

**EMS Implementation Handy Guide Number Two**

**EMS, A Bridge for Organizational  
Coordination and Communications**



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

## EMS Implementation Handy Guide Number Two

# EMS, A Bridge for Organizational Coordination and Communications

prepared by

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American Association of State Highway and Transportation Officials

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## Purpose

Many state departments of transportation (DOTs), as well as other public and private sector entities, have found that the communications and coordination features of an Environmental Management System (EMS) have helped their organizations to achieve significant operational benefits. These benefits include:

- " Breaking the barriers that may exist between organizational units;
- " Enhancing environmental protection by ensuring that project commitments are not "lost" as the project progresses from the planning to design to construction stages of development;
- " Capturing and conveying institutional knowledge;
- " Increasing individual sense of ownership and responsibility for job performance; and,
- " Maximizing effectiveness and efficiency by leveraging intra-agency resources.

The communications and coordination features of an EMS that have enabled DOTs to achieve the benefits described above are based on two key elements:

- " The Plan-Do-Check-Act structure of an EMS; and
- " The processes, procedures, and tools that derive from this structure.

This *Handy Guide* is the second in a series of *Handy Guides* that have been developed by the AASHTO Center for Environmental Excellence to promote and expand the development and implementation of EMSs in DOTs. It provides information to help the reader understand and to apply these features to their DOT's EMS.



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**An EMS's ability to facilitate consistent coordination and communication — both of which can be tracked and measured—is a powerful tool for increasing operational efficiency and breaking down institutional stovepipes.\***

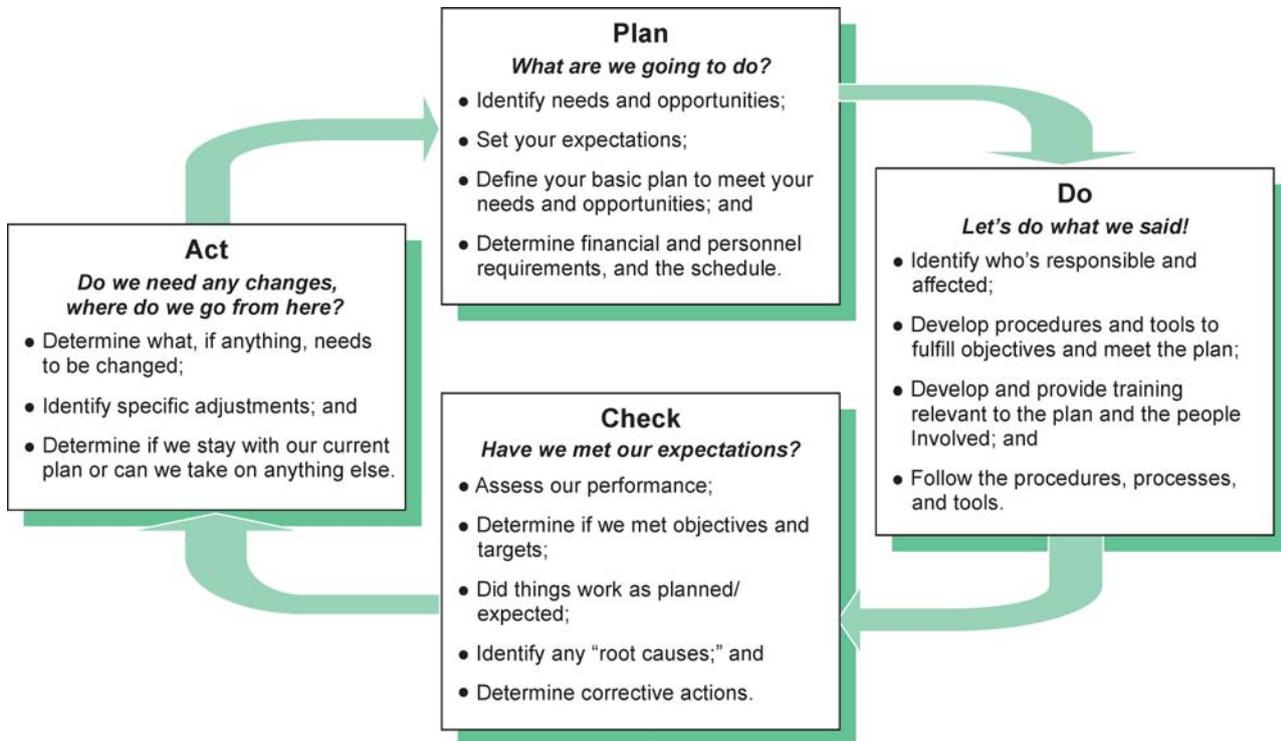
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\* The concept of "stovepiping" can commonly be understood as a phenomenon that occurs when organizational units fail to communicate, coordinate, or share resources with other organizational entities leading to institutional barriers and overall organizational inefficiencies.

## The EMS Plan-Do-Check-Act Solution

DOT personnel face ever-present and ever-increasing demands for service, environmental protection, environmental excellence, and efficiency from their stakeholders, regulators, customers, and elected officials. These demands — coupled with fiscal and other resource constraints — have led DOTs to narrowly define responsibilities for projects and other DOT activities in an attempt to control delivery schedules and costs. The drawback to taking such an approach is often the "stovepiping" of departmental functions that may result. While stovepiped, organizations can point to specific assignments for project delivery and operations, they also have significant barriers that need to be overcome in order to leverage intra-agency resources and/or to improve departmental-wide communication and coordination.

The EMS Plan-Do-Check-Act (PDCA) structure presented by AASHTO provides a framework for DOT personnel to develop and sustain communications and coordination across a DOT. Consistent communications and coordination, in turn, promotes the participation and inclusion of all units and personnel who may affect a project or activity. The following is an illustration of the basic EMS PDCA structure — this illustration is adapted from an exhibit presented in AASHTO's EMS Implementation Guide Number One, *Using an Environmental Management System to Meet Transportation Challenges and Opportunities*.



## Example

A state DOT's preliminary engineering/environmental assessment unit identifies project environmental commitments to address regulator and stakeholder concerns. These commitments, which include both temporary mitigatory measures to be implemented during construction along with permanent measures, are incorporated into construction documents. Upon completion of these documents, the preliminary engineering/environmental assessment views its job as complete. Next, the DOT construction unit and its contractors construct the project based upon their interpretation of the construction documents and any necessary field changes. With completion of construction, the DOT construction unit views its job as complete. At this point the permanent mitigatory measures will need to be maintained. Unfortunately, in this example, there is no structure or effort in place to communicate this need to the DOT maintenance unit as both the preceding units view their job as complete.

The DOT units in question may assume that they have followed the complete PDCA cycle because they planned their work, performed their efforts, and reviewed their progress to ensure completion of their tasks. However, if one applies the EMS PDCA structure presented by AASHTO several key questions arise — Were the temporary measures constructed as proposed? How effective were they? Were they easily constructed?, How can these measures be improved upon for the next project? How can these improvements be incorporated into plans for the next project? Does the maintenance unit know that there are permanent measures that need to be maintained? And, do the regulators and stakeholders believe that the DOT follows through on its project commitments? In this example, the answers to these questions are "No" or "Don't Know" — these responses indicate inadequate communications and coordination (due to stovepiping) and a need to apply the Check and Act phases of the PDCA.

The following is a brief explanation outlining how the PDCA structure fosters the communications and coordination necessary to break through stovepipes, maximize effectiveness and efficiency, and optimize environmental protection.



### **Plan**

Define the issues, opportunities, and actions that are under one's control. In turn, identify the considerations, decisions, and activities of other units and personnel who may play a role in or who could affect these issues, opportunities, and actions. Also, identify the units and personnel who will have a part in implementing decisions and plans. In order to achieve the greatest success in terms of efficiency, the identified units and personnel may not typically be the units assigned to such functions. Traditional roles may need to be re-evaluated at this time.

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### **Do**

Identify the means for integrating the considerations, decisions, and activities of all relevant units and personnel. Also, identify the means to convey relevant goals, requirements, decisions, and instructions to those units and personnel who implement decisions and plans. Most importantly, individual assignments and responsibilities should be conveyed. An EMS is a good tool for increasing accountability among employees.

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### **Check**

Determine the methods to assess the performance and effectiveness of decisions and actions. Identify the means to get these results to the other units and personnel and solicit their corrections and/or improvements.

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### **Act**

Evaluate actions and decisions to determine if changes are needed or additions can be made to sustain, maximize, or pursue other success. This evaluation should include all who were involved in the project or activity. The result of this evaluation may be a decision to involve units and/or personnel in subsequent projects or activities who did not initially participate.

## EMS Procedures as a Solution — Recommended Tools for Success

The EMS Plan-Do-Check-Act information presented on the preceding pages refers to a process for improving communication and coordination. The following tools can be used to facilitate this process.



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### Organizational Charts

Organizational charts illustrate relationships and responsibilities within a unit and can be used to clearly identify all units and personnel who may be involved in or affected by an EMS.



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### Process Maps

Process maps highlight all relevant personnel who may be involved in an environmental decision, program, project, or activity. In addition, these maps outline the sequence of activities and points of involvement by all participating units. These maps can be used as a double check to ensure that all units and personnel have been recognized. An example of a process map is provided in the next section of this *Handy Guide*.



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### Objectives, Targets, and Performance Measures

Objectives, targets, and performance measures are necessary to focus EMS efforts, to recognize all parties involved, and to provide a means of accountability for ensuring successful communication and coordination.



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### Responsibility Statements/Assignments

Responsibility statements/assignments identify the roles of and need for coordination and interaction among all parties.



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### EMS Instructions and Guides

EMS instructions and guides provide an institutional approach for coordinated, integrated direction to all parties involved in the EMS and can be used as another communications tool.



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### **EMS Performance Review Procedures and Processes**

EMS performance review procedures and processes provide the means to assess the effectiveness of communications and coordination. In turn, corrective and preventive action procedures provide the means to make necessary adjustments.

The following are several communications and coordination keys identified by DOTs currently implementing an EMS.

### **EMS Communications and Coordination Keys**



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Use senior management commitments to an EMS to solicit the involvement of and submittal of information from other units.



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Cross-functional teams not only provide a mechanism to solicit contributions from others but also encourage commitment and ownership by all participating units.



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Employees in the "trenches" can be the greatest advocates for environmental protection and enhancements — make sure they are recognized as part of the process.



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Awards used to recognize communications and coordination efforts across an organization show commitment to the EMS and encourage the next unit or person to become involved.



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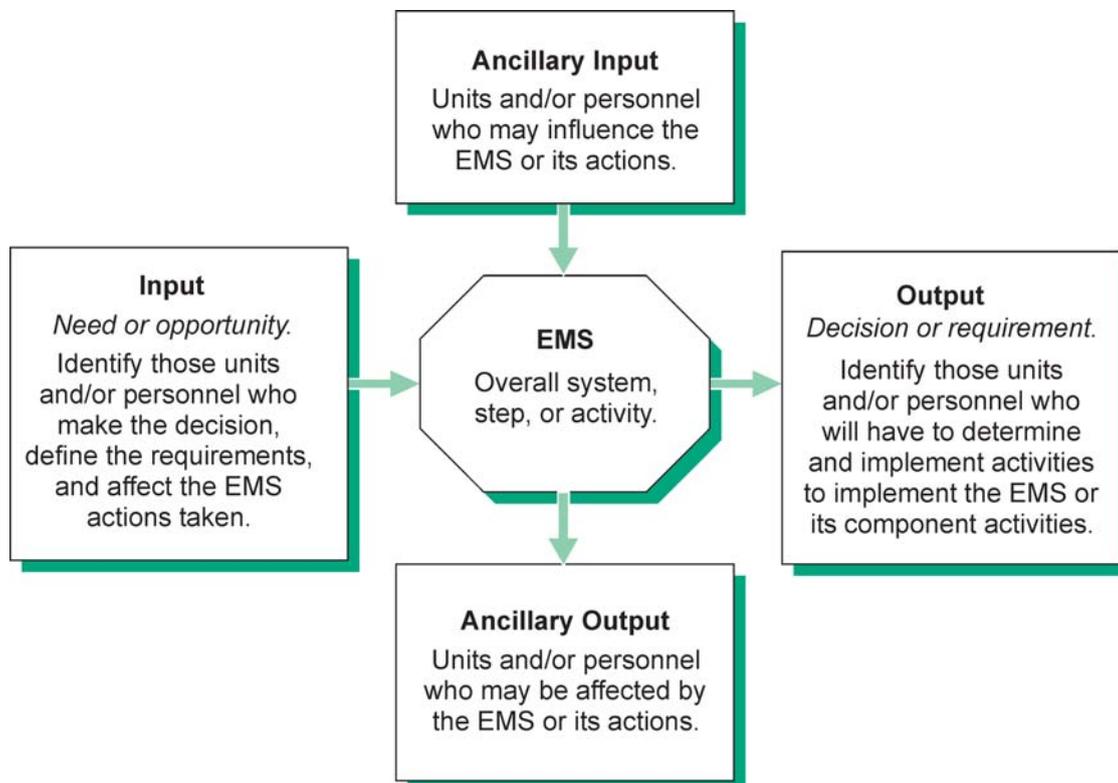
The institutional knowledge from apparent unrelated units and personnel may ensure or, at least, enhance success — stay open to other input.

## A Communications/Coordination Tool

Process maps provide a convenient, widely accepted tool for coordination and communication within an EMS. Specifically, process mapping provides the means to:

- ▶ Identify the units and personnel who have an effect on an environmental decision or activity;
- ▶ Identify the units and personnel who are affected by an environmental decision or activity;
- ▶ Determine the type of information required from or by these units and personnel; and,
- ▶ Determine the schedule and sequence for receipt of this information.

AASHTO's research reveals that, within DOTs, process mapping is most commonly used to plan NEPA-related reviews. This *Handy Guide* applies process mapping beyond this application to consider its use as an EMS planning and implementation tool. The figure presented below illustrates the use of the process mapping approach for EMS coordination and communication.



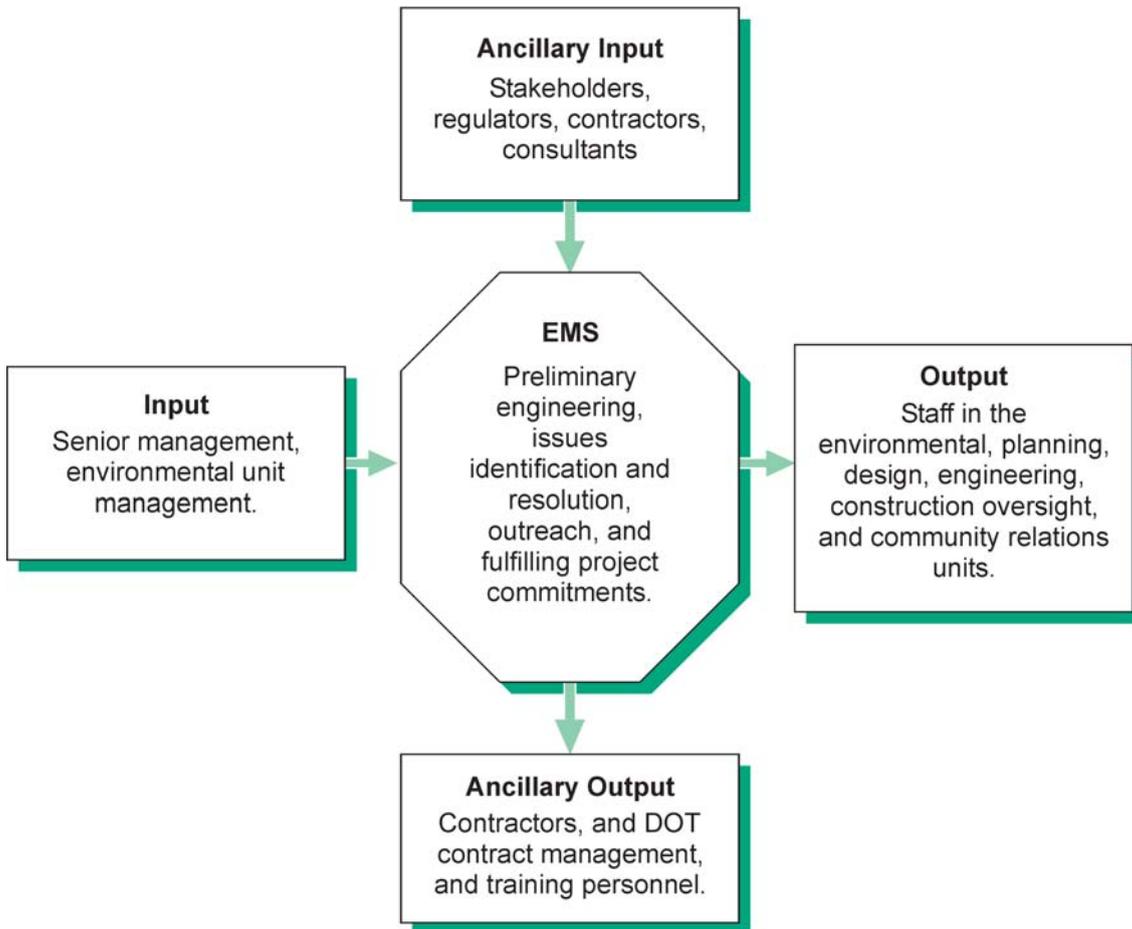
As indicated in the illustration above (refer to the center block) the EMS coordination and communication process mapping approach can be applied to an overall program or to each step in the sequence of steps to develop and implement an EMS.



**Please Note:** The key to effective and efficient EMS development and implementation is identification of all units and personnel who may be involved. Use of the above EMS process map will provide you with the means to coordinate efforts and communicate among all parties.

Following is an example that demonstrates use of the EMS coordination and communication process map in an overall process. In this case, the example considers the overall process for developing and implementing an EMS for the NEPA and Permitting Processes.\*

### Overall Process for NEPA and Permitting



\* The August 2003 AASHTO *EMS Implementation Guide* provided several templates to show how an EMS can be developed for DOT activities — NEPA and Permitting was one of these EMS templates.

## Closing

**Note:** This *Handy Guide* is one in an AASHTO series of EMS *Handy Guides*. While this *Handy Guide* has been developed as a stand-alone document readers are encouraged to review the other Handy Guides to develop a complete "picture" of EMS development and implementation efforts.

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The AASHTO *EMS 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>**



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EMS questions and comments may be directed to the AASHTO Center for Environmental Excellence through Shannon Eggleston at [seggleston@ashto.org](mailto:seggleston@ashto.org).





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