

MASTERS PROJECT

An Analysis of Environmental Management System
Development and Implementation
in the United States Federal Government

by

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May 2009

Duke Environmental Leadership Masters of Environmental Management

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Abstract

Environmental Management Systems (EMSs) are one tool that corporations around the world have been using to work toward sustainability. Agencies in the federal government are also using EMSs to reduce their ecologic footprint, improve efficiencies, and “go green”. Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management,” directs all federal agencies to implement EMSs at all appropriate levels of the organization, ensuring that an EMS will become the agency standard for managing environmental aspects of agency policy and directions.

While many federal agencies have implemented EMSs, other agencies that are seeking to develop their own systems are left with few resources for use in the process. A small, independent agency, the United States Nuclear Regulatory Commission (NRC) has not yet implemented an EMS and has few resources dedicated to the EMS development effort. The focus of this masters project is to understand the challenges and opportunities related to EMS development and implementation for federal agencies, with an emphasis on providing recommendations to the NRC.

Research consisted of case studies of agencies selected from the 2008 White House Closing the Circle Awards civilian EMS category nominees. Open-ended interview questions were used to gather information regarding the nature of the EMS development and implementation processes at the selected agencies – the United States Postal Service and Sandia National Laboratories.

While many agencies have seen success, there are hundreds of others that have yet to develop and implement management programs that will lead to significant change or to “triple-bottom-line” sustainability. In the cases studied, four issues emerged as primary difficulties for EMS development and implementation: lack of guidance; lack of resources, both financial and personnel; lack of management “buy-in” and support; and resistance to change from an established agency culture. Agency best practices worth emulating include integrating the EMS into the existing organizational structure and creating employee interest, particularly through communications initiatives and awards programs. By utilizing the experiences of other agencies and private sector organizations, the NRC and similar organizations can be more successful at EMS development and implementation.

Acknowledgements

I wish to acknowledge and thank those people who contributed to this masters project:

Dr. Deborah Rigling Gallagher, Assistant Professor of the Practice of Resource and Environmental Policy, Duke University's Nicholas School of the Environment, who provided guidance and friendship.

Mr. James McDermott and Ms. Rebecca Schmidt, U.S. Nuclear Regulatory Commission, who encouraged pursuit of this course of study.

NRC's Office of Nuclear Security and Incident Response Division of Preparedness and Response management and staff, especially Ms. Lisa Gibney, were also very supportive of my study.

I appreciate the interest and enthusiasm of the environmental managers interviewed for this project. Sustainable government is within reach due to their efforts. Their enthusiasm inspires me.

And finally, I would like to offer a word of thanks to my family for their continued of my academic pursuits. I owe special thanks to Dave for the encouragement I needed to complete this project.

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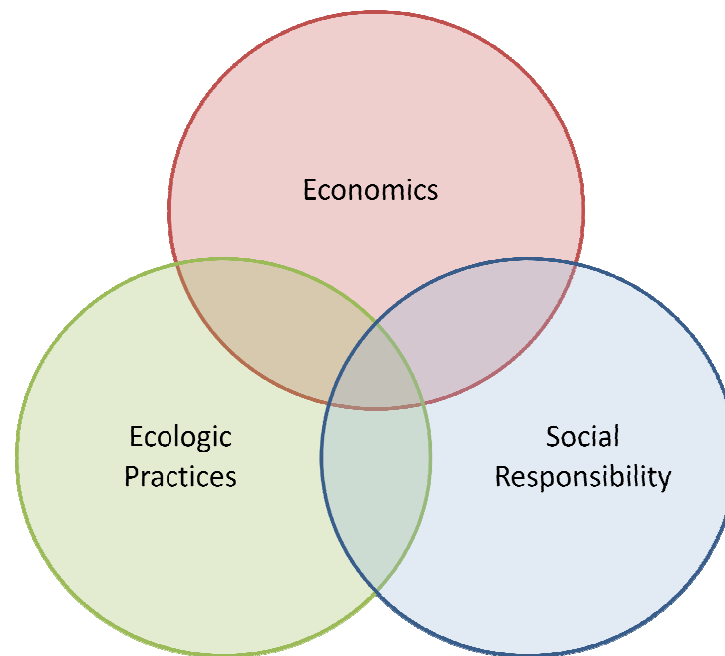
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Sustainable Strategic Management and the Federal Government

Businesses and organizations around the world are changing the ways they operate, incorporating concepts of environmental responsibility and sustainability into their business practices. New commitments to environmental management can be seen in the addition of Vice President for Sustainability or Chief Sustainability Officer positions at very large companies that are not popularly viewed as being environmentally oriented such as Dupont and Georgia Pacific. Environmental management and sustainability goals are not limited to private enterprise. Sustainability is not only pertinent to, but also achievable by, the government.

Sustainable strategic management (SSM) involves processes that are “economically competitive, socially responsible, and in balance with the cycles of nature” (Stead and Stead 2004). SSM is depicted in the following Venn diagram (Figure 1: Strategic Management) that clearly shows the intersection between economics, ecologic practices, and social responsibility. It is in this intersection of practices that businesses find sustainability. “Firms pursuing triple-bottom-line strategies are committed to economic success that both enhances and is enhanced by their concerns for the greater social and ecological contexts in which they exist” (Stead and Stead 2004). Pursuit of sustainability can lead to market share advantages for businesses. Managers view sustainability from different perspectives – for some, “it is a moral mandate; for others, a legal requirement” (Hart and Milstein 2003). For still others, pursuing sustainability is a cost of doing business to ensure maintained legitimacy, while for others it is seen as a real opportunity.

Figure 1: Sustainable Strategic Management



The concept of “triple-bottom-line” sustainability is applicable to government agencies. In public sector enterprises, economic success is likely defined in ways that are different from in private businesses.

However, shareholder value is important to gain and maintain. For government agencies, shareholders may be considered to be those who are regulated, the American people as a whole, and/or the political system. Pursuit of sustainability can lead to benefits for government agencies in terms of economic success by increasing perceived shareholder value through increasing legitimacy and reducing operating expenses.

Viewing government agencies as individual businesses with unique strategic management needs is not a new concept for the government. Government agencies often take cues from private enterprises, using the best practices and lessons learned in corporate America to alter the way government operates, ultimately leading towards improved efficiency and better regulation.

Environmental Management Systems (EMSs) are one tool that corporations around the world have been using to work toward sustainability. Agencies in the federal government are also using EMSs to reduce their ecologic footprint, improve efficiencies, and “go green”. Development and implementation of environmental management programs and EMSs has been mandated for most federal agencies.

“While an EMS is no guarantee of a successful company, it is hard to imagine a company achieving success in the new millennium without a value-creating EMS” (Davis 2000, Stages). Similarly, it is hard to imagine a government agency being successful and seen as competent without a value-creating EMS.

History of Environmental Management in the Federal Government

Federal agencies are expected to comply with a wide range of statutes and regulations related to environmental management, varying from federally issued directives to state and local laws.

Notable Executive Orders for Environmental Management

Since the early 1990s, Executive Orders, issued by the President and managed by the Office of the Federal Environmental Executive (OFEE), have been the primary directives for environmental management at federal agencies. Four Executive Orders in particular created a shift in the government, leading to agencies developing EMSs or similar frameworks as means for managing environmental programs.

EO 12856 – “Federal Compliance with Right-to-Know Laws and Pollution Prevention”

On August 3, 1993, President William J. Clinton issued Executive Order 12856, “Federal Compliance with Right-to-Know Laws and Pollution Prevention”. This Order called on federal agencies to be good neighbors to the American public by requiring agency compliance with the provisions of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and the Pollution Prevention Act of 1990 (PPA). EPCRA “established programs to provide the public with important information on the hazardous and toxic chemicals in their communities, and established emergency planning and notification requirements to protect the public in the event of a release of extremely hazardous substances” (Clinton 1993). PPA established pollution prevention as a national policy where pollution should be reduced or eliminated at the source and pollution that could not be prevented should be recycled or otherwise mitigated in an environmentally responsible manner.

In 1995, responding to EO 12856, the EPA developed a set of five management principles to create an EMS framework called the Code of Environmental Management Principles (CEMP). “The CEMP is modeled on common elements found in a number of EMS standards but with a stronger emphasis on

regulatory compliance and sustainable development, that is, the judicious use of resources to ensure their continued availability” (Ortiz 2001). The five CEMP principles emphasize characteristics that are necessary for EMS success: commitment from top management, assurance of environmental compliance and pollution prevention, ability for personnel to perform their functions in ways that are consistent with agency mission and regulatory requirements, assurance of full accountability of environmental functions, and measurement of environmental goals and improvement in environmental performance (Ortiz 2001).

Many federal agencies had programs that applied to CEMP components, but did not have those programs set up in such a way that they were integrated or connected. CEMP aimed to correct this isolated set up of environmental programs and “to move agencies beyond compliance and the traditional short-term focus on regulatory requirements to a broader, more inclusive view of the interrelated nature of environmental activities” (Ortiz 2005).

EO 13101 – “Greening the Government through Waste Prevention, Recycling, and Federal Acquisition”

Issued on September 14, 1998 by President William J. Clinton, EO 13101 “Greening the Government through Waste Prevention, Recycling, and Federal Acquisition” changed federal procurement guidelines to focus on the environment. It required federal agencies to procure products manufactured containing recycled material. It also instructed agencies to procure products that were “environmentally preferable”, meaning “products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose” (Clinton 1998). This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service.

EO 13101 established an early framework for development of EMSs. By requiring OFEE to develop a “Government-wide Waste Prevention and Recycling Strategic Plan (Strategic Plan)”, EO 13101 set a documentation standard for use of environmentally preferred products and practices. The purpose of the Strategic Plan was to set forth “direction and initiatives for acquisition of recycled and recyclable products and environmentally preferable products and services; ... review and revision of standards and product specifications; assessment and evaluation of compliance; [and] reporting requirements” (Clinton 1998).

Agencies received direction through EO 13101 to “translate the government-wide strategic plan into specific agency plans and to appoint an Agency Environmental Executive (AEE)” (Commission 2002).

Evidence of agency initiative to comply with the spirit of EO 13101 can be seen in the Nuclear Regulatory Commission’s “Greening the Government Strategic Plan”, which was created in May 2002, and has not been updated since. Procurement programs and initiatives to promote the use of recycled materials became more common in government agencies following the issuance of EO 13101.

EO 13148 – “Greening the Government through Leadership in Environmental Management”

Issued on April 21, 2000 by President William J. Clinton, EO 13148 “Greening the Government through Leadership in Environmental Management” led to significant changes in agency environmental management programs. It required agencies to implement compliance auditing programs and EMSs. “It also established agency goals to reduce the use of particular toxic chemicals, reduce the emissions of reported chemicals under [the Emergency Planning and Community Right-to-know Act] EPCRA, and to use environmentally beneficial landscaping” (Ortiz 2001).

EO 13148 required agencies to conduct environmental self-assessments based on the CEMP principles or another appropriate framework for environmental management. Assessments could be conducted at various levels, and many agency EMSs, both for specific agencies and for geographical areas, resulted.

Following assessments, agencies were required to implement EMSs at “all appropriate agency facilities based on facility size, complexity, and the environmental aspects of facility operations” (Clinton 2000). Most agency facilities that were deemed to be “appropriate” were larger facilities with significant industrial components rather than smaller agencies with non-industrial type missions. “Appropriate” facilities were seen as having larger, more immediate deleterious impacts on the environment. As a result, many of the government’s largest agencies developed substantial EMSs. For example, all Department of Defense facilities were required to fully comply with EO 13148 by December 31, 2005 (McFarland et al 2005).

Most agency EMSs established as a result of EO 13148 followed the ISO 14001 standard. ISO 14001 certification is directly applicable to facilities engaged in laboratory or industrial type work. Other types of facilities are not excluded from pursuing ISO 14001 certification, however the EMS standard is simply not as applicable.

EO 13423 – “Strengthening Federal Environmental, Energy, and Transportation Management

On January 24, 2007, President George W. Bush signed Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management”. Consolidating and building on previously signed Orders (and revoking EO 13148), EO 13423 provides guidelines for federal agencies in designing and implementing changes to meet requirements for energy, transportation, and environmental performance. Notably, EO 13423 directs all federal agencies to implement EMSs at all appropriate levels of the organization, ensuring that an EMS will become the agency standard for managing environmental aspects of agency policy and directions.

Prior to issuance of EO 13423, development of a formal EMS was voluntary. However, many agencies chose to pursue full EMS implementation. As of the issuance of EO 13423, approximately 1,000 EMSs were implemented across the federal government. By 2010, it is expected that there will be at least

2,500 EMSs in effect across the federal government (Executive). Agencies that did not pursue full-scale EMS implementation under previous Orders are expected to do so under EO 13423.

Development and Implementation of Environmental Management

Systems

The wide array of different activities undertaken by federal agencies creates a broad range of environmental compliance issues. Agencies are tasked with everything from large-scale manufacturing and industrial type activities to scientific research, from defense activities to regulatory, stereotypical paper-pushing bureaucracy type activities. There is not a one-size fits all definition for a federal agency and therefore, in terms of environmental management, there cannot be a one-size fits all definition of what environmental management or sustainability activities means. What works for one agency may not work for another. Despite the vast differences between agencies, there are opportunities for agencies to work together and learn from each other's successes and failures.

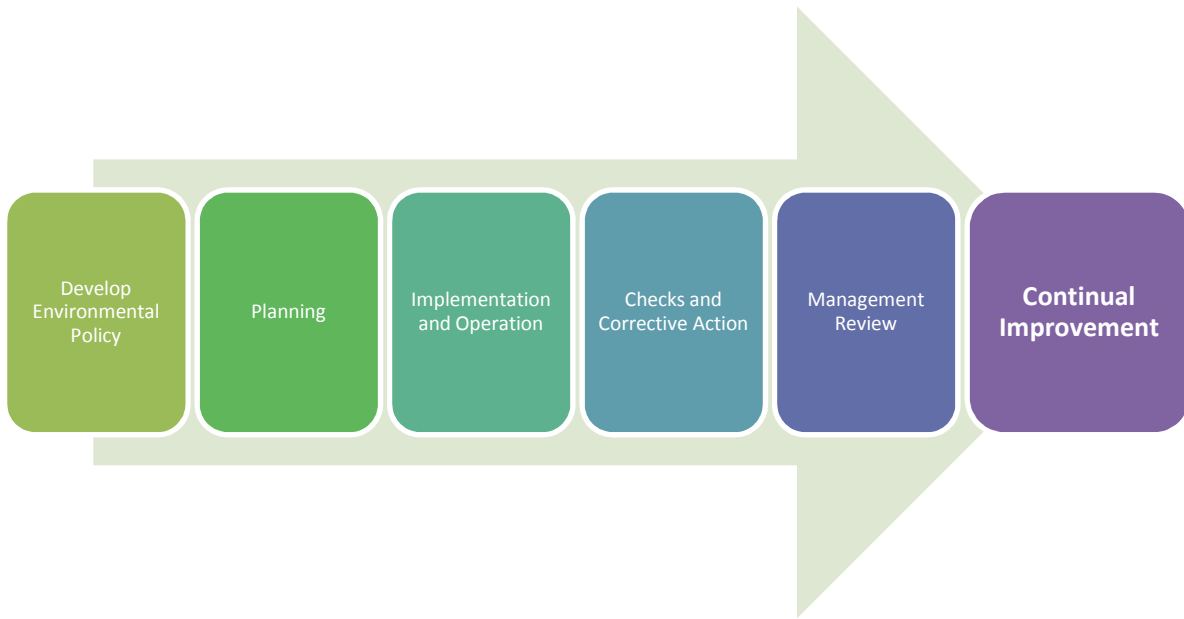
There are limited directions available for federal agencies looking to develop EMSs. Available guidelines, resources, and consulting services are largely oriented to the private sector where EMSs are more commonplace and where strategic sustainable management can lead to a distinct market advantage. Because the private and public sectors strive for different goals, the strategic advantages gained in the private sector through EMS development are not relevant to the public sector. The public sector is expected to gain different advantages, such as "maintain[ing] law and justice, implement[ing] political goals such as environmental rules and regulations (e.g. by controlling private companies by means of supervision), perform[ing] ideological actions, set[ting] a good example and us[ing] the public resources in an effective way" (Noren 2004). These potential advantages can be hard for a government agency to distinguish when faced with the seemingly monumental task of creating an EMS. However, beyond these advantages, "government facilities might [also] benefit more than they recognize from cost savings and management improvements associated with EMS introduction" (Andrews 2003).

Assorted experts and organizations define an EMS in different terms. The Office of the Federal Environmental Executive (OFEE) defines an EMS as a “formal set of management processes and practices that enables an organization to manage and reduce its environmental impacts and operate with greater efficiency and control” (Ortiz 2005). Since OFEE is the primary overseer of environmental management in the federal government, this is the primary definition of an EMS that is used by assorted agencies.

The ISO 14001 standard is the most recognized EMS framework. It is also the most commonly used framework in both the private and public sectors. The ISO 14001 framework formally defines an EMS as “the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy” (Ortiz 2001).¹ This framework establishes a “plan, do, check, act” model with a standard process for identifying and implementing goals, determining progress, and making improvements to ensure continued improvement (Ortiz 2001). As illustrated in Figure 2, the EMS process does not stop after development and implementation – rather it is a process for continual improvement.

¹ Ortiz 2001, citing International Standards Organization, 2004

Figure 2: The EMS Process²



While many federal agencies have implemented EMSs, other agencies that are seeking to develop their own systems are left with few resources for use in the process. Federal website “clearinghouses” for information provide generic guidance (Center 2008, EMS) and the case studies that are available for reference focus on larger agencies with broad-reaching environmental impacts such as the Department of Defense and its daughter agencies and the National Aeronautic and Space Administration. While there is no doubt that there are many lessons to be learned from the experiences of these agencies, there are limited resources available for primarily office-oriented agencies and related EMSs. EMS costs could be reduced and management capabilities could be increased through the creation of standard templates for many common government operations such as motor pools, water supply and wastewater treatment, and construction and maintenance operations (Andrews 2003).

Opportunities exist for agencies and organizations that have not yet implemented EMS standards to build on the experiences of those that have. A small, independent agency, the United States Nuclear

² Adapted from Andrews 2003 – “The EMS Process”

Regulatory Commission (NRC) has not yet implemented an EMS. Pursuant to EO 13423, the NRC is seeking to develop an EMS in compliance with ISO 14001 standards. With few resources dedicated to the EMS development effort, the NRC could especially benefit from utilizing lessons learned from similar agencies to ensure cost, time, and policy effectiveness. The focus of this research project is to understand the challenges and opportunities related to EMS development and implementation for federal agencies, with an emphasis on providing recommendations to the NRC and agencies with similar concerns.

Agency Profile: The Nuclear Regulatory Commission – An Agency Ready for Change

Background

The United States Nuclear Regulatory Commission (NRC) is an independent agency of the federal government charged with the regulation of civilian uses of radioactive material in the country. Its mission is to “license and regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment” (Commission 2004).

NRC’s roughly 4,000 staff carry out the agency’s mission. Headquartered in the Washington, DC metropolitan area, the NRC has four regional offices around the country, with locations in or near major cities and centrally located to nuclear power plant licensees.

As an independent agency, the NRC is different from many other federal agencies. The NRC does not have a Cabinet seat, nor does it report to the Cabinet. Additionally, funding for the agency, while initially provided through the Treasury, is largely billed to licensees through a fee system, and then

returned to the Treasury. As such, the NRC is largely shielded from politics, and has the necessary independence to conduct its regulatory mission without being influenced by political whims. In many ways, the NRC's structure and independence make it like a corporation existing and functioning within the framework of the federal government system.

Environmental Management at the NRC

The NRC does not currently have an Environmental Management System (EMS) in place. However, it is looking to develop and implement one within the next year.³ Initial components of an EMS are in place, captured in the "Greening the Government Strategic Plan" (circa 2002). The Strategic Plan sought to "improve waste prevention, recycling, and the purchase and use of recycled content and environmentally preferable products and services in the NRC" (Commission 2002). An EMS would expand on the existing Strategic Plan, with the goal being to develop a comprehensive, integrated program for continual improvement focused on environmental sustainability. As envisioned, the EMS will provide a method for identifying how NRC operations affect the environment, and will focus on the impacts of NRC facilities and operations.

Based on the guidance and metrics established in the Strategic Plan, NRC environmental management activities are primarily focused on recycling – at many levels. The vast majority of NRC office supplies contain some level of post-consumer material. NRC-owned vehicles at Headquarters all use re-refined motor oil through a novel agreement with a local service station. Recycling stations are provided for employee use throughout the buildings. NRC Headquarters claims to have one of the best recycling programs in the federal government – recycling more than 243 tons of paper and cardboard in 2002 alone (Commission Recycling Program).

³ When I initially spoke with the agency's "Program Manager for Greening Initiatives" in the spring of 2008 regarding environmental management issues at the NRC, he stated that implementation of an EMS was planned for December 2008. At that time, development was an idea – and now, nearly a year after that conversation, it seems that little progress has been made.

Other environmental efforts at the NRC focus on reducing the agency's impact on the surrounding environment. Energy efficiency efforts are primary. Recently, a lighting conversion was conducted to replace overhead lights in the Headquarters buildings with a system that is twice as energy efficient. Motion sensors are also used throughout the workplace to limit electricity use.

NRC regulations of licensees require environmental review and compliance to mitigate the impacts of licensees on the environment. The NRC "has a very good track record for being environmentally conscious" with regard to licensee site processes (Hall 2009). According to Donald Hall, the Program Manager for Greening Initiatives, this level of respect for the environment should and will be carried to NRC operations (Hall 2009).

The NRC does not currently have a definition for success regarding environmental management efforts. An EMS would be a step towards a vision of success. Hall, as the agency's primary environmental manager, would define success as being when "we have reached the level that we have identified all aspects of our environmental impact and have also identified steps to mitigate those aspects" (Hall 2009). Ultimately for Hall, creation and implementation of an EMS that earns third party certification, such as ISO 14001 certification, would mean EMS success. ISO 14001 certification is perceived as important and defining of success because that would mean that a good system of improvement is in place and working.

Development of an EMS at the NRC is a significant challenge. Resources are limited for environmental management efforts. Not enough employees are dedicated to agency environmental management efforts. Many people work on small parts of the agency's environmental management initiatives as part-time assignments because they feel that it is the right thing to do – not because it is a primary assignment, or even because it is seen as important to the employee's management chain. A full-time position dedicated to environmental initiatives such as EMS development has been requested and

denied during the annual budget formulation process. If such a position could be created, more progress would be seen, and processes and programs that essentially function independent of each other could be integrated, leading to increased efficiency.

The NRC stands to benefit greatly by learning from the experiences of other agencies. Participation on working groups and attendance at multi-agency training sessions is useful for this purpose.

Methods

Research consisted of a thorough review of federal directives and orders related to environmental standards and practices for agencies, specifically development of EMSs.

Case studies were conducted on two agencies selected for further study. Using case study design methodology described in Yin, cases were selected based on a replication framework. A list of agencies to be considered for possible inclusion was developed from agencies identified as having successful EMSs defined by nominations for the annual White House Closing the Circle EMS awards.

In 2008, seventeen agencies/offices self-nominated for the White House Closing the Circle award in the civilian EMS category. After review of the nomination narratives, nine EMSs were removed from consideration for various reasons related to the inapplicability of the described program to this research project. Using simple decision analysis methods, the remaining eight agencies were ranked by type of facility and location. Constructed scales were used. For the purposes of this study, an agency EMS that focused on office-type facilities was more important or relevant than an EMS for a purely industrial-type facility. Further, location was considered for purposes of ease of interviewing. A multi-attribute utility function was derived. Given that phone calls were possible (though not preferred) substitutes for in-

person interviews, type of facility was given a higher weight in the MAUT function (.65) than location (.35). For any one EMS, the MAUT function was defined as:

$$U(\text{facility}) = (.65 \times U(\text{type})) + (.35 \times U(\text{location})).$$

The list of potential agencies and their respective utilities is detailed in Table 1: Potential EMSs Considered.

Table 1: Potential EMSs Considered

Project	Agency	Type of Facility K_f = 0.65	Location K_l = 0.35	MAUT	Notes
EMS Implementation at Sandia National Lab	Department of Energy	Hybrid with Office U = 0.90	Albuquerque, NM U = 0	U = 0.585	Government Owned Contractor Operated Facility of DOE
EMS for DC Facility	Bureau of Engraving and Printing	Industrial U = 0.36	DC area U = 1	U = 0.584	
EMS Implementation at Diverse USPS Facilities	US Postal Service	Industrial U = 0.36	DC area & other U = 1	U = 0.584	Winner of 2008 Closing the Circle Award for EMS – Civilian
EMS Implementation at TSA	Department of Homeland Security	Other U = 0	DC area & nationwide U = 1	U = 0.35	
EMS/Environmental Program Management at White Sands Test Facility	National Aeronautics and Space Administration	Industrial U = 0.36	Las Cruces, NM U = 0	U = 0.234	
DEA Aviation Operations	Drug Enforcement Administration	Military type U = 0.18	Fort Worth, TX U = 0	U = 0.117	
EMS for Coast Guard Integrated Support Command Miami	Department of Homeland Security	Military type U = 0.18	Biscayne Bay, FL U = 0	U = 0.117	
EMS Development at USCG Group / Air Station Port Angeles	Department of Homeland Security	Military type U = 0.18	Port Angeles, WA U = 0	U = 0.117	

Following MAUT analysis, three facility EMSs were identified for more detailed consideration. These were, in order of preference, Sandia National Laboratories (U = 0.585), Bureau of Engraving and Printing (U = 0.584), and United States Postal Service (U = 0.584). The contact persons included on the Closing the Circle Award Nominations were contacted via email for solicitation to participate in an interview to gather more information and develop a case study for this project. All contacted persons responded quickly, however the contact for the Bureau of Engraving and Printing was not available for participation due to preparations for an upcoming audit. The solicitation email can be found in the Appendix.

Upon review of informed consent forms, telephone interviews were set up with environmental managers from the Nuclear Regulatory Commission, Sandia National Laboratories, and the United States Postal Service. Interviews consisted of a series of open-ended questions designed to gather information regarding the nature of the EMS development and implementation processes. Particular emphasis was placed on areas of marked difficulty during the development process, and how those challenges were overcome. Attempts were made to keep interview questions consistent between interviews, however due to the nature of conversation and differences in expertise and experiences of interviewees, interviews varied between individuals. Interview questions can be found in the Appendix.

Agency Profile: United States Postal Service

Background

The United States Postal Service (USPS) seeks to provide the US “with reliable, affordable, universal mail service” (Service 2008). USPS statutorily functions “ ... to bind the Nation together through the personal,

educational, literary, and business correspondence of the people ... [to] provide prompt, reliable, and efficient services to patrons in all areas ... [and to] render postal services to all communities.”⁴

The United States Postal Service (USPS) is a large independent agency of the federal government.

Separated from the rest of the Executive Branch, most Executive Orders do not apply to USPS.

Therefore, USPS is not legally mandated to have an EMS like most other agencies. However, USPS is pursuing EMS development and implementation in order not only to comply with the spirit and intent of existing Executive Orders, but also because it views having an EMS as good business practice.

USPS operates solely on revenues generated from its operations. It has an operating budget of 70-72 billion dollars annually. More than 700,000 employees work at 34,000 USPS facilities nationwide.

Approximately 75 percent of the USPS operating budget gets allocated to salaries and benefits for USPS employees. With a fleet of more than 250,000 vehicles, USPS is one of, if not the largest, single owner of vehicles in the US. USPS “delivers to more than 149,000,000 addresses six days a week, and picks up pre-paid letters and packages at the time of delivery” (Service 2008).

USPS’s EMS

USPS has pursued environmental initiatives to green its operations since the early 1990s, with adoption of a formal EMS in 1994 (Gaffney 2008). USPS’s organizational structure has largely defined the shape of the organization’s environmental programs. USPS’s more than 34,000 facilities are organized under one headquarters office in Washington, DC, nine Area offices, and eighty district offices.

The Northeast Area office has set itself apart as a green leader within USPS. Charlie Vidich in the Northeast Area office⁵ has been credited as being the energetic leader of change focusing on

⁴ 39 U.S.C. § 101(a)

⁵ USPS’s Northeast area includes Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont, Maine, Albany and Western New York.

environmental performance (Gaffney 2009).⁶ Vidich pursued a relationship with the US Environmental Protection Agency (EPA) Region I (New England) office to develop methods and practices for greening the area's operations. Some of the facilities in the USPS Northeast Area are charter members of EPA's National Environmental Performance Track initiative that "encourages continuous environmental improvement through environmental management systems, community outreach, and measurable results" (Agency 2008, National). Participation in Performance Track led to the creation of a master environmental plan for the Northeast Area which was shared with other Areas over the years through manager meetings and sharing of best practices. The Western Area⁷ liked the environmental ideas of the Northeast Area and has started implementing programs in its facilities to maximize on the success of the Northeast Area.

USPS has been successful in pursuing environmental stewardship through EMS development and implementation following guidance from the Performance Track program. Forty-one facilities across the country have active Performance Track style EMSs in place. Implementation of an EMS has been a three step process: 1) bringing each facility into compliance with environmental laws and regulations; 2) completing an EMS that ensured meeting of compliance requirements and implementation of an EMS; and 3) conducting an outside, independent review to ensure EMS compliance with USPS and EPA EMS protocols (Gaffney 2008). At one point, USPS tried to expand participation in Performance Track to seven hundred facilities, but this proved to be cost-prohibitive. USPS has also considered developing EMSs for all facilities that would be compliant with ISO 14001 standards. This proved not only too restrictive, but with a price tag of approximately \$100,000 per facility (\$3.4 billion for all USPS facilities), also too costly (Gaffney 2009).

⁶ Gaffney described Vidich as "extremely bright" and the reason that environmental programs in the Northeast Area office have been successful.

⁷ The Western Area encompasses the largest geographical portion of the US within the USPS and includes the states of Alaska, Arizona, Colorado, Idaho, Iowa, Kansas, Minnesota, the western and southern portions of Missouri, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, western Wisconsin and Wyoming.

Looking Forward

USPS seeks to integrate environmental practices into all facets of its business and engage employees to take ownership of and responsibility for USPS environmental initiatives (Service 2007).

USPS is looking to expand the use of EMS within the agency. The agency is looking to pursue a hierarchical EMS, with policies and procedures developed at the headquarters level and trickled down to facilities. EMS directions will reflect how the organization already works, with enough flexibility for Area and facility managers to create individual EMSs that accurately reflect their unique needs and goals.

USPS has an existing compliance audit program that looks at federal, state, and local compliance issues and needs at a facility level. Monitoring EMS compliance will likely fit into this audit program.

Significant change is likely to be on the horizon for USPS. Americans are changing the ways that they rely (or don't rely) on the services of USPS. Budget concerns continually plague USPS and may significantly restrict the ability of the agency to pursue new sustainability efforts in the future.

Organizational uncertainty also affects the overall management "buy-in" to EMS implementation. A new Vice President for Sustainability was recently appointed, however environmental management programs are not organizationally located within his purview (currently environmental management is a function within human relations at the headquarters level).

USPS is an example of EMS success in the federal government. Progress in implementing EMSs across the agency creates a strong foundation for continued success.

Agency Profile: Sandia National Laboratories

Background

Sandia National Laboratories (Sandia) is a government-owned/contractor-operated (GOCO) facility of the United States Department of Energy's (DOE) National Nuclear Security Administration. Managed by Sandia Corporation, a Lockheed Martin company, Sandia has operated since 1949 to develop science-based technologies to support national security missions of the United States. Sandia's mission is to meet national needs in five key areas:

- Nuclear weapons – ensuring that the nation's nuclear stockpile is safe, secure, reliable, and able to support the national deterrence policy;
- Energy and infrastructure assurance – enhancing the reliability of critical energy and other infrastructure;
- Nonproliferation – reducing the proliferation of dangerous weapons, the threat of nuclear accidents, and the potential for environmental damage;
- Defense systems and assessments – addressing new threats to national security; and
- Homeland security – assisting in protecting the nation against terrorism (Laboratories 2009, About).

Sandia's roughly 8,200 staff carry out the lab's mission through cutting edge research and use of technology. Sandia's primary location is in Albuquerque, New Mexico.

As a GOCO, Sandia's status within the US federal government is different from many agencies.

Essentially, Sandia is a private company that follows government directions. For Sandia, this is an

advantage because GOCO status allows “proven private-sector processes to operate without bureaucratic restrictions” (Laboratories 2009, GOCO).

Sandia’s EMS

Sandia first sought to develop an EMS in late 2005 as a result of requirements issued by the DOE following the issuance of EO 13148. There was little guidance or instruction about EMS development available.

Initially, the EMS was structured based on the division structure of the lab. Each vice president of the ten primary divisions was given a list of steps and actions that were necessary to be completed to achieve compliance with the requirements issued by the DOE. “The Sandia EMS is a corporate system that is centrally organized and administered; however, each division is responsible for analyzing their individual activities, products, and services to identify significant environmental aspects and develop objectives and targets to mitigate them” (Mizner 2008). Sandia also has seventeen environmental programs that contribute to the success of the EMS and Sandia’s environmental performance. These programs include energy management, waste water discharge, and air quality compliance. “Each environmental program has a plan which designates the responsibility for achieving objectives and targets to relevant functions of the organization and to determine the means and timeframe by which they are to be achieved” (Mizner 2008). The Sandia EMS combines these two components into one cohesive program which is detailed in an annual EMS Manual.

Issuance of EO 13423 by President Bush in January 2007 led to additional instructions from DOE to its facilities. Sandia must comply with DOE Order 450.1b by June 30, 2009. These additional requirements include:

- Obtaining independent validation of the EMS consistent with the ISO 14001 standard;⁸
- Having a verifiable compliance management approach; and
- Increasing the scope of the current EMS to include specific measures for energy, water, sustainability, and fleet operations.

As a result of the additional requirements being placed on Sandia by DOE, Sandia has decided to pursue independent ISO 14001 certification for its main New Mexico operation. The target date for ISO 14001 certification is June 2009. Jack Mizner, lead of the EMS at Sandia, describes the pursuit of ISO 14001 certification as something that makes sense even though it is beyond what is required by DOE. Obtaining this independent certification will make it easier for Sandia to show DOE that the EMS requirements have been met due to the rigor of program and organization that is necessary for ISO certification.

By all accounts, Sandia's EMS is an example of success in the federal government. Yet, Mizner states that there is no concrete definition of success for the EMS at Sandia. In 2009, obtaining ISO 14001 certification will define success for the year. In other years, success has been determined "largely on how well [Sandia does] on meeting [their] objectives and targets" (Mizner 2009). In future years, Mizner hopes to see the establishment and use of concrete metrics to help in defining success. The process of obtaining ISO 14001 certification is leading to the development of such metrics and is also elevating the EMS to increased notice by management.

Mizner describes the Sandia EMS as "fairly traditional" with a few unique areas that contribute to its success (Mizner 2009). Sandia's environmental team undertakes significant communication and outreach efforts to develop awareness within the Sandia community. Outreach efforts include quarterly newsletters, a lecture series, fact sheets, internal publications (cafeteria and restroom signage), youth

⁸ DOE is not requiring ISO 14001 certification, however it is requiring a level of third-party validation that is in line with ISO 14001 requirements. By default, for many facilities this will mean pursuing ISO 14001 certification.

education, and internal EMS Excellence Awards. Of these, Mizner highlights the lecture series and the EMS Excellence Awards as especially important and useful tools in creating employee buy-in and acceptance of the EMS. The lecture series brings notable respected environmental leaders to Sandia to speak to employees on varied environmental topics. Past speakers have included Dr. Mario Molina, Nobel Prize Laureate, and Dr. Paul MacCready, inventor of the human powered aircraft. Through the EMS Excellence Awards, members of the Sandia workforce are recognized semi-annually for demonstrated environmental excellence in five specific categories. The awards program is becoming more popular and the need for solicitation for nominations is declining every year as more employees embrace the program and participate in it. Mizner also credits a thorough branding initiative with raising employee awareness of the EMS. An identifiable logo (Figure 3: Sandia EMS Logo) is included on all materials related to the Sandia EMS.

Figure 3: Sandia EMS Logo



Achieving success with the Sandia EMS has not occurred without challenges. The biggest challenge according to Mizner is one of culture. Historically, Sandia's mission led to the creation of a lot of different sub-organizations to conduct different activities. Much of the work and research carried out at Sandia has been of a classified nature, requiring sub-organizations to be independent. This "siloeing" had an effect on the culture at Sandia, with communication and trust between sub-organizations lacking. Over time, the silos are disappearing, but residual cultural norms remain. Additionally, encouragement

of creativity and independence in research has created a sense of resistance to structures and specific metrics such as those that are in a traditional EMS. Finally, when asked about management support of the EMS, Mizner identified this area as one that is always identified as a gap in gap analysis of EMS and environmental programs progress. With the nature of the work at Sandia, safety will always be, and needs to be, the highest priority. Looking back at the development of the EMS and learning from the process, Mizner would advise others to “make it as simple as you can” (Mizner 2009). There are good templates, such as the ISO standard, available for use and guidance in EMS development. These can and should be used to avoid reinvention, and the delays that are inherent.

Sandia’s experience in developing and implementing its EMS provides good lessons for other agencies to learn from and emulate.

Lessons Learned

Federal agencies, no matter how large or small and no matter what their mission area, face challenges in developing and implementing EMSs. The challenges faced by the NRC are no different than those that were faced by USPS and Sandia in the early stages of their EMS development. However, USPS and Sandia both found ways to overcome those challenges. There is no doubt that the NRC, if dedicated to pursuing EMS implementation, will also succeed.

EMSs require diligence in development and implementation. In the three cases studied, four issues emerged as primary difficulties or stumbling blocks for EMS development and implementation: lack of guidance; lack of resources, both finances and personnel; lack of management “buy-in” and support; and resistance to change from an established agency culture.

Lack of Guidance

It is not sufficient for the environmental manager, or the EMS lead, to have an idea of what success means. While the idea may lead to innovation, a clear definition of success that is vetted by

management is necessary for progress. Without top-management buy-in, “success” will be nebulous and it may be difficult to convey the value added to the agency through the EMS. The EMS’s perceived value among employees is also important so as to ensure participation and compliance. Employees need to know what is expected of them. Establishing a definition of success early will be useful for the EMS development process. But, like the iterative nature of an EMS itself, it is important to change the definition as time passes and as programs progress. Success in year five should not look like success in year one. It may become harder over time to have marked gains in environmental performance (it is easier to make larger strides earlier in the process), but clearly defined measures of success will help to move the EMS along, reaching ever greater levels of sustainability.

Once the goal of the EMS is defined, it is necessary to identify the ways that the goal can be reached. Measures may be quantitative (reduce emissions by X amount by a certain date, or increase recycling by X% in the next 18 months) or qualitative (improve public perception). Quantitative measures are often easier to identify and monitor, however qualitative measures may add significant value to an agency. Like definitions of success, performance measures can and should evolve over time.

Reflecting on the agencies profiled in this study, EMS success and the performance measures for determining success are difficult or even impossible to define in each case. Success for environmental management programs at the NRC is not currently defined. Top management is in support of development of an agency EMS that “is fully compliant” (Hall 2009). But, ISO 14001 certification does not guarantee superior performance, and it does not define success for an EMS. Similarly, USPS and Sandia struggle with defining success for their EMSs. For both of these agencies, success is defined by meeting a certain mark or metric, perhaps achieving independent third-party certification such as EPA Performance Track or ISO 14001. Each of the environmental managers interviewed for this study noted that achieving compliance/earning certification would increase program visibility and encourage more

management support. This suggests that federal managers are not sufficiently involved in the EMS development process and that the focus is on compliance rather than sustainability. Shifting towards a view where sustainability is central will require a fundamental change in perspectives of federal managers.

Lack of Resources

In large organizations, the scope of an EMS will be just as large as the organization itself, touching every facet of operations. EMSs are living documents that change over time. In order for an EMS to be effective, it needs to be funded and have people who are dedicated to working on it. If an organization is truly dedicated to EMS implementation, environmental management responsibilities should not rest on the shoulders of one person as ancillary duties.

Burdened by the immense task of creating an EMS, NRC's EMS lead is acutely aware of the need to spread EMS responsibilities. Hampered by resource constraints, both in numbers of personnel and in financial resources, the EMS development process tends to take a backseat to other priorities. For personnel working on the issue, their EMS related duties are ancillary to their other, primary responsibilities. Creating a core team has been difficult and delayed for this reason. Hall is quick to dispel any myths that the EMS is his and his alone. He openly recognizes the work that others have done, and he plans for the day when the EMS will be another person's responsibility.

Lack of funding and personnel dedicated to EMS implementation will hamper EMS development activities. Agency level dedication to sustainable management should be reflected in budget priorities, with funding and positions made available for EMS development and implementation.

Lack of Management Support

Management support is critical for the success of any important initiative within an organization. Issues encountered by the agencies studied, such as lack of guidance and lack of resources, are symptomatic of a larger problem – lack of management support.

Management support must be more than superficial – it should parlay into dedicated funding and financial resources for environmental management and a commitment to obtain and retain specialized personnel for environmental management activities.

An environmental manager position responsible for EMS oversight is important at all stages of EMS development and implementation. There needs to be one central contact point for all EMS related issues and questions. In organizations with multiple facilities, an EMS contact at each facility will enable onsite and rapid problem solving and resolution of questions or concerns. This person can also serve as a facility champion for environmental programs, spreading news and keeping other employees interested in participating.

The federal agencies profiled for this study seem to have realized the importance of identifying and maintaining an EMS leader. The environmental manager at the NRC serves as the central EMS leader at the Headquarters facility. At this point, environmental management programs have not spread to other agency offices with any real conviction, so this individual is crucial as a central repository for information related to the agency's varied environmental management programs and the impending EMS. USPS indicated having EMS leaders at each of its facilities as a key to its success. There are identified leaders at every level of the USPS organizational structure. Facility leaders serve as champions, identifying unique qualities of their facilities and adapting EMS to fit their needs, while also encouraging other employees to be involved in EMS implementation. At Sandia, the EMS Core Team consists of employees

at each of its facilities who serve not only as leaders at their facilities but also as integral parts of ongoing EMS development and implementation.

While dedicated staff is a very important need for a successful EMS, it is critical for this team to have access and buy-in from all levels of management. Further, all employees need to have a sense that environmental activities are important to management. Good general management encourages employee innovation and environmental action, but organizations should encourage managers “to focus on encouraging environmental protection and sustainable development activities” (Ramus 2001) in order to effect real environmental change. In a study of eco-innovative private firms, it was found that “while employees are more likely to try an environmental initiative when they know the company has an overarching environmental policy, they are less likely to try an eco-initiative if they know an environmental policy exists and their supervisor is not supportive” (Ramus 2001). Management support for environmental initiatives will often depend on the perception of seriousness of the organization toward environmental management. Certification programs, such as ISO 14001, can raise awareness and get more managers involved in EMS activities. The NRC’s environmental program manager noted difficulties in having representation of the agency’s environmental executive to attend meetings related to EMS development. Sandia’s environmental manager noted that management support is always a gap with improvement needed when doing gap analysis related to the organization’s EMS. Much can be done in terms of EMS development and implementation without management support, but it is critical for easing the process, increasing buy-in at all levels of an organization, and ultimately, it is required for continuation of environmental management activities.

Resistance to Change

Government agencies are notoriously stereotyped for being stagnant, slow to change and evolve with the times. Government processes, especially regulatory processes, tend to be slow. Career employees

may be especially resistant to change and desire to keep the comfort of known tried and true processes and techniques. Agencies that handle sensitive or secure information may be especially prone to resisting change. Stovepiping or siloing can be a good thing in terms of managing information security – but as Mizner at Sandia pointed out, it can also lead to a lack of internal communications and difficulties in sharing best practices between teams and offices. As projects change and shift, and as the baby-boomer generation of career federal employees looks to retire, change may become easier within agencies. Inter-office working groups can play a vital role in bridging gaps between offices and teams, increasing trust and information sharing.

Continual improvement is integral to an EMS. An agency culture that is resistant to change can cause an EMS to stagnate. In an EMS, it is not sufficient to identify areas of weakness without also identify methods for improvement. Similarly, as time passes, weaknesses may be altered or disappear completely, or needs may shift. It is therefore important to have a management system in place that can be altered to match needs, of both the EMS and the workforce as they shift over time. This concept is central to the “Plan, Do, Check, Act” framework of the ISO 14001 style EMS. Many private and public sector entities include improvement plans in their strategic business plans. Carrying continuous improvement into an EMS should therefore be seen as a natural extension of a management plan.

Each of the agencies profiled embraces the concept of continuous improvement, at least in theory. Each environmental manager who was interviewed spoke of the process of change that occurs and is natural to EMS development and implementation. For many agencies, creating a system to envelop a corrective/preventive action process fits in with other agency processes that already exist. While the NRC has not yet created its EMS corrective action process, the concept is part of the EMS plan, and should be easy to implement. The NRC already manages a program called the Reactor Oversight Process (ROP) for nuclear power plant licensees. In the ROP, deficiencies and areas for improvement are

identified in assorted categories. Licensees face regulatory penalties such as fines or even potential shutdown should their deficiencies reach certain levels. While an EMS corrective action program would not have consequences like fines and potential shutdown of the agency, it could be managed in similar ways, with performance metrics defined and successes and/or failures identified and documented for corrective action.

Moving Forward – Ideas and Recommendations for Innovation

The government lags behind private enterprise in the development and implementation of EMSs. While many agencies have seen great success, there are hundreds of others that have yet to develop and implement management programs that will lead to significant change or to “triple-bottom-line” sustainability. In order to achieve success, government agencies looking to develop EMSs should use the resources available through government guidance and lessons from the private sector and other agencies’ experiences.

In the fall of 2008, the Office of the Federal Environmental Executive (OFEE) released new guidance called the Hierarchical, Organization-focused Environment Safety and Health Management System (ESHMS). This guidance provides templates and instruction that can be used by agencies to develop and implement ESHMS through sub-units down to each facility. With modification, “templates may also be used for the development of a system that addresses environment only (i.e., EMS) or for a system that is implemented at only one level of the organization (e.g., facility)” (Center 2008, ESHMS). USPS sees great hope in the methodology created through the ESHMS framework, and hopes to evolve into a larger program-level or functional EMS over time.

Both USPS and Sandia have environmental management programs and sustainability initiatives in place that garner positive attention and accolades for the agencies. Particular successes worth emulating

include: integration of an EMS within the existing organizational structure and creating employee interest.

EMS Integration into Organizational Structure

An EMS that stands alone will not be successful. It is necessary for an EMS to be integrated into an organization's structure and culture such that it simply becomes part of the everyday process for conducting business. If an EMS adds on too much additional work for employees, it will be rejected.

Likewise, if an EMS is so outside of the norm of everyday business practices, it will also be rejected.

While developing an EMS, it is important for the EMS team to perform an assessment of the organization's structure and culture to determine where best to locate the EMS within the management structure and also to determine how best to organize the EMS and its elements so that it makes sense for the agency.

USPS and Sandia both found ways to integrate their EMSs into their existing organizational structures so that the EMSs would be successful. USPS is an agency with immense diversity – with facilities in nearly every major community in the nation. By starting small, the Northeast Area of USPS was able to develop and implement EMSs that worked for its facilities and its employees. The Western Area built on the ideas and experience of the Northeast Area and adapted EMSs for its facilities accordingly. USPS seems to have done very well in sharing the EMS responsibilities among many individuals at many levels in the organization's hierarchy. Facility level employees are involved, as are district level, Area level, and headquarters level employees. It can be argued that the success of the USPS program is hinged on this diverse involvement and the sharing of ideas and expertise between levels and geographic areas. Now, as USPS looks to develop an agency level EMS, it is acutely aware of the need for the EMS to fit within the agency's existing structure. The proposed hierarchical EMS will reflect the agency's organizational structure and will have top-level management support. Guidance documents and instructions for EMS

compliance will follow already existing formats and procedures so as not to create additional layers of burden for employees.

As a much smaller organization, Sandia's EMS had different organizational challenges to overcome during development and implementation. Sandia chose to design its EMS based on its division structure, with each division responsible for meeting certain goals. Divisions were able to create their own programs and activities to meet the goals, with overall reporting and oversight happening through an EMS team. This worked well to develop interest within all levels of the organization. Division management had responsibilities to meet certain metrics – requiring at least nominal buy-in by management in order to achieve success.

For both USPS and Sandia, one of the keys to their EMS success has been the creation of a core team of environmental management employees with interest in and responsibilities for the EMS. In USPS, each facility with an EMS has an onsite EMS champion who is responsible for EMS implementation. This person is also available to answer questions about the EMS and to sell the EMS in a way that is friendly to his/her peers. Sandia's core team is made up of individuals from throughout the organization who have different responsibilities within the EMS. The individuals on this team act as employee and management level cheerleaders for the EMS and other environment oriented activities and programs. The Sandia EMS core team is identified on the organization's website and all members are available to anyone inside or outside of the organization to discuss the EMS. One campaign about identifying the proper ways to handle and dispose of hazardous chemicals and waste even featured the core team members in a series of fun photographs and posters that were displayed throughout Sandia's facilities.

USPS and Sandia developed EMSs that worked within their existing organizational structures. This reduces time and labor needed for EMS development and also lessens the impact of changes on employees who may be reluctant to participate in new activities. To reduce hesitancy and increase

participation, other agencies looking to develop EMSs should create systems that work within their existing organizational structures.

Creating Employee Interest

Ultimately, employees need to be interested in an EMS in order for it to succeed. Employees are an important stakeholder that should be considered during EMS development. During EMS development, employees, their everyday tasks, and their interests should be considered in order to create an EMS that employees will want to support. Two tactics for creating employee interest include communications and internal and external awards.

Communications

EMS implementation is greatly hampered by a lack of awareness of the EMS. Internal communications by the EMS team with employees and management is important to the successful implementation of the EMS. The agency's website should have a prominent link to information about the agency's environmental initiatives. USPS and Sandia both have this information available to internal and external audiences. By contrast, information about the NRC's environmental management activities is available only on the agency's intranet – and at that, it is difficult to find within the internal website of the Office of Administration.

USPS has created a series of clever icons to represent their green initiatives, including those in Figure 4. Use of these icons indicates that the agency's environmental management programs are not separate from the rest of the agency, rather, they are in sync with the processes and programs of the agency. The existence of a page dedicated to the agency's environmental initiatives indicates the seriousness of USPS's commitment to improved environmental management.

Figure 4: USPS Green Icons



Sandia has also successfully used branding and communications to aid in the growth of its EMS and related programs and activities. Every document or work product related to the EMS is marked with the agency's EMS leaf symbol. Information about environmental management activities at Sandia is available through the agency's website – for both internal and external audiences. Sandia's EMS team is very focused on communications. Regular publication of an EMS related newsletter helps to disseminate information about EMS activities. Use of clever marketing strategies, including catchy poster campaigns, gathers employee interest. Activities such as Earth Day celebrations that include famous speakers also attract employee attention and participation. Sandia also actively participates in working groups and conferences related to EMSs – sharing their best practices and learning from the experiences of others. By using a variety of strategies to communicate the activities and goals of its EMS, Sandia reaches a wide range of stakeholders and increases interest in its environmental management activities.

Awards (Internal and External)

Awards programs can serve as incentives to promote exemplar performance. To encourage participation and interest in its EMS, Sandia created an internal awards program for employees. Nominations are evaluated by the EMS team and awards are distributed for innovative activities and enthusiastic support of agency environmental management initiatives. As the EMS and the awards program have become more recognized in the agency, the need for the EMS team to solicit nominations

has declined – something that Sandia’s EMS lead considers a sign of progress and successful EMS implementation.

Participation in external awards programs can also be of benefit to the EMS and the agency. Awards programs can provide incentives and goals for the agency to strive for in EMS implementation. The White House Closing the Circle Awards program has an EMS category for civilian agencies. Agencies self-nominate for consideration for this award and the work involved in preparing a nomination seems relatively easy and straightforward – agency leads prepare and submit a short narrative describing the EMS success or progress. In participating in external awards programs, an agency can bring positive attention to itself for the good work that it is doing. This attention may help the agency to attract and attain new employees, retain current employees, and improve public relations.

EMS success depends on employee and management interest and participation in environmental management activities. Communications efforts and awards programs can lead to increased interest and involvement at all levels of an agency.

Recommendations for the NRC

At the Nuclear Regulatory Commission, management and employees take great pride in being the “Best Place to Work in the Federal Government”. The agency’s vision is to be an exemplar regulatory agency, protecting people and the environment through efficient and effective regulation of uses of nuclear material to ensure safety and security. A recent branding effort highlighted the environment as a critical component of the NRC’s vision – with the agency’s tagline now reading “Protecting People and the Environment” (see Figure 5: NRC Branding). Unfortunately, informal polling of the public suggests that public image of the agency does not match this vision. The NRC has considerable work ahead of it to integrate the environment into the mission that the organization strives to fulfill every day. To truly live

out the goal of protecting people and the environment, the NRC needs to incorporate the environment into day-to-day operations and organizational culture. Adoption of strategic sustainable management practices, specifically an EMS, will lead to progress towards becoming an agency that values the environment and sustainability.

Figure 5: NRC Branding



Define Environmental Goals and "Success"

In spring 2008 at the agency's "All-Hands" meeting, NRC's Chairman Dale Klein was unable to define what it would mean for the agency to be "green". He suggested that steps were in place to make the agency environmentally responsible – such as through changing lighting to reduce electric consumption and through recycling programs. True sustainability and a successful EMS will depend on having a clear definition of what the agency's goals for environmental management are, and what success will mean. Without top management support, including Commission level support, this success will be hard to reach.

One place to define environmental goals and success is in the agency's Strategic Plan. Incorporation of a goal of environmental sustainability with development and implementation of an EMS as a means of achievement will institutionalize environmental management efforts and provide legitimacy through documentation and top management support. Goals need to reach beyond compliance and pollution prevention (Gallagher). Likewise, EMS certification should not be seen as the ultimate goal for

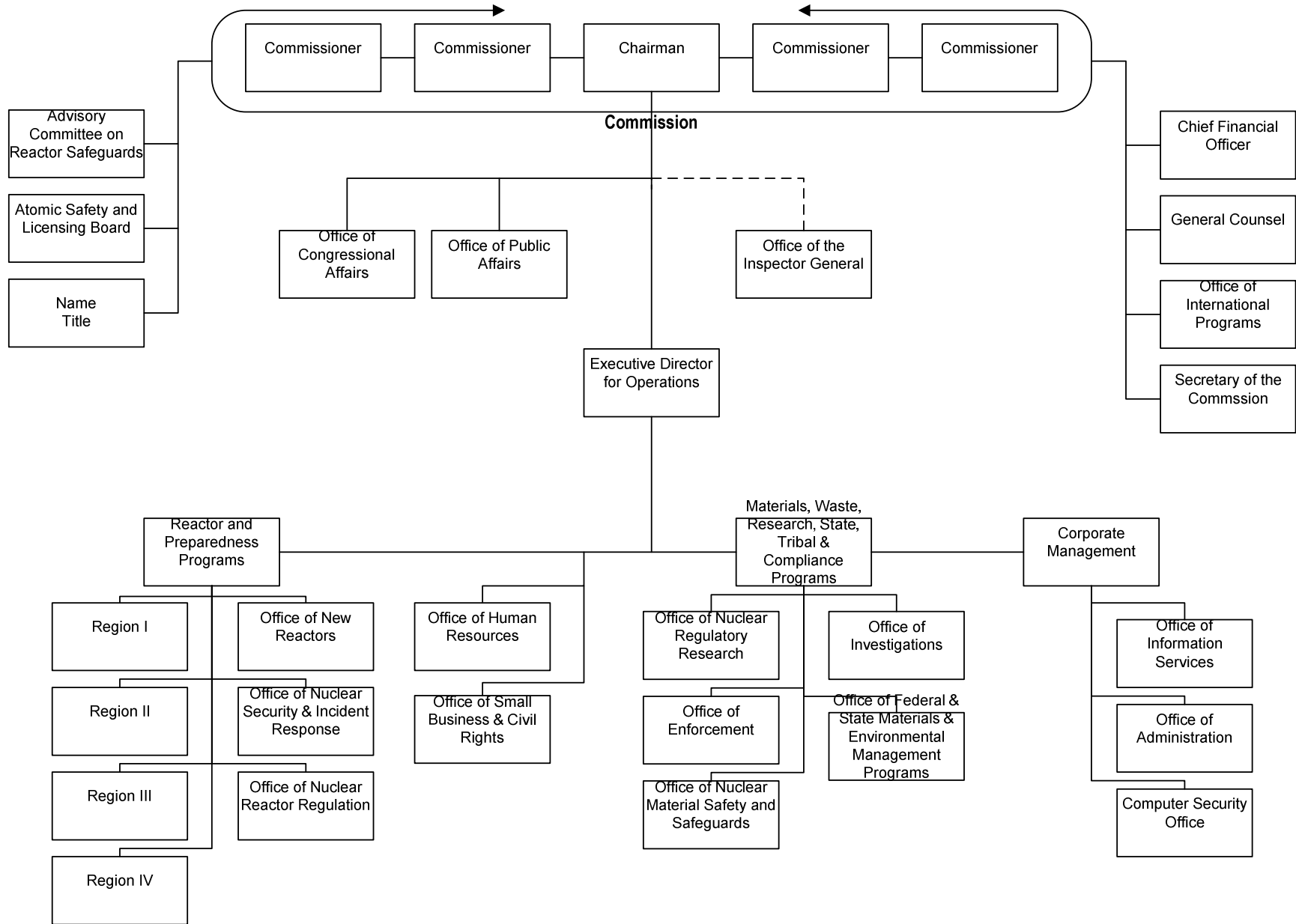
environmental management efforts, but should be seen as a step in the process, or a performance measure. “The content of an EMS provides a clearer basis for public policy rewards than does the mere existence of an EMS – or of ISO 14001 EMS registration” (Andrews 2003). Limited focus on specific attributes of an EMS – or on obtaining certification – rather than on the value that an EMS can provide for an agency will limit the potential scope of programs and ultimately impede progress toward “triple-bottom-line” sustainability.

When defining performance measures for the EMS, consideration should be given to earning recognition through an awards program such as the annual White House Closing the Circle Awards. Not only would such recognition bring external focus and attention to the agency’s efforts, but it would also provide a tangible visible goal for employees and managers to work toward. Much as the NRC takes pride in being ranked as one of the best places to work in the federal government, recognition through an external awards program would also develop agency pride.

Create an Environmental Management Team

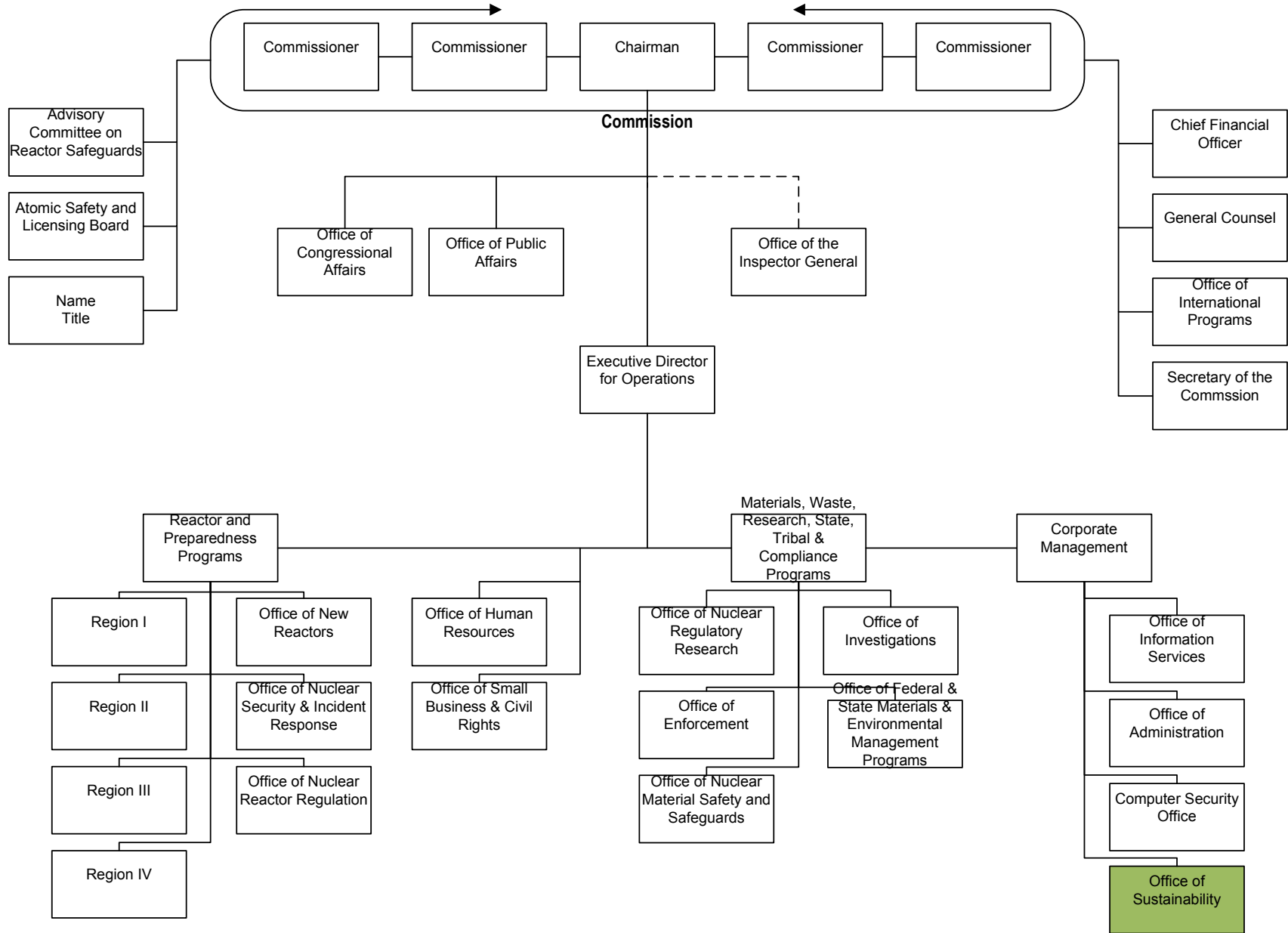
In order to make significant progress towards EMS development and implementation, it is not sufficient for the EMS associated tasks to be categorized as “other duties as assigned”. The NRC’s Program Manager for Greening Initiatives indicated difficulties in obtaining management support for EMS development, particularly in providing management participation in the Core Team for EMS development. A commitment to environmental improvement should be reflected in the agency’s organizational structure and accessibility to management, and there are a few options for how the organization’s structure may be altered to allow for the needed changes. NRC’s current organizational structure is depicted in Figure 6.

Figure 6: NRC Current Organizational Structure



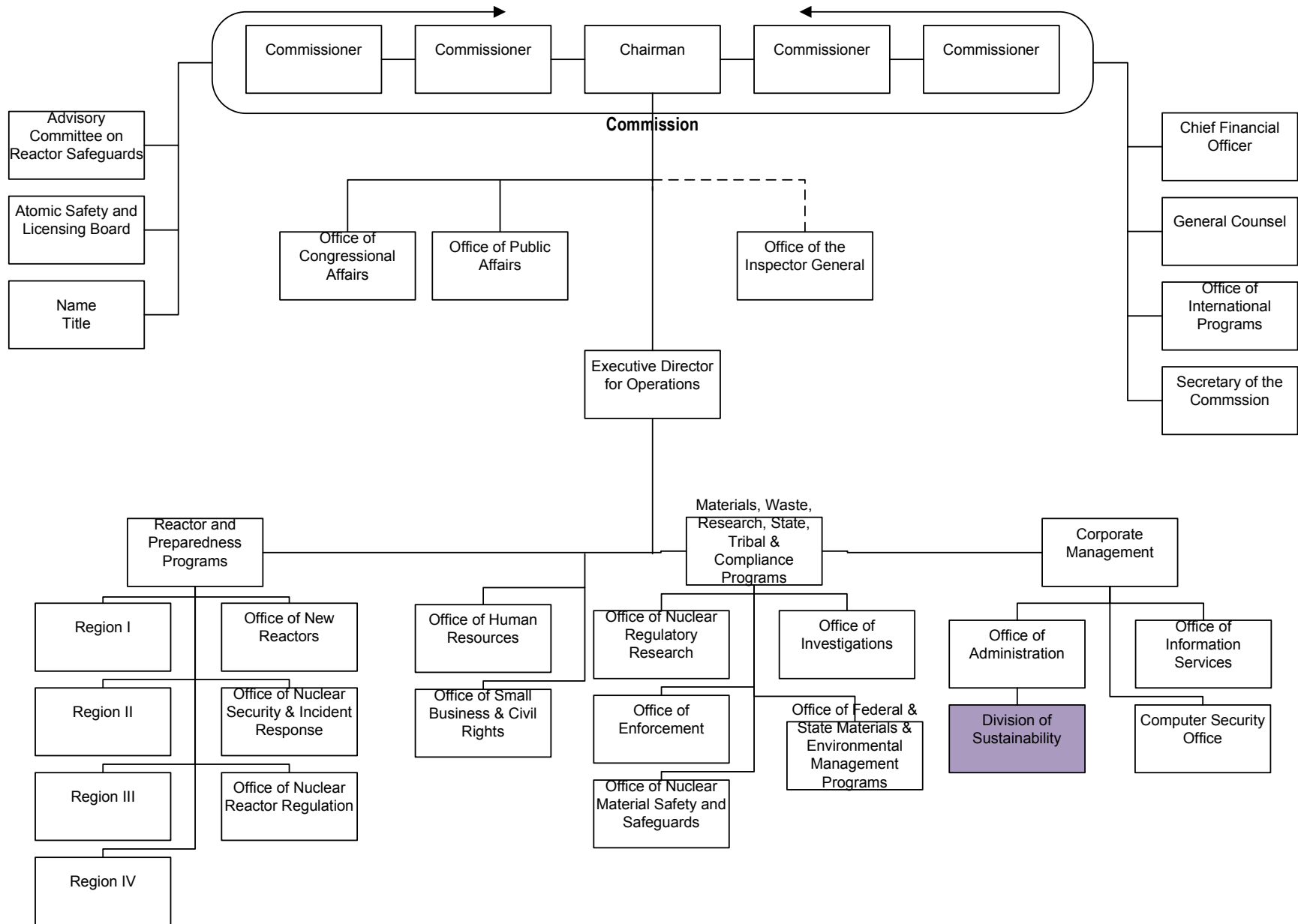
The ideal solution would be to create an Office of Sustainability within the existing structure of the Office of Executive Director of Operations (see Figure 7: NRC Ideal Organization – Office of Sustainability). The Office of Sustainability would be headed by a Director of Sustainability who would serve as the agency's Environmental Executive. The Office would be charged with management and oversight of existing environmental programs as well as development of new initiatives to ensure continued growth towards sustainability. The first task for the Office would be to develop a comprehensive EMS to serve as a framework for program management. The USPS has recently created a Sustainability Director position at its headquarters to serve a similar function. Establishment of an Office of Sustainability would increase visibility of environmental management programs in the agency.

Figure 7: NRC Ideal Organization - Office of Sustainability



Alternatively, a Sustainability Division could be created within the Office of Administration. This option is depicted in Figure 8: NRC Organization Solution – Division of Sustainability. Since environmental management programs are already housed in this office, this proposal would likely be an easier transition for the agency. The Office Director of the Office of Administration is already identified as the agency’s Environmental Executive. Creation of a division directly reportable to Office Director would ensure a direct line for communication and management support of environmental initiatives.

Figure 8: NRC Organization Solution – Division of Sustainability



At a minimum, a team of environmental management specialists should be created within the existing structure of the Office of Administration. Research on private and government EMSs has shown that EMS costs per employee are, on average, three to four times higher for government facilities than for businesses (Andrews 2003). In facilities studied in the cited research, consultant costs were a much more significant element for government facilities than for businesses. The NRC could reduce costs and improve environmental management through the creation of a team of environmental management specialists. These employees should have EMS related tasks as their primary job functions. One of the team positions should be a communications and outreach specialist focused on education initiatives both internal and external to the agency to promote the agency's sustainability efforts. A position dedicated to facilities should also be included on the team. This person would be instrumental in directing initiatives to green current and future facilities. A person with Leadership in Energy and Environmental Design (LEED) professional accreditation might be especially useful for this position.

Focus and Expand Communication Efforts

EMS success will depend on employee and management buy-in and participation in the environmental management efforts. Focused internal communications can create interest and dedication to participation.

NRC's current communication efforts related to its environmental management programs are severely limited. Information about greening initiatives is buried on the internal website for the Office of Administration. USPS's website provides a good example for providing information for internal and external stakeholders in a way that is both eye-catching and informative. Like USPS, NRC should be proud of its efforts to protect the environment and make information available on the external public website.

Further, educational efforts to promote participation in and awareness of environmental management efforts should be expanded. Internal newsletters and announcements, including placards in the cafeterias and restrooms, are good tools for letting employees know about the environmental efforts going on around them while also providing information on how to participate. Earth Day celebrations could be expanded to include exciting speakers and fun activities to increase interest. The NRC may also consider implementation of special branding for its environmental programs to make efforts easily identifiable. Sandia's very successful communications efforts can be used as a model for the NRC.

Conclusion

As federal government agencies look to the future, sustainable strategic management should be a goal. Deliberate and thoughtful planning is necessary for environmental management programs to be embraced by agency management and employees, and to ultimately be successful. Agencies looking to comply with EO 13423, “Strengthening Federal Environmental, Energy, and Transportation Management”, should strive for developing and implementing EMSs that will affect real change, rather than EMSs that simply meet basic compliance requirements. This is a big task for most agencies – especially smaller agencies with seemingly non-hazardous missions and activities. To save time and financial resources, agencies are well served by learning from the experiences – both good and bad – of others.

This project collects some of the lessons learned by federal agencies in developing and implementing EMSs. While admittedly narrow in scope, the cases studied suggest that federal agencies experience similar challenges in environmental management. Lack of guidance, lack of resources, lack of management support, and resistance to change pose significant hurdles for successful EMS deployment. From the earliest stage of EMS development, these four areas should be addressed. By addressing these common challenges early in the planning process, federal environmental managers can avoid many potential delays and difficulties and be sure that the resources and tools are in place for successful EMS development and implementation. Agencies can also seek success by emulating the good practices of others. Plans to integrate the EMS into the existing organizational structure should be made early in the development process so that an EMS is created that can and will work in the particular context of the agency. Communications efforts with internal and external stakeholders should also start early and continue through all stages of EMS development and implementation to promote interest and participation.

The EMS development and implementation process will be easier for the NRC and similar agencies if the experiences of other agencies are used to guide plans, programs, and actions. With careful planning, EMSs can be a very useful tool to support sustainable strategic management in the federal government.

Appendix: Research Tools

Solicitation Email

For non-NRC Participants

Dear _____:

I am currently in my second year of a two-year graduate program at Duke University's Nicholas School of the Environment. My final master's project is a study of environmental management systems (EMS) at agencies and organizations in the United States federal government to find best practices.

I am interested in learning more about your agency or organization's development and implementation of an EMS. In particular, I am interested in learning about key elements of your EMS, the process for developing your EMS, how your organization defines EMS success, and important factors contributing towards success or challenges in EMS design and implementation.

To this end, I would appreciate an opportunity to speak with you about your agency or organization's EMS. Information gathered through this project will be useful for other agencies looking to develop an EMS. If you would like more information about my study and/or you would like to participate, please contact me by phone at xxx-xxx-xxxx or by email at sara.sahm@duke.edu. If you decide to participate, I will be back in touch with you to schedule a time to either meet in person or speak on the phone, whichever is more convenient for you. If you know of someone else who might be interested in my study, please pass my contact information along to her/him.

Thank you for your time and please let me know if you have any questions. I look forward to hearing from you.

Sincerely,
Sara K. Sahm
DEL-MEM 2009
Nicholas School of the Environment

For NRC Participants

Dear _____:

As you may know, in addition to my job in NSIR, I am currently in my second year of a two-year graduate program at Duke University's Nicholas School of the Environment. My final master's project is a study of environmental management systems (EMS) at agencies and organizations in the United States federal government to find best practices.

I am interested in learning more about the NRC's goals for environmental management as it seeks to develop an EMS. In particular, I am interested in learning about key elements of the EMS, the process for developing the EMS, and how the NRC will define EMS success.

To this end, I would appreciate an opportunity to speak with you about the NRC's environmental management program and its future goals. If you would be interested in contributing to my project, please respond to this e-mail and I will provide you with more details. Then, if you decide to participate, I will interview you in person or by telephone (whichever is more convenient).

Thank you for your time and please let me know if you have any questions. I look forward to hearing from you.

Sincerely,
Sara K. Sahm
DEL-MEM 2009
Nicholas School of the Environment

Interview Questions

For non-NRC Participants

1. What are the key elements for your agency/organization's EMS?
2. Please describe the process undertaken for development of your agency/organization's EMS.
3. How is your EMS integrated with your agency/organization's overall mission?
4. Does your agency/organization have a definition of success for its EMS?
 - a. If yes, how is success defined?
 - b. Is environmental performance measured, and if so, how?
5. Using your definition of success, please rate how successful your agency/organization has been so far in implementing your EMS, on a scale of 1 to 5, with 1 being "Not at all successful, our EMS has not been implemented" and 5 being "Completely successful, our EMS has been fully implemented".
6. What are some important factors, both internal and external to your agency/organization, that have contributed to success in developing and implementing your EMS?
7. What are some important factors, both internal and external to your agency/organization, that have posed challenges in developing and implementing your EMS?
8. What words of advice and/or caution would you give to other agencies/organizations seeking to develop and implement an EMS?
9. Please feel free to discuss here any additional information that you think is relevant to this study.

For NRC Participants

1. What are the NRC's goals in developing an agency EMS?
2. What will be or should be the key elements for an NRC EMS?
3. Will an NRC EMS be integrated with the agency's mission and vision? If so, how?
4. How does the NRC define success in terms of environmental management? How will the NRC define success for an EMS?
5. What are some important factors, both internal and external to the NRC, which will help the NRC to succeed in developing and implementing an EMS?
6. What are some important factors, both internal and external to the NRC, which will pose challenges for the NRC in development and implementation of an EMS?
7. Please feel free to discuss here any additional information that you think is relevant to this study.

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