



Texas Industries of the Future

Summary

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2001-August 2007 Program Evaluation

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December 2007

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Texas industries use 19% of the energy consumed across the US by industries, ranking first among the states in industrial energy use. In 2004 Texas industries consumed 53% of the energy used by all sectors in Texas.¹ Because of the concentration and types of energy-intensive industries in Texas, efficient energy management practices and technologies offer a solution to economic and environmental challenges faced by the state's process industries.

Texas Industries of the Future (IOF) was established in 2001 with funding from the US Department of Energy Office of Energy Efficiency and Renewable Energy through contracts with the Texas State Energy Conservation Office. Since that time, the program has organized 48 workshops, forums, roundtables and conferences, with a total of over 2,300 attendees, on energy efficiency topics. This summary presents an overview of the results of an evaluation of the program's impact from 2001 through August 2007.

The evaluation of the Texas IOF program highlighted accomplishments in several areas:

- 59 out of the top 195 or 30 % of the largest industrial sites have staff that attended Texas IOF events. The goal was to reach 25 % of the largest industrial plants in Texas.
- Best Practice workshops are estimated to have saved 1.791 Trillion Btus as a result of attendees using the software and implementing energy saving projects back at their plants.
- The Texas IOF manual and calculator to help small and medium sized manufacturers assess energy savings opportunities is in use by the Texas Manufacturing Assistance Center, which reports identifying savings of \$660,000 at 9 facilities, with replication opportunity at another 13 sites.
- Thirty of the 200 sites that signed up in 2006 to participate in the US DOE Save Energy Now plant assessment program were from Texas. This is the largest number from any state.
- The program has been a successful two-way conduit for information on energy efficiency between plants in Texas and US DOE headquarters. In 2005, member companies on the Texas IOF chemical manufacturing and refining steering committee proposed the development of a certification program for energy efficiency at the plant level. The idea was refined by the committee and submitted to the Texas State Energy Conservation Office, which provided funding in 2007 for a pilot program in Texas. During the proposal development, US DOE became interested in this concept and the Texas pilot project was incorporated into a national effort based in the Industrial Technologies Program at US DOE under the "Superior Energy Performance" banner. The focus of the certification program is implementation of an energy management system standard, energy system assessment standards, and achieving a specified level of performance and continuous improvement. The program is currently under development.
- A June 2007 analysis of the 2003 Strategic Plan shows that most of the activities identified by the advisory committee were implemented. In a few cases, funding was not available; while in others, changing circumstances obviated the need for the action. The following table provides detail on the 2003 Strategic Plan analysis.

¹ EIA, State Energy Data, 2004, Table S1.

2003 Strategic Plan Implementation

The centerpiece of the program's success has been the ongoing involvement of managers and staff engineers from the chemical and refining sectors in the Texas IOF advisory committee and the development of a strategic plan in 2003. An analysis of the 2003 Strategic Plan conducted in June 2007 shows that most of the activities identified by the advisory committee were successfully implemented. Table 1 summarizes the tasks by strategy. The Strategic Plan process has been an extremely helpful tool for identifying projects for funding. In a few cases, funding was not available or circumstances changed such that the original tasks were no longer relevant. The Strategic Plan is viewed as a dynamic document; if the situation changes, some actions may no longer be relevant. This flexible approach to program planning has worked well and allows the program to be responsive to the changing needs of industry and new ideas that emerge from the advisory committee. An update to the plan will be finalized in 2008.

A complete listing of current advisory committee members can be found on the Texas IOF website at <http://TexasIOF.ces.utexas.edu>

**Table 1: Texas IOF 2003 Strategic Plan
Status of Activities as of June 2007**

Tasks by Strategy

- 1. Increase the adoption of technologies and best practices that improve energy efficiency and environmental performance and reduce cost in the chemical and refining industries.**

Activity	Status
Conduct a second industry-focused technology event in 2005/2006.	Technology Showcase held December 6 and 7, 2006. Excellent participation by chemical and refinery industry. Attendance at Showcase events (2003 to 2006) grew by over 50 percent.
Offer/promote 4 trainings per year on Best Practices.	9 offered in 2004. 5 offered in 2005. 3 offered in 2006. From 2002-2006: 30 trainings and 693 participants trained.
Conduct three Texas Energy Management Forums annually	1 held in 2003. 2 held in 2004. 3 held in 2005. 1 held in 2006. Since 2003, 7 Forums with 800 attendees.
Conduct a NOx reduction/energy efficiency symposium in summer 2004 to focus on case studies and technology improvements.	Symposium held 8/24/04. +180 in attendance. Excellent response to format, location, and topic.
Recruit 3-4 companies to participate in Best Practice trainings and Collaborative Targeted	In 2006, DOE transitioned the CTA program to Energy Saving

Assessments.	Assessments (ESAs). Texas IOF recruited sites for participation in DOE's Energy Saving Assessment program. Texas had 15 percent of the sites in the 2006 ESA group (30 out of 200), the highest number of any state.
Facilitate industry input into Texas utility efficiency incentive programs.	TxIOF includes information on the utility SOP in email announcements and presentations.
Educate potential applicants for DOE program funding on how to complete federal forms.	No one has requested assistance on this activity. Information on DOE RFPs distributed via web. In 2005/2006, there were few industrial R&D solicitations.
Establish an energy practices online site where companies, government entities and academic organizations can easily transfer specific practices that will benefit other industrial energy users.	No funding was available to support this. Also, similar online sites on various topics are available.
Increase adoption of energy management systems by plants.	<ol style="list-style-type: none"> 1. Conducted benchmarking with 10 chemical plants on energy management systems. 2. The energy-efficiency plant certification program, proposed by TxIOF companies, was picked up by DOE Headquarters for national development.

2. Increase industry and government awareness of the benefits and the need for integration of industry energy efficiency and environmental technology and practice improvements.

Activity	Status
Coordinate Texas beta-testing, input to, and dissemination of the "NOX and Energy Assessment Tool" NxEAT.	Tool has been released. Incorporated into DOE process heating training module. Complete.
Promote awareness and participation in NGO and government-sponsored energy efficiency and environmental improvement awards	The following plants were nominated for awards for their energy efficiency programs: 2003-Rohm and Haas won the ACEEE industrial energy award. 2004-Valero won the 2004 IETC award for its energy management program and Showcase activities. 2006-Dow and Texas Petrochemicals won IETC awards. 2007-Texas Eastman won the IETC award.
Develop an energy related module for use with the	Developed a small/medium sized

Texas Commission on Environmental Quality's Environmental Management System (EMS)	manufacturer energy project screening assessment manual and calculator (Aug 2005). Downloaded by 185 people. Used by the Manufacturing Extension Partnership at UT Arlington.
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3. Strengthen partnerships among Texas industries, universities, associations, governments, and NGOs, so as to focus research and projects on high priority areas.

Activity	Status
Provide a focus for industrial input into the state's environmental technology funding program.	Program moved from TCET to TCEQ in FY2004 and moved from TCEQ to TERC in 2006. TERC is focused on transportation emissions. No action on this item.
Establish Memorandum of Understanding with other NGO, association, university, governmental or industry organizations to develop a partnership for implementation of energy/emission technologies.	Continue to build informal partnerships with the following: AICHE sections in Houston and Beaumont, business roundtables in Houston and Beaumont, and other research/educational institutions such as Texas A&M, Lamar University and HARC.

Performance Indicators for 2006

Performance Indicator	Status
25% of top energy using plants in Texas have attended a TxIOF/DOE training, conference, forum or workshop	59 out of the top 195 or 30% of the largest industrial sites have staff that attended TxIOF events or requested assistance from TxIOF. ²
Energy intensity of Texas chemicals and refining sectors decreases.	Data on this metric are not published by EIA, although it is collected. States are requesting that data on energy intensity by state be made available for program evaluation purposes.
Texas Industry recognized by DOE/EPA as a leader in energy management.	TxIOF Program: DOE invited Texas IOF to provide input into its plan for state programs. Texas IOF was recognized at the Texas Technology Showcase 2006 by DOE. Since 2001 Texas IOF has been successful in securing funding from the

² The list of 195 was compiled based on the top emitters of NOx in Texas at industrial facilities, based on 2002 air emissions data. Due to the type of facilities in Texas, in 2002 combustion emissions would have been highly correlated with energy usage in these plants.

	<p>highly competitive DOE state industrial efficiency program. Texas IOF is working with DOE on implementation of the “Superior Energy Performance” program.</p> <p>Industries in Texas: Six companies were recognized by DOE at the Texas Technology Showcase 2006 for their energy leadership. Texas IOF companies were invited to participate and speak at the national program launch for the energy efficiency certification program in March 07.</p>
<p>Increase in number of entities from Texas that are successful in responding to DOE industrial program solicitations.</p>	<p>In 2006 and 2007, there were few industrial program solicitations due to budget cuts at DOE. However, Texas sites participated very successfully in the DOE Save Energy Now program in 2006, resulting in 30 assessments at Texas plants, out of the 200 assessments conducted nationally in that year. This was 15% of the national total.</p>
<p>One technology commercialized.</p>	<p>The following technologies, which received some funding by DOE, were highlighted at TexasIOF events:</p> <ul style="list-style-type: none"> • Distillation Column Flooding Predictor—2ND Point • Low Excess Air Control Technology-- Bambeck • Super Boiler