



Brooklyn Union Gas Natural Gas STAR Case Study Series

Brooklyn Union's experience with the Natural Gas STAR program demonstrates that methane emission reduction programs need not be complicated. By empowering employees throughout the company and tapping their experience and abilities, Brooklyn Union developed a dynamic program that has exceeded corporate expectations for methane reduction. Since joining Natural Gas STAR in 1993, Brooklyn Union has saved 98 million cubic feet of natural gas, valued at almost \$200,000. As the following case study illustrates, unwavering support and enthusiasm across all levels of a company can make cutting methane emissions a simple and rewarding endeavor.



PARTNER PROFILE

Brooklyn Union Gas has been a major player in meeting New York City's natural gas needs since before the turn of the century. Today it is one of the largest gas distribution companies in the United States. Brooklyn Union's 3,834 miles of distribution mains, 79 miles of transmission mains, 14 major gate stations, and 520,000 services supply natural gas to more than one million meters

in the New York City boroughs of Brooklyn, Queens, and Staten Island. In 1998, Brooklyn Union merged with Long Island Lighting Company (Lilco) under the umbrella, Keyspan Energy. Together, Brooklyn Union and Lilco provide gas services to 1.57 million customers in Brooklyn, Queens, Staten Island, and Nassau and Suffolk Counties on Long Island.



Joining Natural Gas STAR

Brooklyn Union did not have a formal methane emission reduction program in place before joining the Natural Gas STAR Program as a Charter Partner. However, when approached by the U.S. Environmental Protection Agency (EPA) in 1993 to consider the new program, the company immediately saw the benefits of a voluntary, cooperative approach to reducing methane emissions. Bob Preusser, the now retired vice president and chief engineer, worked actively with EPA to help design and promote the program within the industry and helped draft the memorandum of understanding that became the standard agreement between EPA and Natural Gas STAR partner companies.

“Brooklyn Union is doing this for the environmental benefit, for our grandchildren, and future generations. Cost has never been a factor or a barrier to our implementation.”

*-Bill Ireland,
Business Manager, Keyspan System Laboratory*

For Brooklyn Union, joining Natural Gas STAR was a matter of gaining support throughout the company. While upper management was impressed with the

environmental and economic benefits of the program, the company believed that it was equally important to ensure that field personnel also recognized the value of the program. In fact, Brooklyn Union’s encouragement of employee involvement from the beginning has been a major factor in its success.



Getting Started

Brooklyn Union began implementing the Gas STAR Program with the goal of reducing methane emissions to the greatest extent possible. The company chose not to establish specific methane emission reduction targets or financial goals at the outset, believing that it would be better to first explore the possible gas saving opportunities. Brooklyn Union performed an initial examination of all operations and identified directed inspection and maintenance of its gate stations as the area with the greatest potential to reduce methane emissions for the company.

Building a Methane Reduction Team

One of Brooklyn Union’s first steps toward implementing the program was to select a group of employees to serve as the company’s methane emission reduction team. This team was comprised of both first-line supervisors and bargaining unit personnel from the gate station operations section. The team was tasked with reviewing the basic requirements of the program and developing ideas and suggestions for ensuring program success. By giving the team the freedom to design and structure the program, the company was able to ensure the technical feasibility of the program and its acceptance at the field level.

After a series of meetings, the methane emissions reduction team developed an implementation plan and presented the results to Brooklyn Union management. The team’s suggestions were integrated into a two-part plan targeting methane emission reductions at surface and sub-surface facilities. According to Bill Ireland, Brooklyn Union’s Gas STAR implementation manager, “Many of the suggestions from the team were included in the program. By immediately implementing their ideas, the momentum began to build and carried through as the program progressed.”

Implementing the Program

Phasing in the Program

Brooklyn Union implemented its initial methane emissions reduction program in two phases. Phase I, the directed inspection and maintenance program for its 25 aboveground gate stations, was launched in January 1994. The 25 facilities consisted of 14 major aboveground stations and 11 industrial facilities. At each facility, personnel identified and cataloged all gas flow and monitoring components, such as flanges, fittings, unions, valve packings, control piping, and other associated equipment. At each station, 75 to 150 components were involved in the initial inventory, for a total of 2,150 inventoried components. With the inventory completed, inspection crews began quarterly leak detection surveys. The first round of inspections revealed numerous leaks at 14 of the 25 gate stations surveyed, which were quickly repaired and retested. By the end of the year, Brooklyn Union had completed 8,600 com-

Phase II of Brooklyn Union's methane emissions reduction program, an expansion to directed inspection and maintenance of subsurface facilities, began the following year. Starting in January 1995, Brooklyn Union began quarterly inspections at its

12 subsurface facilities. To duplicate its success in

Phase I, Brooklyn Union again

formed a team comprised of key

bargaining unit personnel and

first-line supervisors. While the

subsurface facilities represented a

different section of field operations,

Brooklyn Union found

that many of the ideas generated during

Phase I were directly applicable to Phase II. The

major difference between the phases was the location of station components. In the aboveground facilities, most



“Employee input in the program from beginning to end brought about an endless striving for perfection that we could all be proud of. Together we were able to work cooperatively and efficiently with EPA, culminating in a star-studded program for Brooklyn Union, the environment, and our customers.”

-Bill Ireland,

Business Manager, Keyspan System Laboratory

ponent checks at the 25 facilities, with 68 leaks being discovered. In 1995, Brooklyn Union moved the 11 facilities at which no leaks were detected to semiannual inspections. As discovery of leaks continued to decrease with each subsequent inspection, more facilities moved to semiannual and annual inspections.

of the monitored components were easily accessible to inspection crews. Many components slated for inspection during Phase II, however, were located in underground vaults and other tight areas, requiring inspection crews to devise and perfect new monitoring techniques and strategies. By relying on the field personnel's expertise and experience, these difficulties were easily overcome.

Exploring New Opportunities

Once the directed inspection and maintenance programs were implemented at all of its facilities, the STAR program team began looking for other methane reduction opportunities. The goal was to identify “quick hit” opportunities in selected processes where immediate and significant methane reduction potential existed. Brooklyn Union again turned to the employees in the field to help identify methane emission reduction possibilities. As Bill Ireland notes, “Employees at all levels are encouraged and expected to contribute to the program by notifying the STAR team when a potential reduction opportunity is identified at the facility level. Managers and facility workers then examine the opportunity, determine its feasibility, and implement the new practice as appropriate.”

Examples of methane emission reduction opportunities identified by onsite employees include:

- **Installation of snap-acting valves on meter runs and replacement of old and leaking pneumatic flow controllers and their charcoal filters.** Snap-acting valves were first installed on meter run piping to eliminate methane venting when the runs were taken off line. The old and leaking pneumatic flow controllers were replaced with dual acting pilots that completely eliminated methane releases and the need for charcoal filters. These measures eliminated the venting of 622,000 cubic feet of natural gas annually and avoided disposal costs for the charcoal filters.
- **Installing sight glasses on receiving vessels and vapor trap valves.** At Brooklyn Union’s above-ground gate stations, scrubbers remove liquid condensate from the natural gas stream prior to injecting it into the distribution network. Before the sight glasses were installed, condensate buildup checks were done through a series of valves which resulted in the venting of a significant amount of gas every year. The sight glasses allow technicians to view the condensate without venting, and the vapor trap valves allow the condensate to be removed while the

KEYS TO SUCCESS

In building its methane emissions reduction program, Brooklyn Union identified these keys to successful program development and implementation:

- **Secure upper management support.** A philosophical and financial commitment is crucial to properly promote and implement a methane emissions reduction program. Without visible management support, field workers will not accept the program.
- **Ensure bottom-up support.** A program’s success hinges upon the commitment of the field personnel responsible for the day-to-day implementation. Including these employees in program planning and design, encouraging their contribution to program improvement and expansion, and recognizing and rewarding their contributions all go a long way towards fostering program buy-in.
- **Do the simple things first.** Begin with practices that are simple to implement and offer the most immediate results. As the program develops momentum and experience is gained, more opportunities to improve and expand will be discovered.
- **Institutionalize the program.** Make methane emission reductions an integral part of every employee’s job. Brooklyn Union field employees, for example, have Gas STAR binders at each facility, and taking and recording emissions measurements is a standard part of every worker’s daily routine.

gas is returned to the system. These retrofits have prevented the annual release of more than 92,000 cubic feet of natural gas.

- **Flaring unreclaimable gas in a thermal oxidizer when retiring natural gas storage tanks.**

Typically, unreclaimable gas trapped in storage tanks would be vented to the atmosphere when the tanks are dismantled. By combusting the methane trapped in the storage tanks, Brooklyn Union eliminated the release of 1,250 Mcf of methane to the atmosphere.

Maintaining Momentum

Maintaining the momentum of the STAR program has not been difficult for Brooklyn Union.

Management remains committed to reducing methane emissions, and facility staff continue to perfect existing practices while searching for further opportunities.

For field managers and technicians, implementing Brooklyn Union's methane emissions reduction program is simply an everyday part of their jobs. As part of on-the-job training, new hires learn about Brooklyn Union's commitment to reducing methane emissions and how they are expected to contribute. This approach has proven to be so effective that special Gas STAR training has not been necessary.

Brooklyn Union management also uses an annual awards ceremony as a way of maintaining momentum and building program support throughout all levels of the organization. In 1995, EPA presented



the company with a program achievement plaque in a special award ceremony held at Brooklyn Union.

Brooklyn Union used this occasion as an opportunity to formally thank and recognize its employees for their contributions to the program's success. As a token of its appreciation,

Brooklyn Union presented each employee a golf shirt with a

special EPA logo. More recently, at its annual awards ceremony (January 1999), Brooklyn Union presented its 1997 Natural Gas STAR Distribution Partner of the Year award to the operations staff responsible for implementing the program. In recognition of their invaluable contribution to Brooklyn Union's methane emission reduction efforts, each employee also received an individual plaque and a watch.

As Brooklyn Union's Gas STAR program evolves and matures, the level of effort and financial resources required to maintain the program continue to decrease. Much of this can be attributed to institutional learning and experience. Inspections that originally took a two-man crew four hours to complete now can be completed in two hours, resulting in decreased costs. Significant reductions in the number of leaks found has reduced labor and material expenses. Brooklyn Union, however, remains vigilant in its watch for leaks and its search for further methane emission reduction opportunities.

Future Plans

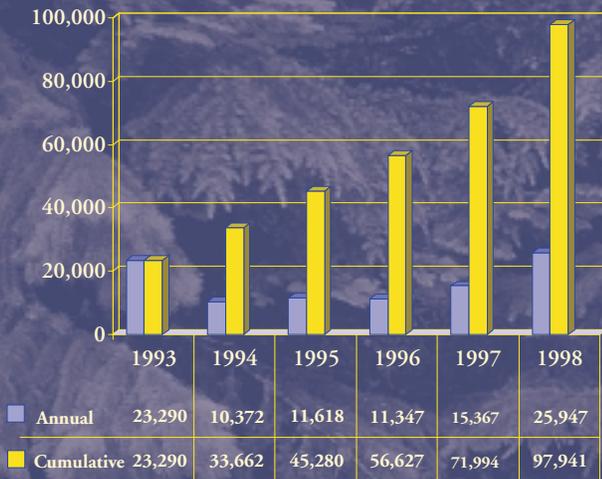
Bill Ireland foresees Brooklyn Union's continued commitment to reducing methane emissions to the greatest extent possible. Brooklyn Union estimates that it has eliminated approximately 75 percent of its methane emissions, primarily through easily implemented opportunities.

Identifying and implementing the final 25 percent in an economically feasible manner presents Brooklyn Union with its future challenge.

Brooklyn Union's 1998 merger with Long Island Lighting Company also offers new opportunities. Lilco has been a Gas STAR Partner since 1995, but its methane emissions reduction efforts have not been as aggressive as Brooklyn Union's. With the merger complete, Mr. Ireland feels the focus of the Gas STAR Program for the next five years will likely revolve around upgrading Lilco's program to the same level as Brooklyn Union's, thereby creating a unified program for Keyspan Energy.

BROOKLYN UNION'S GAS STAR PROGRAM ACHIEVEMENTS

Brooklyn Union's Emission Reductions (Mcf)



Brooklyn Union reports average methane emission reductions of more than 16,300 Mcf each year.

In the last three years, Brooklyn Union has more than doubled its annual methane emission reductions.

Brooklyn Union's Cumulative Emission Reductions Savings



Brooklyn Union's methane emission reduction activities save the company more than \$32,500 worth of methane each year.

WHAT BROOKLYN UNION LEARNED FROM NATURAL GAS STAR

Voluntary partnership programs prove to be effective and cost-efficient. Brooklyn Union firmly believes that voluntary partnerships, such as the Natural Gas STAR Program, can be a highly effective, low-cost measure to protect the environment. Partners' implementation of the Gas STAR recommended "best management practices" profitably reduces methane emissions. "Environmental partnerships" such as Gas STAR also serve as effective technology transfer programs for promoting innovative processes and technologies. Bill Ireland affirms, "The most important message of Gas STAR is that regulators and industry can work together effectively to solve environmental problems."

Challenging employees increases motivation and feelings of empowerment. When tasked with the responsibility of implementing the Gas STAR Program by management, Brooklyn Union's workers embraced the challenge and exceeded corporate expectations. The employees rallied around the common goal of methane emissions reduction, creating a greater sense of team and unity. Being given control of the program's day-to-day operation motivated field workers to go that extra mile to ensure success.