

PERFORMANCE MEASUREMENT FRAMEWORK AND CONGESTION MANAGEMENT UPDATE STUDY

EXECUTIVE SUMMARY 2008-2009

TRANSPORTATION PERFORMANCE MEASURES FOR THE MAG REGION

The MAG Performance Measures (PM) Report has been developed in conjunction with a Regional Performance Measurement Framework and a Data Gap Analysis Document as part of Phase II of the Performance Measurement Framework and Congestion Management Update Study. The purpose of the PM Report is to provide an overview of how the transportation system in the MAG region is currently performing, as well as highlight significant facts regarding performance across selected corridors and facilities.

Data analyzed as part of the Performance Measures Report are primarily from 2006 and 2007, prior to both the dramatic increase in gasoline prices during 2008 and the economic recession which began to gain traction in the middle of that year. As a result, significant changes in transportation system use and performance are likely to have occurred since the data presented in this report were produced. Even so, this report illustrates how tracking transportation system performance data facilitates more informed public decision making, thereby resulting in better public policy, planning, and project selection.

This Executive Summary highlights findings within the reported data that are of significant interest or that have potential future policy implications. Following is a summary and discussion for the principal sections of the Study:

LIMITED ACCESS HIGHWAY AND HOV LANE PERFORMANCE

The freeway system in Maricopa County encompasses fifty-three (53) miles of Interstate highway, and one hundred sixty-three (163) miles of other freeways and expressways. Interstate highways include I-10 (the Maricopa/Papago Freeway) and the I-17 (the Black Canyon Freeway). Other important freeways and expressways include: U.S. 60 (the Superstition Freeway), Loop 202 (the Red Mountain/Santan Freeway), Loop 101 (the Price/Pima/Agua Fria Freeway), SR 51 (the Piestewa Freeway), and SR 143 (the Hohokam Expressway). According to the Texas Transportation Institute's 2009 Annual Urban Mobility Report, congestion in the greater Phoenix metropolitan area cost (based on wasted time and fuel) \$1.89 billion in 2007. The average cost of congestion per traveler during 2007 was \$1,034.

The most heavily traveled freeway segment is I-10 west of downtown Phoenix, which, on an average weekday serves almost 200,000 vehicles. Highest volumes detected on I-10 in 2007 register 265,000 vehicles per day at a sensor located near 7th Street in Phoenix. The I-10 is a heavily congested roadway, moving at an average of just over 35 mph from SR 51 to 82nd Avenue during parts of both the AM and PM peak periods. Other regional freeways carrying

fewer total vehicles are, at times, equally congested. As an example, the Loop 101 (southbound) between the Loop 202 and Guadalupe Road has an average speed of less than 30 mph during the peak of the evening rush hour. In addition, the westbound portion of the Loop 202 is somewhat unique in that it routinely experiences heavy congestion between SR 143 and I-10 during both the AM and PM peak periods.

An important contributor to the MAG area's traffic congestion pattern is the transportation-land use configuration and how it influences travel behavior, especially for commuter trips which tend to concentrate on morning and afternoon periods. One consequence of regional traffic congestion (primarily resulting from high levels of demand and consequent slower vehicular speeds) is that portions of all of the freeways in the MAG region typically and consistently operate at lower efficiencies only during certain hours of the AM and PM periods. That is, as a result of traffic congestion, each of these roads becomes incapable of serving the traffic volumes they were designed to support under more favorable conditions. For example, congestion is frequently so severe during the peak period, that several sections of I-10 actually serve less than 60 percent of the vehicles they were designed to serve, simply because traffic is moving so slowly. Likewise, PM peak period traffic demand along sections of I-17 is so high that these portions of the freeway are able to serve less than 40 percent of their design volumes.

High Occupancy Vehicle (HOV) lanes have been designed and built to encourage carpooling and transit ridership, thus helping in relieving congestion. Nevertheless, congestion is also common on sections of several of the region's HOV lanes, reducing incentives associated with their use. This may be due, in part, to how motorists interact with the HOV lane usage time of day restrictions currently being applied in the region. For example, in the afternoon prior to 3 PM, the HOV lanes are open to general purpose (non-HOV) traffic. Consequently, a significant number of single occupancy vehicles (SOV) make use of the HOV lanes right up to the 3 PM change-over; in some sections of the corridors, congestion begins to form in some HOV lanes as the usage period transitions. While traffic volumes in the HOV lanes do begin to decline after the HOV restrictions are imposed at 3 PM, the volumes remain high enough and the congestion in some sections of the HOV lanes is bad enough, that considerable congestion frequently remains in place until near the end of the peak period. While HOV lane congestion is not nearly as severe as general purpose lane congestion, some sections still perform fairly poorly, limiting the benefits the current HOV lane policy is intended to provide.

With regard to freeway safety, the total crash rates and injury crash rates per million vehicle miles traveled (VMT) appear to be consistent on a year-to-year basis. Total crash and injury crash rates are greatest on I-17 and US 60, followed by I-10 and SR 51. Results indicate that the Loop 101 and Loop 202 consistently have the lowest crash and injury rates as compared to all other freeways analyzed. Although I-10 experiences higher traffic volumes than any other roadway in the MAG region, crash and injury crash rates are lower for the I-10 corridor than for either I-17 or US 60.

Changes in freeway performance from 2006 to 2007 were mixed. Slightly more than half of the corridors showed slight increases in vehicle volume, while slightly less than half showed marginal decreases. Similarly, slightly more than half of the roadway sections examined had minor declines in average vehicle speed during the peak period, but almost half showed minor improvements.

ARTERIAL PERFORMANCE

Arterials are also responsible for a very high percentage of Maricopa County's regional mobility. The major arterials selected for inclusion in this report were chosen due to the fact that they carry large volumes of traffic across the Valley and represent major traffic movements throughout the region. These arterials in some instances parallel the freeway corridors defined in Section 2 of this report, and in other instances carry traffic to and from areas not well-served by freeways.

2007 Study results indicate that average hourly vehicle throughput on arterials is consistently higher during the PM peak period than during either the AM peak period or Midday period. Shea Boulevard carries the highest traffic volumes of all the arterial study corridors, with average daily volumes registering more than 22,000 vehicles per day along each direction of travel. Highest two-directional volumes on Shea Blvd. have been documented as high as 54,000 vehicles per day near Scottsdale Rd. Considering average traffic along the entire corridor, Bell Road/Sun Valley Parkway is the second highest, with more than 20,000 vehicles per day along each direction. Highest detected two-directional volumes on Bell Rd. register up to 62,000 vehicles per day near 115th Avenue. The lowest traffic volumes observed in the arterials selected for inclusion in this study occur on Dysart Road, with daily volumes of approximately 7,900 vehicles per day along each direction of the corridor.

With regard to arterial congestion, during the PM peak period, the westbound direction of Glendale Avenue/Lincoln Drive experiences the most significant delay, with well over half of the corridor experiencing average travel speeds less than 75 percent of the posted speed limit. During the AM peak period, the southbound direction of Dysart Road experiences the greatest congestion-related delay, with more than 60 percent of the corridor experiencing average travel speeds less than 75 percent of the posted speed limit. Power Road is also highly congested during the AM peak period and Midday period, with almost half of the arterial (in both directions of travel) experiencing congestion-related delays in the morning, and more than half experiencing significant delays during the middle of the day.

TRANSIT PERFORMANCE

The transit system in the MAG region consists of a combination of local bus service, express bus service, arterial bus rapid transit service, circulator/shuttle services, dial-a-ride services, and as of the end of 2008, light rail service. As per the MAG Regional Transportation Plan, service levels on particular routes are determined by balancing demand for transit along those routes against the availability of funding. The Regional Public Transportation Authority (RPTA), commonly known as Valley Metro, is a membership organization aimed at helping to streamline transit service across the region. RPTA board member agencies include: Avondale, Buckeye, Chandler, El Mirage, Gilbert, Glendale, Goodyear, Maricopa County, Mesa, Peoria, Phoenix, Queen Creek, Scottsdale, Surprise, and Tempe.

The transit-related performance measures contained in the Performance Measures report reflect data collected by RPTA concerning the operation of the City of Phoenix, RPTA, and City of Tempe's transit services. As the data sets being analyzed are for 2006 and 2007, only bus-related modes of travel (express, local, and paratransit/dial-a-ride) are included; light rail transit service was not in operation at that time and is consequently not included as part of this report.

Although fixed route transit ridership increased from 2006 to 2007, the efficiency of those transit services (i.e., transit boardings per revenue mile driven) declined slightly. The most significant impact of a drop in boardings per revenue mile is the potential for it to result in an increase in subsidy per boarding.

On-time performance for all transit services in the MAG region increased from 2006 to 2007, with the exception of City of Phoenix's fixed route service, which fell by 1%. Nevertheless, during 2007 all services, both fixed route and Dial-A-Ride, exceeded the 90% on-time performance goal laid out by RPTA and the City of Phoenix for their transit services.

BICYCLE AND PEDESTRIAN PERFORMANCE

A number of planning-related efforts have taken place over the past few years with the purpose of improving opportunities for bicycle and pedestrian travel in the region. Tracking performance measures associated with non-motorized (i.e., bicycle and pedestrian-based) modes of travel will provide MAG and its partners with key data concerning the extent to which those efforts have succeeded, as well as increase overall awareness of how travel via these alternative modes is being accommodated.

Based on an analysis of data collected regarding the modes of transportation utilized by commuters, no significant change was apparent in bicycle and pedestrian based travel between 2007 and 2008. Results also indicate that bicycle and pedestrian trips have the shortest commuting trip lengths (6.12 miles and 2.04 miles, respectively).

With regard to the safety of bicycle and pedestrian modes of travel, the annual number of crashes and injury crashes appear to be fairly stable from year to year, increasing or decreasing annually by no more than 7-10%.

QUALITY OF LIFE PERFORMANCE

Quality of life-related issues are of growing concern to communities around the nation. The focus being placed on greater environmental quality, sustainable development, and healthy communities are evidence of an emphasis on an improved quality of life. Tracking quality of life-related performance measures is an important first step in providing community leaders with the information needed to implement substantive quality of life enhancement initiatives.

As a first step in assessing quality of life as it relates to the MAG region, the Performance Measures Report contains an assessment of participation in Maricopa County's Trip Reduction Program (TRP), aimed at encouraging the use of alternative modes (non-SOV based) of travel. Results of the analysis indicate continuing high levels of participation in the program (over 650,000 participants) which, according to the Maricopa County Air Quality Department's Trip Reduction Report, resulted in the elimination of 12,934 tons of air pollution due to the use of alternative modes of travel by program participants during 2008.