

# Guidebook for Sustainability Performance Measurement for Transportation Agencies

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Transportation agencies are recognizing the importance of sustainability in balancing environmental concerns, quality-of-life issues, and economic development now and into the future. Agencies often struggle, however, in applying sustainability concepts in their core activities. Performance measures can help in achieving this goal. The National Cooperative Highway Research Program has produced NCHRP Report 708, *A Guidebook for Sustainability Performance Measurement for Transportation Agencies*, to help transportation agencies understand sustainability and apply that understanding to their core functions.

The guidebook provides resources for state departments of transportation (DOTs) and other agencies to tailor a performance measurement program for sustainability that is relevant to their specific needs and contexts. Agencies can adapt and use the generally applicable framework in ongoing performance measurement programs or as a part of a new sustainability initiative. The recently enacted transportation legislation, Moving Ahead for Progress in the 21st Century (MAP-21), emphasizes

performance measurement.

The guidebook includes the following features:

- ◆ A practical approach to sustainability and to identifying and applying sustainability-related performance measures;
- ◆ Discussion of ways to link sustainability to an agency's mission and strategic plan;
- ◆ Guidance on integrating sustainability measures into other programs and business practices;
- ◆ A compendium of sustainability performance measures, with a menu of goals and objectives, which agencies can use as a starting point—the compendium is also available as an Excel-based tool that allows the filtering and sorting of measures; and
- ◆ Real-world examples from transportation agencies and private industry in the United States and other countries.

The framework can be applied to evaluate progress, assess current conditions, develop forecasts, make decisions, or communicate with stakeholders.



Photo: Doug Kerr

The replacement of Lake Champlain Bridge in Crown Point, New York, received recognition from New York State DOT's transportation environmental sustainability rating program GreenLITES. Transportation agencies can use real-world examples to set up their own sustainability initiatives.

## Applying Sustainability

Most discussions of sustainability are rooted in the 1987 Brundtland Commission Report, which defined sustainability as meeting present needs without compromising the ability of future generations to meet the same needs. In the context of transportation, sustainability generally incorporates three dimensions: environment, economy, and equity—also known as the three E's—and addresses present and future needs.

State DOTs and other transportation agencies increasingly are applying performance measures, but mostly with a focus on system operations and asset management. Nevertheless, performance measures can help agencies address the broad concepts of sustainability in a manner relevant to their core functions and can help track their progress.

Sustainability cuts across planning, design, and implementation of transportation projects, as well as day-to-day operations and maintenance. Although no policy or regulation specifically addresses sustainability, elements of the concept are expressed in environmental, social, and sector-specific regulations, such as the National Environmental Policy Act, the Americans with Disabilities Act, and MAP-21, which lists environmental sustainability as a national performance goal. In response to these regulations, agencies already are—or soon will be—addressing sustainability.

The NCHRP project team assembled case studies and conducted interviews with transportation agencies to understand how to address sustainability and performance measurement. The case studies identified the following factors as contributing to the successful implementation of programs for sustainability, including performance measures:

- ◆ A big-picture view of sustainability as a comprehensive concept;
- ◆ A strong commitment from leadership and a readiness to work with other agencies;
- ◆ A commitment to a long-term effort and to setting appropriate goals and targets;
- ◆ Allocation of sufficient resources; and
- ◆ The linking of sustainability to funding.

## Principles of Sustainability

The guidebook recommends that agencies take a holistic view of sustainability—transportation in support of sustainability—instead of adopting a narrow focus on sustainable transportation. According to this approach, the principles of sustainability include meeting human needs for the present and future, while



PHOTO: CHICAGO METROPOLITAN AGENCY FOR PLANNING

The Chicago Metropolitan Agency for Planning introduced GO TO 2040, a comprehensive regional plan that incorporates livable communities and sustainability, in 2010. A holistic view of sustainability focuses on transportation's role supporting environmental health.

- ◆ Preserving and restoring environmental and ecological systems,
- ◆ Fostering community health and vitality,
- ◆ Promoting economic development and prosperity, and
- ◆ Ensuring equity between and among population groups and over generations.

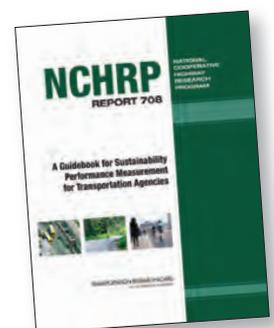
These broad principles were developed from a review of the foundational literature on sustainability, sustainable development, and sustainability in transportation.

## Sustainability Performance Measurement

These general principles of sustainability need to be translated into transportation-related goals, objectives, and performance measures. The guide presents a framework to help transportation agencies apply sustainability concepts in six focus areas:

- ◆ Planning,
- ◆ Programming,
- ◆ Project development,
- ◆ Construction,
- ◆ Maintenance, and
- ◆ Operations.

In general, sustainability performance measures are said to differ from conventional performance measures in their linkage to sustainability goals and objectives. The guidebook emphasizes, however, that



NCHRP Report 708, *A Guidebook for Sustainability Performance Measurement for Transportation Agencies*, is available electronically at [www.trb.org/Main/Blurbs/166313.aspx](http://www.trb.org/Main/Blurbs/166313.aspx) or from the TRB Bookstore, <http://books.trbbookstore.org/nr708.aspx>.



PHOTO: LAURA SAATOR

The framework presented in NCHRP Report 708 promotes the holistic consideration of transportation in support of sustainability.

no single performance measure can truly be a sustainability performance measure—by definition, sustainability requires an integrated set of measures.

The basic sustainability performance measurement framework (see Figure 1, below) consists of the following:

- ◆ **Fundamental components**—the elements required for the step-by-step application of the framework: understanding the basic principles of sustainability; developing appropriate goals, objectives, and performance measures; and implementing the performance measures.

- ◆ **Overarching components**—elements to consider throughout the framework application process, such as stakeholder involvement.

- ◆ **Auxiliary components**—related but optional elements that can supplement the framework application process—for example, an organizational definition of sustainability or employee-based initiatives for sustainability.

### Practical Approach

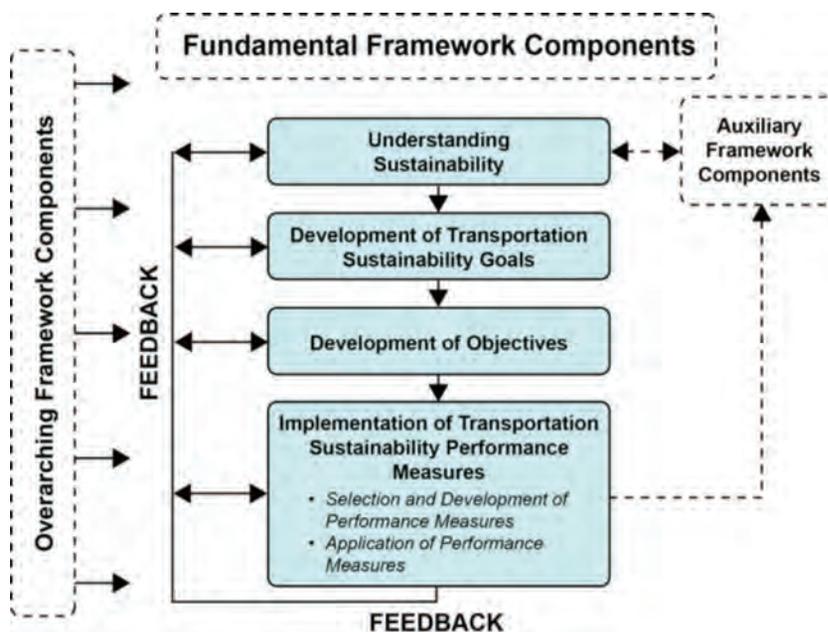
In presenting the case studies, best practices, and contexts, the guidebook emphasizes a practical, phased approach to implementing sustainability performance measurement. Resources include a compendium of performance measures, available in spreadsheet format, to provide agencies with proposed goals, objectives, and performance measures for applying the framework. The compendium offers examples of possible objectives and measures and indicates how they may fit together. An agency can adjust the goals, objectives, and measures to fit its context, focus, organizational structure, and localized need.

The guidebook also contains a sustainability checklist and identifies the sustainability performance measures for different types of applications: description, evaluation, accountability, decision support, or communication.

The framework presented in NCHRP Report 708 promotes the holistic consideration of transportation and sustainability and defines transportation goals that can be broken down into a menu of objectives and performance measures to cover various contexts. The guide describes the application of sustainability performance measures and identifies examples, tools, and approaches. The report equips transportation agencies with background information on sustainability in the context of transportation and with the information and resources to tailor and implement a sustainability performance measurement system successfully.

### Acknowledgments

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44 FIGURE 1 The sustainability performance measurement framework.