

The City of Dallas Environmental Management System Success Story

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Using an EMS to Reduce Risk and Improve Organizational Efficiency

Summary

This success story documents the City of Dallas's Environmental Management Systems (EMS) implementation. It discusses benefits, barriers (and how to overcome them) and important lessons learned. This story is based on interviews with staff and senior management at the City of Dallas, key partners at the Texas Commission on Environmental Quality and the US Environmental Protection Agency. These organizations worked together to help promote improved compliance and environmental performance through an EMS.

The successful implementation of an ISO-certified EMS led to increased compliance, reductions in water use and a number of other environmental improvements. The city also realized several benefits for the organization, including increased interdepartmental communication and improved public image.

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Background

The City of Dallas committed to implementing a performance-based ISO 14001:2004 certified EMS across its major operations in less than three years. Many EMS models establish an EMS at a single facility, such as a wastewater treatment plant that grows within and throughout the governmental organization. However, due to the size and scope of the system, the City of Dallas used a different approach.

Many EMS's arise from the departmental level and seek approval through the management. The Dallas EMS was implemented as a result of the City Manager's Office committing the resources of eleven city departments with over 450 industrial processes. The goal of the EMS for the City Manager's Office was to improve compliance with environmental regulations, organize and advance environmental initiatives, and provide a frequent reporting mechanism to the City Manager on the status of environmental issues.

Benefit 1: Decreased Risk, Increased Compliance

In spring of 2006, the City of Dallas reached an agreement with the federal government requiring the City to spend in excess of \$3.5 million in a comprehensive effort to decrease the amount of pollution entering the city's stormwater system. The settlement required Dallas to construct two wetlands at an estimated cost of \$1.2 million and to pay a civil penalty of \$800,000¹.

As part of the agreed order, Dallas committed to implementing a performance-based ISO 14001:2004 certified EMS in less than three years across its major operations. This commitment was very different from traditional approaches to implementing an EMS in a large city.

At the beginning of the three-year implementation cycle, the City of Dallas had eleven notices of violation (NOV) on issues ranging from sanitary sewer overflows (SSO's) to underground storage tanks. In 2008 they had no enforcement actions.

EMS audits, internal and external, revealed a number of compliance risks, such as inadequate or missing procedures, and general lack of awareness. The EMS allowed the City of Dallas to address these liabilities *before* they became a compliance issue.

Benefit 2: Management Controls

The Texas Commission on Environmental Quality and the EPA had launched an effort to promote voluntary adoption of performance-based EMS's. Because of these efforts, and

¹ EPA Press Release

<http://yosemite.epa.gov/opa/admpress.nsf/0dfc21de1c3d3b985257018004ced8a/900848c23b780d3d8525716a006ee6fa!OpenDocument>

a number of other factors, the senior management of the City of Dallas had been considering an EMS. When the consent decree was issued, they recognized that it could be used as leverage to ensure that an EMS would be completed on time. As a result, they negotiated with the EPA to put an EMS into the consent decree. They began recruiting staff people to improve management oversight in the City Manager's Office. From their perspective, the EMS provided a planned, orderly approach to ensuring that an organization's environmental issues are handled appropriately.

They chose to use the ISO 14001 standard because their economic development teams had a positive impression of it. These teams worked on a global basis to identify economic opportunities for the City and believed that ISO certification would be recognizable to a broad audience internationally.

The senior management also liked ISO because it is a defined methodology – a third party verifies that one is or is not meeting the requirements. This factor was important to them since third party verification means the press and detractors would not be able to dispute the validity of it. Certification offered credibility to one's environmental efforts.

Benefit 3: Increased Interdepartmental Communication

Like many large cities, Dallas was engaged in different environmental programs, and different departments had various levels of commitments to their individual programs. However, there was no comprehensive system that allowed departments to interact or even be aware of each others activities. This "silo effect," common in many large organizations, led to many missed opportunities. Implementing an EMS team promoted communications between the different departments and organizational units within departments. For many departments, it was the first time they had communicated on specific issues.

For example, Texas Senate Bill 12 (2007) mandated energy reductions. Various departments were implementing energy reductions, but other facilities were unaware of what they were doing. An EMS core team established a series of committees based on the ranked aspects and impacts of the city. The core team established an energy conservation committee. This committee has cross communication between departments to share ideas, set programs, policies and procedures. The leveraging is currently being used to allow different cities to share information through the North Texas Regional EMS NTREMS partnership.

Benefit 4: Increased Communication and Efficiency

The EMS established a series of liaisons between departments. In a large city like Dallas, it is often difficult to identify a contact within another department for issues like purchasing, contracting, personnel management and training opportunities.

The Plan-Do-Check-Act Model set objectives and maps processes. The process allows the various departments to be more consistent with contractor compliance. As a result,

Dallas will be meeting its goal to be more sustainable, exceed compliance, and ensure that contractors and vendors maintain the highest level of environmental quality in their work. Similarly, establishing this procedure has led to increases in efficiency for contractor management, identifying training opportunities and purchasing.

Benefit 5: Training and Awareness

The EMS also helped the City of Dallas set specific goals so that everyone was made aware of the plans to reduce power use, conserve water and increase recycling. Another benefit was a consistent training program that ensured employees were made aware of how their job impacts the environment.

“On a practical level, EMS means that staff has defined procedures to follow, savings and other process improvements can more easily generated, and upper management knows what is going on and directing what’s going on.”

*Jill Jordan
Assistant City Manager
City of Dallas*

Benefit 6: Increased Morale

Other benefits were harder to quantify. For example, most observers agree the program resulted in increased employee morale. One employee remarked at his retirement party that joining the EMS team was one of the best days in his twenty-five-year career with the City of Dallas. Although difficult to quantify benefits, increased morale can result in improved customer service, better safety and better use of taxpayer money.

2. Progress towards the Goals

The City of Dallas implemented the EMS in the hopes of improving compliance. They also wanted to improve their environmental quality and public image. The EMS was instrumental in achieving all of these objectives.

Goal 1: Compliance

The goal of compliance was accomplished in less than three years. Specifically, compliance improved in several areas:

- The city reduced spill violations from 11 in FY2005 to one in FY2006; and none in 2008.
- Similarly, city water ordinance nonconformance’s decreased from 98 in FY2005, to 16 in FY2006 and to 49 in FY2007.

Goal 2: Environmental Quality Improvements

The EMS provided a mechanism to document improvements to the environment. For example, projects in the City of Dallas led to:

- Conservation of 278,900,000 gallons of water
- Purchases of over 330,000,000 kWh of wind energy per year

To achieve these goals the city undertook a variety of activities. For example, water was conserved by performing a low flow retrofit program, retrofitting plumbing and installing new landscaping. Purchases of wind energy were done in a cooperative partnership with the EPA's Green Power Leadership Club. The EMS provided the mechanism to ensure that activities are in alignment with the overall goals. It was important that the various departments worked within the EMS to identify the best solution for the specific problem they were addressing. For the City of Dallas it provided a framework for identifying a multitude of specific activities by multiple departments, and collecting the outcomes for the organization.

Goal 3: Public Image Goals

The City of Dallas was recognized by several outside organizations; this recognition helped improve public image. For example, Dallas was the first city to partner with the EPA and the North Texas Council of Governments (NCTCOG) to improve air quality under the Sustainable Skylines program. In 2008, EPA Dallas joined the EPA's Green Power Leadership Club, and was listed as the number one for percentage (40%) of power purchased from renewable sources.

The scope and size of the EMS is believed by many to be the largest and most complex ISO certified system to date.

3. Barriers

"I have never seen a ship of this size move so quickly from one point to the next."

*Ramon Miguez
Assistant City Manager
City of Dallas*

Implementation of an EMS is rarely a smooth process. Like any organization, the City of Dallas had to overcome a number of challenges. The largest barrier was implementing a city-wide cultural change. To implement an EMS, Dallas worked to change the culture of the employees. It was necessary to convince employees that the EMS would be long lasting and a part of everyone's job.

Some people and departments don't understand why it is important. This culture can permeate from laborers to program management. Even after successful implementation, some parts of the organization maintain resistance. There is a belief among some that EMS's are the "flavor of the week."

The method of overcoming the barrier was to ensure that executive management was committed. The management gave the authority, and the departments were quite cooperative. This commitment unleashed the potential of individual employees to meet environmental challenges.

Due to the management's commitment to the EMS, 14 city departments, with over 450 organizational units and 70 different industrial processes, also committed to the EMS. Participating departments ranged from police, fire, street maintenance and water utilities. Over 70 different industrial processes were evaluated.

Selling Local Government EMS to Executive Management

It is difficult to tell who implemented the EMS, staff or senior management. Each credits the other. However, all parties agree that early involvement by senior management is a critical factor in the success of an EMS.

Although an EPA-agreed order was a significant motivator for Dallas, it was not in and of itself motivation to implement an EMS. Staff believed the leadership within the City, particularly the city manager and assistant city managers, needed to be convinced of the link between an EMS and their goals for the city.

As stated previously, city management responded in a unique way to the violations and addressed them as part of a larger systematic program. Senior management had been exposed to EMS's through state and federal partnerships.

To solidify senior management support for a city-wide EMS, city staff from several departments, in cooperation with state and federal programs, sold the project as promoting organizational sustainability.

Organizational sustainability should not be confused with environmental sustainability. In this case study, "*organizational sustainability*" refers to an organization's ability to continue operation. Environmental sustainability is one of many factors addressed in organizational sustainability. Executives were invited to meetings where speakers highlighted the benefits of EMS. Briefings to management **emphasized the benefits to the organization** beyond the environmental benefits.

For the executive management, these benefits focused on organizational sustainability including:

- **Budget Sustainability** – Ensuring that the budget will be maintained for the organization's lifetime.
 - o Will customers pay the same rates for services?
 - o Will capitol improvement costs be managed?
 - o Are costs applied consistently for similar projects?
- **Succession Planning** – City utilities are facing a wave of retirements in their utility departments. Executive management in Dallas estimated a 50-75%

- turnover in the next five to ten years. Experienced personnel often carry a highly specialized set of skills that are not documented. For example, operation of the city wastewater treatment plan requires intimate knowledge of the proper settings and controls for the specific plant.
- **Knowledge Transfer** – Similar to succession planning, an EMS provides the opportunity to train new staff, and ensure staff are adequately prepared to assume a new role. An EMS ensures:
 - o Knowledge is transferred as people retire;
 - o Operational procedures are documented so that they continue if employees turnover;
 - o Training is offered at appropriate levels.
 - **Business continuity** – An EMS can be used to ensure that quality and level of service is consistent throughout the organization. Projects, like the completion of new pipelines, should cost the same with minor geographical changes. The EMS can help ensure the city is most efficient, and that policies and procedures are controlled and maintained. It also identifies areas for improvement. For instance, an EMS will identify a department with effective quality standards and allow the city to improve other areas of its operation using the strengths of the department with good performance.

In summary, selling management requires multiple departments to emphasize the ability of an EMS to promote an organization’s long-term goals.

4. Lessons Learned

In preparation of this document we asked staff from the City of Dallas were asked to discuss how they would do things differently if they could start again. These “lessons learned” can be used by other organizations to help make the EMS run smoother.

Lesson 1: Ensure Adequate Funding

Securing funding was crucial to the success of Dallas’s EMS program. For the City, this meant ensuring the EMS was adequately staffed. Initially the city budget called for approximately 0.5 full-time equivalents (FTE) per department to be assigned to the EMS. However, as the project unfolded, the City increased the commitment to approximately four employees (4 FTE’s) per department.

This increase in FTE’s was possible because the EMS emphasized the benefits, which outweighed the costs, when examining the various savings in water, energy, materials and recycling. Departments were also able to document compliance risk reduction.

Lesson 2: Continue the Process

“When you do get through it, the gratification and pride is worth it. You have created something of lasting value to your organization”

*Grady Coomes
Dallas Water Utilities*

Parties involved in the EMS process repeatedly emphasized that an EMS is a continuous process. The program needs constant modifying and “tuning.” Although there are models and standards in place (e.g. ISO), applying an EMS to a specific organization requires a lot of modification.

Lesson 3: Unproductive Efforts

Implementing an EMS for the first time resulted in many false starts and unproductive efforts. Despite these challenges, most participants believe an EMS is worth the effort.

1. Setting Objectives without Measurement Techniques - In the City’s initial efforts to set objectives, they did not have a method for monitoring and evaluating the objectives. Under the first system, it would be hard to monitor or show an improvement of several objectives. The EMS team learned that the objective:

- had to be beneficial,
- practical,
- achievable, and
- cost effective.

2. Overly Complex Analysis of Aspects and Impacts – Educating an organization on the ISO concept of aspects and impacts is very difficult. The City of Dallas found that identifying and ranking aspects and impacts dominated the initial stages of their EMS. Even for experienced environmental professionals, the concept was difficult to grasp, and for non-environmental staff the concept was elusive.

The EMS team built a complex scoring system using a scale of 1-7, with five criteria. However, they learned that in the end, it always requires judgment. Team members learned not to focus on minor differences between various aspects and impacts in terms of ranking. They found it productive to start with the top impacts, which were usually easy to identify. For city governments these are usually:

- Energy,
- Spills,
- Water use, and
- Solid waste.

3. Start with Compliance – The EMS team focused on compliance first. Stewardship and sustainability were not good places to begin for an EMS.

4. Document Control – Dallas EMS teams learned that document control needs to be well-thought out. The EMS team learned to map out the current process.

For instance, if an operator turns the valve every hour, the procedure should be documented, not changed. Organizations should make sure they identify these unwritten practices and encapsulate them into the written procedures. This process requires constant evaluation of the process and documentation.

The team learned to sit down and interview experienced staff as a basis for written procedure. It was fairly easy to gain participation from the employees because of inherent pride in a job. It gives long-time employees an opportunity to talk about the daily job they do.

Attachment: Details of Reductions

Following are a set of measures that comply with the latest national standards for pollution prevention (P2) outcomes developed by the National Pollution Prevention Roundtable P2 Results Subcommittee.

Level 1: Activities

- **P2 Information Developed** - Any publication, paper or electronic, including, but not limited to a handout, presentation, fact sheet, case study, pamphlet, manual, video tape, slide show, CD-ROM, web page or computer program etc., specifically designed in whole or in part and disseminated to inform clients about P2 opportunities
 - *Number of Unique Documents Developed*
 - **5 water inserts**
 - **Grease abatement Book Covers**
 - **Grease bags**
- **P2 Information Distributed** - Any publication, paper or electronic, including but not limited to a handout, presentation, fact sheet, case study, pamphlet, manual, video tape, slide show, CD-ROM, web page or computer program etc., specifically designed in whole or in part and disseminated to inform clients about P2 opportunities
 - *Number of Documents Distributed*
 - *260,000 inserts distributed*
 - 80,000 Students received book covers
 - 4,000 grease bags distributed
 -

Level 2: Behavioral Change

- **Public Relations benefits**
 - Description of media coverage
 - In 2007, DWU launched its Grease Abatement Mass Media campaign. This effort included radio advertisements, newsprint advertisements and direct mail pieces to apartment complexes in selected portions of the city that experience unusually high grease related SSO's; bill board advertisements; bus board advertisements; and Scooter Squads that hand out grease abatement information at malls and major sporting events.
 - Coverage by Fox 4 News
 - Univision's Green Planet
 - Three different blogs
 - Six community papers

- **Description of recognition by mayor or other elected officials**
 - Mayor Lepert participated in several public events
- **Regulatory Reduction**
 - **Description of reduction in regulatory status** – Reduction of NOV’s from three to zero, and reductions of nonconformance open from 98 to 49.
- **Audits Conducted**
 - 55 Audits conducted per year on facilities

Level 3: Environmental Outcomes

The City had many improvements in environmental quality. Some of the projects were already underway when the EMS was implemented, others were started. The following results are considered by staff to be directly attributable to the EMS.

- Conserved 278,900,000 gallons of water
- Purchases over 330,000,000 kWh of wind energy per year

Other Measures: Recycling

Although not considered source reduction, it should be noted that the city instituted extensive recycling programs. Over 240 city operated locations worked to increase recycling by 49%. Collectively they recycled 93.7 tons of solid waste, including 720,000 pounds of scrap metal.

- The City increased used-oil recycling by 17% through use of drip pans.
- The City of Dallas Zoo increased composting 70% through its “Zoo Poop” program.