




Home of the Headquarters, Naval Facilities Engineering Command
Washington Navy Yard, DC

**INCORPORATING SUSTAINABLE DESIGN
IN FEDERAL INSTALLATIONS**



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DON Challenges

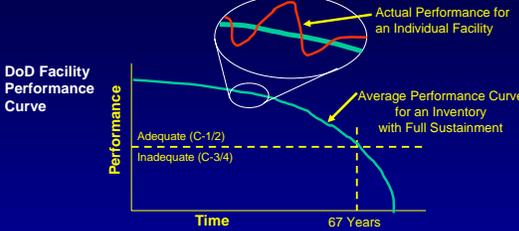
Life Cycle Total Cost of Ownership

- Planning, Design and Construction
- Facility Sustainment
- Facility Churn
- Recapitalization (Restoration and Modernization)
- Reduction in Resources
- Workplace Productivity
 - Salaries and Benefits
 - Health and Absenteeism

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DON Challenges

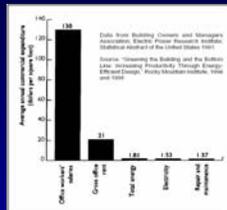


- Average Service Life of DoD Facilities is 67 years
- ➔ Facility Performance directly affects Cost of Sustainment and Workplace Productivity over the Facility Service Life

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DON Challenges



Data from Building Owners and Managers Association, Electric Power Research Institute, National Institute of the United States, and Source: "Sustaining the Building and the Bottom Line: Increasing Productivity Through Strategic Efficient Design," Rocky Mountain Institute, 2004 and 2005.

- Workers' Salaries Average 84% of Total Cost of Facility Occupancy per Year
- 1% Increase in Workplace Productivity can pay entire Energy Bill
- After salary, the second major annual cost of an employee is benefits, including medical and insurance costs, workman's compensation
- ➔ Measured Reductions in These Costs Would Justify Investment in Better Quality Environments




NAVAFAC Challenges to Support DON Shore Readiness

What We Need To Do:

- Partner with Industry for Design, Construction
- Address the Problems in an Integrated Fashion
- Assure all Stakeholders Have a Role in the Solutions

- ➔ Incorporate Sustainable Development Strategies with Design Build Delivery
- ➔ Deliver Performance Facilities with the Appropriate Sustainment Guidance

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NAVAFAC Approach

Sustainable Design: Key to Making Effective Life Cycle Design Decisions That Manage Cost and Deliver Best Value.

- Integrates Approach for Optimal Performance
- Reduces Energy Demand, Consumption
- Reduces Operating and Maintenance Costs
- Enhances Employee Health and Safety That Impacts Employee Productivity
- Enhances Our Homeland Energy Security
- Reduces Environmental Impact
- ➔ Reduces the Total Cost of Ownership

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Integrated Approach of Sustainable Design

Whole Building Perspective

- All Stakeholders Partner to Set Performance Goals
- Continuous Collaboration Through Planning, Design, Construction, Occupancy
- Encourages Constructor Participation in Design
- Enhances Integration and Assures Performance of the Whole Through Total Building Commissioning

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Cost and Integrated Design

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Design-Build Approach

- Predominant Method Used for Navy MILCON
- Team Approach – Partners With All Stakeholders
- Integrates Constructor With Designer for Single Point of Responsibility (Fewer “Hand-Offs”)
- Leverages Contractor’s Efficiencies and Innovations to Meet Performance Criteria and Manage Cost
- Usually Linked With Best Value Source Selection Award Evaluation Approach Where Sustainable Design Is a Selection Factor

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Total Building Commissioning

- Process to Assure Performance Goals of Total Building and Systems Are Met
- Extends Through All Phases of Project: Concept Through Warranty
- Can Reduce Costly Rework and Change Orders in the Field
- Provides Proper O&M Information and Training for Facility Operators
- Prerequisite Process for Meeting Sustainability Objectives

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NAVFAC Success Story

MCPON PLACKETT MANOR - BACHELOR ENLISTED QUARTERS
GREAT LAKES NAVAL TRAINING CENTER, ILLINOIS
 NAVFAC Sustainable Development Pilot Project
 Design-Build Delivery Process

\$65 million 9 buildings - 450,000 sf
 Housing for 2250 sailors 3 to 5 stories
 15 acre site Completed 12/98 - 9/99

USGBC LEED CERTIFIED JANUARY 2000

The U.S. Green Building Council
 Bachelor Enlisted Quarters
 Great Lakes Naval Training Center
 LEED® 1.0 Certified

The White House
 Closing the Circle Award
 June 2000

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NAVFAC Success Story

BUILDING 33 - WASHINGTON NAVY YARD
 NAVFAC Sustainable Development Pilot Project
 Design-Build Delivery Process
 Report on Sustainable Development Energy Performance, 12/ 99 - 12/00

\$95,000 investment,
 \$58,000 lower energy costs/year =
 >2 year payback!

Category	2000	2001	2002	2003
Electricity	1,100,000	1,050,000	1,000,000	950,000
Gas	1,200,000	1,150,000	1,100,000	1,050,000
Water	1,300,000	1,250,000	1,200,000	1,150,000
Waste	1,400,000	1,350,000	1,300,000	1,250,000
Total	5,000,000	4,800,000	4,600,000	4,400,000

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NAVFAC Success Story

NAVAL SEA SYSTEMS COMMAND HEADQUARTERS - WASHINGTON NAVY YARD
\$165 Million Budgeted Construction Cost. Begun 5/98, Completed 1/01
1 Million Square Feet Among Three Structures
Adaptive Re-Use of Historic High Bay Naval Gun Factories with New Additions
Design-Build delivery under Sustainable Development Practices

Estimated Savings:
\$420K / year in Utilities





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Next Steps

□ **Design Build Operate Maintain (DBOM) Pilot Program**

- “Demonstration Program on Reduction in Long-Term Facility Operating, Maintenance and Energy Costs”
- Goal: Optimize the O&M of Each Facility in the Program
- Single Point of Responsibility From Design Through Occupancy
- Operations by DB Contractor After Navy Acceptance for First Years of Occupancy

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Next Steps

□ **Personnel Support Facility (P-137) Amphibious Base Little Creek**

- Design-Build
- USGBC LEED™ Silver Proposed

□ **Naval Training Center Great Lakes, Illinois**

- Third Phase, 7 Barracks, \$201 Million
- USGBC LEED™ Silver Anticipated

□ **Defense Intelligence Analysis Center (DIAC) Bolling Air Force Base, Washington DC**

- Addition to Existing Facility, \$100+ Million
- USGBC LEED™ Silver Proposed



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Questions?