Superior Energy Performance:

A Roadmap for Achieving Continual Improvements in Energy Performance

March 4, 2010

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Superior Energy Performance

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.**

Getting Superior Energy Performance Certified

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.

International Organization for Standardization

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.

ISO International Organization for Standardization

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

Industry

- Drives strategy through **U.S. Council for Energy Efficient Manufacturing**
- Assists in program design through initial pilot plants
- Adopts the SEP program by getting plants certified to ANSI-accredited SEP program

Government

- Facilitates industry collaboration to develop SEP program: fund program development activities, e.g., standards development, pilot projects
- Cost-shares SEP program start-up
- Leverages SEP program to deploy Federal energy programs, e.g., *Save Energy Now* LEADER

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	Registered Partner	Certified Partner
Self-declaration	*Third party remote verification*	*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

SILVER

GOLD

PLATINUM

Registered Partner
Third party remote verification

Certified Partner
ANSI-accredited certification

Performance Levels Criteria

Performance Characteristics		Silver	Gold	Platinum
EI Pathway	**Energy Intensity Improvement**	Meets **5%** energy intensity improvement threshold over the last 3 years.	Meets **10%** energy intensity improvement threshold over the last 3 years.	Meets **15%** energy intensity improvement threshold over the last 3 years.
Mature Energy Pathway	**Energy Intensity Improvement**	Demonstrates an energy intensity improvement of **15%** or more over the last **10** years.	Demonstrates an energy intensity improvement of **15%** or more over the last **10** years.	Demonstrates an energy intensity improvement of **15%** or more over the last **10** years.
	Score on Best Practices Scorecard *Includes credits for energy management best practices and energy performance beyond the 15% EI improvement over the last 10 years.*	• Meets a score of **at least 35 and up to 60** out of 100 total points for Best Practices Scorecard • Minimum of 25 points required for the energy management best practices.	• Meets a score of **at least 61 and up to 80** out of 100 total points for Best Practices Scorecard • Minimum of 25 points required for the energy management best practices and 10 for energy performance.	• Meets a score of **at least 81** out of 100 total points for Best Practices Scorecard • Minimum of 25 points required for the energy management best practices and 10 for energy performance.

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:*

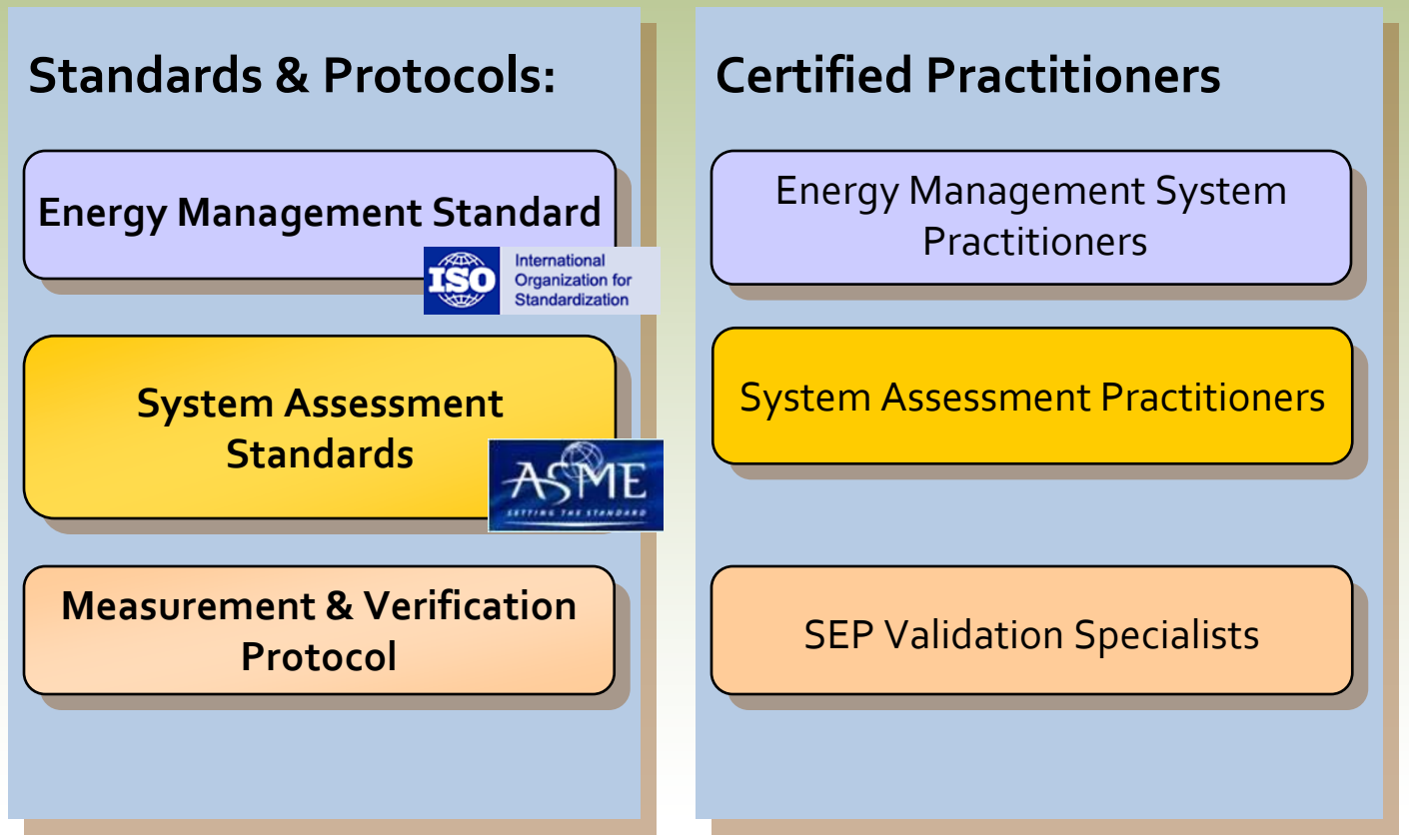
1. Energy data, monitoring, and measurement
2. Management of significant energy uses
3. Energy supply management
4. Management of energy projects
5. System sustainability

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



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.

Initial Four Standards:
- Pumping
- Compressed Air
- Steam
- Process Heating

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:

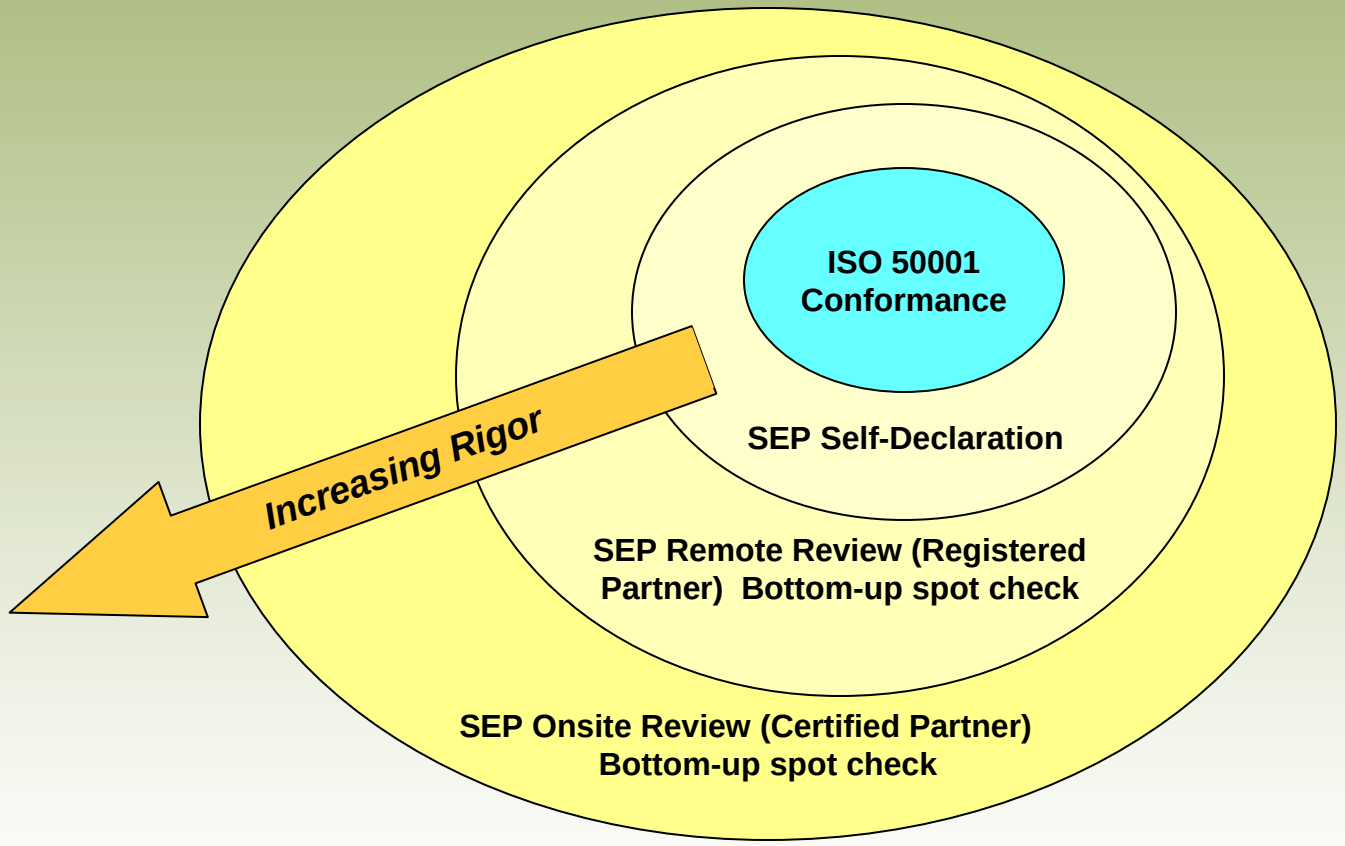
- www.asme/codes/ (type "EA-" in search box)
- Compressed air standard will be released in April, other three are already available

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

Certified Practitioners

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

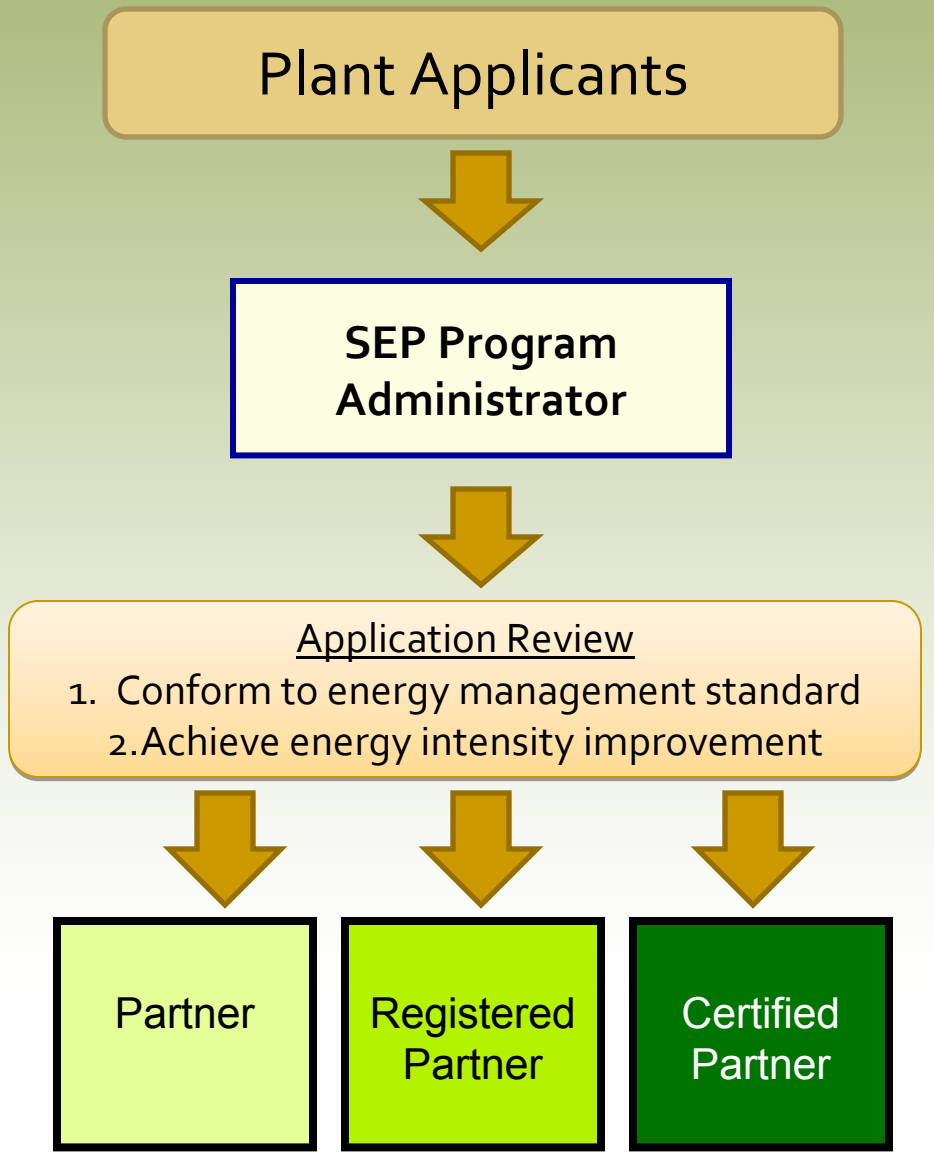
- First class in November 2011
- Sign up on Superior Energy Performance website

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

Partner
Self-declaration

SEP Program Administrator

Internal Audit:

- Conforms to energy management standard
- Achieved own target for energy intensity improvement

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

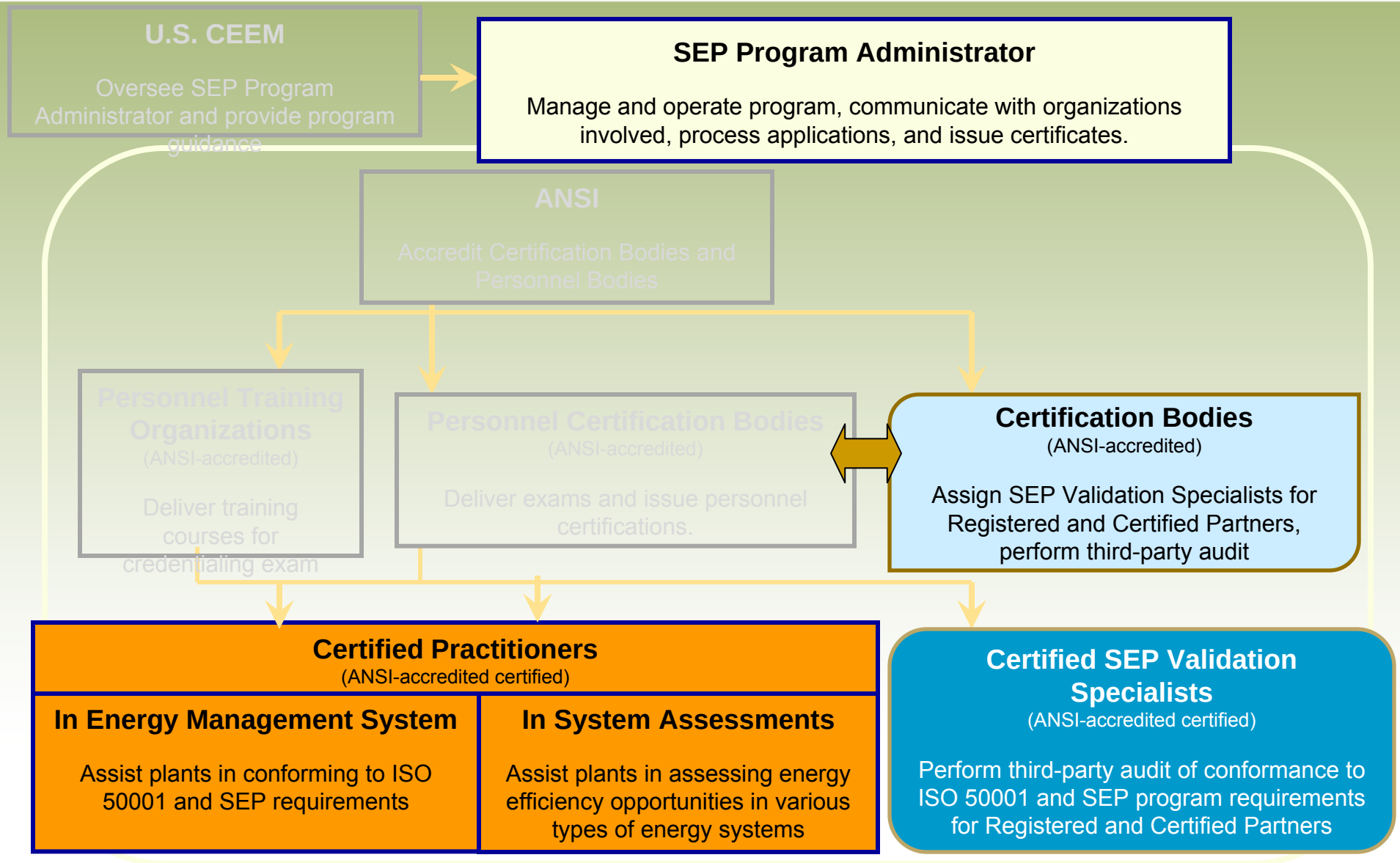
Three Tiers Require Different Methods of Verification

Partner
Self-declaration

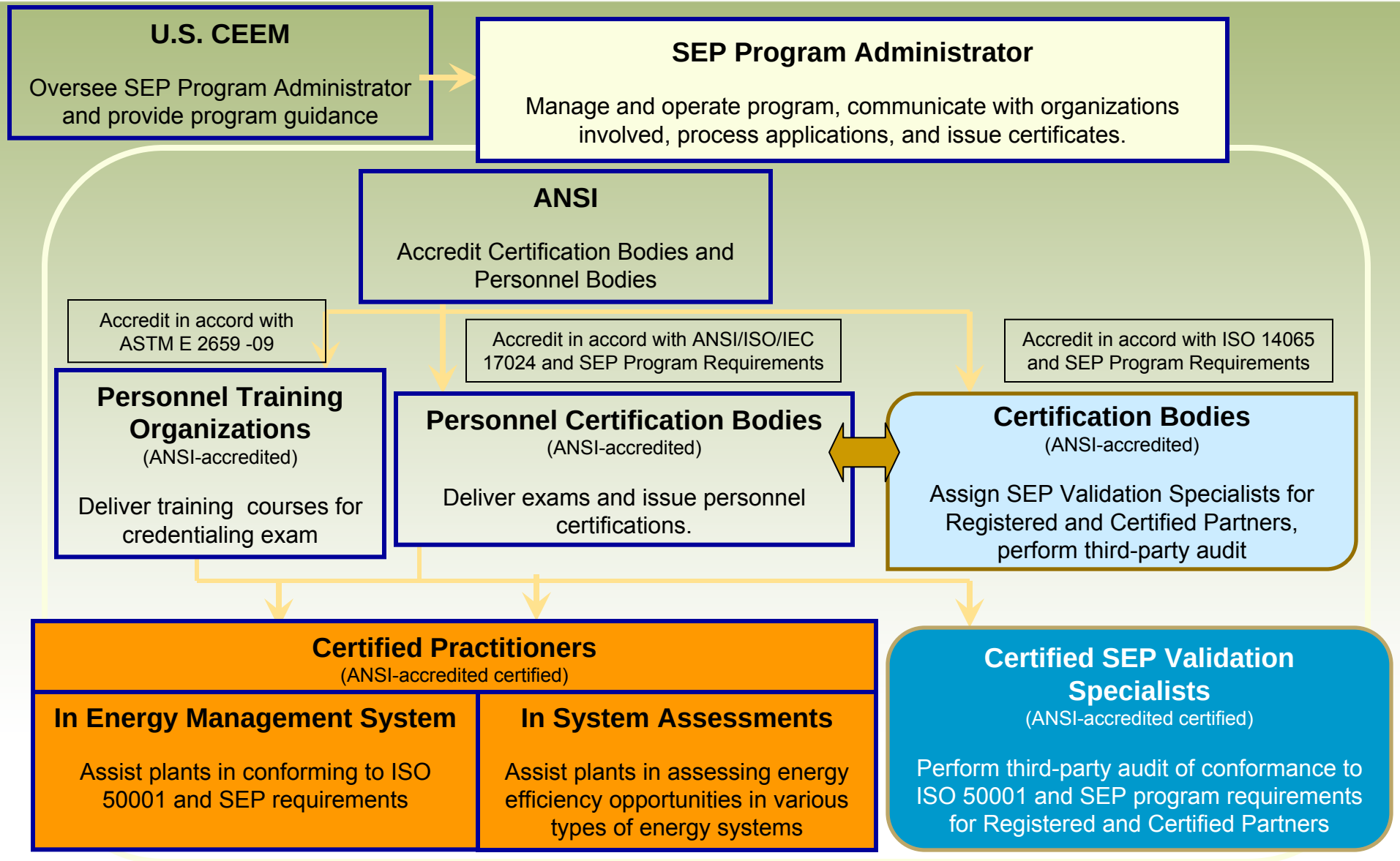
Registered Partner
Third party remote verification through SEP Validation Specialist

Certified Partner
ANSI-accredited Certification through ANSI-accredited Certification Body

Plants Applicants: Resources and Verification



Accreditation and Certification



Registered Partner: Remote Review

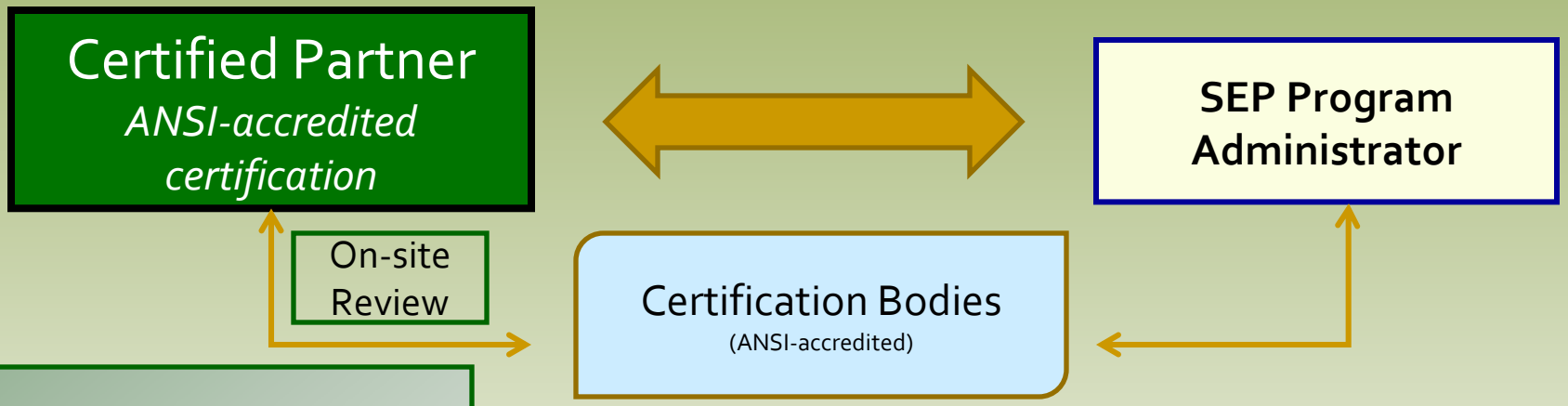
Remote Review:

- Conforms to energy management standard
- Achieved energy intensity improvement
- (Score on SEP Best Practices Scorecard, if applicable)

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

Certified Partners: ANSI-accredited Certification



On-site Review:

- Conforms to energy management standard
- Achieved energy intensity improvement
- (Score on SEP Best Practices Scorecard, if applicable)

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	• Revised ANSI Management System for Energy (2008) • 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 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

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

ISO 50001

Components in place:

- Baseline
- Policy
- Plan
- Team/Leader

ISO 50001

Superior Energy Performance

Single facility ISO 50001 conformance with validated energy performance improvement

***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.

- Recognition
- Tech. Assist.
- Training
- Assessments
- Tools

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
- 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