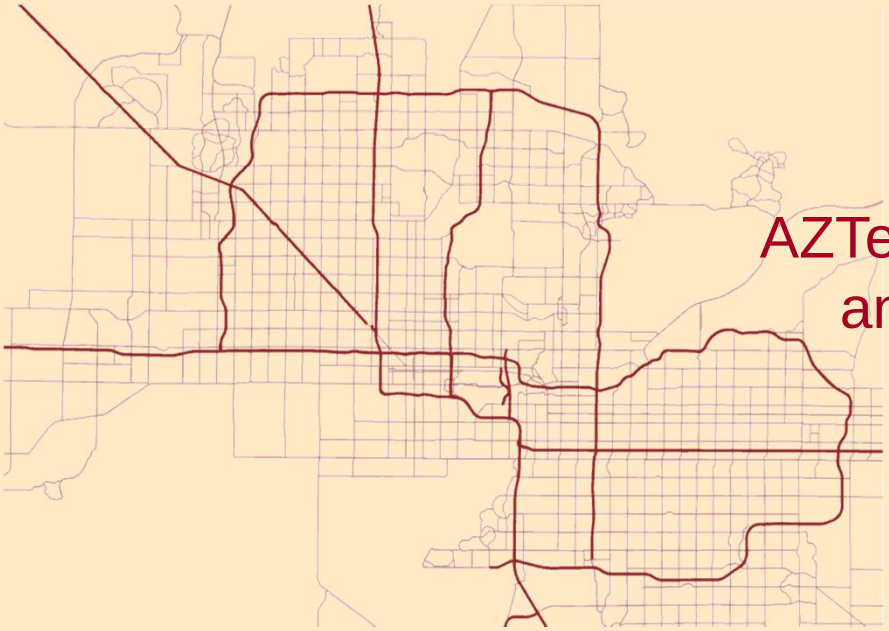
AZTech™ TRAFFIC MANAGEMENT AND OPERATIONS PERFORMANCE INDICATORS BOOK – 2013

Phoenix Metropolitan Region

FREEWAYS • ARTERIALS • SAFETY • INCIDENT MANAGEMENT • TRAVELER INFORMATION • TRANSIT



Developed by the
AZTech™ Strategy Task Force
and Operations Committee

AZTech™
Moving Forward Together

REGIONAL INTELLIGENT TRANSPORTATION SYSTEM PARTNERSHIP

PARTNERS / CONTRIBUTORS

The AZTech™ Regional Intelligent Transportation System Partnership wishes to thank and acknowledge the contributors of the AZTech™ Traffic Management and Operations Performance Indicators Book. The following member agencies of the AZTech™ Strategy Task Force and AZTech™ Operations Committee collaboratively contributed data, graphics, text and other information towards the development of this publication:

Agency	Contributors
Federal Highway Administration	Jennifer Brown, Toni Whitfield
Arizona Department of Transportation	Reza Karimvand, Farzana Yasmin, James Minton, Sanjay Paul
Maricopa County Department of Transportation	Nicolaas Swart, Faisal Saleem, Barbara Hauser, Cynthia Lopez
Arizona Department of Public Safety	Cpt. Jeff King, Cpt. Mike Prochko
Maricopa Association of Governments	Sarath Joshua, Eric Nava
Valley Metro	Ratna Korepella
METRO Light Rail	Abhishek Dayal
Avondale, City of	Bennie Robinson, Chris Hamilton
Chandler, City of	Mike Mah, Ben McCawley
Gilbert, Town of	Erik Guderian
Glendale, City of	Trevor Ebersole, Allan Galicia
Goodyear, City of	Luke Albert
Mesa, City of	Tricia Boyer
Peoria, City of	Jamal Rahimi, Steve McKenzie
Phoenix, City of	Ray Dovalina, Bruce Littleton, Marshall Riegel
Scottsdale, City of	Bruce Dressel, Steve Ramsey
Surprise, City of	Albert Garcia
Tempe, City of	Catherine Hollow, David Lucas

FOREWORD

EXECUTIVE COMMITTEE

"What gets measured gets done, what gets measured and fed back gets done well…" — John E. Jones

This Region and the AZTech™ Partnership have made some significant traffic operations investments and some impressive strides in advancing traffic management and operational strategies. For nearly two decades, local, county and state agencies in the region have been very focused on improving the way we manage and operate the transportation network. We all strive to improve these functions within our jurisdiction and are also focused on how decisions influence our neighboring agencies…and most importantly, the travelers.

AZTech™ has elevated the need within our own region to actively measure the operational performance of our transportation network. Many agencies are closely monitoring, evaluating and enhancing their individual systems, such as transit partners. The collective effort by the partners to report on traffic management and operations performance was represented within the initial Performance Indicators Book in 2011 and is updated in this second generation AZTech™ Traffic Management and Operations Performance Indicators Book for 2013 data. Important next steps include taking these results to improve how we do things, and taking a closer look at where we need to improve.

Moving Ahead for Progress in the 21st Century (MAP-21), our current highway authorization, emphasizes performance management and monitoring across multiple transportation modes, and in particular identifies reducing congestion and improving reliability of our transportation system among the priority performance goals. We see our efforts here as an important step toward meeting the MAP-21 requirements.

The 2013 Performance Indicator Book is a snapshot of where we are today. Many thanks to those agencies and partners that provided the data and analysis for this second publication of a regional traffic management and operations focused performance report. There is a concerted effort at the AZTech™ Executive Committee to continue to refine those measures that are meaningful and create a framework for ongoing measuring, reporting, and improving how we operate our transportation network.

Traffic management and operations encompasses a lot of activities, and through incremental improvements and focusing our efforts on those activities that will yield the greatest benefits, we will truly provide our travelers with a safe and seamless experience on our transportation network every day.

Executive Committee Chairs

Robert J. Samour, P.E.
Senior Deputy State Engineer for Operations
Arizona Department of Transportation

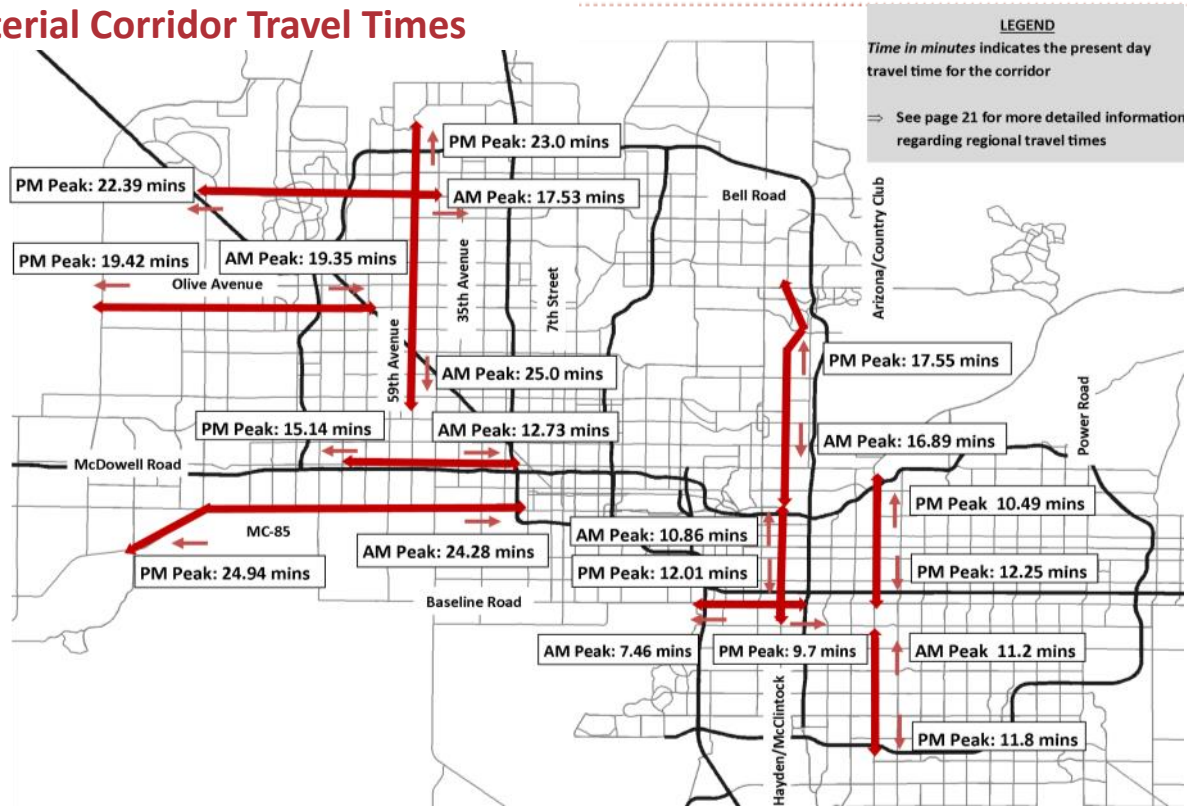
John B. Hauskins, P.E.
County Engineer/Transportation Director
Maricopa Department of Transportation

AZTECH™ PERFORMANCE DASHBOARD

Performance trending in favorable direction. *Trend is holding.* *Performance is trending in an unfavorable direction.*

Policy Goal/ Performance Measure	Previous Reporting Period	Current Reporting Period	Trend		Description
Freeways					
Percent of Miles Congested (out of total of 240 miles measured)	567 miles	612 miles	+7.9%	↓	Overall the freeways are experiencing more congestion where average vehicle speeds drop below 50 mph
Percent of Time Congested Per Mile (out of total of 240 miles measured)	1.77 minutes	2.03 minutes	+14.8%	↓	Overall the freeways are experiencing more congestion where average vehicle speeds drop below 50 mph
Arterials					
Bell Road Westbound PM Peak Travel Time	26:05 min	22:23 min	-14.2%	↑	Bell Road has seen an overall reduction in travel time
McDowell Road Eastbound AM Peak Travel Time	16:59 min	12:44 min	-25.1%	↑	McDowell Road has seen an overall reduction in travel time
Hayden Road Northbound PM Peak Travel Time	21:34 min	17:48 min	-17.5%	↑	Hayden Road has seen an overall reduction in travel time
Incident Management—Freeways and Arterials					
Number of Vehicular Accidents	103,780	103,637	-0.1%	↔	Slight reduction in the number of crashes per year
Percent of Incidents Cleared in 120 Minutes or Less	10.13%	6.77%	-3.36%	↑	Reduction in the percentage of incidents that are cleared in 120 minutes or less
Traveler Information					
Highway Conditions Reporting System (HCRS) Entries	44,248	36,098	-23%	↑	Reduction in the number of HCRS entries indicates less road restrictions
Phoenix Fire CAD to RADS	30,393	32,199	+6%	↑	Increase in the number of Phoenix Fire CAD data that are being transferred to RADS and 511
Twitter Followers	40,734	68,037	+40.1%	↑	Increase in Twitter followers of agencies providing information to the public through this social media method
Transit					
Transit Schedule Adherence	96.70%	94.87%	-2%	↓	Reduction in schedule adherence for transit vehicles
Number of Transit Boardings	135.38 M	146.82 M	+7.8%	↑	Increase in boarding for Valley Metro transit including light rail and bus

Arterial Corridor Travel Times



Agency Signal and Camera Infrastructure

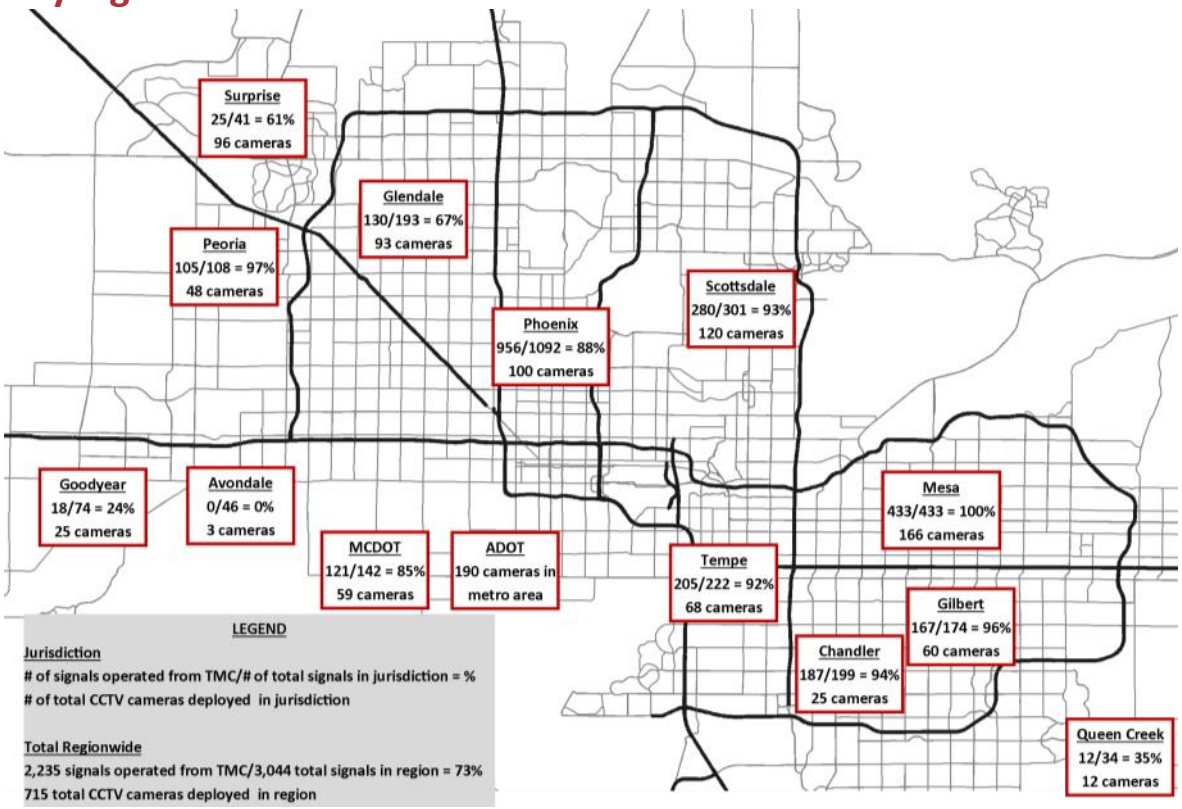


TABLE OF CONTENTS

Overview

This AZTech™ Traffic Management and Operations Performance Indicators Book is the second edition combining key regional traffic management, traffic operations, and transit performance measures that are tracked and reported throughout the Phoenix metropolitan region. Published every two years, the initial AZTech™ Book was developed in 2011. AZTech™ partners have collaborated to complete this 2013 Book to account for the active measurement of the success of agency investments to increase the efficiency of the freeway and arterial networks. It also provides trends on various performance elements within the management components which are described below:

Freeway Management —

To improve safety and mobility, state agencies address traffic and incidents using freeway management system components such as detection systems, ramp meters, dynamic message signs, and cameras.

Arterial Management —

To improve safety and operations of surface streets, local agencies manage the traffic and incidents at intersections and along segments of surface streets using arterial management systems.

Incident Management —

To detect, respond to, and remove traffic incidents, agencies use a planned and coordinated multi-disciplinary approach so that traffic flow may be returned to normal as safely and rapidly as possible. Successful Traffic Incident Management (TIM) procedures will decrease the length and effects of traffic incidents while improving the safety of motorists, crash victims and emergency responders.

Traveler Information —

To enhance travel time and reduce congestion, timely and detailed information is provided about traffic flow, traffic incidents, weather, construction activities, transit and special events.

Transit Management —

To provide quality transit service to the traveling public, transit vehicles are equipped with tracking and communication technologies to provide real-time information to transit centers and to provide arrival times and other capabilities to transit users in the future.

Each section includes key measures reported by state, county, and local agencies provided in paragraph, table, or graphic format. Various measures will be collected annually and applied toward the success of achieving established regional goals.

One of the new features of this Book is the identification and introduction of the data collection corridors in the region. This was done collaboratively by the AZTech™ partners. These corridors were identified to consistently measure and report operational performance each year. Travel time data for AM and PM peak hours is collected. The 2012 data (where available) is compared with 2013 data in the Arterial Section of the Book. Overall, there has been reduction in travel time on priority corridors since 2012.

This book along with previous publication is also available electronically for download at:

www.aztech.org/perfmeasure

INTRODUCTION

SECTION 1

What is AZTech™

AZTech™ is a regional traffic management and operations partnership in the Phoenix metropolitan area. All of the major governmental transportation agencies in the region are members, along with public safety agencies and several private technology and media companies. The coalition, led by Maricopa County Department of Transportation (MCDOT) and Arizona Department of Transportation (ADOT), and working through several collaborating committees, guides the application of ITS technologies for managing regional traffic. The goal is to achieve more efficient mobility, less congestion, and a higher level of safety for travelers throughout the metropolitan area.

AZTech™ began as one of four regions selected for a Federally-sponsored traffic management model deployment initiative in 1996. Throughout the initial demonstration project and continuing into a permanent partnership, AZTech™ quickly evolved into a successful regional traffic management and operations entity. The partnership has carefully integrated individual traffic management strategies and technologies for the region's benefit, yet has retained most operational control protocols important to individual units of government. Early on, AZTech™ adopted several Values, Goals, and Strategies to guide its growth from a demonstration project to what has become a full-fledged regional partnership:

Values

- Collaboration
- Leadership
- Integration
- Results

Goals

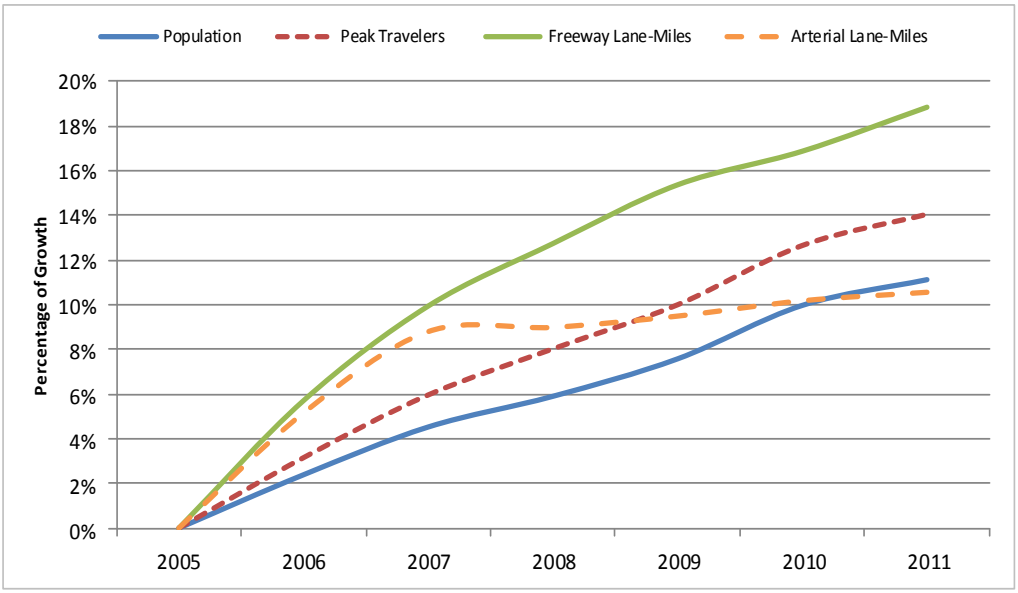
- Integrate existing ITS infrastructure into a regional system
- Establish a regional integrated traveler information system
- Expand the transportation management system for the Phoenix metropolitan area

Strategies

- Expand and Strengthen Partnerships
- Optimize Regional Operations and Management
- Plan, Develop, & Deploy Integrated Regional Systems
- Research and Test New Technological Opportunities
- Establish Education and Outreach Programs

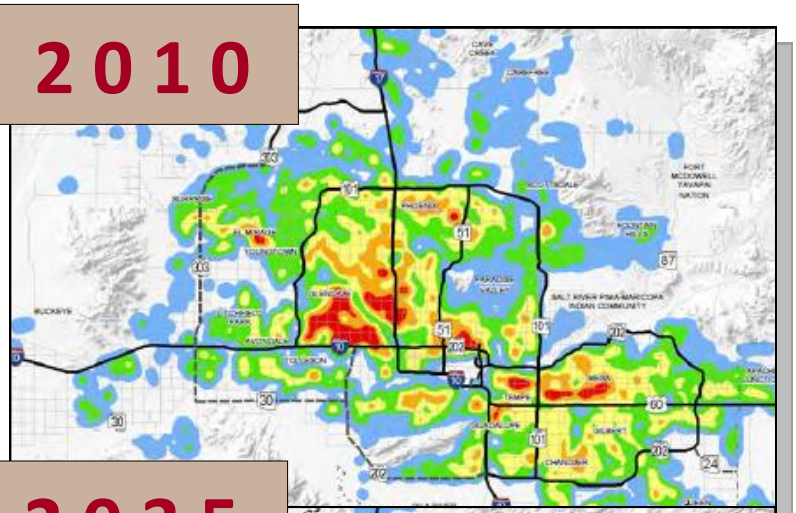
1.1 PHOENIX METROPOLITAN REGION

The population for many cities grew more than 11% between 2005 and 2011 (latest available information). Peak travelers, those who begin a trip by any mode during the peak period, are shown in the graph below growing faster than the population growth and the addition of arterial lane miles. With funding not readily available for infrastructure expansion, the emphasis is shifting towards more efficient management and operation of the existing transportation system.

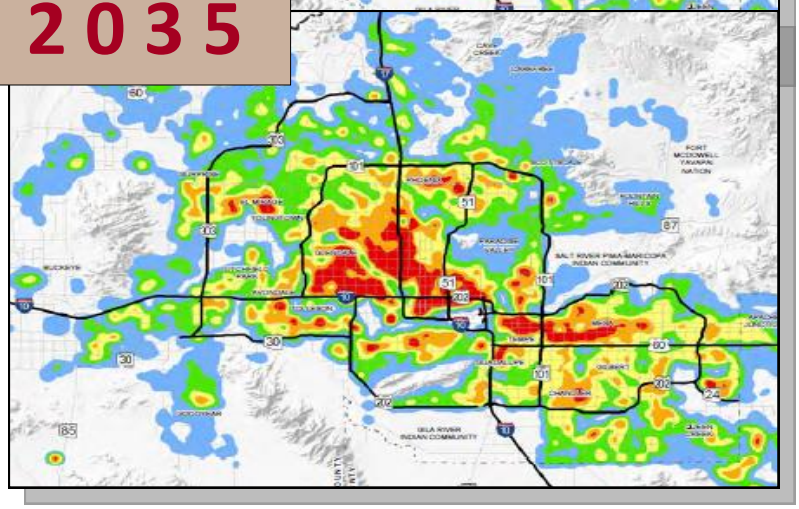


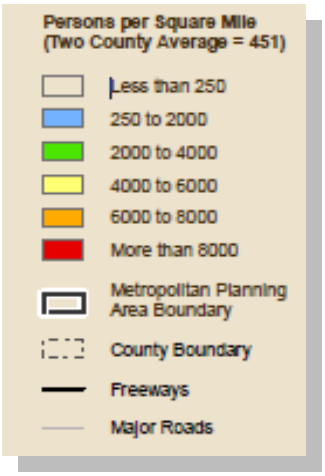
For the past several decades, the region has been one of the fastest growing metro areas in the U.S. From 2010 to 2035 there is an estimated increase in population of 54% to 6,258,452 people. Projections for populations are increasing as the economy and development bounces back in Arizona. Population concentration maps are shown here for 2010 and 2035.

2010



2035





*Source – MAG Regional Transportation Plan Update 2014

1.2 REGIONAL INDICATORS

Characteristics of Performance Indicators

In support of policy and decision making, strategic performance measures monitor the implementation and effectiveness of an organization's strategies, determine the gap between actual and targeted performance, and determine organization effectiveness and operational efficiency. Performance indicators characteristics include:

- Focusing attention on measures that will inform the outcome toward the goal
- Identifying accomplishments, not just work that is performed
- Providing a common language for communication
- Are clearly defined in terms of owner, unit of measure, collection frequency, data quality, expected value (targets), and thresholds
- Are valid - to ensure measurement of relevant metrics relating to goals
- Are verifiable - to ensure data collection accuracy

Key Regional Indicators

The Annual Traffic Scorecard Report by Inrix revealed that traffic congestion increased in the United States during 2013 after two consecutive years of declines at a rate of three times the gross domestic product. If economic growth continues as it did in 2013, drivers can expect more delays and longer commute times on roads in 2014. There is no building our way out of congestion. The Country is using better technology and data analytics to relieve congestion.

Phoenix metropolitan region statistics in the last decade (2001-2011) listed below highlight the importance of measuring performance to determine the effectiveness of transportation management strategies:

- 37% growth — Daily Freeway Vehicle Miles Traveled
- 18% growth — Daily Arterial Vehicle Miles Traveled
- 51% growth — Freeway Lane Miles Constructed
- 30% growth — Arterial Lane Miles Constructed
- 7% increase — 45% to 52% Percent of Lane Miles Congested
- 100% growth — Public Transport Annual Passenger-Miles of Travel
- 41% increase — Annual Excess Fuel Consumed
- 29% increase — Total Annual Delay
- 16% reduction — Total Number of Crashes

This information is reported by the Texas Transportation Institute [TTI] 2012 Annual Urban Mobility Report which uses Federal Highway Administration's Highway Performance Monitoring System traffic volume data by road section.

Corridor Operations Investment

This region continues to invest in corridors important to moving people and goods. Some examples include:

- Bell Road—adaptive planning and implementation along strategic sections of Bell Road through the Valley
- ADOT Travel Time Program–continued expansion to provide travel times on more freeways
- Integrated Corridor Management (ICM) Operations Management Plan—Loop 101 in the Scottsdale area
- I-10 West in Phoenix—ICM concept of operations and detour signal timing development

SECTION 2 FREEWAYS

ADOT Traffic Operations Center Renovation

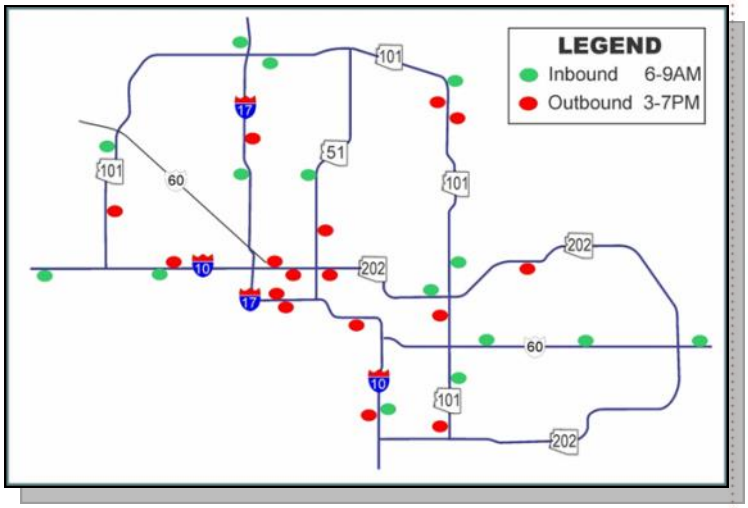
ADOT's Traffic Operations Center (TOC) control room renovation was completed in 2012. Operators were managing the statewide network in an interim facility within the TOC during the renovation. A new and expanded video wall was installed and upgraded operator workstations provide operators with more functionality. The ADOT TOC provides congestion management as well as day-to-day traffic management and utilizes ITS technologies and operations to manage and relieve congestion on state roads.

Ramp Metering Guidelines

ADOT has recently completed a system-wide ramp metering evaluation study and has established well-defined guidelines and warrant criteria for designing new ramp meters as well as operating and maintaining the entire system. For new Freeway Management System (FMS) projects, ADOT is collecting and analyzing traffic data based on time variable traffic demand, freeway level of service, constraints in geometric layout, and segmental crash history. Ramp metering warrants are checked and meters are installed to mitigate freeway congestion toward a goal of zero traffic backup onto the arterial network. ADOT has upgraded all model 179 controllers to model 2070 controllers which has enabled ADOT to centralize the ramp metering system. This has also enabled changing ramp metering operational timing based on the spatial and temporal pattern of freeway congestion.

Travel Time Program Expansion

ADOT has 31 freeway message signs utilized for travel time messaging throughout the Phoenix metropolitan region. ADOT is providing two panels of information on their freeway message signs during incidents— 1) travel time and 2) incident information with suggestion to use an alternate route. ADOT has also expanded their travel time system to four more inbound and six more outbound dynamic message signs. To the right are the locations of where travel time messages are being displayed. Travelers now have travel times along more portions of freeways in the metropolitan region. ADOT is planning to provide 77 message signs with travel time messages by the end of 2014 to enhance the quality and availability of information to travelers.



2.1 FREEWAY MANAGEMENT HIGHLIGHTS

ADOT Has Implemented a Centralized Control System for Traffic Signals

ADOT is in the process of bringing more than one hundred traffic signals online to be centrally controlled from the ADOT TOC using its new central control software system. The system will be capable of monitoring and managing all the connected traffic signals 24 hours a day and 7 days a week.

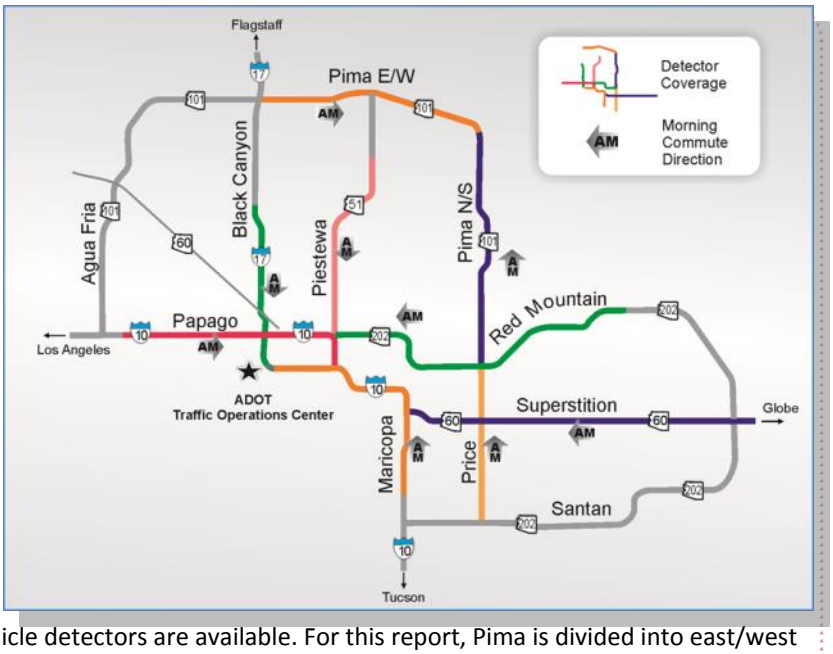
Studying Integrated Corridor Management In Two Locations

Two freeway-arterial coordination efforts have been completed in the region to implement Integrated Corridor Management (ICM) – which is where the freeway network and the arterial network are integrated together to manage and move traffic as safety and efficiently as possible. One effort is along Loop 101 in Scottsdale and another effort is along I-10 from Central Phoenix to the Southwest Valley. The Loop 101 ICM Program developed by AZTech™ was formally implemented and effectively used during a full closure in January of 2014. These two efforts involve coordinating traveler information and traffic management strategies to reduce the impact from full freeway (or mostly full) closures that force traffic onto arterials. Valley transportation, public safety, and transit agencies are working hard to provide the best transportation service to the public and ICM is a major breakthrough in that direction. The Maricopa Association of Governments (MAG) ITS Committee is pursuing federal funding for ICM planning considering the head start this region is already undertaking. More information on the Loop 101 ICM Program can be found on Page 16.

Updates to Existing Systems and Devices

- ADOT is extending Internet Protocol from the node buildings to the roadside field cabinets with fiber to Ethernet switches. This will enable multiple types of future ITS technologies to be deployed in the field.
- ADOT is in the process of installing an Internet Protocol Closed Circuit Television (CCTV) device instead of an analog CCTV combined with a separate Internet Protocol video encoder.
- CCTV and Dynamic Message Sign (DMS) control was previously controlled by two separate software clients through Camera Cameleon and now ADOT is integrating control into one software client that will be used to control both CCTV and DMS.
- The older DMS boards are now being replaced with newer technology.

Freeway Performance Measures



The data source of the freeway performance measures is the Regional Archived Data System (RADS) developed by AZTech™. RADS permanently archives operational data produced by the region's ITS systems, including the ADOT freeway traffic detector data and incident information. This source of continuously collected data provides a wealth of information for assessing and monitoring the performance of the freeway system. These freeway performance measures are presented based on the named freeway corridors per commute direction where vehicle detectors are available. For this report, Pima is divided into east/west and north/south sections due to the distinctive traffic patterns during the morning and afternoon commute periods. The figure above shows the coverage of vehicle detectors (colored segments) as well as the morning commute direction of each named freeway.

Travel Time Index

Travel Time Index (TTI) is computed by dividing the actual (measured) travel time by the free flow travel time along a freeway corridor of interest. This measure considers the peak-hour periods (6am to 9am and 3pm to 7pm) during the weekdays and measures separately for (morning) inbound and (evening) outbound directions of each named freeway where vehicle detectors are available. The table below shows the comparison of Travel Time Indices of named freeways between the years 2012 and 2013 (analysis for Tuesday, Wednesday and Thursday). This measure is "normalized" by the free flow travel time and therefore allows comparison of freeway corridors of different lengths.

Named Freeway	Inbound 6am-9am					Outbound 3pm-7pm				
	Dir	Length	2012 TTI	2013 TTI	% Change	Dir	Length	2012 TTI	2013 TTI	% Change
Black Canyon	SB	11.6	1.10	1.16	5.5%	NB	10.7	1.19	1.26	5.9%
Maricopa	WB	16.1	1.27	1.31	3.1%	EB	15.1	1.32	1.34	1.5%
Papago	EB	14.9	1.30	1.36	4.6%	WB	13.5	1.37	1.47	7.3%
Piestewa	SB	12.1	1.05	1.09	3.8%	NB	13.1	1.06	1.08	1.9%
Pima	EB	13.6	1.19	1.25	5.0%	WB	11.8	1.15	1.20	4.3%
Pima	NB	15.7	1.15	1.18	2.6%	SB	14.5	1.26	1.26	0.0%
Price	NB	9.0	1.26	1.29	2.4%	SB	9.3	1.32	1.36	3.0%
Red Mountain	WB	9.1	1.24	1.26	1.6%	EB	9.6	1.09	1.10	0.9%
Superstition	WB	20.5	1.08	1.10	1.9%	EB	19.5	1.06	1.06	0.0%

The results show that the year 2013 travel times have increased from the previous year with the exception of Pima SB and Superstition EB. The increases of travel times range from 0.9% (Red Mountain EB) to 5.9% (Black Canyon NB). In general, there is a slight increase in commute travel time across all corridors.

2.2 FREEWAY INDICATORS

Travel Time Buffer Index

Travel Time Buffer Index (TBI) is the percentage of additional time that a traveler needs to plan for, relative to his/her own average travel time, to ensure a 95% chance of on-time arrival. TBI has been widely adopted as a measure for assessing and comparing the travel time reliability between different commute corridors. For example, a TBI value of 0.44 represents that a traveler needs to allocate 44% additional time to his/her average travel time to arrive at the destination on-time 95% of the time. A larger TBI value indicates more variations in day-to-day commute times due to recurring and non-recurring congestion.

The table below shows the comparison of travel time buffer indices during peak periods per named freeway between the years 2012 and 2013.

Named Freeway	Inbound 6am-9am				Outbound 3pm-7pm			
	Dir	2012 TBI	2013 TBI	% Change	Dir	2012 TBI	2013 TBI	% Change
Black Canyon	SB	0.71	0.78	9.4%	NB	0.75	0.82	9.3%
Maricopa	WB	0.75	0.72	-4.1%	EB	0.84	0.79	-5.9%
Papago	EB	0.87	1.01	15.9%	WB	0.74	0.90	21.5%
Piestewa	SB	0.31	0.58	83.9%	NB	0.40	0.58	47.2%
Pima	EB	0.44	0.52	19.0%	WB	0.63	0.62	-2.9%
Pima	NB	0.43	0.52	18.9%	SB	0.75	0.70	-7.4%
Price	NB	0.79	0.90	13.3%	SB	0.81	0.86	6.1%
Red Mountain	WB	0.77	0.81	5.7%	EB	0.50	0.59	17.1%
Superstition	WB	0.33	0.40	20.0%	EB	0.28	0.31	10.0%

During the time period from 2012 to 2013, those corridors among the highest increases in the degree of variability (i.e., became less reliable) of commute time include, in order of magnitude, Piestewa SB (83.9%), Piestewa NB (47.2%), Papago WB (21.5%), Superstition WB (20.0%), Pima EB (19.0%), Pima NB (18.9%), Red Mountain EB (17.1%), Papago EB (15.9%), and Price NB (13.3%).

Corridors that experienced improved reliability in commute time include Pima SB (-7.4%), Maricopa EB (-5.9%), Maricopa WB (-4.1%), and Pima WB (-2.9%).

Media and Usage

In 2013, ADOT had 461 press releases distributed from the operators at the TOC, with an average of 38 press releases per month. The press releases from the TOC have an equivalent advertisement value of $1.76 million. ADOT has used social media, such as Twitter, as an outlet to relay information to the media and traveling public. ADOT's Twitter account (@ArizonaDOT) has approximately 28,100 followers with an average increase of 18 new followers per day. ADOT has tweeted approximately 39,300 times since its Twitter account inception with a re-tweet average of 80%. The addition of Public Information Officer (PIO) staff to the TOC has been a great success because that staffi is able to assist in relaying information to the public quicker.

Percentage of Corridor Miles Congested

This measure assesses the extent of recurring congestion by identifying the number of miles of a freeway corridor that was congested during the peak periods. A segment of a corridor (corresponding to a detector station) is considered congested when the average vehicle speed drops to 50 miles per hour or less. This measure is useful for monitoring the spatial extent of congestion along a commute corridor. The table below shows the comparison of corridor miles congested by named freeway per commute direction between the years 2012 and 2013.

Named Freeway	Inbound 6am-9am					Outbound 3pm-7pm				
	Dir	Length	2012 PMC	2013 PMC	% Change	Dir	Length	2012 PMC	2013 PMC	% Change
Black Canyon	SB	11.6	32.82	40.75	24.2%	NB	10.7	48.63	54.59	12.3%
Maricopa	WB	16.1	37.15	38.73	4.3%	EB	15.1	35.7	37.53	5.1%
Papago	EB	14.9	40.08	43.92	9.6%	WB	13.5	36.97	41.88	13.3%
Piestewa	SB	12.1	25.55	26.55	3.9%	NB	13.1	20.17	20.6	2.1%
Pima	EB	13.6	32.88	36.33	10.5%	WB	11.8	35.31	41.28	16.9%
Pima	NB	15.7	25.45	26.86	5.5%	SB	14.5	39.56	39.16	-1.0%
Price	NB	9	37.47	37.72	0.7%	SB	9.3	35.25	38.11	8.1%
Red Mountain	WB	9.1	33.81	36	6.5%	EB	9.6	21.29	21.58	1.4%
Superstition	WB	20.5	16.84	19.22	14.1%	EB	19.5	11.88	10.74	-9.6%

Percentage of Time Congested

This measure represents the percentage of time during the peak periods a corridor is considered congested. Congestion is defined as when the average speed drops to 50 miles per hour or less. Along with the "percentage of corridor miles congested", it depicts the extent of congestion both in space and time. The table below shows the comparison of percentage of percentage of time congested by named freeway per commute direction between the years of 2012 and 2013.

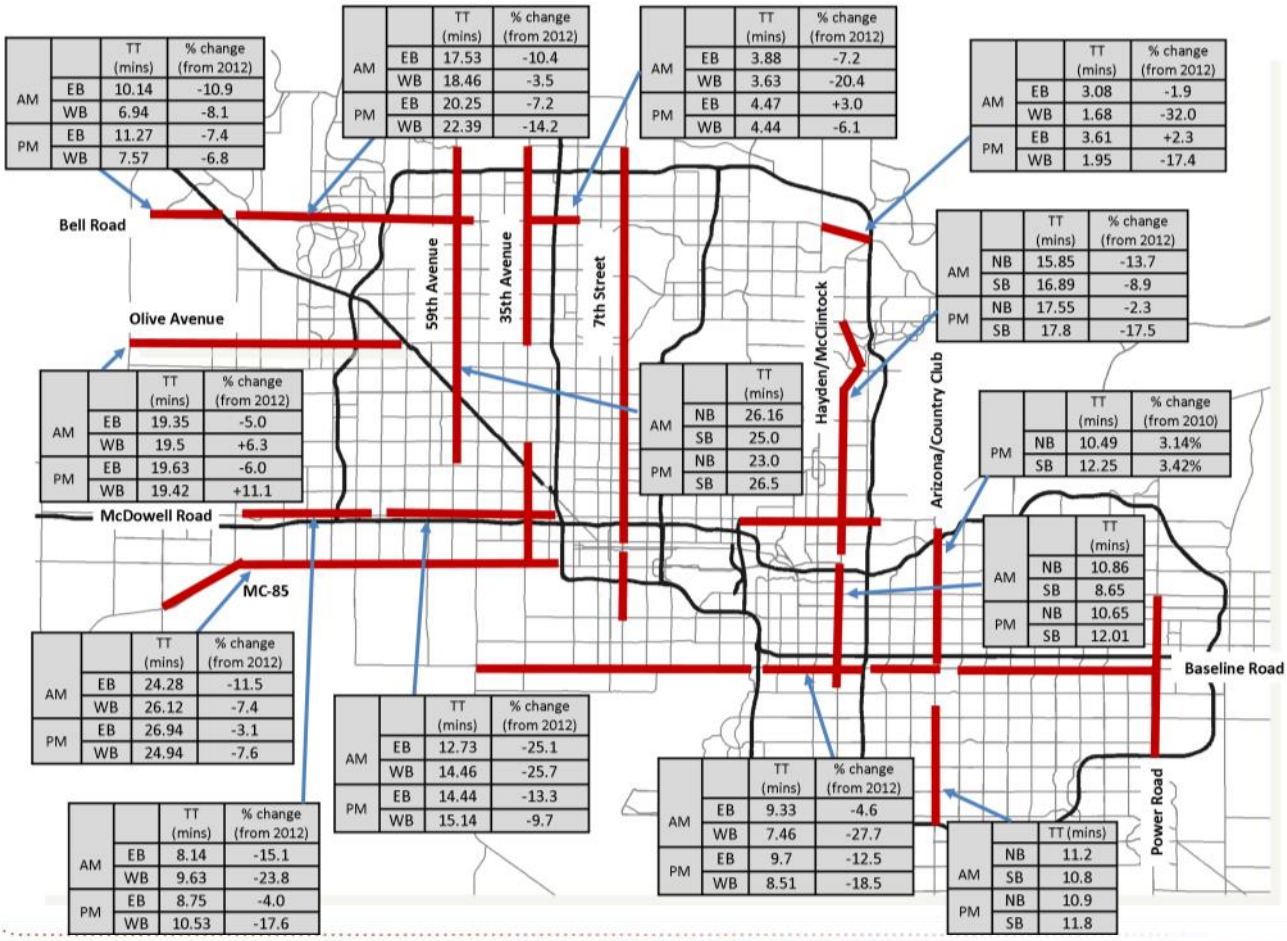
Named Freeway	Inbound 6am-9am					Outbound 3pm-7pm				
	Dir	Length	2012 PTC	2013 PTC	% Change	Dir	Length	2012 PTC	2013 PTC	% Change
Black Canyon	SB	11.6	24.5	33.1	35.1%	NB	10.7	36.5	42.8	17.3%
Maricopa	WB	16.1	30.5	32.2	5.6%	EB	15.1	32.5	35	7.7%
Papago	EB	14.9	32.2	36.7	14.0%	WB	13.5	29.7	35.2	18.5%
Piestewa	SB	12.1	16.8	18.8	11.9%	NB	13.1	10.3	13	26.2%
Pima	EB	13.6	25.5	31.6	23.9%	WB	11.8	20.1	27.7	37.8%
Pima	NB	15.7	18.6	20.8	11.8%	SB	14.5	29.7	31.3	5.4%
Price	NB	9	30.9	32.2	4.2%	SB	9.3	36.1	40	10.8%
Red Mountain	WB	9.1	25.2	26.8	6.3%	EB	9.6	8.1	9.9	22.2%
Superstition	WB	20.5	11.4	13.8	21.1%	EB	19.5	4.7	4.9	4.3%

Arterial ITS Infrastructure

The Phoenix Metropolitan Area has been one of the fastest growing regions in the nation over the past two decades. There are 13 traffic management centers in the region. The arterial traffic management infrastructure in the region includes approximately 3,000 signals operated by 13 different agencies, 75% of which are connected to a centralized signal system. One hundred and eight DMS and 715 CCTV cameras support real-time traffic management. See Page 3 for more detail of arterial infrastructure by agency.

Corridor Travel Times

One of the new features of this book is the identification and introduction of arterial data collection corridors in the region. This was completed collaboratively by the AZTech™ partners. These corridors were identified to consistently measure and report operational performance each year. Travel time data for AM and PM peak hours is collected and percentage change in travel time is reported, as shown in the graphic below. The percent change in travel time from 2012 to 2013 was calculated where information was available. Negative percent changes indicate a reduction in travel time. Current travel time data in minutes was collected in 2013 and corridors that are not showing data are anticipated to be collected consistently in the future publications of this Book. Overall, there has been reduction in travel time on arterial data collection corridors since 2012.



Peoria Corridor Travel Times—Adaptive Pilot

Peoria completes before and after studies along corridors to see the impact of implementing new infrastructure or systems. The table below shows the before and after study of implementing adaptive signal control along Bell Road.

				Travel Time (sec)		Speed (mph)		Delay (sec)	
Bell Road	**EB** Distance: 0.63 mi Signalized Intersections: 3	AM	Before	61		36.7		6	
			After	66		34.4		10	
			Change	**5**	**8%**	**-2.3**	**-6%**	**4**	**67%**
		PM	Before	79		30.1		23	
			After	68		32.8		12	
			Change	**-11**	**-14%**	**2.6**	**9%**	**-11**	**-48%**
	WB Distance: 0.81 mi Signalized Intersections: 4	AM	Before	94		32.5		21	
			After	84		36.8		13	
			Change	**-10**	**-11%**	**4.3**	**13%**	**-8**	**-38%**
		PM	Before	98		30.8		26	
			After	92		33.6		20	
			Change	**-6**	**-6%**	**2.8**	**9%**	**-6**	**-23%**

Mesa Quarterly Performance Measures

The City of Mesa tracks the performance measures on a quarterly basis to observe trends. The following performance measures were reported on in 2013.

Goal	FY2012-13 Q3 Jan to Mar 2013	FY2012-13 Q4 Apr to Jun 2013	FY2013-14 Q1 Jul to Sep 2013	FY2013-14 Q2 Oct to Dec 2013
Percentage of Signalized Intersections Receiving Preventative Maintenance Annually (Goal: 100% at end of fiscal year)	81%	100%	23%	40%
Number of signalized intersections audited for timing quarterly. (Goal: 50 per quarter)	51	48	51	40
Percentage of high priority traffic signal trouble calls responded to within an hour. (Goal: 90% within an hour)	94.4%	98.6%	97.8%	95.2%

Glendale TMC Expanded Capabilities

The City of Glendale in recent years upgraded their central control system which has added functionalities to be able to manage the transportation network better. Glendale is now able to monitor traffic conditions and adjust signal timing accordingly during special events, planned constructions, and unplanned events in a much more real-time controlled method. During mega events with more than 40,000 spectators at the stadium, such as an Arizona Cardinals football game, Glendale has developed pre-set special event signal timing plans based on historical Police control at intersections. In case of an unplanned road restriction during a game, Glendale is able to manually control the signals from their TMC. This has become very effective for reducing the number of Police officers manually controlling intersections from 20 signals before the central system upgrade down to 4 signals where Police control is still desirable. This has put roughly 16 Police officers back to work to support the special events rather than being dedicated to control signals manually .

3.1 ARTERIAL PARTNER AGENCY HIGHLIGHTS

HAWKs In Use At Crosswalks

Many agencies are installing new traffic control devices to help make crossing busy streets easier for pedestrians. **H**igh-Intensity **A**ctivated Cross**W**al**K** (HAWK) beacons are becoming a useful tool to utilize in this region to improve pedestrian crossings. Current installations are listed to the right. Other types of pedestrian signalized crossings are being provided by local agencies as well.

HAWK Locations:

- » MCDOT— 3
- » Tempe — 2
- » Phoenix — 22
- » Mesa — 4
- » Glendale — 2
- » Peoria — 1
- » Scottsdale — 4

ADOT, MCDOT and Scottsdale Implement Loop 101 ICM Program

The ADOT Traffic Operations Center (TOC), Department of Public Safety (DPS), MCDOT Traffic Management Center (TMC), Scottsdale Traffic Management Center, Arizona Local Emergency Response Team (ALERT), REACT, Salt River Pima Maricopa Indian Community and MAG have jointly developed an Integrated Corridor Management (ICM) Program for the L101 corridor in Scottsdale. The plan includes traffic management protocols between operating and responding agencies involved in freeway detour of traffic and specific alternate routing options through the arterial network of the City of Scottsdale. This Program uses a strategic combination of Scottsdale arterial signal and infrastructure control, ADOT freeway DMS messaging, ALERT freeway traffic control support, REACT arterial traffic control support, and other responding services. In early January 2014, a Scottsdale Police Motor Officer went down on the 101 freeway and the southbound freeway was shut down for a period of 4 hours while an investigation was completed. The partners successfully implemented the plan and traffic was diverted to an arterial that was efficiently managed. In short, the plan worked extremely well. According to the Federal Highway Administration (FHWA) this was the first true Traffic Incident Management implementation of its kind between a State DOT and a local jurisdiction.

MCDOT Bell Road Arterial Travel Time

The Valley's arterial travel time program is expanding. The City of Chandler originally implemented their system in 2011, and now the Bell Road corridor in the Northwest Valley is providing arterial travel times as well. The Bell Road corridor is using third party and probe data as well as integrating freeway detection information to collect and post travel times eastbound as a pilot program in the Maricopa County jurisdiction. The pilot program is being planned to expand along the entire Bell Road corridor across the Valley.

City of Surprise Event Timing Based Coordination Plans

The City of Surprise has worked to develop and implement a process to manage event traffic around the City's Major League Baseball Spring Training facility. The City developed several timing plans that could be deployed as time-based coordination plans to accommodate the ingress and egress traffic during the different times of the day. Implementing the time based coordination plans decreased the overall cost to the City because it reduced number of officers needed for traffic signal operations as well as improved the ingress of traffic. The City experienced marginal improvements for the egress of traffic. Additionally, while the egress plan was in effect, normal traffic patterns were overridden and the arterial traffic suffered. The City utilized the congestion manager module within their central signal system to address the egress issues. Also, the video detection was enhanced to provide additional detection zones that would be used to trigger the event timing based upon the occupancy levels of the dedicated zones. Once the occupancy levels return to the normal thresholds, the signal controller returns to the timing plan that it was running before the event traffic was triggered. The implementation of the congestion manager has been highly successful as the event timing only runs as it is needed and the arterial traffic is only affected when the demand dictates.

Flashing Yellow Left Turn Arrows

- » Mesa — 14
- » Peoria — 8
- » Chandler — 9
- » Scottsdale — 10
- » Gilbert — 2

These types of arrows are a recommended tool for public agencies to improve the safety of left-turn movements and reduce delay at signalized intersections. Agencies in the Valley are introducing these new types of arrows to travelers through initial deployments and online education. Current installations are listed to the right. Additional installations are anticipated in the coming years as they realize safety and delay benefits.

Goodyear Deploying ITS Tools All Over City

In the last five years since the completion of the City's first ITS Strategic Plan, the City of Goodyear has installed ITS technologies (many of which were installed by experienced City personnel) including: twenty CCTV cameras at signalized intersections; 26 miles of fiber optic cable communications along strategic corridors to create a citywide backbone network; and two dynamic message signs along McDowell Road. These ITS technologies help the City partner with local Police and Fire to support with traffic signal timing changes and surveillance of the roadways during incidents, closures, construction, and other road conditions that warrant proactive traffic management.

Tempe Traffic Signal Optimization Along Major Corridors

Tempe conducted a before and after travel time study along Rural Road and McClintock Drive as part of the Maricopa Association of Government's Traffic Signal Optimization Program (MAG TSOP). Rural Road had two intersections where left-turns were modified to lead/lag by time of day and three intersections where at least one of the left-turns was modified to lagging for all times of day. The table below shows the travel time study results.

				Travel Time (sec)	
Rural Road	**NB** Distance: 4.25 mi Signalized Intersections: 20	AM	Before	670	
			After	634	
			Change	**-36**	**-5%**
		MD	Before	603	
			After	526	
			Change	**-77**	**-13%**
		PM	Before	619	
			After	607	
			Change	**-12**	**-2%**
	SB Distance: 4.25 mi Signalized Intersections: 20	AM	Before	668	
			After	544	
			Change	**-124**	**-19%**
		MD	Before	619	
			After	563	
			Change	**-56**	**-9%**
		PM	Before	810	
			After	779	
			Change	**-31**	**-4%**

				Travel Time (sec)	
McClintock Drive	**NB** Distance: 4.92 mi Signalized Intersections: 16	AM	Before	657	
			After	654	
			Change	**-3**	**0%**
		MD	Before	604	
			After	542	
			Change	**-62**	**-10%**
		PM	Before	714	
			After	622	
			Change	**-92**	**-13%**
	SB Distance: 4.92 mi Signalized Intersections: 16	AM	Before	575	
			After	528	
			Change	**-47**	**-8%**
		MD	Before	537	
			After	530	
			Change	**-7**	**-1%**
		PM	Before	817	
			After	688	
			Change	**-129**	**-16%**

Tempe Upgrades City ITS Network

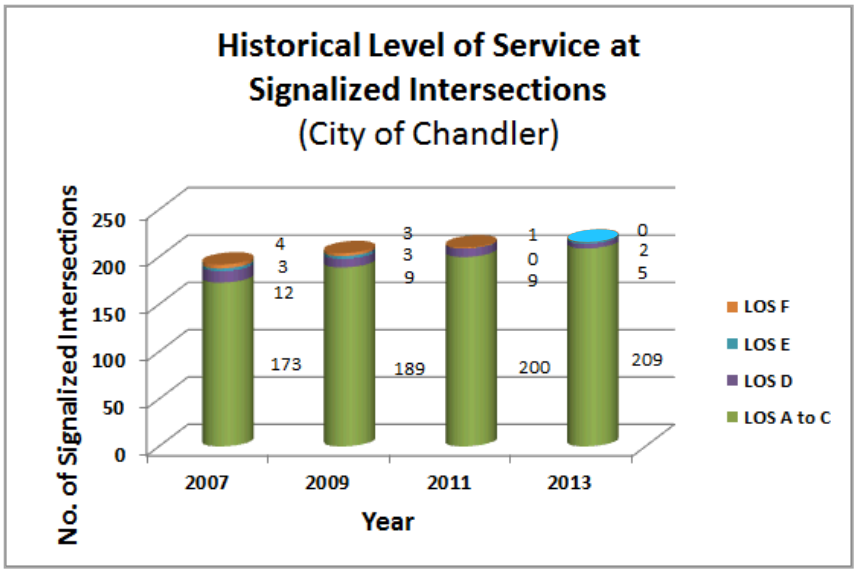
Over the past two years, Tempe has completed its first fiber infrastructure project, as well as two projects to install wireless radios at many of its major intersections thereby reducing its reliance on leased lines, greatly improving bandwidth, and experiencing significant savings in monthly fees. Utilizing this upgraded infrastructure, Tempe staff are now able to view live video from 68 CCTV cameras, that are Internet Protocol based, providing valuable information to better manage the City's traffic network.

3.1 ARTERIAL PARTNER AGENCY HIGHLIGHTS

Avondale Installing ITS Along McDowell Road

The City of Avondale is busy at work constructing Intelligent Transportation Systems (ITS) along McDowell Road including conduit, fiber communication, and connection to signalized intersections from Avondale Boulevard to 99th Avenue. The Avondale Engineering Department is making the most use of receiving $750,000 from Fiscal Year 2012-2016 for technology-related grant initiatives.

Chandler Traffic Signal Optimization Increases Level of Service



Chandler has 216 signals that operate four time-of-day timing plans. In 2013, the Chandler TMC retimed 104 signalized intersections (four timing plans per intersection) and conducted temporary timing changes at 46 signalized intersections in response to construction or special events. The proportion of intersections with Level of Service (LOS) A-C has been increasing since 2007. The City has dynamic message signs on three major arterial roads that display real-time travel times from 6:00AM to 7:00PM Monday through Saturday. These signs are also used to provide traveler information in response to major incidents or road closures on a daily basis.

East Valley Agencies Moving Forward With Travel Time Technology

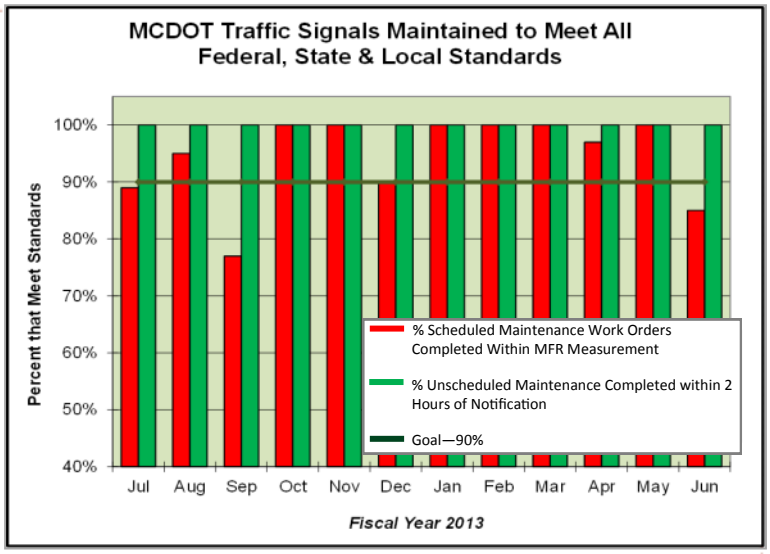
The City of Mesa has a project programmed in the Maricopa Association of Governments (MAG) Transportation Improvement Program (TIP) which will install 82 Bluetooth devices focused in the west Mesa area. Bluetooth devices will allow Mesa to gather travel times. Bluetooth devices will be installed in approximately one-mile increments in existing traffic signal control cabinets to ultimately disseminate to the public via website or other service. Data is being gathered anonymously and being used in aggregate.

Scottsdale Traffic Management Center Moved To A New Location

The City of Scottsdale Traffic Management Center (TMC) moved to a new space in early 2014. This is a larger space with more offices and a larger video wall to be able to manage their transportation network. A photo of the new TMC is provided to the right. Media covered a story about the TMC in June 2013 and April 2014.

MCDOT Signal Maintenance

MCDOT tracks scheduled and unscheduled maintenance of MCODT owned traffic signals with the following goals: complete 90% of preventative maintenance for all signals within the monthly preset schedules and respond to 90% of unscheduled repair work within two hours of notification. Both include maintenance to signals to meet all Federal, State and local standards. The figure to the right highlights the effectiveness of the MCDOT Signal Maintenance schedule in meeting the 90% goal.



MCDOT SMART*Drive* Program

Through a federal initiative called "Connected Vehicles", the U.S. Department of Transportation (USDOT) is working to leverage ITS technology to improve public safety and surface transportation mobility. MCDOT and its partners in ADOT and FHWA as well as the University of Arizona, are moving this initiative forward to develop and demonstrate advanced ITS applications that integrate vehicles together with **S**ystematically **M**anaged **ART**erial (SMART) roadway systems in Maricopa County. MCDOT has launched the vehicle integration concept in a field test application on Daisy Mountain Drive in Anthem, Arizona to demonstrate capabilities, evaluate benefits, and provide a test bed for future SMART*Drive* applications. A demonstration was provided to the AASHTO Standing Committee on Research (SCOR) on December 3, 2013.

Key components of the SMART*Drive* demonstration include:

- Six signalized intersections equipped with Dedicated Short-Range Communications (DSRC) Radios, WiFi and Bluetooth readers
- Traffic signal priority application installed
- Representative emergency vehicle and transit vehicle used to test application priority logic
- Field test for emergency and transit applications
- Pedestrian crosswalk application (developed by Savari through USDOT funding) using smartphones to display crossing status
- Collection of detailed vehicle and traffic operations data for post-operational analysis

TIM Coalition Training Course is Having Success

Led by the Arizona Department of Public Safety (DPS), the AZTech™ Traffic Incident Management (TIM) Coalition was established in 2010 and is a multi-disciplinary traffic incident management partnership including state and local police, fire agencies, state and local transportation agencies, metropolitan planning offices and towing companies in the Phoenix metropolitan region. The purpose of the TIM Coalition is to share ideas, lessons learned, best practices and knowledge to foster regional incident management.

www.aztech.org/TIM

In October 2010, DPS began collecting key data elements to measure TIM performance. DPS found positive results related to the time for clearing blockages and removing incidents from the roadway. The TIM Coalition has partnered with DPS in providing incident management training courses to all first responders throughout the State. The training course has trained 2,000 first responders thus far and there are 12 trainings scheduled between March and June of 2014.

Emphasis on Distracted Driving

Distracted, Drunk, Drowsy, or just plain Dumb drivers are a main focus area of the TIM Coalition. The TIM Coalition constantly looks for ways to reduce the impact of "D" drivers on causing incidents which have a ripple effect on the safety and movement on the roadways.

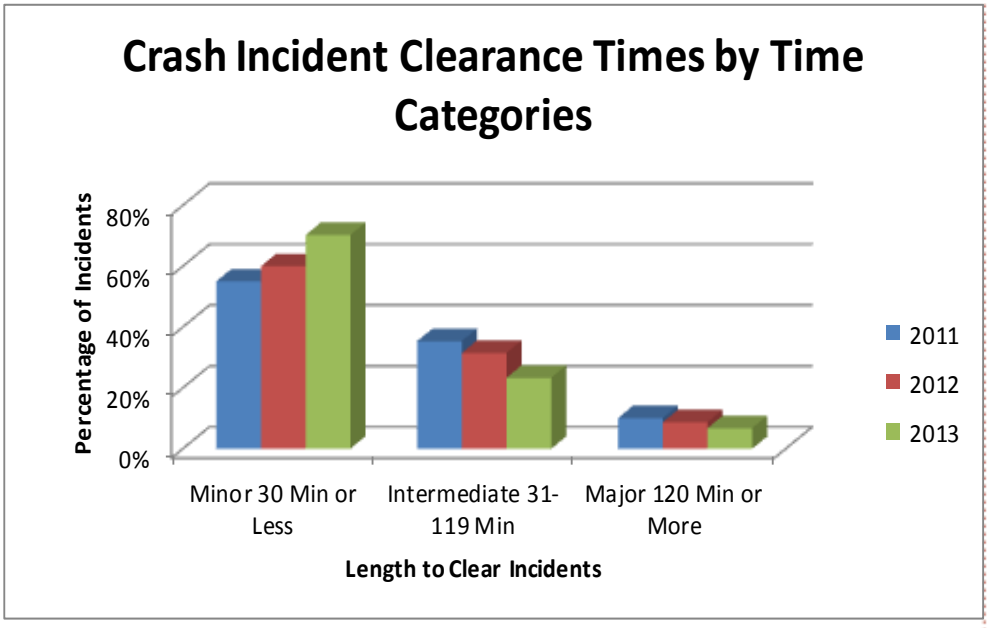
DPS is Making Strides with Quick Clearance Strategies

Beginning October 2010, the Arizona DPS Highway Patrol Division began collecting performance measurements related to traffic incident management. In early 2011, the agency began implementing strategies through policy changes and training to expedite the quick clearance of traffic incidents which includes traffic crashes. The performance measures being collected by officers in the field include roadway clearance time, incident clearance time and secondary crash numbers. These performance measures have been added to the crash report used by the Highway Patrol Division.

These strategies improve first responder safety and transportation mobility by focusing efforts on moving traffic crashes off the roadway where they are no longer a distraction as quickly as possible, while maintaining the integrity of required investigation and enforcement efforts.

The figure below depicts the incident duration of crashes on or adjacent to the roadway within the metropolitan Phoenix region over a three-year period. Since these strategies and performance measures have been in place, the data indicates positive results. While crash investigations in total have increased each year, the durations of the investigations have shifted from major incidents toward minor incidents. The Manual on Uniform Traffic Control Devices (MUTCD) defines incidents by three categories, minor incidents are 30 minutes or less, intermediate incidents last between 30 and 120 minutes and major incidents are described as those incidents that remain 120 minutes or longer. While the average length of the investigations continues to average 70 minutes, more of the collisions are now falling into the minor duration category of less than 30 minutes. This equates to 10,831 investigations in 2011 compared to 14,102 investigations in 2013.

An outcome measure of this effort is related to the secondary crash rate. A secondary crash as it relates to this data is defined as a crash which occurs as a result of the unplanned change in traffic flow and/or a distraction caused by an original crash investigation. The secondary crash rate during these three years remained at approximately 7% while the national average secondary crash rate is said to be approximately 20%.

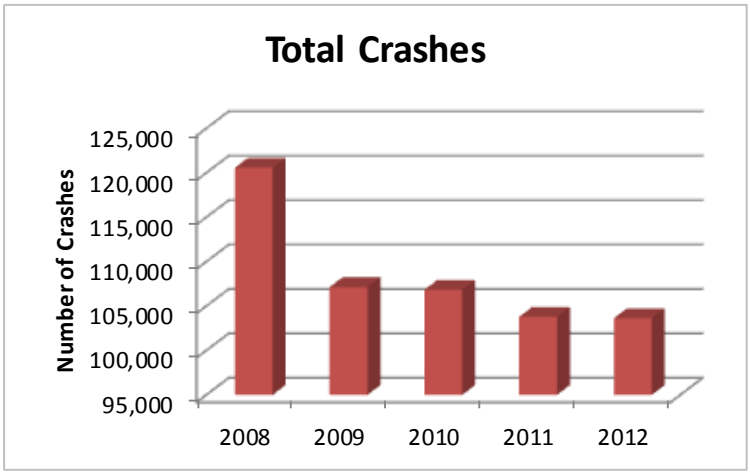


When looking at the agency's data collected on crashes related to distracted driving since November of 2013, it was found that the single largest distraction involved in these crashes was identified by officers as "outside distractions." One of these "outside distractions" can be incidents on and alongside the roadway which includes other crashes.

4.1 INCIDENT MANAGEMENT INDICATORS

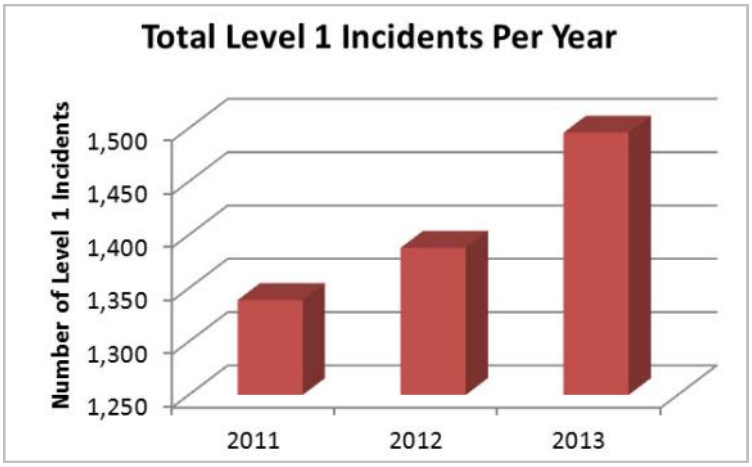
Total Crashes

The ADOT Motor Vehicle Division (MVD) tracks crashes rates on a yearly basis and publishes this information within the annual Arizona Crash Facts report. Since 2008 the annual crash rates have decreased by 16%.



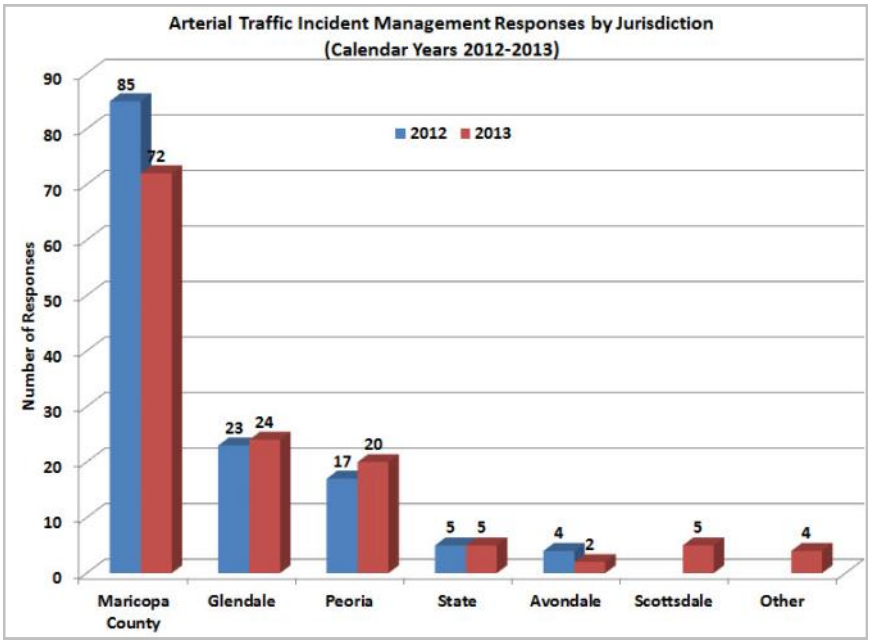
ADOT Level 1 Incidents

As the number of crashes in the region have decreased, the severity of incidents have increased. Level 1 incidents are when a full closure occurs in one or more direction of travel, a fatality has occurred, ADOT Hazardous Material (HAZMAT) personnel deems it is a HAZMAT event, a school bus crashes and one or more children has been injured, or if the incident involves an ADOT employee resulting in an injury or fatality.



REACT

The MCDOT Regional Emergency Action Coordinating Team (REACT) is the region's arterial incident response team. Besides responding to incidents on MCDOT roads, the team also responds to arterial incidents in six other jurisdictions through established Inter-Governmental Agreements (IGA). REACT measures their response time to calls. In 2012 and 2013, REACT exceeded their goal of responding to 99% of incident calls within 30 minutes for a distance 20 miles or less.



SECTION 5 TRAVELER INFORMATION

Expansion of PIO Staff at ADOT

ADOT has added three additional Public Information Officer (PIO)/Communications positions in the Traffic Operations Center (TOC) which provides extended traveler information coverage to support notifications. PIO personnel are in the TOC from 6:00AM to 6:00PM Monday through Friday.

511 is Being Upgraded

The AZTech™ partnership and the various committee representatives involved in the partnership have been invited to participate in a survey that asks critical questions about the current ADOT 5-1-1 website (www.az511.com or www.az511.gov) and the important components to consider including in a redeveloped site. AZTech™ agency representatives who were sent the survey link were encouraged to share the link with other representatives from their agency who would like to participate. This solicitation for formal agency input followed a regional meeting gaining initial talking points toward the redevelopment of the site.

Previously ADOT leased 138 telephone lines to support the 5-1-1 traveler information phone system. Now ADOT has over 1,000 phone lines to support the system. What does this mean to the traveling public?

- No more busy signal during high call volume periods (such as full freeway closures or major weather events).
- The public will always hear an important message that will help them with their travel.

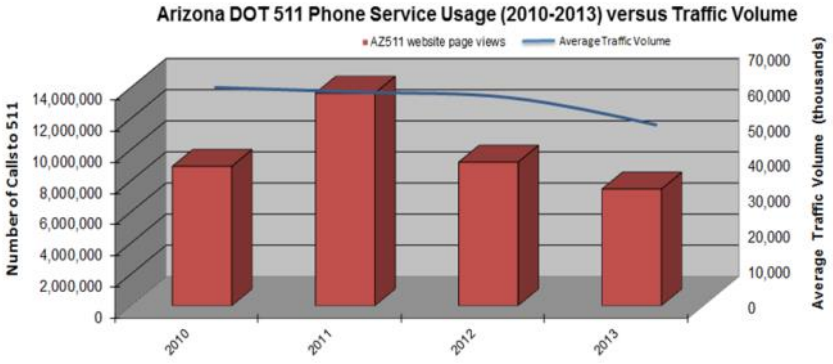
ADOT Completed its Freeway-to-Freeway Alternate Route Program

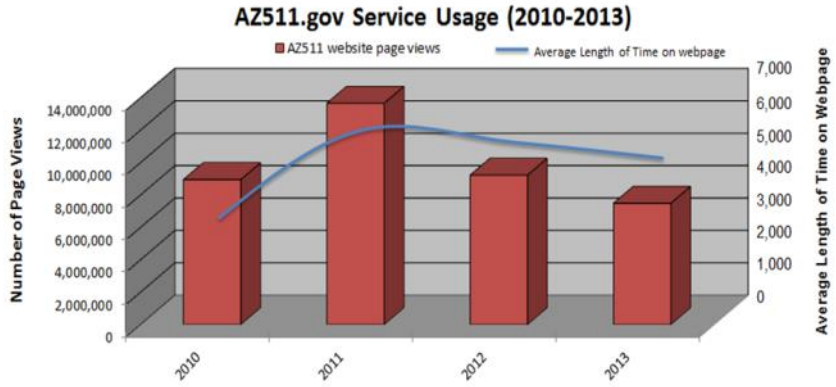
ADOT has completed a statewide alternate routing plan for freeway-to-freeway detour routing and is focused on incorporating arterial rerouting strategies into their plan. This is an effort to be able to use ADOT's freeway message signs and other systems more effectively for the traveling public. ADOT began using this alternate plan beginning in 2013. Operators provides two panels of information (alternate message photo example is shown below) on their freeway message signs during incidents in the peak hours of the day—one to show the incident information and suggest using an alternate if necessary, and another to show the peak period current travel time for that segment the traveler is traveling on. ADOT suggesting to travelers to use an alternate route during an incident has been useful to travelers to be able to make better decisions on their route. Operators are also providing information to travelers based on where they are rather than knowledge of the street system: example "Left 2 Lanes Blocked 6 Miles Ahead" rather than "Left 2 Lanes Blocked at 90th Street". The alternate routing program is planned to be expanded in 2014 to include suggesting specific arterial routes after coordination with the local agencies to confirm that the arterial route is prepared to handle freeway traffic that will be suggested to detour to that specific arterial.

5.1 REGIONAL TRAVELER INFORMATION

511 Usage

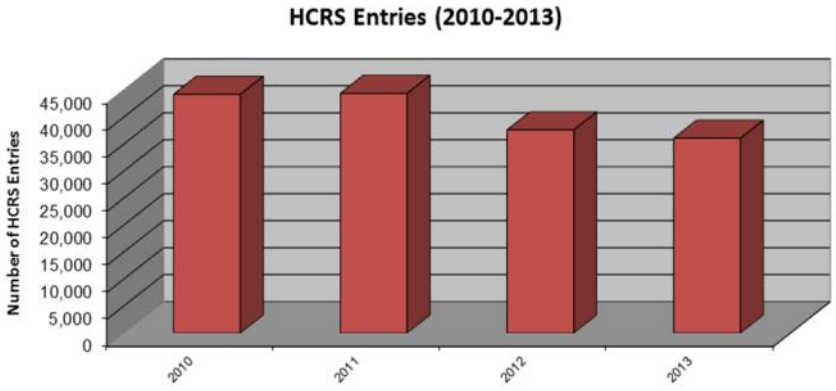
The two graphs to the right show 511 phone and web usage. The first graph provides the total number of calls to ADOT's 511 phone system and the direct correlation with a reduction in traffic volume. The second graph shows the total number of web page views and the average length of time that the page was viewed. Traffic volumes have steadily decreased in recent years, although there is an increase in the number of miles congested, time of congestion and travel time index as shown on Page 13. An increase in the severity of crashes as shown on Page 22 may have a factor in increased congestion even though the traffic volumes are reducing.





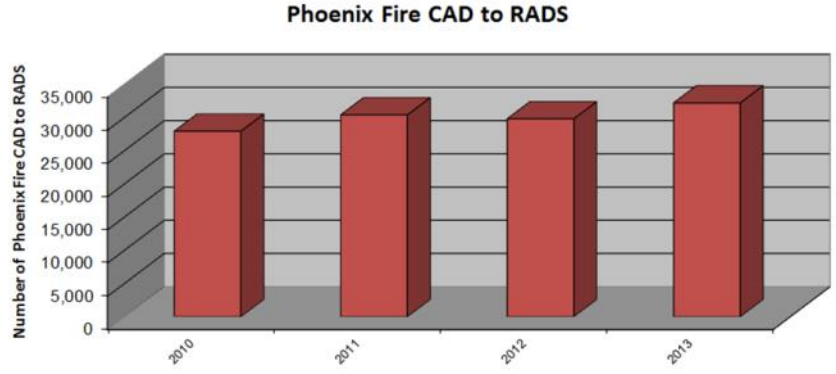
HCRS Entries

The Highway Conditions Reporting System (HCRS) captures roadway conditions on state roads and shares that in the form of traveler information by populating ADOT's 511 system. As shown in the graph to the right, HCRS entries have decreased since 2010 by 49% showing there are less incidents to report .



RADS

The Regional Archive Data System (RADS) was developed as a data collection archive for the region. Due to the amount of information within the archive, it has been expanded to support real-time information. RADS is used as a source of traveler information for the 511 system and a tool to share information between agencies. The graph to the right displays the percentage of Phoenix Fire Computer-aided Dispatch (CAD) system entries that are sent to RADS and ultimately transferred to HCRS.



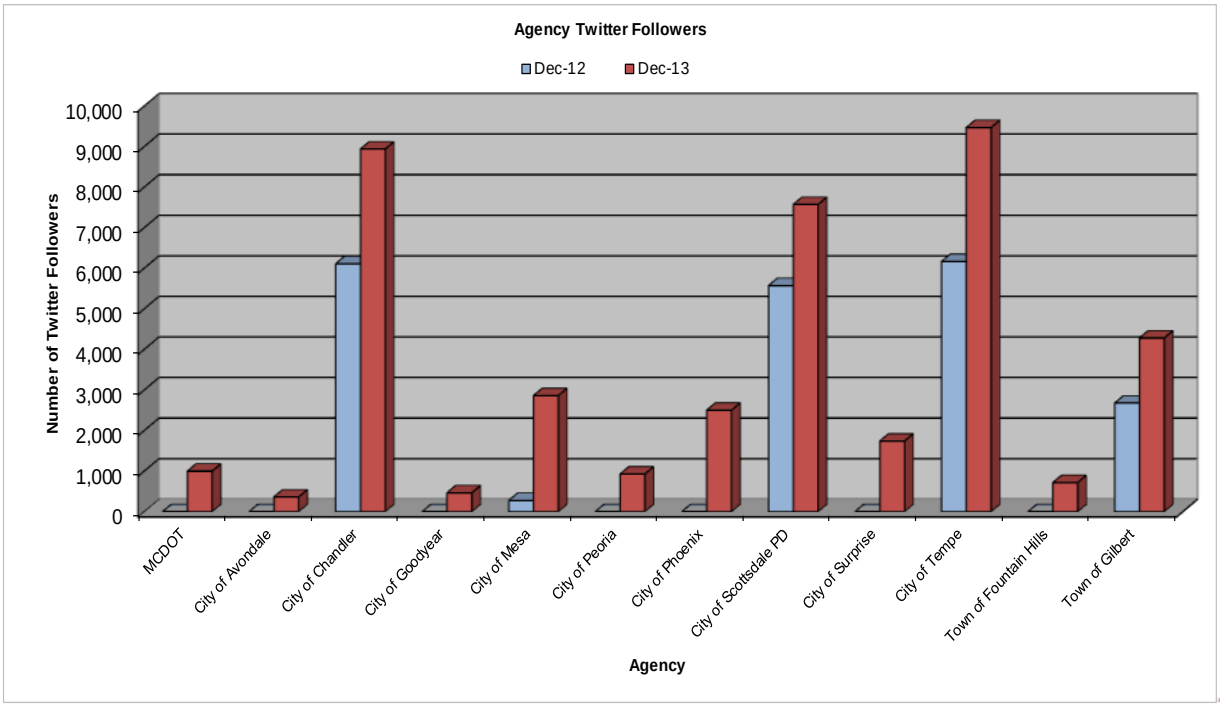
Traveler Information Notifications

The MCDOT Traffic Management Center (TMC) measures performance monthly and quarterly on traveler information messages posted through email alerts, websites and dynamic message signs. The table below displays the data collected and reported quarterly for fiscal year 2013. The goal of the TMC is to post 100% of the verified traveler information event messages within 15 minutes.

Traveler Information Reporting	Q1 (Jul - Sep)	Q2 (Oct- Dec)	Q3 (Jan - Mar)	Q4 (Apr - Jun)
# of Traveler Information Events (Incidents, Construction, etc.)	323	334	398	423
# of Traveler Information Events Verified for Posting	234	236	299	268
# of Traveler Information Messages Posted within 15 minutes	234	236	299	268

Social Media Notifications

Transportation Departments and Public Safety Departments are using more email alerts and various social media outlets to get traveler information out to the public. In looking specifically at Twitter usage, not only are the number of Twitter postings rising on a week-to-week basis, the number of Twitter followers are rising. Social media has become a quality tool to provide real-time traveler information to followers of transportation and public safety departments as well as media. Just since February of 2012, the number of Twitter followers on the accounts listed in the table below have risen almost 40%. ADOT has 28,100 followers and that number is increasing on a daily average of 18 new followers. ADOT has more than double number of followers (not shown in the graph below) than any other agency in the region. ADOT posts or forwards between 30-100 tweets on its Twitter account @ArizonaDOT every single day.

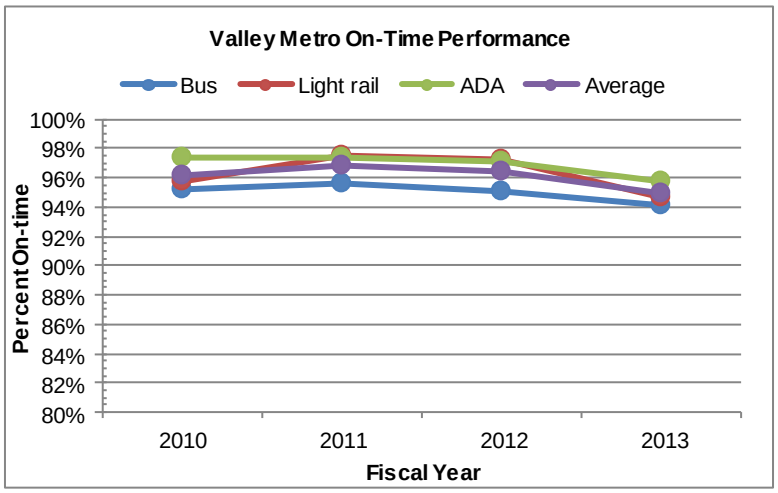


New NextRide System

In February of 2013, Valley Metro launched a new system that gives travelers quick access to next bus and light rail schedule information. NextRide provides the next three times the bus or train will arrive at a stop via the internet or cell phone text—for every transit vehicle in the Valley. While the NextRide usage of the website trip planner has decreased, the number of automated transactions has increased consistent with the number of individual phone calls per month. The system has been proven to be effective and is looking to be expanded to incorporate real-time Global Positioning System (GPS) bus and light rail locations

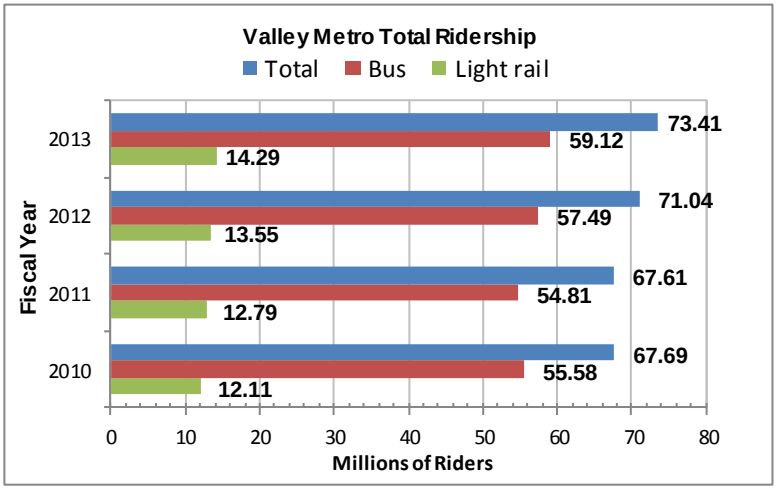
Bus Schedule Adherence

Valley Metro tracks bus schedule adherence as a performance measure to provide quality on-time service to the traveling public. As shown in the graph to the right. bus schedule adherence has remained above 90% over recent years.



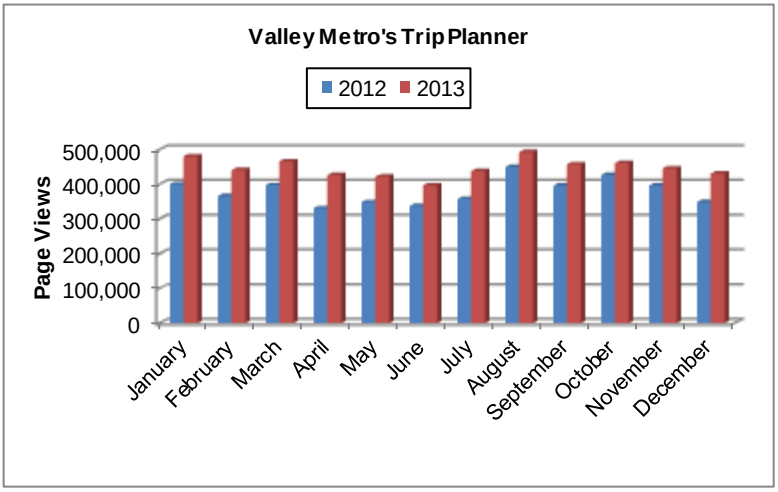
Valley Metro Ridership

Valley Metro's ridership is tracked on a yearly basis for bus routes and light rail and is published on Valley Metro's website. As shown in the graph to the right, the usage of transit has steadily increased since 2010.



Valley Metro Trip Planner

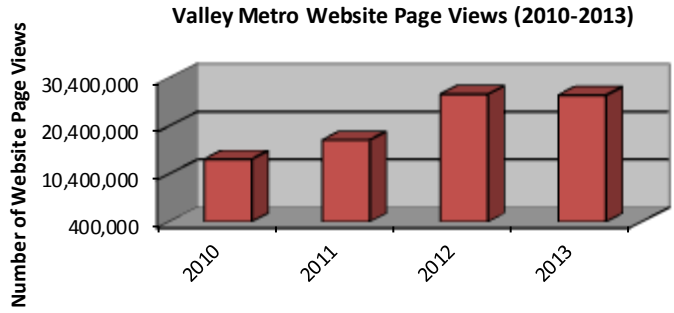
Valley Metro has a trip planner application that gives the traveling public directions on how to use transit to reach their final destination based on various criteria. The graph to the right shows that the overall usage of the application has increased from 2012 to 2013.



6.1 TRANSIT INDICATORS

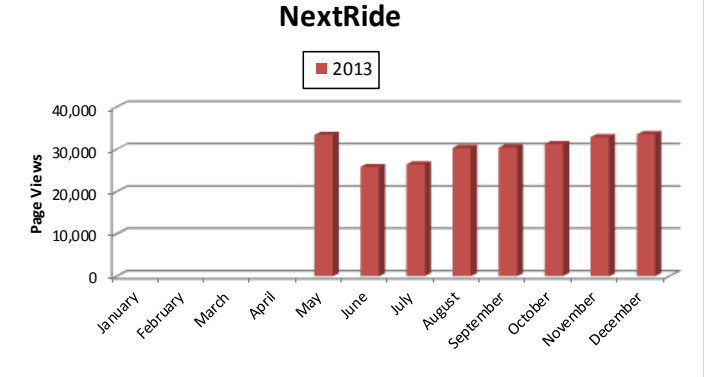
Valley Metro Web Page Usage

Valley Metro tracks the number of page views on a monthly basis and has seen an increase in web page views by 50% from 2010 to 2013, as shown in the graph to the right.



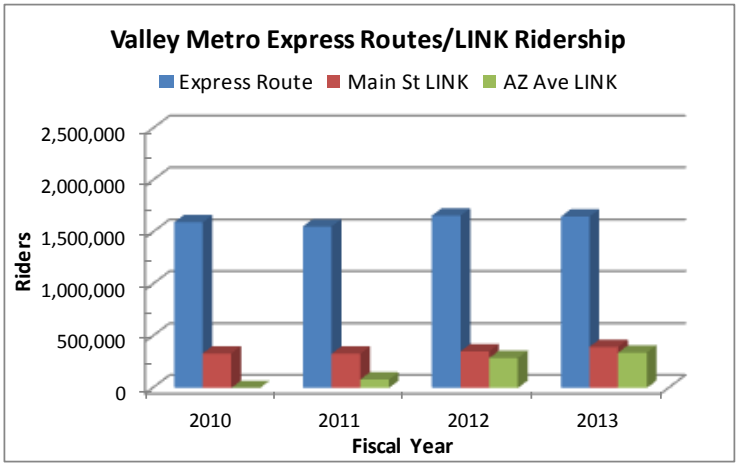
NextRide Page Usage

The NextRide webpage on Valley Metro's website allows riders to have quick access to next bus and train schedule information. The NextRide webpage went live in May 2013 with an initial spike in usage and has since experienced a steady increase throughout 2013, as shown in the graph to the right.



Express Route Usage

The Express bus routes saw a peak in usage in 2010 and has since slightly decreased over the years. The Arizona Avenue Link through the East Valley has seen a 76% growth since 2011.



BikeShare Programs

Phoenix is rolling out a new BikeShare Program for street demonstration using new GRID "smart bikes". This system offers rentable green bikes that will have strategic renting locations along the Central Phoenix corridor and around downtown. The system will formally launch to the public in the Spring of 2014, but is being tested as of December 2013. The City of Mesa and the City of Tempe are establishing BikeShare Programs in the coming years as well.

WHAT'S NEXT?

This Region and the AZTech™ Partnership have made some significant traffic operations investments, and some impressive strides in advancing traffic management and operational strategies. Emerging issues and expectations for the AZTech™ partnership in the coming years include the following:

Freeway Travel Time Expansion

The freeway travel time program will be expanded in the valley on an additional 46 DMS by the end of 2014. FMS coverage is being expanded on Agua Fria Freeway from I-17 to I-10, on I-10 from Chandler Blvd to Wild Horse Pass, and on SR202L Santan from I-10 to Dobson Rd. With completion of these projects, ADOT will have about new 15 DMS, 20 CCTV cameras, more than 50 detection stations, and 26 ramp meters. This new addition will provide ADOT with more coverage for real time incident monitoring and management.

Arterial Travel Time Expansion

Arterial travel time will expand to additional corridors throughout the region. An extension to the Mesa Bluetooth project will be a partnership between the City of Mesa, the Town of Gilbert, and the City of Tempe to deploy additional sensors for broad East Valley coverage. The travel time data will be reported to a regional website that broadcast traveler information. Arterial travel times are also being planned for the Southwest Valley along McDowell Road and MC-85.

AZTech™ Regional Information System (ARIS)

MCDOT is in the process of developing an advanced tool for operators for notification and monitoring during incidents in the metropolitan area. The ARIS system will use information from the RADS to display current speeds on freeways and arterials (where instrumented with detection), traffic volumes, freeway and arterial cameras, and incident status updates based on the Phoenix Fire CAD system. This will help operators understand the breadth of impact surrounding the incident location and provide a tool to manage in a cross-jurisdictional manner.

Connected Vehicles/MCDOT SMART*Drive* Program Next Steps

The test bed in Anthem will continue to be expanded on in the upcoming years and demonstrated to key members of national committees and programs. The MCDOT SMART*Drive* Test bed will continue to focus on traffic signal operations safety and mobility applications. MCDOT, along with support of the Caltrans Test bed, will be deploying applications under the USDOT and Connected Vehicle Pooled Fund Program Multi Modal Intelligent Traffic Signal System (MMITSS) initiative.

WHAT'S NEXT?

Local Agencies Rolling Out BikeShare Programs

Getting to a destination needs to include all modal options. Local agencies are implementing BikeShare Programs that offer bicycles to the public at a rented rate to use and park at public bike racks. The City of Phoenix, City of Mesa, and other Cities are following suit with this concept of sharing bicycles to offer another mode to the public.

Scottsdale HAR Implementation

The City of Scottsdale will be implementing their arterial Highway Advisory Radio (HAR) network soon to provide travelers real-time information related to their trip in a more broadcasted manner than traditional dynamic message signs can provide.

ICM Expansion Throughout Region

A number of ICM-specific project plans were completed in 2013 and it is anticipated that ICM-related projects will continue their momentum in the Valley in 2014 and beyond. Two specific projects are already in discussion to be started in Phoenix and Tempe through the MAG TSOP Program for detour signal timing development.

ITS Strategic Planning

Most agencies in the region have pursued or are currently pursing ITS Strategic Planning efforts in order to plan for appropriate and effective improvements to their technology capabilities and also their strategic partnerships for sharing information across jurisdictional boundaries.

CMM Workshops

This region continues to be an important player in national training activities including the second Strategic Highway Research Program (SHRP2) implementation activities such as the Capability Maturity Model (CMM) workshops in 2014. CMM workshops are being held in 10 metropolitan areas around the country to assist agencies in assessing their capabilities in order to better organize to focus on transportation system management and operations.

More Flashing Yellow Arrows

Glendale installed their first in early 2014 and Scottsdale continues to expand their flashing yellow arrow program. As driver acceptance and safety improvements are realized from the existing deployments of the arrow, more deployments can be expected in additional cities.

AZTECH™ PARTNER AGENCIES

Arizona Department of Public Safety

Arizona Department of Transportation

Arizona Division of Emergency Management

Arizona State University

University of Arizona

City of Avondale

City of Chandler

City of Glendale

City of Goodyear

City of Mesa

City of Peoria

City of Phoenix

City of Scottsdale

City of Surprise

City of Tempe

Town of Fountain Hills

Town of Gilbert

Town of Paradise Valley

Town of Queen Creek

Federal Highway Administration

Maricopa Association of Governments

Maricopa County Department of Emergency Management

Maricopa County Department of Transportation

Maricopa County Sheriff's Office

Phoenix Sky Harbor International Airport

Valley Metro

Phoenix Fire Department

Private Partners