American Association of State Highway and Transportation Officials
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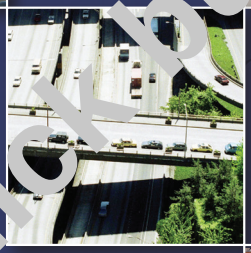

AASHTO Guide for Enterprise Risk Management

FIRST EDITION

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Foreword

The *AASHTO Guide for Enterprise Risk Management* explains how state transportation agencies can establish and benefit from an enterprise risk management program. It defines risk management and illustrates how it complements strategic planning and performance management. The guide explains how the managing of risk provides agencies with a new set of skills to increase the likelihood that they will achieve their strategic objectives. The guide focuses upon enterprise risk management which is defined as the formal and systematic effort to control uncertainty and variability to an organization's strategic objectives by managing risks at all levels of the organization. The guide also explains how to manage risks at four levels, the enterprise, program, project, and activity levels. The guide includes extensive summaries of how risk management is being applied nationally and internationally to typical transportation program areas.

This work was sponsored by the American Association of State Highway and Transportation Officials in cooperation with the Federal Highway Administration, and was conducted by the National Cooperative Highway Research Program (NCHRP). This guide is based on research conducted under NCHRP Project 08-93, *Managing Risk Across the Enterprise: A Guidebook for State Departments of Transportation*.

Introduction—About This Guide

This guide for state departments of transportation (DOTs) provides a comprehensive framework to identify and manage risk. It will help state DOTs plan, staff, implement, and evaluate consistent and effective enterprise risk management efforts. It demonstrates the benefit and strategic value of enterprise risk management to executive and senior staff while building on the findings of previous research and international scan findings. The guide defines risk management, explains its components, and illustrates how it can improve performance, credibility, and transparency.

For U.S. transportation agencies, risk management generally has been confined to managing risks to construction project cost, scope, and schedule. The expansion of interest in enterprise risk management reflects a growing recognition that risk management can play an important, broader role. It can help organizations manage risks to all objectives, not just those related to project schedules and scopes.

Risk management is the natural complement to performance and asset management. Performance management leads agencies to set goals and direct resources to achieve them. However, all goals include uncertainties and risks. Risk management helps identify, measure, manage, and mitigate those risks. It provides a realistic assessment of the uncertainties or impediments surrounding an organization's objectives and a systems approach to addressing them. As agencies move into the performance era inaugurated by the Moving Ahead for Progress in the 21st Century Act (MAP-21), they will find enterprise risk management to be a complementary framework to help them achieve their performance objectives.

Risk management also helps make difficult investment tradeoffs. By casting decisions in terms of risk, agencies can clarify and explain investment priorities.

Even if not spurred by MAP-21, U.S. transportation agencies are well served by enterprise risk management. Applying risk management to transportation agencies transfers a sound management practice from the corporate world to the public sector. In the corporate world, risk management is viewed as a basic competency. It recognizes that in a complex environment, achievement of organizational goals depends on managing many internal and external risks. Failure to measure, manage, and mitigate these risks increases the likelihood of failure. If risks and uncertainties are inevitable, failing to consider them is irresponsible.

This guide helps an agency create an enterprise risk management program. It defines enterprise risk management as a comprehensive approach to addressing risks at all levels of the organization. Because an agency's strategic objectives depend on achieving goals and targets at every level, enterprise risk management drills down to the program, project, and activity levels. It illustrates the integration of risk management into an agency's key programs by explaining how it can be applied not only to strategic objectives, but also to the following:

- Transportation asset management
- Highway safety
- External threats, such as climate change
- Financial forecasting
- Information or decision risks
- Program and project risks related to costs, scopes, and schedule
- Traditional business operation risks, such as theft and workforce injuries.

This guide expands on earlier research. The report on National Cooperative Highway Research Program (NCHRP) Project 20-24 (74), *Executive Strategies for Risk Management by State Departments of Transportation*, analyzed information from 43 state DOTs and identified executive-level strategies for implementing enterprise-wide risk management. A 2011 international scan of transportation agency risk management practices found that leading transportation agencies in Australia, England, Germany, the Netherlands, and Scotland have mature risk management policies and procedures. It is entitled *Transportation Risk Management: International Practices for Program Development and Project Delivery*. The 2012 NCHRP Web-Only Document 183, *Guide for Managing NEPA-Related and Other Risks in Project Delivery*, addressed risks related to National Environmental Policy Act (NEPA) decision making.

How to Use This Guide

A well-known adage says some people just want to tell time and others want to know how to build a clock. This guide is designed for both.

Chapter 1 is an executive summary that distills every other section of the guide. A reader who only wants the "what" and "why" of risk management could read just this chapter to get an overview of the entire guide.

Chapter 2 is a "getting started" section that explains how to create a risk management program. It presents the policies, tools, and processes needed to create an ongoing risk management program. It describes what is needed to implement and sustain an enterprise risk management program.

Chapters 3 through 8 are quite detailed and describe the steps agency staff can take to manage risks at all levels of the organization. They include tools to be used in workshops to identify and assess risks. They also describe agency-wide practices to compile identified risks and sort them for executive decision making. They conclude with a section on measuring an agency's risk management maturity.

Chapter 9 provides more detail on how risk is being applied nationally and internationally to typical transportation program areas. It summarizes how U.S. and international transportation agencies apply risk management to key programs such as highway safety and asset management, and to traditional business operations such as purchasing and inventory control.

Chapter 10 is a critical review of the state of practice, both in public and private sectors.

Chapter 11 is an advanced section that demonstrates risk management tools, such as Monte Carlo simulation that quantifies risk probabilities.