What is NSGEM?

NAVY SHORE GEOSPATIAL ENERGY MODULE
INTEGRATED WITH EXISTING NAVY CAPABILITIES
INTEGRATED WITH EXISTING NAVY CAPABILITIES
UNDER THE HOOD

ArcGIS Server 10.1
Oracle 11g
ASP.NET (web services)
Apache Flex (front-end)
amCharts
Crystal Reports Runtime
Sphinx (Help Documentation)

BEHIND THE WHEEL

4 week development sprints
2 week promotion sprints
Jira + Agile (Project Tracking)
Stash (Git)
Spiceworks (Help Tickets)
Slack (Internal Communication)
WHAT IS BIG DATA TO US?
50,000 FACILITIES TRACKED MONTHLY SINCE 2005

(50,000 FACILITIES X 12 MONTHS) X 10 YEARS = 6 MILLION RECORDS ANALYZED MONTHLY
OH, THAT'S ALL?

THE DATA IS COMPILED MONTHLY FROM 5 DISPARATE BUSINESS SYSTEMS THROUGHOUT THE NAVY. WE RECEIVE EXPORTS OF THE SOURCE DATA IN VARIOUS FORMATS LIKE .TXT, .XLS, .CSV, AND .HTML
INFADS | 500K : MONTHLY REAL PROPERTY
(WHO OCCUPIES, WHO PAYS THE BILL, CATEGORY CODES)

CIRCUITS | 1.5MIL : MONTHLY COMMODITY USAGE
(MBTU'S - ELECTRICITY, STEAM, WATER, GAS, & FUEL)

DUERS | 15K : QUARTERLY ENERGY REPORTING
(MEASURES PROGRESS TOWARD SEC. OF NAVY GOALS)

GOALS | 35K: SEMI-ANNUAL BENCHMARK ESTABLISHMENT
(HIGHLIGHTS AREAS FOR IMPROVEMENT)

CIP | 1.5MIL : MONTHLY GIS
(COMMON INSTALLATION PICTURE BOUNDARIES AND BUILDING FOOTPRINTS)
WE GET DAILY TEMPERATURE INFORMATION FOR OVER 400 SITES IN THE US. WE CALCULATE HISTORIC AVERAGES AND DEGREE DAYS TO HELP MANAGERS PLAN FOR CHANGES IN CONSUMPTION.
HOW DO WE EFFECTIVELY COMMUNICATE ALL OF THIS DATA TO OUR USERS?
COMMANDING OFFICERS
ENERGY MANAGERS
BUILDING MANAGERS
STAKEHOLDERS
NAVY CIVILIANS &
CONTRACTORS
CHARTS

OVER 30 DIFFERENT INTERACTIVE CHARTS DISPLAY PRE-DEFINED ANALYSIS OF CONSUMPTION FILTERED FROM A SINGLE FACILITY TO THE ENTIRE NAVY
For the December 2014 billing period, your facilities consumed 2,780 MBTU with a total cost to you of $101,356.99.

This is an 14.00% decrease from the same billing period last year.
Installation Tenant CO Report

Activity UIC:
- Facility Count: 577
- April 2014 Consumption: 33,715 MBTU

April 2014 Cost: $1,253,221.28

Monthly Consumption Reduction Progress

<table>
<thead>
<tr>
<th>Cumulative Consumption Progress YTD</th>
<th>FY 2013</th>
<th>Month</th>
<th>FY 2014</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31,820.83</td>
<td>Oct</td>
<td>14,646.69</td>
<td>-54.00</td>
</tr>
<tr>
<td></td>
<td>28,930.58</td>
<td>Nov</td>
<td>30,185.40</td>
<td>4.30</td>
</tr>
<tr>
<td></td>
<td>35,810.81</td>
<td>Dec</td>
<td>36,280.09</td>
<td>1.30</td>
</tr>
<tr>
<td></td>
<td>37,212.42</td>
<td>Jan</td>
<td>37,510.39</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>55,991.31</td>
<td>Feb</td>
<td>47,558.90</td>
<td>-15.10</td>
</tr>
<tr>
<td></td>
<td>41,159.18</td>
<td>Mar</td>
<td>33,724.68</td>
<td>-18.10</td>
</tr>
<tr>
<td></td>
<td>35,766.02</td>
<td>Apr</td>
<td>33,715.18</td>
<td>-5.70</td>
</tr>
</tbody>
</table>

-5%

Consumption By Commodity

<table>
<thead>
<tr>
<th>%</th>
<th>Previous and Current Fiscal Year Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>55.3%</td>
<td>Electricity 351,066.43 MBTU</td>
</tr>
<tr>
<td>23.6%</td>
<td>Steam 149,474.00 MBTU</td>
</tr>
<tr>
<td>18.4%</td>
<td>Gas 116,701.20 MBTU</td>
</tr>
<tr>
<td>2.4%</td>
<td>Delivered Fuels 17,303.00 MBTU</td>
</tr>
<tr>
<td>0%</td>
<td>Chilled Water 0 MBTU</td>
</tr>
</tbody>
</table>

Top 10 Facilities With Largest Increase In Energy Intensity

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Previous EI</th>
<th>Current EI</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>31600</td>
<td>ENERGETICS R&amp;D LAB</td>
<td>427.50</td>
<td>660.30</td>
<td>54.4%</td>
</tr>
<tr>
<td>01371</td>
<td>PROPULSION RESEARCH LAB</td>
<td>19.80</td>
<td>28.60</td>
<td>44.6%</td>
</tr>
<tr>
<td>01057</td>
<td>STRAN-STEEL 3&amp;4</td>
<td>474.30</td>
<td>587.50</td>
<td>23.9%</td>
</tr>
<tr>
<td>01058</td>
<td>STRAN-STEEL 5</td>
<td>474.00</td>
<td>587.20</td>
<td>23.9%</td>
</tr>
<tr>
<td>31434</td>
<td>ANECHOIC CHAMBER FAC</td>
<td>107.50</td>
<td>124.90</td>
<td>16.3%</td>
</tr>
<tr>
<td>20279</td>
<td>ADV WPS LAB - HANGAR 5</td>
<td>100.30</td>
<td>115.20</td>
<td>14.8%</td>
</tr>
<tr>
<td>20291</td>
<td>F18 SOFTWARE DEV TASK TEAM</td>
<td>107.70</td>
<td>123.40</td>
<td>14.6%</td>
</tr>
<tr>
<td>11010</td>
<td>PROPULSION LAB ADMIN OFFICES</td>
<td>148.90</td>
<td>165.50</td>
<td>11.2%</td>
</tr>
<tr>
<td>00982</td>
<td>CONTRACTS DEPT OFFICE</td>
<td>44.30</td>
<td>48.70</td>
<td>10.0%</td>
</tr>
<tr>
<td>31598</td>
<td>CORPORATE OPS SUPPORT OFFICE</td>
<td>158.90</td>
<td>173.30</td>
<td>9.1%</td>
</tr>
</tbody>
</table>

Top 10 Facilities With Largest Decrease In Energy Intensity

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Previous EI</th>
<th>Current EI</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>13475</td>
<td>IN SERVICE ENGINEERING BUILD</td>
<td>850.90</td>
<td>47.80</td>
<td>-94.4%</td>
</tr>
<tr>
<td>11130</td>
<td>R&amp;D ENGINEERING</td>
<td>67.59</td>
<td>8.70</td>
<td>-87.1%</td>
</tr>
<tr>
<td>70080</td>
<td>NAVAL THREAT SYSTEM COMPLEX</td>
<td>1,151.30</td>
<td>573.70</td>
<td>-50.2%</td>
</tr>
<tr>
<td>70129</td>
<td>SS1 RADAR PARTS STORAGE</td>
<td>257.20</td>
<td>128.20</td>
<td>-50.2%</td>
</tr>
<tr>
<td>01029</td>
<td>WHSE 20 - REC STORAGE</td>
<td>183.10</td>
<td>105.70</td>
<td>-42.3%</td>
</tr>
<tr>
<td>01025</td>
<td>AWARDS WHSE/STORAGE</td>
<td>180.80</td>
<td>104.80</td>
<td>-42.0%</td>
</tr>
<tr>
<td>31463</td>
<td>TELEMETRY PROGRAM OFFICE</td>
<td>190.00</td>
<td>111.30</td>
<td>-41.4%</td>
</tr>
</tbody>
</table>
| 98012 | H1 IPT/SIGNAL WARFARE              | 227.30      | 134.50     | -40.8%
| 02479 | MWR LOANER BUILDING               | 196.80      | 117.40     | -40.3% |
| 00947 | ACADEMIC TRAINING BLDG            | 190.00      | 115.70     | -39.1% |

FY2015 Q1 EI of 92.23 is 40.9% Below the 2003 Baseline EI of 155.93

FOR OFFICIAL USE ONLY

Print Date: June 26, 2015
Installation Key Facts

- Climate Zone: 4A - Mixed - Humid
- Total MBTU Usage: 82,851
- Total KSF Area: 18,024
- Number of Sites: 6
- Number of Facilities: 588
- Energy Intensity (MBTU/KSF): 5.17

Data Assessment Score

- INFADS (Real Property): 99%
- NFA ID Available: 588 / 588
- Primary Use Category Code is Not Blank: 587 / 588
- KSF Area is Not (Null, Blank, Zero): 585 / 588
- Circuits (Energy Consumption): 71%
- NFA ID Available: 420 / 588
- CIP (GIS Installation Data): 92%
- NFA ID Available: 551 / 588

Total NSGEM Score: 88%

Monthly Energy Consumption

- Graph showing energy consumption from 12/2012 to 9/2013.

Consumption By Commodity

- Electric: 73,446 MBTU
- Gas: 3,983 MBTU
- Steam: 5,453 MBTU

[Map showing energy consumption data]
NAVAL STATION NORFOLK
HOW THE NAVY MEASURES ENERGY REDUCTION

The maps below contain information derived from NGEM, a spatially enabled enterprise system that provides access to monthly energy reporting for over 200 sites and over 1000 facilities worldwide. Built on top of GEK, an existing energy installation site database, NGEM was created to help personnel, namely decision makers and energy managers, reduce overall consumption. The metrics featured below are only a few of many figures used to reach the Navy’s energy reduction goals.

- Rolling Benchmark Score
  - Above Benchmark
  - Below Benchmark

- Goals Benchmark Energy Intensity
  - High Benchmark
  - Low Benchmark

- Rolling Year Energy Intensity
  - High
  - Low

- Monthly Dollar Estimate
  - High Monthly Cost
  - Low Monthly Cost

- Reduction Potential
  - High Potential
  - Low Potential

- Rolling Year Consumption
  - High Consumption
  - Low Consumption

For more information about this map contact the Navy ENECT Program Manager, Gary Seskiel, (510) 228-4511.
NAVY SHORE GEOSPATIAL ENERGY MODULE

FACILITY PERFORMANCE BY REGION
FY2010 - CURRENT

NSGEM is a spatially enabled enterprise system that provides access to monthly energy reporting for over 200 sites and over 50,000 facilities worldwide. Built on top of GRX, an existing Naval Installation GIS data viewer, NSGEM was created to help personnel, namely decision-makers and energy managers, reduce overall consumption.

WORLDWIDE US NAVY FOOTPRINT
(FACILITIES TRACKED BY NSGEM)

Performance within NSGEM is tracked using a metric called 'Benchmark Score'. Benchmark Score is the numeric result of comparison of benchmark performance versus consumption performance. The benchmark score is calculated as follows:

\[
\text{ASHRAE 2010 Benchmark Energy Intensity - Actual Energy Intensity}
\]

ASHRAE 2010 Benchmark Energy Intensity

The charts to the right show the percentage of total facilities for a given month that fall within each performance category. The separation bars denote the start/end of a new fiscal year from FY 2010 - FY 2015. The categories used by NSGEM are as follows:

<table>
<thead>
<tr>
<th>Performance</th>
<th>POOR</th>
<th>GREAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY 2011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY 2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY 2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY 2015</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FOR MORE INFORMATION ABOUT THIS MAP CONTACT THE NAVY NC3 ENERGY PROGRAM MANAGER: SANDRA SCHULTZ, CEM EMAIL: SANDRA.SCHULTZ@NAVY.MIL
NAVY SHORE GEOSPATIAL ENERGY MODULE
REGIONAL ENERGY CONSUMPTION FY2006 - FY2014

NSGEM is a spatially enabled enterprise system that provides access to monthly energy reporting for over 200 sites and over 50,000 facilities worldwide. Built on top of GRX, an existing naval installation GIS data viewer, NSGEM was created to help personnel, namely decision makers and energy managers, reduce overall consumption. The metrics featured below are only a few of many figures used to reach the Navy's energy reduction goals.

HOW TO READ THE ENERGY INTENSITY STREAMGRAPH
THE AREA & COLOR OF EACH SHAPE CORRESPOND TO THE REGIONS TOTAL ENERGY CONSUMPTION PER SQ MILE.
FEDERAL FISCAL YEAR RUNS OCT - SEP.

FY2006
TOTAL FACILITIES: 7,355
ENERGY INTENSITY: 8.64

FY2007
TOTAL FACILITIES: 8,952
ENERGY INTENSITY: 7.85

FY2008
TOTAL FACILITIES: 11,082
ENERGY INTENSITY: 7.58

FY2009
TOTAL FACILITIES: 12,771
ENERGY INTENSITY: 7.40

FY2010
TOTAL FACILITIES: 15,013
ENERGY INTENSITY: 7.35

FY2011
TOTAL FACILITIES: 15,879
ENERGY INTENSITY: 7.28

FY2012
TOTAL FACILITIES: 17,056
ENERGY INTENSITY: 7.32

FY2013
TOTAL FACILITIES: 18,348
ENERGY INTENSITY: 7.54

FY2014
TOTAL FACILITIES: 19,594
ENERGY INTENSITY: 6.94

FOR MORE INFORMATION ABOUT THIS MAP CONTACT THE NAVY CNO ENERGY PROGRAM MANAGER, SANDRINE SCHULTZ, CEN EMAIL: SANDRINE.SCHULTZ@NAVY.MIL.
FOR MORE INFO
CNIC.NAVY.MIL

MS. SANDRINE SCHULTZ, CEM
CNIC, ENERGY PROGRAM MANAGER

DSN: 288-6293 COMM: 202-433-6293

E-MAIL: SANDRINE.SCHULTZ@NAVY.MIL
LEARN EVEN MORE WHILE YOU ARE HERE THIS WEEK!

WEDNESDAY - 3:15 - ROOM 28
ATHURSDAY - 8:30 - ROOM 28 B
THURSDAY - 8:30 - ROOM 25 C
MAP GALLERY - ALL WEEK!