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Headquarters U.S. Air Force

Air Force Sustainability Update



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Integrity - Service - Excellence

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Overview

- **Air Force Accomplishments**
- **Challenges**
- **Incremental Steps**
- **Current Approach**
- **Enterprise Solution**
- **Sustainable Communities Rating System**
- **Leadership in Sustainable Communities**



Air Force Success Stories

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■ Nellis AFB PV System

- Largest PV array in N. America

■ EPA Green Power Partnership

- Top federal agency for renewable energy (5%)

■ AF MILCON Program

- AF Weather Agency – 1st LEED Gold in the AF
- Keesler Housing – Largest LEED community in US homes

■ Natural Resources

- Solid Waste Diversion (2007) - 62%
- HAZWASTE disposal reduction (1996-present) – 33%
- Toxic Release Inventory reduction (2001-2006) – 34%
- Ozone Depleting Substance elimination (1990-present) – 96%
- Water Reduction (FY01-FY07) – 32%
- Green Remediation Technologies (50% are „green“)



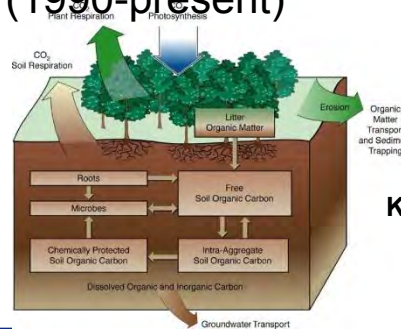
70,000 panels generate 25M KWh per year



AF Weather Agency – 1st LEED Gold



Keesler Housing (736 LEED Silver Homes)





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Challenges

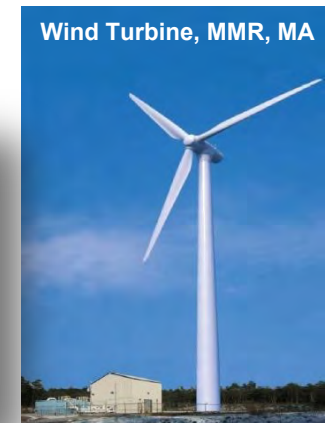
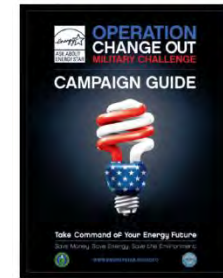
- **Easy wins already accomplished**
- **Individual building approach problematic**
- **Conflicting regulatory requirements**
- **Funding stovepipes still exist**



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Incremental Steps Toward Sustainability

- Energy/Green Procurement
 - 100% participation in EnergyStar “Operation Change Out”
- Sustainable Design and Development Policy
- Natural Resources
 - Sustainable Range Operations
 - Engagement on encroachment
 - Range Residue Resource Recycling
 - AF Recycling Program
 - Alternative Fuels Initiative
- Green Remediation
 - Environmental Restoration Program Optimization (ERP-O)
 - Sustainable Remediation Tool





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Current Approach

- **DoD existing building inventory: ~330,000**
 - **15% HPSB by 2015: ~49,500 buildings**
- **Survey every building**
 - **330,000 Buildings**
 - **Each building survey must incorporate approximately 30-90 data elements**
 - **Result: 9.9M-30M data elements**
- **No single survey in place for all Federal requirements – conflict/duplication**



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Enterprise Solution

- **More holistic, comprehensive & synergistic methodology for sustainability**
- **Utilize an enterprise approach solution which**
 - Integrates both the built and natural infrastructure
 - Incorporates sustainable principles in
 - Environmental Management System (EMS) and
 - Asset Management life-cycle planning
 - Facilitates continuous improvement
 - Enables enterprise acquisition
 - Institutionalizes sustainability cultural shift



“Sustainable Communities”





Sustainable Communities

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- **Tri-Service proposes a Fence-to-Fence rating system**
 - **LEED-like scorecard**
 - **10 categories with requirements & credits under each**
 - **„CreditSheets“ identify requirements and how to comply**
- **Based on Asset Management and EMS**
 - **Each „credit“ mapped to Activity Management Plan**
 - **Continuous improvement process**
- **Proposed Categories:**

Planning	Built Infrastructure
Energy & Greenhouse Gas Emissions	Transportation
Water Efficiency	Human Health, Development & Productivity
Materials & Waste Management	Community Engagement
Natural Infrastructure	Innovation & Regional

I n t e g r i t y - S e r v i c e - E x c e l l e n c e



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Leadership in Sustainable Communities (LSC)

LSC incorporates the mission, social and environmental impact into the business model.



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Conclusion

- **Challenges are opportunities to create a paradigm shift**
 - **Incremental steps towards sustainability are suboptimal**
 - **Current approach to Federal Mandates – large data burden**
- **Enterprise Solution: *Sustainable Communities***
 - **Triple Bottom Line is incorporated into the structure of Sustainable Communities**
 - **Next Tri-Service Collaborative Group Sustainable Communities meeting 12 May 2009 – Wash DC**



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Related Briefings

- **Green Remediation: Wed, 6 May 2009**
 - 8259
 - 8050
 - 8046
- **Environmental Program Management: Wed, 6 May**
 - 8047
- **Cleanup 2: Thurs, 7 May 2009**
 - 8079
 - 8103
 - 8349
- **Sustainability: Thurs, 7 May 2009**
 - 8051



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Questions?



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Backups



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Sustainable Communities

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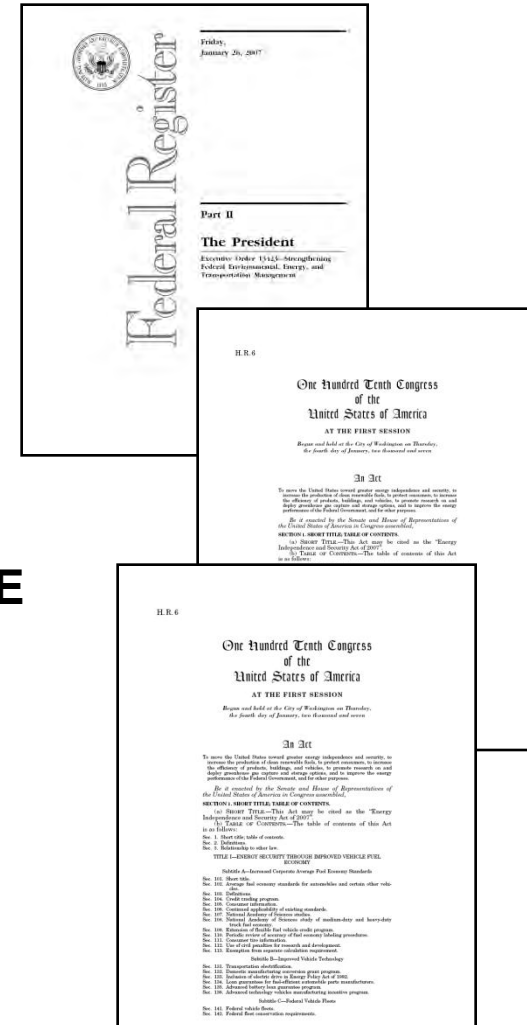
- 75% of the HPSB requirements are installation wide
- Tri-Service Collaborative Group proposes a single streamlined approach
- USGBC, DOE and EPA in advisory roles
- Fence-to-Fence Tri-Service structured rating system
 - LEED-like scorecard
 - 10 categories with requirements & credits under each
 - „Credit Sheets“ identify requirements and how to comply
- Based on Asset Management and EMS
 - Each „credit“ mapped to Activity Management Plan
 - Continuous improvement process



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Challenges

- **Executive Order (EO) 13423**
 - Reduce Energy Consumption 30% by 2015
 - Reduce Water use 20% by 2015
 - Green Procurement
 - Hazardous material and waste reductions
 - 15% High Performance/Sustainable Buildings by 2015
- **Energy Policy Act of 2005 (EPAct05)**
 - Building shall be 30% more efficient than ASHRAE 90.1
 - Use advanced meters
- **Energy Independence and Security Act of 2007 (EISA07)**
 - Buildings reduce fossil fuel consumption
 - 55% by 2010; 100% by 2030
 - Restore predevelopment hydrology





AF LEED Buildings Honor Roll

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Sustainable Design and Development

Leadership in Energy & Environmental Design



Does LEED = *Green*?



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LEED Pitfalls



Charging Station?



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What Makes Sense





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LEED Pitfalls

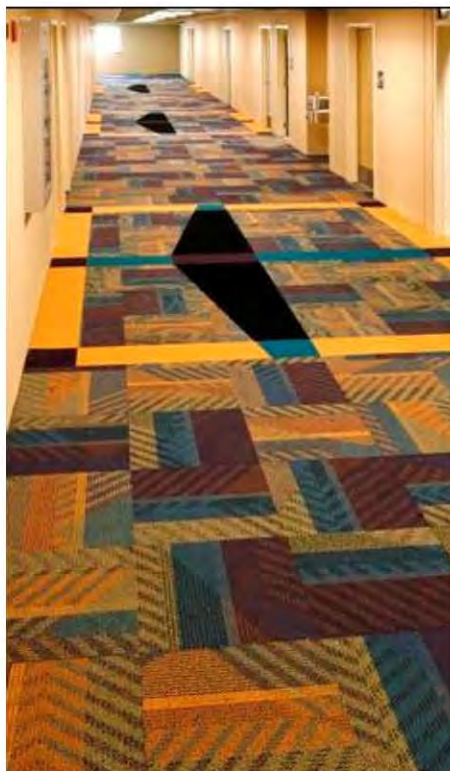


Match material performance with requirements

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A large, empty office space with rows of cubicles. Each cubicle has a desk and a black office chair. The floor is covered in a colorful, patterned carpet. The walls are a warm, yellowish-brown color, and the ceiling has recessed lighting.

[illegible]



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LEED Pitfalls



Essential: Proper design and maintenance
personnel buy-in



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Another Approach





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AF LEED Certified Honor Roll



AF Weather Agency

- LEED Gold
- 41 LEED Points



Keesler Housing

- 736 Homes LEED Silver
- All 1028 EnergyStar Rated
- Largest residential transfer in US



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Air Force Sustainable Policy for New Facilities

- Current policy issued July 07
- Key requirements
 - All MILCON vertical facilities shall be *capable of achieving LEED "Silver"*
 - Incorporates EPA05 and EO 13423 requirements
 - FY09: 5% of total MILCON LEED certified
 - FY10/later: 10% LEED certified
- Policy currently in re-write

ATTACHMENT 1
LEED[®] NC, v2.2 Project Checklist

LEED-NC v2.2 Sustainable Sites	10 Possible Points
SS Credit 1: Construction Activity Pollution Prevention	Required
SS Credit 2: Site Selection	1
SS Credit 3: Sustainable Development	1
SS Credit 4: Alternative Transportation: Public Transportation Access	1
SS Credit 5: Alternative Transportation: Bicycle Storage & Changing Room	1
SS Credit 6: Alternative Transportation: Low-Speed & Fuel Efficient	1
SS Credit 7: Alternative Transportation: Parking Capacity	1
SS Credit 8: Site Development: Protect or Restore Habitat	1
SS Credit 9: Site Development: Maximize Open Space	1
SS Credit 10: Stormwater Design: Quantity Control	1
SS Credit 11: Stormwater Design: Quality Control	1
SS Credit 12: Heat Island Effect: Non-Roof	1
SS Credit 13: Heat Island Effect: Roof	1
SS Credit 14: Light Pollution Reduction	1
Water Efficiency	8 Possible Points
WE Credit 1.1: Water Efficient Landscaping: Reduce by 50%	1
WE Credit 1.2: Water Efficient Landscaping: No Potable Water Use	1
WE Credit 2: Innovative Wateruse: Technology	1
WE Credit 3.1: Water Use Reduction: 30% Reduction	1
WE Credit 3.2: Water Use Reduction: 40% Reduction	1
Energy & Atmosphere	17 Possible Points
EA Credit 1: Fundamentals: Commissioning of the Building Energy Systems	Required
EA Credit 2: Minimum Energy Performance	Required
EA Credit 3: Water-Energy Performance	1
EA Credit 4: On-Site Renewable Energy	1-4
EA Credit 5: Enhanced Commissioning	1
EA Credit 6: Enhanced Energy Performance	1
EA Credit 7: Measurement & Verification	1
EA Credit 8: Green Power	1
Materials & Resources	12 Possible Points
MR Credit 1: Recycling & Collection of Recyclables	Required
MR Credit 2.1: High-Rise: Minimum 75% of Existing Walls, Floor, Roof	1
MR Credit 2.2: High-Rise: Minimum 75% of Existing Walls, Floor, Roof	1
MR Credit 3.1: High-Rise: Minimum 75% of Existing Walls, Floor, Roof	1
MR Credit 3.2: High-Rise: Minimum 75% of Existing Walls, Floor, Roof	1
MR Credit 4: Construction Waste Management: Divert 75% from Disposal	1
MR Credit 5: Construction Waste Management: Divert 75% from Disposal	1
MR Credit 6: Materials Waste: 75%	1
MR Credit 7: Materials Waste: 75%	1
MR Credit 8: Recycled Content: 20% (post-consumer + pre-consumer)	1
MR Credit 9: Recycled Content: 20% (post-consumer + pre-consumer)	1
MR Credit 10: Regional Materials: 10% Extracted, Processed & Manufactured Regionally	1
MR Credit 11: Regional Materials: 10% Extracted, Processed & Manufactured Regionally	1
MR Credit 12: Regional Materials: 10% Extracted, Processed & Manufactured Regionally	1
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MR Credit 100: Regional Materials: 10% Extracted, Processed & Manufactured Regionally	1



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Sustainability Requirements for Existing Facilities

- **Current Federal requirement are single facility-based**
- **Requires multiple surveys to comply with all installation sustainable requirements**
- **No standard method for reporting**



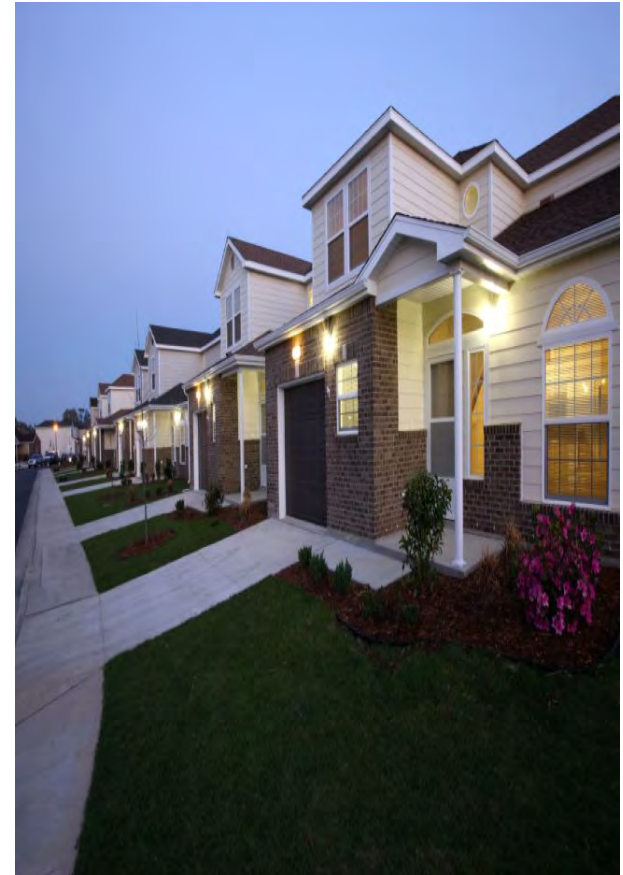
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Option B: Sustainable Communities

- **Tri-Service Collaborate Group proposes a single streamlined approach**
- **USGBC, DOE, and EPA in advisory roles**
- **Holistic sustainable rating system**
 - **Includes energy and water requirements**
 - **Measures/Reports compliance**
 - **Reflects all aspects of the installation**





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Option B: Sustainable Communities

- **Installation-wide rating system**
 - **Reduced data collection**
 - **Streamline reporting requirements**
 - **Enable enterprise acquisition strategies**
 - **Comprehensive & synergistic methodology**
 - **More holistic methodology for sustainability**
 - **Facilitate continuous improvement**
- **Approximately 75% of the HPSB requirements are installation-wide**



Proposed Scorecard Snapshot

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Sustainable Communities Scorecard

Installation Name:

Location:

Yes ? No

				Planning (P)	X Points
				Req 1 EMS Conformance	Required
				Req 2 Environmental Performance Scorecard	Required
				Credit 1 Asset Inventory	
				Credit 2 Long Term Environmental Liability Assessment (Air, Land, Restoration)	
				Credit 3 Sustainable Investment Planning Process	
				Credit 4 Local / Regional Business Support	
				Credit 5 Regional Political Coordination Process (around the fenceline)	
				Credit 6 Land Use	
				Credit 7 Brownfield Development Incentive	
				Credit 8 Circulation / Connection	
				Credit 9 Light & Air	
				Credit 10 Climate Appropriate Design	
				Credit 13 Air Installation Compatible Use Zone Program (AICUZ)	
				Credit 14 Base Comprehensive Planning	
				Credit 15 Development Density	
				Credit 16 On-base Housing and Dormitories	
				Credit 17 Mixed Use Development	
				Credit 18 Facility Utilization and Optimization	

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Proposed Credit Snapshots

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EMS Conformance

P	EG	WE	MW	NI
BI	T	HDP	CE	IR
Requirement 1				

Intent

Compliance – must meet federal requirements listed below.

Requirements

- Federal Requirement:
 - EO13423, (-)
 - DODI xxxx.xx
- Service Requirements
 - Army:
 - Navy:
 - Air Force: AFI XX-XXXX

Submittals Documentation

The submittals will be a list of specific data that should be gathered into a database.

*The intention is that this reference workbook will be used as a scope document for a database designer. The designer will create a database and a web based tool for filling in the information required by the submittals. They do not want yes/no questions and checkmarks. They want for real data to be entered, such as quantities, percentages, etc.

Potential Technologies & Strategies

Not completing this section until after the Tri Service meeting in May

Asset Management Key:

Army:	Navy:	Air Force: NI
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GHG Emissions Benchmark and Tracking

P	EG	WE	MW	NI
BI	T	HDP	CE	IR
Requirement 1				

Intent

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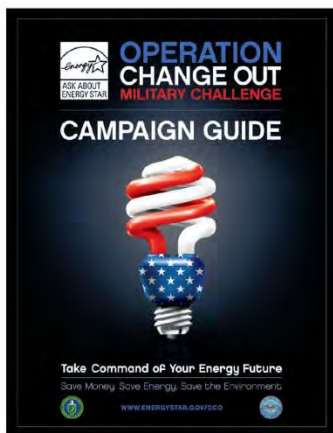
Way Ahead

- **Define credits and requirements**
 - **Reduce data acquisition**
 - **Streamline reporting requirements**
- **Identify a scoring methodology**
- **Develop business strategy**
 - **Tie score to investment strategies**
 - **Prioritize projects considering triple bottom line**
 - **Complements Asset Management approach**



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- **100% participation in EnergyStar “Operation Change Out”**





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Renewable Energy

- **Air Force leads renewable energy initiative**
 - **Largest PV system in N. America**
 - **Nellis AFB**
 - **Purchasing renewable energy**
 - **Rated top federal agency**
 - **Rated #8 nationally – over 426M KWh**
 - **Installations pursuing local renewable resources**
 - **Dyess AFB – 100% wind power**
 - **Fairchild AFB – 100% green power**
 - **Edwards AFB – 60% green power**
 - **Ascension Island – x% wind power**
 - **100% participation in EnergyStar „Operation Change Out“**





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Going “Green”

■ “Green Remediation”

- Focus on working with and leveraging Mother Nature**
- 50% of current remediation systems are “green”**
 - Phytoremediation – utilizing tree root structure to remediate**
 - Bioaugmentation – groundwater stimulation of dechlorination**
 - Wetlands & Biowalls**
 - Solar Powered Systems**

■ Kevin Section