

Austrroads National Performance Indicators



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Foreword

In August 2009, the Federal Highway Administration, the American Association of State Highway and Transportation Officials, and the National Cooperative Highway Research Program conducted an international scanning study of how transportation agencies in Australia, England, New Zealand, and Sweden use performance management to demonstrate accountability and performance.

The U.S. scan team found many examples of management strategies that used performance measures to achieve improved performance and hold agencies accountable for results. The scan members were particularly interested in learning more about

how a common set of highway measures and targets evolved, were established, and are reported in Australia and New Zealand. The Australian states and New Zealand have more than 10 years of experience in producing highway performance measures. Their experience holds important lessons for U.S. highway practitioners.

This followup report was developed by those agencies in cooperation with Austroads, which is the association of highway agencies in Australia and New Zealand. It was written by Brendan Nugent, Penelope Morris, and Alex Ryan.

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Introduction

The focus of this report is how transportation agencies in Australia and New Zealand publish a common set of performance measures. Unlike the United States, which is only beginning to establish a set of national measures developed in cooperation with the States, Austroads has published a comprehensive set of measures for more than 10

years. These measures allow member agencies to benchmark their performance against one another and provide transparency to the public and policy makers. In this paper, long-time Austroads members describe how the measures are established and provide lessons from their experience.

Austrroads Role in Australian Transport

Austrroads is the association of road transport and traffic agencies in Australia and New Zealand. It performs a role similar to that of the American Association of State Highway and Transportation Officials in the United States without the advocacy activity. Austrroads' purpose is to contribute to improved transport outcomes through the following:

- Providing technical advice to the government on road and road transport issues
- Facilitating collaboration between road agencies
- Promoting harmonization, consistency, and uniformity in road and related operations
- Undertaking strategic research on behalf of road agencies and communicating outcomes
- Promoting improved and consistent practice by road agencies

Consensus-Driven

A key element of Austrroads' operation is that all outputs are signed by all members before publication. Austrroads operates by generating consensus with all jurisdictions through a range of subject forums.

Strategic Research Priorities

From the beginning, Austrroads has had a research agenda that responds to the needs and interests of its members. The current programs focus on the following:

- Asset management
- Capability development and retention
- Improving freight productivity
- Network operations
- Vehicle registration and driver licensing
- Road safety
- Technology practice improvement

Austrroads has completed comprehensive guides covering all aspects of road agency activity. Members have agreed to adopt Austrroads guides rather than develop their own. The guides, reviewed at least every 5 years, are available at the Austrroads Web site at www.austrroads.com.au.

How Transport Performance Management Works in Australia

Measuring program performance is essential to good management, public accountability and transparency, and internal organizational learning and development.

Performance management systems set clear performance expectations and create transparency, not only on how agencies perform, but also on how their efforts contribute to broad national policy goals. Transportation is considered a means to important societal ends, and performance systems demonstrate how effectively agencies achieved those ends.

Reporting that clearly demonstrates how transportation fits into larger societal goals is the standard across Australian and New Zealand transportation agencies. Agencies incorporate broad national or state goals into their transportation performance management systems. This linkage of national and state goals to agency performance allows the agencies to illustrate how transportation serves larger societal goals and document accountability, performance, and need.

Transportation Performance Linked to Government Goals

A direct linkage between what the community and economy need from transportation agencies and what they achieve is common across Australian jurisdictions and New Zealand. This linkage occurs for four reasons.

First, the Australian state governments and the New Zealand national government articulate clear goals for the transportation system. Policy goals or expectations, such as economic development, safety, environmental sustainability, or best value for the money, are set as broad transportation goals. Second, agencies have negotiated service agreements or strategic plans that translate these broad goals into clear performance measures and targets. Third, agencies' performance management systems report their accomplishments in achieving the measures

and targets. Fourth, agencies have continually refined processes during more than a decade of performance management. Years of effort are needed to fully develop the performance management process.

In New South Wales (NSW), for example, broad state goals are set out in the State Plan. The NSW Roads and Traffic Authority's *Blueprint: 2008–2012 RTA Corporate Plan* links the state's aspirations to the day-to-day activities of its road transport agency. These goals form the basis for the cascading layers of a performance management framework.

There is no requirement that transportation agencies or regional planning organizations have long-term plans with specific projects lists, budget constraints, or fixed targets. Long-term plans tend to focus on policies, strategies, corridors, and general approaches to providing transportation. Specific, budget-limited projects tend to be over short terms, such as 5 years. State and federal funding mechanisms are often supported by references to these policies or strategies via links to planning and achieved performance standards.

Common Elements of Performance Management

Performance management (PM) becomes a cultural norm and a fundamental way of operating and managing for organizations that apply it. Because of this, it is expressed in behaviors, language, actions, and the type of leadership shown and engagement with a fluid process of continuous improvement.

Relationship Through Dialogue

PM requires a willingness to develop dialogue within and outside an organization. Developing that dialogue requires building relationships and organizational structures and planning processes to support it. The dialogue creates a level of trust among the players and frames the discussion of performance management as an evolutionary and incremental process rather than a simple point that an agency gets to.

Developing these relationships through integrated planning ensures that the organization can move from the concept of being performance oriented to more specific actions in a consistent and aligned planning framework. Ongoing formal and informal engagement with stakeholders ensures that the dialogue is maintained and that all have clear, agreed-on targets and projections.

Corporate Alignment and Logic

Performance systems throughout the organization should be aligned, from national- and state-level objectives through business unit and individual officer plans. Each indicator should logically relate or map to a higher level indicator or goal and clearly link to a set of government or organizationwide goals. Likewise, indicators used by individuals to manage performance should draw a clear link through layers of indicators and goals to demonstrate contribution, provide a point of focus, and increase motivation.

This means organizations must do the following:

- Create a clear strategic intent for the organization and performance management process.
- Set up a corporate framework that supports the strategic intent and ongoing relationships.
- Make the purpose of the organization and PM clear to everyone.
- Shape relationships logically so they can link specific, focused outcomes to higher level comprehensive outcomes that provide whatever the stakeholder needs.
- Ensure that all plans, targets, personnel management, and reporting processes are aligned across the organization and fit into the same logical framework.

Ongoing Development

One of PM's great benefits is that it supports continuous improvement in organizational effectiveness. Setting the indicators and targets central to PM is an evolutionary process. Some indicators may

not relate to outcomes as expected, others may not have effective or inexpensive measures, and others may demand too much data. These types of issues emerge over time.

For a PM system to function effectively, organizations must be willing to constantly review and improve the indicators, measures, and targets that support organization outcomes.

Common Challenge: Information Overload

Even with a clear, logical framework in an organization, getting the appropriate level of detail can be difficult. Indicators, measures, targets, and data required must be set at multiple levels across the organization. It is important to strike the right balance so that the following occurs:

- The level of detail is appropriate for the purpose and does not impose too heavy a burden.
- Complex business activities use sufficiently complex information to capture reality.
- Real meaning is always visible in indicators and reports and not buried by over-aggregation or too much detail.

Emerging Benefits

Effective PM—with good relationships, framework, development, and level of information—has clear benefits in Austroads agencies. It leads to the following:

- Greater confidence in decisionmaking at all levels of the organization
- Clear guidance on resource allocation
- Greater transparency and accountability that, in turn, drive performance
- Clarity of strategic intent and direction so that what gets measured get done
- A working environment that proactively identifies and manages emerging issues because they are caught in the indicator and reporting system

Austroads National Performance Indicators

Each year, Austroads collects and collates performance data on the Australian and New Zealand road transport systems and its members' operations. These data sets are termed Austroads National Performance Indicators (NPI). (See <http://algin.net/austroads/site/index.asp>.)

This results in a published set of measurements that indicate performance levels, efficiency, and improvements in all aspects of the road system. These performance measures provide snapshot comparisons of road agencies for any one year and time series information for previous years.

Indicator categories include road safety, road maintenance, travel time, and user satisfaction.

Generally, indicators are presented in graphs and tables.

Each indicator includes the following:

- Basic statistical information for the current year in charts and data tables for each jurisdiction
- Time series information
- National averages
- General notes that apply to the overall performance indicator grouping (considerations)
- Specific factors that must be taken into account when interpreting an indicator for an individual jurisdiction (qualifications)
- Clear descriptions of the methodology used to establish the measures of the indicator

Creating National Performance Indicators—NPIs From 1993 to 2011

The process of creating NPIs involves recognizing the key need, building consensus, and bringing every major agency on the journey. This ensures that the indicators and data are relevant and workable and provide the comparable performance information that is one of their key purposes.

Austrroads' Initiation of NPIs in 1993

Starting the process of developing NPIs requires key agencies to recognize they are needed. Austrroads and its member organizations recognized a need for NPIs as a response to a range of events:

- Introduction of competition policy at a national level¹
- Business demands for transparency and efficiency
- Movements for public sector reforms
- Growing demand for public sector accountability from citizens

The performance indicators were required to accomplish the following:

- Meet reporting imperatives for accountability.
- Reinforce strategic decisionmaking.
- Improve performance through benchmarking against world practice.

Austrroads started the national performance measurement process by commissioning the Australian Business Systems Program Performance Measurement Project in 1993. This initial project developed 14 indicators designed to be high-level measures to monitor progress over time, appraise performance, and benchmark cross-jurisdictional comparisons.

Since 1994, Austrroads has published the performance measures against indicators each year, initially as a

hard copy publication and later through the Austrroads Web site.

The first 14 indicators were subsequently expanded to 72 (including subindicators).

After the first steps in 1993, Austrroads drove the following developments:

- In 1994, the *Australian Road Systems Report* expanded the outcomes and indicators used.
- In 1994, a technical report benchmarked six interim efficiency measures.
- In 1999, an external *Review of National Performance Indicators* suggested refocusing the NPI set on 14 key indicators and recommended extra indicators in a number of categories.
- In 2004, an independent *Review of National Performance Indicators* against agreed-on criteria (see “Maintaining Momentum—Review 2004” on page 11) eliminated 16 indicators, replaced others, and found that 46 of the 72 indicators largely met the criteria.

Current Indicators

The NPI effort involves the production and publication of a set of performance measurements that assist in indicating levels of performance, efficiency, and improvement in the road system and related disciplines. The result is a set of performance measures that allow comparisons of data sets of road authority jurisdictions for any one year and provide timeline information for data over previous years.

The indicators are grouped in sections with headings that include road safety, road maintenance, travel time, and user satisfaction. Where applicable, all indicators include graphical and tabular representation of performance indicators.

¹ Hilmer, F.G., Rayner, M.R., and Taperell G.Q., *National Competition Policy Review* (the Hilmer Report), 1993 Commonwealth Government Printers, Canberra, Australia, 1993.

Road safety measures include the following:

- Serious casualty crashes (population basis)
- Serious casualty crashes (vehicle-kilometers traveled basis)
- Road fatalities (population basis)
- Road fatalities (vehicle-kilometers traveled basis)
- Persons hospitalized (population basis)
- Persons hospitalized (vehicle-kilometers traveled basis)
- Social cost of serious casualty crashes (population basis)
- Social cost of serious casualty crashes (vehicle-kilometers traveled basis)

Asset management indicators include the following smooth travel exposure measures:

- Smooth travel exposure urban (4.2 International Roughness Index (IRI))
- Smooth travel exposure rural (4.2 IRI)
- Smooth travel exposure all (4.2 IRI)
- Smooth travel exposure urban (4.2 IRI) on Auslink National Network
- Smooth travel exposure rural (4.2 IRI) on Auslink National Network
- Smooth travel exposure all (4.2 IRI) on Auslink National Network
- Smooth travel exposure urban (5.33 IRI)
- Smooth travel exposure rural (5.33 IRI)
- Smooth travel exposure all (5.33 IRI)
- Smooth travel exposure urban (5.33 IRI) on Auslink National Network
- Smooth travel exposure rural (5.33 IRI) on Auslink National Network
- Smooth travel exposure all (5.33 IRI) on Auslink National Network

Program and project assessment measures quantify the return on construction expenditure. Traffic conditions are measured across a.m. and p.m. peak times, throughout the day, and during offpeak

periods. These measures include travel speeds (actual and nominal), congestion indicators, and variability for travel times for the urban environment. Lane occupancy rates, car occupancy rates, and user satisfaction form the rest of the NPIs. All of the information, including considerations, qualifications, and methodology, is available on the Austroads Web site.

Key Elements to Building NPIs

Based on the experience of using NPIs over 15 years, Austroads has observed key approaches and activities that are critical to the success of a national indicator and performance management project. These have emerged from driving such a project from inception through multiple review cycles and from engaging with member agencies with different circumstances. These key elements contribute to the ongoing success and continuous improvement of Austroads' NPIs. These lessons may be relevant to the U.S. experience.

Build Need

All road transport agencies do not necessarily recognize the pressures that support developing NPIs at the same time. They may be focused on other reform agendas or other approaches to budgetary or performance management.

Peak bodies such as Austroads or committed state-level agencies must convince all transport agencies of the need for a common performance indicator framework. This involves demonstrating that the indicators address a need and purpose and that engaging with them will benefit all transport agencies. It is important to identify those benefits and minimize any sense of dominating other agencies' agendas.

Be Proactive

Where it is clear that there is a growing requirement generated outside the community of transport agencies—such as a national competition policy, a review of transport and infrastructure management, major budgetary pressure, or a public sector accountability agenda—it is vital that agencies move to a performance and indicator framework before they are forced to do so by external events.

Building effective, usable, and reliable indicators takes time. As Austroads' NPI history shows, it can take as long as a decade. Building NPIs in a way that brings all relevant agencies along also requires patience and a willingness to develop collaborative approaches.

All this means that once a likely requirement for a performance indicator framework is identified, peak bodies and leading state-level bodies must be proactive to ensure sufficient time to build an effective system and engage all relevant jurisdictions. In short, it is important to move ahead of the game to achieve the most effective outcomes.

Build Collaborative Approaches

An NPI framework requires cooperation from all agencies and only provides full benchmarking and performance benefits if all are committed and involved. In particular, this applies to developing common visions of the role and purpose of indicators, achieving a common commitment to using indicators, and collecting and supplying the data necessary to make the indicators worthwhile.

Road and transport agencies' primary reporting obligations are to their respective governments. Peak bodies driving a national collaborative project must respect that and work with the constraints those obligations impose.

Collaborative approaches to defining and managing projects—such as through joint steering committees and common forums—and to viewing the structure, content, and review of indicators increase the likelihood of a national framework that will work.

It is important to “do it with people, not to them,” emphasize incentives rather than penalties, and enter cycles of dialogue rather than dictate to agencies what they must do to meet a national standard.

Road and transport performance indicators are not divorced from major cross-department policy issues, such as economic development and public health. In developing, reviewing, and managing NPIs, it is important to engage across department lines to gather and report on the most useful information.

Move Forward Without Complete Consensus

Although collaborative approaches are essential for success, in Austroads' experience that does not correspond to seeking complete consensus before acting.

It is rare that all road and transport agencies across multiple jurisdictions will initially agree on indicators, content, measures, data collection, and, above all, project timing. It is still important to maintain momentum and be proactive, particularly if addressing external requirements. Austroads' experience in the NPI development process suggests the most effective approach is to develop momentum with a core group of committed organizations that will champion the process. Austroads accepted that some members would not necessarily engage from the beginning and that moving forward and showing the benefit of the project was the most effective and persuasive action.

This worked well. It ensured indicator development moved forward, it avoided the problems of a directive approach, and it supported the long-term effectiveness of collaboration. All relevant agencies are part of the NPI framework and have been for a long time.

Accept Central Coordination

Collaboration does not mean project responsibilities can be dispersed. As with all projects, clear responsibilities and good team communication are essential for successful delivery. This requires central coordination of indicator development activity, ongoing performance management, and indicator review. Depending on the circumstances, this could be a peak body, such as Austroads, or a lead operational agency, such as a larger state road authority.

In the case of NPIs, Austroads took the lead with resources and staff provided by committed operational agencies.

Decouple From Funding Decisions

When measurement against NPIs is linked to agency funding levels, the barriers to successful development of indicators increase. There are greater incentives to stay out of the system, resist particular indicators

or measures, and, unfortunately, shape reporting and data collection.

When agencies can focus on continuous improvement, operational excellence, benchmarking domestically and overseas, and learning from the experience of other agencies, the framework offers multiple benefits and few costs.

By decoupling from funding models, the Austroads NPI program has dropped the threshold for agency engagement and commitment, increased incentives for complete transparency, and increased the likelihood of truly effective information-sharing through performance data.

Aim for Long-Term Improvement

Austroads accepts the approach of meeting long-term government goals by generating indicators that reliably reflect steps toward those goals. Hard-and-fast short-term performance targets that can be used to penalize agency performance are not likely to drive successful operational innovation. Instead, they are likely to drive short-term and target-focused decisionmaking that is inconsistent with the state-level performance management systems described in this paper.

The real value of performance management such as NPIs is improved long-term decisionmaking and investment through the information shared by benchmarking.

Accept Surrogate Measures

Although identifying indicators can be difficult, it can be more difficult to establish measures and data to reflect those indicators. Data may not be available for an appropriate measure, measures may be hard to conceptualize, or data and measures may differ across jurisdictions.

Provided the indicator and its ideal measure are clear, Austroads believes that surrogate measures are appropriate and acceptable as long as the relationship to the ideal measure is sound.

Indicators and measures are never perfect, and when the relationship is sound surrogates ensure that performance management can move forward.

Qualify Data for Differences

Data definition and collection across jurisdictions may differ even for key indicators such as serious injury crashes, which are defined for NPIs as a crash with one person killed or hospitalized.

For example, Victoria has substantially higher rates of serious injury crashes than other states. This is because of police procedures in Victoria that define persons hospitalized as taken to the hospital rather than admitted to the hospital, which is used in other jurisdictions.

Rather than struggling to force data definitions and collection into rigid uniformity across differing jurisdictions, Austroads believes that it is more effective to accept those data as they stand in reporting against indicators and qualify the data for those differences by presenting them as an adjunct to the NPI reports.

This provides two benefits: it removes a major institutional barrier to NPIs and it allows users to reconcile data that are inconsistent.

Accept Local Agency Interpretations

Austroads does not present analysis and interpretation of local agency NPI performance. This is left to local agencies because variation in measure does not necessarily mean variation in performance.

Variations can arise from a wide range of factors:

- Policy differences
- Geographical differences
- Different approaches to measurement
- Different mixes of rural and urban roads
- Different population-to-road-kilometer ratios

Local agencies are best placed to analyze and explain these types of variation in their own performance.

Although this may appear to reduce comparability, even with local agency interpretation NPIs and benchmarks provide a guide to trends in performance and identify areas that may require further investigation. With data qualification and interpretation, NPIs do provide a valid base for performance comparison over time.

Accepting local agency interpretation removes an institutional barrier to NPIs and reduces any sense of risk for local agencies. They know they can trust the interpretation to take into account their local circumstances.

Embrace Review

Indicators are never set in stone and must be continuously reviewed for feasibility, comparability, and relevance. When it began developing indicators, Austroads accepted that the process would be iterative and that subsequent reviews would add, delete, or modify indicators and measures. It is the nature of performance indicators that they are difficult to get right.

Framework managers must be able to let go of longstanding indicators and measures if they no longer meet the criteria.

As the history of the NPI process shows, Austroads has driven many review cycles since 1994 and made substantial changes to the number and type of indicators, most recently in 2004.

Drive Success Through Flexibility

In many ways, flexibility is the key category for all these critical success elements. At the beginning of the NPI project, Austroads took the view that the most important outcomes were to start, develop some relevant and useful indicators, and continue to refine, improve, and reach out to agencies.

Collaborating, moving forward without total consensus, allowing for differences in data structure and definition, letting agencies interpret their own performance against NPIs in their own way, accepting surrogate measures, and embracing review—this flexibility eliminated many institutional barriers to starting and completing the NPI process. It ensured progress, it ensured benefit to the agencies involved, it removed any sense of risk for them, and it supported their managerial autonomy.

External influences can affect NPI development, and the process must be flexible enough to accommodate that. For example, political and public focus can shift from one emphasized indicator area to another that may be less emphasized, and that can happen differently in different jurisdictions. Austroads NPIs have had to respond to increased focus on issues such as asset condition and road safety.

Maintaining Momentum—Review 2004

A critical success element of the NPI program has been multiple reviews of indicators and indicator categories to ensure their viability and relevance. Nothing undermines a program more quickly than a stakeholder belief that meeting its requirements provides no real benefit.

Need for Review

Austrroads and its member organizations committed considerable financial resources and expertise in developing and refining NPIs over a decade to 2004. Over the years, the set of NPIs grew from 14 to 72 (including subindicators) and became more costly and harder to manage. As a result, Austrroads commissioned an independent review to assess the NPIs and recommend changes in collection and reporting.

The review was not a technical one. Instead, it combined the experience and expertise of key professionals working in member organizations (the Review Group) to reach consensus. In 2004 the Review Group developed criteria covering relevance, feasibility, and comparability across jurisdictions, reflecting broad agreement among members on the purpose of the NPIs.

The 72 NPIs aimed to provide a comprehensive performance management framework within which road system and member road authority performance could be benchmarked.

Concerns Underlying 2004 Review

Member organizations had concerns that drove the need for the 2004 review. Key among them were the following:

- Substantial effort and cost for some data capture
- Usefulness of some indicators
- Complexity of some measures

- Ambiguity and openness to interpretation of some measures
- Methodological basis for some indicators
- Fact that some indicators were not used at all by road authorities

Independence of Review

The NPIs were developed collaboratively under the auspices of Austrroads by senior staff in transport organizations across Australia and New Zealand. To ensure the effectiveness and independence of the 2004 review, no staff members involved in developing the indicators were part of the Review Group.

Review Group members were transport professionals from Austrroads' member organizations. They provided input and drew on the expertise of their organizations. Although this was not a strictly independent review, the expertise required to review the NPIs was and is available in those organizations.

Review Methods

The review was conducted using the Delphi technique, which is a systematic and iterative process for collecting and reviewing evidence and reaching agreement. The review covered 35 key performance measures that were reported by Austrroads as 72 indicators and subindicators.

The review was completed in two stages. The first stage established the criteria against which the NPIs would be assessed. The second stage assessed the relevance, feasibility of collection, and comparability of the performance indicators for benchmarking purposes.

The NPIs were reviewed and scored against essential and discretionary criteria established through several cycles of research and consultation by the Review Group.

To evaluate the indicators, the Review Group did the following:

- Reviewed preliminary assessments of the NPIs in a working paper containing summary scores and statistics, a matrix showing the results for each NPI by jurisdiction, and qualitative comments
- Identified obvious indicators to abandon, modify, or keep
- Conducted workshops to agree on action on marginal indicators

This generated a new set of NPIs, which was reviewed to ensure the following:

- **Comprehensive**—The NPIs covered all the major activities and responsibilities of the road and traffic authorities, without any significant gaps.
- **Manageable**—The NPIs provided a set of key indicators that could be reasonably maintained, updated, and reported.
- **Acceptable**—Austroads member organizations would agree to collect and report these indicators. Even if it was not feasible for all organizations to collect and report an indicator, it was agreed to keep the indicator if it provided useful and relevant performance information for most authorities.

Review Criteria and Results

The NPIs were reviewed and scored against essential and discretionary criteria established through several cycles of research and consultation by the Review Group.

Of the 72 reviewed indicators and subindicators (35 measures), 46 were retained, nine with modification (64 percent); 10 needed to be redeveloped (14 percent); and 16 were discarded (22 percent).

Building Better Measures

After the 2004 review, Austroads assigned several technical groups the responsibility of revising the NPIs identified for revision in the review. The network operations group produced a report in 2007, *National Performance Indicators for Network Operations*.² The original travel-time indicators used floating-car surveys to measure travel times on representative routes a few times a year as a means to monitor the performance of a road network in a jurisdiction. Some believed these indicators were insufficient and may not present a true picture of prevailing traffic conditions, especially in larger cities where congestion and peak-spreading are common. Some jurisdictions were measuring traffic performance in real time on freeways and arterials with vehicle detectors in freeway management systems and signal area traffic

Review Criteria for National Performance Indicators

Criteria Group	Essential Criteria	Discretionary Criteria
Relevant	Aligned with key outcome areas of government road, transport, and traffic sector activity Useful to individual Austroads member organizations for planning and performance management	Useful to a wider audience to assess the performance of the government road, transport, and traffic sector
Feasible		Readily understood Cost-effective Agreed-on methodology
Comparable		Enables comparisons across Australasian jurisdictions and over time Enables potential international comparisons

² Austroads Publication No. AP-R305/07

control (ATC) systems, so the floating-car surveys were being done primarily for Austroads NPIs at significant cost to the agencies.

The 2007 report proposed the definitions and calculations of five new network performance indicators. These indicators are measured online with freeway and arterial traffic control systems. It recommended procedures for the phase-in of online performance measurement employing the indicators and procedures, but it also anticipated that some jurisdictions will continue to use floating-car surveys.

The following are the five new NPIs for traveler efficiency:

- **Travel speed.** This indicator monitors congestion in terms of speeds. It is derived from spot speeds on freeways measured directly using point sensors such as a pair of loops. On arterial roads, it can be derived from the inverse of travel times estimated from an ATC system. This indicator does not use histograms for its reporting and uses a single number for each performance measurement period (the other four indicators use histograms for performance reporting).
- **Traveler efficiency (variation from posted speeds).** This indicator monitors the proportions of a road network at various levels of deviations from posted speed limits on freeway or arterial road links.
- **Traveler efficiency (arterial intersection performance).** This indicator monitors the proportion of an arterial road network at various levels of congestion.
- **Reliability (travel speed).** This indicator measures the variability of speeds by calculating the coefficient of variation. It is displayed as the proportions of a road network at different levels of variability in a measurement time period.
- **Productivity (speed and flow).** This indicator is based on the product of speed and flow. A high productivity is achieved if both speed and flow are maintained near maximum values (i.e., near free-flow speed and capacity flow). It is displayed as the proportion of a network at various levels of productivity in a measurement period.

Austrroads has done further work to implement the recommendations in the report. The new indicators are expected to be published in 2011, but the current set of related NPIs for network performance will continue to be used for some time in parallel with the new indicators. Smaller agencies do not generally have automated traffic performance measurement systems.

Committee Responsibility for Improvement

Any collaborative, consensus-driven activity must have a point of responsibility to ensure action and drive for improvement. This also applies to the review of NPIs.

Austrroads commissioned the NPI Review Group for a major review of indicators in 2004. Rather than relying on ad hoc reviews to maintain relevance and quality of indicators, Austrroads is creating a standing committee with specific responsibility for maintaining the momentum for improvement.

Public Transport

In response to national interest in managing congestion, a recent effort is extending the Austrroads indicators to public transport. A National Public Transport Indicators Working Group was established in 2009. The group has focused on resolving draft efficiency, reliability, and productivity measures. It undertook an initial assessment of the data available on passenger transport operations and performance across all jurisdictions.

The proposed measures are intended to be measured separately for right-of-way public transport (e.g., rail, busways) and onroad public transport (e.g., buses). The proposed measures are as follows:

- **Efficiency—average travel time for a typical trip.** This measures how efficiently people are moved around the transport network.
- **Reliability—variation in travel time for a typical trip.** The indicator defines the likely variation in travel times when the same trip is made on a number of days at the same time.
- **Ontime running.** The indicator defines the likely variation between scheduled time and travel times for the same trip made on a number of days at the same time. This also provides a user perspective of reliability.

- **Canceled services.** This measure provides a perspective on the reliability of services. It also provides a perspective of congestion on the transit network because services are more likely to be canceled during peak times.
- **Missed stops for a typical trip.** This measure is identified as a future indicator because data are not available for all jurisdictions. It provides a perspective on the reliability of services and congestion on the transit network.
- **Productivity—passengers per route (by time of day) for a typical trip.** This measure is identified as a future indicator because not all jurisdictions can generate these data through automated systems (such as ticketing systems). It measures how well routes on the network provide for the transport of people.

The measures are viewed as a year-on-year comparison and not for direct comparison between cities or states.

User Satisfaction Index

Because performance management is not front-of-mind for most service delivery and technical practitioners, it is important to take advantage of

strategically opportune times when events raise the awareness of performance concepts.

Every 3 to 4 years Austroads conducts a survey, called the User Satisfaction Index (USI), to measure the perceived satisfaction of users of the road systems (not just motorists). This is a relatively straightforward project-management exercise, but it provides an opportunity for Austroads members to discuss performance beyond the scope of the USI.

In 2010, the USI project was the major catalyst for the establishment of the NPI reference group, and it is expected that the contribution of the reference group will extend beyond the output of the USI.

Current Situation

Following the outcomes of the 2004 review, and with a view to continually improve the benefits and use of NPIs, Austroads established an NPI reference group in July 2010. The purpose of this group is to partner with the six Austroads program areas to provide analysis and advice on performance measurement, map performance indicators to Austroads' strategic themes (i.e., a performance management framework), and improve the process of collecting NPIs.

The Way Ahead

Through the process of collecting and publishing NPIs for more than 15 years, transportation practitioners have learned major lessons that they are using to better drive performance across Austroads programs and member organizations. These lessons are relevant to the United States as it develops a set of national transportation metrics.

First, the development of performance indicators cannot be delegated to technical experts alone. While a thorough understanding of an activity is required to develop a meaningful and feasible measure, it is important to have independent people skilled in performance measurement to ensure that indicators are not only accurate, but also useful to decisionmaking and appropriate for the intended audience.

Second, performance indicators must be put in context as part of a performance management framework and their contribution to outcomes must be clear and well communicated to all involved. It is important that people see the purpose of their work, including the collection and collation of performance information. Whether it is used to benchmark an activity over time or drive the improvement of an activity, a performance indicator must clearly fit into an overarching framework that is easy to understand and identify where an individual's effort fits in.

To maximize the extent to which these lessons can be translated into improvement, an effective working relationship between technical and performance-related staff is essential.

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