American Association of Port Authorities (AAPA) Biannual Harbors, Navigation, and Environmental Seminar

Vancouver, British Columbia, Canada
June 6-8, 2006

James W. Wright, Ph.D., P.E.
Chief Engineer and Director, Capital Improvements
Who we are...

- Global Engineering / Acquisition Command
- 615 Active / 170 Reserve CEC Officers
  13,721 Civilians
  558 Contractors
- FY06: $9.1B Funds Flow
- Department of Navy’s Facilities Engineering Systems Command
- Department of Defense Construction Agent
Our Business...Facilities Engineering

**Planning**
- Strategic
- Global
- Contingency
- Regional

**Construction**
- Acquisition Process
- MILCON

**Recapitalization**
- Restoration
- Modernization

**Sustainment**
- Operate and Maintain

**Disposal**
- Demolition
- Excess Facilities
- Outleasing

**Venture Acquisition**
PPV / EUL / Lease - Construct

**Real Estate Contracting**

**Financial Management**

**Community/Gov’t Liaison**

**Range Mgmt**

**AT-FP Ashore**
- Energy Contracting
- Utilities Contracting
- NWCF Mgmt
- Tech Liaison Contractors, Engrs
- Facilities Contracting / Privatization
- Environmental Planning, Compliance, Conservation & Cleanup

**Renewables**

**AICUZ**

**NAVFAC**
NAVFAC Execution

- Expanded use of streamlined Design-Build (DB) processes
  - Performance-based, minimally prescriptive RFPs
  - Goal: 75% of all MILCON and 95% BRACON design-build
  - Maximizes flexibility for contractors

- Maximize energy savings and lower life cycle costs through sustainable design focus
NAVFAC Sustainable Policy

- Projects must comply with NAVFAC Sustainable Development Policy
- Reduce the total cost of ownership of shore facilities by implementing sustainable design concepts and principles
- Use LEED as a tool in applying sustainable development and as a metric to measure the sustainability achieved
- All applicable projects shall meet the LEED Certified level unless justifiable conditions exist

Note: NAVFAC rarely pays to have buildings certified – occasionally developers provide part of the funding for certification
Sustainable Development - Progress

FY05 – 50% of Military Construction Projects LEED Certifiable

Total Savings for 18 sample buildings
- Sustainable Cost: $2 M
- Annual savings: $230 K
- ROI: 9%
- LCC savings: $3.9 M
- Energy saved: 23% / 3.9 M kWh/yr
- Water saved: 2.6 M gal/yr
Personnel Support Facility
NAB Little Creek, VA

- 37,754 SF Educational/Admin Bldg
- Construction Cost $7,500,000
- Sust. Cost $150,000 = 2% of Construction Cost
  - 21% reduction in energy usage
    • Energy savings = 146,910 kWh/yr > $11,370/yr
  - 50% reduction in water usage
    • Water savings = 517,458 gal/yr > $3,000/yr
  - Over 75% construction waste diverted from landfill
  - ROI/Simple payback = 10% / 10 yrs

“Silver”
Building 850
Port Hueneme, CA

Public Works Department Admin building
10,000 SF renovation & 7,000 SF addition

Sustainable Features
- Prototype natural gas heat pump
- Variable Air Volume (VAV) under floor distribution system
- High efficiency pulse boilers
- Natural ventilation
- Solar space & domestic water heating systems
- Photovoltaic power generation system
- Daylighting
- Shading & innovative glazing elements
- Fluorescent lighting
- Occupancy & photo sensors controls

AIA/COTE 2002 Top Ten Green Project
2006 White House Closing the Circle Award
Defense Intelligence Analysis Center (DIAC) Addition
Bolling AFB, District of Columbia

Six story office building – 450,000 SF addition
Integrates SD with DoD ATFP Standards

Seeking LEED Silver
Defense Intelligence Analysis Center (DIAC) Addition
Bolling AFB, District of Columbia

- Utilized excess capacity of existing chiller plant
- T-8 pendant lighting in offices w/ occupancy sensor
- Metal Halide lights in garage
- Bio-retention pond – protect Anacostia River & Chesapeake Bay
- Indigenous low-maintenance plants
- Sun control – shading devices w/ high reflective glass
- Low-flow toilets
- Recycle 80,000 Cubic Meters (CM) excavated soil. Saved Navy $400K
- Low Volatile Organic Compounds (VOC) materials and increased ventilation rate
- Crushed demo concrete on-site - aggregate used for new work
Renewable Energy

Three examples of Navy and Marine Corps renewable energy projects

Photovoltaic Array
MCAGCC 29 Palms, CA

Wave Energy Technology
MCB Hawaii

Wind Turbines
Guantanamo Bay, Cuba
Our Challenges

- Buy-in, direction & implementation
- Awareness and knowledge
- Organizational changes
- Funding and Programming process
- Self-certification v. 3rd party
- Solicitation, design and construction processes
- Data collection
- Building performance data
- Cost/benefits
- Creating a new “standard”
DoD requires its buildings to be secure and sustainable.

Challenge - satisfy design requirements in a balanced, integrated cost-effective solution.

This tool:

- Analyzes and integrates LEED and UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings,
- Saves design and construction costs,
- Will integrate AT requirements, sustainable strategies/features and aesthetics.
## LEED-DoD Antiterrorism Standards Tool

### Tools Index
- LEED-DoD Antiterrorism Standards Tool

#### Introduction
- How To Use This Tool
- General Issues

#### Antiterrorism Standards Tool

<table>
<thead>
<tr>
<th>Sustainable Site</th>
<th>Antiterrorism Standard</th>
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<tbody>
<tr>
<td>SS-1 F1</td>
<td>Erosion &amp; Sedimentation Control</td>
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<tr>
<td>SS-2</td>
<td>Site Selection</td>
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<tr>
<td>SS-3</td>
<td>Development Density</td>
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<td>SS-4 F1</td>
<td>Brownfield Redevelopment</td>
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<tr>
<td>SS-4 F2</td>
<td>Alternative Transportation, Public Transportation Access</td>
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<td>SS-4 F3</td>
<td>Alternative Transportation, Bicycle Storage &amp; Changing Rooms</td>
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<tr>
<td>SS-4 F4</td>
<td>Alternative Transportation, Alternative Fuel Vehicles</td>
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<td>SS-4 F5</td>
<td>Alternative Transportation, Parking Capacity</td>
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<tr>
<td>SS-5 F1</td>
<td>Reduced Sites Disturbance, Protect or Restore Open Space</td>
</tr>
<tr>
<td>SS-5 F2</td>
<td>Reduced Sites Disturbance, Development Footprint</td>
</tr>
<tr>
<td>SS-6 F1</td>
<td>Stormwater Management, Rate and Quantity</td>
</tr>
</tbody>
</table>

### Legend
- Complimentary requirements
- Conflicting and complimentary requirements
- Conflicting requirements
- Not conflicting or complimentary, but have related considerations

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**Download**
UFC 4-010-01
DoD Minimum Antiterrorism Standards for Buildings

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Green Specifications

The scope of this project is to revise the Unified Facilities Guide Specifications (UFGS) that are used for Navy projects to incorporate sustainable development principles.

Value/benefits:

- Reduce design costs
- Provide corporate consistency
- Get sustainable strategies / features in projects
# Data Collection & Program Metrics

<table>
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<tr>
<th>Why?</th>
<th>What?</th>
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<tbody>
<tr>
<td>Measure &amp; evaluate progress</td>
<td>Number and level of sustainable projects</td>
</tr>
<tr>
<td>Show value added</td>
<td>Design and constructions costs for sustainable design</td>
</tr>
<tr>
<td>Guide initiatives for improvement</td>
<td>Energy savings (kWh/yr; $/yr)</td>
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<tr>
<td></td>
<td>ASHRAE reduction (%)</td>
</tr>
<tr>
<td></td>
<td>Water savings (gal/yr; $/yr)</td>
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</tbody>
</table>
Summary

- We take Sustainable Development very seriously
- NAVFAC has the highest number of LEED certified designers of any of the Services
- Sustainable development is a technical evaluation factor in contract awards
- We ensure that sustainable development features promised are delivered and functioning at turnover
  - The challenge, particularly with Design-Build, is to ensure that all the sustainable features promised ARE delivered