Session 2: Performance Measures

Where is everybody?

- What type of performance measures tools do you use to report to the following?
  - Map-21 (anticipated) and Federal requirements
  - State performance measures and goals
  - Regional performance measures and goals
- Describe the help if any, that you need to obtain, monitor or report on performance measures.
- How has performance measures that are being used affected operations?

Performance Measures – MAP-21

- MAP-21 Performance Measures
  - Planning Division is leading effort for State
  - 3 technical teams developed (bridge, pavement, safety)
- Transportation Asset Management Plan (TAMP)
  - Framework study completed in 2013
  - Gap assessment completed and informing an RFP to solicit external services (inventory)

Performance Measures – MAP-21

- Current activities linked to MAP-21
  - Bridge Inventory
  - Highway Performance Monitoring System (HPMS)

Performance Measures - ADOT

Fiscal Year 2017 Key Performance Indicators - Department of Transportation

Performance Metric Titles	JOP		YTD	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
Breakthrough Metrics															
Decrease urban MVD field office entrance to exit time from 57.5 minutes to 30.0 minutes by December 31, 2017 [1/]	6/30/2016	Target	53.1	53.1	53.2	48.6	51.2	45.3	41.3	45.1	45.0	45.2	42.3	38.3	40.8
	57.6	Actual	53.0	53.8	52.1										
PB - Decrease time needed to execute a design consultant task order from 172 days to 50 days by December 31, 2016 [1/]	1/1/2016	Target	140	150	130	110	90	70	50	50	50	50	50	50	50
	172	Actual	70	64	75										
Operational / Sustainment Metrics															
Increase the number of MVD online service transactions from 7,215.8 million to 7,484.7 million by June 30, 2017	6/30/2016	Target	1,273.8	630.0	643.8	598.0	588.2	539.2	571.4	600.7	662.8	719.1	651.8	658.5	621.2
	7,215.8	Actual	1,246.3	603.5	642.8										
Increase the percentage of domestic port of entry permits issued on-line from 25% to 35% by June 30, 2017	6/30/2016	Target	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
	25%	Actual	30%	25%	34%										
Increase the percentage of construction projects delivered on-time from 33% to 60% by June 30, 2017	1/1/2016	Target	51%	50%	51%	52%	53%	54%	55%	56%	57%	58%	58%	59%	60%
	50%	Actual	47%	33%	60%										
Maintain time to process simple Class C over-dimensional permits at 20 hours or less	6/30/2016	Target	20	20	20	20	20	20	20	20	20	20	20	20	20
	20	Actual	20	20	20										
PB - Process 100% of simpe utility permits in 10 days or less	1/1/2016	Target	10	10	10	10	10	10	10	10	10	10	10	10	10
	56	Actual	5.6	5.6	10										
PB - Process 100% of Third Party applications in 30 Days or less by April 30, 2017	11/1/2015	Target	45	35	35	35	33	33	33	31	31	31	30	30	30
	110	Actual	35	35	--										
Decrease the percentage of time the Phoenix Metro system operates at a congested level from 36% to 31% by December 31, 2018	6/30/2016	Target	35.1%	35.2%	35.0%	34.9%	34.8%	34.6%	34.5%	34.3%	34.2%	34.1%	33.9%	33.8%	33.6%
	35.3%	Actual	35.2%	35.2%	35.1%										
Improve pavement condition from 73% to 80% for interstate highways by June 30, 2017	6/30/2016	Target	80%	80%	80%	80%	80%	80%	80%	80%		80%	80%	80%	80%
	73%	Actual	73%	73%	73%										
Maintain percentage of bridges rated as good or fair at 95% or greater	6/30/2016	Target	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	95%	Actual	95%	97%	97%										
Decrease the average total number of traffic fatalities in Arizona by 7% by December 31, 2018 (FY2017 target = 3% or 866 total fatalities) [2/]	12/31/2015	Target	146	73	73	73	73	72	72	72	72	72	72	72	71
	888	Actual	133	75	58										
Deliver 100% of construction projects within original program amount	6/30/2016	Target	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	100%	Actual	100%	100%	1005%										

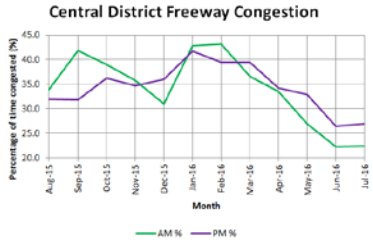
Custom Field Legend	
Speed	Go Faster (Respond, Decide, Resolve)
Quality	Compliance, Customer Satisfaction
Cost	Dollars Saved
People - P	Retain Employees / Safe Employees

Performance to Targets Color Coding:	
	Within 99% - 100% of Target
	Within 75% - 98% of Target
	Within 0% - 74% of Target

Performance Measures - ADOT

Percent of Time Congested

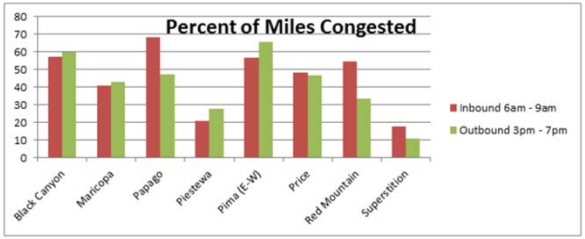
Percentage of Time Congested			
Month	AM %	PM %	Average
Aug-15	33.9	32.0	32.8
Sep-15	41.9	31.8	36.1
Oct-15	39.0	36.2	37.4
Nov-15	35.8	34.7	35.2
Dec-15	31.0	36.0	33.9
Jan-16	42.8	41.7	42.2
Feb-16	43.2	39.4	41.0
Mar-16	36.6	39.5	38.3
Apr-16	33.5	34.2	33.9
May-16	26.9	32.9	30.3
Jun-16	22.3	26.5	24.7
Average	**35.2**	**35.0**	**35.1**

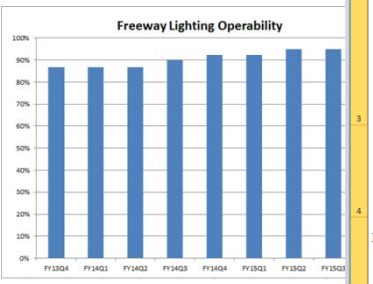


- Congestion defined as speed below 50 mph, collected from approximately 320 detector stations
- Only the general purpose lanes are included
- Only Tuesday, Wednesday and Thursday traffic data thus excluding Holidays
- AM% - inbound corridors during morning peak hours (6-9)
- PM% - outbound corridors during afternoon peak hours (3pm-7pm)
- 1 year period is reported to normalize seasonal variation deviation, winter visitors, etc.

Travel Time Reliability (95th Percentile Travel Time)

	Inbound 6am - 9am			Outbound 3pm - 7pm		
Named Freeway	Dir	Length	TTR (mins)	Dir	Length	TTR (mins)
Black Canyon	SB	11.6	35.1	NB	10.7	29.6
Maricopa	WB	16.1	35.0	EB	15.1	42.7
Papago	EB	14.9	62.9	WB	13.5	51.3
Piestewa	SB	12.1	23.5	NB	13.1	24.0
Pima	EB	13.6	32.9	WB	11.8	26.6
Pima	NB	15.7	-	SB	14.5	21.1
Price	NB	9.0	18.9	SB	9.3	23.3
Red Mountain	WB	9.1	24.8	EB	9.6	18.8
Superstition	WB	20.5	31.3	EB	19.5	23.2



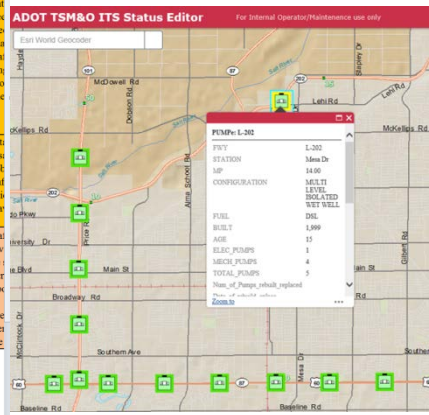


FREEWAY MANAGEMENT

Area	Goals	Objectives	Performance Measures	Data Source[1]	How to Measure	Countermeasures	Outcomes
Freeway Management	Mobility	Congestion Mitigation	1- Miles Congested 2- Time Congested 3- Total delay, Vehicles 4- Delay per vehicle 5- VMT (Vehicle Miles Traveled) 6- VHT (Vehicle Hours Traveled) 7- Truck VMT 8- Average Speed 9- Average HOV lane speed 10- HOV lane volume 11- Percent peak-period volume 12- Percent peak-period truck volume 13- Travel time 14- Density 15- Ramp Delay (could be included in 3 - Total delay	SW-PD: RG-LD: 1, 2, 5, 6, 8, 9, 10, 13 SW-PD: ATR: 3, 4, 7, 11, 12, 14	- Different congestion levels for Different travel links could be calculated based on the speed data - Travel time and volume count data is required to calculate delay - VMT could be calculated with volume count data and distance - VHT could be calculated with volume count data and travel time - Travel time is the average time consumed by vehicles traversing a fixed distance of freeway. It is calculated for peak hour (a.m and p.m. peak periods), midday and daily. Travel time is also used for finding delay. -RADS database could be used for speed and travel time	- Increase detection - Implement adaptive ramp metering - Implement adaptive signal control - Improve signal timing statewide - Deployment of variable speed limit (VSL) - Address system bottleneck and weaknesses to reduce congestion - Improve Mobility in Work Zones	- Reduce delay - Improved tra - More accurat - Effective fre - Improved fre - Reduced dela - Improved tra - Reduced con - Effective Wo reduced crashe
		Travel Time Reliability	1- 95th percentile travel time[2] 2- Buffer Index[3] 3- Travel time index (TTI)[4] 4- Planning time index[5]	SW-PD: RG-LD: 1, 2, 3,4	- RADS database which includes travel times should be used for calculating travel time performance measures. - Posted travel time could be verified by ground truth data (probe vehicle, video, and license plate matching) or video image processing of traffic cameras (depends on the video quality, for license plate matching)	- Establish and operate alternative routes - Coordination/Control of Planned Closure - Improve Mobility in Work Zones - Reduce crashes - decrease incident time - Reliability of travel times	- More predicta - Travel time s - Improve Mob - Enhanced sat - Reduced inci - Improved tra
	Safety	Achieve a significant reduction in traffic fatalities and serious injuries on our transportation system	1- Crash frequency (Quarterly) - Total number of crashes - Total injuries - Total fatalities 2- Crash severity 3- Crash rate (overall and fatal crash rates) - by corridors	SW: HCRS/ALISS: 1, 2, 3	- ALLIS crash database should be used to analyze the frequency and severity of crashes - Average Annual Daily Traffic (AADT) is also required for finding crash rate.	- Enhance engineering, enforcement, and education activities - Identify all high crash locations - Complete AASHTOWare Safety Analyst software initiative - Increase Number of RSA's Developed/ Completed - Real Time Notification to the Traveling Public - Reduce duration of incidents - Dissemination of queue length and weather related info to travelers via DMS, AZ511.	- Optimized sa - Targetted inv - An effective potential for cr - Quicker resp black spots - Improved pre - Better inciden clearance time
		Avoid creating any "bad" situations in terms of significantly higher crash rate	Number of crashes per quarter: - Fatal - Injury - PDO - Crash Rate	SW: HCRS/ALISS	- ALISS crash database should be used to analyze the frequency and severity of crashes - Crash Rate	- Improvements in work zone design features - Increase quick clearance procedure	- Smother traff

FreewayMgmt | ITS-Mgmt | IncidentMgmt | Freight | Signal Ops | Signal Mx | Pavement-LOS

Ready 75%



NOCoE National Operations Center of Excellence

Performance Measures - Regional

- Strong regional partnership in terms of performance measures – AZTech (20 years)
  - FHWA, ADOT, MAG, University of Arizona, County, local cities/towns, EMS
- Bi-annual Performance Indicators Book/Dashboard
  - Freeway Management
  - Arterial Management
  - Integrated Corridors
  - Incident/Special Event Management
  - Traveler Information
  - Transit Management

Performance Measures - Regional

Performance trending in favorable direction.

Performance is trending in an unfavorable direction.

Policy Goal/ Performance Measure	2012-2013 Period	2014-2015 Period		Description
Freeways				
Percent of Miles Congested (Out of Total of 240 Miles Measured)	31.6%	36.7%	↓	Overall 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)	25.2%	32.1%	↓	Overall freeways are experiencing more congested time where average vehicle speeds drop below 50 mph
Arterials				
Bell Road Westbound PM Peak Travel Time—35th Avenue to US-60	22:23 min	23:46 min	↓	Took over 1 minute longer to travel along this corridor
McDowell Road Eastbound AM Peak Travel Time—83rd Avenue to I-17	12:44 min	14:43 min	↓	Took over 2 minutes longer to travel along this corridor
Hayden Road Northbound PM Peak Travel Time—Loop 202 to Shea Boulevard	17:33 min	19:50 min	↓	Took over 2 minutes longer to travel along this corridor
Average Arterial TMC Hours with Ability to Respond Per Week	44 hours	44 hours	↑	77% of agencies also have on-call after hours support