



## DON Renewable Energy Program

E.C. Hoelzer  
NAVFAC Atlantic Renewable Energy

757-322-4698  
[ernest.hoelzer@navy.mil](mailto:ernest.hoelzer@navy.mil)

# Why Renewable Projects?



- **Renewable Energy Mandates**

- SECNAV Goal: 50% renewable / alternative energy by 2020
- SECNAV Goal: 50% net zero installations by 2020
- 10 USC 2911(e): Produce or procure 25% of all DoD energy from renewable energy by 2025
- EPACT 2005: Renewable energy – 3% by 2007, 5% by 2010, 7.5% 2013 and beyond
- EISA 2007, EO 13423: Energy efficiency, energy intensity, biofuels, etc.
- EO 13514: Carbon / Green House Gasses

- **Energy Independence/Security**

- On-site generation and consumption
- Reduced dependence on purchased power

- **Rate Stability**

- Renewable power rates will be fixed and lower than or equal to “brown power”
- Reduce peak power demand – save money
- Potential for revenue/in-kind consideration (EJV/EUL contracts)

- **Risks**

- **Self-Encroachment**



# China Lake Geothermal - Operational



## ***GEO THERMAL***



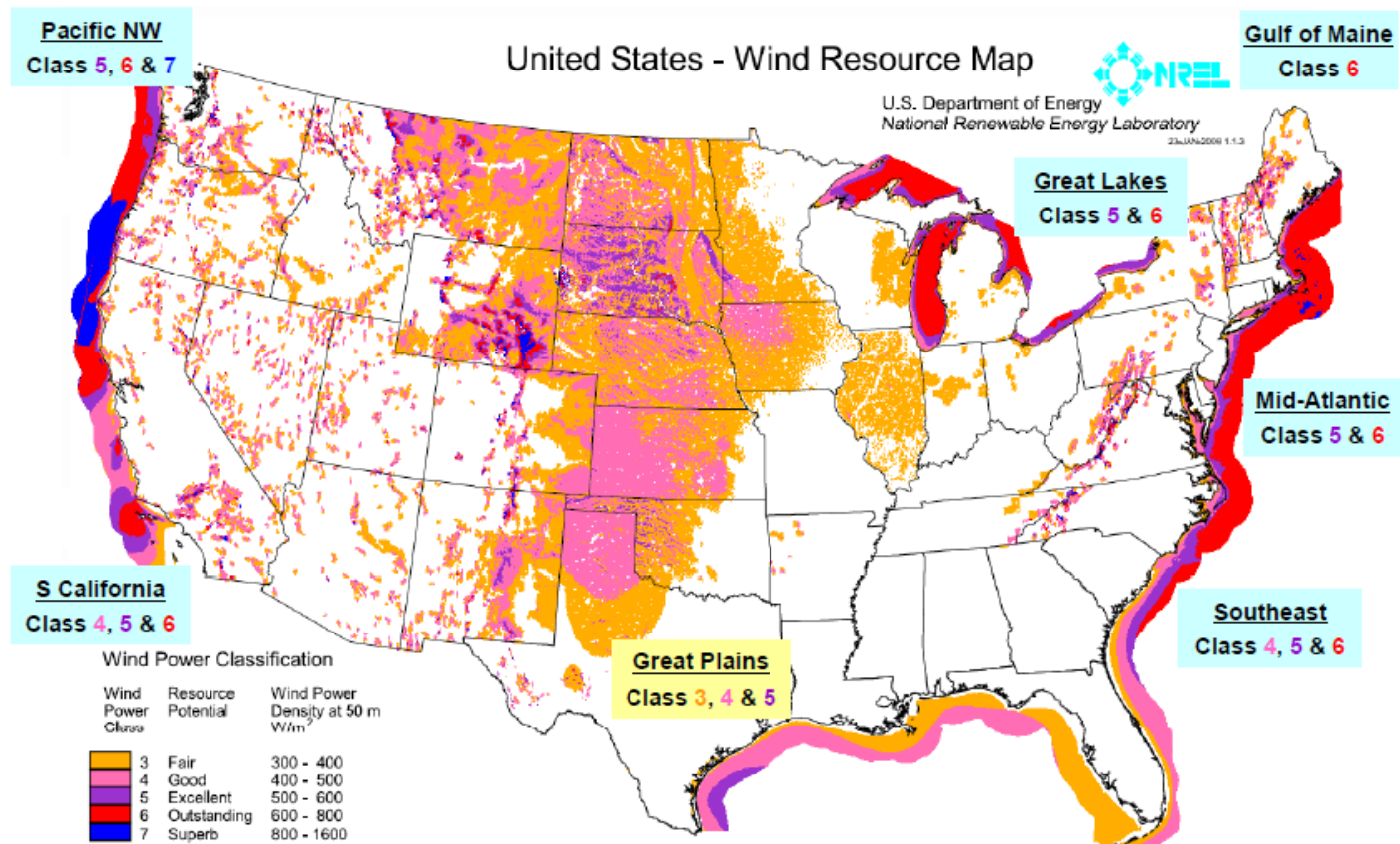
The Navy's 270 MW geothermal power plant at NAWS, China Lake, California, has generated 26 million MWH since it's inception. This power plant has provided enough resources to power 180,000 homes nearly pollution free.

# Wind Energy Projects - Operational



- **3.8 MW NB Guantanamo Bay, Cuba**
- **1.5 MW MCLB Barstow, CA**
- **0.7 MW at Navy Auxiliary Landing Field, San Clemente Island, CA**

## U.S. Offshore Wind Resources



# Solar Photovoltaic Projects - Operational

## NB Coronado, MCAGCC Twenty-nine Palms, CA



### **PHOTOVOLTAIC**



*Marine Corps Air Ground Combat Center, Twentynine Palms, California*

The Department of the Navy provided the two largest federal photovoltaic projects ever constructed with the installation of a 1.1 megawatt (MW) system at the Marine Corps Air Ground Combat Center, Twentynine Palms, California, and a 750 kW system at Naval Air Station, North Island, San Diego, California.

*Naval Air Station, North Island, San Diego, California*

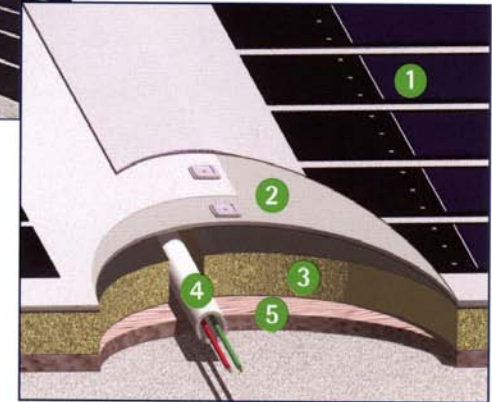


These systems improve electrical grid reliability, generate enough electricity to supply 1,200 homes, avoid burning 6,000 barrels of crude oil equivalent annually, and avoiding 567 metric tons of carbon equivalent (green house gases) annually, that would have been produced to generate the equivalent amount of power from conventional sources.

# Existing RDTE – Solar PV



- **Thin Film PV Evaluations – High wind, high temp, adhesion, roof durability, performance**  
NAVSTA Guam, NAS Pax River, NB Ventura
- **Test Energy storage and model grid compatibility - BAA proposals received**



- 1 Flexible Photovoltaic Roofing Panel
- 2 Gypsum Board Fire Barrier
- 3 Rigid Foam Insulation
- 4 Electrical Wiring Conduit
- 5 Existing Roof Deck

# Kinetic Hydropower System – Tidal Energy, Keyport, WA



- Nominal generating capacity of 35 kW in a 4 knot current
- Units are scalable to small or large arrays
- Bi-directional tidal operation



- **RPO Purpose**

- **Develop process and provide assistance to FEC in executing renewable projects**

- Contract tools
    - Project selection

- **Contract Selection**

- **Key element: Navy does not wish to operate, maintain, or own**

- **Program centered around FEC**

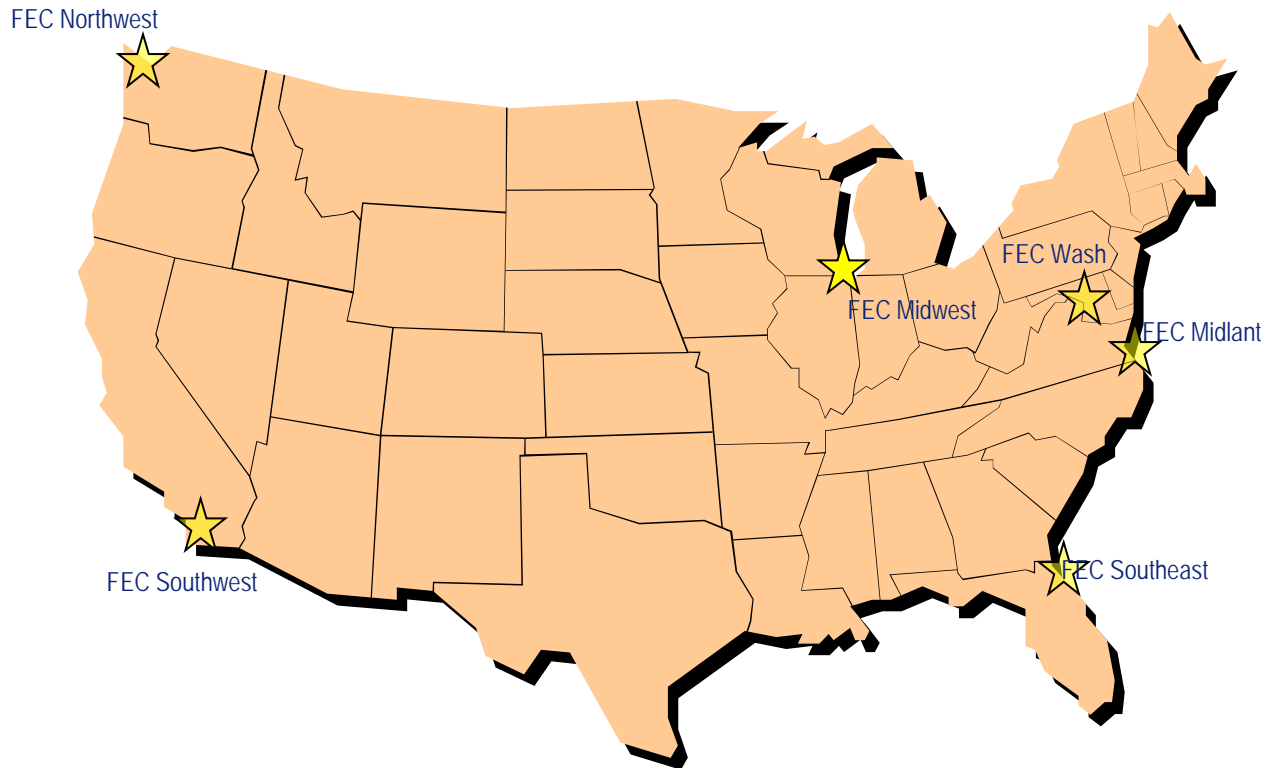
- **Core team members: OPS, AM, PW**
  - **Echelon 3 and 4 represented**
  - **Marine Corps installations are included.**

# Project Execution Vehicles



- **Utility Energy Services Contract (UESC)**
- **Energy Savings Performance Contract (ESPC)**
- **Design/Build, Design/Bid/Build**
- **Enhanced Use Lease**
- **Energy Joint Venture**
- **Power Purchase Agreement**

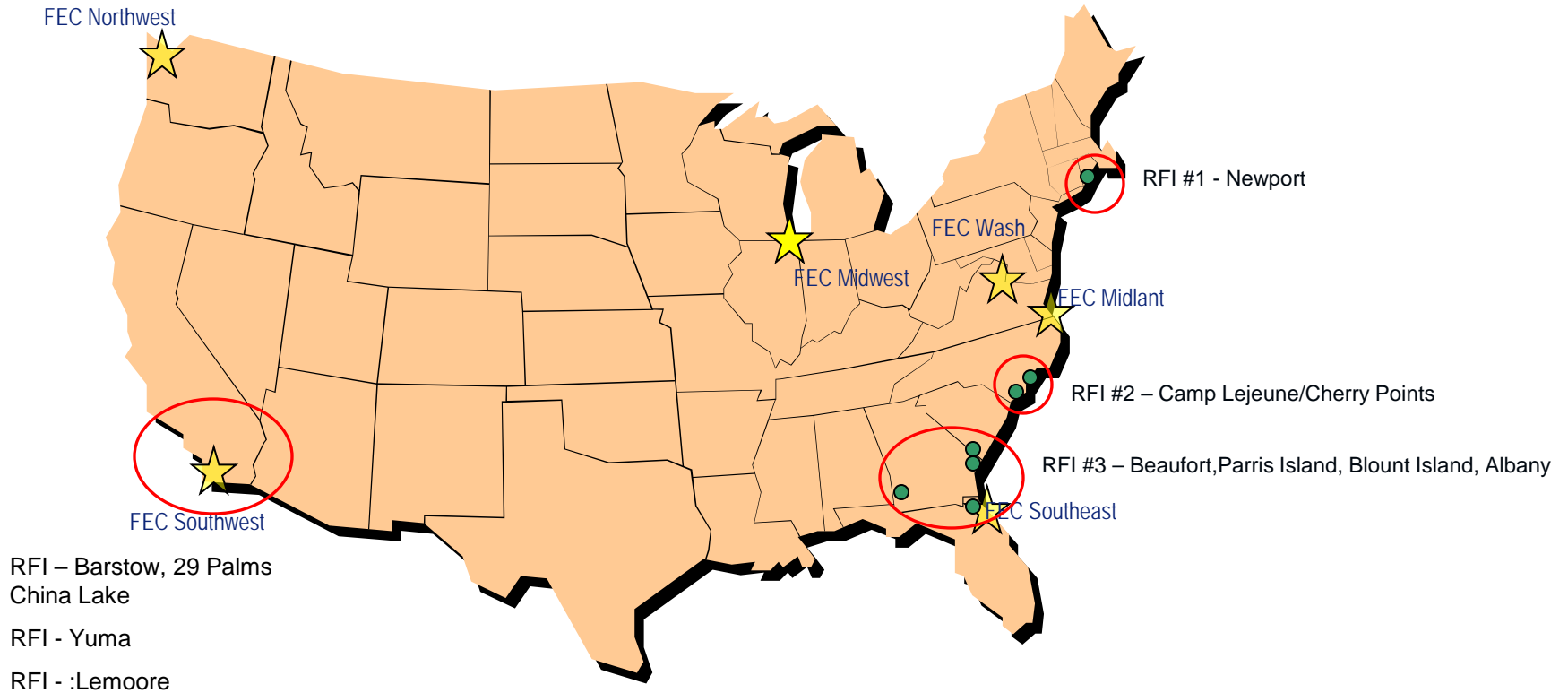
# NAVFAC Lant AOR



## Request For Information (or Interest)

- All technologies to be considered
  - However, unproven or experimental tech not desirable
- Power may be solely consumed by base, sold to grid or combination of the two
- Most favorable projects expected to be in the 1 – 5 MW range
- Power Purchase Agreement (PPA) enables 20 year contract
- Each RFI to be developed for specific FEC

# Initial Renewable RFI's (Lant AOR)



- RFI #1 (closed Apr 22)
  - Newport (Wind Energy)
- RFI #2 (closed Apr 23)
  - Camp Lejeune
  - Cherry Point
- RFI #3 (closed Apr 28)
  - Parris Island
  - Beaufort
  - Blount Island
  - Albany
- Simultaneous Release by NAVFAC Lant
- Require minimal Site Data Packages

- Establish installation requirements
  - **Size (MWh) required**
  - **Unworkable technologies (Mission Collision)**
- Examine RFI responses
  - **Specific Technologies**
  - **Financial capacity**
  - **Logistics**
  - **Technically appropriate**

- **RPO Team Goal**

- Develop multi-megawatt renewable energy generation assets on DON installations in Southwest AOR

- **RPO Team Charter & Objectives**

- Partner with Navy, DoD, and industry to develop strategy
- Develop innovative solutions to integrate renewable generation
  - Consider potential for selling of power to grid
  - Arrangements for taking of power
  - Maximize land opportunity
- Export knowledge to NAVFAC Enterprise

# Market Research Results



- **Government requirements can be met by commercially-available, proven technology**
  - **Large-scale wholesale generation projects in CA are dependent on transmission upgrades which are 5-10+ years away**
  - **Small & medium projects are more viable due to on-site consumption, state incentives (CSI and others), Federal tax credits, and Renewable Energy Credits**
  - **Power purchase agreements (PPA) of 20 years or more are the most desirable and feasible for smaller projects**
- SW RPO team developed Three-Tiered, Phased Approach**
- Tier 1 & 2 for small/medium projects with on-site consumption
  - Tier 3 for large wholesale generation projects

# Contract Vehicles for Large-Scale Projects



## • General Principles

- All private financing; Developer must finance construction
- NEPA, studies funded by Gov't or Developer
- 10-30+ year contracts
- Developer retains ownership and O&M responsibility for assets



## • Power Purchase Agreement (PPA)

- Gov't buys power
- Gov't grants developer land access to construct system to provide power
- Authorized by 10 USC 2922a

## • Energy Joint Venture (EJV)

- Business agreement
- Gov't provides land
- Developer sells power, Gov't gets royalties and/or power
- Authorized by 10 USC 2916

## • Enhanced Use Lease (EUL)

- Real Estate agreement
- Gov't provides land lease
- Developer provides 'in-kind consideration'

# Acquisition Strategy – SW Projects



## Tier 1&2: Solar MAC

### 1-15 MW PPA Contracts, On-site Generation and Consumption

- Solar MAC Task Orders Sized up to base load (~ 1-15 MW)
- PPAs with terms of 10-30 years
- Projects can be executed quickly
- Projects 1-5 MW are highly incentivized
- Industry is highly competitive for systems of this size, leading to lower cost energy

#### Tier 1 – Phase I Sites

Installation	Acquisition Tool
NAWS China Lake	Solar MAC PPA contract for solar technology. Contract terms of 20 years
MCAGCC 29 Palms	
MCLB Barstow	
MCAS Miramar	15-yr sole-source PPA for landfill gas (in progress)

**Solar MAC Awarded 24 Feb 2010**

# Solar Multiple Award Contract (MAC)



## •Scope

- \$200M Multiple Award Contract (MAC) for Solar Energy
- 5 contractors selected for the MAC
- Contracts will be Power Purchase Agreements (PPAs) up to 30 Years
  - Government buys power only; does not own systems
  - No Government capital required
- Three Initial Task Orders
  - NAWS China Lake, MCLB Barstow, MCAGCC 29 Palms

## •Status

- PPA negotiations for Initial Task Orders Ongoing
- Planned award summer 2010
- Power for Initial Task Orders to be on-line within 12 months of award

## •Future Task Orders

- NAS Fallon, NAF El Centro, MCB Camp Pendleton, others TBD

# Utility Scale Projects – SW Projects



## Tier 3: Large-Scale on-site Generation, Sell for Consumption

- Large-scale wholesale generation projects to sell power to the grid
  - Projects count toward SECNAV and 10 USC 2911 goals
  - Utilize Energy Joint Venture (EJV) / Enhanced Use Lease (EUL)
  - CA installations require resolution of transmission issues
  - Large-Scale projects require large land area
- 
- **MCAS Yuma**
    - 1700 acres on west edge of Goldwater Range
    - RFI to industry mid-April
  - **NAS Lemoore**
    - 1000 acres of fallow agricultural land
    - RFI to industry mid-May (feature at NRSW Energy Forum)
  - **NAWS China Lake**
    - Currently developing GIS maps to identify possible sites

# Renewable Energy Credits (RECs)



- **RECs belong to the system owner**
  - Developer in PPA/EJV/EUL arrangements
  - Navy must buy RECs from developer if desired
  - Solar MAC initial task orders state that Navy does not desire RECs
- **DESC, WAPA buy RECs for Federal Agencies**
  - Mostly wind RECs for \$0.0005 - \$0.002 per kWh
- **Current Navy policy is to not buy RECs**
  - Air Force very active in REC market
- **Solar MAC RECs estimated at \$0.01 - \$0.03 per kWh**
- **Tradable REC Market**
  - California PUC recently allowed REC trading; implementation TBD

# Other SW Initiatives



- **Miramar Landfill Gas PPA**

- Project for 3 MW of electricity from landfill methane gas
- Currently in extended negotiations with contractor