CNIC

★ FLEET ★ FIGHTER ★ FAMILY

Naval Energy Forum
Shore Energy

October 17, 2012

Navy Energy Goals

"Department of the Navy will by 2020 produce at least half of our shore-based energy requirements on our installations from alternative sources."

-- Secretary of the Navy Ray Mabus

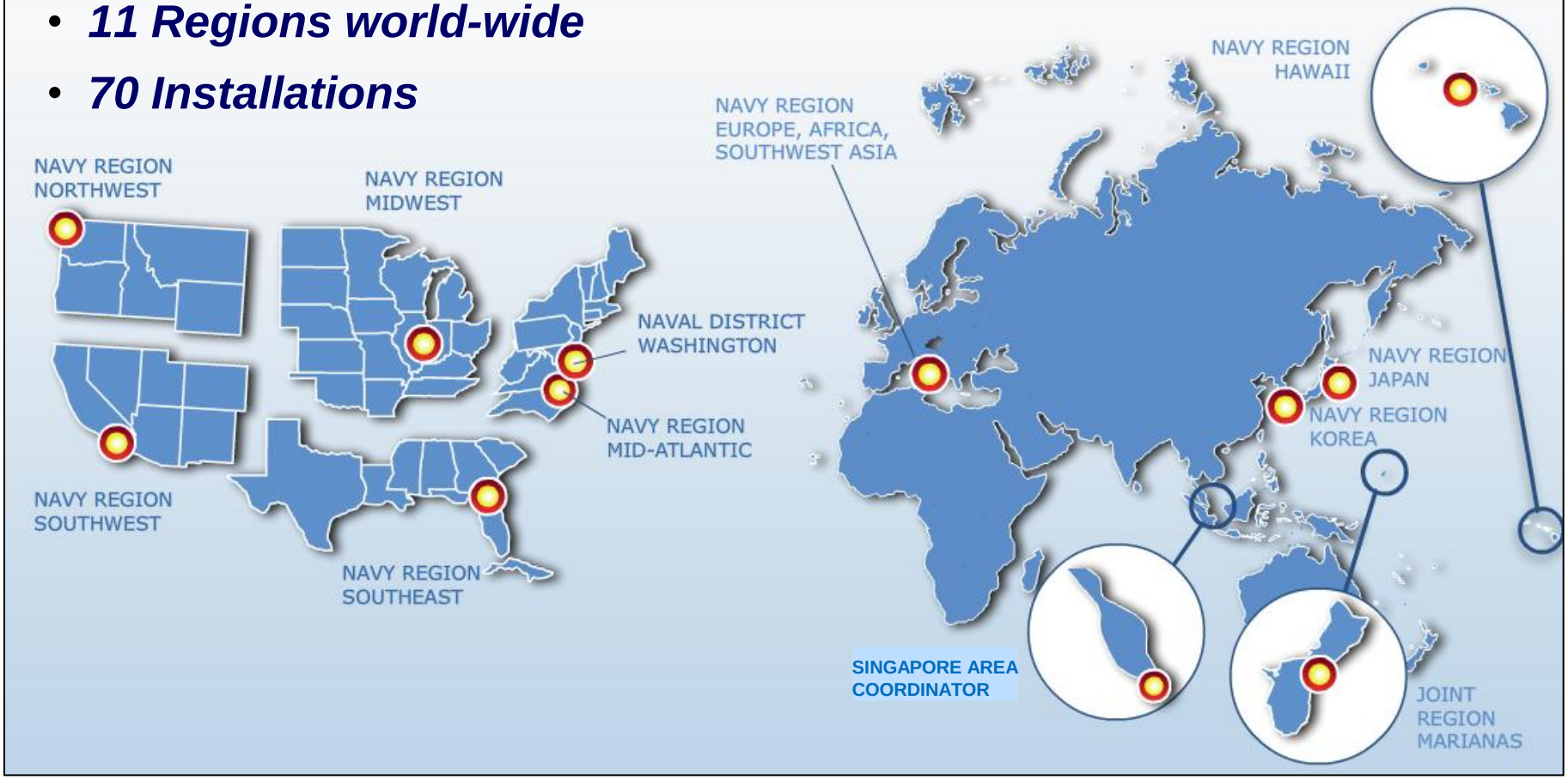
Navy Shore Energy Mandates

	LEGISLATION - EXECUTIVE ORDERS	SECNAV / NAVY GOALS
Reduce Consumption	•Electric- 3% per year or 30% by 2015 (EISA '07-E.O.13423) •Water-2% per year or 16% by 2015 (E.O. 13423)	•50% ashore by 2020 compared to 2003 baseline (Navy)
Renewables	•Purchase renewable electric: 3% now and 7.5% by FY13 (EPAct'05) •At least 50% of renewables from new sources (E.O. 13423) •25% or greater of electric energy use from renewables by 2025	•50% of energy consumed provided through alternative sources (SECNAV) •50% of installations "net-zero" by 2020 using alternatives (SECNAV)
Vehicles	•Reduce annual petroleum consumption by 20% by 2015 (EISA '07)	•50% by 2015 in commercial vehicle fleet (SECNAV)
Sustainable Facilities	•Lease spaces req'd to have Energy Star label (E.O. 13514) •Energy and water audits on facilities on 4yr cycle (EISA'07) •Buildings designed 30% better than ASHRAE standards •15% of building inventory to be sustainable by 2015 (LEED or similar) (E.O. 13423) •100% of buildings designed after 2020 must be "net-zero" by 2030	•50% DON installations will be "net-zero" by 2020 (SECNAV)

Navy Installations Command

Sustain the Fleet, Enable the Fighter, Support the Family

- *11 Regions world-wide*
- *70 Installations*

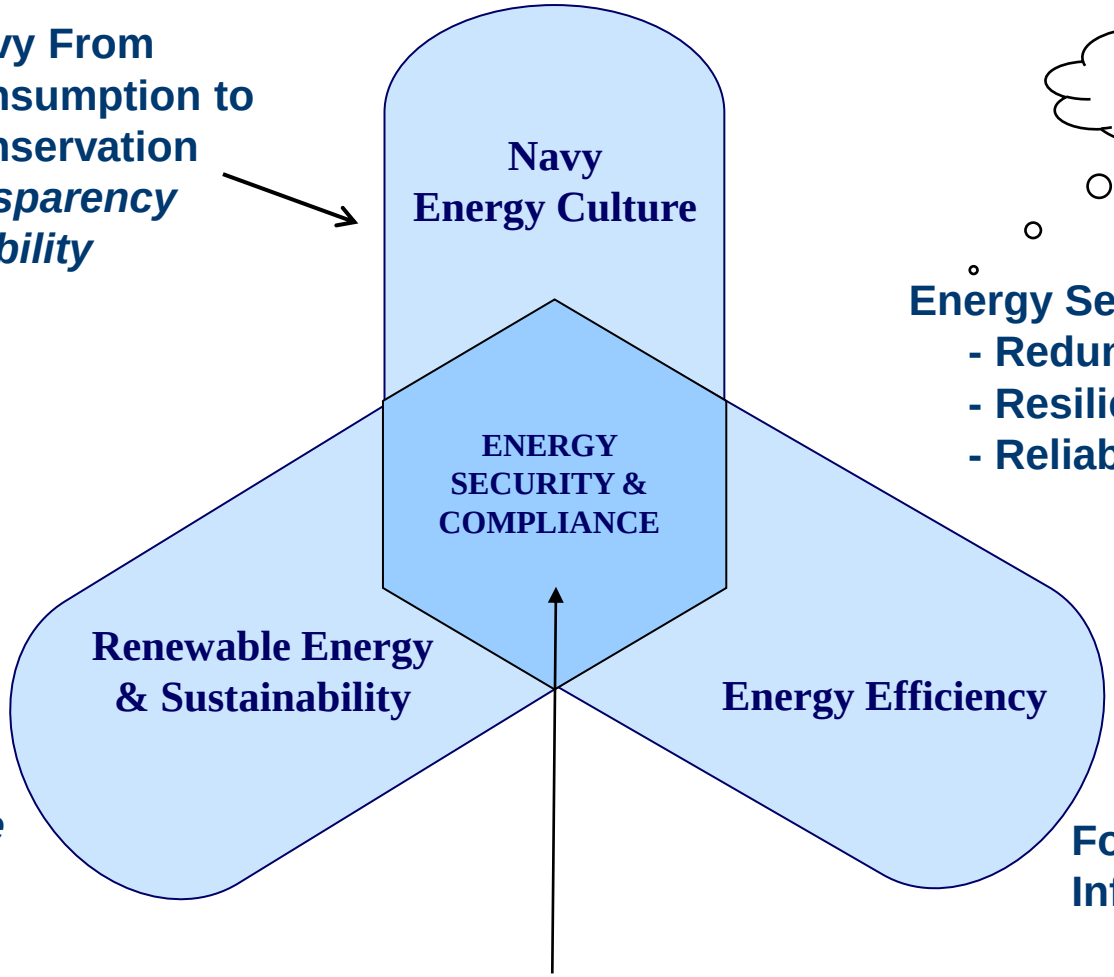


"My vision is simple, to support CNO Greenert's Sailing Directions and Vision," …

-- William French, Vice Admiral, U.S. Navy
Commander, Navy Installations Command

Navy Shore Energy Strategy

Transform Navy From Culture of Consumption to Culture of Conservation ***Through Transparency and Accountability***



Mission Critical Loads

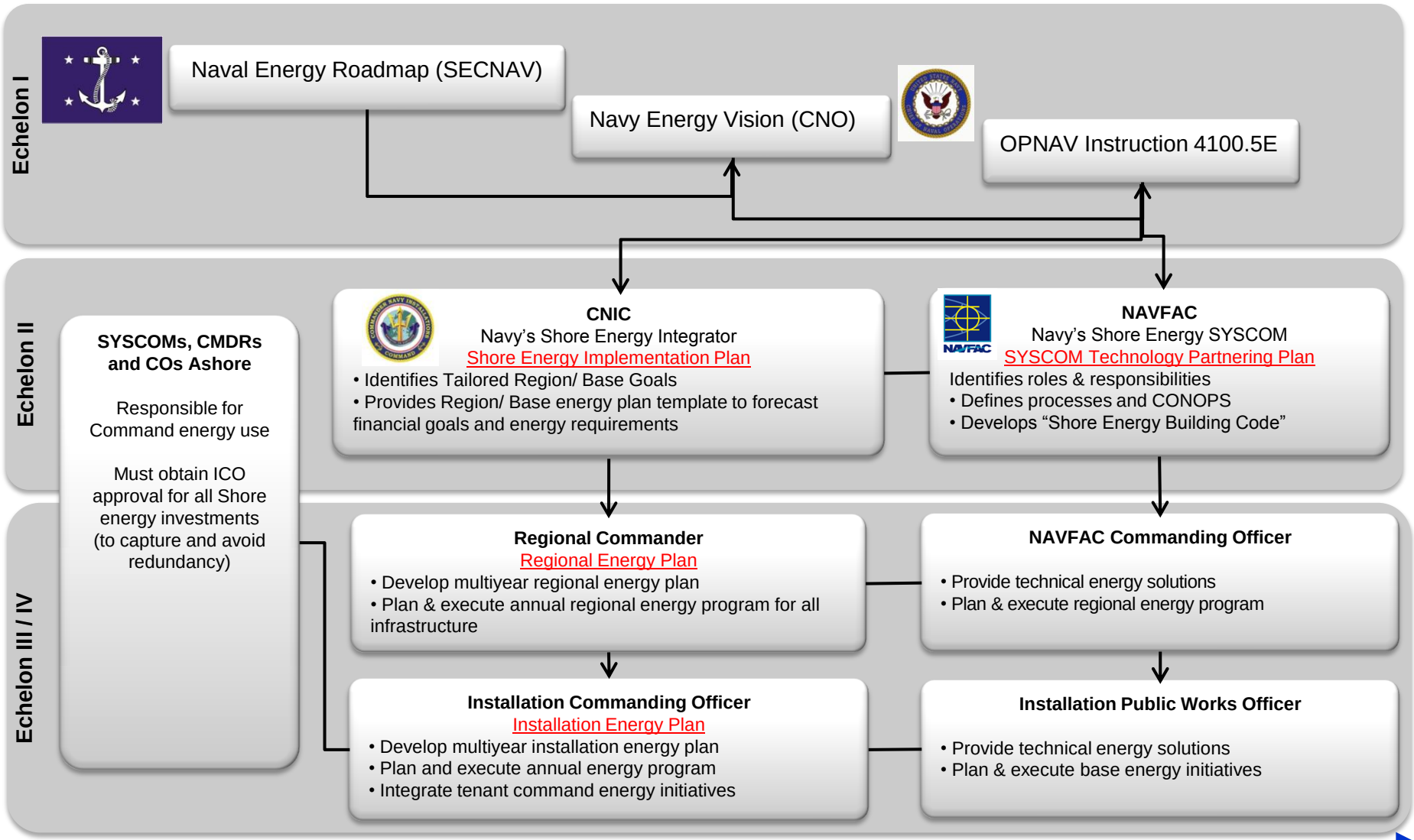
Energy Security:
- **Redundancy**
- **Resiliency**
- **Reliability**

The *Right Technology* at the *Right Time*

Focus on Infrastructure

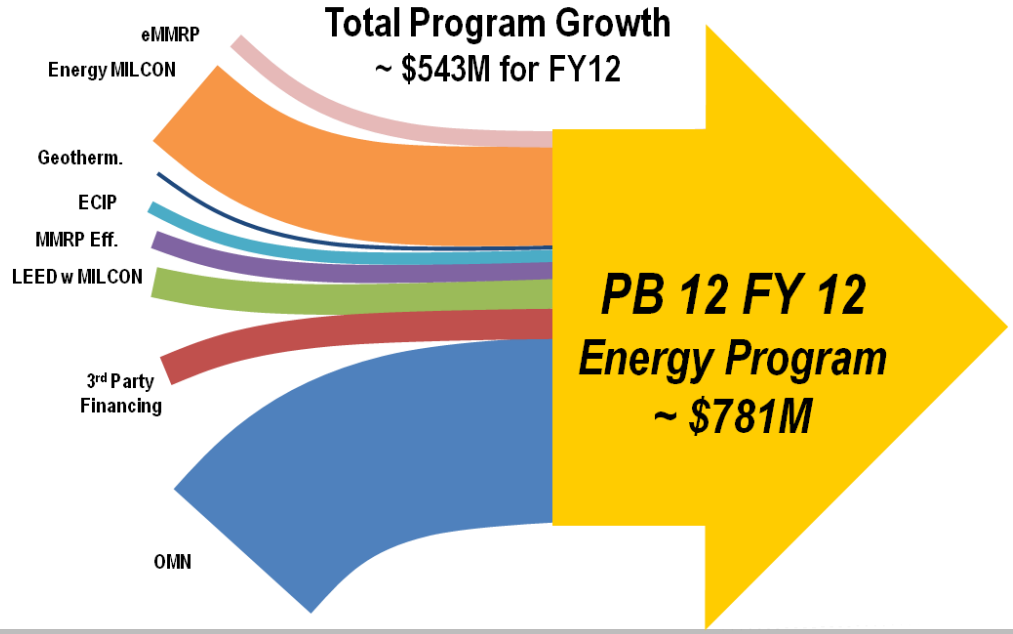
"Compliance" with energy mandates

Navy Shore Energy Governance



Shore Energy Execution

- *Identify cost effective opportunities*
- *Develop plans*
- *Maximize return on investment*



Average Base Went From ~$3M/ YR to ~$11M/ YR in Direct Energy Investment

Energy Plans

- Navy Wide Plan
- Region Level Plan
- Installation Level Plan

\+ $$ = Energy security ✓ Energy reduction ✓ Goals ✓

Innovative Leadership

Strategic

- Set Shore Goals
- Provide resources
- Engineered improvements

$$

Command / Operational

- Day to day operations
  - Maximize energy efficiency
- Standard Operating Procedures
  - Maximize energy efficiency
- Follow through on awareness campaigns
  - "DOG ZEBRA" Campaign

DZ

Have you set "DOG ZEBRA" today?

"DOG ZEBRA" ashore means
Secure all non-security lights & all non-essential equipment

Individual/ Tactical

- Engaged individuals are a resource for operational improvements
- Feedback creates success

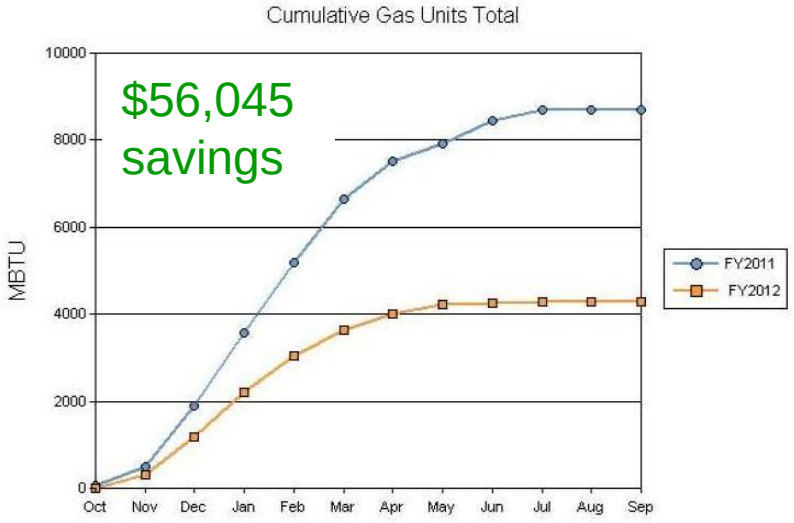
QR Code Pilot

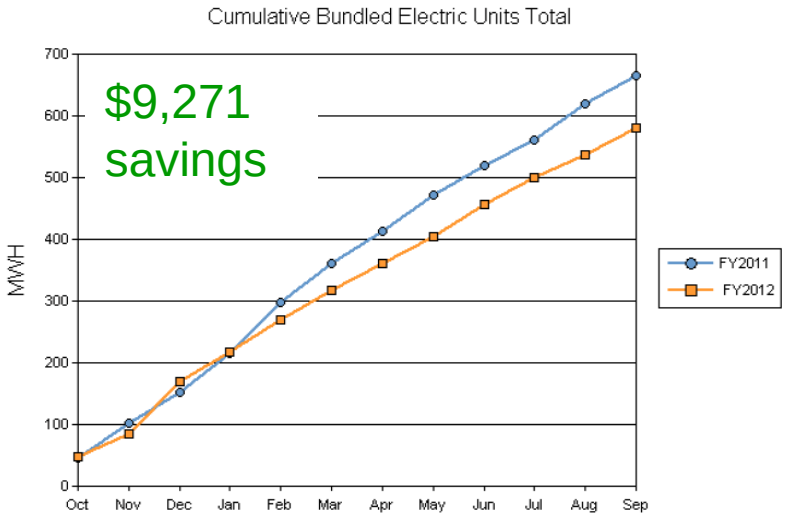
- Post QR codes at buildings
- Energy waste feedback via smart phones
- Drive behavior change

No-Cost Energy Savings

- Energy manager worked with building operators:
  - Reduce space temperatures
  - Reduce lighting, temperature and ventilation when not operational
  - Shifted paint operations of small parts to right-size facility
  - Entire building operated for mostly small painting jobs

$65,316 savings due to change in behavior/ operations



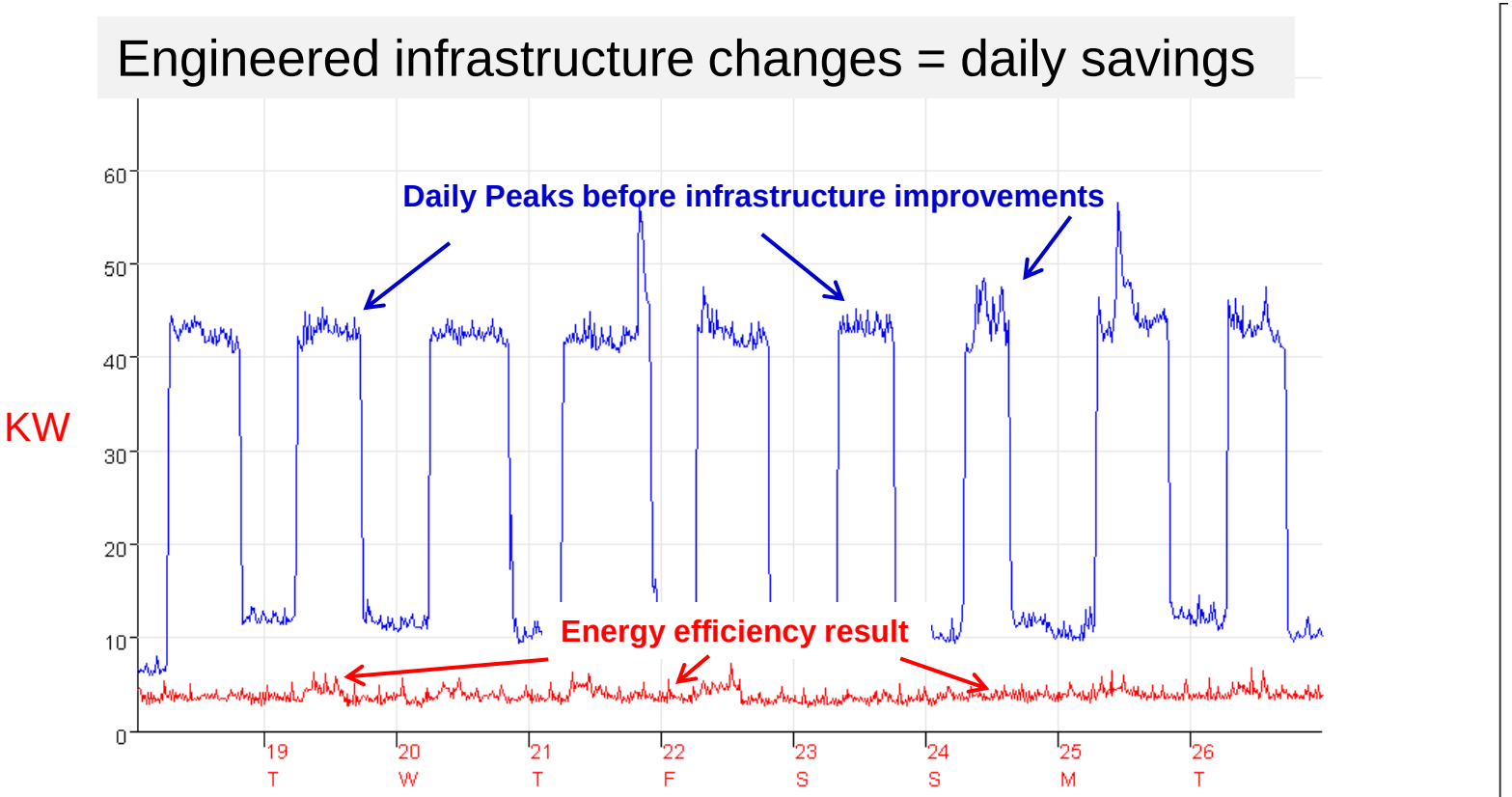


Energy Efficiency Improvements

Warehouse Lighting/ Daylighting

Warehouse Lighting/ Daylighting

Engineered infrastructure changes = daily savings

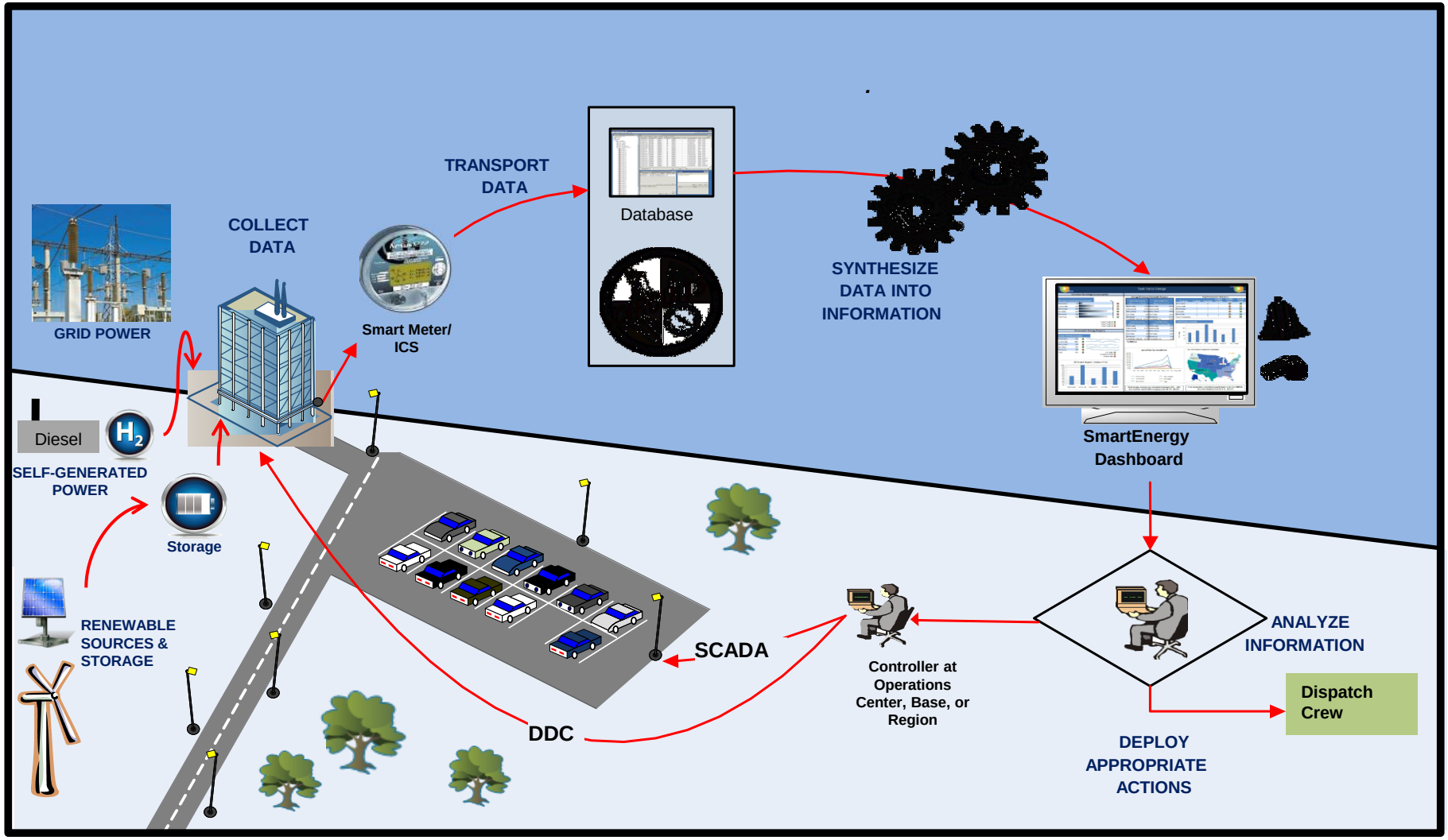


$33,000 annual cost reduced to $5,000

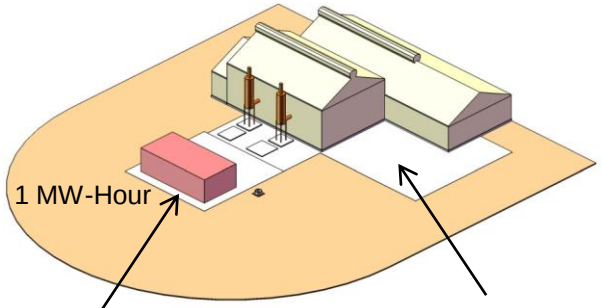
Energy Efficient Buildings

Shipboard Shore Energy Management

Smart Grid Capabilities



Integrated Renewable Energy Storage System



- Energy security
- Reduced liquid fuel consumption
- Operational reliability
- Reduced emissions

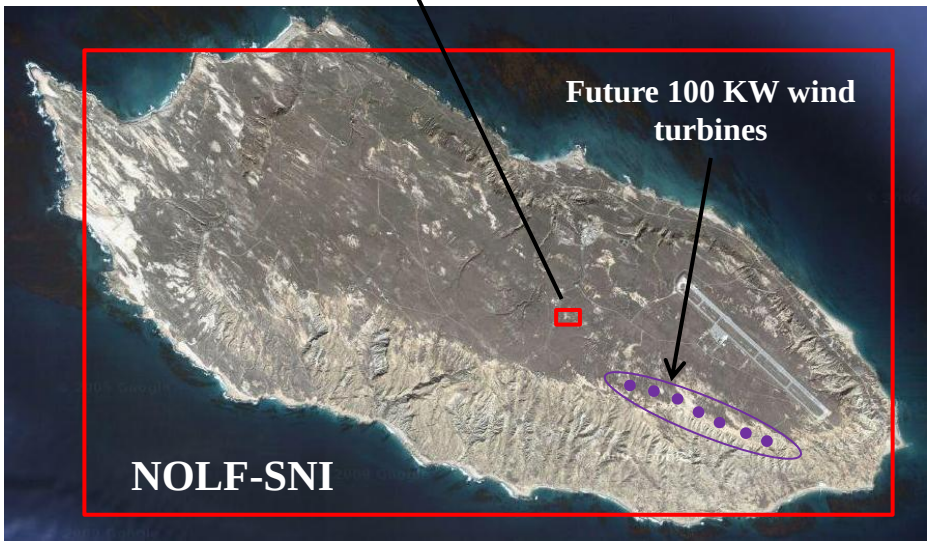
Export lessons-learned to grid connected Installations

Advanced micro-grid

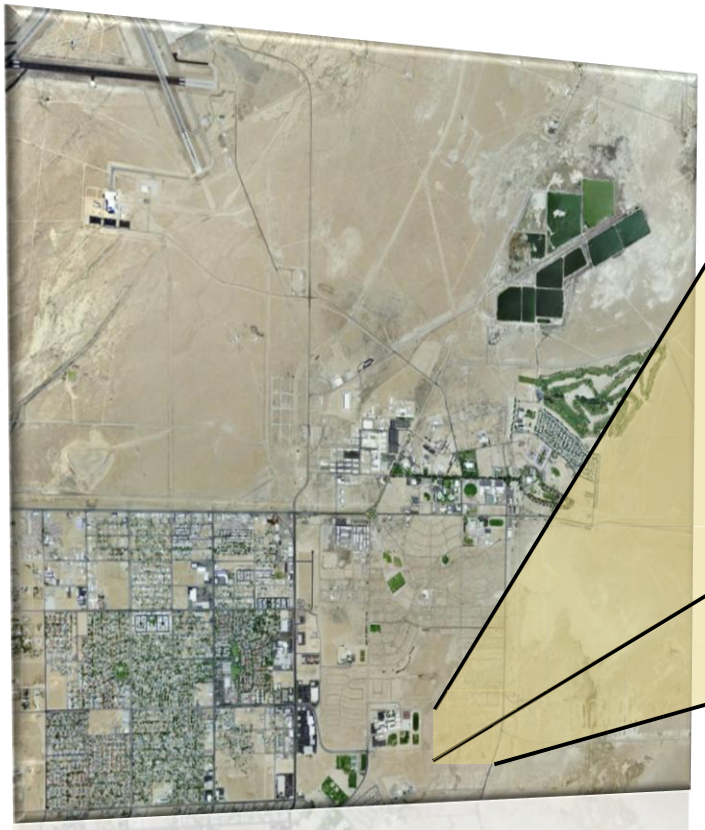
Integrate renewable energy generation

Integrate advanced energy storage device

Existing micro-grid



NAWS China Lake Solar PPA



29,000 MWh annually

- 30% annual requirement
- 50-70% summer day peak
- 70-90%+ winter day peak

Term: 20 years
Technology: Single Axis Tracking Solar Array
Capacity: 13.78 MW

Enabling the Warfighter