

# **Sustainable Development: Costs of LEED Certification**

**Atlantic Division**

**Naval Facilities Engineering Command**



# **Shipboard Sailors Ashore BEQ Complex Naval Base Norfolk**

## **Overall Program:**

- 18 Buildings  
(4-6 stories)**
- 9000 Sailors**
- Campus Sites**
- Design Build RFP**

## **Phase 1:**

- 3+ Buildings for 1500 Sailors**
- Community Center**
- Central Thermal Plant**
- Parking Garage**



# **Sustainable Pilot Project**

- **Identify Cost / Savings for LEED Certification and Higher Levels**
  - **Applied for additional funding in 1391 in Accordance with MCON General Project Development Guidance**



- **Questioned by Navy Comptrollers Office (FMB)**

- **Developed list of potential Sustainable Features, costs & savings**

# **RFP Development**

- **Thermal Node Plant Study**
  - ~ \$25,000
- **Sustainable Workshop & Study**
  - 3 day Workshop
  - Detailed LEED Analysis
  - ~ \$25,000
- **Project Rated LEED Gold**
  - 40 points Identified

# Sustainable Features & Costs

- **Storm Water Management** **\$200k**
- **Light Pollution Reduction** **\$20k**
- **Gray Water Recovery & Reuse** **\$182k**
- **Energy Optimization** **\$70k**
  - High Efficiency Chillers
  - Heat Recovery Systems
- **Measurement & Verification** **\$750k**
- **Construction Waste Management** **\$31k**
- **CO2 Monitoring/IAQ** **\$185k**
- **Thermal Comfort Monitoring** **\$100k**
- **Building Commissioning** **\$175k**



# **Additional Sustainable Features**

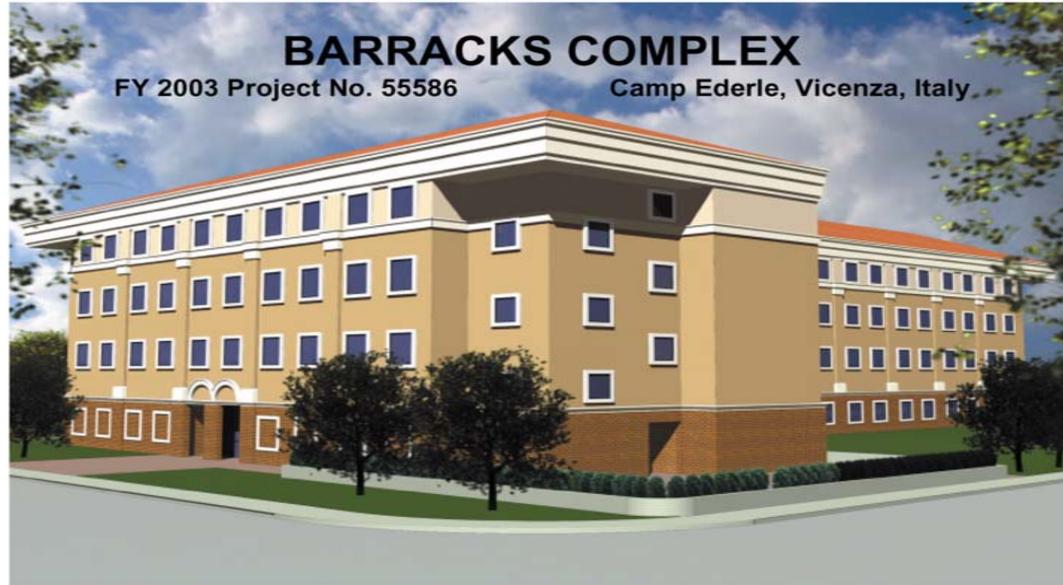
- **Spectrally Selective Windows**
- **Energy Star Compliant Products**
  - **Roofs**
  - **Windows**
  - **Appliances**
  - **Lighting Systems**
  - **Transformers**
  - **Motors**

# Construction Costs

- **Additional Investment Cost**
  - **LEED Gold**      **3% ECC (\$2M)**
  - **LEED Silver**    **1-2% ECC**
  - **Certified**        **<1% ECC**
- **Supported by Life Cycle Cost Analysis...**

# Savings

- **Annual Savings**            **\$285,000**
- **Simple Payback**        **< 7 years**
- **LCC Cost Savings**    **> \$4,500,000**
- **Plus Add'l Environmental & QOL Savings**



# BARRACKS COMPLEX

FY 2003 Project No. 55586

Camp Ederle, Vicenza, Italy

U.S. Army 22<sup>nd</sup> Area Support Group

Atlantic Division, Naval Facilities Engineering Command

**Design Consultants**



**Value Engineering Consultants**



# Barracks Complex

## Camp Ederle, Vicenza, Italy

### MILCON FY03 Project

- 2 Buildings - 10,800 square meters
- 300 Personnel
- \$25,000,000

### SPiRiT & LEED Ratings

- Minimum Design Requirements
  - SPiRiT Bronze
  - LEED Certified
- Final Design
  - SPiRiT Gold (52 Points)
  - LEED Silver (34 Points)



# Sustainable Features

## Sustainable Sites

- Erosion & Sediment Control
- Site Selection
- Open Space
- Alternative Transportation
- Reduced Heat Islands
- Energy Star Roof

## Water Efficiency

- Water Efficient Fixtures
- Indigenous Landscape – No Irrigation

## Energy & Atmosphere

- 34% Energy Cost Reduction (5 pts)  
\$56,000/yr Savings
- Ozone Depletion

## Materials & Resources

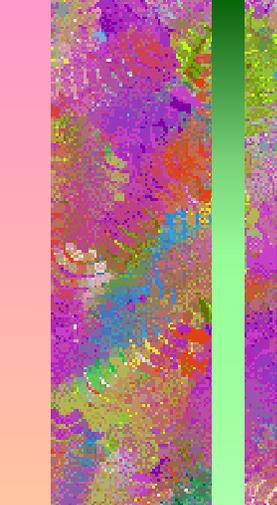
- Local Materials
- Construction Waste Management (2 pts)
- Recycled Materials
- Certified Wood

## Indoor Environmental Quality

- Separate Ventilation System for Smoking Rooms
- Construction IAQ Management
- Low /Zero VOC Sealants & Wood Composites
- Individual Room HVAC Control
- Daylight & Views

# Other LEED Projects

<u>Project</u>	<u>LEED</u>	<u>Fee</u>	<u>ECC</u>
Personnel Supt, LCRK	USGBC Silver	\$0 (D/B)	\$7.5M
BEQ, Camp Lejeune	LANTDIV Cert	\$0 (D/B)	\$13.0M
Dining Facility, Iceland	USGBC Cert	\$31k	\$12.6M
Navy Lodge Add., Norf	LANTDIV Cert	\$24k	\$8.9M



# Conclusions

- **LEED Certification is obtainable at relatively little additional cost**
  - **Additional funding may be available if fully justified**
- 