Results of DOE's Streamlined Energy Savings Assessments

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ABSTRACT

The Department of Energy's new, streamlined approach for conducting energy assessments has identified substantial opportunities for energy savings in industry. In 2006, DOE's Industrial Technologies Program (ITP) conducted 200 energy savings assessments (ESAs) of steam or process heating systems at some of our nation's largest manufacturing facilities. Focusing on natural gas, DOE experts worked with plant personnel to identify savings opportunities that typically amounted to 5 to 15% of a plant's total energy use—saving an average of about $2.5 million per plant annually. The ESAs cumulatively identified opportunities to save over 50 trillion Btu of natural gas and nearly $500 million in potential energy cost savings. If these identified opportunities are fully implemented, they could reduce carbon dioxide emissions by 3.3 million metric tons annually.

The ESAs depart from typical plant energy assessments by integrating a strong training component. This training prepares the plant staff to assume key roles in the current assessment process and equips them to provide ongoing value to plant energy management. Other benefits of this approach include stronger plant-buy-in for the assessment results and better plant preparation for independent replication of the assessment process at other facilities across the host company. Initial follow-up surveys of 116 of the plants that received ESAs indicate that 65% of all ESA recommendations have been implemented, are now in progress, or are in the planning stage. In 2007, DOE is planning to continue and expand this process with the goal of performing 250 ESAs.

Success of the *Save Energy Now* Initiative and Energy Savings Assessments

In the wake of Hurricane Katrina and other severe storms in 2005, natural gas supplies were restricted, prices rose, and industry sought ways to reduce its natural gas use and costs. In October 2005, Energy Secretary Bodman launched his *Easy Ways to Save Energy* campaign with a promise to provide free energy assessments to 200 of the largest U.S. manufacturing plants. A major thrust of the campaign was to ensure that the nation's natural gas supplies would be adequate for all Americans, especially during the home heating season.

The Energy Department's Industrial Technologies Program (ITP) responded to the Secretary's campaign with its *Save Energy Now* initiative, featuring a new and cost-effective form of plant assessment. The Energy Savings Assessments (ESAs) drew heavily on the existing resources of the Program's Technology Delivery component, which provides near-term solutions to support the Program's longer-term research and development (R&D) efforts. Over the years, ITP/Tech Delivery had worked with industry partners to assemble a suite of respected software decision tools, proven assessment protocols, training curricula, certified experts, and strong partnerships for deployment. These existing resources enabled ITP's swift and effective response to the sudden need to increase industrial energy efficiency in the near term.

The ESAs conducted during 2006 departed from earlier DOE plant assessment approaches by including training as an integral part of the process. This training prepared the plant staff to assume key roles in the assessment process immediately—and into the future. Benefits of this approach include stronger plant-buy-in for the assessment results and better plant preparation for independent replication of the assessment process at other facilities across the host company.

By the end of 2006, DOE had completed all 200 of the planned ESAs, identifying over 50 trillion Btu and nearly $500 million in potential energy savings. These energy savings, if fully implemented, could reduce carbon dioxide emissions by 3.3 million metric tons annually, representing approximately 7% of total U.S. growth in carbon dioxide emissions from 2004 to 2005. Given the large size of the targeted facilities and their presumed energy efficiency, the identified savings opportunities were more extensive than anticipated. The unusually large size of these plants may also be a factor in the higher than normal implementation rates found to date through follow-up surveys. ITP expanded this initiative in 2007 with the goal of conducting 250 ESAs.

Save Energy Now Strategy, Scope, and Resources

The *Save Energy Now* initiative in 2006 strategically focused on natural gas savings in some of the nation's largest manufacturing plants. ESAs were targeted at those plants that consume 1 trillion Btu or more annually. This relatively small group of very large plants suggests a convenient way to affect large amounts of energy use. At the same time, these very large plants can typically afford to have their own energy management personnel and might be expected to have already taken advantage of the easily obtainable energy savings opportunities. This supposition was the basis for initial industry skepticism regarding the value of the ESAs.

On the basis of anticipated supply issues in the natural gas sector, the initiative also focused specifically on process heating and steam systems. These common industrial systems tend to use natural gas and are estimated to account for approximately 76% of all manufacturing natural gas use.

The Save Energy Now initiative also included provisions to help plants that applied for but did not qualify for an ESA. Alternative services offered to these plants included (1) an assessment by one of DOE's 26 university-based Industrial Assessment Centers, (2) a telephone consultation with a systems expert at the DOE/EERE Information Center, or (3) other technical materials and services (e.g., the *Save Energy Now* CD) available through ITP.

ITP's existing resources were specifically designed and developed to carry out the types of assessments required to fulfill the Secretary's pledge. Over the past 20 years, ITP has worked in partnership with U.S. industry to develop software tools, training programs, Qualified Specialists in software tool applications, and university-based assessment teams—all to help industrial plants identify their best opportunities for saving energy and cutting costs.

- **Software Tools**. The primary software tools used for the 200 ESAs in 2006 were the DOE process heating and steam decision tools, which address industrial systems that often use natural gas. The Process Heating Assessment and Survey Tool (PHAST) is used to survey and identify the most energy-intensive process heating equipment. The Steam System Assessment Tool (SSAT) estimates the impacts of key steam system

improvements, and the 3E-Plus tool can also be used to calculate the most economical thickness of industrial insulation for specific operating conditions.

- **The ESA Experts**, who conduct the ESAs, were initially solicited from the pool of Qualified Specialists. These individuals had completed training and passed rigorous exams on either the DOE steam or process heating software tools and were trained in the protocols for conducting ESAs. To increase and maintain a substantial group of Energy Experts, ITP now regularly solicits individuals who are Qualified Specialists to train for the ESA process.
- **Industrial Assessment Centers.** Teams of engineering students and their faculty leaders at 26 participating U.S. universities provide energy, waste, and productivity assessments at no charge to small and mid-sized manufacturers in their regions. These teams conduct one- or two-day site visits to identify energy and cost savings opportunities. In addition to the direct energy and cost savings benefits, the IAC program offers industry a longer-term benefit—a trained workforce of energy engineers, who typically contribute to improved industrial energy efficiency throughout their careers. The IAC teams now include at least 12 Energy Experts and 45 Qualified Specialists among the staff and students. Since 2001, the IAC assessments have identified an average of $117,000 per plant in energy saving opportunities each year, with the average implemented savings being $51,000 per plant.

  The on-line IAC database includes information from more than 13,000 assessments conducted over the last 20 years. It is recognized as one of the most comprehensive industrial energy databases in the world. Visitors to the IAC website are able to search the database by industry NAIC or SIC code to find the top recommendations for plants of the specified type. Database functionality also supports searches by Cost, Savings, Plant Size, Year, Energy Costs, Products, or Type of Recommendation.

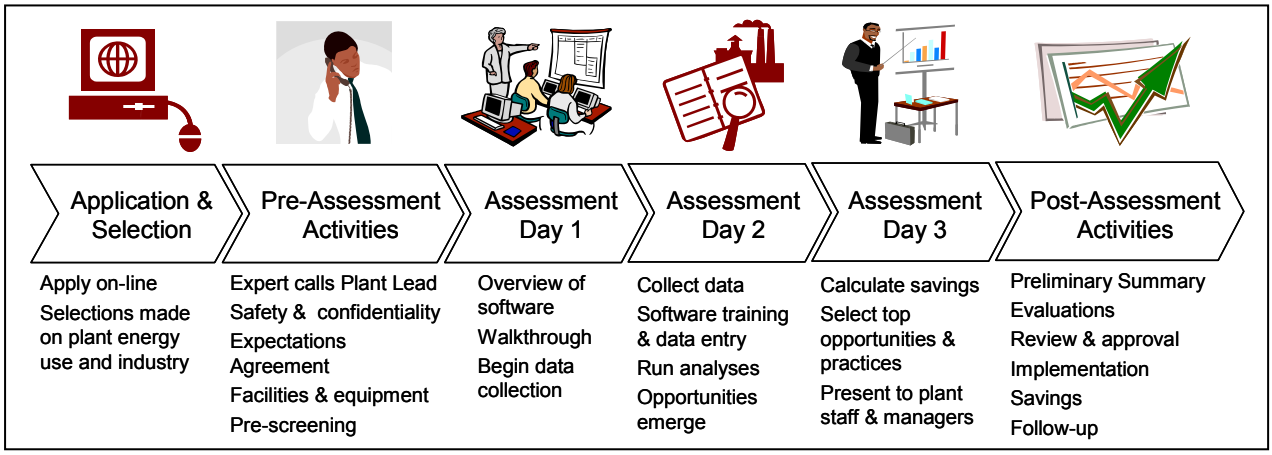
The Energy Savings Assessment (ESA) Process

ESAs are distinct from most industrial energy audits or assessments in that they emphasize training. As summarized in Figure 1, ESAs in 2006 specifically focused on training industrial plant staff on how to use either the DOE steam or process heating software tools. Key benefits of this approach are that plant personnel get hands-on experience in how to effectively use the DOE software tools and recognize the value of applying these tools to their operations, and that plant personnel who have participated in identifying and evaluating opportunities during the ESA enhance the likelihood that many of these opportunities will be implemented to actually save energy and costs at the plant. Major steps in the ESA process are summarized below.

Application and Selection

Companies complete an online application to define the type of ESA requested (steam or process heating), their total plant energy use, key characteristics of the plant, and plant contact info. Annual plant energy usage must be 1 trillion Btu or higher. The applications are examined and plants that meet the requirements are identified. Potential plants are contacted to verify their interest and possible dates to conduct the ESA.

Figure 1: ESA Process



Pre-ESA Activities

An ESA Expert is chosen according to the location of the plant, requested dates, and type of ESA. The identified ESA Expert then calls the plant contact and clearly establishes who will serve as the "ESA Plant Lead." This individual stays with the ESA Expert during the full three days that the ESA is performed, so their commitment to participate fully in the ESA process is essential. The Plant Lead is responsible for scheduling a conference room for working with the DOE tools and for setting up a Closeout Meeting to discuss assessment results with plant staff and upper management on the last day of the ESA.

The Plant Lead is given a copy of the plant's application data (to confirm), a copy of the ESA Agreements to which the company subscribed through the application process, and an Energy Management Practices Questionnaire to be completed and returned to the ESA Expert. The ESA Expert then works with the Plant Lead to identify safety requirements and any confidentiality agreements with which the ESA must comply. They also discuss possible opportunities to investigate during the ESA and potential data collection needs. To help in identifying possible opportunities, the Plant Lead is asked to complete a Prescreening Tool (SSST for steam or the Process Heating Scorecard).

If necessary, the ESA Expert may bring to the plant any measurement equipment needed for the ESA and not available at the plant. The Steam or Process Heating software tool must be installed on the Plant Lead's computer, and the Lead is alerted that they will need to perform some data entry as part of the software training process. This requirement helps the Plant Lead become familiar with applying the software tools to estimate energy savings.

ESA Day 1

After assuring that all plant safety requirements are met, the ESA Expert meets with the Plant Lead and other participating personnel to go over the results of the Prescreening Tool and provide an overview of the Steam or Process Heating software tool to be used. The group performs a walkthrough of the plant or portion of the plant on which the ESA will focus. Some initial data collection may be conducted as a large group or in smaller ESA sub-teams if there is a large amount of data to be collected.

ESA Day 2

Data collection continues until sufficient results are obtained to support the opportunity analyses. Separate analyses are performed by the ESA Expert and Plant Lead, who enter the data into their respective versions of the software tool. The ESA Expert explains the software application to investigate an ESA opportunity, and individual opportunities are investigated until all have been completed and reviewed. Based on the results, specific opportunities are selected as potential recommendations for plant implementation. Additional data collection may be required if some opportunities raise further questions. By the end of the second day, the Expert and Plant Lead should be approaching agreement on the best opportunities for inclusion in the Final Report. The ESA Expert prepares a draft of the Preliminary Report after leaving the plant. This draft is presented to the Plant Lead on the third day and they jointly review and approve the report before the ESA is completed.

ESA Day 3

The ESA Expert and Plant Lead finalize the calculations performed to quantify ESA target savings opportunities. They discuss and agree on all opportunities that will be discussed in the one- or two-hour afternoon Closeout Meeting, to which plant management has been previously invited. Either the Plant Lead or the ESA Expert, preferably the former, presents an overview of the ESA, reviews the operational best practices that the plant had been using already, and explains the ESA opportunities identified and evaluated—highlighting the anticipated cost and energy savings those opportunities represent.

The ESA Expert leaves the plant with copies of the completed ESA attendance list, copies of evaluations from the participating plant personnel, and an approved version of the Preliminary ESA Report. All information provided to the ESA Experts for the ESA Summary Report is securely held by DOE; no individual ESA plant information is reported by the DOE in public documents.

By the end of the ESA, the Plant Lead should have a good understanding of how to apply the DOE steam or process heating software to evaluate energy savings opportunities. The Plant Lead should also be confident that at least some of the ESA opportunities evaluated will provide good cost and energy savings for the plant if they are implemented. Finally, ESA participants from other company plants will also have been provided some experience in applying and using the DOE software to evaluate energy savings opportunities.

Post-ESA Activities

The ESA Expert submits to DOE the Approved Preliminary Report, attendance at the assessment, and summaries of the ESA Evaluations from plant personnel and the Energy Management Questionnaire. The ESA Expert also prepares a draft ESA Summary Report and draft savings spreadsheet. The former contains the background information for the ESA, a table of the identified ESA opportunities and associated dollar and energy savings, and a summary of the identified best practices from the ESA plant.

The Expert submits the draft ESA Summary Report to the Plant Lead and DOE for review, comment, and final approval. At 6-, 12-, and 24- month intervals following the ESA, the Plant Lead is contacted as part of a follow-up survey regarding the energy savings

recommendations they have implemented in their plant or replicated in additional plants. These surveys help DOE track overall energy savings achieved through the program.

ESA Results

ITP received a large volume of industry applications for the ESAs, and the planned 200 assessments were completed at large manufacturing plants across the country. As shown in Figure 2, the plants assessed tended to cluster in major manufacturing centers. The selection process focused on plant energy use and similar characteristics rather than geographic location.

Figure 2. 200 Energy Savings Assessments Were Completed Across the Nation in 2006

The 2006 Energy Savings Assessments were highly successful in identifying opportunities for energy savings. Significantly, early indications suggest they may lead to a higher than normal rate of implementation for the identified savings opportunities. As shown in Table 1, the ESAs identified 52 trillion Btu in potential natural gas savings (approximately equal to the amount required to heat 700,000 U.S. homes) and 49 trillion in potential energy savings. The identified potential cost savings have also been impressive—nearly $495 million.

Tables 2 and 3 list the 10 most frequent ESA recommendations for improving energy efficiency. These recommendations topped a generic list of more than 40 steam and process heating activities recommended in the 2006 ESAs. The aggregated potential monetary savings were calculated using the fuel and electricity rates appropriate for each plant.

Initial follow-up surveys of 116 of the plants that received ESAs indicate that approximately 65% of all ESA recommendations have been implemented, are now in progress, or are in the planning stage.

Table 1. ESAs in 2006 Identified Potential Plant Savings of $494 Million per Year

All 2006 ESAs	
Number of ESAs Performed in 2006	200
Total Potential Cost Savings ($/year)	$494.3 million
Potential $ Savings/ESA ($/year)	$2.5 million
Average Potential $ Savings per ESA (% of total annual plant energy bill)	10.3%
Total Potential Natural Gas Savings (trillion Btu/year)	52.2
Total Potential Natural Gas Savings per ESA (trillion Btu/year)	0.26
Average Potential Natural Gas Savings per ESA (% of total energy use)	9.5%
2006 STEAM ESAs	
Number of Steam ESAs Performed in 2006	114
Total Potential Steam Cost Savings ($/year)	$360.4 million
Potential Steam $ Savings/Steam ESA ($/year)	$3.2 million
Average Potential $ Savings per Steam ESA (% of total annual plant energy bill)	11.3%
Total Potential Steam Natural Gas Savings (trillion Btu/year)	38.6
Total Potential Steam Natural Gas Savings per Steam ESA (trillion Btu/year)	0.34
Average Potential Natural Gas Savings per Steam ESA (% of total energy use)	10.3%
2006 PROCESS HEATING (PH) ESAs	
Number of PH ESAs Performed in 2006	86
Total Potential PH Cost Savings ($/year)	$133.8 million
Potential PH $ Savings per PH ESA ($/year)	$1.5 million
Average Potential PH $ Savings per PH ESA (% of total annual plant energy bill)	8.9%
Total Potential Natural Gas Savings (trillion Btu/year)	13.6
Total Potential Natural Gas Savings/PH ESA (trillion Btu/year)	0.16
Average Potential Natural Gas Savings per PH ESA (% of total energy use)	8.5%

As shown in Table 4, the majority of opportunities identified by the ESAs will pay for themselves in less than two years. Many large industrial plants will seriously consider implementing energy savings opportunities that provide paybacks in this timeframe.

The six-month follow-up surveys show that 116 plants have already selectively implemented recommended activities to save a total of 2.5 trillion Btu, providing a total estimated cost savings to their companies of $22 million. The same 116 plants are also planning or have in progress enough recommended energy savings activities to save another 21 trillion Btu, which should generate another $176 million in cost savings.

Implemented projects avoid carbon emissions equal to 0.15 million metric tons of CO_2 per year, and projects that are planned and in-progress add up to a further 1.1 million metric tons of avoided CO_2 annually. Plant follow-ups to identify implementation will also be conducted at 12 months and 24 months following the completion of each ESA.

Table 2: The Top 10 Steam ESA Recommendations Offer Potential Cost Savings of $304 Million Annually

Recommendation	Potential Dollar Savings ($)	# of Plants
Reduce Steam Demand by Changing the Process Steam Requirements	$81.7 million	96
Use an Alternate Fuel (e.g., offgas from process operations, No. 6 fuel oil, wood chips from pulp & paper processing)	$76.9 million	17
Add or Modify Operation of Backpressure Steam Turbine	$32.5 million	50
Change Boiler Efficiency	$28.5 million	117
Change Condensate Recovery Rates	$23.6 million	55
Add or Modify Operation of Condensing Steam Turbine (High Pressure to Condensing)	$21.9 million	13
Implement Steam Trap Maintenance Program	$15.0 million	56
Modify Feedwater Heat Recovery Exchanger using Boiler Blowdown	$8.9 million	49
Change Boiler Blowdown Rate	$8.9 million	39
Feedwater Heat Recovery - General	$6.0 million	7

Table 3: The Top 10 Process Heating ESA Recommendations Offer Potential Cost Savings of $102.5 Million Annually

Recommendation	Potential Dollar savings ($)	# of Plants
Heat recovery from hot products or other heat sources (i.e. from walls) from a furnace – oven	$19.6 million	27
Heat cascading - use of flue or Exhaust gas heat from higher temp. process to supply heat to lower temperature processes	$16.2 million	36
Improve Insulation	$12.3 million	83
Use of proper heating methods - replace inefficient and uneconomical methods with economical/efficient system	$11.8 million	22
Proper insulation and maintenance of furnace structure or parts	$11.7 million	48
Reduce oxygen content of flue (exhaust) gases	$8.9 million	71
Load or charge preheating using heat from flue or exhaust gas or other source of waste heat	$6.9 million	25
Use of process or exhaust air for combustion	$6.0 million	6
Use of oxygen for combustion	$4.9 million	9
Reduce-eliminate openings and air leakage in the furnace	$4.2 million	23

Table 4: The Majority of ESA Recommendation Payback Periods Are Less Than 2 Years

Steam Assessment Payback Data		
Payback Category	Number of Assessment Recommendations	Recommended Cost Savings, $
0-9 months	315	$144.6 million
9 months - 2 years	240	$114.7 million
2 -4 years	113	$78.6 million
> 4 years	75	$22.6 million
Totals	**743**	**$360.4 million**

Process Heating Assessment Payback Data		
Payback Category	Number of Assessment Recommendations	Recommended Cost Savings, $
0-9 months	153	$50.6 million
9 months - 2 years	139	$55.8 million
2 -4 years	76	$23.9 million
> 4 years	37	$3.5 million
Totals	**405**	**$133.8 million**

All Assessment Payback Data		
Payback Category	Number of Assessment Recommendations	Recommended Cost Savings, $
0-9 months	468	$195.2 million
9 months - 2 years	379	$170.5 million
2 -4 years	189	$102.5 million
> 4 years	112	$26.1 million
Totals	**1,148**	**$494.3 million**

Success Stories

The 2006 ESAs produced success stories for manufacturing plants across the nation. Several plant spokespersons mentioned that the ESAs helped to quantify the benefits of improvements already under consideration. The defined benefits helped to push tentative plans into motion and convince upper management of project feasibility. More than a few of the companies that received ESAs quickly saw the value of the assessments and have moved rapidly to replicate the assessment process across their enterprise. This replication process, which accelerates progress toward national energy goals, has been greatly facilitated by the presence of plant personnel already trained in the use of DOE software decision tools through the ESA process.

Dow Chemical Company

Energy performance improvements at the Dow Chemical Company over the past decade have saved the company substantial amounts of energy and money. In 1994, the company set an ambitious goal of reducing its energy intensity by 20% by 2005. It has surpassed this target and reduced energy intensity by 22%. These improvements have saved the company a total of 900 trillion Btu and over $4 billion.

On the basis of this well-established and exemplary energy management program, Dow Chemical was one of the first six plants selected for an ESA. In 2006, Dow participated in ESAs at their facilities in Freeport, TX; Seadrift, TX; Hahnville, LA; Plaquemine, LA; Ludington, MI; and Midland, MI. At the Freeport plant, the ESA focused on steam utilization, steam generation, and insulation. Plant participants in the ESA included experts from the phenol/acetone manufacturing facility as well as plant engineers and technicians. The recommended actions included replacing the plant's steam turbine with an electric motor to reduce venting and improve boiler efficiency. This single recommendation offered a potential energy cost savings estimated at $508,000 per year. In addition, the ESA Team evaluated various steam processing projects already in place at the plant; these involved steam generation and acquisition options as well as improvements in steam venting.

Boise Cascade

As a leading paper products company, Boise Cascade puts a high priority on energy-efficient practices and technologies throughout their company. In line with this policy, several Boise Cascade plants across the country participated in the 2006 Save Energy Now ESAs. These plants are located in Jackson, AL; International Falls, MN; St. Helens, OR; Wallula, WA; and DeRidder, LA.

In Boise Cascade's Jackson facilities, the primary goals of the ESA were to identify realistic and cost-effective energy savings projects, train plant personnel on energy management techniques and DOE steam assessment tools, and identify energy management best practices that can be replicated throughout Boise Cascade and the industry. The ESA affirmed several existing energy projects already underway and also found three additional projects. Projects that have been implemented to date have produced over $2.5 million in savings.

Training of plant personnel was another key result of the ESA. The mill's new Charter Team, consisting of engineering, operations, and maintenance personnel to monitor steam system performance and implement improvements, participated in the ESA and received valuable training on tools and best practices. Tom Tobin of Boise Cascade noted, "The Save Energy Now visit last year served as a real eye-opener for us around these opportunities, so we continue to give them a high priority."

Owens Corning

As a large corporation with more than 125 manufacturing plants in 25 countries, Owens Corning incorporates energy efficiency into all of its daily operations. The company's main product, glass insulation, is highly energy-intensive to manufacture, so energy efficiency is a major focus. The company has seen measurable results from their efforts, achieving a 15% reduction in energy intensity since 2002.

Owens Corning employs a number of strategies to implement and improve energy efficiency. Each plant has an energy leader, who is also part of a company-wide energy team. This arrangement enables regular information exchange through twice monthly conference calls, company energy symposia, and an intranet site with information and tools. DOE's ITP tools, tip sheets, and sourcebooks constitute key resources for their program and are linked to their corporate intranet.

In 2006, Owens Corning completed a process heating ESA at their plant in Jackson, TN. Michele Mazza, project leader for energy-use reductions throughout the Insulating Systems Division, says, "We plan to take advantage of ITP training in 2007 as well as DOE's Energy Savings Assessments so we can better utilize the software tools for validating and justifying energy projects." The company plans to use the training provided in the 2007 ESAs to conduct further assessments throughout its operations, look for opportunities to save energy and money, and validate energy-saving measures proposed for systems targeted by the company's energy teams.

Conclusions

The success of the 2006 ESAs conducted under the Save Energy Now initiative may be attributed to a variety of factors. Some evaluation of these factors and their significance may be instructive in future efforts to build on this success.

ITP Resources and Experience

- The Program's existing tools that were developed in partnership with industry are recognized by industry as providing accurate, unbiased information in common industrial terminology.
- Existing long-term partnerships with leading industrial companies were instrumental in convincing industry leaders to devote their time and resources for the pilot ESAs. Their participation fostered a strong industry response to the initial ESA application process.
- ITP's established reputation for reliably protecting sensitive corporate data helped the initiative avoid a common hurdle to public-private partnerships.
- Existing partnerships with state energy offices and other organizations that assist in industry outreach; ITP tapped into its vast network to spread the word about ESA opportunities.

Findings

- Substantial opportunities for energy savings can be identified by targeting individual energy systems in large industrial plants. The ESAs identified opportunities to save a total of 52 trillion Btu of natural gas annually.
- Although some very large plants have in-house expertise in energy management, the ESAs were able to find additional savings in most plants. The ESAs found opportunities for an average potential cost savings of nearly $2.5 million per plant, representing an average 10.3% of a plant's total annual energy bill.
- Most of the energy-saving opportunities identified are typical of those that can be found in many plants. These opportunities were not previously identified because plant personnel typically focus on production rather than energy efficiency.

- Many of the large plants that received ESAs appear to have quickly recognized the value of the identified opportunities. Preliminary surveys suggest that a higher than normal implementation rate may be observed in upcoming follow-up surveys.
- A number of companies plan to replicate the savings in their ESA plant at other plants under corporate ownership.
- Many plant personnel were unaware of the range of resources available to assist them in energy management. Training is an excellent way to promote ongoing attention to energy issues in a plant.

2007 and Beyond

In 2007, ITP has expanded its ESA offerings to 250 and the focus extends beyond steam and process heating systems to explore opportunities in compressed air, fan, and pump systems. This expansion is enabled through increased opportunities for cost-sharing of ESAs with interested third parties. Assessments are also open to a wider range of manufacturing facilities as several may add their energy use to apply jointly for one ESA, during which all applicants may participate in the software application training.

To increase implementation of ESA recommendations, ITP has formed a partnership with Manufacturing Extension Partnership centers operated by the National Institute for Standards and Technology across the country. MEP staff members are being trained to conduct ESA follow-up activities that can help plants surmount hurdles to implementation, such as appropriate financing strategies, technical information, and other resources.

A key ITP strategy has been to leverage its activities through strong industry partnerships. These partnerships are now enabling ITP to multiply the energy impacts of program activities despite continuing budget constraints. It recognizes the need to maintain and continuously update the software decision tools as the drivers behind its success.

Over time, the largest energy-consuming plants with highest level of interest in energy management will complete their assessments. It is likely that ITP then may receive applications from plants with somewhat lower annual energy requirements. However, there could still be substantial energy opportunities. Based on past experiences, somewhat smaller or less energy intensive plants may have not addressed energy management issues as well as larger plants, so even though their overall energy use is lower, savings opportunities as a percentage of energy used may be higher.

The success of the ESAs and the Save Energy Now initiative has been recognized as an important tool in controlling energy demand both in the United States and abroad. DOE is currently working on replicating this approach as part of activities to support the Asia-Pacific Partnership and a new initiative to assist China in assessing its largest industrial plants. Save Energy Now's success is also leading DOE to work with industry to develop a framework for industrial energy efficiency standards and certification, and work with data centers, which have experienced strong growth and generated soaring increases in electricity demand.

References

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