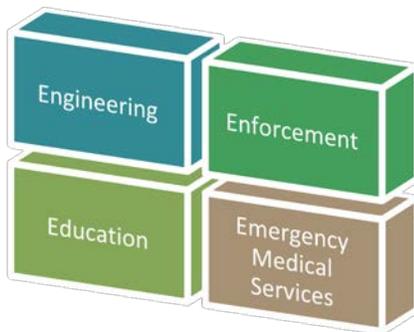


# CHAPTER 5: IMPLEMENTATION PLAN FY2016-FY2025

## STRATEGIES

The Implementation Plan Matrix, provided in Table X on the following pages, organizes the 2015 MAG STSP Action Areas, strategies, and corresponding lead agencies, planning level unit costs, and implementation time frame. Implementing the strategies proposed will, in some cases, require changes in investment priorities and/or organizational changes. None require legislative changes. Some of the strategies proposed can be implemented with existing resources and by existing staff. Some are already underway.

These strategies were developed by the 2015 MAG STSP Transportation Safety Stakeholders Group (TSSG) with the intention of having the greatest potential for reducing fatalities and serious injuries in the MAG planning area. These strategies encourage MAG



and MAG member agencies to look at safety from the 4 E perspective and to establish partnerships with diverse agencies and groups in order to achieve greater results.

Annual programs implemented under the 2005 MAG STSP will continue. Most of the strategies can be considered a promotion or enhancement of strategies identified in the 2005 MAG STSP. Three of the proposed strategies are new:

- 1.1 Support and disseminate information from ADOT's on-going research efforts of wrong-way detection systems to reduce wrong-way crashes on freeways.
- 2.1 Support and encourage the implementation of infrastructure-based ITS technologies that show promise for reducing fatalities and serious injuries.
- 2.3 Develop best practice guidelines for use of automated enforcement to improve safety.

## INVESTMENT REQUIREMENTS

Safety was especially prominent in the MAP-21 legislation and continues to be prominent in current legislation (GROW AMERICA Act). National performance goals for

federal highway programs were set and the safety goal was at the top of the list:

*“Safety – To achieve significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal lands”*

Federal funds are set aside exclusively for transportation projects. MAG member agencies have access to these funds for implementing road safety improvements through ADOT, MAG, and the Governor's Office of Highway Safety (GOHS), including certain set-asides within the programs below:

- National Highway Performance Program (NHPP)
- Surface Transportation Program (STP)
- Highway Safety Improvement Program (HSIP)
- Congestion Mitigation and Air Quality Improvement Program (CMAQ)
- Metropolitan Planning Program
- Transportation Alternatives Program (TAP)
- Fixing and Accelerating Surface Transportation (FAST)
- NHTSA Funds (402 and 405 grants) (GOHS)

Local agency funds and the MAG Unified Planning Work Program and Annual Budget are additional funding resources for plan implementation.

The 2035 MAG Regional Transportation Plan (January 2014) identifies the first of four goals as “System Preservation and Safety: Transportation infrastructure that is properly maintained and safe, preserving past investments for the future”. Included among fifteen objectives, which are intended to guide behavior



of the organization, is the objective to “provide a safe and secure environment for the traveling public, addressing roadway hazards, pedestrian and bicycle safety, and transit security”. Promoting and ensuring transportation safety will require resources commensurate with the importance of safety to the region's values.

Securing adequate resources to implement this plan will be a challenge. In some cases, current programs will be enhanced and existing resources are already identified. Other strategies will require new funds.

MAG staff and local experts developed planning level unit costs for each strategy. The following resources were used to estimate costs when local information was not available:

- [2009 FHWA Low-Cost Safety Enhancements for Stop-Controlled and Signalized Intersections](#)
- [2013 FHWA Costs for Pedestrian and Bicyclist Infrastructure Improvements](#)
- [BIKESAFE: Bicycle Safety Guide and Countermeasure Selection System](#)
- [PEDSAFE: Pedestrian Safety Guide and Countermeasure Selection System](#)

Costs for DUI Enforcement and Pedestrian and Bicycle Crossing Enforcement were estimated by taking the average of FFY13 funds spent by MAG member agencies from the [State of Arizona Highway Safety Annual Report for Federal Fiscal Year 2013](#). Due to the small sample size, School Zone Enforcement was estimated by taking the average of the FFY13 funds spent for two agencies in this task area.

## **RETURN ON INVESTMENT**

To estimate the perceived return on investment of each strategy, the TSSG members were polled. They were asked to provide input as to whether an individual strategy would provide a low, medium, or high return on investment for the region. If a member felt that they lacked expertise in an area, they could respond “not sure”.

[Placeholder for additional summary once results are in]

## **TIME FRAME**

Implementation of this plan spans a ten year time frame from MAG fiscal year 2016 to MAG fiscal year 2025 (July 2015 – June 2024). Implementing the strategies outlined in this STSP provides the greatest opportunity of achieving the goal of reducing fatalities and serious injuries **by 30 percent by 2025**. [Has not been accepted by TSSG yet]

Action Area	E's Addressed	Strategies	Documented Effectiveness*	Lead Agency	Unit Cost (1000's)	Unit	Return on Investment (Subjective)	Time Frame
1.0 Eliminate Death and Serious Injury from Impaired Driving	Engineering	1.1 Implement wrong-way detection systems to reduce wrong-way crashes on freeways.	-	ADOT DPS MAG	\$ 100	ea		Medium
	Enforcement	1.2 Conduct high visibility DUI saturation patrols.	HIGH	Local Agencies GOHS	\$ 114	per year		Short
	Education	1.3 Develop materials for educating target groups for impaired driving including mass-media campaigns on DUI dangers and penalties.	MED	MAG ADOT Local Agencies GOHS	\$ 50	ea		Medium
2.0 Eliminate Death and Serious Injury from Speeding and Aggressive Driving	Engineering	2.1 Support and encourage the implementation of infrastructure-based ITS technologies that show promise for reducing fatalities and serious injuries.	-	MAG ADOT	\$ 0	na		Short
		2.2 Administer projects that develop ICM strategies for handling incident diversions from freeways onto City arterials to address secondary crashes.	-	MAG ADOT DPS Local Agencies	\$ 180	ICM project/year		Short
		2.3 Develop best practice guidelines for use of automated enforcement to improve safety.	-	MAG	\$ 80	ea		Medium
	Enforcement	2.4 Utilize automated enforcement where appropriate to address speeding.	HIGH	Local Agencies	\$ 77	ea location		Medium
		2.5 Conduct enforcement in all work zones and increase enforcement in school zones.	HIGH		\$ 180	per year		Short
	Education	Public information campaign to support enforcement programs.		MED	Deferred to Implementation of the State SHSP Emphasis Area: Speeding and Aggressive Driving Strategy: Educate all road users about the dangers and consequences of speeding and aggressive driving			

Action Area	E's Addressed	Strategies	Documented Effectiveness*	Lead Agency	Unit Cost (1000's)	Unit	Return on Investment (Subjective)	Time Frame	
3.0 Eliminate Death and Serious Injury Related to Intersections	Engineering	3.1	Encourage submittal of TIP projects that include safety elements, for improving safer access for all modes, by including safety as an explicit project evaluation criteria for all TIP projects that currently have evaluation criteria as a means of prioritizing a list of projects. Exceptions to this practice are those Transit Maintenance and Operations programs funded through the MAG TIP.	-	MAG	\$ 0	na	Short	
		3.2	Identify new practices or standards that integrate safety into planning and design.	HIGH	MAG ADOT Local Agencies	\$ 0	na	Short	
		3.3	Enhance the MAG RSA Program:						
		3.3.a	Refine RSA location nominating criteria: Priority (1) High crash risk locations Priority (2) Locations where there are known high volumes of bicylists and pedestrians accessing transit.	-	MAG	\$ 300	per annual program administered	Short	
		3.3.b	Conduct safety assessment reviews during the design phase.	-	MAG Local Agencies	\$ 80	per annual program administered		
		3.3.c	Develop a Bicyclist Safety Assessment program that focuses on bicyclist safety countermeasures on bike paths.	-	MAG	\$ 100	per annual program administered		
		3.4	Prioritize Improvements based on screening for high crash risk intersections.	-	Local Agencies MAG ADOT	\$ 0	na	Short	
		3.5	Implement systemic improvements based on identifying characteristics of high risk intersections.	-	Local Agencies	\$ 46	ea intersection	Short	

Action Area	E's Addressed	Strategies	Documented Effectiveness*	Lead Agency	Unit Cost (1000's)	Unit	Return on Investment (Subjective)	Time Frame	
3.0 Eliminate Death and Serious Injury Related to Intersections (Continued)	Engineering (Continued)	3.6	Prepare a "best practices" guide for Road Diet and Complete Streets projects that incorporates safety countermeasures in project development.	-	MAG	\$ 80	ea	Medium	
		3.7	Prepare a "best practices" guide for design of pedestrian and bicycle accommodations at roundabouts.	-	MAG	\$ 60	ea	Medium	
		3.8	Prepare technical resource that summarizes and documents regional and national research on effectiveness of safety countermeasures for all E's.	-	MAG	\$ 100	ea	Long	
		Implement countermeasures that go beyond minimum standards (including street design or beyond MUTCD requirements)		-	Deferred to Implementation of the State SHSP Emphasis Area: Interjurisdictional/ Emphasis Support Areas Strategy: All Strategies under Emphasis Area				
	Enforcement	3.9	Conduct targeted enforcement of high crash risk intersections.	HIGH	Local Agencies ADOT	\$ 18	ea intersection	Short	
		3.10	Utilize automated enforcement at high crash risk intersections where appropriate.	HIGH		\$ 77	ea intersection	Medium	
	Education	3.11	Partner with local professional societies to hold an annual workshop to educate roadway designers on safety tools available to assess and improve substantive safety.	-	FHWA ADOT MAG	\$ 0	na	Short	
		3.12	Develop and distribute educational materials related to intersection safety.	-	AAA ADOT AARP GOHS MAG	\$ 60	ea crash type addressed	Medium	
	EMS	3.13	Perform comprehensive review of current EVP practices and develop a recommended practice for the region to follow.	-	MAG Work Program currently underway				

Action Area	E's Addressed	Strategies	Documented Effectiveness*	Lead Agency	Unit Cost (1000's)	Unit	Return on Investment (Subjective)	Time Frame
4.0 Eliminate Death and Serious Injury for Vulnerable Road Users - Pedestrians, Bicyclists and Persons with Disabilities	Engineering	4.1	Encourage submittal of TIP projects that include safety elements, for improving safer access for all modes, by including safety as an explicit project evaluation criteria for all TIP projects that currently have evaluation criteria as a means of prioritizing a list of projects. Exceptions to this practice are those Transit Maintenance and Operations programs funded through the MAG TIP.	-	MAG Local Agencies	\$ 0	na	Short
		4.2	Promote practices that ensure safety and multimodal connectivity in planning and design.	-	Local Agencies MAG ADOT	\$ 0	na	Short
		4.3	Promote and administer Safe Routes to School framework studies to identify school traffic issues and produce walking and biking route maps through the MAG TA non-infrastructure program		MAG Local Agencies	\$ 400	na	Short
		4.4	Identify high risk locations for potential implementation of enhanced pedestrian crossings would have a favorable benefit/cost ratio.	-	MAG	\$ 0	na	Short
		4.5	Install pedestrian Hybrid Beacons (HAWKs).	MED**	Local Agencies	\$ 85	ea	Short
		4.6	Install medians and pedestrian crossing islands.	HIGH	Local Agencies	\$ 75	ea crossing	Short
		4.7	Provide bicycle detection at signalized intersections.	-	Local Agencies	\$ 3	ea intersection approach	Short
		4.8	Develop Complete Streets Implementation Guidelines that integrate safety analysis and design throughout the planning process.	-	MAG	\$ 80	ea	Medium
		4.9	Prepare a "best practices" guide for high risk intersections and high exposure bicycle and pedestrian crossing nodes.	-	MAG	\$ 80	ea	Medium

Action Area	E's Addressed	Strategies	Documented Effectiveness*	Lead Agency	Unit Cost (1000's)	Unit	Return on Investment (Subjective)	Time Frame	
4.0 Eliminate Death and Serious Injury for Vulnerable Road Users - Pedestrians, Bicyclists and Persons with Disabilities (Continued)	Engineering	4.10	Develop short-range action program oriented to 1) high transit activity stops and 2) new routes that would enhance transit stop safety.	-	RPTA Local Agencies	\$ 80	ea	Medium	
		Develop update of regional bus stop design and location guidelines to promote safety.			Deferred to efforts currently underway by RPTA				
	Enforcement	Establish bicycle helmet laws for children.		HIGH	Deferred to Implementation of the State SHSP Emphasis Area: Nonmotorized Users (Bicyclists) Strategy: Research and identify effective policies to improve bicycle safety that can be implemented by state, local and tribal governments				
		4.11	Decrease wrong-way riding and traffic control violations by bicyclists.	-	GOHS Local Agencies	\$ 381	per year		Short
		4.12	Produce a white paper on wrong way bicycle crashes and model ordinances to prevent crashes	-	MAG	\$ 10	ea		Short
	Education	4.13	Develop on-going training and public information bicycle and pedestrian safety campaigns.		GOHS MAG Local Agencies	\$ 60	ea		Short
		4.14	Share best practices among regional stakeholders on best safety practices for getting to and from school; including developing recommended walk or bike to school routes for all schools in the region and administration of SRTS programs	-	ADOT MAG School Districts Local Agencies	\$ 0	na		Short
		4.15	Support a regional training program for school crossing guards	-	MAG	\$ 4	per year for 3 annual training workshops		Short
		4.16	Explore and release a smartphone application to educate vulnerable users.	-	MAG ADOT RPTA ASU	\$ 60	ea		Medium

Action Area	E's Addressed	Strategies	Documented Effectiveness*	Lead Agency	Unit Cost (1000's)	Unit	Return on Investment (Subjective)	Time Frame	
5.0 Eliminate Death and Serious Injury Involving Young Road Users	Education	5.1	Identify best practices for promoting or implementing Safe Driving pledge campaigns.	-	MAG	\$ 30	ea	Short	
		5.2	Explore methods of educating young road users through Mass-media campaigns.	-	ADOT GOHS Local Agencies AAA MAG	\$ 30	ea	Short	
		Implement driver education in schools.		-	Deferred to Implementation of the State SHSP Emphasis Area: Age Related (Young Drivers) Strategy: All Strategies under this Emphasis Area				
		5.3	Partner with ADOT, Valley Metro, and other organizations to deploy distracted driver safety awareness campaigns.	-	ADOT GOHS DOEd AAA MAG	\$ 30	ea	Medium	
6.0 Support Action Area - Improve Data Collection, Quality, Availability, Integration, and Analysis for Decision Making	Analysis	6.1	Enhance the existing network screening methodology for intersections and segments	-	MAG	\$ 0	na	Short	
	Data Improvement	6.2	Enhance the Regional Transportation Safety Information Management System	-	MAG	\$ 80	ea	Short	
		6.3	Develop or purchase a comprehensive safety assessment tool based on HSM methodologies.	-	MAG	\$ 100	ea	Long	
		6.4	Develop a tool to conduct benefit-cost analyses and calculate crash reduction factors (CRFs).	-	MAG	\$ 30	ea	Long	
		6.5	Develop local calibration factors for existing national HSM SPFs specific to the MAG planning area.	-	MAG Local Agencies ADOT	\$ 100	ea	Long	