

Proceedings

Designing a Framework for Achieving Superior Energy Performance in US Manufacturing Plants March 6, 2007

Meeting Summary

The following summary was prepared by the meeting organizers immediately following the meeting, and is posted on the [Superior Energy Performance web site](#):

Over 50 representatives from US manufacturing companies, the Department of Energy's Industrial Technologies Program, the Environmental Protection Agency's ENERGY STAR Program for Industry, and the National Institute of Standards and Technology's Manufacturing Extension Partnership met to discuss a variety of approaches for engaging the industrial sector in promoting greater energy efficiency in US plants. The meeting participants critiqued a preliminary concept proposal (see http://www.superiorenergyperformance.net/pdfs/Preliminary_Concept_Proposal_030607.pdf, and also as Attachment 2) and considered the characteristics of a framework (which described levels of plant energy performance achievement which include ENERGY STAR, Partner Plant, Certified Plant) to help achieve superior energy performance. They also identified potential barriers and suggested innovative incentives to assist industrial plants in initiating or accelerating their energy management programs.

Preliminary comments received from attendees to the meeting included the following:

- ***Participants expressed both a strong interest and a need for a voluntary program to assist all US manufacturing plants in improving energy efficiency, regardless of size or internal resources;***
- ***Existing information and tools are useful, but more needs to be done to provide and streamline access to this information so that plants can save energy in the near-term;***
- ***Many plants need assistance in developing and implementing energy management plans, especially if the program is pushed up the supply chain;***
- *Attendees perceived a value in the certification of an industrial facility's energy management program that produces sustainable results and ensures the engagement of all levels of plant personnel;*
- *Any plant certification would address the measurement and verification of savings by the facility being certified;*
- *Individual energy efficiency projects could have energy savings validated, and therefore, could potentially provide tradable benefits.*
- *Any program to certify plants for energy efficiency has to "make the business case" for participation;*
- *Certification requirements should achieve a balance between documenting performance and the cost, in both time and money, of doing so;*
- *Financial incentives, such as- a tax credits, loan guarantees, would help to level the playing field for access to capital needed for implementing energy efficiency projects and increase program attractiveness for "early adopters".*

As the result of the meeting, an industry-led steering committee is being formed to further develop the framework for achieving superior energy performance.

Introduction

On March 6, 2007, the Achieving Superior Energy Performance meeting was convened with representatives from US industry in Washington, D.C. by the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Commerce's National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership (MEP). The purpose of the meeting was exploratory--to review and help shape a preliminary program concept for recognizing and certifying industrial facilities for energy efficiency, with the working title of *Framework for Achieving Superior Energy Performance in US Manufacturing Plants (SEP)*. This large national initiative is in its early planning stages; the initial meeting was designed to encourage an open dialogue with representatives from the manufacturing sector, the organizing government entities, the American National Standards Institute, and a few non-governmental industrial policy experts. The agenda for the meeting is included as Attachment 1 to this summary.

To prepare for this meeting, the organizing agencies consulted with representatives from 3M, Dow, Dupont, Ford, Rohm & Haas, Tesoro and Weyerhaeuser and received many valuable comments in shaping what is still a work in progress. While participation in this meeting was limited to industrial manufacturing companies to encourage a focused critique of the basic concepts, a website has been established at www.superiorenergyperformance.net to encourage broader input from interested parties and future meetings that include other organizations such as suppliers, trade associations, states, utilities, and consultants are planned.

The purpose of the SEP as presented is to promote greater energy efficiency in US manufacturing plants by making energy management as much a part of typical industrial operating practices as quality, waste reduction and inventory management. The goal is to provide a mechanism that helps each company maintain their focus on energy efficiency improvements, provides visibility for its achievements, and provides verification of results to public and private entities to "raise the bar" on industrial energy efficiency.

Along with the need for increased energy efficiency, there is also need for greater transparency in the way industrial facilities identify, develop, and document energy efficiency improvements. Historically, energy saving efforts have been developed by plant engineers, frequently with assistance from consultants or suppliers with highly specialized technical skills. Quantifying results and measuring progress relies heavily on the presence of individual energy efficiency "champions" within a company and their access to consultants or suppliers with substantial expertise and experience. Drawbacks to this approach are that achievements are often not well understood by those without specialized expertise, including management; replication occurs quite slowly in the market, and benefits may disappear if the champion leaves the company or is relocated.

The SEP concept discussed at the meeting seeks to foster energy efficiency at all levels of energy performance and a methodology for measuring and validating progress toward energy efficiency—progress that is voluntary, performance-based, and technically sound. The intent would be to integrate this methodology into existing corporate management systems, such as ISO 9001:2000, 14001:2004, and Six Sigma. The long-term goals of this approach are (1) to foster a organizational culture of continuous improvement for energy efficiency, 2) to develop a transparent system to validate energy efficiency improvements and management practices and

thus (3) create a verified record of energy savings with potential market value that could be recognized among sectors and countries. The initial proposal discussed at the meeting is included in Attachment 2.

The meeting was organized with a series of industry presentations to provide background on the SEP, followed by an industry panel in which four industrial representatives described how the proposed activities might relate to what their companies are already doing to promote energy efficiency. DOE Principal Deputy Assistant Secretary John Mizroch gave a lunch presentation, followed by breakout groups to provide input on the Framework and to consider issues raised during the morning's presentations. The meeting concluded with a plenary session during which the breakout groups reported out and next steps were discussed.

Meeting Synopsis

Note: all slide presentations are posted at www.superiorenergyperformance.net

The meeting opened with welcoming statements by Paul Scheihing of DOE, Elizabeth Dutrow of the EPA, Carroll Thomas of the MEP, and Lane Hallenbeck of ANSI. Each provided a very brief overview of their respective program offerings that could be resources for the Framework.

Gary Faagau of Tesoro Energy then opened the industry dialogue by describing the industry collaboration in Texas Industries of the Future (TX IOF), for which he is an Advisory Committee member. TX IOF was formed in 2003 to promote greater energy efficiency in Texas industries, which represent nearly 20% of the energy used by US industry. The Advisory Committee includes thirteen organizations, including eight industrial companies. Mr. Faagau described a number of activities undertaken by TX IOF including forums, showcases, and training.

Mr. Faagau then presented the genesis of a request by TX IOF to DOE and EPA to consider certifying industrial plants for energy efficiency. The inspiration for the request was based on very positive results from the OSHA VPP program, which certifies plants for safety by empowering the plants to make safety "everyone's job". The TX IOF member companies feel that certification could contribute to sustainable energy efficiency that would continue even if energy prices should decline. The certification program would give plants a common mechanism for communicating with stakeholders about their energy efficiency and greenhouse gas emissions reductions. TX IOF supports a tiered membership structure that allows sites to begin on a path to greater energy efficiency from where they are now and which focuses on establishing an organizational culture to promote energy efficiency. TX IOF is planning a pilot program in 2007-2008 to determine informational needs, and to test performance criteria and assessment methodologies by working with five Texas plants.

Proposed Levels of Superior Energy Performance

The initial framework for SEP includes three levels of participation, listed below:

- ENERGY STAR Plant
- Partner Plant
- Certified Plant

Presentations describing these three proposed levels were given by Brad Reed (Toyota Motor Manufacturing), Joe Almaguer (Dow Chemical), and Fred Fendt (Rohm and Haas Company).

ENERGY STAR Plants – Mr. Reed presented an overview of the existing EPA ENERGY STAR for Industry Program. This program focuses on corporate energy management and offers guidelines for energy management, self-evaluation tools, industry-specific energy guides, energy manager forums, and a recognition program. The program incorporates the EPA's National Energy Performance Rating System, which is based on plant energy performance indicators (EPIs). To qualify as an ENERGY STAR plant, the facility must score in the top quartile for energy performance by plant type, based on the rating system, and a licensed professional engineer certifies data contained in the application. To date, only four industry segments are covered by ENERGY STAR: the cement, wet corn milling, automobile assembly, and petroleum refining industries. EPIs are under development for other segments, including food processing, glass, petrochemicals, pharmaceuticals, and the pulp & paper industries.

Partner Plants – Mr. Almaguer discussed the proposed Partner Plant level, which he described as a “straw man” model open to suggestions for improvement. This level is intended to provide industrial plants a flexible entry into a recognized program to improve energy efficiency. The Partner Level can be open to plants of all sizes, and no prior energy efficiency activity is required. Partner Plants will commit to developing an energy use baseline and creating a plan for managing energy consumption and costs. In return, Partner Plants will receive preferred access to technical assistance from DOE and EPA industrial programs, and will be publicly recognized for their achievements.

Certified Plants – Mr. Fendt described the proposed Certified Plant level of participation and explained the merits of a certification program for manufacturing plants. The merits focus on the capability to offer a consistent, standardized approach to identifying, developing, documenting, and reporting energy efficiency improvements. To insure that energy efficiency is considered on an ongoing basis (i.e., continuous improvement), energy efficiency will be integrated into existing industrial management systems. Four basic elements of plant-level certification are proposed, but these elements are subject to modification based on industry feedback:

- energy management standards
- standardized assessment protocols for systems (such as pumping, compressed air, steam, etc.)
- certified practitioners
- measurement and validation of energy savings

To become a certified plant, a company must demonstrate compliance with an energy management standard. There is an existing ANSI energy management standard – MSE 2000, developed by Georgia Tech – which provides the type of framework envisioned. The developers and ANSI have expressed interest in revising this standard to meet the needs of this plant-level certification initiative.

Also required for plant certification is applying the system assessment protocols to identified improvement opportunities, and to validate the energy savings using a recognized methodology. Envisioned reporting requirements include documentation of plant energy savings and energy intensity improvement. The documentation and reporting tools need to be developed. It is proposed that re-certification be required every three years. A proposed re-certification

requirement is continuous improvement of 5% or greater in energy intensity within the re-certification period.

The proposed standardized system assessment protocols are meant to create a market standard for industrial system assessments, to aid plants in identifying opportunities, and meet continuous improvement goals. These protocols should ease internal justifications for assessment services, assure sound recommendations, and help realize economically attractive projects.

The development of certified practitioners can build upon the existing pool of DOE Qualified Specialists and Energy Savings Assessments Experts. Additional training and certification requirements are anticipated.

Mr. Fendt stressed that the success of any plant certification initiative will depend on industry having a clear understanding of the value of pursuing certification. He concluded his presentation by listing these issues for consideration:

- the cost of certification
- documentation requirements
- application and re-certification requirements
- certify at both the plant and corporate level?
- acceptance by utilities and states for financial incentives
- concerns about regulations (e.g., a voluntary program evolving into a regulated requirement)
- compatibility with ISO and programs in the European Union and other countries

Panel Discussion

Next, four representatives from industry provided overviews of their existing energy programs and offered their opinions on how the Superior Energy Performance initiative could impact their activities. Each presenter responded to three questions posed by the meeting organizers in advance. The questions are:

1. What characteristics of the proposed program would advance your energy efficiency program?
2. What would be potentially problematic?
3. What incentives would make the proposed framework attractive to your company and widespread among industry?

Ford Motor Company – Joe Ghislain of Ford Motor Company described Ford’s energy program, which has institutionalized energy efficiency into the daily business activities. They rely on “processes and business practices”, not “projects and programs”, and have established standards of practice. Each plant’s business objectives include energy efficiency improvements.

To advance their energy program, Mr. Ghislain would like to see Superior Energy Performance provide technical resources, along with recognition for their efforts. He feels that a certification program could create a healthy competition between Ford’s plants. If the program evolved to recognition at the corporate level, that could provide additional incentive to Ford. He sees potential problems as:

- the potential management burden of oversight and reporting at the plant level,

- the risk of the program being too prescriptive. A more self-directed approach may be better,
- the program may not include provisions for recognizing obstacles created by changes in a company's business climate,
- metering and verification requirements could be too costly and unmanageable,
- A "project-driven" program is not ideal, and
- third party verification could be costly while adding little value (self-certification may be a better approach)

Incentives which would make Superior Energy Performance attractive to Ford include tax credits, credit for energy savings (such as emissions credits), availability of more in-depth, system-specific technical training via web cast or on-demand, and the creation of an energy network to allow knowledge-sharing with other industrial sectors.

Texas Petrochemicals, LP – Sean Diamond of Texas Petrochemicals presented an overview of his company and their energy management program. Texas Petrochemicals has formed a Manufacturing Optimization group which focuses on energy and process optimization, and reports directly to the Senior VP for Operations. They prepare daily energy reports, have daily review of key performance indicators and process targets, and have developed a regression analysis model for plant energy consumption.

To advance their energy efficiency improvement efforts, Texas Petrochemicals would like to see the program emphasize continuous improvement over absolute energy savings, so that companies who are already addressing energy efficiency are not placed at a disadvantage. Also, the re-certification requirement will help their plants maintain focus. Mr. Diamond believes potential problems could include:

- if the assessment/auditing process is too cumbersome, the costs to the plant may outweigh the benefits,
- losing sight of the main intent of the program – reducing industrial plant energy intensity,
- unintended use of the certification and validation data for regulatory purposes, and
- establishing reasonable benchmarks (for example, could be difficult even within the petrochemical industry since the type of feedstocks used can vary with time and costs).

Incentives that Texas Petrochemicals would find attractive include recognition through press releases that go to local, state, and national media outlets, and tax credits for expenditures on documented energy projects.

DuPont – Don McConnell of DuPont described his company's energy management program. DuPont has developed sustainability goals which include energy consumption. They have a corporate-level energy "Breakout" program which collects and advocates energy projects. Internal energy reviews are conducted through a Corporate Center of Competency. They have corporate-level funding pool for energy projects, also. Plants have Site Energy Champions, and there are Area Energy Champions within each site. DuPont has in-house tools and best practices for use by plants, and uses the DOE assessment tools when appropriate.

Characteristics of the Superior Energy Performance which would advance DuPont's activities include the establishment of a consistency of approach (to minimize the impact of personnel turnover), availability of a Six Sigma or ANSI standard, access to a wider variety of tools

validation, and a certification program which provides a consistent resource pool of energy professionals. Potentially problematic issues include:

- potentially excessive reporting requirements,
- public access to reported data,
- certification via external consultants vs. internal staff,
- potential for costs to outweigh benefits to the plants,
- establishing consistency in a voluntary program,
- any impacts on carbon trading or cap & trade programs, and
- the extent to which the program identifies a plant or process meeting some baseline expectation of efficiency, or not meeting expectations.

Incentives which could be attractive to DuPont include

- limits on data published or made public,
- some linkage to a carbon trading or cap & trade program in the future,
- investment tax credits for energy efficiency investments, and
- corporate image enhancement through association with sustainability, energy efficiency, and climate change mitigation activities.

3M – Steve Schultz of 3M described their global energy management program. This includes tracking energy use at their facilities worldwide. 3M has reduced its energy consumption by 30% since 2000 through the activities of its program. 3M sees energy efficiency as a competitive advantage, and they are working with many of their suppliers to urge them to improve their energy efficiency.

Aspects of the proposed Superior Energy Performance program which would advance their existing program includes possibly providing greater credibility within 3M for energy savings achievements, the availability of a national framework for energy management, and an additional motivation to staff to seek recognition among peer companies. Potential issues for 3M include:

- not being able to receive credit for actions already completed,
- potential for costs for bureaucratic activities to outweigh benefits,
- requirements that are either too difficult to achieve or so easy to achieve that they are meaningless, and
- risk of the program becoming “owned” by a certifying body

Incentives 3M would like to see include:

- a preferred supplier status,
- financial benefits through significant reductions in operating costs and/or a verifiable response from the financial community,
- preferred services from government agencies such as EPA and DOE, and
- credit for actions already taken.

Lunch – Keynote Address

A speech was given by John Mizroch, Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy at DOE. He congratulated the participants on their commitment and leadership to explore construction of an energy management standard that can help control energy prices and apply the brakes on climate change. He stated that DOE was

interested in supporting industry's leadership, working together to establish a framework that provides real value to industry and boosts competitiveness, yet substantially accelerates energy efficiency gains and carbon reductions

Mr. Mizroch outlined some basic goals for the framework, which include:

1. First, it needs to be a voluntary program. The Administration does not want mandatory caps on U.S. carbon emissions. That would chase our vital industries offshore to countries where they have no caps.
2. Second, it should ultimately be a global solution.
3. Third, it should provide incentives for all industrial plants to improve their energy management practices—no matter where they currently stand along the continuum of energy efficiency.
4. Finally, it should create real economic value for industry. This solution should cut operating costs and increase productivity without imposing unrealistic time or cost burdens. He stated that he expects that financial communities will recognize and place greater value on industrial companies that adopt superior energy management practices. In many areas, this framework should lead to workable trading mechanisms to provide further financial incentives.

He recognized the importance of the multi-agency collaboration of DOE, EPA, and the Department of Commerce's National Institute of Standards and Technology. An overview of DOE's Save Energy Now initiative was given as an example of how public-private partnerships can be extremely effective. As part of this program, 200 Energy Savings Assessments (ESAs) were conducted at the nation's most energy-intensive plants. These assessments collectively identified opportunities to save over 50 trillion Btu of natural gas, or the equivalent used in 725,000 homes. If implemented, the identified opportunities for improvements could save almost half a billion dollars per year and reduce carbon dioxide emissions by 3.3 million metric tons annually. Many of the companies that participated in Save Energy Now are now using their trained staff members to conduct similar assessments at their other facilities. He invited the meeting participants to participate in the expanded 2007 program.

Mr. Mizroch stressed that he would like the energy management standard to become an ISO standard for use around the globe. He characterized the SEP as an opportunity to think big, avoid any regulatory scheme, and collaborate with government and other parties to build an exemplary voluntary program. He closed by thanking the participants for their commitment and hard work.

Breakout Groups

See Attachment 3 for a transcription of the discussion points from each of the three breakout groups.

The key ideas, thoughts, and opinions from each of the three breakout groups are summarized below. Discussion in these sessions focused on the following 8 areas: the energy management standard; certification; protocols; ENERGY STAR; obtaining capital for energy efficiency projects; the public release of data; incentives; and the DOE program structure, tools & training.

Energy Management Standard

Each plant needs to define its own energy efficiency metric, such as kWh per kg product. The energy management standard (EM Standard) should be:

- Voluntary,
- Not prescriptive,
- Transparent,
- A consensus standard, and
- Owned by industry.

These requirements would also apply to any standards developed for the Protocols or ENERGY STAR.

The EM Standard should allow for a uniform structure, but have flexibility in the metrics. The EM Standard requirements need to cause a mindset change in the corporate culture to embrace energy efficiency. The EM Standard should be program driven, not person driven.

Participants felt many that companies may need help putting the management system in place painlessly. The EM Standard should apply to all sizes and types of industry. There should be no external pressure to develop an EM Standard, and no consequences for not developing one. The driver for each industrial facility should be value.

Senior and plant management support is critical in establishing a program. Many participants were looking to DOE to provide resources and tools to help them “sell” the EM Standard to management.

Having energy efficiency as part of a company’s purchasing program should be a part of the EM Standard. This would give the program more global reach.

The EM Standard needs to specify what re-certification is, and how to level the playing field for both procrastinators and top performers.

Certification

Any certification program developed should be voluntary, flexible, and “industry-owned”. There was some disagreement over whether energy efficiency improvement results should be certified - some participants only wanted energy management *programs* to be certified, not the energy savings results. If the efficiency improvements were to be certified, 3rd party certification may be required for credibility in the marketplace, especially for “white certificates”. Some

participants felt DOE's target of a 5% improvement over 3 years may not be aggressive enough for some industries.

The fee for certification should be small, and some participants stated there should be an option for self certification or for certification of one industry by another. The certification process needs to make clear whether only a plant can be certified or if a corporation can also be certified. Some participants expressed that the DOE timeline may be too aggressive for to develop a good certification program.

Auditors that certify the energy savings need to be familiar with the industry they are assessing and should not sell or install equipment.

Protocols

The protocols need to take a holistic view – for example, some companies can trade feedstock for energy. The protocols need to go into the distribution and process level (end uses) and not just focus on energy conversion.

ENERGY STAR

Some participants really liked the ENERGY STAR approach and wanted EPA to include more industries as soon as possible. Some participants don't like the idea of benchmarking against others, just against themselves. Some participants felt benchmarking would be very difficult in some industries or that the program favors larger plants. There was confusion during breakout discussions regarding whether ENERGY STAR is the "top level" of SEP for industry participation.

Obtaining Capital for Energy Efficiency Projects

Many participants expressed that it is difficult to obtain capital for energy efficiency projects. These plants could implement efficiency projects if they had access to money. Other capital improvement projects are typically given preference within the company. Some participants felt they need a better way to build energy efficiency into capital investments. Some stated that cost avoidance does not always equal cost savings

Public Release of Data

DOE should not release data on individual plants. Participants agreed that releasing consolidated information on an industry sector is acceptable.

Incentives

Several participants favor federal tax credits, along with R&D cost credits. A government loan program or tax credits were suggested, with loan repayment possibly made through energy bill savings. These programs should not require certification, have quick access and quick turn-around, and not be limited to big-ticket items. They should not only apply to industry, but also residential and commercial energy users. Some felt these loan and tax credits would benefit latecomers. State programs and utilities rebates were also mentioned.

Carbon credits, where this program would provide assurance and due diligence of energy improvements, were also of interest to the participants. Overall program success may depend on the initial incentives. These initiatives will appeal to upper management and help them to recognize that energy efficiency is an urgent priority.

DOE Structure, Resources, and Training

Many participants want DOE to continue to develop energy savings-related tools and put a structure around them – to prepare a package for Partner Plants even before the certification program is in place. The tools need to be better organized – something “speedy and slim”. Additional training resources (especially operator training) would help. Something web-based would also be helpful. An additional resource that shows how to get a program started and sustained needs to be developed. We need some type of resource to show how energy efficiency makes a business case.

Meeting Attendees

The Achieving Superior Energy Performance in US Manufacturing Plants meeting consisted of 57 participants. A complete list is contained in Attachment 4.

Next Steps

At the conclusion of the meeting, the next steps were overviewed by the group. The first step is to post a brief meeting summary on the www.superiorenergyperformance.net web site. The meeting organizers will then prepare a complete meeting minutes for use by the participants.

Based on interest expressed in the meeting evaluation forms, an Interim Steering Committee will be formed to work with DOE, EPA, and NIST in shaping the final framework of this initiative. The meeting organizers will work to achieve a balance of industries represented on the Interim Steering Committee. Future gatherings may be by some combination of in-person meetings, conference calls, and webcasts.

This committee will then establish other committees and working groups as deemed necessary, and will draw from those expressing interest in their meeting evaluation forms. The organizers will be mindful of the participants request for separate tracks for the development of the proposed Partner Plant and Certified Plant levels.

An activity of high interest to meeting participants was the development of a web-based informational resource for energy management that was both easy to find and easy to use by plants of all sizes. This “quick-start” material should take the user through the process of setting up an energy management plan step-by-step, providing a roadmap that allowed users to determine their appropriate point of entry based on their energy management experience. This resource should be made available as early as possible in the program development.

Attachment 1

Meeting Agenda

- 10:00am Welcome and Introductions–
Paul Scheihing, US Department of Energy
Elizabeth Dutrow, US Environmental Protection Agency
Carroll Thomas, US Department of Commerce
Lane Hallenbeck, American National Standards Institute
- 10:15am Purpose of Meeting, Paul Scheihing, US DOE
- 10:30am How did we get here? Texas industry perspective
Gary Faagau, Tesoro Energy
- 10:45am Proposal for Achieving Superior Energy Performance
- ENERGY STAR Plant Brad Reed, Toyota Motor Manufacturing
 - Partner Plant Joe Almaguer, Dow Chemical
 - Certified Plant Fred Fendt, Rohm & Haas Company
- 11:15am Panel Discussion: Industry Speaks
- Noon Instructions for Afternoon Breakout Groups
- Steve Schultz, 3M Company, Moderator
Joe Ghislain, Ford Motor Company
Sean Diamond, Texas Petrochemicals
Don McConnell, DuPont
- 12:15pm Lunch
Speaker: John Mizroch, Principal Deputy Assistant Secretary, Energy Efficiency and Renewable Energy, DOE
- 1:30pm Breakout Groups Convene
- 3:00pm Break
- 3:30pm Reconvene Plenary Session
- Report from breakout groups on findings
 - Establishing a structure to move forward
 - Next Steps
- 5:00 Adjourn

Attachment 2

Designing a Framework for Achieving Superior Energy Performance in US Manufacturing Plants PRELIMINARY CONCEPT PROPOSAL For Industry Review and Comment

3/1/07

Who's involved?

This preliminary concept has been developed by industry representatives, US Department of Energy's Industrial Technologies Program (DOE/ITP), US Environmental Protection Agency's ENERGY STAR Program for Industry (EPA Industry), NIST Manufacturing Extension Partnership (MEP), Texas Industries of the Future (TX IOF), and the American National Standards Institute (ANSI).

What is the "Framework for Achieving Superior Energy Performance in US Manufacturing Plants?"

The purpose of the Framework is to promote greater energy efficiency in US manufacturing plants by making energy management as much a part of typical industrial operating practices as quality, waste reduction and inventory management. The goal is to provide a mechanism that helps each company maintain their focus on energy efficiency improvements, provide visibility for its achievements, and provide verification of results to public and private entities to "raise the bar" on industrial energy efficiency.

Along with the need for increased energy efficiency, there is also need for greater transparency in the way industrial facilities identify, develop, and document energy efficiency improvements. Historically, energy saving efforts have been developed by plant engineers, frequently with assistance from consultants or suppliers with highly specialized technical skills. Quantifying results and measuring progress relies heavily on the presence of individual energy efficiency "champions" within a company and their access to consultants or suppliers with substantial expertise and experience. Drawbacks to this approach are that achievements are often not well understood by those without specialized expertise, including management, replication occurs quite slowly in the market, and benefits may disappear if the champion leaves the company or is relocated.

This proposal describes creation of a framework for fostering energy efficiency at all levels of energy performance and a methodology for measuring and validating progress toward energy efficiency—progress that is voluntary, performance-based, and technically sound. The intent would be to integrate this methodology into existing corporate management systems, such as ISO 9001:2000, 14001:2004, and Six Sigma. The long-term goals of this approach are (1) to foster a organizational culture of continuous improvement for energy efficiency, 2) to develop a transparent system to validate energy efficiency improvements and management practices and thus (3) create a verified record of energy savings with potential market value that could be recognized among sectors and countries.

The proposed framework includes three levels of participation:

- Partner Plant
 - Provide plants with a flexible point of entry into a recognized, progressive program to improve energy efficiency
- Certified Plant
 - Provide a more consistent approach to industrial energy efficiency that is technically sound, yet flexible;
 - Integrate energy efficiency improvements into existing industrial management systems for continuous improvement, and
 - Position participating plants to be recognized by the financial community for superior energy management practices and their contribution to climate change mitigation.
- ENERGY STAR Plant
 - Recognize and encourage superior energy performance

Within this framework, the award of the ENERGY STAR for qualifying plants already exists for some sectors, as do many of the tools that will lay the foundation for the Partner Plant and Certified Plant. What is new is an integrated approach to superior energy performance for industrial facilities, and a voluntary certification process to more consistently validate and recognize achievements. The Partner Plant is meant to prepare industrial facilities to embark on a path to continuous improvement in energy efficiency. The Certified Plant introduces a standardized approach to identifying, developing, documenting, and reporting on energy efficiency progress that provides transparency that currently does not exist.

Four elements are proposed for the voluntary certification program at the plant level:

- Energy Management Standards;
- Standardized Assessment Protocols for industrial systems (such as pumping, compressed air, steam, process heating) based on best practices identified over years of work by DOE with industry;
- Certified Practitioners who can provide technical assistance with implementation of the energy management standard and/or system protocols, and
- Measurement and validation of energy savings by an ANSI-Accredited Certifier.

For additional details on the purpose of the proposed levels, business benefits, technical assistance, and issues to consider, see Attachment 1.

In addressing this proposed Framework, participants in the March 6 meeting will be asked the following three questions:

1. Given your plant(s) energy efficiency efforts, what characteristics of the proposed framework would advance the energy efficiency program?
2. What would be potentially problematic?
3. What incentives would make the proposed framework attractive to your company and widespread among industry?

Substantial feedback is expected and welcomed.

Industry Input Needed

The success of a voluntary, industry-driven program depends on designing a program that balances requirements for measurement and documentation of performance with practical considerations and costs. To date, a small planning group, including several representatives from manufacturing companies, has contributed to this preliminary concept proposal. The purpose of the March 6 meeting is to more broadly obtain industry input on the proposal, in order to shape the proposal into something that manufacturing companies, such as yours, find valuable. Your comments are not only welcome, but critical to the success of this program.

IMPORTANT NOTE: If you are unable to participate in the meeting, or have additional people in your company who would like to provide input during this first round of discussions, we have made provisions for you to submit comments in writing. Please use the "Track Changes" feature to capture your comments or suggested edits in this document, save the file with your initials and company name in the file name, and email it no later than Monday, March 12, 2007 to: Aimee McKane, Lawrence Berkeley National Laboratory at atmckane@lbl.gov

What will my company gain from participating in the March 6 meeting?

Approximately 40 representatives from manufacturing companies will be attending the one day meeting from over 12 sectors. The March 6 meeting offers the greatest opportunity to industry to shape the program in its formative phase. This meeting precedes any program announcement and is focused on manufacturing companies; future meetings will be open to suppliers, consultants, states, utilities, and other interested parties.

What is this meeting likely to accomplish?

The sponsoring organizations will consider this meeting a success if:

- Participating manufacturing companies actively provide input to debate and discuss the framework, shaping it into a concept that they find worthwhile;
- Participating companies agree to participate in future planning to develop elements of the proposed framework

Industry will determine the direction of the certification and standards development process by participating in committees or working groups.

Why is this Framework being considered now?

In 2003, a group of companies in Texas proposed creation of a voluntary program to certify industrial plants for their proficiency in best energy management practices. DOE recognized this as an opportunity to work with industry, the EPA, and the MEP to develop an organizing framework to broaden the impact of existing industrial energy efficiency program offerings.

The proposed concept relies on an industry-designed framework that provides a transparent, voluntary approach for industrial plants to identify, achieve, measure, document, and report energy savings. Voluntary energy management standards offer a way for industry to integrate energy efficiency into management practices. The US has an existing ANSI standard Management System for Energy that could be modified and adopted.

The proposed certification program involves government in a facilitation role, providing a neutral platform, technical assistance, and recognition during the development and piloting of the program. The intent would be to transition management of the certification program to a not-for-profit, non-governmental entity within five years.

What's the value for industry?

- Cut operating costs while increasing energy productivity;
- Reduce emissions without having a negative effect on operations;
- Be recognized by financial analysts for superior energy management practices;
- Influence program design, ensuring that it meets energy efficiency goals without undue burdens of time or cost;
- Access government resources to initiate their certification, and
- Contribute to more workable carbon trading mechanisms through certification program.

What do the DOE, EPA, and MEP hope to gain from this Framework?

- Greatly increase the number of US plants and suppliers to US plants on a path of continuous improvement for energy efficiency;
- Launch a successful, voluntary program with measurable results;
- Meet energy savings and greenhouse gas reduction targets through voluntary efforts that help, rather than harm, US industries;
- Demonstrate U.S. leadership by developing an energy efficiency standard through a consensus-driven, voluntary approach.

What's the concept proposal of how a plant could become certified?

- Demonstrate compliance with the *energy management standard*;
- Identify energy intensity performance improvement opportunities or demonstrate best practice through application of *system assessment protocols*;
- Measure improvement by implementing identified opportunities and use recognized *methodologies to validate resulting energy savings*;
- Provide certified documentation of plant energy savings and energy intensity improvement (%);
- Re-certify every 3 years by documenting energy savings projects and continuous improvement of 5% or greater in energy intensity within the re-certification period.

Who will determine the cost of certification?

Industry is being asked to develop a business model that makes sense. As previously mentioned, a balance needs to be struck between requirements for measurement and documentation of performance with practical considerations and costs. An industry-led working group is envisioned to develop this business model and to make recommendations concerning organizations that could be certifiers. The ultimate goal is a program that is self-supporting through industry fees, so the cost/value proposition needs to be workable.

How can I get involved?

1. Participate in the March 6, 2007 meeting in Washington, DC
2. Provide comments on this document for inclusion in the meeting summary by March 12 to Aimee McKane at atmckane@lbl.gov
3. Submit further comments, request to be placed on the Framework email list, review the summary of the March 6 meeting and the refined proposal (available late March), and look for announcements and updates on the Superior Performance website at <http://www.superiorenergyperformance.net/>
4. Respond to email requests for volunteers to serve on committees and working groups

Attachment: Proposal for Achieving Superior Energy Performance in Industrial Plants

Program Element	Planned Purpose	Business Benefits	Technical Assistance (Available/Needed)	Issues to Consider
Partner Plant	<ul style="list-style-type: none"> • Provide industrial plants with a flexible point of entry into a recognized, progressive program to improve energy efficiency 	<ul style="list-style-type: none"> • Develop a baseline of energy use • Begin actively managing energy use, costs, and risk • Identify energy savings opportunities that recover costs in 2 years or less • Preferred access to DOE/EPA technical assistance • Recognition for achievements 	<ul style="list-style-type: none"> • Plant Energy Profiler • Energy Management Guidelines/ Standards • Energy Saving Assessments • System optimization training • System assessment software • Qualified Specialists • Opportunity/ energy reduction calculator for SMEs • <i>Documentation/reporting tools</i> • <i>Recognition program</i> 	<ul style="list-style-type: none"> • Reporting requirements • Needs of small vs large companies
Certified Plant	<ul style="list-style-type: none"> • Provide a framework for a consistent approach to industrial energy efficiency that is technically sound, yet flexible. • Integrate energy efficiency improvements into existing industrial management systems for continuous improvement (ISO, Six Sigma) • Position plants to be recognized by the financial community for superior energy management practices & their contribution to climate change mitigation 	<ul style="list-style-type: none"> • Reduce emissions without negative effect on operations • Continue to improve energy use/product output over time • Enhanced shareholder value • Broad recognition as a good corporate citizen • Improve opportunities for utility and state financial incentives thru documentation/reporting • Potential for preferred supplier status • Potential to set direction for international policy/programs 	See below	<ul style="list-style-type: none"> • Allow certification at both plant and corporate level? • Acceptance by utilities & states for financial incentives • Concern about regulations • Compatibility w/ ISO and programs in the EU and other countries • Federal/ private sector support & recognition of preferred purchasing status
<i>Certified Plant Details</i>				
ANSI Energy Management Standard	<ul style="list-style-type: none"> • Provide a framework for integrating energy efficiency into existing industrial management systems for continuous improvement 	<ul style="list-style-type: none"> • Develop a baseline of energy use • Actively managing energy use, costs, and risk • Reduce emissions without negative effect on operations • Continue to improve energy use/product output over time • Document savings for internal & external use • Encourage facilities to sustain gains& address core causes 	<ul style="list-style-type: none"> • <i>Modify existing ANSI energy management standard</i> 	<ul style="list-style-type: none"> • Documentation requirements • Compatibility w/existing management practices
ANSI Standardized Assessment Protocols for industrial systems	<ul style="list-style-type: none"> • Create a market standard for industrial system assessment • Introduce greater reliability and recognition of system energy efficiency opportunities • Identify savings opportunities to meet continuous energy efficiency improvement goals 	<ul style="list-style-type: none"> • Easier to secure internal approvals for assessment services • Assurance that recommendations are sound and will produce predicted results • Energy efficiency projects w/ attractive paybacks using commercially available technology 	<ul style="list-style-type: none"> • <i>System Assessment Protocols</i> (based on existing body of knowledge on system assessment & expert guidance) 	<ul style="list-style-type: none"> • Application requirements for energy efficient plants
Certified Practitioners	<ul style="list-style-type: none"> • Create a market standard for assessment services based on training and independent validation of requisite skills 	<ul style="list-style-type: none"> • Easier to identify qualified experts • Companies may choose to have internal staff certified 	<ul style="list-style-type: none"> • <i>Training and testing program for certification</i> (build on Qualified Specialist & ESA Experts training) 	<ul style="list-style-type: none"> • Requirements to maintain certification • Conditions to de-certify
Plant Certification for Energy Efficiency	<ul style="list-style-type: none"> • Validate energy savings achievements • Validate energy management processes • Position plants to be recognized by the financial community for superior energy management practices & their contribution to climate change mitigation 	<ul style="list-style-type: none"> • Enhanced shareholder value • Broad recognition as a good corporate citizen • Improve opportunities for utility and state financial incentives • Potential for preferred supplier status • Potential to set direction for international policy/programs 	<ul style="list-style-type: none"> • <i>Business plan for certifying body</i> • <i>Well-vetted value proposition for industry</i> • <i>Documenting/reporting tools</i> 	<ul style="list-style-type: none"> • Cost of certification • Documentation requirements • Application and re-certification requirements

ENERGY STAR Plant	<ul style="list-style-type: none"> • Recognize and encourage superior energy performance 	<ul style="list-style-type: none"> • Reduce emissions without negative effect on operations • Actively managing energy use & costs • Recognition for superior energy performance 	<ul style="list-style-type: none"> • Energy Guides for Industry • Energy management guidelines, tools • Energy Performance Indicator(EPI) • Energy program self-assessment tools • National energy performance rating system for US plants – specific to select industries but expanding 	<ul style="list-style-type: none"> • Plant label currently limited to 4 industrial sectors
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Attachment 3

Contents of Breakout Group Flip Charts

Group 1 Flip Charts

Around the room, what is your top issue:

- (1) 3rd party cert may be needed for credibility in marketplace
- (5) Measurement/validation (recover the cost of capital for measurement)
- (3) Public release of data
- (8) Senior & plant management attention – 2nd place
- (1) Operator training & performance
- Variety of issues/sizes of industry
- (4) Global viewpoint is positive
- How do we get word out that US is making progress/program is value
- (10) Sense of urgency needed – 1st place
- How do we motivate and sustain program (contra ISO 14000)
- (4) Maintain focus on value, not certification – 5th place
- (1) No external pressure/consequences. Driver should be value/improvements
- Certification is means, not end
- (2) Need to define metrics/numerator -- #, \$, lbs
- (5) Expand from energy systems to users – 4th place
- (2) Energy conservation , moral good for future
- Want fears of costs, burden
- Clear guidance of which/ where to use E* / this effort
- (1) Need a good system (lights still on all day)
- Consensus standard
- Timing & reasonableness of timeline
- (7) Voluntary. If owner is industry, success, versus government or certifier ownership. – 3rd place

Pluses

- (10) First, Need structure and tools (add to the existing tools) to save energy, not certification – 1st place
- (1) Some states have tax credits, some utilities have programs
- Transparency
- (6) Global reach. (ISO hasn't really improved quality, but has made achieving quality less expensive.) – 3rd place
- (3) Uniform structure will save money, train people, but need flexibility in metrics.
- (5) Benchmarking/idea sharing focus – sell as lean
- (1) Provides motivation (a positive of ISO 14000)
- (9) Industry-developed system fosters competition & improvement – 2nd place
- The system needs to address the question of implementation.

Minuses

- Timing. ENERGY STAR is available. Partner could be started soon. Certification could, should take time.
- (6) Urgency to save energy, not establish certification – 2nd place
- A consensus standard takes time
- Timeline of 3 years likely too short, consensus standard takes time
- (4) Capital/management support . How do we sell/what is benefit? – 3rd place
- (9) Legitimacy – How do we create meaningful metrics? Need to encourage measurement technologies. Need to sustain and propagate. – 1st place
- (2) Each participant must identify measures & metrics in concert with standards
- (1) No existing regular/identical processes in industry

Note: Group 1 participants each were allowed 10 votes on keys issues. Votes are highlighted in teal.

Group 2 Flip Charts

Pluses

- Strong management support
- Good low hanging fruit capture
- Timely – ready for energy efficiency change
- New energy engineers – good thing
- ENERGY STAR Assessment – can help rate your program
- Can compare across industries with system basis
- No target goal
- Go into process assessment, include utilization and delivery, not just conversion of energy

Change

- Build EE in capital investment
- Dollars for technology
- Mindset
- Energy standards into capital project review
- Activity based accounting does not have build in for energy variance
- Some industries not included in ENERGY STAR
- Know tools are there, training?
- Credit or loan not associated with certification
- Part of program to foster partners to be involved
- Part of energy management standard for purchasing sector
- Aggressive target for certification (5% in 3 years not enough)
 - By industrial sector?
 - Have association set targets for sector
 - Also by quartile
 - Or scorecard
- Need working group to address
- Qualifier for continual improvement not just for those starting and moving up a quartile
- Certification
 - continual maintenance
 - top quartile
 - 1st time for significant movement
- Certify program, not results

Incentives

- Web page works well

- Leadership
 - Performance based on energy efficiency results
 - What it means to the individuals and their contribution
- Cost avoidance does not equal cost savings
- Government loan program – low interest or interest free so money is not taken from the internal capital funding
 - Need to have quick access
 - Residential, commercial, industrial – amenable to a broader audience
 - Not big ticket or industry specific
- Tax credit for energy efficiency efforts
- PICs drive behavior
- Top quartile continuous performance improvement (show maintenance)
- Incentives for companies making large first time changes

Summary

- Mind set change (culture)
- Program driven, not person driven
- Difference between kick-off vs. sustain
- Process/program measure – not results
- Certification would lead validity that may be used outside the program
- Don't misuse data supplied
- Program does not release information on plants, but on sector is ok
- Only individual company released – results dictate continuing
- If you have the program in place, you can measure consumption
- Need holistic view, some companies can trade energy for feedstock
- Every company needs to select its own metric
- Certification process should review the metric, make sure ok, what is happening with associated metrics
- Fee for certification, self-certification
- How much is value driven?
- Broad incentives included, tax credit, low interest loan
- Incentives for small-medium business
- How do you show new company how to start, what to use
- Energy Management (big company) required to drive out to value chain (supplier customer)
- Plant vs. corporate certification?
- Hard to do w/o corporate support
- Need plant level push
- Need senior management support (as part of certification)
- Good business to save energy

Group 3 Flip Charts

Key Issues

- Substantive improvement; results over process
- Get industrial users on same page; share best practices across industry
- Cost, availability, and environmental impacts
- Cost-effective program that serves industry w/out unnecessary costs
- Engaging companies and achieving measurable results; deeper impacts
- Competitiveness of US plants and products
- Leveling the playing field
- Creating a motivational value proposition for industry
- Increase the perceived value of energy efficiency
- How can the government improve performance over creating constraints
- Avoid obstacles that reduce competitiveness
- De facto requirements and legislation stemming from standards
- Technology transfer
- Excess capacity to relieve workforce issues
- Maintain competitive edge of rural manufacturing industry
- Industry gets it and gets it right
- Move away from a prescriptive top down approach
- Move away from an anecdotal approach

What is the importance of this program to you (1-5)?

- Certification could be good or bad
- Responses vary whether impacted directly or not
- What are key elements needed in certification?
- Should there be an energy performance indicator element to partner plant and certified plant
- Limited by ability for EPA to work with all industries
- Could be improved info on energy benchmarking; guidance on benchmarking; quality of methodology
- Difficult because there is a lot of variation in industry that is out of their hands (weather, prices, etc)
- Other say: should not be benchmarking against others, just yourself and should be about working with the individual companies
- Maybe limit benchmarking for internal use
- Could be very difficult to benchmark across industry; metric very different amongst industries and companies
- Beware of being too prescriptive

- Need agreement on what re-certification requirement will be in terms of continuous improvement; should be on an individual company or plant basis to account for fixed and variable elements
- Level playing field for both procrastinators and top performers considering technological age, business conditions and climate
- Distinguishing between practices vs. performance in recognition
- Recognition should be connected to a significance
- Measurement and accountability internally
- Certification is a tool to help the other 75% of industry (partner plant)
- Need legally binding firewall for ensuring data privacy
- Self-certification
- SMEs needs help to facilitate and implement usage
- Regional centers to provide technical expertise for SMEs
- Mechanism to get evaluations done through trade orgs.
- Need a way to articulate best practices and look at the bigger picture through assessments, despite possible conflicts of interest

Potential Obstacles

- Very difficult to create for all industries and suppliers
- Not clear from the proposal what the real limitations are (ENERGY STAR)
- National epi not viable
- Lots of interest in the ability for other industries to get the ENERGY STAR
- Seems as if you are not in the top 25%, you can't get certified, which leaves no incentive; look outside the top plants
- Not clear that any plant can be involved at any level of energy efficiency; ENERGY STAR seems like the top level; can't view this as reaching for ENERGY STAR
- 5% improvement for re-certification should look retroactively at those who have been improving for many years
- Must have a way to incorporate incremental improvement
- Barriers to implementing new technologies
- Fears that data will be shared with regulatory agencies for other purposes
- Actions taken to improve energy efficiency (substantive change) can be subject to new permits and other regulation
- Third-party assessment must be value-added for the facility recommendations
- Assessors must be familiar with industry they are assessing
- Assessors should not be selling and installing equipment; need firewall between a specialist that does assessment and tries to sell services or products; conflict of interest, esp. small manufacturers

What do we need?

- Way of getting energy projects implemented in a resource limited climate
- Quantitative people that want to be energy assessors; need a specialist for energy efficiency metrics
- Need people to help put the management system into place as painlessly as possible
- Need for champions to understand energy efficiency and cost economics
- Need organization to capture institutional knowledge
- New skill set or profession to be a support mechanism for balancing management and energy efficiency needs; assist companies in establishing and implementing an energy management system; take specialized knowledge and put into format that can be used more easily by a general population
- Mechanism to get info out in the marketplace: web-based system
- Process to assist w/ buying equipment and doing life cycle cost in equipment purchases

Incentives

- Drives and appeals to high-level management to see energy efficiency as an urgency – dollars
- Initial incentives to breed success
- Increase the competitiveness of cost to capital
- R&D cost credit; tax credits
- Carbon credits don't make too bureaucratic and prescriptive; be clear about what the role is (does program provide assurance and due diligence of energy improvements); just be disciplined in the short term and use data for future carbon credits
- Tax credits would not support a level playing field; would favor late comers, not those who took early action
- Carefully done without creating a permanent crutch

**Attachment 4
Meeting Participants**

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