

EMS Implementation Handy Guide Number One

Making the Case for an Environmental Management System



Center for Environmental Excellence
American Association of State Highway and Transportation Officials

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prepared by

AASHTO's Center for Environmental Excellence

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American Association of State Highway and Transportation Officials

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Purpose

The AASHTO Center for Environmental Excellence is providing guidance and training to encourage and support the development of Environmental Management Systems (EMSs) in state departments of transportation (DOTs). These efforts include the publication of a series of *EMS Handy Guides* designed to assist state DOT personnel in performing key activities in preparation for the development and implementation of an EMS.

This first *Handy Guide* provides guidance for making the EMS case for senior management. This guidance not only describes, in general terms, the steps to "make the case" for an EMS, it also provides examples to show how these steps can be applied in several DOT-specific situations. Specifically, these examples identify some of the possible business benefits as well as the environmental benefits (based on realistic expectations/estimates) that can be realized by a DOT through use of an EMS. These benefits can include:

Dollar Savings and Cost Avoidance

EMS procedures, processes, and tools can yield a combined total savings of more than \$300,000 per year, with a range of \$10,000 to \$200,000 per year for specific actions.

Reduction in Regulatory Review Cycles

Through implementation and training on EMS processes — and most importantly consistent follow-through on project commitments — a three-to nine-month reduction in regulatory review cycles can be achieved.

Increased Productivity

More than 300 hours per year for maintenance employees (as a result of implementing planning, training, and other processes to prevent incidents and ensure conformance) equating to one quarter to one half of a full-time employee equivalent. In addition, (as noted above) EMS processes can lead to shortened regulatory and stakeholder review cycles — thereby reducing DOT time needed to oversee and coordinate these reviews.

Conservation of Resources

Reduction in electricity consumption by 50,000 kilowatt hours per year, natural gas consumption by 10,000 MCF per year, and water consumption by 250,000 gallons per year through efficient DOT operations.



Controlling Environmental Risk and Maintaining Compliance

Ensuring proper management of more than 20,000 gallons and 25,000 tons of hazardous or otherwise environmentally sensitive material. (this isn't a sentence!!) Potential exists in some areas to eliminate up to 35 incidents/releases per year.

This *EMS Handy Guide* builds upon the information provided in AASHTO's *EMS Implementation Guide, Using an Environmental Management System to Meet Transportation Challenges and Opportunities*.

Making the EMS Business and Environment Case

When a DOT decides to pursue a new initiative or to modify the way it operates, it must first justify its actions in two basic ways, 1) how will the action fit within fiscal and operational constraints? and, 2) how will the action serve society? The first consideration recognizes that a DOT must operate within a budget, provide a safe and efficient product (i.e., a transportation system), and respond to customer demands (including the public, industry, and elected officials). These constraints and demands show that while a DOT may be a governmental agency it also must operate as a business. Therefore, any action must be justified from a business perspective.

Conversely, the second consideration, "how will the action serve society?" recognizes that a DOT must comply with environmental regulatory requirements, and that it must conduct its operations and make its decisions in a manner which results in the protection and enhancement of the natural and human environments. The American public values both ease of mobility and the protection of natural resources. Therefore, any action performed by a DOT must also be justified from an environmental perspective.

This *Handy Guide* is designed to assist DOTs in making both the business and environment cases for an EMS.

Why Make an EMS Business and Environment Case?

In many DOTs, an EMS is either a new initiative or an improvement/enhancement to an existing practice. Such an undertaking typically requires the decision by senior management* to commit resources — both staff time and financial dollars. This decision to commit resources will be influenced by the preparation of a well-documented business and environment case.

The EMS business and environment case provides the requirements and benefits information needed to obtain and sustain management's decision to develop an EMS.

It should also be recognized that the requirements and benefits information presented in an EMS business case helps senior management to:

- ▶ Balance EMS resource needs against other DOT financial needs,
- ▶ Balance EMS resource needs against other DOT needs to maximize environmental benefits,
- ▶ Prove that the DOT is delivering the greatest financial "bang for the buck,"
- ▶ Prove that the DOT is a good steward, remaining in regulatory compliance, in addition to taking actions to proactively protect and enhance the environment.

* Depending on the affected activities or facilities, resources needed, and overall impact on DOT operations and practices, senior management could reside at the departmental, bureau, office, or district levels.

Key Questions

While the decision process to implement an EMS considers various criteria and conditions, eight key questions that should be answered prior to proceeding with any business and environment decision are the following:

1. What is the focus of the effort?
2. What does it cost?
3. How long will it take to implement?
4. What are the benefits?
5. Will it maintain or enhance compliance rates?
6. Will it help the DOT manage environmental risks and liabilities?
7. Will it help to conserve resources and/or prevent pollution?
8. Will it assist the DOT in producing environmental enhancements?

The answers to these questions form the basis for "making the case for an EMS." The first four questions are the foundation for any business case and the last four questions are typically provided for in an environment case. However, it should be noted that any decision to move forward with an EMS will rely on both justifications. A common problem in many organizations that are considering implementing an EMS, is that they typically focus on only the environmental considerations for justifying their intentions. While the term "environment" appears in an EMS, the decision to implement such a system is ultimately a business decision.

In summary, the EMS business and environment case should:



Be the mechanism to "sell/prove the environmental worth" of an EMS to senior managers. Therefore, all potential sources of information to help determine needs and establish benefits should be used. For example, non-environmental personnel can provide key details to help with the business case.



Address both long-term and short-term benefits of an EMS. While EMSs are designed to provide long-term consistent benefits, it should be recognized that DOT budget limitations will oftentimes necessitate outlining benefits that can be realized within a year or two, *vis-à-vis* the initial investment in time, money, and resources.

Making the Case for an EMS – The Business and Environmental Case Components

The EMS Business and Environment Case may include the following:

- ▶ Descriptions of resource requirements, including DOT labor, consultant support, if necessary, and financial requirements (for communications, training materials, IT systems, etc.).
- ▶ Estimates of the time needed to implement the EMS.
- ▶ Descriptions (in measurable terms) of the expected benefits (environmental and business efficiency) and when these benefits may be realized. DOT business benefits may include, money saved, costs avoided, productivity improvements, and schedule reductions. DOT environment benefits may include resource reductions, increase in the use of environmentally friendly products, and reduction in the quantity and/or hazard level of wastes generated.

In addition, the Case for an EMS may also outline the implementation plan for the EMS, including the following:

Identification of the activities and/or facilities to be covered by the EMS.

- ▶ The specific issues and opportunities that will be addressed; The actions to be included in the EMS along with estimates for the accompanying resources and time needed and,
- ▶ A discussion of the employees responsible for or affected by an EMS.

How to Make the EMS Business and Environmental Case

Making the case for an EMS can be accomplished by following four basic steps:

1. Evaluate issues and opportunities to select a focus for the EMS.
2. Determine the resources and time needed to develop the EMS.
3. Identify expected results and benefits for the EMS.
4. Summarize the issues, opportunities, targets, and business/environment benefits for senior management.

Detailed step-by-step guidance to make the business case is presented below. Also note that the first few steps below are necessary to develop the conditions from which expected results can be determined.




1. Evaluate Issues and Opportunities to Select the EMS Focus.

- ▶ Identify Environmental Issues — examples include:
 - ▮ Activities with an increased potential for violations or complaints.
 - ▮ Actions that led to prior fines and/or corrective action costs.
 - ▮ Relevant requirements that are not well understood by employees.
 - ▮ Changing requirements, customer demands, or operations.
- ▶ List Relevant Environmental Opportunities. Consider:
 - ▮ Cost savings and/or cost avoidance.
 - ▮ Increased productivity (e.g., do more work with existing resources).
- ▶ Review the Issues and Opportunities (IOs) to Determine Which May Offer the "Greatest Bang for the Buck."
 - ▮ Potential impact on DOT operations if nothing is done.
 - ▮ Possibility for generating savings, avoiding additional costs, or improving productivity.
 - ▮ Recognition and acceptance of changes that may result from an EMS.
 - ▮ Management interest in an EMS or recognition that an IO presents a serious impact or offers the potential for significant benefit.
- ▶ Identify the Specific Aspect(s) of the activity, operation, or location associated with the IOs.
- ▶ Identify the Specific Aspects and IOs to be addressed by the EMS.

2. Determine the Resources and Time Needed for the EMS. 

Resources include the personnel, finances, contractors, and time to obtain the expected benefits. Time requirements mean project duration — the routine and the day-to-day demands on staff involved with the EMS should be considered when determining the duration.

3. Identify Measurable Business and Environmental Benefits Associated with the IOs. 

Benefits may include work hours saved or made available for other use, schedules advanced, dollars and hours saved, especially those associated with reduced monitoring or regulatory oversight, as a result of improved regulatory relationships and enhanced review processes.

4. Prepare a Summary that Succinctly Identifies the Issues, Opportunities, Targeted Activities, and Expected Business Benefits. 

Examples of Making a Case for an EMS

This section of the Handy Guide provides examples that use the Steps for Making the Case for an EMS for six different transportation operations or facilities.

- ▶ NEPA and the Permitting Process
- ▶ Construction Inspection
- ▶ Construction and O&M Instructions/Procedures
- ▶ Stockpile and Garage Operations
- ▶ Roadway Maintenance
- ▶ Rest Areas

The overall case summaries for each example are placed first to help the reader focus on his/her particular interest areas. Remember that these examples are designed to be used as starting points when considering developing an EMS case.

Example 1: NEPA and the Permitting Process

- ▶ **Issues** — Schedule delays, added resource burdens, and skepticism of the public and the regulatory community.
- ▶ **Opportunities** — Timely project delivery, and efficient use of resources.
- ▶ **EMS Focus** — Processes to consistently identify stakeholder issues and implement project commitments.
- ▶ **Resource and Time Needs** — Total of approximately one FTE of staff time over a period of eight to nine months.
- ▶ **Expected Benefits** — Reduce review schedules by five to 10 percent (three to nine months depending on project complexity); savings of 0.25 to 0.5 Full-Time Equivalents (FTEs) per project; and, protect or create more than 100 acres of wetlands per year.



1. Evaluate Issues and Opportunities to Select the EMS Focus.

Issues may include:

- ▶ Lengthy project review and approval cycles;
- ▶ Increasing resource and schedule burdens associated with regulatory and stakeholder oversight;

- ▶ Regulatory agency and public skepticism regarding a DOT's ability to protect the environment; and
- ▶ Inconsistent communication and implementation of environmental commitments from preliminary engineering to design and construction.

2. Resources and Time Needs

- ▶ 12- to 16-person weeks (each) of environmental, planning, design, and community coordination/public outreach staff to identify and develop processes related to stakeholder issues and concerns and consistent, optimum project planning.
- ▶ 8- to 12-person weeks (each) of environmental, planning, and design staff to develop processes for requirements identification, coordination, distribution, and implementation.
- ▶ 2-to 4-person weeks of environmental planning, design, and community coordination staff to develop and communicate relevant DOT EMS implementation information to influence stakeholder responses and perceptions.
- ▶ Project activities are estimated to take eight-to-nine months to complete. This is limited to developing and putting in place the EMS procedures, processes, and tools.

3. Identify Results.

- ▶ Improved stakeholder and regulator recognition of DOT's efforts to identify, address, and most importantly, follow through on project commitments can reduce the average time for an EIS review and approval by five to 10 percent (using experience of the past five-to-seven years) based on project complexity.* Complexity can be defined in terms of project money, project duration, extent of area affected, population in the area affected, and/or presence of sensitive environments or species. The reduction in review schedule can amount to three to nine months.
- ▶ Staff (and contractor) time savings will be reduced, and the associated cost savings will increase as a result of the review and approval enhancements. As with the preceding bullet, these savings can be based on project averages over the past five to seven years and may reflect project complexity as defined by the DOT. These benefits can be expressed in terms FTEs — and would be measured as an average annual salary with benefits. In this example, the benefit could amount to 0.25 to 0.5 FTEs per project.
- ▶ Environmental protection and enhancement efforts can also be expressed in the number and/or size of sensitive areas identified and protected. In this example, the DOT has identified and taken steps to protect and maintain an average of more than 100 additional acres of wetlands per year, in certain projects.



4. Prepare a Summary.

Refer to the above.

* Note: Improving the public's perception of the DOT's commitment to protect and enhance the environment could be based on polling statistics or the number of specific EMS actions completed. However, a more practical measure would be the reduction in schedule time as a result of improving public perception.

Example 2: Construction Inspection

- ▶ **Issues** — Complaints from stakeholders regarding failure to meet commitments and incidents/releases.
- ▶ **Opportunities** — Avoiding fines, penalties, and costs of remedies; and improved stakeholder acceptance and belief in commitments.
- ▶ **EMS Focus** — Training of inspectors in environmental commitments, and communication of commitments from preliminary engineering through construction.
- ▶ **Resource and Time Needs** — A total of approximately 1,000 person hours (including construction inspector participation in training) over a period of 9 to 12 months.
- ▶ **Expected Benefits** — Avoid increased DOT personnel time to oversee and respond to incidents (\$25,000 per year). Therefore, assuring greater on-time completion of projects.
- ▶ **Expected Environmental Benefits** — Eliminate an average of more than 20 E&S control incidents per year. Protect 15 wetlands covering more than 75 acres and more than 15 miles of sensitive waterways each year.



1. Evaluate Issues and Opportunities to Select the EMS Focus.

Focus on erosion and sedimentation (E&S) control practices of contractors and DOT construction inspectors. The majority of DOT construction work is performed by contractors who are responsible for environmental compliance. Problems may include:

- ▶ Complaints from citizens or regulators are directed at the DOT — these individuals do not want to hear an explanation from a DOT that the contractor — not the DOT — is responsible.
- ▶ Failure to comply with commitments made during preliminary engineering and design lead to stakeholder lack of confidence in DOT's interest in fulfilling and ability to meet commitments.

- ▶ Issues include recent incidents of sediment deposition or erosion (e.g., washouts) that required corrective actions in response to regulatory notification or stakeholder complaints; contractor activities leave conditions which could lead to erosion or sedimentation problems; and construction inspectors have commented that their training and their measurement of success is based solely on the delivery of a quality transportation facility (e.g., highway or bridge).

2. Resource and Time Needs

- ▶ Eight-person weeks each of environmental and construction staff time to develop requirements summary, assessment checklist, reporting process, and training program; prepare and present training; develop assessment checklist, and develop planning process. Training (assuming 100 inspectors across the state and four-hour program) — 400 hours.
- ▶ Project activities are estimated to take nine to 12 months to complete. This includes the development and implementation of procedures and checking processes, and the development and provision of training.

3. Identify Results.

- ▶ Eliminate an average of 25 fines or other notifications of E&S control noncompliance over the past three years across the state received by contractors on DOT projects. These notifications typically begin with calls to the DOT.
- ▶ Reduce DOT personnel time needed to address contractor incident corrective actions. Each incident may require 3.5 to 4 days of inspector time to respond to the complaint, notify the contractor, oversee contractor implementation of corrective actions, prepare documents, and close out the corrective actions. Average labor cost is \$40 per hour (approximately \$1,000 per incident). Total cost avoidance is \$25,000 per year (based on the above).

4. Prepare a Summary.

Refer to the above.

Example 3: Construction and O&M Instructions/Procedures

- ▶ **Issues** — Inconsistent identification and implementation of commitments.
- ▶ **Opportunities** — Consistent compliance with commitments to reduce costs of incidents and fines, and improvement in stakeholder confidence in the DOT.
- ▶ **EMS Focus** — Establish programs for communication of and training in implementation of commitments.
- ▶ **Resource and Time Needs** — Total of approximately one FTE of staff time over a period of approximately eight months.
- ▶ **Expected Benefits** — Eliminate more than 20 environmental incidents per year, and avoid costs of correcting incidents (\$200,000 per year).



1. Evaluate Issues and Opportunities to Select the EMS Focus.

Establish a process to routinely and consistently identify and communicate up-to-date environmental commitments and requirements to DOT contractors and employees.

- ▶ Issues include inconsistency in completeness, accuracy, and currency of environmental instructions and documents;
- ▶ Absence of a mechanism to ensure that any new or updated environmental requirements are recognized and implemented by the users; and,
- ▶ Incidents of noncompliance resulting from the preceding issues.



2. Resource and Time Needs

- ▶ Twelve-person weeks (each) of environmental, construction, contracts, and maintenance staff to develop and implement processes.
- ▶ Six- to eight-person weeks of environmental staff to review instructions and documents to ensure that they include current commitments and requirements.
- ▶ Project activities are estimated to take approximately eight months to develop and implement EMS procedures, processes, and tools.

3. Identify Results.

- ▶ Reduce number and cost of environmental incidents attributable to inadequate knowledge of or familiarity with commitments and requirements. The average number of construction and maintenance incidents has been 20 per year over the past three years. Corrective actions costs (for DOT labor and corrective action contractors and supplies) is \$10,000 per incident (or \$200,000 per year based on an average of 20 incidents per year).
-

4. Prepare a Summary.

Refer to the above.

Example 4: Stockpile and Garage Operations

Issues — Recurring releases and incidents, stakeholder lack of confidence in DOT's ability to operate facilities in an environmentally sound manner, and increased neighbor resistance to facility expansion, relocation, or purchase.

Opportunities — Reduce or eliminate fines, resources, and costs of responding to incidents, and improved acceptance of facilities.

EMS Focus — Develop operating procedures, train employees in procedures, and develop processes to routinely assess and take corrective and preventive actions on facility equipment and practices.

Resource and Time Needs — Approximately 750 person hours over a period of six to eight months.

Expected Benefits — Avoid costs of fines (average \$10,000 per year), cleanup waste disposal (average \$10,000-\$12,000 per year), and labor (average \$25,000 per year). Prevent releases averaging 400 gallons per year. Control environmental risks and liabilities of storing more than 20,000 gallons and over 25,000 tons of environmentally sensitive or hazardous materials at stockpiles.

1. Evaluate Issues and Opportunities to Select the EMS Focus.

Issues include a fuel release which led to a cleanup notice, storage of fuel, hazardous materials on site, location in populated area and upstream of a sensitive watershed, consistent cover for roadway maintenance materials (salt, liquid asphalt, liquid anti-icing agent), and many citizens in area are "environmentally active."

- ▶ Evaluation shows that releases, resulting cleanups, and fines can be traced back to failure to follow simple practices; and citizen surveys indicate that they believe DOT employees do not care about the environment.
- ▶ Activities related to the above include materials storage, materials use and distribution, and design/construction of a new personnel building.
- ▶ Due to predominance in issues and opportunities — focus on materials, storage, distribution, and use. Personnel building construction/design can be addressed in the next go around provided that engineers are asked to consider energy efficiency.



2. Resource and Time Needs.

- ▶ Eight-person weeks of environmental staff time to prepare and present instructions, and develop assessment checklist (over a period of four months). For support, two-person weeks (each) of maintenance manager and stockpile manager/supervisor. Two-person weeks (total) for employees to do reality check on instructions and checklist. Training (assuming 50 people assigned to stockpile and three-hour program) — 150 hours.
- ▶ Project activities are estimated to take approximately six to eight months to develop and implement EMS procedures, processes, and tools and provide training.



3. Identify Results.

- ▶ Fines avoided (in excess of \$2,500 per incident, four fines in 2000, three fines in 2001, four fines in 2002, and four fines in 2003). Total is approximately \$10,000 per year.
- ▶ Labor savings, include cleanups for each incident required from 2.5- to three-days work from two crews. Assume four-person crew and \$35 per hour per person, allowing routine duties to be completed without overtime. Totals amount to labor savings of more than \$25,000 per year (over 700 hours per year). Releases in the incidents averaged 100 gallons.
- ▶ Cost avoidance will include cleanup waste disposal costs average \$3,000 per incident.
- ▶ A typical stockpile in the DOT stores more than 1,000 gallons of liquid asphalt, more than 2,000 tons of salt, more than 1,000 gallons of fuel, and more than 100 gallons of solvents, herbicides, paints, and other hazardous liquids.



4. Prepare a Summary.

Refer to the above.

Example 5: Roadway Maintenance

Issues — Recurring releases and incidents, potential for releases and environmental damage from work sites identified as completed, and potential degradation of sensitive areas, and stakeholder concerns.

Opportunities — Avoid fines, penalties, and cost of and resources for cleanup.

EMS Focus — Develop procedures to consistently plan work and perform in accordance with plans, train employees in procedures, and develop processes to routinely assess and take corrective and preventive actions on activities.

Resource and Time Needs — Approximately 800-person hours over a period of six to eight months.

Expected Benefits — Avoid costs of fines and penalties (average of \$10,000 per year), avoid need to use personnel to correct conditions that could have been prevented (average \$11,000 per year), and increase productivity (average 300 person hours). Eliminate average of 12 incidents per year. Control environmental risks/liabilities and maximize protection of 25 miles of sensitive waterways and 50 acres of wetlands annually.



1. Evaluate Issues and Opportunities to Select the EMS Focus.

Roadway maintenance includes any activity that would have an erosion or sedimentation environmental impact.

- ▶ Issues include recent incidents of sediment deposition or erosion (e.g., washouts) that require corrective actions in response to regulatory notification or stakeholder complaints; roadway maintenance activities leave conditions (e.g., unstabilized areas, areas not mulched or seeded, steep cuts, or no diversion channels or rip rap) which could lead to erosion or sedimentation problems after DOT crews are finished working in the area; a number of sensitive watersheds and wetlands (by regulatory definition) near roadways maintained by the DOT; regulators (including conservation district staff) have expressed increasing concern about the DOT's lack of adequate E&S control; and, many citizens in area are "environmentally active."
- ▶ Evaluation shows that foremen/supervisors are unaware of or unfamiliar with specific E&S control requirements mandated by regulations and DOT procedure, managers, and foremen/supervisors are not familiar with the definitions of wetlands or sensitive watersheds and the locations of these areas in their county/district, and E&S control materials are not readily available.



2. Resource and Time Needs

- ▶ Eight-person weeks of environmental staff time to prepare and present training, develop assessment checklist, and planning process. For implementation, two-person weeks (each) of maintenance manager and each foreman/supervisor. Three-person weeks (total) for employees to do reality check on instructions and checklist. Training (assuming 50 people in each county and four-hour program).
 - ▶ Project activities are estimated to take approximately six to eight months to develop and implement EMS procedures, processes, and tools, and provide training.
-



3. Identify Results.

- ▶ Fines avoided (in excess of \$5,000 per occurrence, two fines in 2000, three fines in 2001, two fines in 2002, two fines in 2003). Total potential cost avoidance is \$10,000 per year.
 - ▶ Labor savings include corrective actions (returning to site after crews have departed) have required from one-to-two days work from a crew. There has been an average of seven incidents per year over the past three years that required crews to return to a location to take corrective actions. Education and planning could decrease this time for productive work. Crews consist of four people with an average rate of \$35 per hour. Total labor savings are estimated at 300 hours per year (\$11,000 per year).
 - ▶ Recent history shows that roadway maintenance activities take place adjacent to on average 25 miles (annually) of sensitive waterways and of 50 acres of wetlands.
-



4. Prepare a Summary.

Refer to the above.

Example 6: Rest Areas

Issues — Energy and other resources consumed, and environmental impact of locations and activities.

Opportunities — Control resources consumed (energy, water, etc.) and operate facilities to minimize environmental impacts.

EMS Focus — Implement consistent pollution prevention and energy efficient (P2/E2) program to identify and implement opportunities, develop procedures to operate facilities to protect environment (includes training and self-assessment).

Resource and Time Needs — Approximately one FTE of staff time over a period of approximately eight months.

Expected Benefits — Savings of \$17,000 per year per facility for energy (50,000 KWH of electricity and 10,000 MCF of natural gas). Manage environmental risks and liabilities of using 2,500 gallons and 5,000 pounds of environmentally hazardous materials per year. Reduce water consumption by 250,000 gal/year.



1. Evaluate Issues and Opportunities to Select the EMS Focus.

The focus of this example is establishing a process to routinely and consistently identify and implement P2/E2 opportunities in the operation and maintenance of rest areas.

- ▶ Issues include reducing energy consumption, eliminating or minimizing the environmental impacts associated with chemicals and other materials used in maintaining the rest areas, reducing resource (e.g., water) consumption, and ensuring effective treatment of wastewaters (sanitary and parking area runoff).
- ▶ Evaluation shows that there have been specific, non-routine P2/E2 actions taken when a new rest area is designed or an existing rest area is undergoing a major renovation; the DOT does not have a routine means to consider the "green-ness" of products used in operations and maintenance; and, regulatory staff have noted (although no fines or formal notices have been issued) that rest area treatment facilities are prone to upsets.
- ▶ Related activities include rest area design and equipment selection, chemicals and materials selection, and wastewater treatment facility design and operation.
- ▶ Focus on equipment selection and design, support facilities operation, and maintenance materials selection.



2. Resource and Time Needs

- ▶ Twelve-person weeks (each) of environmental, design, procurement, and maintenance staff to develop facility/equipment and chemicals/materials selection and options review processes.
 - ▶ Two-person weeks (each) of environmental and operations staff to develop an up-to-date, comprehensive set of instructions for rest area wastewater treatment facilities (to avoid and minimize the potential for upsets).
 - ▶ Project activities are estimated to take approximately eight months to develop and implement EMS procedures, processes, and tools to consistently and continually identify, evaluate, and implement "green" opportunities.
-



3. Identify Results.

- ▶ Reduce energy costs - each rest area averages \$10,000 per year for electricity and \$7,000 for natural gas.
 - ▶ Control chemicals/materials used in maintenance (e.g., cleaning products) — each rest area requires 500 gallons per year of cleaners and 1,000 pounds per year of herbicides and pesticides. The DOT operates five rest areas.
 - ▶ Reduce water consumption (lavatories, drinking water, and cleanup) — each rest area uses an average of 1,000,000 gallons per year of water, DOT cost for treating well water or purchasing water averages \$1.75 per 1,000 gallons.
-



5. Prepare a Summary.

Refer to the above.

Other EMS Information

This and the other AASHTO Center for Environmental Excellence EMS Implementation Handy Guides incorporate and build upon the guidance presented in AASHTO's EMS Implementation Guide, Using an Environmental Management System to Meet Transportation Challenges and Opportunities which was issued in August 2004(?). When the Implementation Guide was issued, the Center for Environmental Excellence also conducted a 2.5-day workshop to demonstrate use and application of the EMS Implementation Guide to transportation operations and facilities.

The Implementation Guide, its attachments, associated workshop presentations, and other EMS-related information can be accessed on the AASHTO Center of Environmental Excellence web site at:
<http://environment.transportation.org>



EMS questions and comments may be directed to **Shannon Eggleston** at the AASHTO Center for Environmental Excellence through **seggleston@aaashto.org**.



Making the Case for an EMS – A Summary



Management Commitment — The success of an EMS begins with management commitment of resources and commitment to environmental stewardship that can be observed by employees. The business case is the vehicle to obtain this commitment.



Expectations — The business case should identify measurable, achievable benefits expressed in business terms (schedule, hours, dollars). Look at the overall operation and personnel involved to identify these expectations — involve others as needed.



Realistic, but Challenging — Be realistic when assessing benefits and resource needs. Challenge the organization to go beyond status quo.



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