

# NAVY Shore Geospatial Energy Module

## Turning Data Into Decision To Meet Energy Goals

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# NAVY Shore *Energy* Program

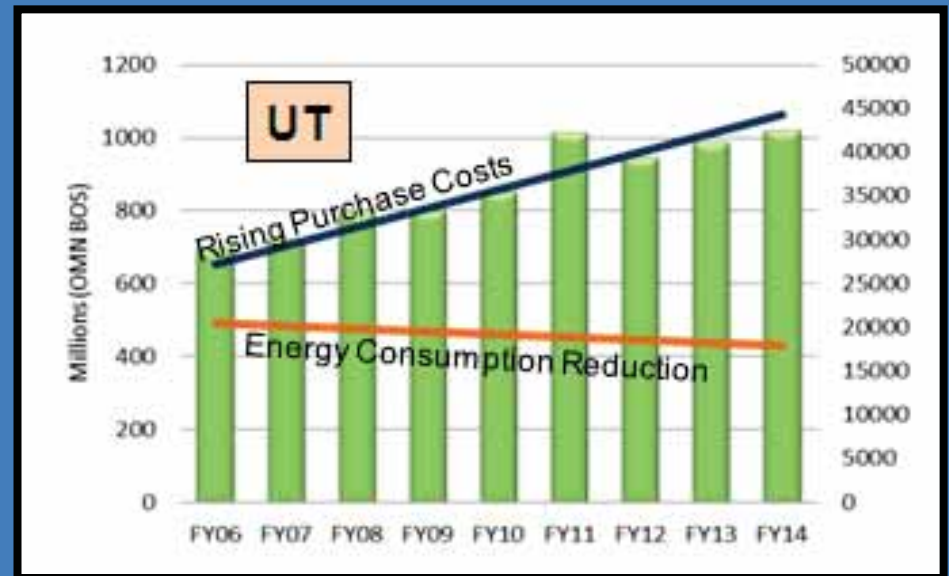


## CNIC Overall Mission:

- Serve as the Shore Integrator to sustain Fleet, enable the Fighter, and support the Family through delivery of shore based products and Services

## Why Energy?

- Increased Efficiency
- Increase Cost
- Increase Demand
- Budget Constraint
- High Visibility



**\$1.7 Billion A Year**



# NAVY Shore Energy Mandates



	LEGISLATION - EXECUTIVE ORDERS	SECNAV / NAVY GOALS
Reduce Consumption	<ul style="list-style-type: none"> <li>• Electric- 3% per year or 30% by 2015 (EISA '07- E.O.13423)</li> <li>• Water-2% per year or 16% by 2015 (E.O. 13423)</li> </ul>	<ul style="list-style-type: none"> <li>• 50% ashore by 2020 compared to 2003 baseline (Navy)</li> </ul>
Renewables	<ul style="list-style-type: none"> <li>• Purchase renewable electric: 3% now and 7.5% by FY13 (EPA Act '05)</li> <li>• At least 50% of renewables from new sources (E.O. 13423)</li> <li>• 25% or greater of electric energy use from renewables by 2025</li> </ul>	<ul style="list-style-type: none"> <li>• 50% of energy consumed provided through alternative sources (SECNAV)</li> <li>• 50% of installations "net-zero" by 2020 using alternatives (SECNAV)</li> </ul>
Vehicles	<ul style="list-style-type: none"> <li>• Reduce annual petroleum consumption by 20% by 2015 (EISA '07)</li> </ul>	<ul style="list-style-type: none"> <li>• 50% by 2015 in commercial vehicle fleet (SECNAV)</li> </ul>
Sustainable Facilities	<ul style="list-style-type: none"> <li>• Lease spaces req'd to have Energy Star label (E.O. 13514)</li> <li>• Energy and water audits on facilities on 4yr cycle (EISA '07)</li> <li>• Buildings designed 30% better than ASHRAE standards</li> <li>• 15% of building inventory to be sustainable by 2015 (LEED or similar) (E.O. 13423)</li> <li>• 100% of buildings designed after 2020 must be "net-zero" by 2030</li> </ul>	<ul style="list-style-type: none"> <li>• 50% DON installations will be "net-zero" by 2020 (SECNAV)</li> </ul>



# Energy Geospatial Efforts



**Navy Common Installation Picture (CIP)  
Data Layers**

- Foundational layers for our base maps include:
  - Buildings and parking areas
  - Roads, bridges, railroads
  - Piers and mooring facilities
  - Water bodies and streams
  - Cadastre information
  - Military range areas
  - Ammunition storage areas
  - Recreation areas

A diagram showing a stack of various data layers (topographic, roads, buildings, etc.) and a map of a base area.

## GeoReadiness Explorer (GRX)

Single Interface Access

Variety of Data to Increase Awareness

Leverage readily available energy information and existing GIS resources to improve decision-making and situational awareness





# NAVY Data

## Authoritative Data Systems

iNFADS

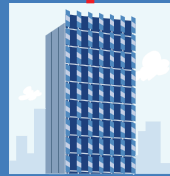
Real Property Inventory

CIRCUITS

Utility Allocation

Utility Payable Modules

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Units Consumed (FYTD)	100	100	100	100	100	100	100	100	100
Total Cost (FYTD)	100	100	100	100	100	100	100	100	100



## Energy Projects

M&V

- Lighting
- Building Envelope
- HVAC System
- Cool Roof
- Windows
- Retro commissioning
- DDC

## Energy Tailored Goals

An installation's potential energy savings are calculated by Project Type and Building Type within the Energy Reduction Potential Lists

Facility level energy projects with common data fields from iNFADS, CIRCUITS and Tailored Goals

Consumption Reduction Goals and Energy Intensity Data Down to the Facility Level

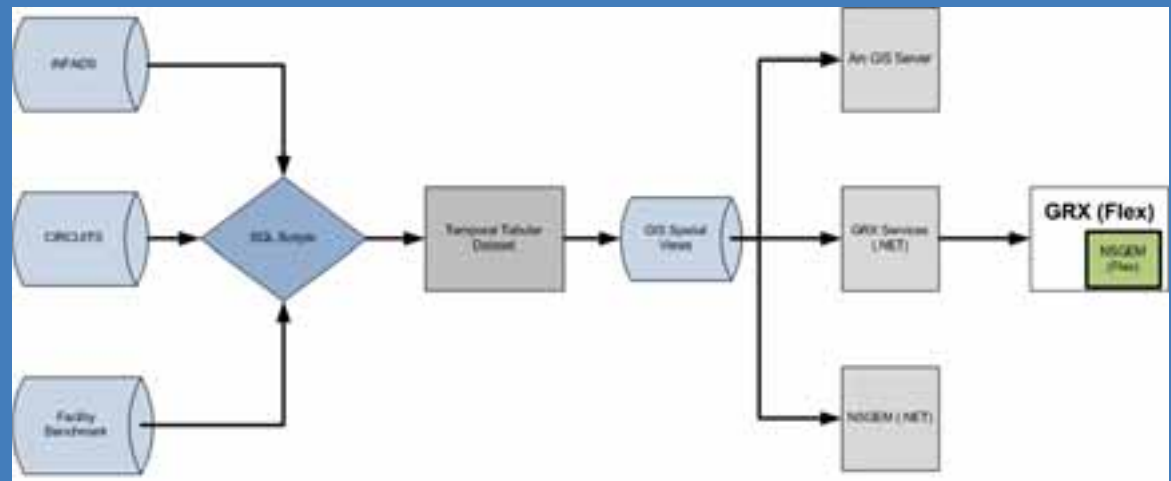


# Extract Transform Load Overview

## ASHRAE Benchmark Intensity

Building Type	1A	2A	2B	3A	3B
Clubs & Dining Facilities	69.0	101.2	150.5	95.7	83.1
Communications Facilities	223.0	119.2	166.5	128.6	190.4
Community Facilities	77.2	65.4	56.3	71.9	45.7
Data Center	318.9	137.7	114.8	125.3	311.4
Family Housing	38.4	37.8	38.1	38.8	36.4
Fuel & Liquid Dispensing & Storage Facilities	76.1	102.8	18.1	58.4	79.5
Gate / Guardpost / Watch Tower	123.5	146.0	116.6	109.4	70.5
Land, Waterfront and Coastal Operations Facilities	60.0	70.5	54.9	38.0	46.2
Maintenance Facilities	48.3	49.6	34.3	36.6	42.3
Medical Facilities	133.6	131.2	124.1	126.2	116.5
Office	35.3	34.7	35.5	33.6	32.7

## Extract Transform & Load





# NSGEM Lenses



NAVY

Region

Installation

Facility

**ALIGNMENT**



# Installation Lens







# Reporting

The image displays a stack of report pages. On the left, several pages from the ICER (Installation Consumption Efficiency Report) are visible, including:

- Top 10 Facilities with Lowest Benchmark Score
- Installation Year to Year Consumption Comparison
- % Total Consumption by Building Type
- Installation Key Facts
- Installation Monthly Energy Consumption

On the right, several pages from the NAVSEM Data Assessment Report for Billing Month May 2013 are shown. The most prominent page features the following information:

- NAVBASE CORONADO**
- NAVSEM Data Assessment Report for Billing Month May 2013
- NAVSEM Data Assessment Score: **84.2%**
- Score Breakdown:**
  - INFADS (Real Priority): 100.0%
  - DRUITS (Energy Consumption): 88.8%
  - Worldwide EIP (GS): 83.8%
- Data Assessment Score Trend:** A line graph showing scores for 2012 and 2013 across three categories: Overall, Energy, and EIP.



# Gap Analysis



Data Validation and Verification: Increase Data Credibility and Identify Potential Savings



# Way-Ahead (moving rapidly)



- Energy Projects linked to the meter and Facility
- Energy Audit Information Linked to the Facility
- Utility Systems mapped
- Renewable projects development capability
- Spatial Management
- Environmental Assessments



# CONCLUSION



- Geospatial capabilities are changing the way that we do business
- As the Shore Integrator we, at CNIC, are developing standard processes and that allow us to integrate and amplify the knowledge of our programs
- NSGEM enables the Navy to meet it's energy reduction goals through identifying consumption trends and providing data validation for authoritative business systems