

EMS-FINANCIAL CASE STUDIES IN THE PUBLIC WATER SECTOR

Charleston Water Charleston, South Carolina



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**AN EMS-FINANCIAL CASE-STUDY:
CHARLESTON WATER – CHARLESTON, SOUTH CAROLINA**

Executive Summary

In June 1999, South Carolina's Charleston Water (CW) became the first public utility in the United States to achieve certification to the ISO 14001: 1996 Environmental Management Standard. Since that time, CW's Environmental Management System (EMS) has continued to manage its environmental risks and improve its environmental performance. The EMS has also become an integral component of CW's business success, serving as an overall management system that continues to lead the organization to improved business efficiencies, avoided costs, and reduced risk. CW's EMS encompasses all of its operations and is notable for the significant support and involvement of senior management in the EMS.

This Case Study tells the story of how CW, recognizing the range of environmental and organizational benefits that its EMS provides, decided to explore with Fitch Ratings the effect that its EMS might have on an improved bond rating. The Case Study explores how these discussions progressed and offers some insights about CW's experiences. These insights may assist other organizations in exploring the relationship of their EMS to their financial opportunities and obligations, specifically improved bond ratings.

CW's story verifies something that EMS implementers have always known: when senior managers are actively involved in the EMS, and when strong internal communication is regular and frequent, organizations get the maximum benefit from their EMS implementation. In CW's case, these two factors allowed the utility to push well beyond the usual application of an EMS and to explore how or if their EMS might impact financial obligations. It was clear during meetings and discussions between Fitch Ratings and CW managers that the EMS had produced significant operational and environmental performance improvements to the utility. Due to strong monitoring and measuring activities, there was a significant amount of quantifiable data to verify these improvements. What was lacking, however, was quantifiable financial data linked to the operational improvements - the dollars saved and/or costs avoided associated with the environmental performance improvements attributed to the EMS. Fitch Ratings clearly wanted to see CW develop a business case that showed the affect of the EMS on the utility's financial balance sheet. Charleston was aware that a bond rater has neither an incentive nor a disincentive to show that an EMS satisfies the rater's criteria to improve a bond rating. Rather, it is the utility's responsibility to establish baselines to track the business benefits of its EMS, in terms of cost reduction and costs avoided information, as well as environmental performance improvement data. This is one of several learned lessons for other utilities that may want to demonstrate the business value of their EMS to external financial entities.

This Case Study concludes that while an EMS may *strengthen* a utility's profile in a bond rating evaluation, at the present time, it is not possible to quantify the extent to which an EMS may *improve* a bond rating.¹ There are two reasons for this. First, EMSs can vary in their scope and quality from facility to facility, thus making it difficult for bond rating agencies to generalize that an EMS will consistently improve a rating. Second, bond ratings are subjective activities (i.e.

¹ It is important to note that at the time of this writing, Charleston and Fitch are still exploring this issue and neither side has reached any definitive conclusions regarding the feasibility of reflecting an EMS's benefits in a bond rating.

bond rating criteria are not assigned a specific weighting), and their subjective nature leads to difficulties when attempting to quantify the exact extent to which an EMS influences the bond rating calculation. Because of this, even though this Case Study demonstrates that CW's EMS impacts at least three out of ten of Fitch's bond rating evaluation categories, it is difficult to project how much the EMS impacts these categories and thus difficult to know the extent to which an EMS influences the bond rating.

CW's efforts to link its EMS to its bond rating through discussions directly with its bond rater are certainly ground-breaking. In the bond rating that CW received in early 2006, its rating improved from AA- to AA. This improvement in CW's bond rating supports the conclusions of this Case Study; however, it is important to note that the improved rating cannot be solely attributed to the value of CW's EMS but rather is a reflection of all the factors that affect a bond rating. Nonetheless, CW's management is confident that its EMS played an important role in helping the utility improve its rating. We encourage the reader to consider this investigation as a starting point for a dialogue that aims to explore the full range of possibilities within EMSs and bond ratings.

AN EMS-FINANCIAL CASE-STUDY: CHARLESTON WATER

Introduction

Charleston Water (CW) is the largest publicly owned water and wastewater utility in the South Carolina Low Country and provides retail water service to the City of Charleston, including North Charleston, West Ashley, James Island, Daniel Island, Hollywood, Ravenel, Goose Creek, and other small townships in the region and wastewater service to the City of Charleston, including West Ashley, Daniel Island, and James Island. CW also provides wholesale water service to other water utilities in Charleston, Dorchester, and Berkeley Counties and treats wastewater from Folly Beach, Hollywood, and Meggett on a wholesale basis. The utility employs more than 400 people and operates one water treatment plant and two wastewater treatment facilities.

CW became the first public utility in the United States to achieve Environmental Management System (EMS) ISO 14001 certification in June 1999. The utility quickly realized that their EMS provided more than just environmental benefits. These additional benefits ranged from using their EMS as a comprehensive management tool for achieving improved business efficiency (cost savings) to reducing its risk exposure (costs avoided). As a result of recognizing these added benefits, CW began to explore whether its EMS might also help improve their bond rating.

Based on interviews with CW personnel, Fitch Ratings bond raters, and external research, the following case study explores the perspectives of both a bond rater, Fitch Ratings, and a utility, Charleston Water (CW), as applied to the impact an EMS has on a bond rating. It details how CW approached this issue with its bond raters, and specifically, the ability of CW's EMS to positively affect those aspects of its operations that are evaluated by Fitch Ratings in their bond rating evaluation. Finally, the Case Study extracts the lessons learned, conclusions, and outstanding questions about the extent to which an EMS may affect a bond rating.

After presenting the EMS to its bond raters, CW decided to pursue a bond rating evaluation and in early 2006 received a rating that improved from AA- to AA. A bond rating for a utility like CW generally costs around \$40,000 to \$50,000 and therefore is a significant business decision. However, CW estimates that its improved bond rating improvement will save between \$17,000 and \$170,000 annually over the life of its current bond.

CW's EMS Evolution

CW implemented its EMS in 1999, and became the first public utility in the United States to adopt the ISO 14001:1996 international standard. Initially, CW chose to implement an EMS specifically to provide senior management confidence in how the organization managed its environmental risks. It anticipated that the results-oriented system would provide the utility with improved business practices that would reinforce the utility's commitment to being a "best in class" utility. The improved business practices of an EMS that impressed CW included the EMS's commitment to continual improvement, its operational focus (as opposed to a program focus), and its performance-based *culture change*. The focus was on quantifiable environmental performance improvements, and organizational efficiencies. Above all, management believed that the EMS could improve their general business practices, identify risks and problems, and

implement solutions. The intent was to externally verify these measurable results through a formal audit process. The potential for benefits from the financial community (e.g., improved bond or insurance ratings) was not an original driver for the implementation of CW's EMS.

Charleston's continual improvement programs have formed the backbone of its EMS's success. For each of its 17 significant aspects, CW has an effective continual improvement program. Examples of these programs include:

"EMS was really the first system that I saw where you have to back it up with results and you have to have it verified and I believe that it gave our senior managers some confidence."
—Wesley Ropp, CFO Charleston Water

- *Preventative Maintenance*: reduces number of water and wastewater system failures and costly corrective repairs and improves corrective to preventative maintenance ratio.
- *Pipe Replacement Rehabilitation*: involves replacing of lead service lines, increasing size of water mains, and improving system capacity.
- Other Programs include: *Reduced Sanitary Sewer Overflows, Improved Certification and Training Program, Inflow & Infiltration Reductions.*

Just as the CW's facility's EMS improvement programs have effectively addressed its significant environmental aspects, the utility is increasingly adapting the EMS system to launch other programs that move beyond explicitly targeted environmental issues. For example, in recent years CW has focused increasingly on programs that emphasize its asset management through preventive maintenance and renovation of CW's aging infrastructure. Charleston's EMS has adapted to this asset management focus by emphasizing infrastructure replacement, preventative maintenance, leak detection programs, systems mapping, and database construction.

Similarly, in anticipation of the EPA's forthcoming Capacity, Management, Operation, and Maintenance (CMOM) regulations, CW used its EMS to develop a CMOM program cross-walking and bridging many of its EMS elements to satisfy CMOM requirements. In another instance in which CW used its EMS framework to launch a program (unrelated to explicitly environmental issues), the utility is currently using its EMS process management approach to address homeland security risks, appropriately aligning with its priority security vulnerabilities an expenditure of \$11.5 million in security upgrades. CW's experience consistently demonstrates that an EMS provides an effective management platform not only for targeting environmental issues but also for launching additional programs that improve efficiency and reduce risk exposure.

CW's EMS—Expanding Benefits

"An EMS is more than an environmental management system – it is an overall management system."
- Rick Bickerstaff, EMS Manager,
Charleston Water

As the EMS became institutionalized at CW, the management system became the "business as usual" way of identifying a broader range of risks than initially considered and for defining solutions to control the risks. At that point, CW management began to realize that the EMS provided significant business value beyond its

original purpose. For instance, Charleston's EMS helped the facility establish predictive and preventative management and maintenance programs that senior management believe have led to significant cost savings and avoided costs. These programs include: preventative maintenance in

all areas of operation, leak detections, and other preventative programs. Additionally, the EMS improved the facility's information database management and overall asset management. Particularly successful asset management programs have included two different computerized maintenance management programs (CMMS), namely, those that track the specifications of assets, maintenance histories, and GIS mapping. CW personnel also report that the EMS environmental aspect evaluation, legal requirements review, and establishment of objectives and targets all played an integral part in improving CW's infrastructure. The wide range of management improvements described here, not all specifically related to environmental impacts, demonstrated to CW the overwhelming bottom-line and risk reduction benefits of its EMS.

Making the EMS and Bond Rating Connection

Recognizing the business value of its EMS both as a tool for improving business efficiency (reducing costs) and as a risk mitigation tool (avoiding costs), CW's Assistant General Manager, John Cook, asked the Director of Financial Services and CFO, Wesley Ropp, in 2004 if he thought that their EMS might also help it achieve an improved bond rating. Already well-versed in the benefits of CW's EMS, Mr. Ropp explored the possibility further on his own, coming to the conclusion that educating the bond-raters about the utility's EMS might improve their bond rating. However, CW was also aware that in its experience with other major bond rating companies, the raters closely guarded their bond rating evaluation criteria and were not always as concerned about how new management strategies might improve a bond rating.

Accordingly, Ropp conducted web-research to determine if other organizations already had received improved bond-ratings as a result of their EMS benefits. The only mention of another utility that had tried to connect its bond rating to its EMS that Ropp identified was a public utility in Australia, although it was evident that Fitch Ratings had not established a clear connection between its rating and the utility's EMS. While this was not encouraging news to CW's CFO, during his research, Ropp also encountered a Fitch Ratings document detailing the evaluation criteria Fitch Ratings uses to rate bonds ("*Water and Sewer Revenue Bond Rating Guidelines*" available at www.fitchratings.com). He was struck by the transparency of the approach articulated in the document and the institutional openness that it implied about Fitch Ratings, differentiating it from his previous experience with bond raters. In large part because of the document, CW chose to target Fitch Ratings to test whether the benefits of its EMS might be reflected in an improved bond rating.

Although the way in which CW decided to explore the possibility that its EMS might affect its bond rating may seem serendipitous, interviews with CW personnel suggest otherwise. Rather, senior management understanding, commitment, and involvement in the utility's EMS and awareness of the EMS's value, positioned them such that they were able to pursue an opportunity to maximize the EMS's benefits. Additionally, CW's EMS Manager, the program's champion, was diligent in maintaining regular and frequent updates and program communication up, down, and across the organization. The utility's strong internal communication allowed its managers to share ideas about how to use the EMS to its fullest capacity. In this way, senior management involvement and strong internal communication, both characteristics of a successful EMS, allowed CW to push beyond the normal scope of an EMS to explore how it might impact its financial obligations and opportunities.

How does the financial sector evaluate CW's EMS?

In its first meeting with Fitch Ratings' bond raters in Charleston in the spring of 2005, CW senior staff presented a full overview of its EMS performance improvements and organizational efficiencies to two members of the Fitch Ratings team.² Fitch Ratings was impressed by the facility's EMS, particularly CW's improved management, greater organizational efficiency, and enhanced environmental compliance. However, because bond-raters are ultimately responsible to their investors, and need information about the facility's bottom line and the factors that influence the bottom line, Fitch Ratings wanted more specific cost data about how the EMS affects CW's financial profile.

Bond Rating Criteria

Fitch Ratings is relatively open about the criteria they use in their evaluations (see their guidance document previously referenced). Their weighting of those criteria, however, remains undisclosed because there is no one formula used for a rating; although mostly quantitative, the rating process includes a subjective component. Interviews with Fitch have indicated that for the most part Fitch weights its ten primary criteria (Fitch's 10 C's) equally, with extra weight placed on the explicitly financial categories. However, Fitch points out that there are not specific quantitative weighting values assigned to each of its

evaluation criteria. Rather, in its rating process Fitch gathers information about all the criteria in order to help paint as clear a picture as possible about the utility being rated. Fitch uses the

information that it collects to develop ratios that are then compared to other credits. Generally, these quantitative comparisons provide a good indication for what the rating should be, but not always. Sometimes a weakness in one rating category can be offset by a strength in another, or vice-versa. It is at this point in the bond rating analysis that the process becomes less

"Bond-rating criteria is kind of like the Colonel Sanders secret recipe"
—Wesley Ropp, CFO, CW

"Trying to tell someone exactly how they will be rated based on x, y, and z is nearly impossible without considering every issue that we [Fitch Ratings] consider to have bearing on an issuer's ability to operate a system and pay their debt service. As a result, this is where we as a rating agency have difficulty in quantifying how much an EMS affects the rating."

—Douglass Scott, Senior Director, Fitch Ratings

quantitative and relies more on the rater's somewhat subjective analysis of the criteria and the extent to which deficiencies in one category are offset by strengths in another.

Accordingly, one can explore in general terms whether an EMS positively affects bond rating criteria, but cannot know exactly which criteria will be considered more

important than others in any given utility bond rating. Thus it is difficult to ascertain the extent to which CW's EMS affects its bond rating. Understanding how an EMS might affect a bond rating requires a certain amount of conjecture about the criteria that bond rater's use and how they weight those criteria. It is unequivocally clear, however, that the primary incentive for demonstrating how an EMS affects these criteria lies with the facility employing the EMS and not with the bond raters. It is up to the organization to develop a business case that is responsive to the bond raters' criteria. In this new area of EMS application, education of all parties is the key factor in making the connection.

² As a major utility, Charleston Water regularly uses revenue bonds to finance significant capital improvements every year.

Which Fitch Ratings’ bond rating criteria does CW’s EMS impact?

Fitch Ratings’ publicly available “*Water and Sewer Revenue Bond Rating Guidelines*,” outlines the criteria it uses for rating a utility such as CW. The *Guidelines* group Fitch Ratings’ evaluation categories into “*Fitch’s Ten Cs*” that span the spectrum from considerations of the market the utility depends on, to its infrastructure, financial status, environmental compliance and even internal management and business quality. Of Fitch Ratings’ ten evaluation categories, CW has identified three that it believes its EMS positively affects:

- Compliance with environmental laws and regulations,
- Coverage and Financial Performance criterion, and
- “Crew” management.

Although Fitch Ratings’ *Guidelines* do not reveal how Fitch Ratings weights each criterion to produce its rating, the *Guidelines* emphasize some criterion’s importance over others. For example, the rating consistently places a premium on a utility’s *stability*. Moreover, the *Guidelines* indicate that a strong management system can be a very effective tool for achieving *stability*: “experience has shown that strong management practices can dramatically improve a system’s ability to cope with unexpected demands, plan for future needs, and maintain healthy, vibrant fiscal operations in a cooperative manner with elected officials and regulators.” An EMS is such a management system.

“Based on Fitch’s findings, sound and institutionalized management practices can often endure the most extreme stresses from economic downturns or unexpected system demand, or conversely, the lack thereof can exacerbate weakening conditions. Therefore, Fitch believes emphasizing them can result in greater stability over time.”

-Fitch Ratings Revenue Criteria Report

As previously noted in this case study, CW’s management is characterized by involved senior level management and strong internal communication. In order to demonstrate that its EMS in fact strengthens these management capabilities, CW is beginning to analyze how its EMS impacts Compliance, Coverage, and Crew criteria for the next meeting with Fitch Ratings. Following are the results of this initial analysis.

The “*Compliance with Environmental Laws and Regulations*” category links most obviously to the targeted role of an EMS. Fitch Ratings describes their main concerns for this evaluation category as follows:

- *Is the utility staying ahead, keeping up, or falling behind regulatory mandates?*
- *What is the status of consent decrees or compliance litigation, milestones to meet, and current stage within corrective plans?*
- *What developing regulations could affect the utility?*
- *How much will meeting the regulations cost in the five- to ten-year timeframe?*

In their preliminary meeting with CW, Fitch Ratings was impressed with the utility’s accounting for all 41 environmental regulations that affect its operations. The qualitative nature of this Fitch Ratings’ evaluation category suggests that it is important for a utility to educate its bond rater about how its EMS effectively manages the bond raters’ concerns in this area. In turn, if a bond

rater were to reveal how this evaluation criteria is weighted in its analysis, greater quantification of EMS benefits might be possible (e.g., by calculating percentage impact on bond rating).

CW is not currently undergoing any compliance litigation or involved in any consent decrees. While its EMS may be responsible for its ability to avoid penalties and lawsuits in recent years, correlating the EMS's role to CW's regulatory and legal clean slate may not be possible given the lack of a baseline to verify this position. However, CW has indicated that its EMS does in part help it track pending regulations that could affect its operations. For instance, at the time of this writing, CW identified one pending regulation that could force CW to spend upward of \$60-100 million in capital improvements to its system. This type of awareness about pending regulations, heightened by CW's EMS, certainly reduces legal risks and improves CW's bottom line as it can anticipate the financial impacts of potential regulations.

Fitch Ratings' "*Coverage and Financial Performance*" criterion evaluates the business efficiency and effectiveness of a utility. Interviews with senior management at CW indicate their overwhelming conviction that the EMS has improved the utility's efficiency, resulting in significant cost savings.

Benefits of EMS for Management
"EMS is so engrained in our business and what we do that it is not seen as a separate system, but as part of normal operations."
 —John B. Cook, Assistant General Manager/Engineer, Charleston Water

Additionally, CW management also believes that its EMS has reduced its risk exposure, leading to significant costs avoided. Unfortunately, to date there has been minimal quantitative tracking of the dollars associated with EMS improvements to prove the extent to which improved operating efficiency has saved money and improved risk management has avoided costs. CW realized through these discussions with Fitch Ratings that the more it is able to demonstrate and quantify how its EMS improvements strengthen its overall financial picture, the more it will be able to show bond raters that the EMS also directly affects criteria critical to a strong bond rating. Subsequent to these initial discussions with Fitch, CW personnel expressed regret that they had not established financial baselines and monetary/environmental metrics to track EMS performance improvements when CW's EMS was first being developed and implemented. Theoretically, had CW done so, it could demonstrate the financial benefits of its EMS and thus more specifically demonstrate to Fitch Ratings the potential for the EMS to positively affect its financial solvency as well as its environmental management.

As has been previously noted, CW, or any other utility, cannot expect bond rating agencies to search out the cost savings/avoided that its EMS has provided. It is clearly up to the utility to measure and link these financial improvements to its EMS. A bond-rater assesses the financial performance of a utility but does not identify all the factors that have contributed to that financial performance (i.e., an EMS). In other words, it is the utility's responsibility to determine how to improve its financial performance and to demonstrate to itself the business value of the tools that improve performance (such as an EMS).

"*Crew Management*" criteria, which consider a utility's internal management practices, are among the hardest to quantify yet also the most important in terms of impact on the overall Fitch rating: "Sound management practices are key to a highly rated utility credit, affecting all aspects of Fitch Ratings' review process." As stated in their *Guidelines*, Fitch Ratings' primary concerns regarding management include:

- *Important for linking credit features together*
- *Are management and administrative practices institutionalized, recognized by political leaders and management officials, and able to withstand personnel changes?*
- *Have management and administrative practices withstood prior periods of operating volatility, if any?*

CW's extensive senior management "buy-in" to the EMS and active involvement in the EMS as well as the fact that all employees within the organization play an active role in the EMS indicate its ability to unify the utility's staff around common goals as well as open communication channels across the organization. As part of its Management criteria, Fitch Ratings also looks for a set of specific "Best Management Practices" (BMPs) that it details in its Rating *Guidelines* report. Although most of these BMPs focus on financial policies, two of the recommended BMPs are already integral components of CW's EMS.

- "prioritized capital improvement plans that consider growth, capacity, regulatory, and replacement and renewal needs."
- "strategies to track and anticipate future regulatory mandates."

Regarding "prioritized capital improvement plans," CW reports that its EMS has allowed it to develop improved planning programs for its facility's infrastructure and future needs. With respect to "strategies to track and anticipate future regulatory mandates," through its EMS, CW already actively manages all 41 of its environmental requirements and is thus also aware of possible future regulatory changes (i.e., see description of CW's CMOM program developed in anticipation of regulation, p. 4).

Measuring benefits of CW's EMS for its bottom line

In its evaluation of CW, Fitch Ratings focuses on CW's financial health and its performance against Fitch Ratings' bond rating criteria (which affect the bottom line). If Charleston's financial performance is improved because of its EMS, then it is likely that the EMS will result in an improved the bond rating. Because bond raters will not identify for CW the extent to which they believe that CW's EMS has improved its financial performance, CW will have to determine for itself and make a strong case supported by good data on how its EMS has affected its financial performance. Theoretically, by understanding the extent to which the EMS affects the utility's financial performance, and understanding how the rating institution has weighted the utility's financial performance in its evaluation, CW can determine the extent to which the EMS impacts the bond rating. This assumption needs to be tested by real world experiences, and perhaps this case study will help other organizations, utilities and bond raters alike, in developing the data, information, and understanding to further these initial discussions.

Although CW's senior management is convinced that its EMS makes a compelling business case, admittedly it has not attached dollar values to the EMS's performance improvements. Even though CW has good monitoring and measuring programs, it has not converted its metrics to dollar values that explicitly demonstrate the EMS's positive influence on the utility's financial picture. During interviews, CW regretted that they had not anticipated the value of quantifying the economic savings associated with the performance improvements that its EMS has achieved. However, many of the savings are in terms of cost avoidance, and these are difficult to quantify

without the application of complex risk models, which CW is presently researching. They hope that this insight will assist other organizations contemplating associating their EMS with improved financial obligations to do so as early into implementation and maintenance as possible, and they anticipate greater future effort in tracking economic value associated with EMS performance improvements.

CW's Improved Bond Rating in 2006

Following the round of preliminary discussions with its bond raters in the spring and fall of 2005, CW decided to pursue a new bond rating before issuing a \$170 million bond in 2006. CW's new bond rating improved the utility's status from AA- to AA. CW estimates that this improved AA rating allowed for an interest rate between 0.01% and 0.1% lower than it would have received with an AA- rating when it sold its \$170 million bond in early 2006. Accordingly, the lower interest rate allows the utility to save between \$17,000 and \$170,000 annually over the life of the bond due to the improved rating. It is only possible to approximate the range of savings that the improved bond rating resulted in because one would need an exact selling price for an identical utility sold on the same day at the lower credit rating for a baseline comparison. The price that a bond sells for depends on the market demand and other varying market conditions which are all unpredictable. Nonetheless, the 0.01% - 0.1% range is accepted by CW as a fair approximation of the difference in interest rates given to AA- and AA utility bonds.

Examining the fact that CW's bond rating did improve shortly after discussions with its bond raters about the value of the utility's EMS, one could draw the conclusion that that the EMS was responsible for the change in rating. However, this conclusion would ignore the complex range of other factors that bond raters consider, which have been discussed throughout this Case Study. If the EMS did play a partial or significant role in helping to improve the utility's bond rating, then it would be possible to attribute some of the financial savings achieved through the improved rating to the utility's EMS. Although this type of calculation is currently not feasible, the significant savings that CW received through its new positive bond rating demonstrate the significant financial value of implementing management system approaches, such as the EMS, which reduce a utility's risk and improve its likelihood of a favorable rating.

Conclusions

- Active and ongoing senior management understanding, commitment, and involvement in CW's EMS led to business applications of the EMS beyond environmental performance improvements.
- Although its EMS seems to strengthen CW's profile in at least three of the ten Fitch evaluation categories, at this point it is not possible to categorically quantify the impact of the EMS on the bond rating. There are two primary reasons for the difficulty of quantifying the extent to which an EMS may affect a bond rating:
 - First, EMSs can vary from facility to facility in their scope and quality, thus making it difficult for bond raters to generalize that an EMS will always improve a rating.
 - Second, the subjective nature of bond ratings (i.e. criteria are not assigned a specific weighting) leads to difficulties when attempting to quantify the extent to which an EMS might improve a bond rating.

- Through thorough, regular, and frequent monitoring and measuring, an organization must be able to demonstrate that its EMS has produced environmental performance improvements *and* the cost savings that results from these improvements.
- Through risk reduction models presently being researched, it might be possible to demonstrate and quantify cost avoidance as one of the impacts of an EMS.
- It is not the bond raters' responsibility to identify and highlight the benefits of the EMS that can improve the bond rating. It is the organization's responsibility to show how their EMS has positively affected each of the bond rater's evaluation criteria.

Lessons Learned

- Senior management involvement in the EMS, a strong Environmental Management Representative and team to champion the program, and regular and frequent internal communication, allowed CW to push the potential benefits of the EMS to the next level to explore a nexus with bond ratings.
- The EMS's ability to improve the utility's efficiency and management capabilities is as important from a bond rater's perspective as the more specific environmental benefits of the EMS that reduce the utility's risk profile and lead to avoided costs.
- Facilities with EMSs should continue to educate bond raters about the benefits of their EMS to encourage bond raters to consider the impacts of EMS benefits on its rating.
- It is the utility's responsibility to establish baselines to track the benefits of its EMS for its bottom line, both in terms of cost reductions and costs avoided. It is crucial that a utility do so in order to demonstrate its EMS's benefit to external financial institutions.
- Regardless of the fact that CW did not specifically measure financial gains realized during their EMS development and implementation, there were costs avoided and dollars saved as a result of the management system.
- A systems approach like the EMS is effective in jump-starting other programs whose focus is beyond environmental and public health protection, e.g., asset management, CMOM, and security.

Further Questions

- Might the bond rating process allow a utility like CW to identify ways in which it could alter its EMS so that it addressed more of the bond rater's concerns? In instances where the EMS does not encompass the entire utility, might this involve expanding the EMS fencelines?
- Would a sector-focused EMS, specifically designed for public utilities, and including requirements that satisfy bond raters' criteria (e.g., Fitch's 10 Cs) produce an EMS with potential to positively affect the utility's bond rating? Who would help to develop the system requirements, audit checklist, qualify the auditors, and audit the systems?
- To what extent did CW's targeted presentation to Fitch Ratings about how its EMS should impact Fitch Ratings' evaluation result in an improved bond rating for the utility?
- There is currently a market for "green stocks." Could there be a market for "green bonds" as there is for investing in sustainable companies through Socially Responsible Investment (SRI) indices?
- What might be some next steps in educating all parties about the EMS-bond rating relationship?
- What risk reduction models are presently available to quantify cost avoidance as part of the EMS?

Appendix A: Additional Information

For additional information on CW's EMS experience and progress, please contact:

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In addition, CW maintains an up-to-date website devoted in part to their EMS:

<http://www.charlestonwater.com/>

For additional information on Fitch Ratings experience and progress, please contact:

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Appendix B: EMS Primer

Overview

An environmental management system, or EMS, addresses the needs of a broad range of interested parties and the evolving needs of society for environmental protection. It is a set of management processes and procedures that allow an organization to analyze, control and reduce the environmental impact of its activities, products and services and operate with greater efficiency and control.

An EMS is appropriate for all kinds of organizations of varying sizes in public and private sectors. An EMS encourages an organization to continuously improve its environmental performance. The system follows a repeating cycle of plan-do-check-act.

EMS Basic Elements:

- Reviewing the organization's environmental goals;
- Analyzing its environmental impacts and legal requirements;
- Setting quantifiable environmental objectives and targets to reduce environmental impacts and comply with legal requirements;
- Establishing programs to meet these objectives and targets;
- Monitoring and measuring progress in achieving the objectives;
- Ensuring employees' environmental awareness and competence; and,
- Reviewing progress of the EMS and making improvements.

An EMS helps organizations address its regulatory demands in a systematic and cost-effective manner. This proactive approach can help reduce the risk of non-compliance and improve health and safety practices for employees and the public.

An EMS can also help address non-regulated issues, such as energy conservation, product substitution and green purchasing, and can promote stronger operational control and employee understanding and stewardship.

Methodology:

EMSs follow Shewart and Deming's well-known Quality Management approach of "*Plan, Do, Check, Act*" which is a systems methodology rather than the traditional command and control approach.

Personnel evaluate the processes and procedures they use to manage environmental issues and incorporate strong operational controls and environmental roles and responsibilities into existing job descriptions and work instructions. They set objectives and targets for managing their environmental issues. They monitor and measure and evaluate their progress in environmental performance both in areas that are regulated and areas that are not.

The EMS integrates the environment into everyday business operations, and environmental stewardship becomes part of the daily responsibility across the entire organization, not just in the environmental department.

Part of an organization's overall management system:

EMSs provide a number of benchmarked tools to manage environmental risk effectively and offer great potential for continuous improvement in compliance and other areas of environmental performance, as well as in business efficiencies, and a better bottom line.

Not a substitute for regulatory requirements:

An EMS is not intended to be a substitute for regulatory requirements nor does it offer regulatory relief from the law, although many states have offered regulatory incentives for those public and private organizations implementing and maintaining an EMS.

EMSs can improve an organization's compliance, pollution prevention and overall environmental performance and hopefully build greater confidence with local stakeholders. EMSs are proactive programs that identify and address the root causes of potential compliance problem areas. Senior management plays an active role in the EMS, monitoring and measuring the organization's progress toward its environmental goals, and continually looking for ways to improve environmental management.

EMS Baseline/Framework:

The most commonly used framework for an EMS is the one developed by the International Organization for Standardization (ISO) called the ISO 14001 standard. The latest version of the Standard was released by ISO in 2004.

Appendix C: Glossary of EMS Terms

Accreditation: Formalized procedure by which an authoritative body formally recognizes that an organization or facility is competent to carry out specific tasks and/or meets specific accreditation requirements.

Audit: A planned, independent and documented assessment to determine whether agreed upon requirements are being met within an organization.

Audit Cycle: The period of time in which all the activities in a given site/facility are audited.

Audit team: Group of auditors, or a single auditor, designated to perform a given audit; the audit team may also include technical experts and auditors-in-training. Note: One of the auditors on the audit team performs the function of lead auditor.

Certification: The environmental management system of an organization is certified for conformance with ISO 14001 after it has demonstrated such conformance through a formal audit process through a third party.

Certification body: A third party that assesses and certifies/registers an organization's environmental management system with respect to published environmental management system standards and any supplementary documentation required under the third party's certification system.

Compliance: An affirmative indication or judgment that the supplier of a product or service has met the requirements of the relevant specifications, contract, or regulation.

Conformance / Conformity: An affirmative indication or judgment that a product or service has met the requirements of the relevant specifications, contract, or regulation. In terms of ISO conformance to ISO 14001 certification requirements - comparable to Compliance.

Continual improvement: The recurring process of enhancing the EMS in order to achieve improvement in overall environmental performance consistent with the organization's environmental policy. This widely adopted principle is intended to ensure that an organization does not simply adopt an environmental management system for cosmetic purposes and thereby remain static, without commitment to reduce its impact on the environment.

Document: Information and its supporting medium (Note: the medium can be paper, magnetic, electronic or optical computer disc, photograph or master sample, or a combination thereof.)

Emergency response plan: A formal, detailed plan that describes an organization's specific logistics and reporting requirements in the event an emergency, such as fires, erosion or spills. A fundamental element of an environmental management system.

Environment: Surroundings in which an organization or facility operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.

Environmental Aspect: Element of an organization's activities, products or services that can interact with the environment. (Note: a **significant** environmental aspect has or can have a significant environmental impact)

Environmental Impact: Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services.

Environmental Management Representative (EMR): The clearly identified environmental management system team leader who has responsibility for the planning and facilitating an organization's environmental management system from start to finish and has the designated authority of senior manager to get the job done.

Environmental Management System (EMS): Part of the organization's management system used to develop and implement its environmental policy and manage its environmental aspects. A set of interrelated elements used to establish policy and objectives and to achieve those objectives. EMS includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources.

Environmental Management System Audit: A systematic, documented verification process of objectively obtaining and evaluating an organization's environmental management system to determine whether or not it conforms to the environmental management system audit criteria pre-defined by the organization, and for communication of the results of this process to management.

Environmental Objective: Overall environmental goal, consistent with the environmental policy, that an organization sets itself to achieve, and which is quantified where practicable.

Environmental Performance: Measurable results of an organization's management of its environmental aspects. Results can be measured against the organization's environmental policy, objectives and targets and other environmental performance requirements.

Environmental Policy: overall intentions and direction of an organization related to its overall environmental performance as formally expressed by top management.

Environmental Target: Detailed performance requirement, quantified where practicable, based on an organization's defined environmental objectives and that must be met in order to achieve those objectives.

Fenceline: The area in which an organization chooses to implement its environmental management system – a department, division or specific operation.

Interested Party: Individual or group concerned with or affected by the environmental performance of an organization.

ISO: The International Organization for Standardization (ISO) is a worldwide federation of national standards bodies from some 140 countries, one from each country. ISO is responsible for the development of ISO 14001.

ISO 14001: An international voluntary standard for environmental management systems. This is one standard in the ISO 14000 series of International Standards on environmental management.

Lead auditor: Person qualified to manage and perform environmental management system audits.

Non-conformity: The non-fulfillment of a specified requirement.

Observation: A practice within an organization's operations, while not in strict violation of environmental management system requirements, that can make conformance difficult or potentially provide an opportunity for error. Examples include overly difficult processes, poor housekeeping, and inadequate personnel training.

Organization: Company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public or private, that has its own functions and administration. For organizations with more than one operating unit, a single operating unit may be defined as an organization.

Prevention of Pollution: Use of processes, practices, materials or products that avoid, reduce or control pollution, which may include recycling, treatment, process changes, control mechanisms, efficient use of resources and material substitution.

Pollution Prevention: Use of processes, practices, techniques, materials, products, services or energy to avoid, reduce or control (separately or in combination) the creating, emission or discharge of any type of pollutant or waste, in order to reduce adverse environmental impacts.. Any activity that reduces or eliminates pollutants prior to recycling, treatment, control or disposal.

Procedure: Specified way to carry out an activity or a process

Record: document stating results achieved or providing evidence of activities performed.

Registrar: Third-party entity which audits and registers an organization's environmental management system with respect to the ISO 14001 environmental management system standard.

Stakeholders: Those groups and organizations having an interest or stake in a organization's environmental management system program (e.g., regulators, shareholders, customers, suppliers, special interest groups, residents, competitors, investors, bankers, media, lawyers, geologists, insurance companies, trade groups, unions, ecosystems and cultural heritage).

Verification: The act of reviewing, inspecting, testing, checking, auditing, or otherwise establishing and documenting whether items, processes, services, or documents conform to specified requirements.

Waste Minimization: The use of source reduction and/or environmentally sound methods and practices that reduces the quantity and/or toxicity of pollutants entering a waste stream prior to recycling, treatment, or disposal. Examples include: equipment or technology modifications, reformulation or redesign of products, substitution of less toxic raw materials, improvements in work practices, maintenance, worker training, and better inventory control.