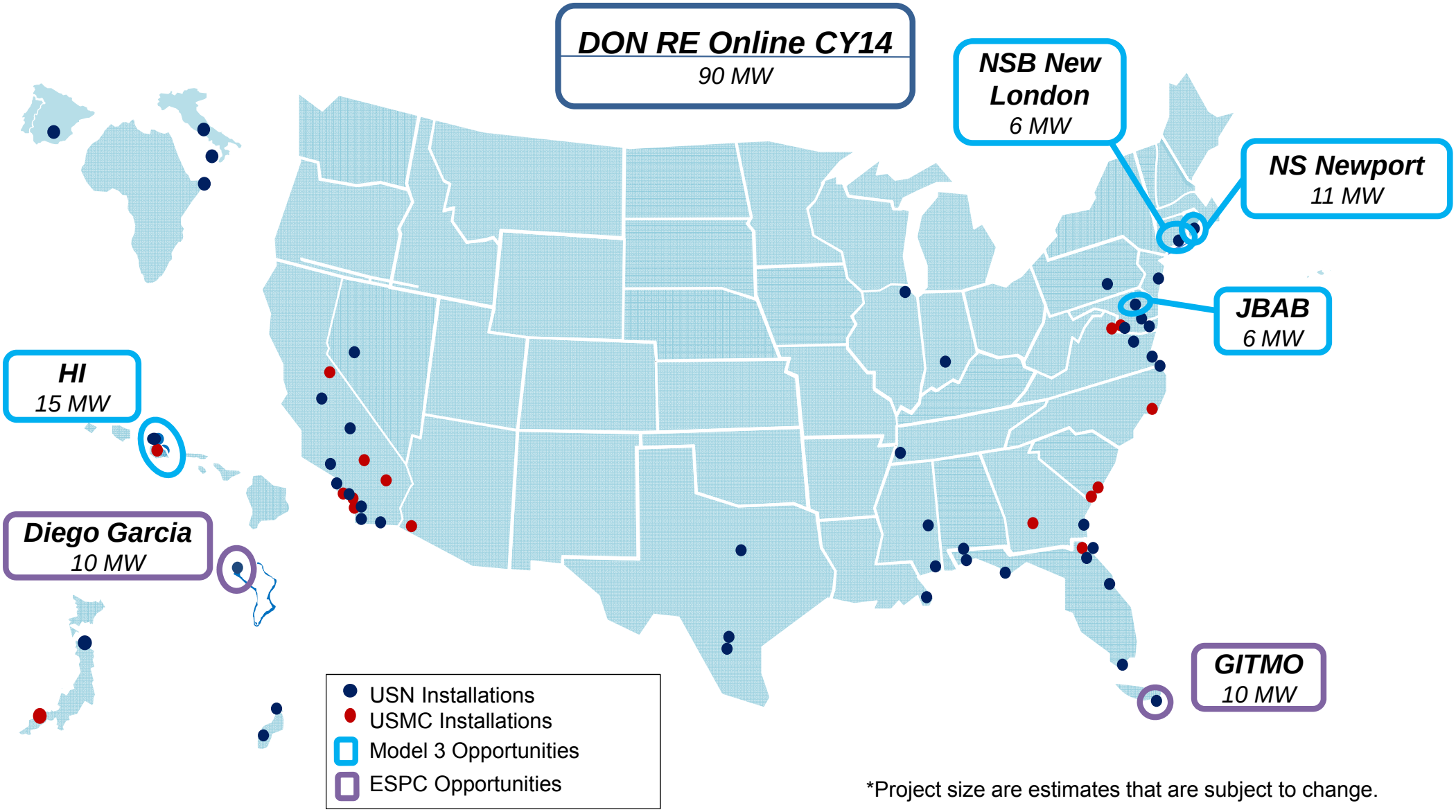
Model 3 Project Opportunities

(as of September 2015)



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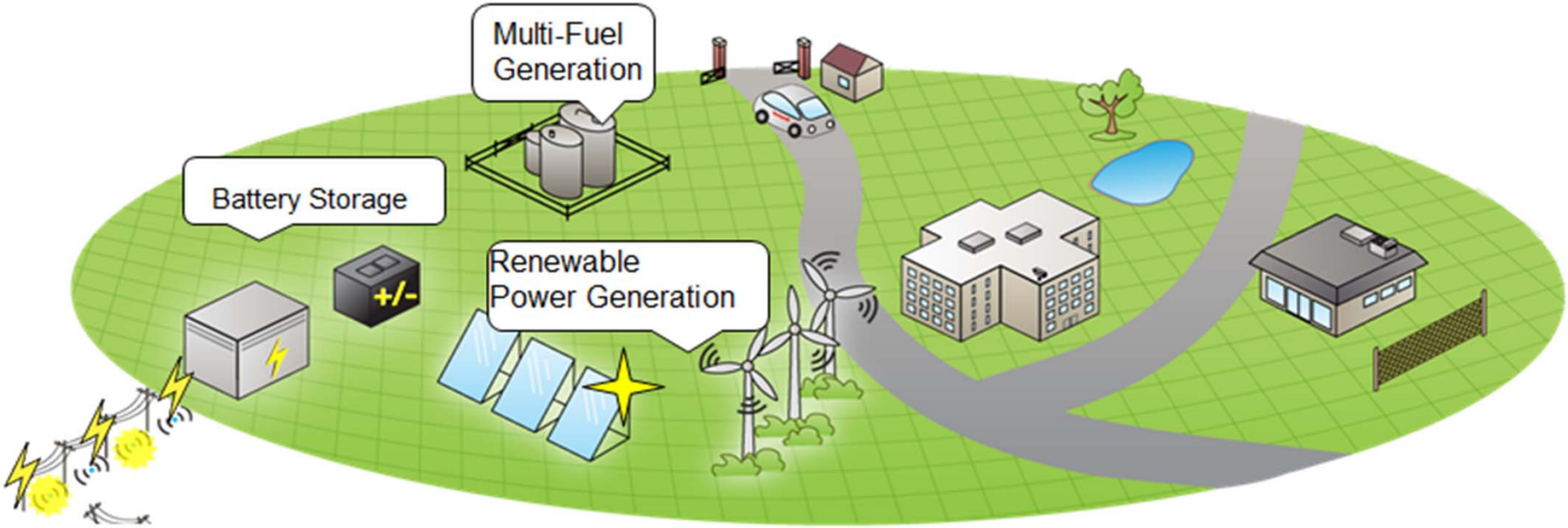
Future Microgrid Development

Additional/updated infrastructure is required to create access to on-base renewable energy generation

- OSD energy security work group is in process of defining a holistic approach for DOD microgrid capability
- NAVFAC HQ is in process of developing written requirements for the DON
- REPO is providing recommendations for eventual integration of on-base renewables into microgrid capability to enhance energy security



Questions?

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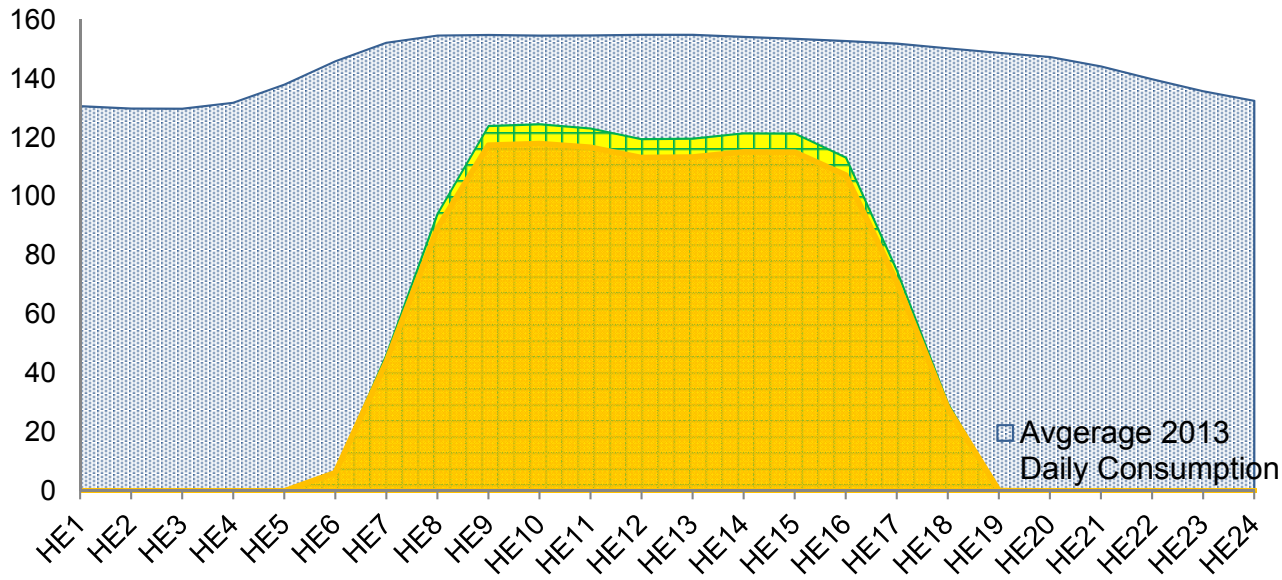
Backup Sides

Analyzing GW Integration

SAMPLE LOAD & RESOURCE ANALYSIS

Projected average 2016 day solar PV production in Southwest region (with RPS requirement) compared to 2013 historic DON load



- Conduct load and resource analysis DON-wide and for specific installations
- Understand the DON energy profiles and how renewable energy production profiles align

Strategizing GW Integration

Initial land availability analysis by the National Renewable Energy Laboratory (NREL)

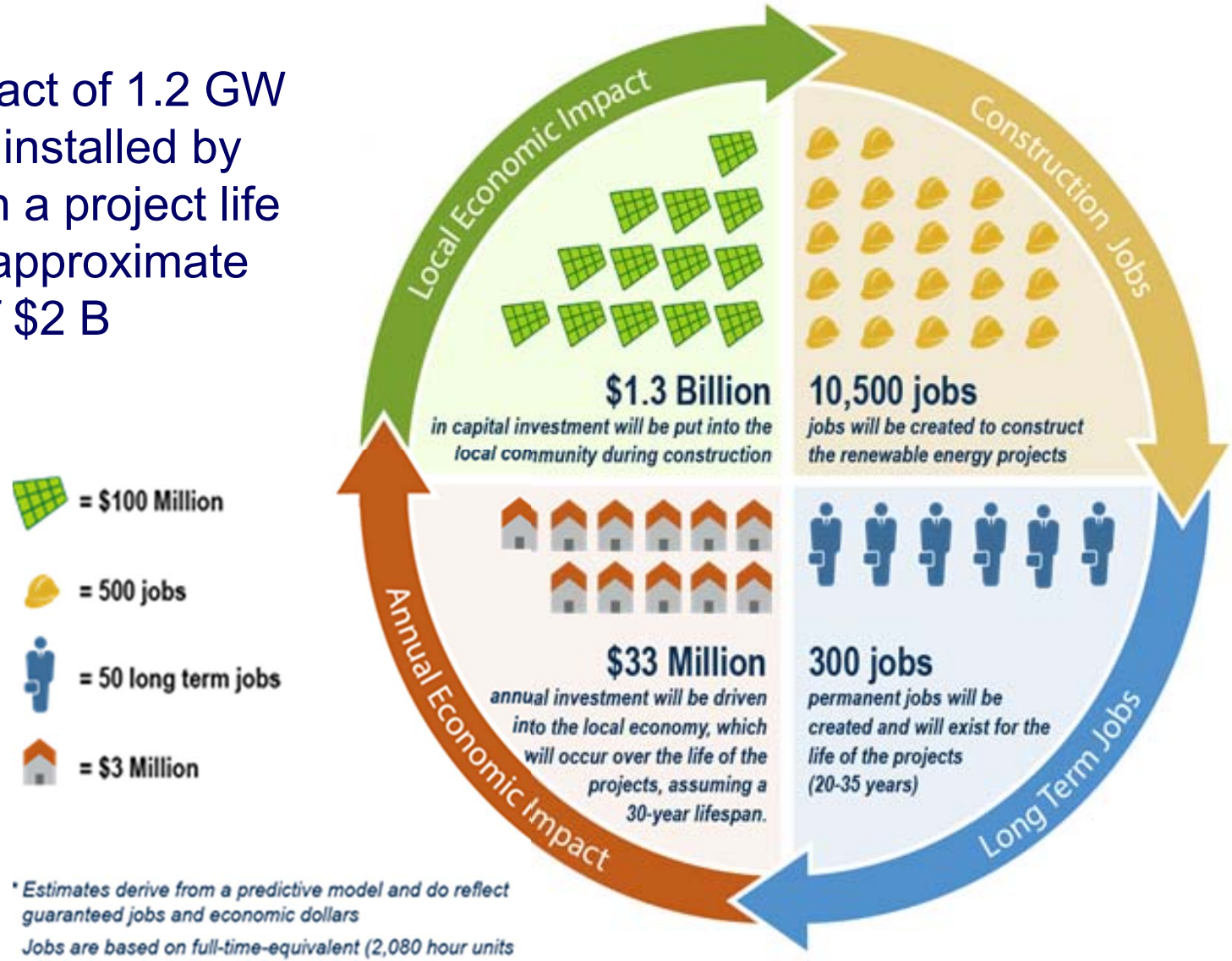
Navy & USMC land tasker to confirm available on-base land

<u>Undertake aggressive engagement strategy:</u>

- Meet with all utilities that serve DON installations
- Expand relationships with utility contracting entities
- Engage industry and stakeholder organizations
- Attend and speak at industry events

Benefits of RE for the Local Economy

Total economic impact of 1.2 GW of new RE capacity installed by the end of 2016 with a project life of 30 years has an approximate net present value of $2 B



* Estimates derive from a predictive model and do reflect guaranteed jobs and economic dollars

Jobs are based on full-time-equivalent (2,080 hour units of labor), equivalent to a full-time job for 1 year