Superior Energy Performance: A Roadmap for Achieving Continual Improvements in Energy Performance

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**Agenda:**
- Superior Energy Performance Overview
- Program Design
- Program Status and Moving Forward
What is Superior Energy Performance?

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

Goals:

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

Superior Energy Performance will be launched nationwide in 2011.
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 intensity/efficiency improvement.
• Potentially create value for corporate energy savings and carbon reductions in utility, state, regional, national, and international trading markets
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.
An ANSI-accredited Certification Body will certify plants in two areas:

1. Energy Management System Conformance –
   ISO 50001 Energy Management Standard

2. Validated Energy Performance Improvement –
   Third-party measurement & verification to show that the facility meets minimum Superior Energy Performance requirements on energy intensity improvements
ISO 50001 - Energy Management Standard

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

Potential impacts:

- Could influence up to 60% of the world’s energy use across many economic sectors

Uptake of ISO 50001 will be driven by companies seeking an internationally recognized response to:

- Corporate sustainability programs
- Energy cost reduction initiatives
- Demand created along the manufacturing supply chain
- Future national cap and trade programs; carbon or energy taxes; increasing market value of “green manufacturing” / reduced carbon footprint
- International climate agreements

Status of ISO 50001
• Under development by ISO Project Committee 242; United States and Brazil lead effort with United Kingdom and China
• Draft International Standard by April 2010
• Ready for publication by mid 2011
ISO 50001 - Energy Management Standard

- 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.

- Designed to be used independently, yet can be aligned or integrated with other management systems (e.g., ISO 90001 and ISO 14001). Applicable to all organizations that use energy.
Benefits of Certification to Manufacturers

• Recognition
  − Public: Recognized leader in sustainable use of energy resources (local and financial community)
  − Supply chain: Customers grant preferred supplier status

• External financial incentives
  − Energy efficiency credits (electric utility & others)
  − Potential carbon credits (state, region, and national)

• Systematic framework for continuous improvement
  − ISO 50001 energy management and ASME system assessment standards
  − Tools and resources to assist implementation and validation of energy performance improvement
Roles within Superior Energy Performance

<table>
<thead>
<tr>
<th>Industry</th>
<th>Government</th>
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<tr>
<td>• Drives strategy through <strong>U.S. Council for Energy Efficient Manufacturing</strong></td>
<td>• Facilitates industry collaboration to develop SEP program: fund program development activities, e.g., standards development, pilot projects</td>
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<td>• Assists in program design through initial pilot plants</td>
<td>• Cost-shares SEP program start-up</td>
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<td>• Adopts the SEP program by getting plants certified to ANSI-accredited SEP program</td>
<td>• Leverages SEP program to deploy Federal energy programs, e.g., <em>Save Energy Now LEADER</em></td>
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Benefits in the Industrial Energy Efficiency Market

**Superior Energy Performance builds and supports the industrial energy efficiency market:**

| Utilities              | • Empowers a plant-wide, systems-oriented approach  
|                       | • Helps justify industrial energy efficiency program investments, including permanent operational changes, to public utility commissions |
| ESCOs                 | • Builds greater credibility with industrial customers and a stronger business case for providing third-party energy efficiency services and off-balance sheet capital investments |
| Supply Chains         | • Provides a pro-active turnkey program for major OEMs and retailers to request their suppliers to meet the program requirements |
Superior Energy Performance Program Design
Superior Energy Performance Program Design

The program accommodates:
• Maturity of plant’s energy management program
• Level of external validation desired
• Business climate/cycle

Three Program Tiers:

- **Partner**  
  *Self-declaration*

- **Registered Partner**  
  *Third party remote verification*

- **Certified Partner**  
  *ANSI-accredited certification*
Superior Energy Performance Program Design

Partner
Criteria
- Conformance with ISO 50001
- Measure and audit energy performance improvement
Performance Levels
- Energy intensity improvement required
Method of Verifying Results
- Self Declaration

Registered Partner
Criteria
- Conformance with ISO 50001
- Measure and verify energy performance improvement
Performance Levels
- Energy intensity improvement required, minimum requirements set by program
- Two Pathways Available: Energy Intensity or Mature Energy
Method of Verifying Results
- Third-party verification via remote review

Certified Partner
Criteria
- Conformance with ISO 50001
- Measure, verify, and certify energy performance improvement
Performance Levels
- Energy intensity improvement required, minimum requirements set by program
- Two Pathways Available: Energy Intensity or Mature Energy
Method of Verifying Results
- ANSI-accredited certification with onsite visit
Performance Levels

Registered and Certified Partners can qualify for Silver, Gold, and Platinum based on:

• Validated energy intensity improvements
• Superior Energy Performance Best Practices Scorecard

Registered Partner
Third party remote verification

Certified Partner
ANSI-accredited certification
Performance Levels Criteria

<table>
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<tr>
<th>Performance Characteristics</th>
<th>Silver</th>
<th>Gold</th>
<th>Platinum</th>
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<tr>
<td><strong>El Pathway</strong></td>
<td><strong>Energy Intensity Improvement</strong></td>
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<td><strong>Energy Intensity Improvement</strong></td>
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<tr>
<td></td>
<td>Meets 5% energy intensity improvement threshold over the last 3 years.</td>
<td>Meets 10% energy intensity improvement threshold over the last 3 years.</td>
<td>Meets 15% energy intensity improvement threshold over the last 3 years.</td>
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<tr>
<td><strong>Mature Energy Pathway</strong></td>
<td><strong>Score on Best Practices Scorecard</strong></td>
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<td></td>
<td><strong>Includes credits for energy management best practices and energy performance beyond the 15% EI improvement over the last 10 years.</strong></td>
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<td>• Meets a score of <strong>at least 35 and up to 60</strong> out of 100 total points for Best Practices Scorecard</td>
<td>• Meets a score of <strong>at least 61 and up to 80</strong> out of 100 total points for Best Practices Scorecard</td>
<td>• Meets a score of <strong>at least 81</strong> out of 100 total points for Best Practices Scorecard</td>
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<td>• Minimum of 25 points required for the energy management best practices.</td>
<td>• Minimum of 25 points required for the energy management best practices and 10 for energy performance.</td>
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Partner Plants that self-declare results are not eligible for silver, gold, or platinum designation.
Best Practices Scorecard

- Plants in the Mature Energy Pathway earn Superior Energy Performance Best Practices Scorecard points to qualify for silver, gold, or platinum designation.
- Scorecard provides some approaches that can be implemented to earn the credits.
- A tool will be available to help users apply the scorecard.

Credits are awarded in seven major categories:

**Energy Management Credits:**
- 1. Energy data, monitoring, and measurement
- 2. Management of significant energy uses
- 3. Energy supply management
- 4. Management of energy projects
- 5. System sustainability

**Energy Performance Credits:**
- 6. Energy intensity reduction
- 7. Innovation in energy performance

*Activities, processes, or procedures that exceed the requirements of American National Standard, ANSI/MSE 2000-2008.*
Program Resources to Help Plants Prepare for Certification

Standards & Protocols:
- Energy Management Standard
- System Assessment Standards
- Measurement & Verification Protocol

Certified Practitioners:
- Energy Management System Practitioners
- System Assessment Practitioners
- SEP Validation Specialists
System Assessment Standards

Four ASME standards provide guidance on conducting an energy-efficiency system assessments. Use of the standards is not required for certification but will help plants define a pathway for achieving energy savings.

Standards address:
- Organizing an assessment
- Conducting an assessment
- Analyzing the data collected and developing efficiency recommendations
- Reporting and documentation

Visit ASME website to purchase standards (print or digital) for $35:
- [www.asme/codes/](http://www.asme/codes/) (type “EA-“ in search box)
- Compressed air standard will be released in April, other three are already available

Corresponding guidance documents will be available in spring/early summer.
Measurement and Verification Protocol

• The Superior Energy Performance Measurement and Verification (M&V) Protocol is a methodology to:
  1. Verify results and impact from implementing the energy management standard.
  2. Quantify energy savings from specific measures or projects.
  3. Track energy intensity changes over time for the overall manufacturing facility

• The M&V protocol will also:
  – Document normalized energy performance indicators, such as Btu per pound of product.
  – Validate energy savings so that reported savings can be used to determine carbon impact.
Proposed M&V Validation Rigor

Utility Validation Requirements

Carbon Trading Validation Requirements
Appropriate application of the energy management standard, system assessment standards, and the M&V Protocol will require significant training and skill. Superior Energy Performance will help to build this workforce.

ANSI-accredited professional certification programs are planned for three types of Certified Practitioners:

- **Energy Management System Practitioner**: Help plants implement the ISO 50001 energy management standard
- **System Assessment Practitioner**: Perform compressed air, process heating, pumping, or steam system assessments using ASME system assessment standards to help plants meet the SEP energy intensity improvement criteria
- **SEP Validation Specialist**: Perform third-party audits to verify a plant’s conformance to the Superior Energy Performance requirements

Certified Practitioners in Energy Management
- First class in November 2011
- Sign up on Superior Energy Performance website

http://www.superiorenergyperformance.net/certified_practitioners.html
Becoming a Superior Energy Performance Plant

1. Sign up to become SEP candidate. Select tier and performance level.

2. Receive preparatory materials and guidance from SEP Program Administrator.

3. Prepare application and request a review when ready to demonstrate that conformance to energy management standard and energy performance are met.

The review process varies by the tier selected.
Partner: Self Declaration

Steps:

- Sign up to become a SEP Partner
- Prepare application and validate application via internal audit
- Submit application including internal audit results to SEP Program Administrator
- SEP Program Administrator issues SEP Partner certificate

Internal Audit:
- Conforms to energy management standard
- Achieved own target for energy intensity improvement
Three Tiers Require Different Methods of Verification

- **Partner**
  - Self-declaration

- **Registered Partner**
  - Third party remote verification through SEP Validation Specialist

- **Certified Partner**
  - ANSI-accredited Certification through ANSI-accredited Certification Body
Plants Applicants: Resources and Verification

**U.S. CEEM**
Oversee SEP Program Administrator and provide program guidance.

**SEP Program Administrator**
Manage and operate program, communicate with organizations involved, process applications, and issue certificates.

**ANSI**
Accredit Certification Bodies and Personnel Bodies.

**Personnel Training Organizations (ANSI-accredited)**
Deliver training courses for credentialing exam.

**Personnel Certification Bodies (ANSI-accredited)**
Deliver exams and issue personnel certifications.

**Certification Bodies (ANSI-accredited)**
Assign SEP Validation Specialists for Registered and Certified Partners, perform third-party audit.

**Certified Practitioners (ANSI-accredited certified)**
In Energy Management System
Assist plants in conforming to ISO 50001 and SEP requirements.

**Certified SEP Validation Specialists (ANSI-accredited certified)**
In System Assessments
Assist plants in assessing energy efficiency opportunities in various types of energy systems.

Perform third-party audit of conformance to ISO 50001 and SEP program requirements for Registered and Certified Partners.
Accreditation and Certification

U.S. CEEM
Oversee SEP Program Administrator and provide program guidance

SEP Program Administrator
Manage and operate program, communicate with organizations involved, process applications, and issue certificates.

ANSI
Accredit Certification Bodies and Personnel Bodies

Personnel Certification Bodies
(ANSI-accredited)
Deliver exams and issue personnel certifications.

Personnel Training Organizations
(ANSI-accredited)
Deliver training courses for credentialing exam

Certification Bodies
(ANSI-accredited)
Assign SEP Validation Specialists for Registered and Certified Partners, perform third-party audit

Certified Practitioners
(ANSI-accredited certified)
In Energy Management System
Assist plants in conforming to ISO 50001 and SEP requirements

In System Assessments
Assist plants in assessing energy efficiency opportunities in various types of energy systems

Certified SEP Validation Specialists
(ANSI-accredited certified)
Perform third-party audit of conformance to ISO 50001 and SEP program requirements for Registered and Certified Partners
Registered Partner: Remote Review

Steps:

- Sign up to become a SEP Registered Partner
- Choose energy performance level (silver, gold, or platinum)
- Prepare application and submit to SEP Program Administrator
- Participate in remote review conducted by ANSI-accredited SEP Validation Specialist
- Receive SEP Registered Partner certificate from SEP Program Administrator
Steps:

- Sign up to become a SEP Certified Partner
- Choose energy performance level (silver, gold, or platinum)
- Prepare application and submit to SEP Program Administrator
- Participate in on-site review conducted by ANSI-accredited Certification Body
- SEP Program Administrator issues SEP Certified Partner certificate
Program Status and Moving Forward
Superior Energy Performance Development Status

Overall

- Developed Superior Energy Performance program strategy, prototype criteria and program scheme with the U.S. Council for Energy Efficient Manufacturing
- Established pilot program with five Texas plants and five Northwest plants
- Created certification schemes: energy intensity and mature program pathways

Energy Management Standard

- Developed training and coaching materials for five pilot plants on MSE 2008
- Formed U.S./ANSI Technical Advisory Group; participated in three ISO PC 242 meetings to create ISO 50001 Draft International Standard (DIS)

System Assessment Standards

- Published three ASME standards (pump, steam, and process heating) fourth standard (compressed air) to be published in April 2010.
- Field tested standards and guidance based on industry feedback

Measurement & Verification Protocol

- Produced measurement and verification (M&V) protocol to baseline and measure energy intensity performance improvement
- Produced Best Practices Scorecard to assess maturity of plant’s energy management program
Texas Pilot Project, 2008-2010

Since May 2008, DOE has worked with the University of Texas at Austin to pilot the elements of Superior Energy Performance.

Goal: Verify the processes, standards, and performance criteria as:
- Practical and achievable
- Beneficial to participating plants
- Effective in identifying plants that meet the proposed program criteria

Texas pilot plants will be the first plants certified by Superior Energy Performance

- January - July 2010: Conduct audits (both remote review and on-site) using ANSI MSE and M&V Protocol
- This process will also establish the first ANSI-accredited Certification Body for Superior Energy Performance
Energy Management Demonstration Projects

DOE’s Industrial Technologies Program is conducting State/Regional Energy Management Demonstration Projects in support of *Save Energy Now LEADER* and Superior Energy Performance.

**Energy Management Demonstration Goals:**

- **Provide *Save Energy Now LEADER* Companies with a roadmap** to achieve ambitious goals to reduce industrial energy intensity.
- **Test the elements of Superior Energy Performance.**
- **Build energy management expertise** at the regional, state, and plant level by showcasing lessons learned and best practices.
- **Broaden energy savings** throughout the nation.

**Anticipated Roll Out Dates**

- **2009:** Northwest region initiated energy management demonstration projects
- **Spring/Summer 2010:** Southeast, Midwest, Mid-Atlantic, Northeast regions, Pennsylvania, South Carolina, Wisconsin
- **Summer/Fall 2010:** California, Colorado
- **Fall 2011:** Texas (2nd round)
Save Energy Now LEADER

- Voluntarily pledge to reduce energy intensity by 25% or more over 10 years
- Make continuous improvements in energy efficiency and carbon reduction as part of a robust business strategy
- Gain enhanced access to enabling resources: tailored technical assistance, training, assessments, and more
- Receive high-level recognition for participation and achievements

Reduced energy costs and carbon emissions
Industry Progression toward Higher Energy Performance

Save Energy Now LEADER Program
Provides resources to companies (usually multiple facilities) that pledge to reduce their energy intensity 25% in 10 years. Guidance and tools can also help plants and companies gain ISO and SEP certification.

Superior Energy Performance
Single facility ISO 50001 conformance with validated energy performance improvement

ISO 50001
Components in place:
- Baseline
- Policy
- Plan
- Team/Leader

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

ISO 50001
Tools
Assessments
Training
Tech. Assist.
Recognition
Improved Energy Management
Superior Energy Performance Program Administrator

- The SEP Program Administrator will manage and operate Superior Energy Performance on behalf of U.S. CEEM. Activities include but are not limited to:
  - Develop a business plan for a self-sustaining, fee-based program.
  - Act as the public face for the SEP program, including interface with manufacturing organizations and maintenance of the SEP program website.
  - Manage application of manufacturing plants into the SEP program.
  - Maintain all documents and records pertaining to the program.

- On Feb. 24, 2010, DOE issued a Funding Opportunity Announcement (FOA) for organizations interested in serving as the SEP Program Administrator.

- See DOE Industrial Technologies Program news announcement about the FOA: [http://www1.eere.energy.gov/industry/index.html](http://www1.eere.energy.gov/industry/index.html)

- Applications are due on May 6, 2010
Major Milestones: 2009-2013

- **Nov. 2009**: M&V protocol ready for pilot plant application
- **Dec. 2009**: Request applications from initial Texas plants
- **Jan. 2010**: First plant applies to SEP program
- **March 2010**: Hold state-regional Energy Management demo workshop
- **March 2010**: Complete first plant on-site audit and review of conformance to SEP program requirements
- **July 2010**: Texas pilot plants certified through ANSI-accredited Certifying Body
- **Sept. 2010**: Select SEP Program Administrator by conducting DOE solicitation
- **Oct. 2010**: Identify accredited professional certification body for Certified Practitioner in four system areas
- **Jan 2011**: Identify professional training organizations (PTOs) for certified energy management system practitioners
- **March 2011**: Identify PTOs for certified SEP validation specialists
- **June 2011**: Identify PTOs for certified system assessment practitioners
- **Apr. 2011**: ISO 50001 Energy Management Standard published; replaces ANSI standard
- **May 2011**: Begin certified energy management system practitioner and SEP validation specialist training through PTOs
- **June 2011**: National launch of Superior Energy Performance Program
- **July 2011**: Begin certified system assessment practitioner training in four system areas through PTOs
- **June 2013**: SEP program self-sustaining on program fees
For More Information:

Superior Energy Performance:
www.superiorenergyperformance.net

DOE Energy Management Demonstrations:
http://www1.eere.energy.gov/industry/energymanagementdemonstrations/

Today’s webcast presentation and audio available next week:
http://www1.eere.energy.gov/industry/resources/thursday_webcasts.html
NEXT WEBCAST

- Thursday, April 1st, 2PM eastern
- Pew Research Center

From Shop Floor to Top Floor: Best Business Practices in Energy Efficiency

Andre de Fontaine