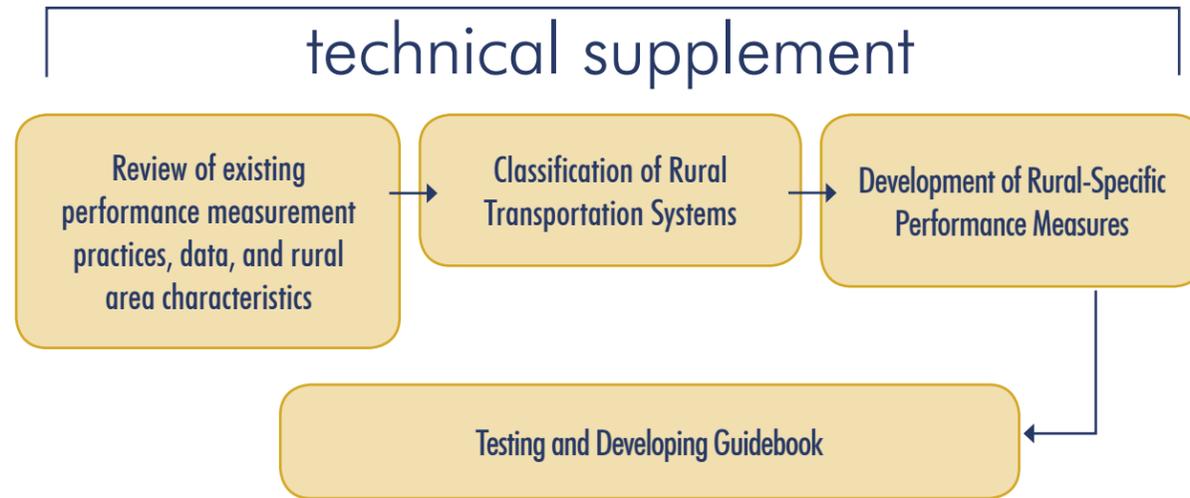




Project Process



Review of existing performance measurement practices, data, and rural area characteristics

The following were conducted: a review of existing performance measures in statewide transportation systems in California, a comparison of performance measures used in rural areas and statewide, and a review of existing performance measures used in other western states and nationwide. The project investigated these rural-specific characteristics in areas of California encompassed by Regional Transportation Planning Agency (RTPA) boundaries (which also coincide with county boundaries).

Classification of Rural Transportation Systems

Next, a classification system was developed based on existing county characteristics which affect transportation system performance. Economic, geographic, and transportation-related characteristics were investigated, including population, population density and trends, taxable sales, commercial and hospital facilities, roadway inventory and conditions, and public transit and aviation. The result is an informative categorization of rural counties which was used as a springboard for the rest of the project, and which also serves as a comprehensive reference.

Development of Rural-Specific Performance Measures

Performance measurement practices were explored in detail and enhanced to meaningfully reflect rural area characteristics. For example, methodologies and tools which are not cost prohibitive are described, along with ways to build on existing data and practices. The practices are not intended to apply to every rural situation, but rather to present a “toolbox” from which rural agencies can select those performance measures appropriate to their own resources, expertise, and policies.

Testing and Developing Guidebook

Performance measurement methodologies were applied using actual data provided by several rural counties throughout California. Along with lessons learned from this proof of concept testing, stakeholder feedback was also used to refine the Guidebook where actual data was unavailable. This iterative process culminated in the final reference Guidebook.



Throughout the Guidebook, this icon indicates a free resource available on the web which will support calculation of performance measures for rural transportation systems. Links to these tools are also provided on the project website: www.dot.ca.gov/perf.



Guidebook Organization

The Guidebook is organized by performance category with these tabs throughout

Definition	Performance Measures
Safety Performance measures facilitate reduction of fatalities, injury, and property loss of system users and workers.	Safety performance measure Accident rate per million vehicle miles traveled (VMT)
System Preservation Performance measures help maintain the condition of the roadway network at a desired or agreed-upon level, documenting and forecasting needs for regular maintenance, rehabilitation, and reconstruction.	System preservation performance measure Pavement Condition Index (PCI)
Mobility Performance measures assess the ease or difficulty of traveling from an origin to a destination; the potential for movement, or the ability to travel from point A to point B.	Mobility performance measures <ul style="list-style-type: none"> • Origin-Destination times along major corridors • Actual average speeds • Delays
Accessibility Performance measures assess the opportunity and ease or difficulty of reaching desired destinations. In rural areas, accessibility to the State Highway System (SHS) is particularly important. If the primary route for accessing the SHS is blocked, a comparable alternative is critical in emergencies.	Accessibility performance measure Accessibility time difference (From a particular point, time between the fastest and second-fastest SHS access points)
Reliability Performance measures assess the consistency and dependability of travel times, and compare expectations with experience. The most important factors are to regularly and dependably predict travel times and avoid unexpected delays.	Reliability performance measure Variability of travel times between major origin-destination pairs
Productivity Measures assess the utilization of transportation system capacity. In rural areas that experience high recreational demand, peak periods typically occur on weekends and not during the typical AM and PM peaks.	Productivity performance measures <ul style="list-style-type: none"> • Vehicle throughput • Lost lane miles (equivalent lost capacity on a roadway due to decreased lanes, weaving, or other congestion-related scenarios)
Return on Investment Measures communicate the value the public can expect from planned investments in the rural transportation system.	ROI performance measures See Guidebook. Examples include benefit/cost ratio, project payback period, travel time savings, and accident cost savings

- 1 Safety
- 2 System Preservation
- 3 Mobility
- 4 Accessibility
- 5 Reliability
- 6 Productivity
- 7 Return on Investment

The performance measures above should all be tracked over time to demonstrate trends.



Quick Reference

Mobility

Performance Measures [units]

- Origin-destination travel times along major corridors [min]
- Actual Average Speeds [mph]
- Delays [sec or min]

Inputs Data Needed		Outputs Results Calculated
Necessary	As Feasible	
<p>Speeds between major origin-destination pairs from any of:</p> <ul style="list-style-type: none"> • probe vehicles with speed measuring devices and/or GPS, or • automated detection, or • Travel demand model (TDM) output <p>OR</p> <p>Travel times between major origin-destination pairs from any of:</p> <ul style="list-style-type: none"> • probe vehicles with speed measuring devices and/or GPS, or • automated detection, or • TDM output <p>Distances between the selected origin and destination points (if a route passes through areas with different posted speeds, the route should be broken into segments for the analysis)</p>	<p>If available, Travel Times between major origin-destination pairs as output directly from TDM</p> <p>If available, delays as output directly from TDM</p> <p>If automated detection is being used, consider sending the input data to the California Freeway Performance Measurement System (PeMS) which will then process the data and provide the mobility measures recommended</p> <p></p>	<p>Trend analysis over time of:</p> <ul style="list-style-type: none"> • Travel times • Speeds • Delays <p>The longer the time period for which data is collected and analyzed, the more informative the result.</p> <p>If data is sent to PeMS for processing, the recommended mobility measures (travel times, speeds, delays) will be provided.</p>

3-1 GUIDEBOOK

Every jurisdiction will differ in its priorities, policies, resources and expertise. Where applicable, the explanation and guidance for each performance category will be provided at different levels based on the degree of performance measurement maturity:

- Basic** No or little standardized performance measurement
- Intermediate** Somewhat standardized performance measurement, often using current tools and methods
- Advanced** Regular, often frequent performance measurement using current tools and methods

Each section summarizes the performance measures recommended, inputs and outputs required, and step-by-step explanations of how to use data to calculate the performance measures. Given that agencies often have limited resources, where applicable the description of inputs required is separated into “necessary” and “as feasible” data so that performance measures can be calculated with minimal data as a baseline, and gradually improved where more resources become available.

Rural Counties in California

- | | | |
|------------------|------------------|-------------------|
| Alpine | Lake | Plumas |
| Amador | Lassen | San Benito |
| Calaveras | Mariposa | Santa Cruz |
| Colusa | Placer | Sierra |
| Del Norte | Mendocino | Siskiyou |
| El Dorado | Modoc | Tehama |
| Glenn | Mono | Trinity |
| Humboldt | Monterey | Tuolumne |
| Inyo | Nevada | |

EXECUTIVE SUMMARY

Performance Measures for Rural Transportation Systems

GUIDEBOOK

What is the Performance Measures for Rural Transportation Systems Guidebook?

The Performance Measures for Rural Transportation Systems Guidebook provides a standardized and supportable performance measurement process for transportation systems in rural areas. Rural areas often have unique characteristics and transportation needs, along with priorities, resources, expertise and sometimes constraints which may differ from those of non-rural areas. The Guidebook provides a toolbox from which to select appropriate methodologies for performance measurement in your rural area. The Guidebook is accompanied by a Technical Supplement which provides background project documentation and case study examples using actual data from rural areas.

