

Superior Energy Performance:

Certifying Plants for Achieving Continual Improvements in Energy Performance

Industrial Energy Technology Conference

May 22, 2010

Kathey Ferland
Texas Industries of the Future
The University of Texas at Austin

kferland@mail.utexas.edu

512-232-4823



Texas Industries of the Future

Superior Energy Performance

Agenda:

- Background
- Program Design
- Texas Pilot Project
- 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**.



Superior Energy Performance Certification

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 140001). 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
- Tools and resources to assist implementation and validation of energy performance improvement

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*

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

- Validated energy intensity improvements
- SEP Best Practices Scorecard

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

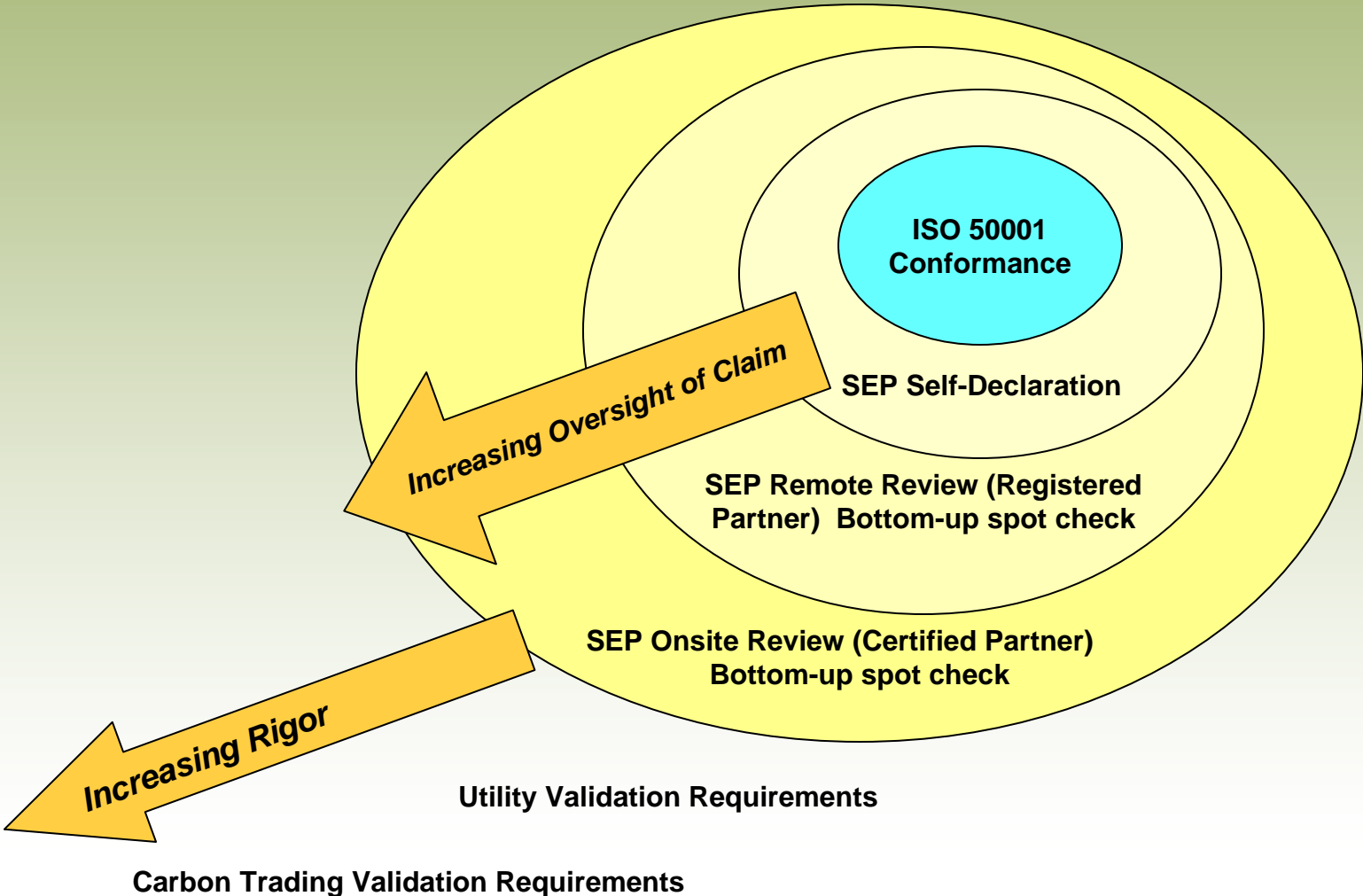
Method of Verifying Results

- ANSI-accredited certification with onsite visit

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



Infrastructure Resources that Support Certification

Standards & Protocols:

Energy Management Standard



System Assessment Standards



Measurement & Verification Protocol

Certified Practitioners

Energy Management System Practitioners

System Assessment Practitioners

SEP Validation Specialists

Texas Pilot Project

Pilot Project Contributors



U.S. Department of Energy

Energy Efficiency and Renewable Energy



OAK RIDGE NATIONAL LABORATORY

Managed by UT-Battelle for the Department of Energy

U.S. Council on Energy Efficient Manufacturing



**Georgia
Tech**



Enterprise
Innovation
Institute



Texas Industries of the Future

Pilot Project Participants

- Cook Composites and Polymers Co. Houston Plant



- Freescale Semiconductor Inc. Oak Hill Plant



- Owens Corning Waxahachie Plant



- Union Carbide's Texas City Operations



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

Successes from the Texas Pilot

- M&V has verified savings of 6 to 14 % at two participating plants.
- System assessment recommendations using the ASME standards led to immediate and near term cost savings
- Structured analysis of data using statistical methods facilitated opportunity identification and better process control
- Creation of a cross-functional team in energy management a real plus!
- Integration of Energy Management System into existing management system structures worked very well



Lessons Learned

- Bring your organization's management system expert in early.
- Communicate, communicate, communicate...to plant personnel and management.
- The visibility to and support by high level plant management raised the stakes for the energy program.
- Even in a down economy, there were savings to be realized. In fact, this spurred creativity.

Moving Forward

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)

Major Milestones: 2010-2013

- **March-Aug. 2010:** Application of M&V protocol at pilot plants.
- **Summer 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 for certified energy management system practitioners
- **March 2011:** Identify professional training organizations (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/](http://www1.eere.energy.gov/industry/energymanagementdemonstrations/)