



*Ms Paula  
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*Green in the  
Military  
3 Feb 2009*

# **Air Force Center for Engineering and the Environment**

# **Air Force Sustainable Design and Development**

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# Overview

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- **Sustainability Challenges**
  - Closing Policy Gaps
  - Meeting Federal Requirements
  - Greening Existing Facilities
  - Thinking Beyond the Footprint
- **Meeting the Challenges**
  - Training Workshops
  - Improving Project Delivery
  - Existing Building Assessments
  - Sustainable Communities



# Defining Sustainability

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**“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”**

**~ Brundtland  
Commission, 1987**





# Defining Sustainability

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- Recognizing the direct and indirect impacts of Air Force operations on resources
- Achieving better understanding of the full measure of resources needed in the present and the future to ensure the successful conduct of Air Force operations
- Taking action by planning, designing and executing mission requirements in a manner that provides for the long-term sustainability of operations in the face of constrained resources

*USAF EESOH: Managing for Operational Sustainability  
2007 Inaugural Report*

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# Air Force Sustainable Design & Development (SDD) Policy

ATTACHMENT 1  
LEED<sup>SM</sup> NC, v2.2 Project Checklist

LEED, NC, v2.2 Minimum Score	LEED, NC, v2.2 Project Checklist	Possible Points
44	SS Prerequisite: Construction Activity Pollution Prevention	Required
	SS Credit 1: Site Selection	1
	SS Credit 2: Development Quality & Community Connectivity	1
	SS Credit 3: Sustainable Development	1
	SS Credit 4: Alternative Transportation: Public Transportation Access	1
	SS Credit 5: Alternative Transportation: Bicycle Storage & Changing Station	1
	SS Credit 6: Alternative Transportation: Low-Speed & Fuel Efficient	1
	SS Credit 7: Alternative Transportation: Parking Capacity	1
	SS Credit 8: Site Development: Pervious Parking Surface	1
	SS Credit 9: Site Development: Maximize Open Space	1
8	WE Credit 1: Water Efficient Landscaping - Turf-free Lawns	1
	WE Credit 2: Water Efficient Landscaping - No Potable Water Use	1
	WE Credit 3: Innovative Wastewater Technologies	1
	WE Credit 4: Water Use Reduction - 20% Reduction	1
	WE Credit 5: Water Use Reduction - 30% Reduction	1
	WE Credit 6: Water Use Reduction - 40% Reduction	1
17	EA Prerequisite: Environmental Commitment of the Building Owner/Client	Required
	EA Prerequisite: Minimum Energy Performance	Required
	EA Credit 1: Environmental Impact Management	1
	EA Credit 2: On-Site Renewable Energy	1-3
	EA Credit 3: Advanced Commissioning	1
	EA Credit 4: Advanced Energy Management	1
	EA Credit 5: Commissioning & Verification	1
	EA Credit 6: Green Power	1
	EA Credit 7: Green Power	1
	EA Credit 8: Green Power	1
13	ME Prerequisite: Storage & Collection of Recyclables	Required
	ME Credit 1: High-Rise: Minimum 75% of Existing Walls, Floors, Roof	1
	ME Credit 2: High-Rise: Minimum 75% of Existing Walls, Floors, Roof	1
	ME Credit 3: High-Rise: Minimum 75% of Existing Non-Structural Elements	1
	ME Credit 4: Construction Waste Management: Divert 75% from Landfill	1
	ME Credit 5: Construction Waste Management: Divert 75% from Landfill	1
	ME Credit 6: Materials Sourcing	1
	ME Credit 7: Materials Sourcing	1
	ME Credit 8: Recycled Content: 10% (post-consumer + pre-consumer)	1
	ME Credit 9: Recycled Content: 10% (post-consumer + pre-consumer)	1
4	RE Credit 1: Regional Materials: 10% Extruded, Processed & Manufactured Regionally	1
	RE Credit 2: Regional Materials: 10% Extruded, Processed & Manufactured Regionally	1

- Current policy issued July 07
- Key requirements
  - All MILCON vertical facilities shall be *capable of achieving LEED “Silver”*
  - Incorporates EPA Act 05/EO 13423 requirements
  - FY09: 5% of total MILCON LEED certified
  - FY10/after: 10% LEED certified



# SUSTAINABILITY CHALLENGES

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# Challenge One: Closing Policy Gaps

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- **Education: Institutionalizing SDD**
- **Data collection for metrics**
- **Support for all new Federal requirements**
- **Focuses only on LEED-NC 2.2 – must also address:**
  - **Sustainment, Restoration, Modernization (SRM)**
  - **Existing building inventory**
- **New requirements of LEED 2009**



# Challenge Two: Meeting Federal Requirements

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- **Energy Policy Act of 2005 (EPAct 05)**
- **Federal Leadership in High Performance and Sustainable Buildings (HPSB) Memorandum of Understanding (MOU) and Guiding Principles**
- **Executive Order 13423**
- **Energy Independence and Security Act 2007 (EISA 07)**
- **What will be required in the near future?**





## Challenge Three: Greening Existing Facilities

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- **EO 13423: 15% of existing Federal capital inventory, by agency, shall incorporate Federal HPSB MOU**
- **Execute existing facilities assessments**
- **Identify/fund existing facilities projects to meet HPSB**



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# Challenge Four: Thinking Beyond the Footprint

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- Sustainable sites
- Joint basing requirements
- Sustainable Communities:  
A fence-to-fence approach



# MEETING THE CHALLENGES

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# AF SDD Training Workshops

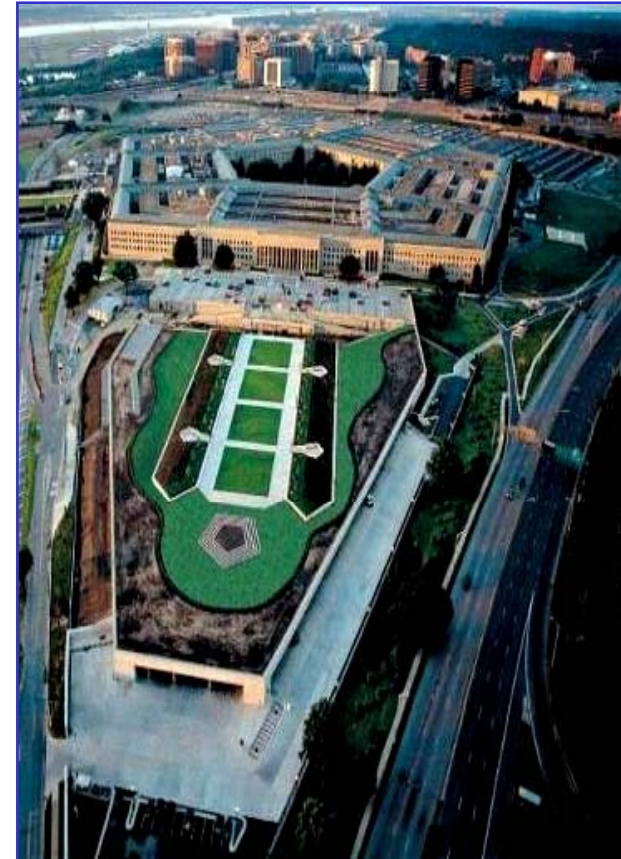
- Three standard workshop types - beginning basic (2 ½-day); executive overview (1-day); intermediate LEED AP prep (2 ½-day)
- Conducted twelve workshops with over 650 in attendance to date
- Three near future workshops scheduled - San Antonio TX, WPAFB OH, Tyndall AFB FL
- FY09 funding will allow for six workshops, completing AFCEE education spiral
  - Will work with AFIT and USAFA to provide long term education solution
  - Will schedule special interest workshops as needed to complement formal course structure





# Improving Project Delivery

- **A-5 team evaluating existing project delivery processes**
  - **Integrate SDD into entire project delivery model**
  - **Track/report SDD at every stage**
  - **Project commissioning**
  - **Align with established industry efforts and best practices**
  - **Implementable metrics**
  - **Issue revised policy in FY09**
- **Team members include AFCEE, ACC, AFIA, Army, Navy, USGBC, Virginia Tech, Commissioning Industry SME**





# Existing Building Assessments

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- EO 13423 requires incorporation of Federal HPSB Guiding Principles into 15% of existing building inventory by 2015
- Compliance with EO may include resolution of Guiding Principles, with third party validation and existing building rating system
- Assessments will determine:
  - HPSB and third part validation (LEED-EBOM ?) scores
  - Cost to improve facilities to achieve HPSB
  - Cost to improve facilities to achieve third party threshold
  - Priorit





# Sustainable Communities

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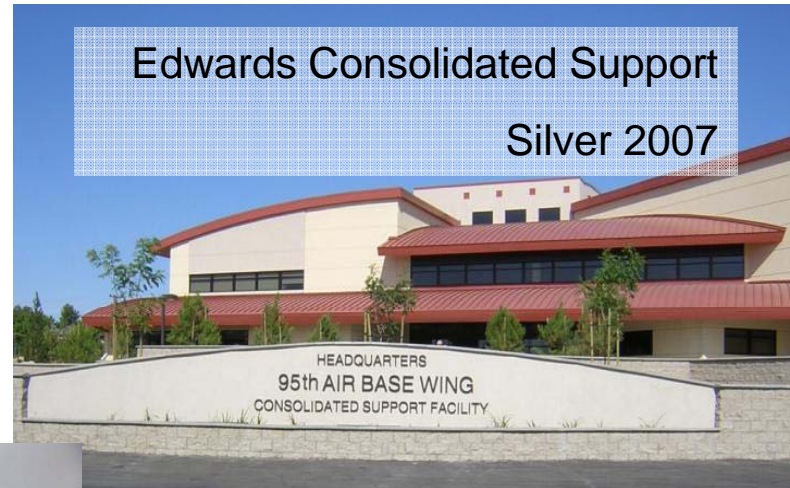
- **Recent rapid escalation of Federal sustainable requirements have not allowed for thoughtful approach to sustainable installations**
  - **Compliance requires focus on individual building certification**
- **AF exploring potential Multi-Service effort to define a fence-to-fence approach, rooted in asset management and EMS principles, and resulting in:**
  - **Reduced data collection burden**
  - **Streamlined reporting requirements**
  - **Enterprise acquisition strategies**
  - **A more holistic method for achieving and demonstrating installation sustainability**



# AF LEED Certified Honor Roll



Barksdale Fitness Center  
Bronze 2003



Edwards Consolidated Support  
Silver 2007



Seymour Johnson Crash Rescue  
Certified 2007



Shaw Library  
Silver 2008



# AF LEED Certified Honor Roll



**AF Weather Agency**

- LEED Gold
- 41 LEED Points

**Keesler Housing**

- 736 Homes LEED Silver
- All 1028 EnergyStar Rated





# Tyndall Fitness Center Sustainable/Energy Demonstration

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Daylight views, heat island effect (roof), drought tolerant plants, non-potable irrigation

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# Shaw 144 Person Dorm Sustainable/Energy Demonstration

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# Just a thought . . .

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**“No problem can be solved by the same consciousness that created it.”**

*Albert Einstein*



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