



# The Second U.S.-China Energy Efficiency Forum

## Energy Management Standards and Implementation

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# The Second U.S.-China Energy Efficiency Forum

Lawrence Berkeley National Laboratory

## DOE's Industrial Technologies Program

Improve national energy security, climate, environment, and economic competitiveness by transforming the way U.S. industry uses energy.



### Research & Development

Develop advanced technologies addressing the top energy savings opportunities across industry



### Technical Assistance

Help plants save energy today by assessing opportunities and facilitating adoption of best energy management practices

**Save**  
**ENERGY**  
**Now**



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## Potential Energy Benefits Are Largely Unrealized

- Time and again, industrial energy efficiency has been demonstrated to be *cost effective* while having a positive effect on productivity
- Despite this, energy efficiency improvements with very favorable payback periods often *do not get implemented*
- Even projects that are implemented may *not be sustained* due to lack of supportive operational and maintenance practices
- Energy efficiency is still viewed during hard times as *a luxury that industry can't afford*, rather than a strategic investment in future profitability

**Problem:** *Energy efficiency is not integrated into daily management practices.*

**Solution:** *Top management needs to be engaged in the management of energy on an ongoing basis.*



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## Superior Energy Performance

A market-based, ANSI/ANAB-accredited certification program that provides industrial and commercial facilities with a roadmap for achieving continual improvement in energy efficiency while boosting competitiveness.

### Goals:

- Drive continual improvement in energy performance
- Develop a transparent system to validate energy performance improvements and management practices
- Encourage broad participation throughout industry
- Support and build the energy efficiency market and workforce



Superior Energy Performance for industry will be launched nationwide later in 2011.



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## Superior Energy Performance Strategy

- Foster a corporate culture of **continuous improvement** in energy efficiency
- Use **ISO 50001** standard as foundational tool for energy management
- Establish a **tiered program** that provides an entry point for companies at all levels of experience with energy management
- Create a **verified record** of energy performance improvement.
- Potentially **create value** for corporate energy savings and carbon reductions in utility, state, regional, national, and international trading markets





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## U.S. Council for Energy-Efficient Manufacturing

- Acts as champion of U.S. industry in pursuing national energy efficiency goals.
- Seeks to improve the energy intensity of U.S. manufacturing through a series of initiatives.
- Guides development of **Superior Energy Performance**.



*Texas Industries of the Future*



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## ISO 50001 - Energy Management Standard

ISO 50001 energy management standard will establish a framework for industrial and commercial facilities and organizations to manage energy.

**Potential impacts:** Could influence up to 60% of the world's energy use across many economic sectors.

- Requires an organization to establish, implement, maintain, and improve an energy management system, enabling **systematic** achievement of **continual improvement in energy performance**, energy efficiency, and energy conservation.
- **Imposes requirements on energy supply and consumption:**
  - Measurement
  - Documentation and reporting
  - Design and procurement practices for energy-using equipment and systems
  - Processes and personnel
- Applies to **all factors that can be monitored and influenced** by the organization to affect energy use.
- **Does not prescribe specific performance criteria** with respect to energy.



### Status of ISO 50001

- Under development by ISO Project Committee 242; United States and Brazil lead effort with United Kingdom and China
- 56 countries participating, 13 of which are observing
- Final Draft International Standard (FDIS) released March 2011
- Ready for publication by August 2011

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## Getting Superior Energy Performance Certified

### Certification Requirements:

An ANSI/ANAB-accredited Verification Body will conduct a third-party audit to verify that the following requirements are met:

1. Energy Management System Conformance to ISO 50001 Energy Management Standard
2. Energy Performance Improvement



**ISO 50001 is a foundational tool that any organization can use to manage energy.**

### ISO 50001

Components in place:

- Baseline
- Policy
- Plan
- Team/Leader



### Superior Energy Performance

Single facility ISO 50001 conformance with validated energy performance improvement

### ISO 50001







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## Superior Energy Performance Program Design

**The two-tiered approach accommodates:**

- Maturity of facility's energy management program
- Level of external validation desired
- Business climate/cycle

### Two Program Tiers

#### **Partner**

##### *Self Declaration*

##### Criteria

- Conformance to ISO 50001
- Measure and audit energy performance improvement

##### Performance Levels

- Energy performance improvement required

##### Method of Verifying Results

- Self Declaration

#### **Certified Partner**

##### *ANSI/ANAB-accredited certification*

##### Criteria

- Conformance to ISO 50001
- Measure, verify, and certify energy performance improvement

##### Performance Levels

- Energy performance improvement required, minimum requirements set by program
- Two Pathways Available: Energy Performance or Mature Energy

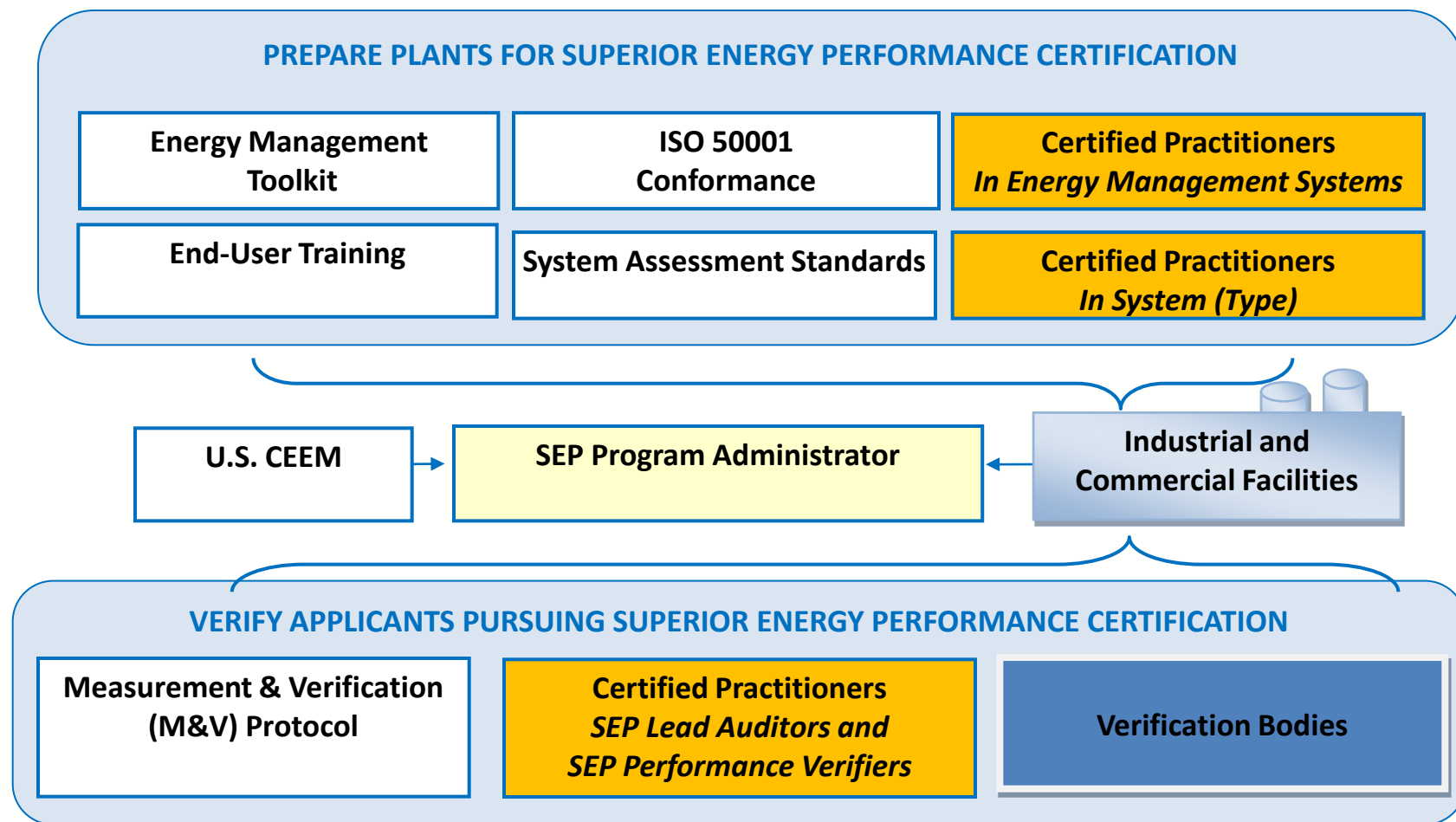
##### Method of Verifying Results

- ANSI/ANAB-accredited certification with on-site visit



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## Superior Energy Performance Program Design





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## Energy Management Pilot and Demonstration Projects

### Texas Pilot Project, 2008-2010:

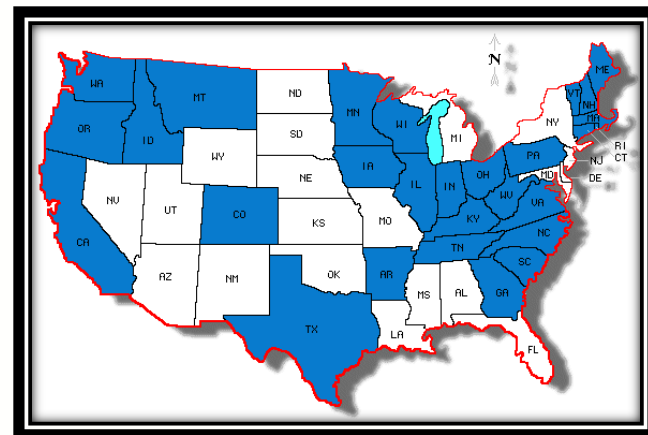
DOE worked with the University of Texas at Austin to pilot Superior Energy Performance in Texas facilities.

- Field tested elements of Superior Energy Performance
- Conducted audits using ANSI MSE and M&V Protocol
- Established the first ANSI/ANAB-accredited Verification Body for Superior Energy Performance

First facilities certified to Superior Energy Performance	Performance Level
<b>Cook Composites and Polymers Co.</b> Houston, Texas	<b>Gold</b>
<b>Freescale Semiconductor, Inc.</b> West Austin, Texas	<b>Silver</b>
<b>Owens Corning</b> Waxahachie, Texas	<b>Silver</b>
<b>Union Carbide, subsidiary of the Dow Chemical Co.</b> Texas City, Texas (manufacturing facility)	<b>Platinum</b>
<b>Union Carbide, subsidiary of the Dow Chemical Co.</b> Texas City, Texas (energy systems facility)	<b>Silver</b>

### Energy Management Demonstrations

- Conduct State/Regional Energy Management Demonstration Projects in 23 states
- Provide *Save Energy Now* LEADER Companies with a roadmap
- Test the elements of Superior Energy Performance.
- Build energy management expertise
- Broaden energy savings in the U.S.





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## Launching Superior Energy Performance

Developed key program elements: ISO 50001, M&V Protocol, system assessment standards, ITP tools & training

Formed U.S. CEEM and developed certification strategy and scheme

Field-test industrial certification program with regional and state partners

Train and qualify Certified Practitioners and Auditors

Select SEP Program Administrator to operate and manage program.

Launch SEP Program (industrial): 10/2011

SEP Program is self-sufficient on fees in 2013

2007

2008

2009

2010

2011

2012

2013

2014





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## Global Superior Energy Performance (GSEP)

- GSEP is conceived as an international network of national government agencies, national-level certification programs, and other public/private sector organizations that will catalyze continuous energy performance improvements in **commercial buildings and industrial facilities** of all performance levels.
- GSEP was announced in July 2010 at the Clean Energy Ministerial, which convened 25 energy ministers from 20 countries and the European Commission.
- The GSEP partnership includes Canada, the European Commission, Finland, France, India, Japan, Korea, Mexico, Russia, South Africa, Sweden, and the United States. Observers include Brazil, Australia, and Hungary.
- The GSEP partnership has 6 working groups: Certification, Cement, Combined Heat and Power (CHP), Cool Roofs and Pavements, Power, and Steel.
- Clean Energy Ministerial provides a forum for countries to share information and take specific steps forward to promote clean energy technologies.





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## GSEP Certification Working Group

- **Purpose:**
  - Assist governments in establishing national-level certification programs by helping to implement required infrastructure (e.g., program administrators, certification bodies, professional training organizations)
  - Harmonize certification programs, to the extent possible
  - Develop tools and training curriculums for the owners and operators of facilities
  - Establish harmonized professional credentialing programs
  - Oversee development and maintenance of a database to track energy performance information from certified facilities in a manner that protects privacy and addresses competitiveness concerns
- **Pilots:** Conducting pilots in industrial and commercial and public buildings
- **Workshop:** Will convene on June 20-21, 2011

### GSEP Working Groups:

1. Cement
2. Certification
3. CHP
4. Cool Roofs and Pavements
5. Power
6. Steel

**Workshop:** All Working Groups will convene in Sept. or Oct. 2011

### Certification Working Group Participants:

- Canada
- European Commission
- France
- India
- Japan
- Korea
- Mexico
- Russia
- South Africa
- Sweden
- United States
- Observers: Brazil, Australia, Hungary



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# Thank You!

Superior Energy Performance:

[www.superiorenergyperformance.net](http://www.superiorenergyperformance.net)

Global Superior Energy Performance:

[www.cleanenergyministerial.org/GSEP/](http://www.cleanenergyministerial.org/GSEP/)