Arizona
Highway Safety Improvement Program
2013 Annual Report

Executive Summary

The Moving Ahead for Progress in the 21st Century Act (MAP-21) continued the Highway Safety Improvement Program (HSIP) as a core program. HSIP is authorized under section 148 of Title 23, United States Code (23 U.S.C. 148) with implementing regulations at 23 CFR Part 924. This annual report for Federal Fiscal Year (FFY) 2012 has been prepared by Arizona Department of Transportation (ADOT) Traffic Safety Section (TSS) based on best available data and information collected from various internal and external sources.

Arizona DOT is continuing to make progress in the HSIP implementation on all public roads statewide. ADOT-TSS has been leading the efforts to deliver the HSIP program. ADOT Local Public Agency (LPA) Section tracks local HSIP funded projects and works with stakeholders to ensure successful project delivery. Apart from core HSIP funded projects, High Risk Rural Roads Program (HRRRP) was implemented to the extent projects were eligible and justified. Road Safety Assessment (RSA) program is very well established with several successful RSAs conducted within State, city/town, county and tribal jurisdictions. Many of the safety projects funded through HSIP were developed based on the RSA recommendations.

Approximately $26 million safety funding (HSIP and HRRRP) was obligated in FFY 2012. Projects included systemic as well as spot improvements.

As far as statewide fatality trend is concerned, there has been a general decline since the baseline year of 2007 when the Arizona Strategic Highway Safety Plan (SHSP) was developed per SAFETEA-LU. During the last year of this reporting, there is a slight reduction in number of fatalities (822 in 2012 compared to 827 in 2011). Arizona SHSP is currently being updated to reflect MAP-21 requirements and FHWA guidance.

A. Program Structure

Federal HSIP funding is intended for any project aiming at reducing traffic fatalities and serious injuries on public roads. This funding is administered for the state highway system as well as local roadways through ADOT-TSS. ADOT Districts may submit requests for funding for safety enhancements at locations within their jurisdiction. HSIP local public agency (e.g. counties, cities, towns and tribal governments) set-aside funds are distributed through the regional planning bodies and projects are prioritized based on their local needs. Program Managers assigned with HSIP (State Highway System) and Local Public Agency Section (LPAS) are responsible for this program.

Program Administration

How are Highway Safety Improvement Program funds administered in a State?

☒Central

Describe how local roads are addressed as part of Highway Safety Improvement Program.

Seventy percent (70%) of Arizona's HSIP funds are set aside for statewide safety projects, twenty percent (20%) for local government and the remaining ten percent (10%) for flexible non-infrastructure projects. This 70/20/10 split was adopted to address traffic safety on all public roads with both ADOT and local agencies (Council of Governments (COGs), Metropolitan Planning Organizations (MPOs), cities, towns, counties and tribal agencies). This split is being re-evaluated as part of the SHSP update process and per MAP-21 legislation. As ADOT and local government agencies identify high crash locations using any acceptable screening method and develop safety improvement projects, ADOT reviews them on a statewide basis and prioritize projects for funding eligibility. ADOT

LPA, in consultation with MPOs and COGs, provides assistance to local agencies throughout the process of identifying and developing the projects.

Identify which internal partners are involved with Highway Safety Improvement Program planning. Check all that apply.

☒Other: ADOT Traffic Safety Section (TSS) and Local Public Agency Section (LPAS)

Briefly describe coordination with internal partners.

Safety analyses begin with the compilation and correlation of data elements on a statewide system. Coordination takes place within ADOT including the State Engineer's Office, the Director's Office, Project Managers, District Engineers and others involved in safety projects. Once the project is identified, depending on the nature of the project, justification of HSIP funding through evaluation and formal eligibility process is established by ADOT and FHWA Arizona Division Office.

Identify which external partners are involved with Highway Safety Improvement Program planning. Check all that apply.

☒Metropolitan Planning Organizations and Rural Council of Governments

Identify any program administration practices used to implement the HSIP that have changed since the last reporting period.

☒Other: As opposed to HSIP (Local Government) located within Traffic Safety Section (TSS), Local Public Agency Section (LPAS) has been formed and they work in coordination with TSS.

Program Methodology

Select the programs that are administered under the HSIP.

☒Median Barrier	☒Intersection	☐Safe Corridor
☒Horizontal Curve	☐Bicycle Safety	☒Rural State Highway
☐Skid Hazard	☒Crash Data	☐Red Light Running
☒Roadway Departure	☒Low-Cost Spot Improvements	☒Sign Replacement and Improvement
☒Local Safety	☒Pedestrian Safety	☐Right Angle Crash
☒Left-turn Crash	☒Shoulder Improvement	☒Segments
☒Other:		

Road Safety Assessment (RSA)
Tree Removal

For each program checked above, enter the following information:

Program: Not all of the checked items are established as formal programs. These programs generally involve HSIP funded projects either independently or as a part of a bigger project jointly funded through HSIP and other funding.

Date of Program Methodology: HSIP: March 2010 and RDSIP: June 2012.

Arizona HSIP Manual provides necessary guidance to utilize federal safety funding allocated to the state. The manual discusses funding categories, allocations among state and non-state agencies as well as three major components, i.e. planning, implementation and evaluation. This document will be updated based on the upcoming Arizona SHSP Update (2014).

Roadway Departure Safety Improvement Plan (RDSIP) was developed for Arizona with technical support from Federal Highway Administration Office of Safety and its contractor. Using a data analysis package, the following items were developed: a set of roadway departure safety strategies to identify cost-effective countermeasures, deployment levels, and funding needed to achieve 10 to 15 percent reduction in roadway departure fatalities on Arizona roadways when fully implemented.

What data types were used in the program methodology? Check all that apply

Crashes	***Exposure***	***Roadway***
☒All crashes	☐Traffic	☐Median width
☐Fatal crashes only	☐Volume	☐Horizontal curvature
☒Fatal and serious injury crashes only	☐Population	☐Functional classification
☐Other: 1T	☐Lane miles	☐Roadside features

What project identification methodology was used for this program? Check all that apply.

☒Crash frequency

☒Relative severity index

Are local roads (non-state owned and operated) included or addressed in this program?
Yes
If yes, are local road projects identified using the same methodology as state roads?
No
If no, describe the methodology used to identify local road projects as part of this program.
MPOs and COGs perform the screening and prioritize projects for local agencies.

How are highway safety improvement projects advanced for implementation?

☒Other: Based on B/C Ratio and systemic projects based on crash type.

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

☒Rank of Priority Consideration

Ranking based on B/C	2
Available funding	1

See Appendix C for additional criteria used to program HSIP funds.

What proportion of highway safety improvement program funds address systemic improvements?
30.29% based on funding spent on systemic type improvements.

Highway safety improvement program funds are used to address which of the following systemic improvements? Please check all that apply.

☒Cable median barriers	☒Upgrade guard rails
☒Rumble strips	☒Clear zone improvements
☒Traffic control device rehabilitation	☐Safety edge
☒Pavement/shoulder widening	☒Install/improve lighting
☒Install/Improve Signing	☒Add/upgrade/modify/remove traffic signal
☒Install/improve pavement marking/delineation	☐Other: 1T

What process is used to identify potential countermeasures?

☒Engineering Study

☒Road Safety Assessment

Identify any program methodology practices used to implement the HSIP that have changed since the last reporting period.

☒Highway Safety Manual

Describe any other aspects of the Highway Safety Improvement Program methodology on which you would like to elaborate.

The Road Safety Assessment (RSA) program is housed in ADOT-TSS. The RSA program is available statewide to local, tribal, state, and federal agencies. Each RSA is a formal examination of road user safety of an existing or

future roadway by a qualified and experienced independent multidisciplinary team. Highlights of the Arizona RSA Program for federal fiscal year 2012:

- 20 RSAs conducted for
  - 2 Tribes
  - 7 Cities
  - 4 Counties
  - 5 ADOT Districts
  - 152 RSA team members participated in the 20 RSAs
- 8 RSA-generated projects received FHWA eligibility approval for use of $28,092,000 in HSIP funds
- Provided technical assistance to Maricopa Association of Governments (MAG) and Pima Association of Governments (PAG) for their RSA programs
- Multiple Safety Coordination meetings with Inter Tribal Council of Arizona (ITCA) to improve RSA process for Tribes, including Tribal response to RSAs
- Provided information and examples from Arizona RSAs to FHWA contractors for:
  - Tribal HSIP/Traffic Safety Management Plans
  - RSAs on Federal and Tribal Lands

B. Progress in Implementing Projects

Funds Programmed

Reporting period for Highway Safety Improvement Program funding.

Federal Fiscal Year

October 1, 2011 to September 30, 2012. The table below shows the Arizona State SFY2012 funding programmed in the Five-year Program, and available and obligated amounts in Federal FFY2012. A total of approximately $26 million were obligated on state, county, local and tribal safety projects.

HSIP Project Funding			
Reporting Period 10/01/2011 to 09/30/2012			
Funding Category	**SFY 2012 Programmed (5Yr Program)**	**FFY 2012 Available**	**FFY 2012 Obligated**
HSIP (Section 148)	$28,190,000.00	$49,744,422.53	$24,657,944.81
HRRRP (SAFETEA-LU)	$ 4,840,000.00	$12,437,835.00	$ 1,335,973.00
HRRR Special Rule	$ 0	$ 0	$ 0
Penalty Transfer - Section 154	$ 0	$ 0	$ 0
Penalty Transfer – Section 164	$ 0	$ 0	$ 0
Incentive Grants - Section 163	$ 0	$ 0	$ 0
Incentive Grants (Section 406)	$ 0	$ 0	$ 0
Other Federal-aid Funds (i.e. STP, NHPP)	$ 0	$ 0	$ 0
State and Local Funds	$1,264,930.00	$ 0	$ 0
Total	**$34,294,930.00**	**$62,182,257.53**	**$25,993,917.81**

How much funding is programmed to local (non-state owned and maintained) safety projects?

$5,950,000
How much funding is obligated to local safety projects?
$6,136,407 (HSIP = $4,631,616; HRRRP = $1,504,791)
How much funding is programmed to non-infrastructure safety projects?
None.
How much funding is obligated to non-infrastructure safety projects?
$1,064,057
How much funding was transferred in to the HSIP from other core program areas during the reporting period?
None
How much funding was transferred out of the HSIP to other core program areas during the reporting period?
None
Discuss impediments to obligating Highway Safety Improvement Program funds and plans to overcome this in the future.
ADOT and FHWA Arizona Division Office are having discussions on how to improve the funding process as a part of the SHSP update.

General Listing of Projects

List each highway safety improvement project obligated during the reporting period.
Several safety improvement projects were delivered as well as ongoing during the reporting period. While spot improvements continued to take place, a number of systemic/systemwide improvements were also implemented. Funding was allocated based on date-driven analysis and justification submitted by state and non-state agencies and approved by ADOT and FHWA. See **Appendix A** for the complete listing of projects.

C. Progress in Achieving Safety Performance Targets

Overview of General Safety Trends

The Arizona motor vehicle crash facts are published annually and are available on the web at <http://www.azdot.gov/mvd/statistics/crash/index.asp>. Statewide fatalities and incapacitating injuries and corresponding rates per Hundred Million VMT (HMVMT) are given below.

Category/Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Statewide Total									
Fatalities	1,159	1,193	1,301	1,071	938	806	759	827	821
Incapacitating Injuries	7,105	7,026	6,542	6,282	5,409	4,825	4,644	4,588	4,468
Fatality Rate per HMVMT	2.02	2.00	2.08	1.70	1.52	1.34	1.27	1.38	1.37
Incapicating Injury Rate per HMVMT	12.38	11.77	10.48	9.99	8.78	8.04	7.75	7.66	7.43

Crash data by Functional Classification and Ownership are not available at this time. Work is underway to integrate the crash and roadway feature databases.

Application of Special Rules

Present the rate of traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65. Using the Section 142: Older Drivers and Pedestrians Special Rule Interim Guidance, the calculations were performed as follows:

Rate of Fatalities (F) and Incapacitating Injuries (II) per capita for drivers, passengers and pedestrians 65 years of age and older = (Number FII involving older drivers + Number of FII involving older passengers + Number of FII involving older pedestrians)/Population Factor for Arizona given in Special Rule Attachment 2).

See **Appendix B** spreadsheet for details.

Application of Special Rule:

Older Driver Performance Measures	2005	2006	2010	2011
Fatality Rate per capita	1.13	1.22	0.99	0.98
Incapacitating Injury Rate per capita	3.88	3.98	3.04	3.18
Fatality and Incapacitating Injury Rate per capita	5.02	5.2	4.03	4.15

$(R_{2011} + R_{2010} – R_{2006} – R_{2005})/5 = (4.15 + 4.03 – 5.20 – 5.02)/5 = -0.41 < 0.0.$

Therefore, Special Rule does not apply to Arizona.

Does the older driver special rule apply to your state?
No

D. Assessment of the Effectiveness of the Improvements (Program Evaluation)

What indicators of success can you use to demonstrate effectiveness and success in the Highway Safety Improvement Program? Select all that apply.

☒B/C ratio

☐Policy change

What significant programmatic changes have occurred since the last reporting period? Select all that apply.

☐Shift focus to fatalities and serious injuries

☒Organizational changes*

☒More systemic programs included in HSIP

☒Other: Application of Highway Safety Manual at the project level

Briefly describe significant program changes that have occurred since the last reporting period.
*Local Public Agency (LPA) section, created toward the end of FFY 2012, is assisting local agencies with Federal-Aid processes to ensure that the Federal policies and procedures are met.

SHSP Emphasis Areas

For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.
SHSP goals and reported fatalities in each of the emphasis areas are given below:

SHSP Goals vs. Reported Fatalities in 2012

Safety Device Not Used: Goal = 378, Reported = 317
Speeding Related: Goal = 367, Reported = 286
Young Driver (age 24 and under): Goal = 301, Reported = 237
Impaired Driver Involved: Goal = 403, Reported = 367
Lane Departure Related: Goal = 511, Reported = 447
Intersection Related: Goal = 205, Reported = 182

Statewide fatalities and incapacitating injuries and corresponding rates per Hundred Million VMT (HMVMT) categorized by SHSP emphasis areas are given in the next table.

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Category/Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
SHSP Emphasis Areas									
Safety Device Not Used									
Fatalities	494	469	572	445	376	322	282	300	317
Incapacitating Injuries	1,619	1,628	1,511	1,338	1,185	1,032	921	865	862
Fatality Rate per HMVMT	0.86	0.79	0.92	0.71	0.61	0.54	0.47	0.50	0.53
Incapicating Injury Rate per HMVMT	2.82	2.73	2.42	2.13	1.92	1.72	1.54	1.44	1.43
Speeding Related									
Fatalities	445	482	507	432	397	283	251	287	286
Incapacitating Injuries	2,366	2,325	2,243	2,173	1,890	1,634	1,588	1,481	1,477
Fatality Rate per HMVMT	0.78	0.81	0.81	0.69	0.64	0.47	0.42	0.48	0.48
Incapicating Injury Rate per HMVMT	4.12	3.89	3.59	3.45	3.07	2.72	2.65	2.47	2.46
Young Driver (age 24 and under)									
Fatalities	425	434	413	354	288	212	160	229	237
Incapacitating Injuries	3,069	3,078	2,702	2,561	2,062	1,687	1,699	1,576	1,527
Fatality Rate per HMVMT	0.74	0.73	0.66	0.56	0.47	0.35	0.27	0.38	0.39
Incapicating Injury Rate per HMVMT	5.35	5.16	4.33	4.07	3.35	2.81	2.84	2.63	2.54
Impaired Driver Involved									
Fatalities	405	366	459	474	431	355	329	367	367
Incapacitating Injuries	1,578	1,497	1,382	1,276	1,149	1,173	1,010	1,036	994
Fatality Rate per HMVMT	0.71	0.61	0.74	0.75	0.70	0.59	0.55	0.61	0.61
Incapicating Injury Rate per HMVMT	2.75	2.51	2.21	2.03	1.87	1.96	1.69	1.73	1.65
Lane Departure Related									
Fatalities	622	625	655	601	520	458	378	406	447
Incapacitating Injuries	2,191	2,265	2,176	2,120	1,839	1,852	1,595	1,494	1,481
Fatality Rate per HMVMT	1.08	1.05	1.05	0.96	0.84	0.76	0.63	0.68	0.74
Incapicating Injury Rate per HMVMT	3.82	3.79	3.49	3.37	2.99	3.09	2.66	2.49	2.46
Intersection Related									
Fatalities	246	258	325	241	221	170	175	195	182
Incapacitating Injuries	3,052	3,086	2,782	2,634	2,224	2,010	2,041	2,097	2,019
Fatality Rate per HMVMT	0.43	0.43	0.52	0.38	0.36	0.28	0.29	0.33	0.30
Incapicating Injury Rate per HMVMT	5.32	5.17	4.46	4.19	3.61	3.35	3.41	3.50	3.36

Data by Groups of Similar Projects and Systemic Treatments are not available at this time. The data needs and evaluation method for this analysis is to be addressed as part of the SHSP Update currently underway.