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El Paso Natural Gas Company
Natural Gas STAR Case Study Series

For El Paso Natural Gas Company, reducing methane emissions is a necessary part of doing business in the natural gas industry. Simply put, lost methane is lost revenue. The company, a Texas-based subsidiary of El Paso Energy, has saved $3.3 million by implementing emission reduction activities. Joining EPA's Natural Gas STAR program in 1995 was a logical extension of El Paso's ongoing emission reduction activities. Gas STAR participation augmented El Paso's program by providing public recognition, networking, and learning opportunities. As the following case study of El Paso shows, joining Gas STAR is an easy way to formalize, expand, and publicize existing emission reduction programs and identify new opportunities to reduce emissions.

PARTNER PROFILE

El Paso Natural Gas Company operates the western portion of El Paso Energy's coast-to-coast regulated gas transmission system, which consists of 10,300 miles of pipeline, powered by more than 70 compressor stations. El Paso offers long- and short-haul interstate gas transportation services from producing regions in New Mexico, Texas, Oklahoma, and Colorado to markets in California, Nevada, Arizona, New Mexico, Texas, and northern Mexico. El Paso supplies more than 35 percent of the California interstate market, transporting more than 1.8 billion cubic feet (bcf) per day. The company transports 600 million cubic feet (mcf) per day east of California and 1 bcf per day to off-system markets.

Joining Natural Gas STAR

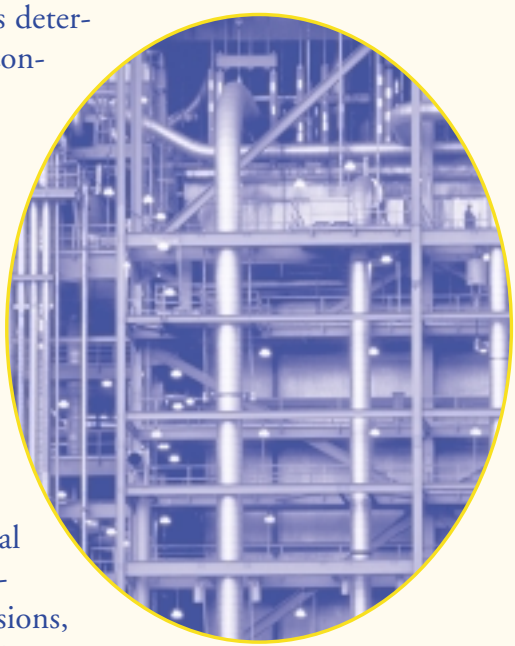
Early Activity: The MERT Program

EPA's Natural Gas STAR program was a natural fit for El Paso. The company had organized a methane emission reduction program before becoming aware of Natural Gas STAR.

Beginning in 1994, the company experienced an increase in unaccounted-for gas levels and formed an internal Methane Emission Reduction Team (MERT) to explain and address the issue. MERT included personnel from several departments that were affected by or monitored unaccounted-for gas, including El Paso's Gas Measurement, Engineering, Compression, and Accounting personnel. The group conducted a "brown paper" exercise to review their company's processes and determine possible solutions. After studying the issue in detail, the group developed four categories of emission reduction "best practices" to implement across the organization:

- **Revise operating procedures that have an impact on methane emissions.** This multistep process involves defining operating procedures that affect methane emissions, performing economic analyses of procedures, prioritizing procedure changes, training staff, implementing and monitoring new procedures, and documenting lessons learned.
- **Identify and replace high-bleed pneumatic devices.** This includes identifying high-bleed vent devices and evaluating alternative replacement devices. It also includes performing economic analyses for the lifetime of the replacement device.

- **Replace reciprocating engines with turbines and install new turbines.** This involves determining the conditions for compressor replacement or new installation, investigating the costs of service, conducting an operational review, determining emissions, selecting engine types, recording methane reduction, and documenting lessons learned.



- **Survey for leaks.** This involves identifying locations to survey; preparing a survey schedule; identifying, tagging, and recording leak sources; addressing and checking "quick fix" leaks; and documenting lessons learned.

MERT also conducted an inventory of turbine replacements and new installations, low-bleed controller installations, and other emission-reducing operational practices at El Paso facilities from 1991 to 1994 to determine historical emission reductions.

MERT's Introduction to Gas STAR

While MERT was developing and implementing these practices, an engineer from EL Paso Natural Gas was attending Gas STAR workshops. El Paso learned how EPA was assisting and recognizing natural gas transmission and distribution companies that voluntarily reduced methane emissions and quickly realized that MERT should become involved.

After reviewing the details of the Gas STAR program in 1995, the environmental engineer

met with MERT and explained how the Gas STAR program dovetailed with MERT's current activities to reduce methane emissions. MERT requested that the engineer join the group and then began evaluating El Paso's program to determine if it matched up to the Natural Gas STAR program. The group found that most of MERT's best practices directly correlated with Gas STAR's recommended practices.

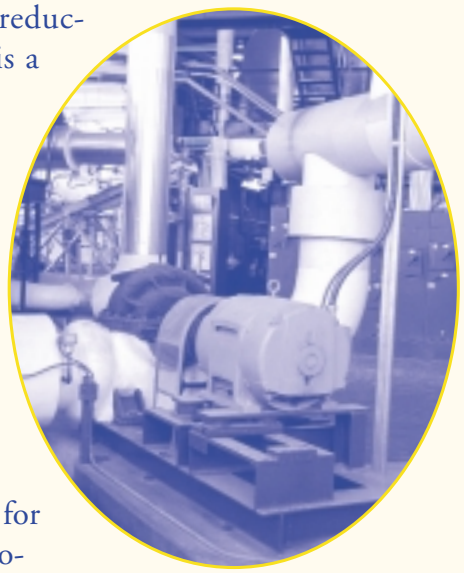
Initially, MERT was concerned that El Paso's limited staff would not have the time to fulfill Gas STAR's reporting commitment. Upon further examination, however, the group determined that Gas STAR requirements were minimal and that the benefits of participation outweighed the extra time involved in reporting Gas STAR results. In late 1995, MERT began coordinating with Gas STAR and filed its first Gas STAR annual report in 1997.

> "El Paso's Gas STAR program is successful because it makes sense. The value of the work we do drives our commitment to the program."
>
> *John Hazen*
> *El Paso's Gas STAR Implementation Manager*

Getting Started

MERT's early work created a smooth transition into the Gas STAR program. In the years prior to El Paso joining the Gas STAR program, MERT had identified cost-effective best practices in emission reductions and trained operational personnel on how to implement recommended changes. Members of MERT hosted meetings at individual facilities to disseminate the results of MERT's research. As a result, El Paso had developed an implementation plan prior to joining the program. The company's involvement in the program generated a new impetus to systematically quantify, report, and compile emission reductions resulting from implementation of MERT's recommendations.

Once El Paso facilities began implementing MERT activities, the program required only one person to gather and compile emission reduction information. With trained technicians in place, El Paso's Gas STAR participation focused on showing individuals how to quantify and report emission reductions and making this a company priority.



Management support for emission reduction programs has always been strong. Early on, MERT demonstrated the clear cost savings of reducing emissions. According to John Hazen, El Paso's Gas STAR implementation manager, "The message at El Paso is—the value of stopping unaccounted emissions is in the best interest of all."

Implementing the Program

Program Logistics

MERT laid the groundwork for Natural Gas STAR participation. Early work at one of El Paso's facilities proved that best management practices saved money and that it was unnecessary to continually justify such activities. Rather than spend time and money surveying

and assessing which repairs should be a priority, El Paso began to repair leaks as soon as they were identified. Thus, El Paso technicians were able to implement MERT's best practices without lengthy approval from various levels of management.

With this system of best practice implementation in place, all that was required for Gas STAR participation was to designate an individual as implementation manager responsible for compiling results of emission reduction activities throughout the company. For El Paso, that individual is John Hazen. As part of his job responsibilities, Mr. Hazen visits each El Paso facility at least once per year and meets with facility staff to discuss a number of ongoing projects. While in the field, Mr. Hazen spends a significant portion of his time with field technicians. He works with them to identify which of the past year's capital projects have resulted in reportable emission reductions. Mr. Hazen then compiles companywide emission reductions for submission to the program. By working on multiple projects such as gas measurement and emission reductions during each facility visit, Mr. Hazen maximizes what can be accomplished given his limited travel time and budget for each visit.

El Paso's Strategic Environmental Management

El Paso's Gas STAR program is facilitated by the company's strategic environmental management approach. In strategic environmental management, business thinking plays a key role and is fully integrated into business strategy and operations. Strategic environmental management at El Paso involves:

- Achieving line ownership of environmental issues.
- Developing performance indicators to track environmental improvements.
- Developing organizational communication.
- Enhancing employee awareness of environmental issues.
- Identifying opportunities for competitive advantage.

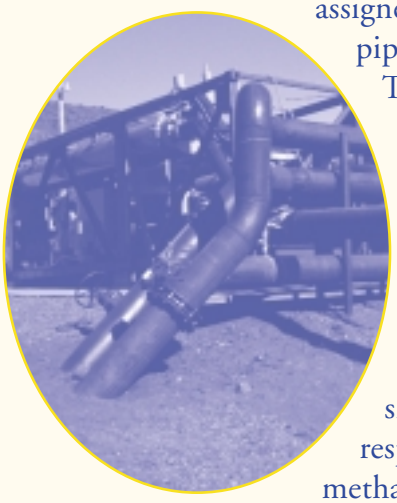
For example, El Paso developed environmental training modules and a "lessons learned" database to educate personnel and enhance communication of successful and unsuccessful activities. The "lessons learned" database provides a mechanism to share information on the costs and benefits of certain environmental initiatives. The environmental modules provide information specific to El Paso Natural Gas. One such module addresses the need to identify and eliminate methane emissions. The company also developed a comprehensive environmental policy that places responsibility on each supervisor for the environmental performance of his or her location, department, or function.

El Paso's Keys to Success

The major factors that contributed to the success of El Paso's program included:

- Management support. Gaining senior management support was an important step for the organization. It heightened the attention given to emission reduction activities.
- Employee involvement. Through training, field employees understand the impact they have on companywide methane emission reductions.

Two additional initiatives that were instrumental in the success of the emission reduction program were the cross-functional work program and the emphasis on enhancing effective communication across the company. The cross-functional work program eliminated technician specialties such as measurement, corrosion, pipelines, plant operation, and controls. All technicians now share the same title—operations specialist—and are assigned particular sections of pipe or areas of the plant. This process has improved operational efficiency, as repairs to a section of the plant previously involving up to three technicians now involve only one. By eliminating confusion about who is responsible for preventing methane emissions in each plant area or pipe section, the company improved accountability for lost methane and increased information sharing about opportunities to reduce emissions. According to Mr. Hazen, El Paso "values everybody's contribution."



Communication also is facilitated by the company's streamlined, nonhierarchical corporate structure—there are only two staff levels between operational specialists and vice presidents. According to John Hazen, this flat corporate structure reduces confusion about who should be reporting emission reduction information to whom. Emission reduction data is e-mailed directly to Hazen or relayed to him through standard annual facility reports to corporate headquarters. To gather data on emission reductions that resulted from a national valve maintenance program, Mr. Hazen simply asked to be on the maintenance program's report distribution list.

Obstacles

El Paso did not encounter any major obstacles in implementing its emission reduction activities, although John Hazen acknowledged that operating personnel must be made aware of the impact that unaccounted-for gas can have on the business. As Mr. Hazen notes, "When gas is vented, it is often difficult to determine the volume or dollar impact. Operating personnel need to keep this in mind at all times. The challenge is getting people to think 'outside the box' about the impact that their activities can have on emissions and to be proactive in preventing methane emissions in the first place." Onsite meetings by MERT staff and clear management support helped convey the importance of minimizing unaccounted-for gas at El Paso.

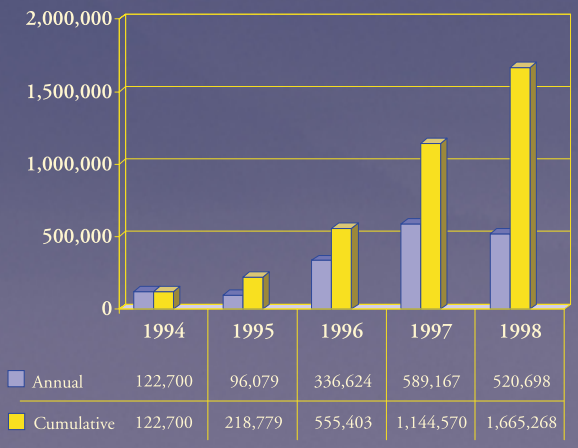
Commonsense Commitment to Emission Reductions

Emission reduction activities are part of the company's evolution toward greater efficiency. As El Paso looks to the future, the company sees the possibility of expanding emission reduction activities and identifying additional gas saving opportunities by networking with other companies.

According to Mr. Hazen, "El Paso's Gas STAR program is successful because it makes sense. The value of the work we do drives our commitment to the program."

El Paso's Gas STAR Program Achievements

El Paso's Emission Reductions (Mcf)

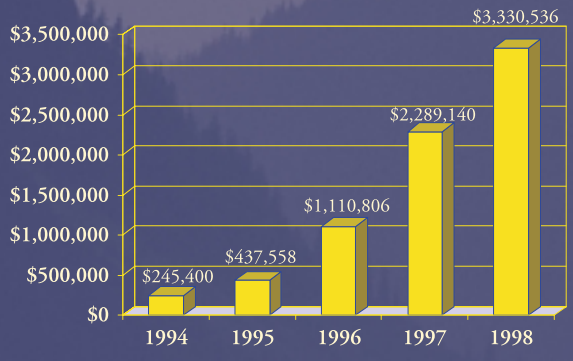


	1994	1995	1996	1997	1998
Annual	122,700	96,079	336,624	589,167	520,698
Cumulative	122,700	218,779	555,403	1,144,570	1,665,268

El Paso reports average methane emission reductions of more than 300,000 Mcf each year.

El Paso's methane emission reduction program has expanded dramatically since its introduction. El Paso's methane emission reductions increased four-fold between 1994 and 1998.

El Paso's Emission Reductions Savings



El Paso saves an average of $600,000 each year through methane emission reduction activities.

What El Paso Learned from Natural Gas STAR

Environmental benefits. In addition to cost savings, El Paso's Gas STAR involvement made El Paso aware of the impact of methane on climate change. El Paso personnel generally did not realize that methane is a potent greenhouse gas, 21 times more effective than carbon dioxide. El Paso's John Hazen used this information to educate field staff and help them understand the consequences of venting gas. This information in turn caused field staff to be more diligent about minimizing methane venting and be proactive in reporting emission reductions.

Unit valve and compressor rod packing procedure. A presentation at a Gas STAR workshop made Mr. Hazen recognize the value of emission reduction opportunities in compressor facilities and eventually led to the creation of a new position at El Paso to oversee company valve maintenance. The staff person in charge of the company's valve maintenance program arranges for contractors to clean, flush, and grease station unit and pipeline valves identified at El Paso's facilities across the pipeline system. This type of valve maintenance gives the system the attention it deserves—routine greasing and fine tuning to fit manufacturer specifications helps prevent methane emissions.