Resilient Energy Program Office

U.S. NAVY

The Department of the Navy's Energy Resiliency Progress

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Innovative Funding for Resiliency

"…leverage private sector funding for projects that improve the energy efficiency of our facilities, reduce our operating costs, and contribute to mission assurance. Sequestration and the Budget Control Act have curtailed our direct investment in energy efficiency, so reliance on these contracts has taken on increased importance."

– Deputy Secretary of Defense Robert O. Work

DON Three Pillars of Energy Security

Energy Security

Reliability

The percentage of time energy delivery systems (utilities) can serve customers at acceptable regulatory standards.

Resiliency

The ability of a system to anticipate, resist, absorb, respond, adapt, and recover from a disturbance.

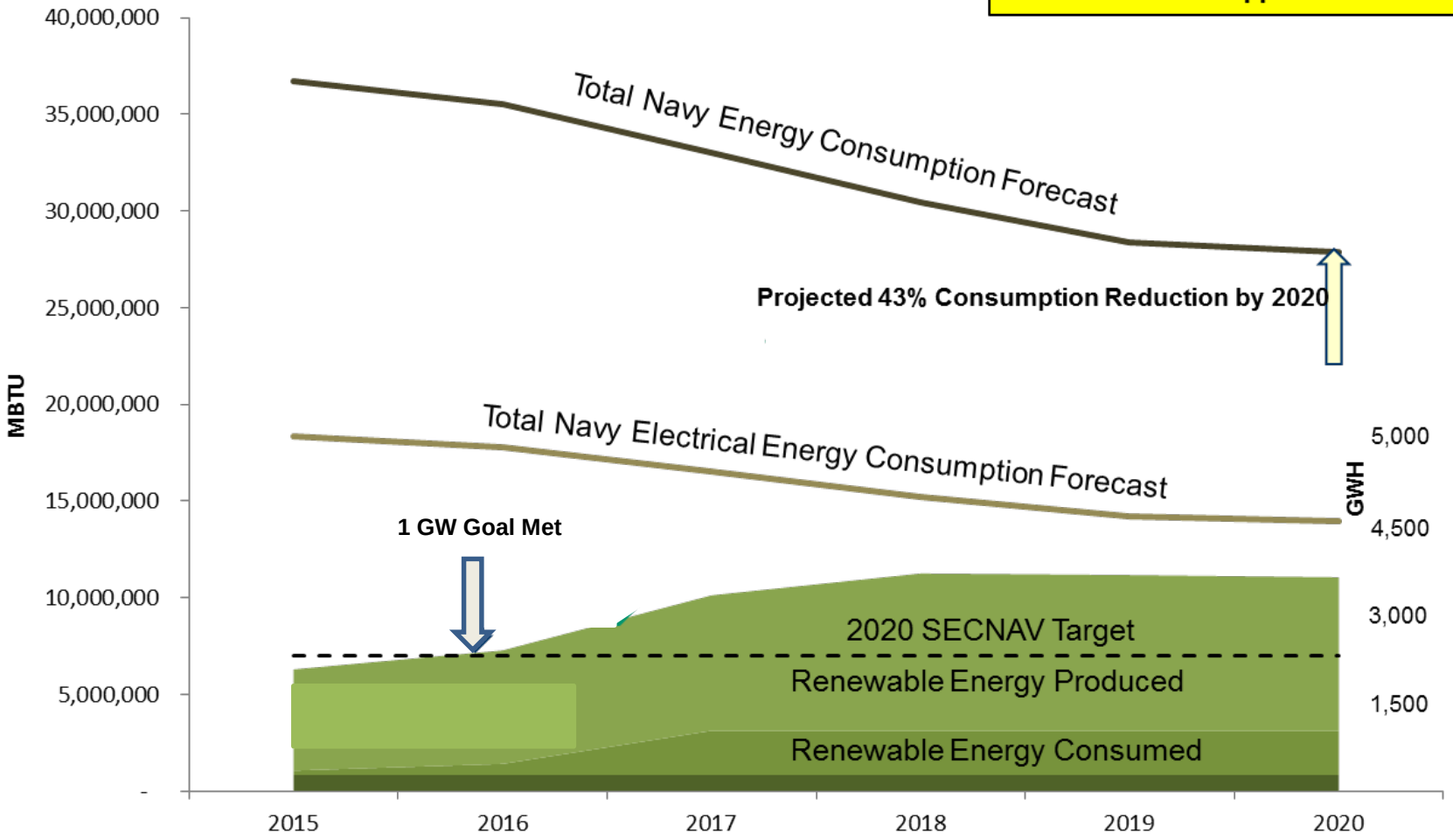
Efficiency

The use of the minimal energy required to achieve the desired level of service.

Shore Conservation Energy Strategy

Leveraging Third-Party Financing to Execute Holistic Base-Wide Efficiency, Renewable Energy Generation, and Demand Reduction Opportunities

Navy Shore Energy Projections

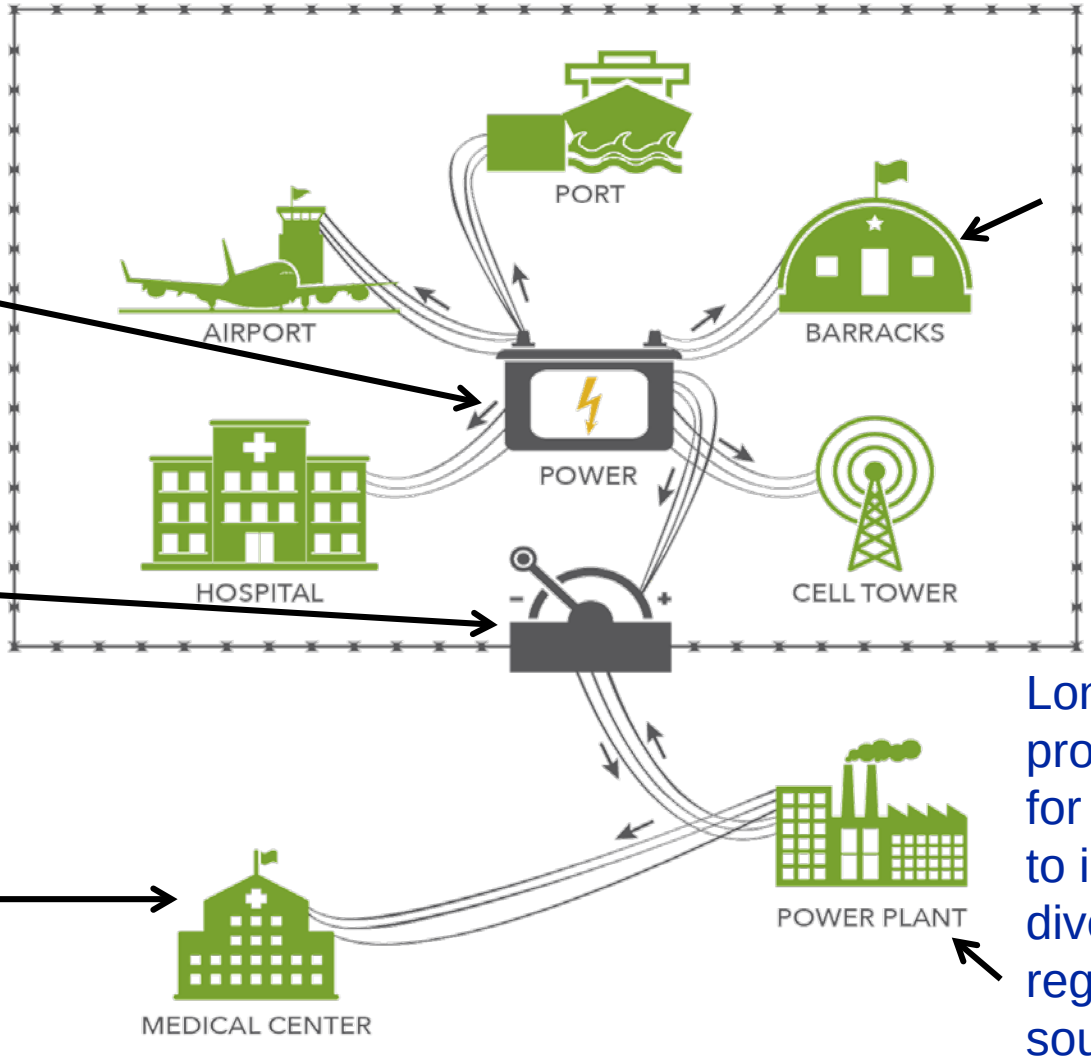


Holistic Approach: Evaluating Base Needs

Critical assets powered by dedicated base energy sources

Islanding microgrid capabilities

Potential community microgrid capabilities



ESPCs make buildings more energy efficient and enable long-term cost savings

Long-term PPAs provide cost stability for the DON and help to incentivize the diversification of regional energy sources

The Third-Party Financing Toolbox

The DON uses a number of financing mechanisms to fund projects

- ***In-kind considerations through outgrants***
- ***PPAs***
- ***UESCs***
- ***ESPCs***

Existing REPO Projects

Focused on utilizing 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 receive 500 KW of dedicated onsite renewable capacity with battery back-up and microgrid controls.

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 which will power the base ’s critical assets in the event of a grid outage.

NB San Diego /Coronado (solar + storage)

REPO released an RFP for up to 40 MW of energy generation and/or storage.

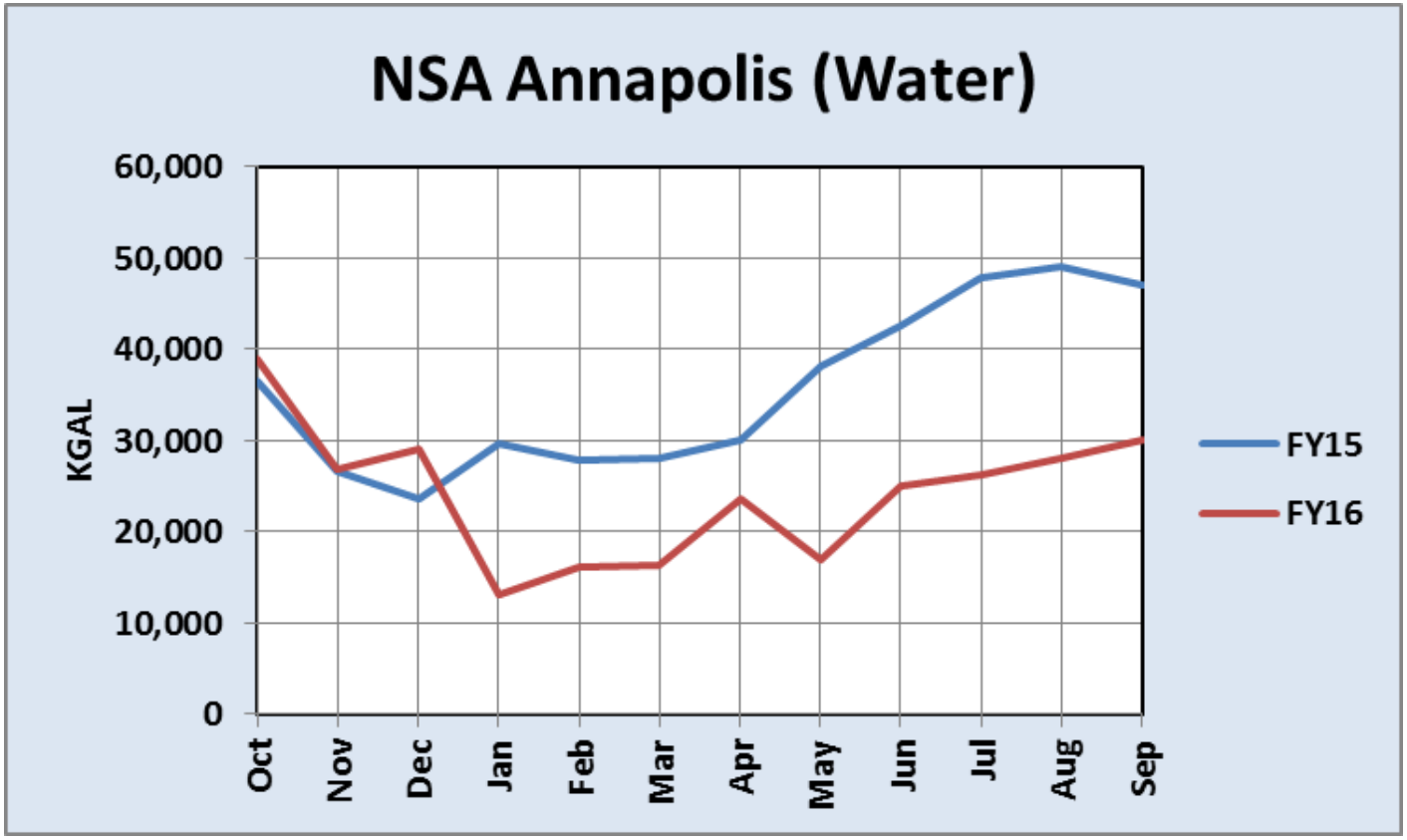
UESC Example: Naval Support Activity Annapolis, MD

$7.7M Water Conservation Project (Completed in 2015)

- *Water plant upgrades included centrifuges and gravity settlers*
- *Projected $860K annual savings*
- *Reduces operational costs through an improved sludge removal process, recapturing of filter backwash, reduced energy consumption, and reduced chemical treatment*
- *Reduces environmental impact associated with run-off discharged into the Chesapeake Bay*

UESC Example Continued

Reduces groundwater production requirement up to 40% (135 million gallons per year)



ESPC Examples: Portsmouth Naval Shipyard

- ***Over $79M of improvements (1999-2010)***
  - ***Three ESPCs:***
    - ***Phase 1: $11M in infrastructure improvements to include a 5.2 MW COGEN Plant – completed in 2000;***
    - ***Phase 2: $33M in infrastructure improvements to include a major upgrade of the central power/steam plant – completed in 2004;***
    - ***Phase 3: $35M in infrastructure improvements to include the installation of two new variable speed compressors and repairs to condensate return system – completed in 2010.***
  - ***Cost avoidance of $14M and saving almost 100,000 MBtus annually;***
  - ***Huge reductions in greenhouse gases and other potentially harmful emissions damaging to our environment.***

ESPC Examples: Twentynine Palms, CA

- ***$67M, 4-in-1 solution combining cogeneration, chillers, a photovoltaic array and direct digital controls (DDCs) to form their own micro-grid (awarded in 2002).***
  - ***Saves 63,176 MWH/year (equivalent to powering Austria or Greece);***
  - ***Electricity bill reduced by $5.8 million/year;***
  - ***Huge reductions in greenhouse gases and other potentially harmful emissions damaging to our environment.***

Ongoing Efficiency Projects

Naval Amphibious Base (NAB) Coronado:

- *Began as a MCON project: ~$91M*
- *Capital Investment: $70M*
- *Annual Estimated Cost Savings: $5M*
- *Total Energy Savings: 321,115 (MMBTU/yr)*

Naval Station Guantanamo Bay:

- *Fence-to-fence analysis of needs*
- *Maximizing cost savings*
- *Reducing petroleum reliance via smart grid, distributed energy (batteries, PV, combined heat and power plant, HVAC upgrades)*

Marine Corps Logistics Base Albany:

- *Net zero installation (Electricity) through biomass ste turbine generator*
- *Capital Investment: $47M*
- *Annual Estimated Cost Savings: $5M*
- *Total Energy Savings: 157,000 (MMBTU/yr)*
- *Excess sales of electricity to Georgia Power*

Questions?