

Superior Energy Performance^{cm}: A Roadmap for ISO 50001 Implementation



**Superior Energy Performance and
ISO 50001: Future opportunities for
IAC students**

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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

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

- Developed by ISO Project Committee 242; United States and Brazil lead effort with United Kingdom and China
- 56 countries participating, 13 of which are observing
- Published June 15, 2011
- ISO PC 242 transitioned to TC 242, developing standards and guidance related to implementation of ISO 50001

Key Elements of ISO 50001

1. **Energy policy** representing top management's official statement of the organization's commitment to managing energy.
2. **Cross-divisional management team** led by a representative who reports directly to management and is responsible for overseeing the implementation of the energy management system (EnMS).
3. **An energy planning process** to assess energy uses and identify opportunities for improvement.
4. **A baseline** of the organization's energy use.
5. **Identification of energy performance indicators (EnPIs)** that are unique to the organization and are tracked to measure progress.
6. **Energy objectives and targets** for energy performance improvement at relevant functions, levels, processes or facilities within an organization.
7. **Action plans** to meet those targets and objectives.
8. **Operating controls and procedures** to address all aspects of energy purchase, use, and disposal.
9. **Measurement, management, and documentation** for continuous improvement for energy efficiency.
10. **Internal audits and periodic reporting of progress** to management based on these measurements.

Industry and Energy Management

- *Significant (10-30 percent) energy efficiency in industry can be achieved* through operational changes in how energy is managed in an industrial facility; installation of new technologies will further improve energy efficiency;
- Actively managing energy requires an *organizational change in culture*
- *Top management needs to be engaged* in the management of energy on an ongoing basis.
- At its core, energy management requires a group of people to *change their behavior* and *sustain the change*

Scope of energy management

facilities

equipment

personnel

systems

processes

What is 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 in early 2012.

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 (5% minimum over 3 years)



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



Superior Energy Performance

Single facility ISO 50001 conformance with validated energy performance improvement

ISO 50001



SEP Performance Criteria for Certification Levels

| Performance Characteristics | | Silver | Gold | Platinum |
|-----------------------------------|--|---|---|--|
| Energy Performance Pathway | Energy Performance Improvement | Meets 5% energy performance improvement threshold over the last 3 years. | Meets 10% energy performance improvement threshold over the last 3 years. | Meets 15% energy performance improvement threshold over the last 3 years. |
| Mature Energy Pathway | Energy Performance Improvement | Demonstrates an energy performance improvement of 15% or more over the last 10 years. | Demonstrates an energy performance improvement of 15% or more over the last 10 years. | Demonstrates an energy performance improvement of 15% or more over the last 10 years. |
| | Score on Best Practice Scorecard <i>Includes credits for energy management best practices and energy performance improvements beyond 15% over the last 10 years.</i> | <ul style="list-style-type: none"> Meets a score of at least 35 and up to 60 out of 100 total points for Best Practice Scorecard Minimum of 25 points required for the energy management best practices. | <ul style="list-style-type: none"> Meets a score of at least 61 and up to 80 out of 100 total points for Best Practice Scorecard Minimum of 25 points required for the energy management best practices and 10 for energy performance. | <ul style="list-style-type: none"> Meets a score of at least 81 out of 100 total points for Best Practice Scorecard Minimum of 25 points required for the energy management best practices and 10 for energy performance. |

Personnel Certification

Qualified Workforce

1. **Certified Practitioner in Energy Management Systems:** Helps facilities implement the ISO 50001 Energy management system standard and prepare for SEP application
2. **ISO 50001 Auditor:** conducts third party audit of facilities for conformance with ISO 50001
3. **SEP Lead Auditor:** leads team conducting third-party audit of facilities seeking to become SEP Certified Partners; verifies conformance to ISO 50001 and SEP Additional Requirements (future ANSI MSE 50021)
4. **SEP Performance Verifier:** Audit team member qualified to verify the energy performance improvement of facilities seeking to become SEP Certified Partners
5. **Certified Practitioner in Systems:** Perform compressed air, process heating, pumping, or steam system assessments using ASME standards to help plants meet the SEP energy performance improvement criteria

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
- **Certified the first plants to Superior Energy Performance**

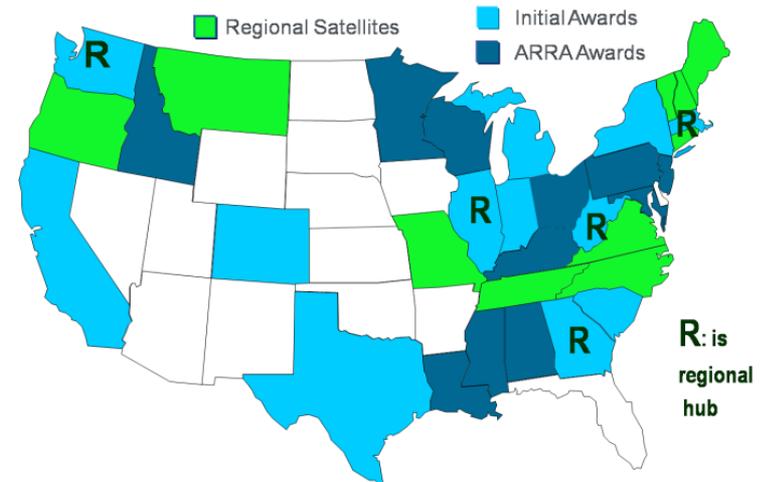


| First facilities certified to Superior Energy Performance | % Energy Performance Improvement |
|---|----------------------------------|
| Cook Composites and Polymers Co. Houston, Texas | 14.9 |
| Freescale Semiconductor, Inc. West Austin, Texas | 6.5 |
| Owens Corning Waxahachie, Texas | 9.6 |
| Union Carbide, subsidiary of the Dow Chemical Co. Texas City, Texas (manufacturing facility) | 17.1 |
| Union Carbide, subsidiary of the Dow Chemical Co. Texas City, Texas (energy systems facility) | 8.1 |

Superior Energy Performance Demonstrations

States, regions, and utilities are partnering with the U.S. DOE to further **test Superior Energy Performance** and to **build energy management expertise**.

- First five facilities certified in Texas with savings of 6.5% to 17% over 3 years
- Demonstrations and pilots completed or underway with 34 companies in 19 states



Current Industrial Participants:

- | | | | |
|---------------------------------------|--------------------------------|-----------------------------|---------------------------|
| • 3M (IL) | • Cummins (NC) | • Haynes International (IN) | • Owens Corning (TX) |
| • Alcoa (IN) | • Didion Milling, Inc. (WI) | • Holcim (TX) | • Schneider Electric (TN) |
| • Allsteel (IA) | • Dixie Chemical (TX) | • JR Simplot (ID) | • Sherwin-Williams (KY) |
| • Amcor PET (WA) | • Dow Chemical (TX, WV) | • Lockheed Martin (CA) | • Spirax Sarco (SC) |
| • Bentley Prince Street (CA) | • Eaton (SC) | • Kenworth Trucks (WA) | • Traco (PA) |
| • Bridgestone Tire (NC) | • Freescale Semiconductor (TX) | • MedImmune (MD) | • UTC/Sikorsky (CT) |
| • Cook Composites & Polymers (TX, WI) | • General Dynamics (PA) | • Neenah Foundry (WI) | • United States Mint (NY) |
| • Cooper Tire (AR) | • Harbec Plastics (NY) | • Nissan NA (TN) | • Volvo (VA) |
| | | • Olam Spices (CA) | • World Kitchen (PA) |

ISO 50001:

www.eere.energy.gov/energymanagement

Superior Energy Performance:

www.superiorenergyperformance.net/

Energy Management Demonstrations:

www.eere.energy.gov/industry/energymanagementdemonstrations/

Texas Pilot Program, Superior Energy Performance Case Studies:

www.superiorenergyperformance.net/texas_pilot.html