

# Superior Energy Performance Partnership and Certifying U.S. Manufacturing Plants for Energy Efficiency

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BP Steam Steering Committee

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# **Superior Energy Performance Partnership and Certifying U.S. Manufacturing Plants for Energy Efficiency**

- ❑ Background – Why is Industrial Energy Efficiency Important?
- ❑ Superior Energy Performance Partnership
- ❑ Plant Certification



Achieving Superior Energy Performance

# **Background – Why is Industrial Energy Efficiency Important?**

# Converging Issues of Energy, Economy and the Environment

- ❑ Uncertain Energy Supply
- ❑ Volatile Energy Prices
- ❑ Climate Change
- ❑ Sustainability
- ❑ Corporate Accountability



**Energy Diversity**

## **Opportunity:**

“ Existing technologies with an attractive internal rate of return can cut the growth in global energy demand by half (or more) within fifteen years.”

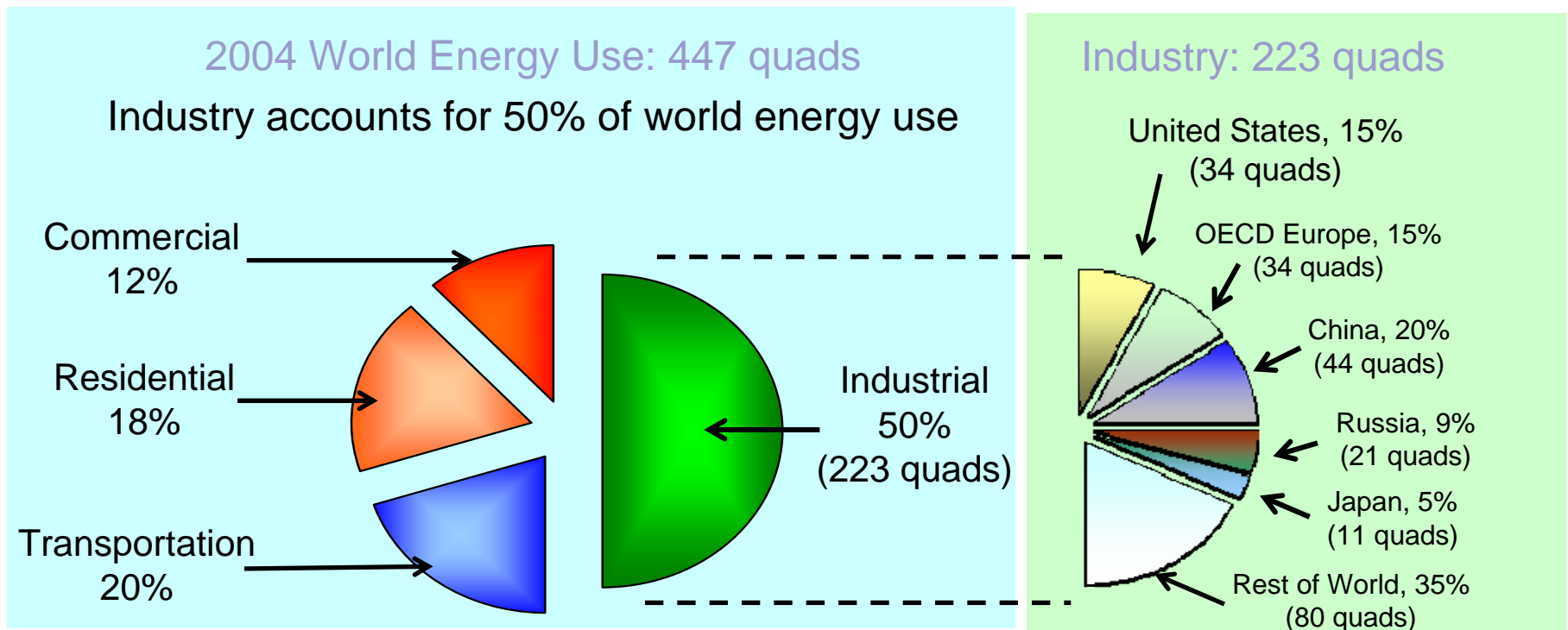
-- *Curbing Global Energy Demand Growth*, McKinsey & Co., May 2007

# Focus on Industrial Energy Efficiency is Growing around the Globe

- ❑ UN Industrial Development Organization is promoting systems energy efficiency and energy management standards for both developed and developing nations.
- ❑ International Organization for Standardization (ISO) is pushing a broad portfolio of initiatives to promote energy efficiency.
- ❑ China initiated plan to reduce energy use 20% per unit of GDP over 2005 levels by 2010.
- ❑ Through the Asia Pacific Partnership, the U.S., Australia, Korea, Japan, China, and India are promoting greater industrial energy efficiency.
- ❑ Energy efficiency is now a major focus of G-8 meetings.



# World Industrial Energy Use

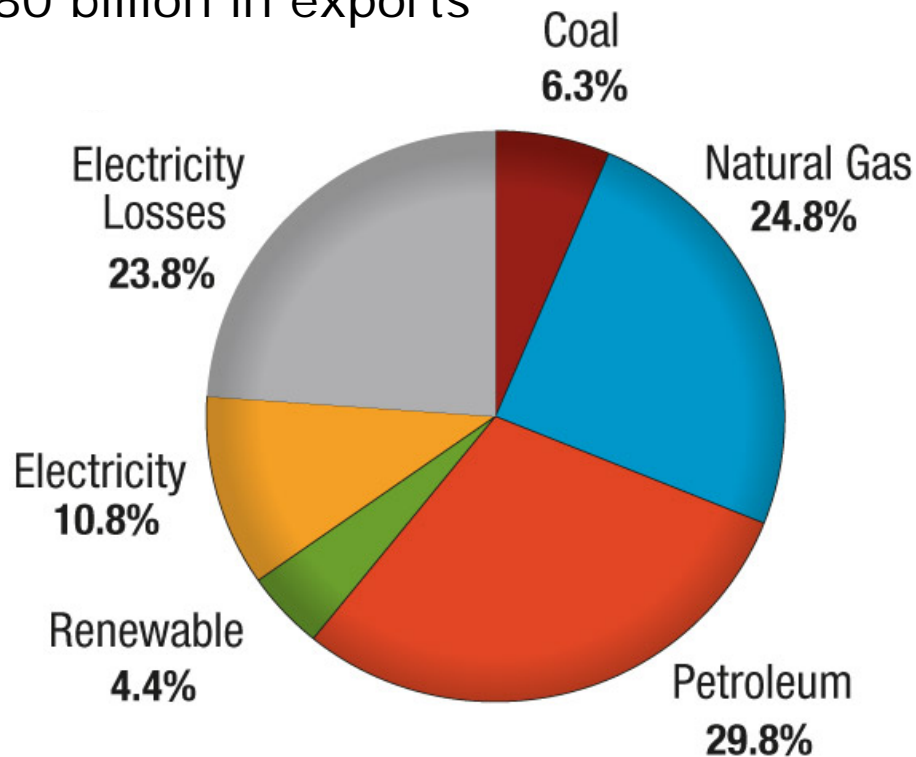


*15% of industrial energy is consumed in the United States*

# U.S. Industrial Sector Represents a Big Opportunity

32 quads or ~33% of total U.S. energy consumption

>200,000 sites  
14.3 million jobs  
\$5,900 billion in  
shipments  
\$980 billion in exports



## ***U.S. industry represents:***

- 37% of U.S. natural gas demand
- 29% of U.S. electricity demand
- 30% of U.S. greenhouse gas emissions
- More energy use than any other single G8 nation
- Large opportunities for
  - Energy reduction
  - Emissions reductions
  - Fuel flexibility



# U.S. Industrial Sector

## Current Situation

- ❑ Energy efficiency peripheral to most corporate business strategies
- ❑ R&D expenditures minimal for process and energy technologies
- ❑ Some US plants are best-in-class; application of state-of-the art technology; excellence in energy management
- ❑ Combined heat & power applications are common place, but not as prolific as in EU and Japan
- ❑ Lack of incentives to invest in energy efficiency technologies
- ❑ No common standard for managing energy
- ❑ Insufficient energy management skills in work force
- ❑ Limited energy fuel choices
- ❑ Volatile US energy prices
- ❑ Uncertain future environmental regulations





Achieving Superior Energy Performance

# **Superior Energy Performance Partnership**

# Superior Energy Performance Partnership

- ❑ Collaboration of industry, government, and non-profit organizations
- ❑ Seek to improve the energy intensity of U.S. manufacturing through a series of initiatives.
- ❑ Support ANSI-accredited Plant Certification program



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

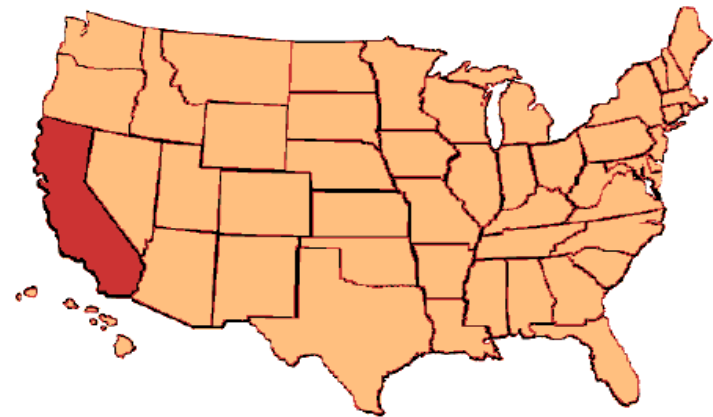
# Superior Energy Performance Goal

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***Proposed Goal: US industry improves energy intensity by 25% over a 10 year period: from 2007 to 2016***

## **Reducing U.S. Industry's Energy Intensity by 25 percent**


- Saves 8.4 quadrillion Btu per year
- Equal to energy consumption of state of California in one year; every house, commercial building, automobile and manufacturing plant






## Elements of Superior Energy Performance

1. Energy Quick Start website. See [www.EnergyQuickStart.org/](http://www.EnergyQuickStart.org/)
2. Voluntary commitment of 25% reduction in energy intensity improvement over 10 years (through EPACT Section 106)
3. Plant certification



Achieving Superior Energy Performance



## **Plant Certification**

# ANSI-accredited Plant Energy-Efficiency Certification

Industry can be expected to respond positively to a certification program for energy efficiency in manufacturing plants that is:

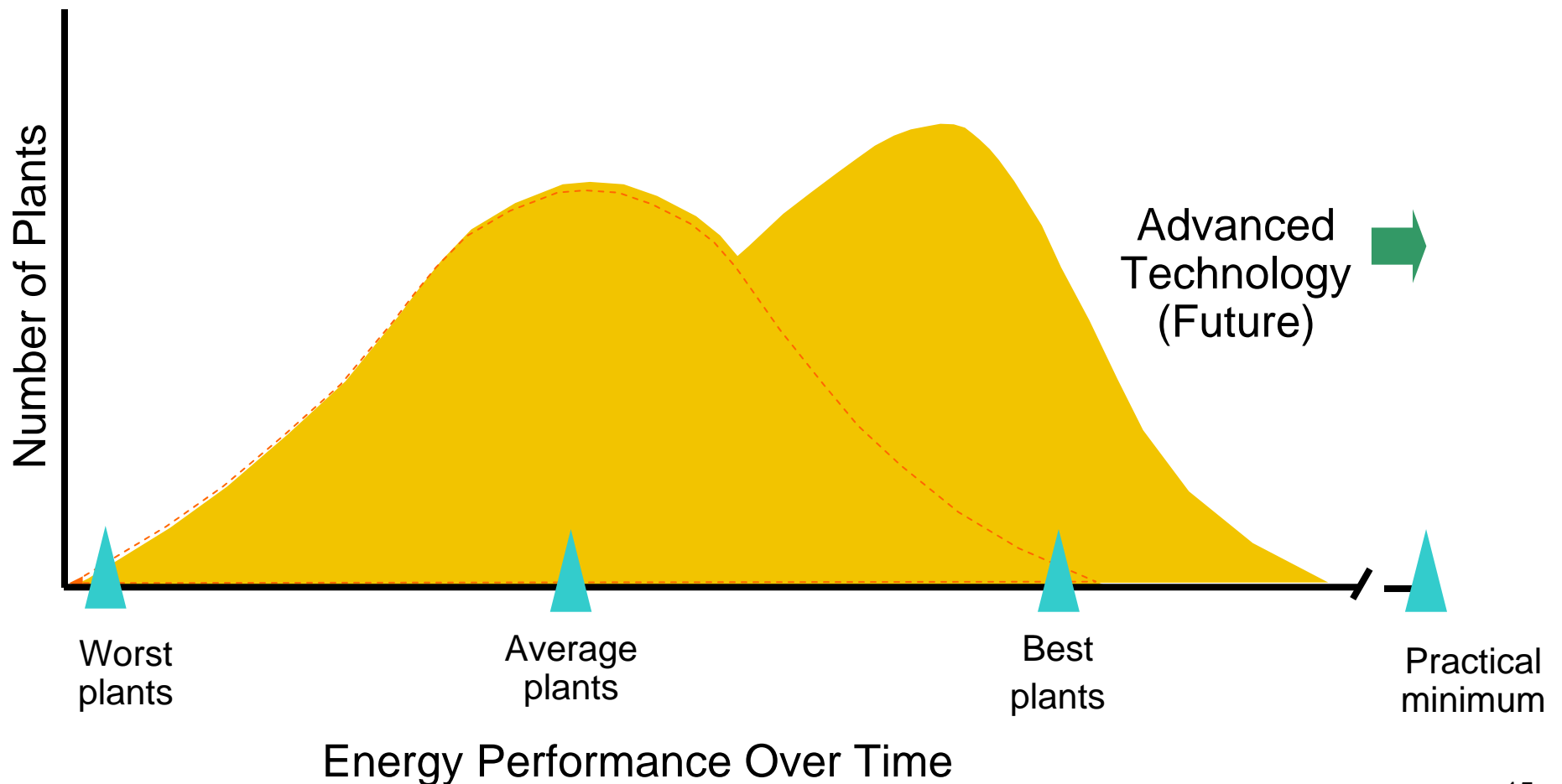
- **Voluntary**
- **ANSI accredited**
- **Third-party validated**
- **Industry backed**



## Elements of Plant Certification

- **Implement Energy Management Standard (U.S. ANSI standard; International ISO standard).**
- **Optional use of System Assessment Standards for industrial systems (pumping, compressed air, steam, process heating) building on industry best practices**
- **Measure and validate energy savings through a third-party certifier**

# Impact on All Manufacturing Plants' Energy Performance





## Strategic Goals of Plant Certification

- ❑ Fosters an organizational culture of continuous improvement in energy efficiency
- ❑ Develops a transparent system to validate energy intensity improvements and management practices, and thus
- ❑ Creates a verified record of energy source fuel savings and carbon emission reductions with potential market value that could be recognized both nationally and internationally





## Benefits of Plant Certification

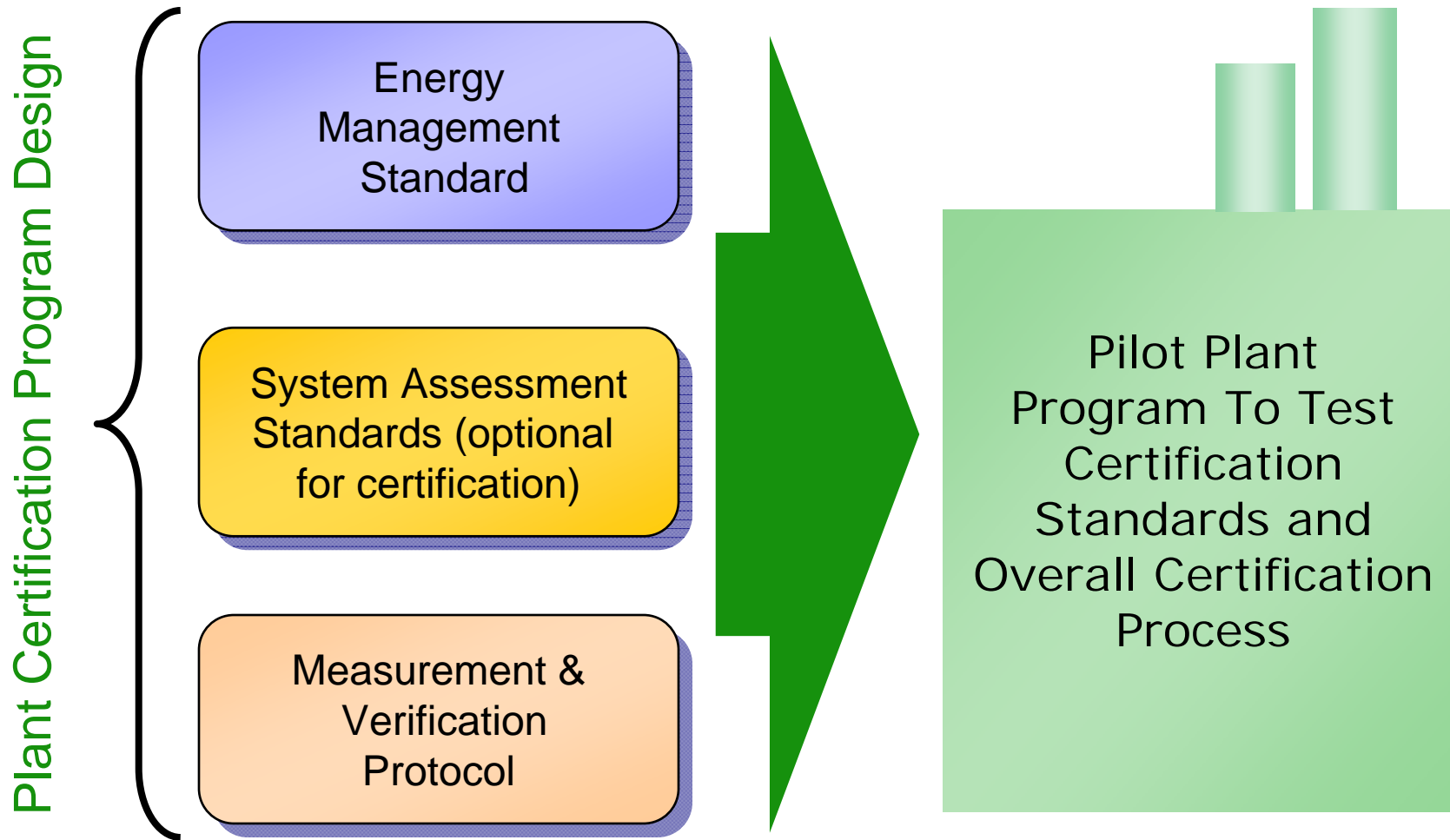
- ❑ Establishes systematic means to achieve continuous improvement
  - ❑ Standards for energy management and system assessments
  - ❑ Tools and resources to assist in implementation
  - ❑ Process for validation
  - ❑ Focus on reducing energy intensity per unit of output
- ❑ Helps plants get on the path to improvement by adopting tools and resources
  - ❑ Promotes buy-in to energy efficiency
- ❑ Applies to most companies (wide-range of industries)
- ❑ Delivers value to all plants, not just those that pursue certification
- ❑ Creates a transparent way to compare energy efficiency



## Benefits of Certification, *continued*

- ❑ Helps industrial companies and their supply chains fulfill their voluntary commitments to reduce energy intensity
- ❑ Codifies use of DOE tools, assessment protocols, best practices, and Qualified Specialist program
- ❑ Creates market demand for assessments, displacing the need for DOE-funded assessments in the long term
- ❑ Empowers the manufacturing supply chain to push energy efficiency
- ❑ Creates market value for energy efficiency—recognizing continual improvement in energy intensity at rates well above business as usual
- ❑ Validates energy and carbon reductions at manufacturing facilities—potential to enable trading of emission permits and credits
- ❑ Establishes U.S. as international leader in industrial energy efficiency

# Certifying Plants for Energy Efficiency



# Future Certification Infrastructure

## Overall Plant Certification Standard

Energy Management Standard

System Assessment Standards

Measurement & Verification Protocol

## Third Party Certifying Organization (TBD)

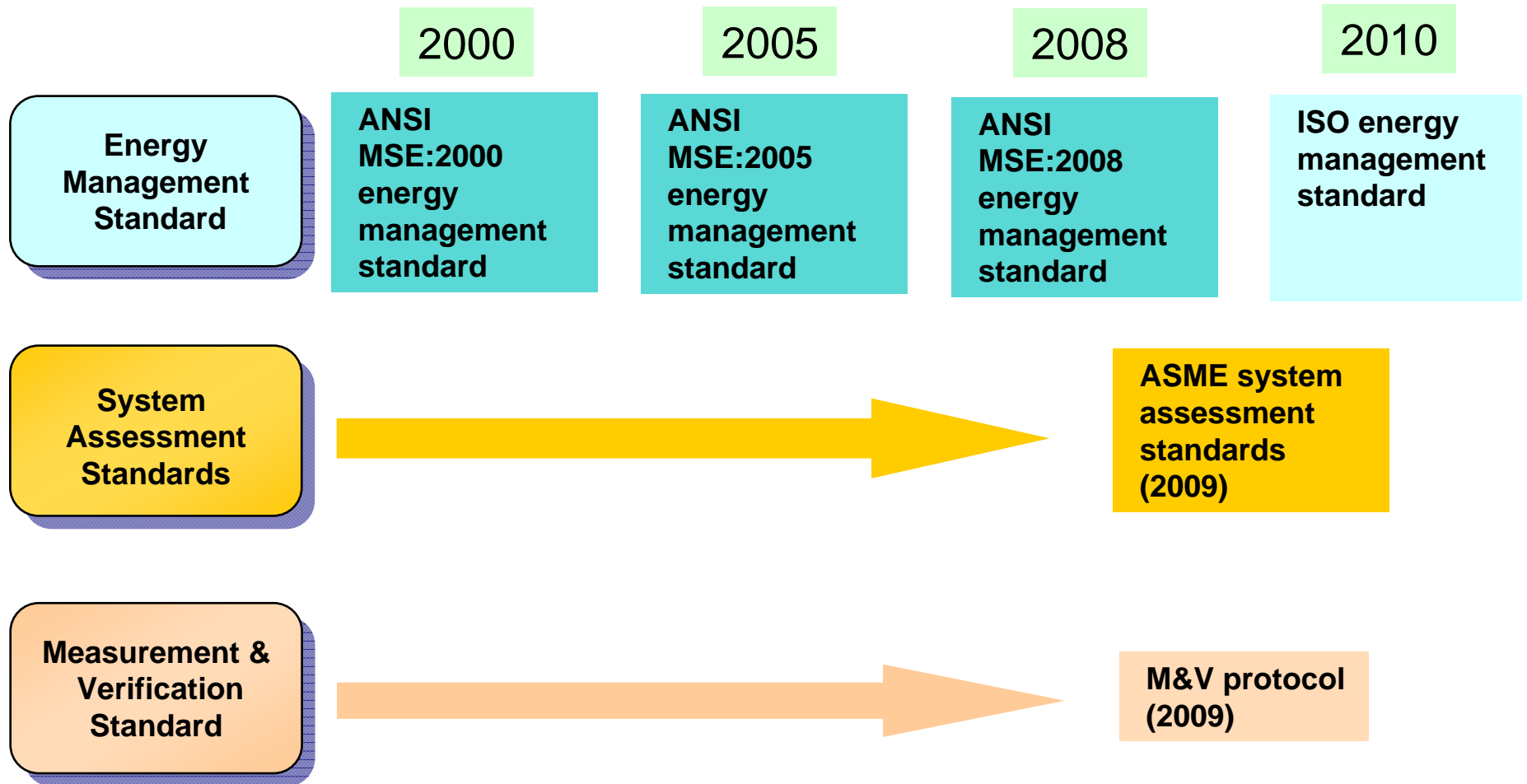
Energy Management Practitioners

System Assessment Practitioners

Measurement & Verification Certifiers

Manufacturing Plants Seeking Certification

# Energy Management Standard Evolution





## What Is an ANSI-Accredited Certified Plant?

For **initial certification**, the plant:

1. Complies with the energy management standard, and
2. Achieves validated energy intensity performance by:
  - a) Demonstrating energy intensity improvement of >5% over the previous 24 month period OR
  - b) Assessing any energy system which uses greater than 10% of total plant energy use (not including feedstocks) and demonstrating that the plant has:
    - I. Implemented >30% of total Btu energy savings opportunities that meet the company's internal rate of return (IRR) and are identified through application of system assessment standards, OR
    - II. Met or exceeded the Energy Management Best Practice threshold\* for systems for which Best Practices exist.

\* Energy Management Best Practice threshold is still to be defined



# What Is an ANSI-Accredited Certified Plant?

For **re-certification** at three year intervals, the plant demonstrates:

1. Continued compliance with the energy management standard AND
2. Achievement of validated energy performance through:
  - a) Demonstration of an energy intensity improvement of 12.5 % or greater over the previous 5 year period; OR
  - b) Demonstration that its energy intensity is within the top 10 percent of its sector (example: Btu/pound of product) OR
  - c) Documentation that any energy system which uses greater than 10% of total plant energy use (not including feedstocks), and for which a Best Practice threshold exists, meets the Best Practice threshold.



## Looking Forward: Key Milestones

- ❑ **June 2008:** Texas Pilot project begins field testing ANSI energy management standard and system assessment standards
- ❑ **Feb. 2009:** Select third-party certifying organization
- ❑ **May 2009:** Begin field testing of measurement and verification methodology in pilot plants
- ❑ **Dec. 2009:** Begin training certified practitioners in energy management and system assessments
- ❑ **Feb. 2010:** First plants are ANSI certified for energy efficiency, based on pilot program results
- ❑ **Sept. 2010:** National launch of third-party certification program
- ❑ **Sept. 2011:** Third party fee-based, certification business model established





## Texas Pilot Project

### Goal:

- ❑ To verify that the processes, energy systems standards and performance criteria considered for application to a plant under the certification program are:
  - ❑ Practical and achievable
  - ❑ Provide benefit to participating plants
  - ❑ Reliably identify plants that meet the proposed certification criteria



## Texas Pilot Project Schedule

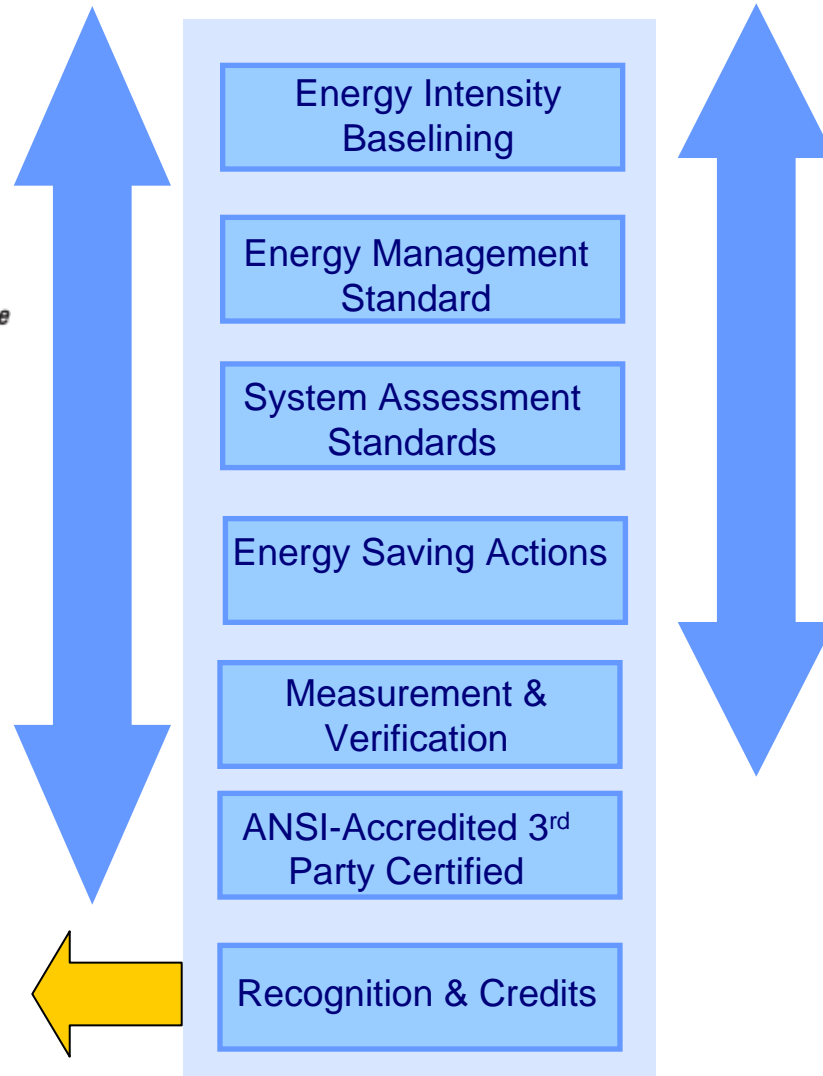
- ❑ Jan-May 2008 - Recruiting 5 plants from diverse sectors
- ❑ July 08-March 2009 - Training and coaching on implementing an energy management system
- ❑ July-Dec 2008 - Conduct two assessments per plant using the proposed system assessment standards
- ❑ June-Oct. 2009 - Conduct audits on the management system and energy performance
- ❑ Oct. 2009 - Recognition of plants

# Comprehensive Plant Energy Management



Plants improving energy intensity > 2.5% per year

Utility, State, Federal Incentives; Carbon Credits



**Save ENERGY Now**  
Tools, Training & Assessments



Achieving Superior Energy Performance

# Energy Management Standard

# Need for Energy Management System

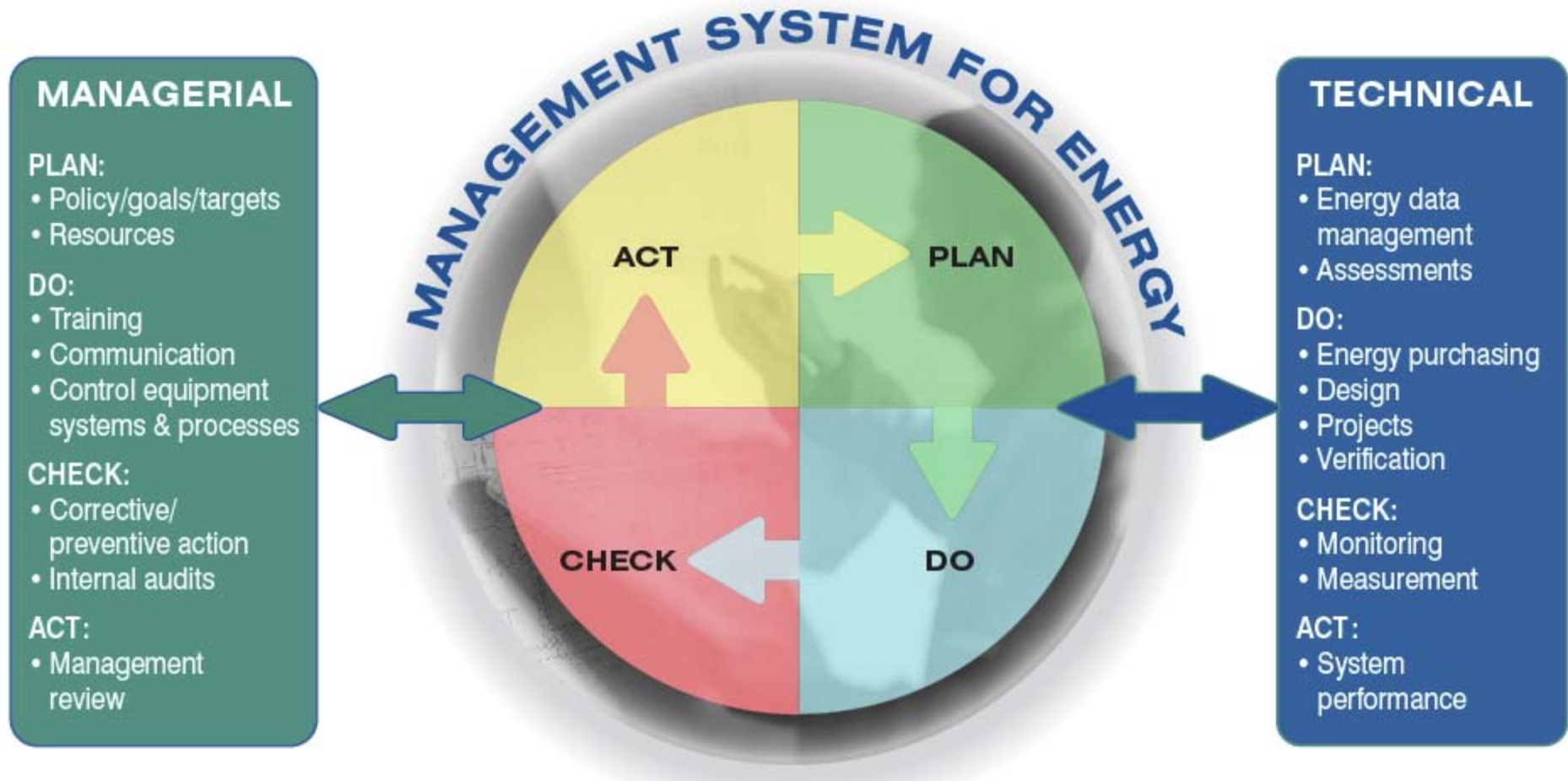
Energy management is not a destination...



It's a process!

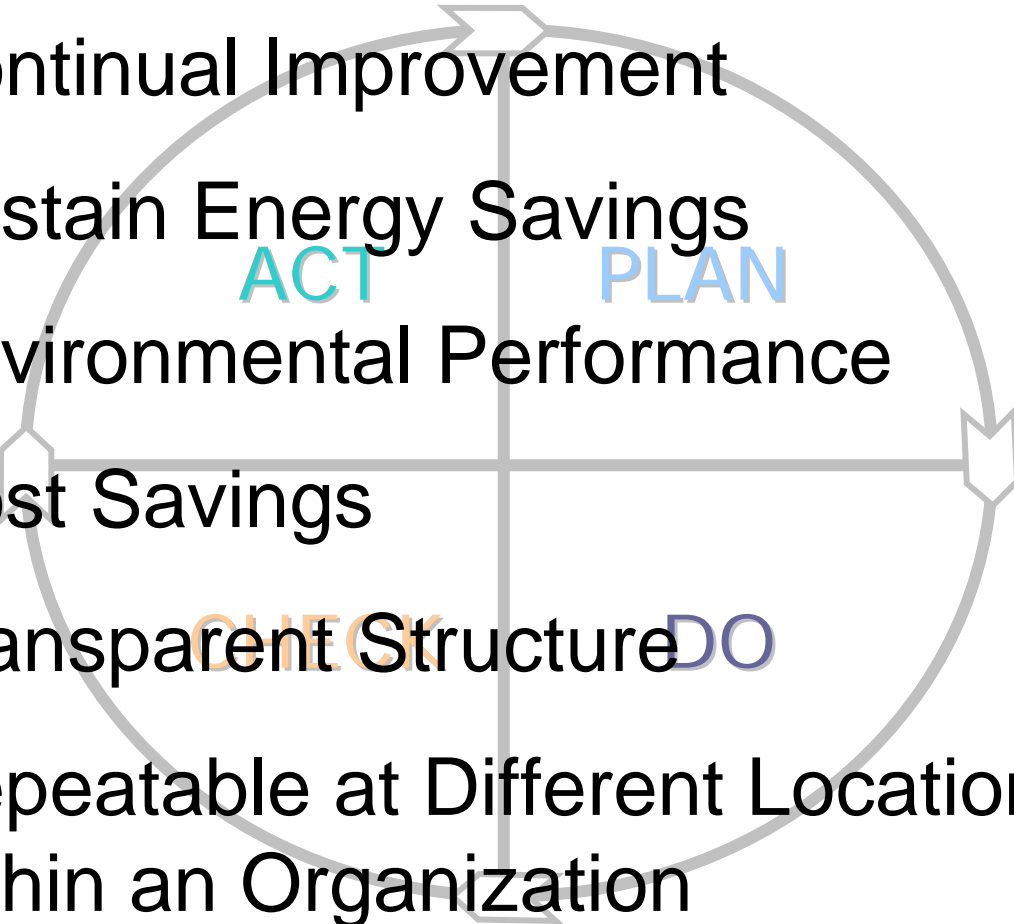


# Basic Elements of ANSI Management



[www.ansi.org](http://www.ansi.org)

## Why Implement MSE 2000?

- Continual Improvement
  - Sustain Energy Savings
  - Environmental Performance
  - Cost Savings
  - Transparent Structure
  - Repeatable at Different Locations within an Organization
- 

# International Standard

## □ International Energy Management Standard



- UNIDO Expert Group, Vienna, March 21-22, 2007
- ANSI (U.S.) / ABNT (Brazil) partnership
- Project Committee - PC 242
- First Meeting of PC 242 - September 2008, Washington, DC

## □ UNIDO / CSC Working Group Meeting

- Discuss similarities and differences
- Preparatory harmonization
- Detailed & Summary Comparisons developed

