

“Government-Industry Collaboration to Achieve
Improved U.S. Industrial Energy Intensity”

ISO energy management system standard stakeholders
meeting

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U.S. industrial sector represents a big opportunity

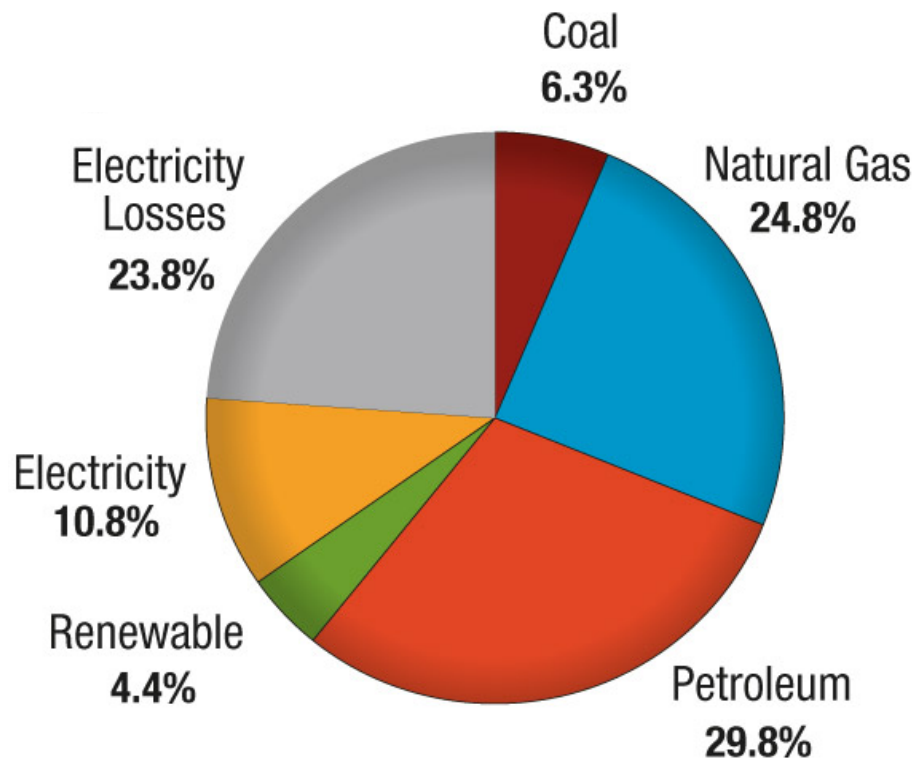
32 quads or ~33% of total U.S. energy consumption

>200,000 sites

14.3 million jobs

\$5,900 billion in shipments

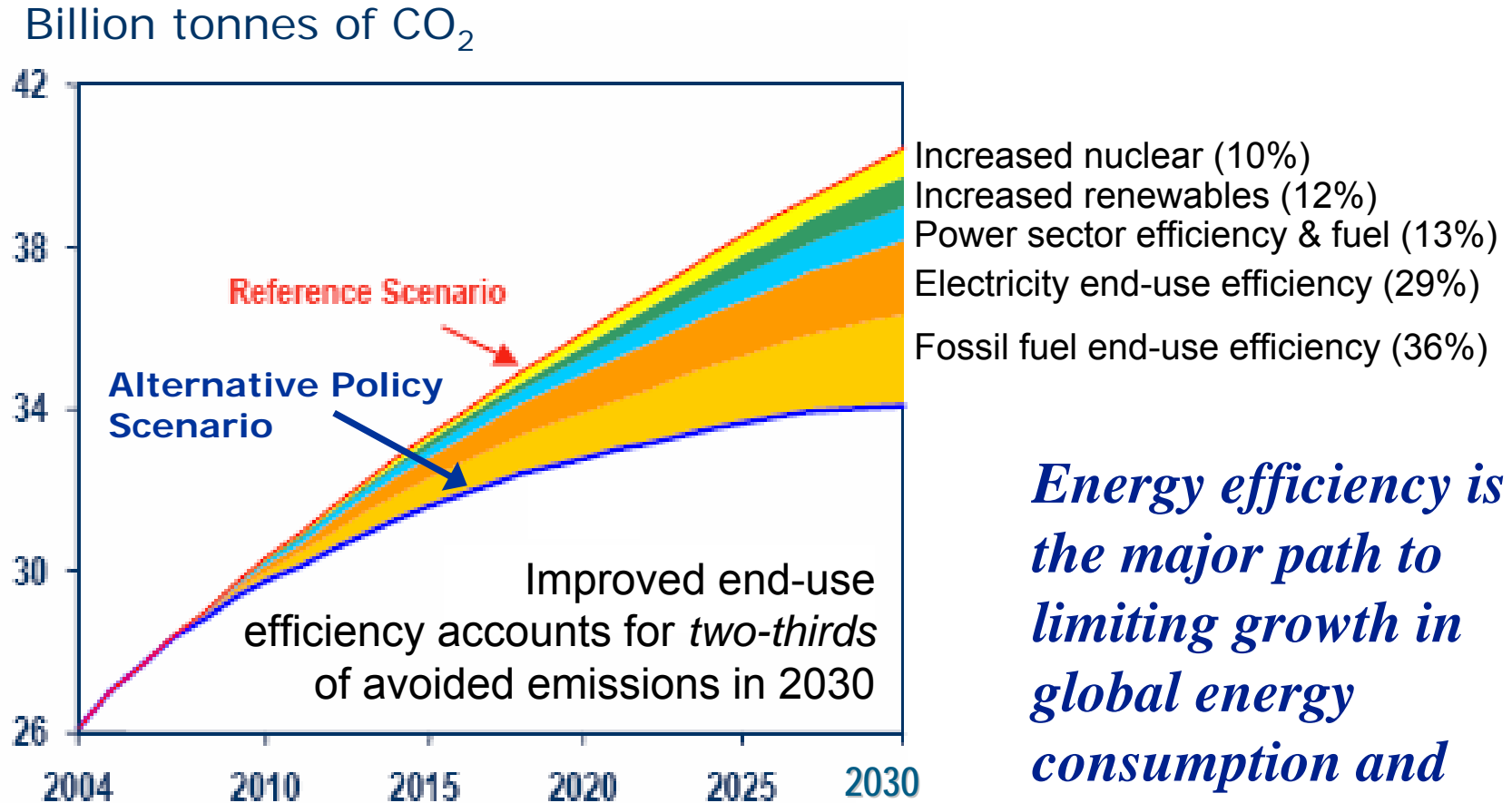
\$980 billion in exports



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

Energy Efficiency and Carbon Emission Reductions



Energy efficiency is the major path to limiting growth in global energy consumption and carbon emissions

Source: International Energy Agency, World Energy Outlook. 2006

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.



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

Some U.S. companies are leaders in energy efficiency

Well-managed companies find substantial energy efficiency opportunities when they actively manage their energy use:

- ❑ **3M's** Global Energy Management Program has cut energy use 30% per net sales since 2000; now seeks to reduce total energy use by >40% from 2000 levels by 2008.
- ❑ **Dow Chemical** achieved 22% improvement (\$4B savings) 1994-2005 through its corporate energy management system; now seeks another 25% in 2005-2015.
- ❑ **Toyota's** North American (NA) Energy Management Organization has reduced energy use per unit by 23% since 2002; company-wide energy-saving efforts have saved \$9.2 million in NA since 1999.
- ❑ **Rohm and Haas**, a long-standing leader in energy management, won the 2006 American Chemistry Council Energy Award for projects that cut energy use by 450 billion Btu, saved >\$3 million, and avoided 40,000 tons of related CO₂ emissions.
- ❑ **Dupont** applied "Six Sigma" energy management and completed >75 projects to save \$250,000 annually per project and reduce GHG emissions by 68% since 1990—exceeding their 2010 target of 65%. Corporate-wide energy use has remained flat since 1990 despite a 35% increase in production.

Superior Energy Performance Partnership

A partnership between industry and government to accelerate US industry's energy efficiency by:

- Delivering tools, training, technologies & standards to all types of manufacturing plants
- Facilitating recognition and incentives for effective industrial energy management and energy efficient technology adoption

Partners

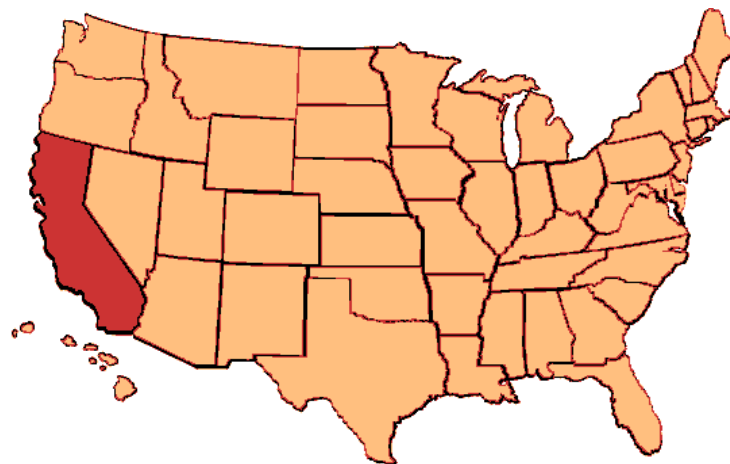
- U.S. Industry
- U.S. Department of Energy Industrial Technologies Program
- U.S. Environmental Protection Agency ENERGY STAR Program
- U.S. Department of Commerce Manufacturing Extension Partnership
- American National Standards Institute

Superior Energy Performance Partnership Goal

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



Vision: By 2017

Goal: US industry improves energy intensity by 25% from 2007

US Industrial Sector

- A world leader in energy efficiency
- Known for best-in-class plants for energy-efficient technology
- A leading exporter of energy efficiency technologies and solutions
- Staffed by and working with engineers with extensive energy management expertise
- Driven by the performance of manufacturing plants
 - using ANSI-certified energy management systems
 - implementing system assessment protocols

Leading US Corporations

- Over 100 major corporations
 - Have integrated energy management into their business strategy
 - Improved their energy intensity by more than 25% from 2007 to 2017
 - Assist their plants and supply chain in becoming ANSI certified for energy efficiency

US Manufacturing Plants

- 25% of the 200,000 U.S. plants with 10 or more employees (50,000 plants) have adopted basic energy management principles
- 5,000 plants are certified by an ANSI accredited organization for energy management and committed to continuous improvement in energy efficiency

What would help *all* U.S. industry capture energy savings to reach the 25% energy intensity reduction goal?

- ❑ Provide industrial plants with easier access to information and tools for managing energy
- ❑ Provide incentives and recognition for effective industrial energy management
 - Integrate energy management into existing management systems (i.e., treat energy like every other resource)
- ❑ Develop market value for effective energy management and the resulting energy savings and carbon reductions
- ❑ Meet the R&D and technological support required to help industry achieve a 2.5% annual energy intensity reduction goal through 2016



CERTIFIED

Proposed Framework

Corporate Level

Save ENERGY Now Corporate Partner

Key Elements	Resources	Rewards/Recognition
<ul style="list-style-type: none"> Energy baseline CEO commits to 10 yr goal to reduce energy intensity 25% Energy management plan Technology evaluation/ best practices adoption Report progress annually 	<ul style="list-style-type: none"> Quick Start website Tools, training, and technologies Energy management tools Energy assessments 	<ul style="list-style-type: none"> Enhanced technical assistance Preference in RD&D solicitations National energy efficiency recognition

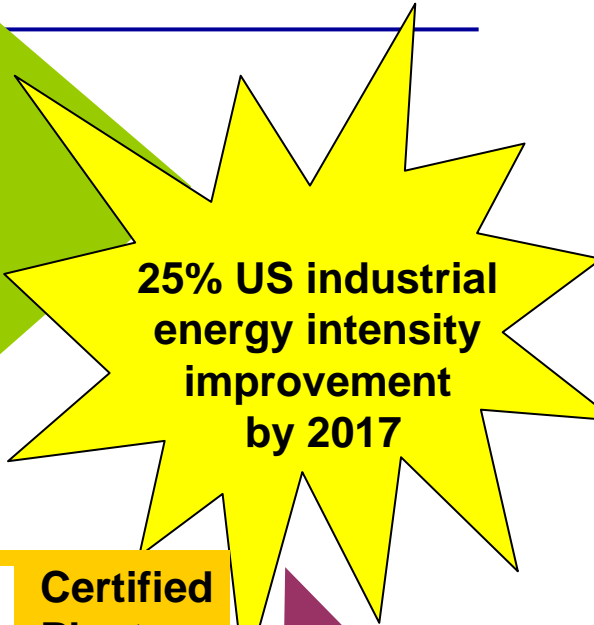


Save ENERGY Now Partner Plant

Key Elements	Resources	Recognition
<ul style="list-style-type: none"> Energy baseline Take steps to save energy, including creating an energy management plan Report energy savings annually 	<ul style="list-style-type: none"> Quick Start website System tools & training Energy management tools Energy assessments 	<ul style="list-style-type: none"> Energy saving recognition Case study Publicity

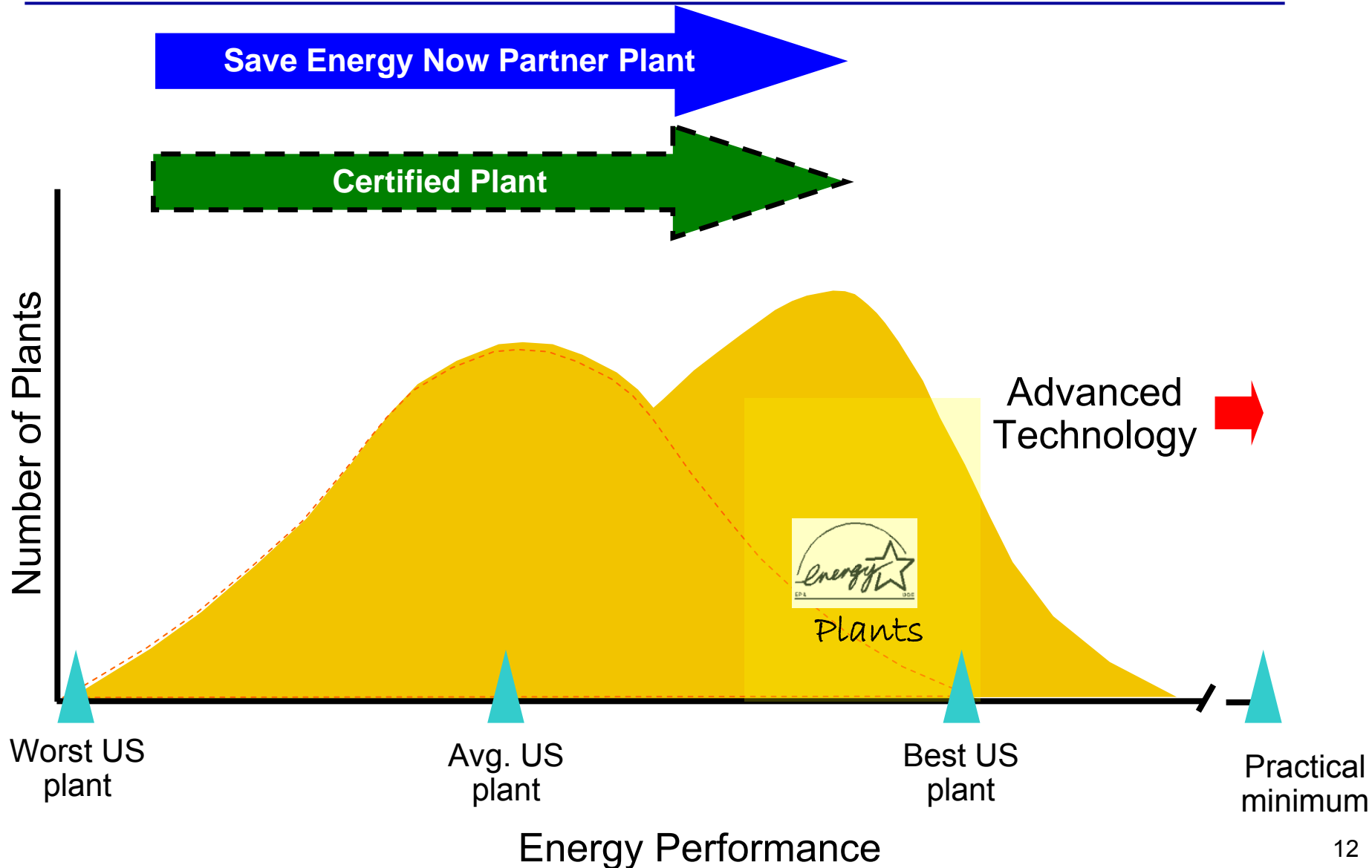
ANSI American National Standards Institute Certified Plant

Key Elements	Resources	Rewards/Recognition
<ul style="list-style-type: none"> Energy management standards System assessment protocols Independently certified energy savings 	<ul style="list-style-type: none"> Quick Start website System tools & training Energy management tools & support Energy assessments 	<ul style="list-style-type: none"> Utility incentives Tradable credits/tags Market recognition Preferred supplier status National energy efficiency recognition



Plant Level

How will this framework affect plant energy performance?



Boosting Energy Management Performance

- INCENTIVES:**
- Recognition (ENERGY STAR, other)
 - Access to low-interest capital
 - Market value
 - ITP resource commitment
 - Tax credits
 - Potential carbon credits
 - OTHER ?

2007

2008

2009

2010

2016

Save Energy Now Partner Plant

Save Energy Now Corporate Partner Agreement

Pilot
Certification

Certified Plant (ANSI accredited)

ENERGY STAR Plant

Superior Energy Performance Steering Committee

- Determine the scope of work to support the SEP initiative through April 2008
- Develop an implementation plan, including
 - Establish voluntary working groups as required
 - Work with DOE, EPA, and NIST to secure required resources
 - Develop a transition plan to a more permanent organizational structure that supports SEP goals

Interim Steering Committee Members

Representative	Organization
Bill Allemon	Ford
Joe Almaguer	Dow Chemical
Bill Bailey	DuPont
Sean Diamond	Texas Petrochemical
Tom Dunn	Weyerhaeuser
Betsy Dutrow	EPA
Fred Fendt	Rohm and Haas
Martha Gibbons	IPSCO Steel
Jim Hoffman	Huntsman Chemical
Greg Jason	Cargill
Brad Reed	Toyota
Paul Scheihing	DOE ITP
Steve Schultz	3M
Carroll Thomas	NIST
Don Verdiani	Sunoco
Glen Wieger	Eastman Chemical
Jeff Yigdall	PPG

Superior Energy Performance Partnership

SEP Work Plan

- ❑ Develop Quick Start website to help plants initiate energy management programs
- ❑ Help to coordinate U.S. participation in ISO energy management standard development
- ❑ Assist in design and delivery of “Save Energy Now” Partner Plant program
- ❑ Assist in design of ANSI-accredited plant certification program
- ❑ Assist in design and execution of voluntary “Save Energy Now” corporate energy efficiency program (EPACT Section 106)

Key Milestones

May 2007	Interim Steering Committee formed Working Groups identified
July 2007	Work on program definition completed Initial Working Groups populated
Sept 2007	Save Energy Now Partner Plant Program announced Quick Start website available
Mid-2008	Energy Management Standard & System Assessment Protocols tested
Early 2009	Certified Plant Program ready for pilots
Early 2010	Certified Plant Program announced

Moving U.S. industry to greater energy efficiency

- ❑ Moving the US industrial sector to an energy intensity improvement rate of 2.5% per year
- ❑ Certifying plant energy management programs; creating transparency for continual energy efficiency improvement
- ❑ Unite US corporate leaders in energy efficiency; commit to 25% energy intensity improvement over 10 years (through EPEAT Section 106)
- ❑ Empowering the supply chain to demand energy efficiency
- ❑ Enhancing the business case for energy efficiency
- ❑ Paving the way for U.S. global leadership in energy efficiency technologies and practices

