



# APPENDIX C

## TRANSPORTATION PERFORMANCE MANAGEMENT TERMS

A comprehensive list of transportation performance management terms used in the guidebook is provided here in alphabetical order. Terms particularly relevant to each component are included in the Overview of each component chapter.<sup>1</sup>

Common Term	Definition	Example
<b>Activity</b>	Refers to actions taken by transportation agencies, such as projects, related to strategy implementation.	<i>Paving key locations, adding new guardrail, rehabilitating a bridge, purchasing new buses.</i>
<b>Adjustment</b>	The alteration of programming, planning, targets, measures, and goals resulting from analysis of information collected.	<i>The restriping of a construction project to address an observed increase in traffic incidents.</i>
<b>Baseline</b>	The observed level of performance for a specified performance period from which implementation begins, improvement is judged, or comparison is made.	<i>2014 fatality rate = 0.83 per 100 million miles of travel.</i>
<b>Benchmarking</b>	A comparison of two numbers, often historical data, with current numbers or one agency's results against its peer's.	<i>Assessing an agency's fatality rate by comparing it to that of a peer agency, or to historic fatality rates.</i>
<b>Change Management</b>	The discipline that guides how we prepare, equip and support individuals to successfully adopt change in order to drive organizational success and outcomes.	<i><b>Individual</b> change management requires understanding how people experience change and what they need to change successfully. <b>Organizational</b> change management provides steps and actions to take at the project level to support the hundreds or thousands of individuals who are impacted by a project. <b>Enterprise</b> change management is an organizational core competency that provides competitive differentiation and the ability to effectively adapt to the ever-changing world.</i>

<sup>1</sup> Vision and mission examples are from the Minnesota Department of Transportation (<http://www.dot.state.mn.us/vision/>); scenario planning definition is from the Federal Highway Administration (FHWA) Scenario Planning Guidebook ([http://www.fhwa.dot.gov/planning/scenario\\_and\\_visualization/scenario\\_planning/scenario\\_planning\\_guidebook/](http://www.fhwa.dot.gov/planning/scenario_and_visualization/scenario_planning/scenario_planning_guidebook/)).

Common Term	Definition	Example
<b>Collaboration</b>	Efforts to organize people or groups to enable them to work together effectively.	<i>Establishment of a target setting working group to set common targets in a bi-state urbanized area.</i>
<b>Coordination</b>	To work with another person or group in order to accomplish a task.	<i>Undertaking work to set common targets.</i>
<b>Customer</b>	Users of an agency's services.	<i>For a transit agency, riders of buses, light rail, and other transit modes. For a DOT, drivers, walkers, bicyclists, and others.</i>
<b>Data Accessibility</b>	The ease with which agency staff and partners can obtain data needed for transportation performance management.	<i>One State DOT has three different traffic operations centers that monitor real time travel conditions. However, there are no procedures or systems in place to consolidate data across the centers or summarize it in a useful form for reporting.</i>
<b>Data Availability</b>	The degree to which data needed for TPM exist at the right level of detail, with sufficient coverage to meet information needs.	<i>Lack of supply chain data may limit a freight planner's ability to evaluate the effectiveness of alternative strategies for freight mobility improvement.</i>
<b>Data Change Management</b>	Processes to coordinate and communicate changes to data definitions, data structures and associated information systems. Change management processes are aimed at minimizing impacts to users and reducing change-related errors.	<i>A change to the definition of bridge elements requires evaluation to determine and plan for impacts on performance of inspections, calculation of bridge condition indices, identification of rehabilitation strategies, and data structures and software supporting bridge inspection and management processes.</i>
<b>Data Exploration and Visualization</b>	Presentation of data in a graphical form to enable interactive analysis and facilitate understanding and communication.	<i>Common TPM data visualizations include maps showing highway links with poor performance, trend lines showing average crash rates, and dashboards showing charts with key performance indicators.</i>
<b>Data Governance</b>	Establishment of decision rights and accountability with respect to data. For example, who is accountable for data quality and how decisions about sharing data, investing in new data, or improving existing data are made.	<i>A State DOTs information governance body defined a set of data policies that emphasize data as a shared agency asset and designated data stewards with responsibility for each category of data.</i>

Common Term	Definition	Example
<b>Data Integration</b>	Combining data that reside in different locations to present a unified view. Data may be integrated into a single physical repository. Alternatively, data may be integrated “virtually” without creation of a new physical data repository.	<i>The DOT established a data warehouse to provide an integrated view of capital projects, including current status, assets, funding sources, and costs to date.</i>
<b>Data Quality</b>	The degree to which data are suitable for a given use, considering consistency with requirements and established business rules, accuracy, completeness, and currency or timeliness.	<i>Lack of timely crash data challenges a safety planner’s ability to address emerging safety issues.</i>
<b>Data Standardization</b>	Practices to ensure different data sets adhere to established standards—which may pertain to inclusion of certain attributes, the definition and meaning of data attributes, their specific format, measurement or quality specifications, allowable values, etc.	<i>Use of a standard linear referencing system (LRS) enables an agency to display data about traffic, crashes, and various highway features on the same map.</i>
<b>Data Usability</b>	The ease with which user information needs can be met with available data, tools, and skills.	<i>A data feed of highway travel speeds is not usable in its raw form. Data processing, summarization and presentation are required to make this data feed usable.</i>
<b>Data Validation</b>	Process that uses specified criteria to determine whether data are correct, complete and meaningful.	<i>Validation routines are run on pavement condition data to check for out-of-range condition measures and distresses that are not compatible with the recorded pavement type.</i>
<b>Goal</b>	A broad statement of a desired end condition or outcome; a unique piece of the agency’s vision.	<i>A safe transportation system.</i>
<b>Imputation</b>	Substitution of estimated values for missing or inconsistent data element values.	<i>A probe data set consisting of speeds by five-minute period for each section of an Interstate may have missing data due to insufficient observations for some periods/sections. Data for these periods/sections may be imputed based on values for nearby sections.</i>
<b>Metric</b>	An indicator of performance or condition.	<i>The annual number of fatalities.</i>

Common Term	Definition	Example
<b>Mission</b>	Statement that reflects the core functional purpose of an agency.	<i>Plan, build, operate and maintain a safe, accessible, efficient and reliable multimodal transportation system that connects people to destinations and markets throughout the state, regionally and around the world.</i>
<b>Monitoring</b>	The identification and diagnosis of performance systems and programs.	<i>Freeway and Arterial System of Transportation (FAST), a real-time traffic condition dashboard that enables detailed analysis on request.</i>
<b>Objective</b>	A specific, measurable statement that supports achievement of a goal.	<i>Reduce the number of motor vehicle fatalities.</i>
<b>Outcome</b>	Results or impacts of a particular activity that are of most interest to system users. Focus of subcomponent 5.1 System Level Monitoring and Adjustment.	<i>Transit travel time reliability, fatality rate, percent of assets within useful life.</i>
<b>Output</b>	Quantity of activity delivered through a project or program. Focus of subcomponent 5.2 Program/Project Level Monitoring and Adjustment.	<i>Miles of pavement repaved, miles of new guardrail put into place, the number of bridges rehabilitated, the number of new buses purchased.</i>
<b>Partner</b>	An organization involved in administering the transportation programs and policies, whether directly or indirectly. Involvement includes, but is not limited to, target setting, planning, programming, monitoring, and reporting.	<i>Transportation agencies, emergency personnel, chambers of commerce, local government.</i>
<b>Performance Diagnostics</b>	Analysis of root causes for performance results.	<i>Correlating traffic incidents with travel speed data; breaking down crash data by contributing factors recorded in crash records or highway inventories.</i>
<b>Performance Measure</b>	Performances measures are based on a metric that is used to track progress toward goals, objectives, and achievement of established targets. They should be manageable, sustainable, and based on collaboration with partners. Measures provide an effective basis for evaluating strategies for performance improvement.	<i>Transit passenger trips per revenue hour.</i>
<b>Performance Period</b>	An established timeframe for monitoring results and collecting data and information for performance reporting.	<i>A calendar year.</i>

Common Term	Definition	Example
<b>Program</b>	A program is a document which matches funding to projects.	<i>A State Transportation Improvement Program (STIP).</i>
<b>Project Selection Criteria</b>	Evaluation metrics used to rank projects.	<i>Numerical weights assigned to goals such as economic impact or environmental effects.</i>
<b>Reporting</b>	Summary documentation of performance trends for either internal or external audiences.	<i>WSDOT Gray Notebook.</i>
<b>Risk</b>	Threats to and opportunities for achieving strategies, goals, and targets.	<i>An extreme weather event causes unanticipated costs.</i>
<b>Scenario</b>	Scenarios use funding and performance data to determine likely future outcomes.	<i>An investment of five % more revenue may reduce SD bridges by 10%.</i>
<b>Scenario Planning</b>	A technique designed to help citizens and stakeholders understand how changes in various forces potentially impact transportation networks in an area.	<i>Engaging the public in a workshop to compare and contrast the impact of land use scenarios on traffic volumes and distribution.</i>
<b>Source System of Record</b>	The designated authoritative source system for a given type of data. A single source system is designated to avoid a situation in which multiple versions of a data set are being updated independently and not kept in sync.	<i>The agency's traffic monitoring system is the source system of record for annual average daily traffic (AADT) data.</i>
<b>Stakeholder</b>	Person or group affected by, or who believe themselves to be affected by, a transportation agency's activities. This includes, but is not limited to, customers and partners.	<i>In developing the long-range transportation plan, agencies must engage the general public and representatives of system users such as bicyclists, freight shippers, and public transportation riders.</i>
<b>Strategy</b>	A well-defined pathway toward reaching a target, goal, or objective.	<i>Increasing bridge inspections to decrease % falling into SD category.</i>
<b>Sub-Measure</b>	A detailed quantifiable indicator uncovered during monitoring that provides additional insights into internal and external processes.	<i>Preventive maintenance compliance—a driver of overall asset performance.</i>
<b>Target</b>	Level of performance that is desired to be achieved within a specific time frame.	<i>Two % reduction in the fatality rate in the next calendar year.</i>
<b>Transportation Performance Management</b>	A strategic approach that uses system information to make investment and policy decisions to achieve performance goals.	<i>Determining what results are to be pursued and using information from past performance levels and forecasted conditions to guide investments.</i>

Common Term	Definition	Example
<b>Trend Line</b>	A trend distilled from historical or projected performance data.	<i>The graph depicting annual fatality rate and five-year average fatality rate from 2000 to 2014.</i>
<b>Vision Statement</b>	An overarching statement of desired outcomes that is concisely written, but broad in scope; a vision statement is intended to be compelling and inspiring.	<i>Minnesota’s multimodal transportation system maximizes the health of people, the environment, and our economy.</i>
<b>Visioning</b>	The process of setting or confirming goals and objectives.	<i>Envisioning the characteristics of a transit agency providing equitable, efficient, and dependable service.</i>

## COMPONENT DEFINITIONS

Definitions for each component are provided below; subcomponent definitions are contained in guidebook chapters.

### Component 01. Strategic Direction

**Definition:** The establishment of an agency’s focus through well-defined goals and objectives, enabling assessment of the agency’s progress toward meeting goals and objectives by specifying a set of aligned performance measures. The Strategic Direction is the foundation upon which all transportation performance management rests.

### Component 02. Target Setting

**Definition:** The use of baseline data, information on possible strategies, resource constraints, and forecasting tools to collaboratively establish a quantifiable level of performance the agency wants to achieve within a specific time frame. Targets make the link between investment decisions and performance expectations transparent across all stakeholders.

### Component 03. Performance-Based Planning

**Definition:** The use of agency goals and objectives and performance trends to drive the development of strategies and priorities in the long-range transportation plan and other performance-based plans and processes. The resulting planning documents become the blueprint for how an agency intends to achieve its desired performance outcomes.

### Component 04. Performance-Based Programming

**Definition:** The use of strategies and priorities to guide the allocation of resources to projects that are selected to achieve goals, objectives, and targets. Performance-based programming establishes clear linkages between investments made and expected performance outputs and outcomes.

### Component 05. Monitoring and Adjustment

**Definition:** A set of processes used to track and evaluate actions taken and outcomes achieved, thereby establishing a feedback loop to refine planning, programming, and target setting decisions. It involves using performance data to obtain key insights into the effectiveness of decisions and identifying where adjustments need to be made in order to improve performance.

## **Component 06. Reporting and Communication**

**Definition:** The products, techniques, and processes used to communicate performance information to different audiences for maximum impact. Reporting is an important element for increasing accountability and transparency to external stakeholders and for explaining internally how transportation performance management is driving a data-driven approach to decision making.

### **Component A. Performance Management Organization and Culture**

**Definition:** Institutionalization of a transportation performance management culture within the organization, as evidenced by leadership support, employee buy-in, and embedded organizational structures and processes that support transportation performance management.

### **Component B. External Collaboration and Coordination**

**Definition:** Established processes to collaborate and coordinate with agency partners and stakeholders on planning/visioning, target setting, programming, data sharing, and reporting. External collaboration allows agencies to leverage partner resources and capabilities, as well as increase understanding of how activities impact and are impacted by external factors.

### **Component C. Data Management**

**Definition:** A set of coordinated activities for maximizing the value of data to an organization. It includes data collection, creation, processing, storage, backup, organization, documentation, protection, integration, dissemination, archiving, and disposal. Well-managed data are essential for a robust TPM practice.

### **Component D. Data Usability and Analysis**

**Definition:** Existence of useful and valuable data sets and analysis capabilities available in accessible, convenient forms to support transportation performance management. While many agencies have a wealth of data, such data are often disorganized, or cannot be analyzed effectively to produce useful information to support target setting, decision making, monitoring, or other TPM practices.