

Office of Federal High-Performance Green Buildings Advisory Committee Meeting November 9, 2011

PROJECT OVERVIEWS:

Levers for Change

High Performance Green Building Demonstration Projects

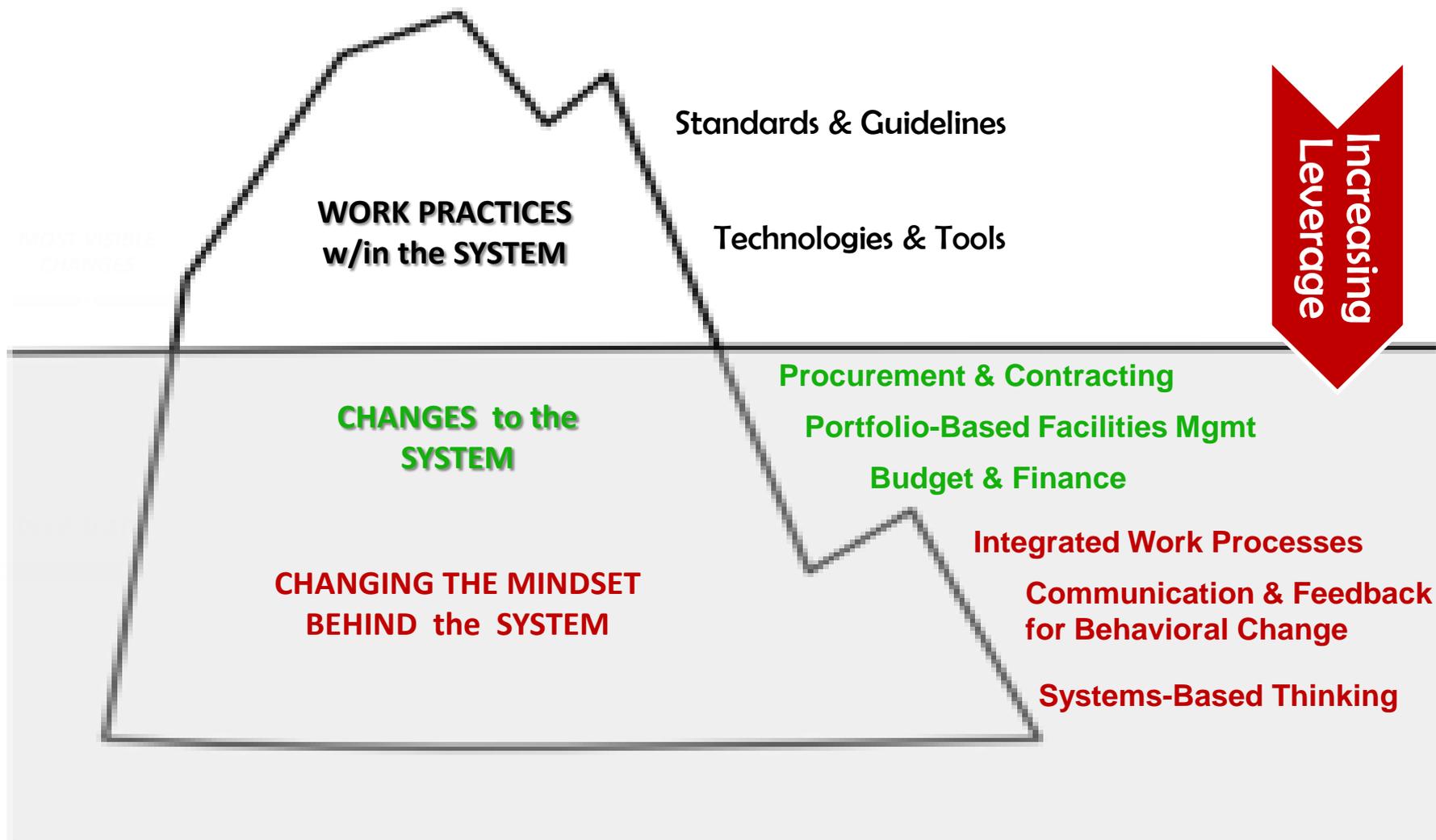
Research into Practice Knowledge Hub

Green Building Certification System Review

Levers for Change

Systems Based Thinking is Key

Achieving High-Performance Federal Facilities: Strategies and Approaches for Transformational Change



1. Systems-Based Thinking
2. Portfolio-Based Facilities management
3. Integrated Work Processes
4. Procurement, Contracting, and Finance
5. Communication and Feedback for Behavioral Change
6. Standards and Guidelines
7. Technologies and Tools

- Performance based contracting and integrated work practices – completed September 2011
- Technology bundling
- Budget and finance
- Systems based thinking and regenerative design

(Behavioral change will be addressed in the 2012 EISA Demonstration Project.)

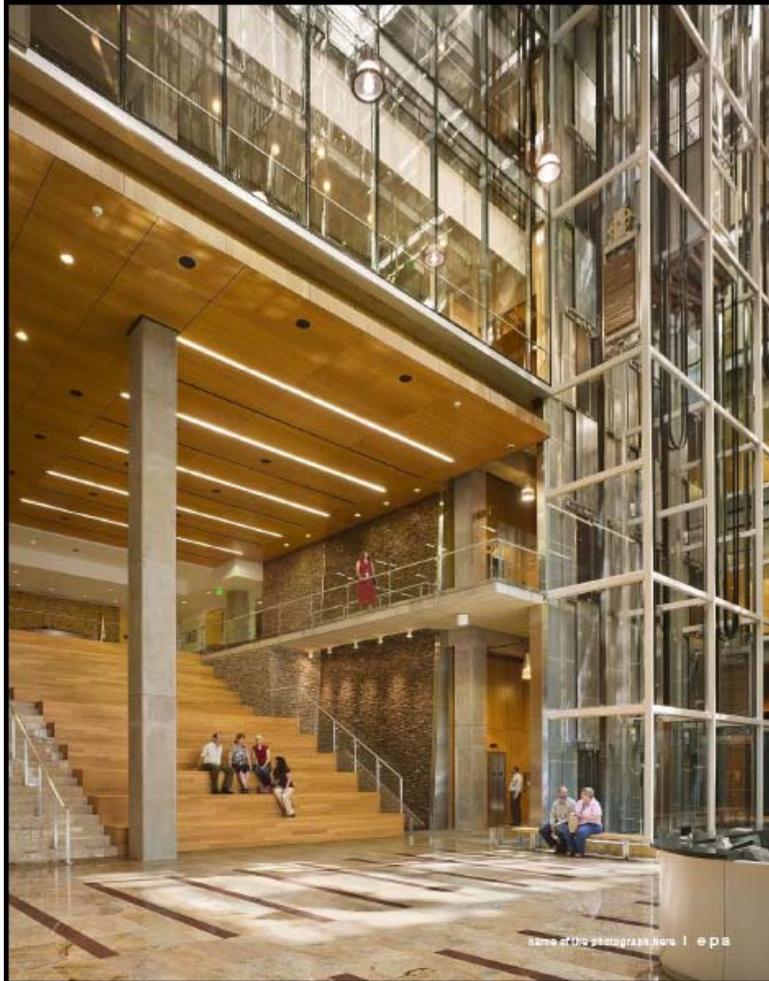
Purpose of expert convenings:

- Further clarification of promising approaches
- Identify “bright spots” and innovative practices that are replicable and scalable
- Identify barriers to implementing and strategies for overcoming barriers
- Follow up with attendees over time to track success (or not) with adopting new practices
- Create collaborative partnerships with other agencies to enhance potential for turning knowledge into practice

High Performance Green Buildings Demonstration Projects

- Develop benchmark and performance data for design, construction, operations standards for the Federal real property inventory
- Use Federal buildings as research learning laboratories and teaching tools to advance understanding of HPGB performance
- Relationships among building diagnostics and human health, occupant productivity, safety, security, and accessibility

2011 and 2012 Demonstration Projects



EPA Wynkoop Building, Denver



Test new technologies and sustainable strategies; revise and retest

Identify best practices that are replicable and scalable

Integrate findings into the Research into Practice Knowledge Hub



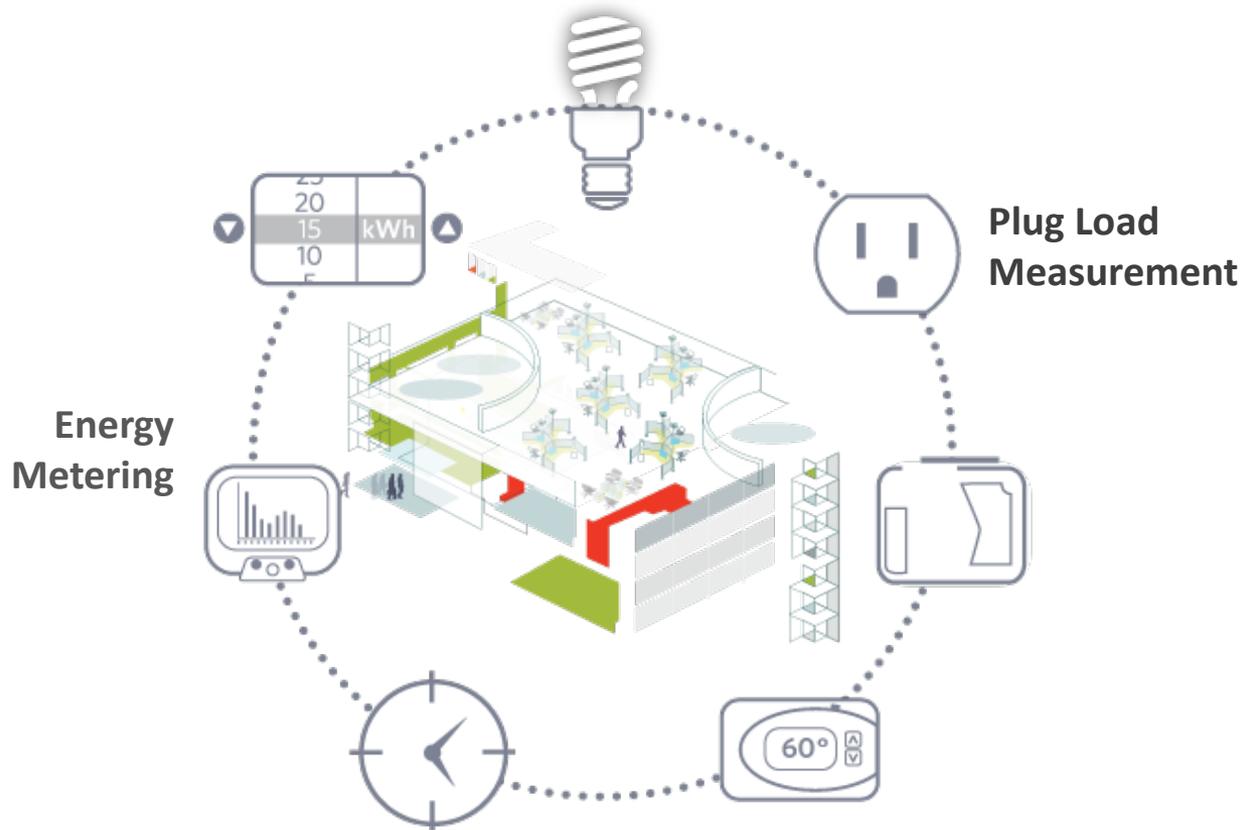


EPA Region 8 Wynkoop Building: Research Studies

Report Title	Author	Date Completed
Air Leakage Test Report	Center for the Built Environment (CBE): Fred Bauman, Tom Webster, and Darryl Dickerhoff	August 2008
Case Study of Environmental Protection Agency (EPA) Region 8 Headquarters Building	Center for the Built Environment (CBE): Tom Webster, Fred Bauman, Darryl Dickerhoff, and Yoon Soo Lee	September 2008
Indoor Environmental Quality Measurements at the EPA Region VIII LEED Gold Certified Office Building	Battelle: Bradley P. Goodwin, Ian C. MacGregor, and Marcia G. Nishioka	July 22, 2009
Extensive Green Roof Species Evaluations Using Digital Image Analysis	Colorado State University: Jennifer M. Boussetot, James E. Klett, and Ronda D. Koski	June 2010
Re-Assessing Green Building Performance: A Post Occupancy Evaluation of 22 GSA Buildings	Pacific Northwest National Laboratory: KM Fowler, EM Rauch, JW Henderson, AR Kora	June 2010
Moisture Content of Extensive Green Roof Substrate and Growth Response of 15 Temperate Plant Species during Dry Down	Colorado State University: Jennifer M. Boussetot, James E. Klett, and Ronda D. Koski	December 2010
EPA Region 8 Headquarters Operations and Maintenance Manual	Bison Green Roof Consulting Services	2010
Acoustical Study	The Greenbusch Group, Inc	February 11, 2011*
Data Center Energy Efficiency Site Assessment	National Renewable Energy Laboratory: Ian Metzger, Otto VanGeet, and Chuck Powers	May 6, 2011
Plug Load Behavioral Change Demonstration Project	National Renewable Energy Laboratory: Ian Metzger, Alicen Kandt, and Otto VanGeet	July 2011
Water Use Field Research and Baseline Assessment	Koeller and Company, Veritec Consulting, Inc: John Koeller and Bill Gauley	July 2011*
Pulling to the Future: Evolving the Workplace to Accommodate the Changing Nature of Work	U.S. General Services Administration: Judith Heerwagen and Michael Bloom	July 2011*

The installed equipment measured the energy used at each of the plugs in a workstation.

There are other components available with this system, however only the Plug Load Measurement and the Energy Metering equipment have been installed for this Program



- Target a campus of buildings
- Same overall goals as 2011
- Focus on *behavior* of occupants and facility staff and impacts on energy, water and indoor environments
- Discussions with Army and DOE pointing to Fort Carson, CO

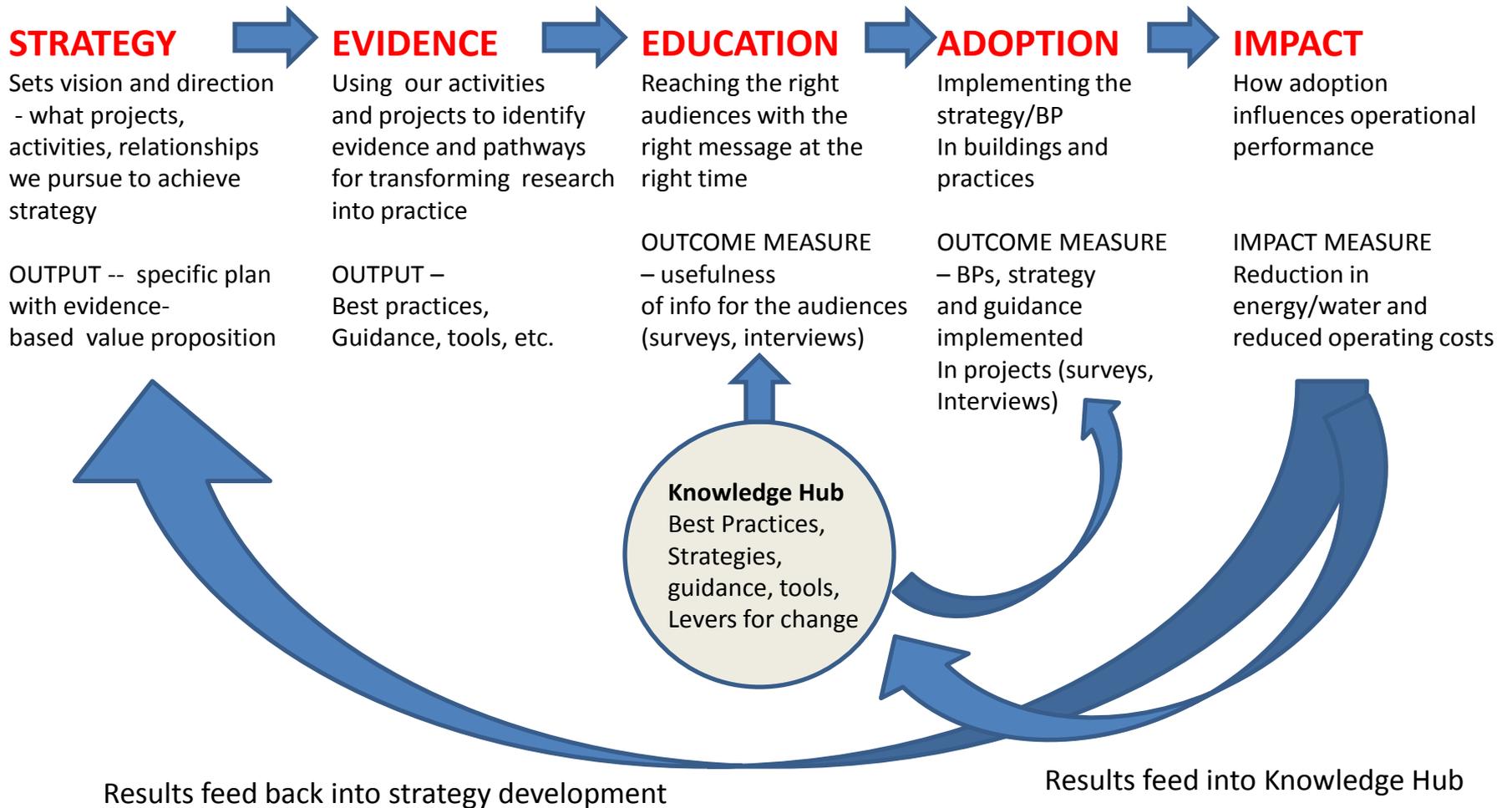
Research into Practice Knowledge Hub

Create an **Information Ecosystem** to facilitate the dispersal and adoption of technologies, practices, and strategies focused around sustainable and cost effective building operations.

- The approach involves multiple relationships, mixed modes of communication, continuous adaptation, and feedback for improvement.
- This is not a typical “post it” and leave approach.
- The approach facilitates “learning by using,” adapting and changing much as a living system learns and adapts.
- Facilitates “swarm intelligence” – collective intelligence of best practices through collaboration and pooling of expertise

- A living Knowledge Hub that organizes information and facilitates sharing, collaboration, and interaction among users
- A communications plan targeted at people who can implement new strategies and technologies – from purchasing through installation and demonstration
- Feedback loops with updated information on technologies, practices and strategies.

OFHPGB Organization to support Research Into Practice



1. Create an overall communications/education strategy
2. Conduct follow-on expert convenings to further develop the National Academies recommended “Levers for Change” to facilitate transformation of federal buildings to high performance
3. Create the framework for the Knowledge Hub
4. Populate the Knowledge Hub with best practices, lessons learned, guidance, and case studies drawing on collaboration with other agencies
5. Focus on learning-doing-sharing



GSA Portfolio

DOD portfolio

VA portfolio



DOE Labs

Universities

Conceptualizing the Information Ecosystem and Knowledge Hub





LEARN

PLAN

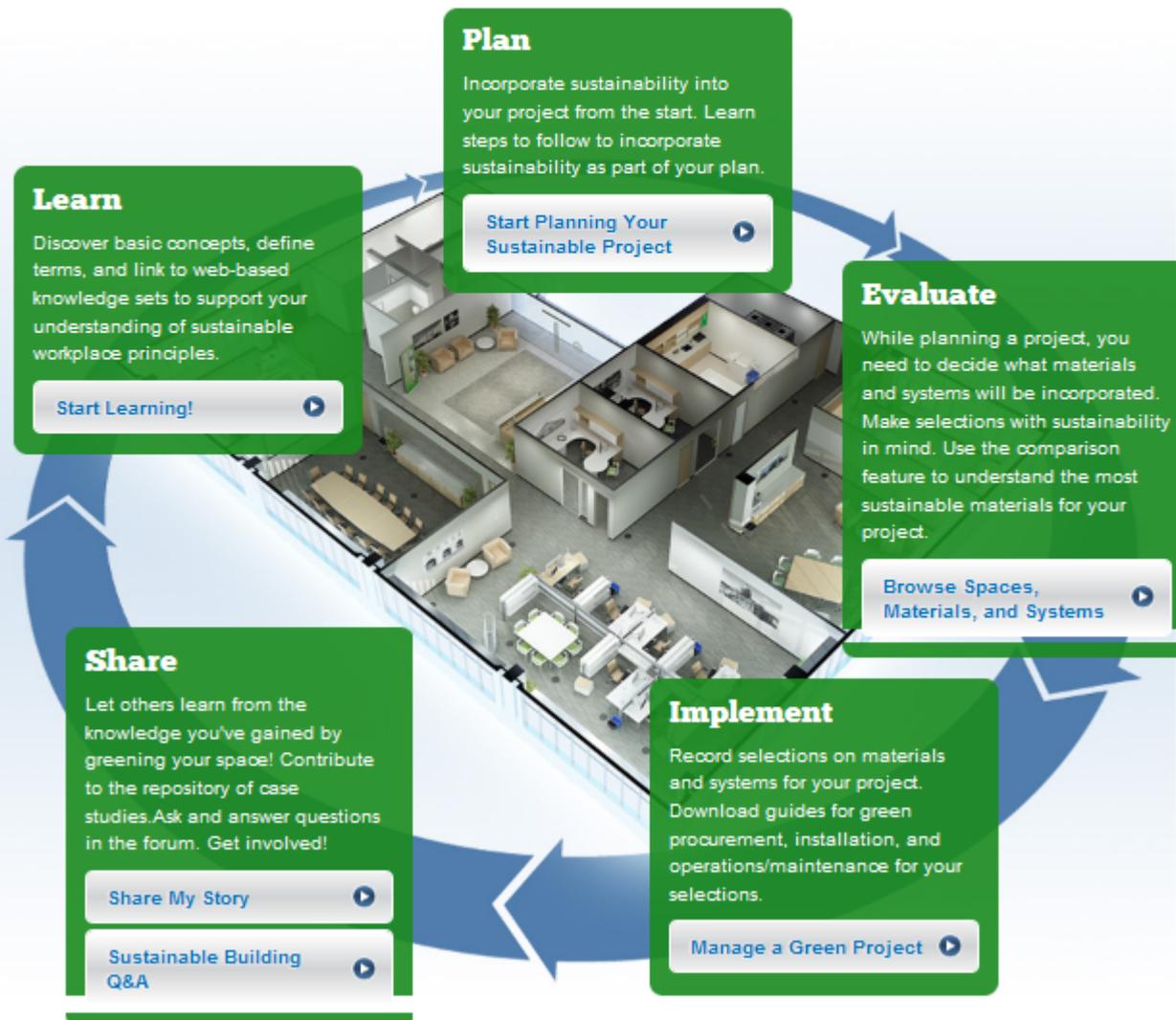
EVALUATE

IMPLEMENT

SHARE

MY PROJECTS

Building sustainable practices one decision at a time



- Create content using existing research (labs, universities, private sector, OFHPGB projects)
- Expand collaborative partnerships to assure the best information is identified and translated to best practices, guidance, stories, case studies, apps
- Link to other valuable content already on the web (DOE, Fed Center, EPA)
- Feed content into the information ecosystem
 - Sustainable Facilities Tool (new whole building component launched in 2012)
 - Interact collaboration site
 - You Tube
 - Meetings/conferences/training with high value audiences
- Create and implement evaluation plan to assess adoption and impact

Green Buildings Certification System Review

- **Provide an objective, independent evaluation of certification systems**
- **Why?**
 - Sections 433(h) & 436(h) require identification of “a green building certification system [deemed] to be most likely to encourage a comprehensive and environmentally sound approach to ratification of green buildings” in the federal sector.

- **Independence** – assessors have no stake in outcome
- **Availability** – assessors are available to review buildings
- **Verification** – documented verification method
- **Transparency** – documented approach for inclusion of public comments in standard development and updates
- **Consensus based** – per OMB circular A-119
- **National Recognition** – recognized academically, within private market & federal sector
- **System Maturity** – effective links to latest
- **Robustness** - efficient and sustainable use of water, energy, and other natural resources; criteria for these and following categories meet federal requirements: IEQ, building system controls, siting, integrated design, renewable energy
- **Tools & standards** - components to track performance post occupancy; consistently updated
- **Usability** – affordable, technical knowledge to use the system is readily available, well defined & easily understood, professional rigor

- EOs 13423 and 13514 & HPGB Guiding Principles establish high performance requirements for new and existing federal facilities.
- Developed additional performance criteria for this review.

- **Measured Use**
 - Requires quantitative information about the applicable metric based on *measured or monitored* consumption or generation data.
- **Calculated Use**
 - Requires calculations of consumption or generation based on *assumptions* about the design or operation of the applicable metric.
- **Evidence of Intent or Activities**
 - Requires documentation of *plans, policies, or implementation activities*.

Table 4-10 Meet a Current Federal Requirement for EB

Robustness - Others			
Integrated Assessment, Operation and Management	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Commissioning	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Robustness - Water			
Indoor Water	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Process Water	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Outdoor Water	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Stormwater	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Water-Efficient Products	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Robustness - Energy			
Energy Efficiency	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
On-Site Renewable Energy	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Measurement and Verification	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Benchmarking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Robustness - Materials			
Recycled Content	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Biobased Content	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Environmentally Preferable Products	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Waste and Materials Management	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Ozone Depleting Compounds	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Low-Emitting Material	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Robustness - Indoor Environment			
Ventilation	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Thermal Comfort	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Daylighting	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Environmental Tobacco Smoke Control	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Moisture Control	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Protect Indoor Air Quality during Construction	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

- **Draft report to OFHPGB**
 - QA, frame questions for discussion of recommendations
 - Sustainability Council representation welcome
- **Convene interagency group, including major portfolio holders, to review final draft report**
 - 2-3 hour virtual “slam”
 - EISA Advisory Board input
- **Continue discussion with interagency group to formulate recommendations, including relationships with**
 - ASHRAE 189.1
 - HPGB Guiding Principle revisions
- **Recommendation to DOE by December 30, 2011**