

TRANSPORTATION SAFETY & SECURITY SYSTEM

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

2016
2040 **RTPSCS**

APPENDIX
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TRANSPORTATION SAFETY & SECURITY

TRANSPORTATION SAFETY INTRODUCTION

The 2016 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS) prioritizes ensuring the safety and mobility of the region's residents, including drivers and passengers, transit riders, pedestrians, and bicyclists. In 2012, the most recent date for which complete data is available¹, about 1,300 people died and more than 6,000 were severely injured on roadways throughout the SCAG region. Put a different way, the SCAG region had a fatality rate of 0.83 per 100 million Vehicle Miles Traveled (VMT), which is slightly lower than the California fatality rate of 0.91 per 100 million VMT and significantly lower than the national rate of 1.09. Although both fatalities and injuries have declined over the last 10 years, the emotional and financial toll as a result are still far too high. Average costs for each traffic death, traffic injury or property damage were²:

- Death - \$1,410,000
- Severe Injury - \$78,900
- Property Damage - \$8,900

Safety is defined as the protection of persons and property from unintentional damage or destruction caused by accident or natural events. A crucial aspect of any transportation system is to ensure the safety of people and goods throughout the course of their travels. Transportation and law enforcement agencies at all levels understand the importance of providing a safe transportation system and have recognized ensuring safety as one of their chief responsibilities.

In 2015, the California Department of Transportation released an updated Strategic Highway Safety Plan (SHSP). The SHSP is a federal requirement under the Moving Ahead for Progress in the 21st Century Act (MAP-21) (P.L. 112-141; 2012) and serves as a component of the Federal Highway Safety Improvement Program (HSIP). The SHSP is a comprehensive, data-driven effort that establishes targets and strategies for reducing serious injuries and fatalities on all public roads in California.

The development of SHSPs was initiated in 2005 following the enactment of the federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). With the enactment of subsequent legislation, MAP-21, the HSIP continues to serve as a core federal-aid program and states are required to develop, implement,

evaluate and regularly update an SHSP. Additional requirements were mandated under MAP-21 to strengthen the overall SHSP, which include:

- Regular plan updates (at least every five years);
- Increased stakeholder involvement;
- Consideration of other safety factors (i.e., locations with risk factors, high-collision locations, rural roads, and road safety audit findings) when updating the SHSP;
- Integration with other state and regional transportation plans;
- Focus on use of proven effective strategies and countermeasures; and
- Identification of methods to evaluate the SHSP.

California is now working toward a long-term goal of Toward Zero Deaths, or TZD. The state's short-term goals are to reduce the number and rate of fatalities by three percent per year and to reduce the number and rate of severe injuries by 1.5 percent per year. The updated SHSP includes 15 challenge areas (e.g., impaired driving, bicycling, and older drivers), which function as categories for improvement. The updated plan and accompanying action plan are intended to provide the state with a roadmap for effective implementation.

SCAG supports and embraces the efforts of the state. Ensuring the safety of people and goods as they traverse our transportation network remains an enduring priority for the state and our region. The importance of providing a safe and secure transportation system is emphasized by transportation and law enforcement agencies at all levels, and is recognized as one of the chief responsibilities of transportation planners. SCAG's adopted safety goal is to ensure transportation safety, security, and reliability for all people and goods in the region.

The state's updated SHSP, includes new goals, actions, and challenge areas to further reduce transportation-related severe injuries and fatalities in California. The following sections provide details on SCAG challenge areas that are consistent with those included in the SHSP and what steps should be taken to further reduce transportation-related injuries and fatalities in the SCAG region.

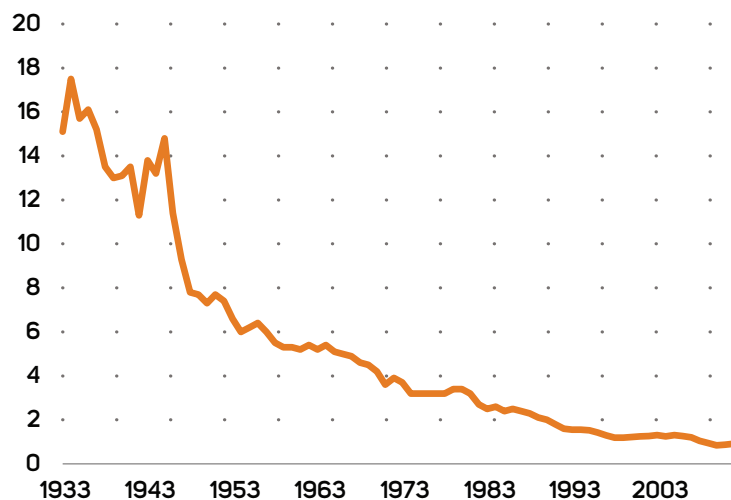
BACKGROUND CONDITIONS

The SCAG region has an extensive transportation system with more than 70,000 freeway and arterial lane-miles, as well as 3,900 miles of bikeways. The region had 14.9 million licensed drivers and 11.8 million registered vehicles as of 2014. In 2012, more than 1,300 people died and nearly 7,000 were severely injured in traffic collisions in the SCAG region.³

The rate of fatal and injury collisions on California’s highways has declined dramatically since the California Highway Patrol (CHP) began keeping such data in the 1930s. California has led the nation in roadway safety for much of the past 20 years. Only recently have our nation’s roadways become as safe as those in California. California’s 2012 Mileage Death Rate (MDR) – fatalities per 100 million vehicle miles traveled (100 million VMT)- is 0.91, much lower than the national MDR of 1.09. This marks the fifth time California has been below a rate of 1.0 as shown in **FIGURE 1**. The SCAG region has a fatality rate of 0.83 per 100 million VMT, which is lower than both the national and California fatality rate.

The Statewide Integrated Traffic Reporting System (SWITRS) serves as the primary source for collecting collision data reflected within the California SHSP. Data collected for 2012 in the SCAG region is summarized in **TABLES 1-8**.

FIGURE 1 California Mileage Death Rate



Source: <https://www.chp.ca.gov/InformationManagementDivisionSite/Documents/2012-sec1.pdf>

CONSEQUENCES OF COLLISIONS IN THE SCAG REGION

Though fatalities and injuries in the SCAG region increased marginally between 2011 and 2012, by about 8 percent and 2 percent, respectively, these rates are still significantly lower when compared to 2002 levels.

The National Safety Council reports that the calculable costs of motor-vehicle crashes are wage and productivity losses, medical expenses, administrative expenses, motor vehicle damage, and employers’ uninsured costs. The average costs for each traffic death, traffic injury or property damage crash were (in 2012)⁴:

- Death – \$1,410,000
- Nonfatal Disabling Injury – \$78,900
- Property Damage, including non-disabling injuries – \$8,900

While the California SHSP focuses on activities at the state level, local governments can supplement these activities to provide additional benefits. This document provides a guidance on how jurisdictions can help in the implementation of each strategy laid out in the SHSP. Because SCAG is a planning agency and does not coordinate enforcement, education or emergency response this document will focus on engineering improvements. Where funding information is available for education, enforcement or emergency response, that information is provided.

TABLE 1 Traffic Fatalities in the SCAG Region (2012)

County	Driver Killed	Passenger Killed	Pedestrian Killed	Cyclist Killed	Motorcyclist Killed	Total Killed
Imperial	16	8	7	1	2	32
Los Angeles	296	102	203	27	113	628
Orange	73	20	47	13	23	153
Riverside	121	37	47	10	23	215
San Bernardino	128	58	51	7	28	244
Ventura	29	7	8	4	12	49
SCAG Region	663	232	363	62	201	1,321
Statewide Totals	1,582	563	702	147	451	2,995

Source: The Statewide Integrated Traffic Records System (SWITRS)

TABLE 2 Traffic Injuries in the SCAG Region (2012)

County	Driver Injured	Passenger Injured	Pedestrian Injured	Cyclist Injured	Motorcyclist Injured	Total Injured
Imperial	482	262	29	24	31	797
Los Angeles	42,431	19,941	5,094	4,931	3,210	72,451
Orange	12,657	5,093	864	1,448	954	20,072
Riverside	6,867	3,311	404	354	682	10,945
San Bernardino	7,061	3,934	448	395	494	11,844
Ventura	3,332	1,338	248	276	217	5,195
SCAG Region	72,830	33,879	7,087	7,428	5,588	121,304
Statewide Totals	136,929	62,188	13,280	13,921	11,472	226,544

Source: The Statewide Integrated Traffic Records System (SWITRS)

TABLE 3 Traffic Fatalities Summary (2002 - 2012)

County	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Imperial	49	45	56	46	42	42	39	37	31	13	32
Los Angeles	728	816	750	745	801	759	715	589	568	542	628
Orange	193	215	215	205	210	193	162	154	106	140	153
Riverside	312	303	321	333	349	318	253	219	203	203	215
San Bernardino	334	357	409	425	397	354	290	236	221	240	244
Ventura	66	79	70	71	82	74	74	62	43	74	49
SCAG Region	1,682	1,815	1,821	1,825	1,881	1,740	1,533	1,297	1,172	1,212	1,321
Statewide Totals	4,089	4,225	4,094	4,304	4,197	3,967	3,401	3,076	2,739	2,835	2,995

Source: The Statewide Integrated Traffic Records System (SWITRS)

TABLE 4 Traffic Severe Injury Summary (2002 -2012)

County	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Imperial	152	180	143	136	164	126	90	85	78	94	82
Los Angeles	4,874	4,604	4,558	4,188	4,253	4,457	3,924	3,763	3,331	3,464	3,584
Orange	1,130	1,098	1,110	1,121	999	1,010	1,001	883	889	921	990
Riverside	1,202	1,089	1,221	1,165	1,249	1,119	973	899	910	903	900
San Bernardino	1,227	1,432	1,317	1,279	1,371	1,176	1,008	886	893	849	874
Ventura	461	376	412	400	435	360	336	299	353	298	380
SCAG Region	9,046	8,779	8,761	8,289	8,471	8,248	7,332	6,815	6,454	6,529	6,810
Statewide Totals	19,788	18,977	19,602	18,507	18,681	18,346	16,514	15,264	14,483	14,629	14,847

FHWA uses the latest definition in MMUCC (Model Minimum Uniform Crash Criteria) guidelines: "serious injury" or "suspected serious injury" (A): any injury, other than fatal, which results in one or more of the following: Severe laceration resulting in exposure of underlying tissues, muscle, organs, or resulting in significant loss of blood; Broken or distorted extremity (arm or leg) Crush injuries; Suspected skull, chest, or abdominal injury other than bruises or minor lacerations; Significant burns (second and third degree burns over 10 percent or more of the body); Show citation box, Unconsciousness when taken from the crash scene; or Paralysis. Source: The Statewide Integrated Traffic Records System (SWITRS)

TABLE 5 Traffic Injury Summary 2002–2012

County	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Imperial	1,219	1,231	1,159	1,040	1,133	963	775	680	752	763	797
Los Angeles	92,742	92,557	90,042	86,582	83,941	82,480	74,893	73,107	71,866	72,056	72,451
Orange	22,782	24,173	23,917	23,028	21,671	20,082	18,891	18,735	19,043	19,323	20,072
Riverside	14,291	15,105	15,805	15,966	15,720	14,601	12,565	11,705	11,298	10,727	10,945
San Bernardino	16,517	17,022	17,299	16,929	16,628	15,090	12,571	11,735	11,764	11,382	11,844
Ventura	6,892	7,085	6,587	6,266	5,965	5,562	5,280	4,747	4,932	4,730	5,195
SCAG Region	154,443	157,173	154,809	149,811	145,058	138,778	124,975	120,709	119,655	118,981	121,304
Statewide Totals	310,687	307,165	302,357	292,798	277,573	266,687	241,871	232,777	229,354	225,602	226,544

TABLE 6 Drivers in Fatal Collisions by type of Collision by Movement Preceding Collision (2002 -2012)

MOVEMENT PRECEDING COLLISION	Head-On	Sideswipe	Rear End	Broadside	Hit Object	Overturned	Auto/ Pedestrian	Other	TOTAL
Stopped	4	6	93	38	7	2	9	3	162
Proceeding straight	310	107	244	578	216	89	623	116	2,283
Ran off road	9		2	5	303	72	12	7	410
Making right turn	3	1	3	9	7	1	19	12	55
Making left turn	23	3	6	150	7	6	30	13	238
Making U turn				13			1		14
Backing		1	3	2		1	6		13
Slowing/stopping	8	3	29	4	1	5	3	1	54
Passing other vehicle	11	7	2	9	5	2	1	2	39
Changing lanes	2	30	10	3	6	2	5	2	60
Entering traffic	1	1	3	22		2	5	1	35
Other unsafe turning	17	5	8	10	125	31	15	7	218
Crossed into opposing lane	120	10		16	7	3	1	1	158
Parked*			1						1
Merging		1				1	1		3
Traveling wrong way	36	1		2	2			1	42
Other	4	7	19	9	120	45	9	2	215
Not stated		1		3			3		7
Total	548	184	423	873	806	262	743	168	4,007

*Anomalies are due to re-engineering of SWITRS beginning with 2002 data.
Source: The Statewide Integrated Traffic Records System (SWITRS)

TABLE 7 Drivers in Injury Collisions by type of Collision by Movement Preceding Collision (2002 -2012)

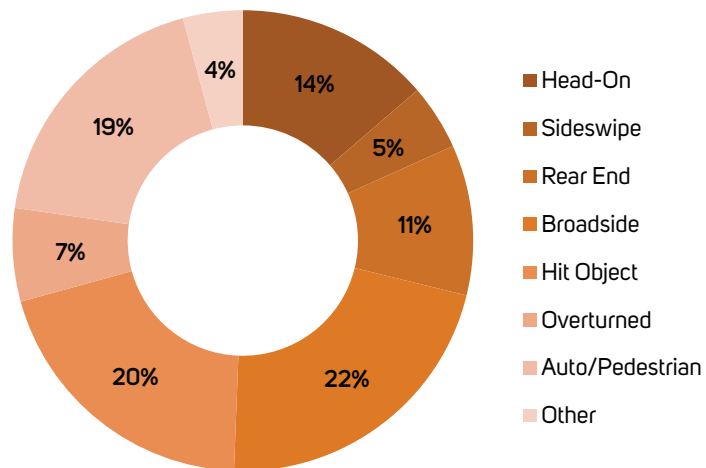
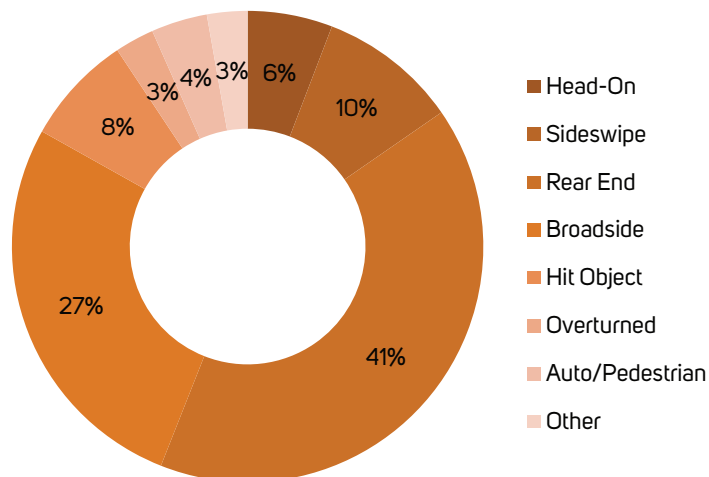
Movement Preceding Collision	Head-On	Sideswipe	Rear End	Broadside	Hit Object	Overturned	Auto/ Pedestrian	Other	Total
Stopped	849	1,502	40,734	3,040	191	90	288	538	47,232
Proceeding straight	8,728	14,291	54,319	47,653	7,395	2,914	5,322	3,554	144,176
Ran off road	178	122	123	121	5,017	1,620	50	101	7,332
Making right turn	437	1,232	1,003	3,291	549	165	1,778	996	9,451
Making left turn	4,489	1,686	808	16,885	726	276	2,335	1,083	28,288
Making U turn	115	213	119	1,455	57	36	26	64	2,085
Backing	34	83	352	304	62	14	450	234	1,533
Slowing/stopping	104	454	15,328	387	187	200	127	234	17,021
Passing other vehicle	60	576	134	262	88	81	32	50	1,283
Changing lanes	51	4,196	1,833	431	585	295	31	160	7,582
Parking maneuver	6	65	65	35	24	4	32	42	273
Entering traffic	158	524	188	2,846	54	54	207	274	4,305
Other unsafe turning	268	582	441	268	2,355	779	96	101	4,890
Crossed into opposing lane	769	454	45	186	117	53	10	25	1,659
Parked*	16	115	100	28	22	2	11	84	378
Merging	12	155	136	60	26	14	7	22	432
Traveling wrong way	263	78	7	76	41	3	11	10	489
Other	94	908	451	328	4,113	1,135	80	97	7,206
Not stated	112	192	634	329	103	22	179	318	1,889
Total	16,743	27,428	116,820	77,985	21,712	7,757	11,072	7,987	287,504

*Anomalies are due to re-engineering of SWITRS beginning with 2002 data..

TABLE 8 Persons Killed and Injured by Primary Collision Factor

PRIMARY COLLISION FACTOR ^{1/}	2008		2009		2010		2011		2012	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Driving Or Bicycling Under Influence Of Alcohol Or Drug	790	21,680	709	19,805	545	18,568	602	18,237	601	18,504
Pedestrian Or "Other" Under Influence Of Alcohol Or Drug		1				1		1		
Impeding Traffic		137	6	105	2	107	3	141	1	116
Unsafe Speed	563	70,560	462	69,817	435	71,854	443	70,653	459	70,291
Following Too Closely	4	5,658	4	5,757	3	5,387	4	5,257	5	5,498
Wrong Side Of Road	233	7,683	179	7,323	192	7,145	146	7,036	190	7,358
Improper Passing	24	1,377	29	1,337	22	1,173	26	1,242	16	1,232
Unsafe Lane Change	73	9,451	92	8,870	49	8,751	46	8,444	48	8,682
Improper Turning	652	31,048	612	30,575	545	29,659	577	28,805	638	28,894
Automobile Right-Of-Way	211	41,782	181	40,073	171	38,633	180	37,926	174	37,295
Pedestrian Right-Of-Way	92	4,728	80	4,709	86	4,675	90	4,769	82	4,924
Pedestrian Violation	356	4,395	315	4,283	365	4,100	361	4,091	392	4,249
Traffic Signals And Signs	151	22,756	167	21,217	125	20,740	141	20,245	162	20,816
Unsafe Starting Or Backing	16	3,981	10	3,944	11	3,927	11	3,957	6	3,722
Hazardous Parking	4	120	2	116	3	118	5	110	1	107
Lights	1	55	2	52		49	3	58	1	64
Brakes		58		42		38	1	41	1	38
Other Equipment	5	141	3	123	1	108	3	109	2	122
Other Hazardous Violation	27	2,384	12	2,138	11	2,040	19	1,938	12	1,995
Other Improper Driving	7	1,258	9	1,113	8	1,011	7	938	8	920
Fell Asleep ^{2/}		47		28		18		10		16
Other Than Driver	57	3,398	69	3,120	44	2,930	54	3,010	49	3,078
Unknown	63	4,352	83	4,026	62	4,234	58	4,136	83	4,276
Not Stated*	72	4,823	50	4,204	59	4,088	55	4,448	64	4,347
Total	3,401	241,873	3,076	232,777	2,739	229,354	2,835	225,602	2,995	226,544

*Anomalies are due to re-engineering of SWITRS beginning with 2002 data. 1/See Glossary for definition. 2/Fell Asleep is no longer a Primary Collision Factor since July 2003 Traffic Collision form revision.

FIGURE 2 Drivers in Fatal Collisions by Type of Collision by Movement Preceding Collision**FIGURE 3 Drivers in Injury Collisions by Type of Collision by Movement Preceding Collision**

MEASURABLE OBJECTIVES

The overarching goal of the California SHSP is Toward Zero Deaths (TZD). Under MAP-21, states are mandated to develop performance measures on the number of and rate of fatalities and severe injuries. However, as part of the proposed National Proposed Rulemakings (NPRMs) for Safety Performance Measures, State Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) have yet to establish exact targets for the reduction of the numbers of traffic fatalities and severe injuries on all public roads. However, the draft SHSP includes the following goals:

- A three percent per year reduction for the number and rate of fatalities; and
- A 1.5 percent per year reduction for the number and rate of severe injuries.

To improve safety and security on the transportation network, SCAG recommends the region implement the strategies discussed below. These strategies are largely based upon the updated SHSP and are in line with the 15 challenge areas discussed in the Plan.

CHALLENGE AREAS & SAFETY STRATEGIES CHALLENGE AREA 1: ROADWAY DEPARTURE & HEAD-ON COLLISIONS

Roadway departure and head-on collisions occur when the collision is head-on or the movement preceding is a roadway departure (i.e., leaving the road or crossing into the opposing lane). According to the SHSP, roadway departures and head-on collisions account for almost a quarter (23.3 percent) of the total traffic fatalities and severe injuries in California. In addition, trends from 2010 and 2012, show that a majority of the crashes occur on local roads and in rural areas with the largest numbers involving males age 15 to 24. They also tend to occur at night and on weekends.

California intends to employ the following strategies to reduce the occurrence of roadway departure and head-on collisions:

- Address systemic risks on non-state roads with low cost safety countermeasures.
- Ensure funding strategies reflect unique local needs.
- Improve the dissemination of crash data at the jurisdiction level.
- Target highest risk jurisdictions for funding and technical assistance.
- Implement an effective, consistent, and coordinated traffic incident management (TIM) program at the state and local level to reduce the duration and impacts of traffic incidents and improve the safety for motorists, crash victims and emergency responders.

SCAG STRATEGIES

SCAG supports and encourages the strategies California intends to employ toward reducing the occurrence of roadway departure and head-on collisions. SCAG will continue to work with County Transportation Commissions (CTCs), Caltrans and sub-regions toward incorporating highway construction/reconstruction methods to warn drivers they are leaving the highway or crossing into the opposing lane. SCAG will also continue its ongoing support for the implementation of high visibility signage and road striping that enhance driver awareness and ability to detect, recognize and react to warning signs during the night-time and periods of inclement weather.

CHALLENGE AREA 2: INTERSECTIONS, INTERCHANGES AND OTHER ROADWAY ACCESS

Intersections are the most prominent areas for potential collisions since various modes (i.e., bicyclists, motorists and pedestrians) tend to intersect at such locations. According to the SHSP, as of 2012 more than 45 percent of all fatalities and severe injuries were related to crossing and left-turn movements at intersections and the merging, weaving and lane changing movements generated by freeway, expressway and carpool lane entrances and exits. Over the decade of 2003 to 2012, 15,917 people died and 56,143 were severely injured at intersections and between closely-spaced freeway interchanges and other access points.

California intends to implement the following strategies to help reduce fatalities and severe injuries within intersections, interchanges and other roadway access points:

- Mainstream and accelerate the deployment of innovative solutions that have been proven to be highly effective and cost-effective.
- Pursue programmatic application of low-cost and high-impact strategies, countermeasures and activities.
- Focus on continuous improvement and collaboration by building on the foundational work products and findings generated by previous strategic safety and other statewide initiatives.
- Emphasize the role and importance of visibility among road users and workers (especially during hours of darkness).
- Minimize or avoid safety performance degradation resulting from land use and highway infrastructure investment proposals.
- Increase understanding and collaboration among transportation system owners, operators, investors and regional agencies regarding the effect of access-related decisions on safety and overall system performance.

SCAG STRATEGIES

SCAG encourages and supports the strategies California intends to employ toward reducing fatalities and severe injuries within intersections, interchanges and other roadway access points. For its part, SCAG will continue working with communities to develop transit oriented development and active transportation plans as part of its Sustainability Planning Grant program. SCAG would encourage that these plans:

- Incorporate intersection safety into the planning grant strategy.
- Incorporate Intelligent Transportation Systems (ITS) at high incident intersections to reduce red-light violations causing collisions.
- Encourage clearly marked, visible crosswalks.
- Encourage the installation of improved visibility traffic signals as part of the normal traffic signal replacement cycle.
- Encourage the development of median sanctuaries for pedestrians.
- Support signalization at problem non-signalized intersections.
- Encourage changing intersection geometries, where applicable (offset intersection to aligned intersection, intersection to interchange and intersection to roundabout).

CHALLENGE AREA 3: WORK ZONES

Construction work zones are areas of the road where maintenance or construction occurs and may involve lane closures, detours, shoulder work and moving equipment. In the SCAG region, the work zone can be any time of year. On many of SCAG roadways, the work often occurs at night. Many fatalities occur because of excessive speed, impaired and distracted driving. As of 2012, work zones accounted for 1.7 percent of all traffic fatalities and severe injuries in the state, according to the SHSP. Between 2003 and 2012, 658 people died as a result of work zone crashes and 1,760 were severely injured.

California intends to implement the following strategies to reduce fatalities and severe injuries within work zones:

- Evaluate and promote strategies for best work zone practices.
- Improve safe driving through work zones with education and enforcement.
- Apply advanced technology to improve work zone safety.
- Improve work zone data collection and analysis.

SCAG STRATEGIES

SCAG encourages and supports the above strategies that California intends to employ toward reducing fatalities and severe injuries in work zones.

SCAG will continue to encourage work zone safety training and proficiency for all transportation modes at city and county governments. In addition, SCAG will encourage local agencies to provide safe alternate routes or appropriate countermeasures to ensure that bicyclists and pedestrians can safely access their destinations when their routes are affected by work zones

CHALLENGE AREA 4: ALCOHOL AND DRUG IMPAIRMENT

Alcohol and drug-related collisions include all instances where a driver, pedestrian, bicyclist or motorcyclist is under the influence of alcohol or drugs, whether prescribed or over the counter medication. According to the SHSP, as of 2012, more than one-third or 34.2 percent of all fatalities and severe injuries in California involved an impaired person. Between 2003 and 2012, 17,624 fatalities and 34,666 severe injuries were a result of impaired individuals. As shown in [TABLE 7](#), within the SCAG region there was a total of 633 traffic deaths as related to alcohol or drugs as of 2012.

California intends to implement the following strategies to help reduce fatalities and severe injuries resulting from alcohol and drug impairment:

- Enhance state laws, local ordinances and programs intended to reduce alcohol and/or drug impaired driving.
- Enhance the utilization of Driving Under the Influence (DUI) treatment programs, emerging innovations, and system monitoring to reduce DUI offenses among highest risk offenders, including repeat or high-BAC (Blood Alcohol Content) offenders, and in areas where the risk of DUI is highest.

FIGURE 4 Persons Killed and Injured in Alcohol Involved Collisions by Age of Victim - 2012

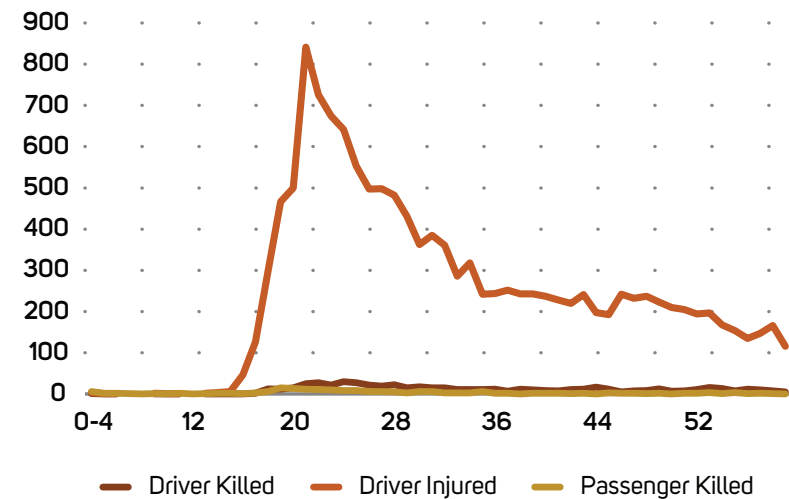


TABLE 9 Traffic Deaths Related to Alcohol or Drugs

County	2004	2005	2006	2007	2008	2009	2010	2011	2012
Imperial	20	11	4	13	6	7	6	6	15
Los Angeles	259	240	276	268	258	204	259	238	274
Orange	67	78	80	75	62	62	62	63	74
Riverside	116	112	136	129	101	87	87	95	119
San Bernardino	138	120	133	105	94	98	106	115	127
Ventura	19	16	31	28	27	23	28	42	24
SCAG Region	619	577	660	618	548	481	548	559	633

- Improve consistent, timely DUI adjudication and broaden and/or improve application of administrative sanctions of impaired drivers.
- Conduct education/social norming and other programs to change behaviors related to impaired driving.
- Enhance knowledge of the impacts of legal and illegal drug use on safe driving using empirical evidence and implement effective, data-driven methods to identify and reduce drug-impaired driving or roadway use.
- Enhance DUI enforcement, training and tools for improved detection and enforcement of impaired roadway users.
- Enhance the collection, management and accessibility of data related to the consequences of impaired driving and the effectiveness of the DUI countermeasure system.

SCAG STRATEGIES

Though SCAG has no implementation authority and can do little to enforce traffic laws, educate travelers or provide Emergency Medical Services (EMS), SCAG will continue to work with the state, CTCs and its local jurisdictions to develop projects that promote the goals of the SHSP, specifically as they relate to alcohol and drug impaired driving. SCAG urges local governments to consider the following strategies from the SHSP Implementation Plan:

- Consider increasing frequency, consistency and publicity of sobriety checkpoint operations by law enforcement agencies in areas with the highest fatality rates.
- Encourage and increase statewide crime laboratory support and distribution of portable evidential breath testing devices to allow for increased use by law enforcement personnel.
- Implement and maintain the Traffic Safety Resource Prosecutor program including specialized DUI prosecution training statewide and DUI prosecutor mentoring.
- Promote implementation of vertical prosecution of DUI offenders.
- Institute programs that provide intense monitoring of “worst of the worst” repeat DUI offenders.
- Develop uniform and consistent system for hospital staff to notify law enforcement upon the arrival of a person who has been involved in a traffic collision in which alcohol may have been involved.
- Design and develop a study to identify discrepancies in county DUI rates and develop recommendations for system improvements.
- Increase by 15 percent the number of law enforcement officers who are trained and certified as Drug Recognition Evaluator officers.
- Develop protocol and staffing to expand use of Screening and Brief Intervention Programs in hospitals and trauma centers, and encourage courts to obtain

presentence alcohol and drug screening investigations as authorized in Vehicle Code Section 23249.50 and include resulting recommended treatments in sentencing of convicted DUI offenders.

- Track and report in the Department of Motor Vehicles (DMV) DUI Management Information System annual report the enrollment and completion rates of DUI offenders into alcohol programs.
- Increase the use of Minor Decoy and Decoy Shoulder Tap Programs to detect and deter the furnishing of alcohol to minors.
- DUI countermeasure evaluations including an increase in the use of home arrest (electronic confinement) for nonviolent DUI offenders.
- Develop and distribute a “tool kit” identifying programs, providers, and resources that will assist communities in implementing effective community based, comprehensive, multijurisdictional DUI task forces.
- Encourage Licensee Education on Alcohol and Drugs training to retail licensees and their employees.
- Encourage full law enforcement, forensic laboratory and DMV compliance and application of the administrative license suspension law provisions, through ongoing administrative training and outreach to law enforcement agencies, and by continuously tracking and reporting statewide and regional administrative operation trends.
- Facilitate the development and distribution of reference materials for use by judicial officers in court at entry of plea and sentencing proceedings to include mandatory sentencing requirements for license suspension, treatment programs, ignition interlock requirements, enhancements for elevated BAC levels and open container laws.
- Increase publicity of the DUI Management Information System annual report to law enforcement, alcohol program providers and the courts.

CHALLENGE AREA 5: OCCUPANT PROTECTION

The combination of air bags and lap and shoulder safety belts offers the most effective safety protection available for passenger vehicle occupants. According to the SHSP, between 2003 and 2012, 8,263 individuals died in unrestrained crashes and 16,623 were severely injured. Unrestrained crashes include all collisions in which victims did not use or improperly used a safety belt or child restraint. In 2012, unrestrained crashes accounted for 12 percent of the total traffic fatal and severe injuries in California. Research and statistics have shown that the best defense in a collision is a seat belt or properly installed child restraint.

California intends to implement the following strategies towards reducing fatalities and severe injuries resulting from alcohol and drug impairment:

- Target high risk populations with education and enforcement to increase occupant protection use.
- Improve occupant protection educational outreach.
- Increase occupant protection enforcement and improve adjudication of violations.
- Improve occupant protection data collection processes.

SCAG STRATEGIES

SCAG encourages and supports the above strategies and is interested in ensuring vehicle safety equipment is used. SCAG urges local governments to consider the following strategies from the SHSP Implementation Plan:

- Implement occupant protection programs targeted at ages 15–24 years.
- Encourage increased enforcement and education campaigns for occupant protection programs.
- Implement education campaigns for child passenger safety usage.
- Develop and implement a social norms (media) campaign targeted to ages 15–24 years to influence or promote seat belt usage.

FIGURE 5 Persons Killed Safety Equipment Not Used by Age (2012)

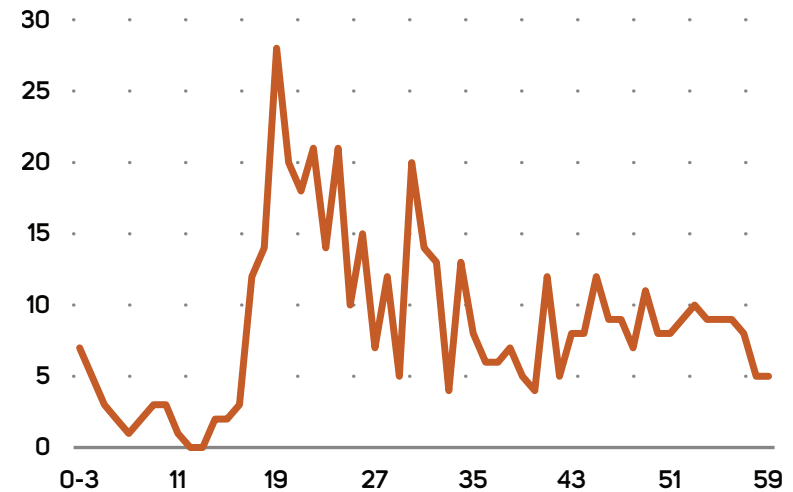


TABLE 10 Passenger Victims Aged 5 and Under Killed in Collisions by County

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Imperial	2	2	0	1	0	1	0	0	0
Los Angeles	7	8	5	5	5	7	2	1	6
Orange	3	1	0	3	3	1	1	1	0
Riverside	9	6	3	7	6	5	2	3	3
San Bernardino	8	7	10	11	6	5	2	0	6
Ventura	0	3	1	1	2	1	0	0	0
Total	29	27	19	28	22	20	7	5	15

- Initiate a project to develop a system that links the California Emergency Medical Services Information System (CEMSIS), SWITRS and medical data (for example, data on injuries treated in hospitals and emergency departments).
- Encourage prioritization of child passenger safety enforcement statewide.
- Enhance occupant protection curriculum and oversight in all traffic related education programs.
- Incorporate child passenger safety training (from certified child passenger safety trainers) into firefighter, health care, law enforcement, community-based organizations, and child care curricula/training for both initial and continuing education.
- Promote the establishment of permanent child passenger safety fitting stations with paid staff, targeting counties based on need.
- Develop a program that increases the accuracy of California child safety occupant protection misuse data.
- Improve the child passenger safety violator process.
- Implement substantially more child passenger violator educational programs statewide.

CHALLENGE AREA 6: SPEEDING AND AGGRESSIVE DRIVING

According to the SHSP, speeding and aggressive driving accounted for nearly 20 percent of all traffic-related fatalities and severe injuries in California. Also, between 2003 and 2012, 5,675 people died while 21,330 were severely injured as a result of speeding and aggressive driving. The age group with the highest representation in speed-related collisions is age 15 to 24 with the majority being male.

California intends to employ the following strategies to help reduce fatalities and severe injuries as result of speeding and aggressive driving:

- Increase targeted enforcement at locations prone to speeding and other forms of aggressive driving.
- Improve the consistency of adjudication of drivers cited for speeding and other forms of aggressive driving.
- Increase use of technology and engineering methods to reduce speeding and other forms of aggressive driving.
- Conduct outreach and education about the safety risks of speeding.

SCAG STRATEGIES

SCAG encourages and supports the above strategies that California intends to employ toward reducing fatalities and severe injuries resulting from speeding and aggressive driving. In addition, SCAG will continue to work with the state, CTCs and its local jurisdictions to determine whether proposed projects have potential benefits to safety in this particular challenge area. SCAG urges local governments to consider the following strategies from the SHSP Implementation Plan:

- Develop a statewide definition for aggressive driving.
- Conduct public information and education media outreach campaigns.
- Develop and encourage implementation of a systematic approach to identify and improve safety in high-collision concentration locations involving speeding and aggressive driving.
- Form multijurisdictional traffic enforcement teams to address speeding and aggressive driving.
- Employ vehicle impounding as a potential deterrent to speeding and aggressive driving.
- Educate traffic commissioners and judges with consistent training programs on speeding and aggressive driving.
- Develop a pilot re-education program to assess the effectiveness of behavior modification training on recidivism rates of repeat aggressive driving offenders

CHALLENGE AREA 7: DISTRACTED DRIVING

Distracted driving includes an activity that detracts or diverts a driver's attention away from the task of driving and includes hands off the wheel, eyes off the road, and mental distraction from the task of driving. Given today's modern times, cellphones, tablets and navigation devices have contributed to distracted driving. According to the SHSP, reliable data on distracted driving is not attainable at this time, but anecdotal information indicates the number is high.

California intends to employ the following strategies toward reducing collisions as a result of distracted driving:

- Improve data quality on distracted driving.
- Increase enforcement and improve adjudication of current distracted driving laws.
- Conduct education on the risks of distracted driving using evidence-based strategies to create a culture of traffic safety.
- Strengthen laws on distracted driving.

SCAG STRATEGIES

The focus of this challenge area is primarily enforcement and education. SCAG encourages local jurisdictions to continue to develop enforcement and education programs designed to discourage distracted driving.

CHALLENGE AREA 8: DRIVER LICENSING AND COMPETENCY

According to the SHSP, improper licensing continues to be a critical issue within the California. Fortunately, it may be proven to be less of an issue because in 2015 when California enacted Assembly Bill 60, which grants all undocumented immigrants access to a driver's license. According to the SHSP, drivers with suspended or revoked driver's licenses are three times more likely to be involved in or cause a fatal crash.

California intends to employ the following strategies to help reduce collisions as a result of distracted driving:

- Improve the initial driver licensing process.
- Improve the competency of licensed drivers.

- Assess and improve policies for managing unlicensed drivers, negligent operators and suspended/revoked drivers.
- Improve data systems, including quality control measures, for driver and vehicle records, citations issued, court adjudication reporting and DMV license actions.
- Improve training of law enforcement and related local agencies regarding licensing, DMV license actions and DMV data systems.

SCAG STRATEGIES

While SCAG is interested in ensuring that drivers are properly licensed, SCAG has no authority over implementation. For reference, the implementation strategies from the SHSP are listed below.

- Improve driver competency assessment tools to improve the renewal driver licensing process.
- Improve educational components to inform the public about the new laws as new initial licensing and renewal licensing laws are implemented and established.
- Encourage and increase vehicle impoundment for drivers whose licenses are suspended or revoked, or who are unlicensed.

TABLE 11 Distracted Drivers in Fatal and Injury Collisions 2008-2012

INATTENTION	2008		2009		2010		2011		2012	
	Fatal	Injury	Fatal	Injury	Fatal	Injury	Fatal	Injury	Fatal	Injury
Cell Phone Handheld (7/03)	9	363	7	262	3	278	3	294	12	306
Cell Phone Hands Free (7/03)	1	35		54		53	1	67	3	65
Electronic Equipment	2	105	1	182	1	177		199	3	204
Radio/CD	7	288	2	341	1	360	7	350	7	364
Smoking	1	40	1	36	1	42	2	56	2	38
Eating	3	158	3	151	1	153	3	160	1	171
Children	2	171	3	193	1	165		179	3	207
Animal	1	58		59		58		73	1	69
Hygiene		24		22		13		23		30
Reading	1	70	1	57		65		54		37
Other	29	2,214	30	2,183	19	2,256	13	2,286	40	2,007
Cell Phone (prior to 7/03 form rev.)		8		4		3		2		2
Inattention not stated	63	8,588	44	8,058	55	7,400	65	6,824	41	6,655
Total	119	12,122	92	11,602	82	11,023	94	10,567	113	10,155

- Create a public awareness campaign addressing the consequences of driving without a valid license.
- Improve driver competency assessment tools to improve the initial driver licensing process.
- Examine the reasons why some individuals choose to drive without a proper license rather than reinstate licensing privileges when eligible and based on this information propose ways to increase the reinstatement rate.
- Increase the integrity of the written testing process for driver license.

CHALLENGE AREA 9: PEDESTRIANS

As of 2012, pedestrian fatalities and severe injuries accounted for 17.32 percent of the total number of traffic fatalities and severe injuries in California, according to the SHSP. Between 2003 and 2012, 6,775 pedestrians were killed and 17,504 were severely injured. It should also be noted that between 2010 and 2012, the number of pedestrian fatalities and severe injuries slightly increased.

California intends to employ the following strategies toward reducing the number of pedestrian fatalities and severe injuries:

FIGURE 6 Pedestrians Killed in Traffic Collisions by Age (2012)

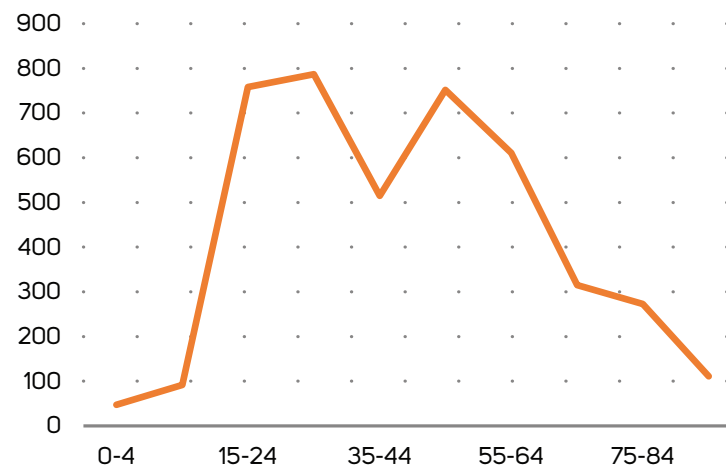


TABLE 12 Pedestrians Killed and Injured by Age – 2012

PEDESTRIAN AGE		0-4	5-14	15-24	25-34	35-44	45-54	55-64	65 and over	Not Stated	Total
PEDESTRIAN ACTION	Crossing in crosswalk - at intersection	135	715	1,536	889	700	820	847	854	24	6,520
	Crossing in crosswalk - not at intersection	3	48	73	49	28	33	30	36	1	301
	Crossing - not in crosswalk	144	665	700	386	343	493	373	366	30	3,500
	In roadway - includes shoulder	55	170	537	424	340	361	230	163	14	2,294
	Not in roadway	40	107	207	163	138	184	143	163	5	1,150
	Approaching/leaving school bus		2	1			1	1	1		6
	Not Stated	6	17	53	35	29	34	18	19		211
Total		383	1,724	3,107	1,946	1,578	1,926	1,642	1,602	74	13,982

- Improve the safety of pedestrian crossings by using proven effective countermeasures.
- Expand effective enforcement and education of all roadway users to improve pedestrian safety based on known risk factors and data trends.
- Increase funding for pedestrian safety infrastructure and non-infrastructure projects.
- Improve collection, use and analysis of data needed for pedestrian safety planning and programming.
- Increase pedestrian safety-focused coordination among State, regional and local agencies including on transportation planning and land use efforts.

In addition, SCAG recommends the following strategies:

- Continue to work with local jurisdictions to provide comprehensive education for all road users.
- Continue to work with local jurisdictions to help direct enforcement agencies to focus on bicycling and walking safety to reduce multi-modal conflicts.
- Support improvements to roadway design standards and Intelligent Transportation Systems (ITS) that increase bicyclists and pedestrians safety.
- Facilitate the planning, development and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption and air pollution in the vicinity (approximately 2 miles) of primary and middle schools (Grade K-8).

SCAG STRATEGIES

SCAG encourages and supports the above strategies toward improving the overall safety of pedestrians. In addition, SCAG urges local governments to consider the following strategies from the SHSP Implementation Plan:

- Encourage cities and counties to develop funding mechanisms to maintain and improve sidewalks and intersections to make them ADA compliant.
- Encourage every city to develop Safe Routes to School policies and plans.
- Encourage cities and counties to consider the needs of elderly and persons with disabilities crossing streets and develop appropriate countermeasures for their safety.
- Encourage cities and counties to integrate pedestrian safety into general & specific plans, non-motorized transportation plans and other land use policy documents.
- Encourage the development of Pedestrian Safety Action Plans in all urban and rural communities.

- Incorporate applicable Complete Streets policies—providing safe access for all modes—as fundamental principles of transportation plans.
- Encourage safe, convenient, high visibility pedestrian crossings at mid-block and intersection locations on urban thoroughfares and rural highways.
- Encourage clearly marked, visible crosswalks at intersections and mid-block locations.
- Encourage the use of advanced signalization at intersections.
- Encourage pedestrian and bicycle safety in all maintenance projects where new striping will be required or existing striping is to be replaced.

Fortunately, work is already underway in the region to improve the safety of pedestrians. In 2014, SCAG received a \$2.3 million grant from California’s Active Transportation Program to implement a Safety and Encouragement Campaign targeted at all road users, including bicyclists, pedestrians and drivers, and focused on improving intersections. In 2015, in coordination with the CTCs, county departments of public health and stakeholders, SCAG kicked off the campaign. It will focus on the following initiatives to improve safety for bicyclists and pedestrians throughout the region:

- **Advertising Campaign** targeting more than 100 million impressions or ad views regionally with memorable encouragement and safety messages.
- **Community Outreach/Tactical Urbanism Campaign** attracting between 100,000 - 500,000 people, and millions more media impressions, to open street events and other temporary bicycle-related improvements or “pop-ups” that bring greater opportunity and awareness of the use of streets for people, not just cars.
- **Active Transportation Training and Training Toolkits** for four target audiences—Employers, Elected Officials, Transportation/Public Health Professionals and Community Members—to create and empower at least 1,000 local champions in key sectors to lead education and encouragement programs in their communities.

The focus of the campaign will be on disadvantaged communities, high-risk populations, and key opportunity areas (locations where trip lengths, urban form, and demographics are aligned to facilitate a significant shift in mode-share toward active transportation).

In addition to its work on this campaign, SCAG is also responsible for administering its own Sustainability Grant Program which has been used to provide funding for active transportation planning. Through these programs, SCAG supports local jurisdictions in planning for and building infrastructure that makes walking safer.

CHALLENGE AREA 10: BICYCLING

Within the SCAG region, active transportation- specifically bicycling- has grown in popularity. Between 2008 and 2012, the number of bicycle trips within the SCAG region grew by about 12.5 percent. Given the growing number of bicyclists within the region, improving safety for all users is a large concern. Between 2003 and 2012, 1,294 bicyclists were killed and 8,421 were severely injured, according to the SHSP. Fatalities and severe injuries involving bicyclists have increased since 2006. It is important to recognize that there is a positive correlation between increases in bicycling trips and severe injuries and fatalities. That is, as one increases, often so does the other.

Collisions involving bicyclists tend to peak in late summer and fall, decline after October and rise again in March.

California intends to employ the following strategies to help reduce the number of bicyclist fatalities and severe injuries:

- Improve roadway and bikeway planning, design, operations and connectivity to enhance bicycling safety and mobility to all destinations.
- Improve data collection regarding bicyclist trips, injuries and fatalities on California roadways and bicycle paths.
- Improve education and enforcement to promote safe multi-modal travel.

- Encourage more bicycle travel by improving public attitudes about bicycling as a safe mode of transportation.
- Develop safe, direct and connected routes for bicycling.

SCAG STRATEGIES

SCAG understands the importance of improving safety for bicyclists and ultimately all users of the transportation network, and therefore supports and encourages the implementation of the above strategies. In addition, SCAG recommends the following strategies:

- Encourage every city in the SCAG region to be connected via bicycle facilities, including wayfinding signage.
- Develop regionally significant bicycle corridors for bicycle travel throughout the region.
- Encourage every city to fully implement their bicycle master plans.
- Encourage all local jurisdictions to develop active transportation master plans.
- Incorporate applicable Complete Streets policies—providing safe access for all modes—as fundamental principles of transportation plans.
- Encourage the consideration of bicycle and pedestrian safety as part of Blueprint Land Use Planning.
- Encourage pedestrian and bicycle safety in all maintenance projects where new striping will be required or existing striping is to be replaced.

FIGURE 7 Bicyclist Killed Collisions and Injured (2008-2012)

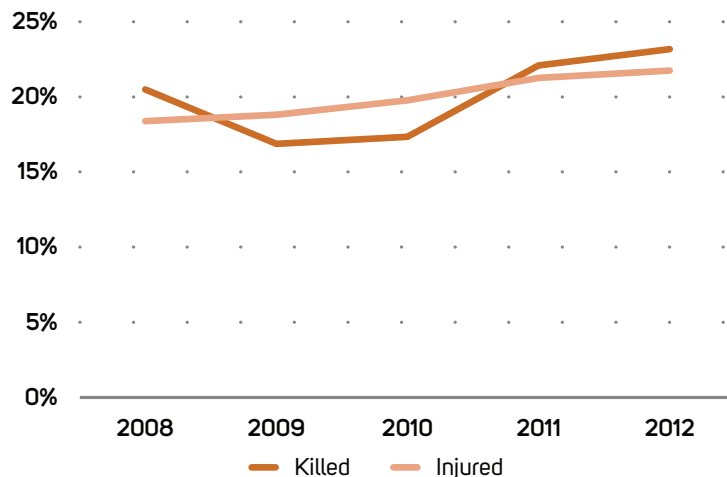
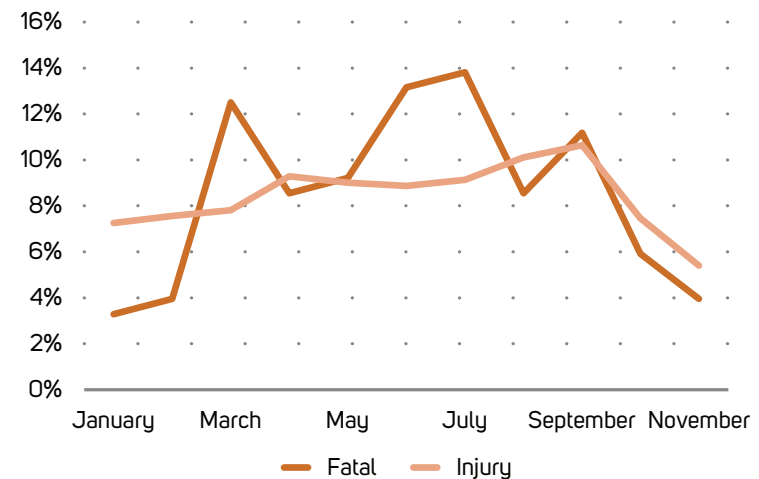


FIGURE 8 Percentage of Bicyclist Collisions by Month



- Encourage the use of intersection control devices that detect bicyclists, particularly left turn signals.
- Encourage bicycle education in lieu of fines for bicyclists and motorists who commit bicycle related traffic violations.
- Support expanding Safe Routes to School programs for non-infrastructure projects focusing on education, bicyclist visibility, motorist awareness and accommodation of bicyclists.
- Develop a standardized database of bicycle data, including safety, counts, surveys, etc. for use throughout the SCAG region.

As mentioned in the previous section on pedestrians, SCAG is currently implementing a Safety and Encouragement Campaign targeted at all road users, including bicyclists, and SCAG also administers its own Sustainability Grant Program which can be used for active transportation planning. Through these programs, SCAG supports local jurisdictions in planning for and building infrastructure that make bicycling safer.

CHALLENGE AREA 11: YOUNG DRIVERS

According to the SHSP, young drivers tend to have less driving experience and as a result are less likely to identify hazardous conditions and react to them. In addition, young drivers are more prone to be involved in risky driving behaviors resulting in more collisions. Young drivers are classified as individuals who are between the ages of 15 and 20. As of 2012, fatalities and severe injuries involving young drivers accounted for 15 percent of all fatalities and severe injuries. Between, 2003 and 2012, 6,000 young drivers died and 22,726 were severely injured.

California intends to employ the following strategies toward reducing the number of fatalities and severe injuries involving young drivers:

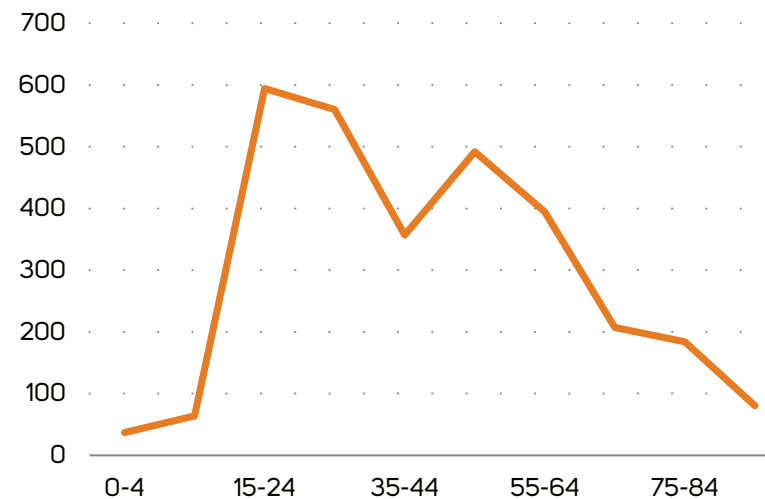
- Increase awareness of and compliance with graduated driver licensing laws.
- Promote social norming and behavior change on youth-related traffic safety issues.
- Promote the use of evidenced-based programs and outreach methods.
- Improve school policies and procedures relating to young driver safety.
- Improve enforcement and adjudication of young offenders.

SCAG STRATEGIES

SCAG supports and encourages the above strategies to help reduce fatalities and severe injuries involving young drivers. In addition, SCAG supports for the following SHSP implementation strategies:

- Implement the Driver Performance Evaluation drive test, as originally developed, to include freeway driving.
- Establish a task force to resolve issues and make recommendations related to improving driver education and training.
- Increase the use of law enforcement for graduated driver licensing outreach programs and proactive enforcement.
- Initiate a program that promotes usage of parent-teen contracts related to driving privileges.
- Expand the implementation of young driver programs such as: Smart Start, Right Turn, Teen Smart, Every 15 minutes, Friday-night Live, Sober Graduation and Target Responsibility for Alcohol Connected Emergencies (TRACE), and encourage development of new programs.
- Modify completion certificates for the required driver education and training courses to allow the DMV to include information on the driver record reflecting the modality of course offered as well as the type of organization that conducted the training.

FIGURE 9 Persons Killed in Traffic Collisions by Age (2012)



- Implement program to have DMV send a congratulatory letter to every provisional licensee that goes six months without any violations or collisions, until the provisional status is terminated at age 18 years. Encourage the insurance industry to provide discounts for parents and teens who receive a letter.
- Increase schools district awareness of the State-legislated Safe Routes to School Program (SR2S) and the federal Safe Routes to School (SRTS) Program and encourage implementation of elements of these programs whenever possible if funding is insufficient for a comprehensive implementation.
- Establish a task force to work with existing statewide media campaigns and to develop and pursue use of public service announcements to convey traffic safety messages related to young drivers and use of alcohol and drugs.
- Encourage additional local communities to implement and maintain anti-DUI programs such as, Teenage Party Prevention, Enforcement and Dispersal, Minor Decoy Program, the Shoulder Tap Program and TRACE.

CHALLENGE AREA 12: AGING ROAD USERS

Aging road users include drivers, pedestrians, bicyclists and motorcyclists who are 65 years of age and over. As of 2012, fatalities and severe injuries involving aging road users accounted for 15 percent of all traffic fatalities and severe injuries, and between 2003 and 2012, 6,172 aging road users died and 14,034 were severely injured.

Older drivers tend to self-regulate, driving less and avoiding rush hour and nighttime driving unless necessary. The frailty associated with their advancing years means that older drivers are more likely to succumb to injuries in a minor collision than a younger person.

Intersections pose a particular safety problem for older drivers. Navigating through intersections requires the ability to make rapid decisions, react quickly and accurately judge speed and distance. Because these abilities can diminish as people age, older drivers tend to have more difficulties at intersections and are more likely to be involved in a fatal collision at these locations. Research shows that 37 percent of traffic-related fatalities involving drivers aged 65 and older occur at intersections compared with 18 percent for drivers aged 26 to 64.

California intends to employ the following strategies to help reduce the number of fatalities and severe injuries involving aging road users:

- Develop and disseminate education materials, programs and tools that explain how the aging process may affect safe driving.
- Promote awareness of the impact of prescription and non-prescription medications and supplements on the safety of aging road users.

- Promote implementation of multi-modal guidance for aging road users, which is included in the California Manual on Uniform Traffic Control Devices.
- Promote knowledge and increased application by transportation professionals of preferred roadway design elements friendly to aging road users.

SCAG STRATEGIES

SCAG supports and encourages the above strategies towards reducing fatalities and severe injuries involving aging road users. This matter is especially important since by 2040, the numbers of seniors will increase to 18 percent - nearly one in five people in the region. SCAG also urges local jurisdictions to consider implementing the following strategies:

- Support roadway, intersection and interchange improvements that support improving rights of way decision by older drivers.
- Encourage formation and expanded use of Supplemental Transportation Systems (STPs), particularly in locations where standard public transit is sparse or unavailable.
- Support signage and striping that enhance a driver's ability to notice, recognize and respond to warning signs during nighttime and/or inclement weather conditions

CHALLENGE AREA 13: MOTORCYCLISTS

The greatest primary collision factor with motorcycle collisions is unsafe speed. According to the SHSP, motorcycle riding has increased over recent years which has led to increases in fatalities and severe injuries. As of 2012, motorcyclist fatalities and severe injuries accounted for 18.3 percent of the total traffic fatalities and severe injuries in California. Between 2003 and 2012, 4,148 motorcyclists were killed and 19,046 were severely injured.

California intends to employ the following strategies towards reducing the number of fatalities and severe injuries involving aging road users:

- Improve education on motorcycle safety.
- Improve motorcycle licensure.
- Improve motorcycle exposure and crash data.
- Improve motorcycle rider training.
- Enhance roadway design to improve motorcycle safety.

SCAG STRATEGIES

SCAG supports and encourages the above strategies to help reduce fatalities and severe injuries involving motorcyclists. In addition, SCAG would like to reiterate our support for the following strategies:

- Work with the state and CTCs to determine if proposed projects have potential benefits to safety in this challenge area.
- Work with local governments to help identify motorcycle high-collision concentration locations and help develop plans to mitigate possible causes.

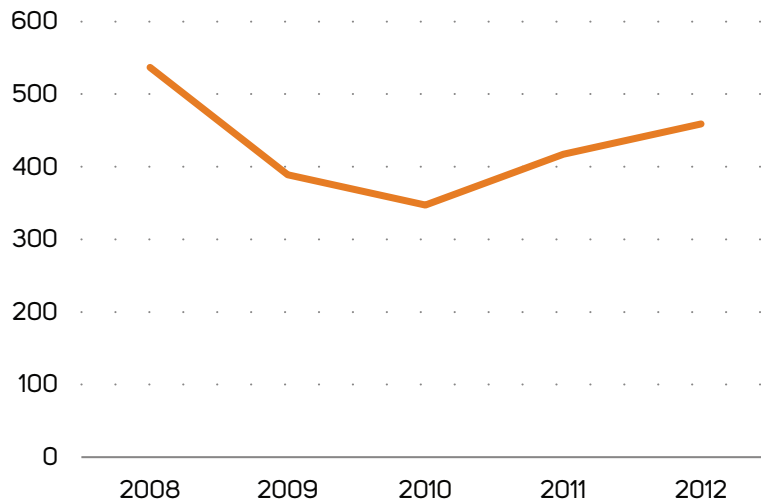
CHALLENGE AREA 14: COMMERCIAL VEHICLES

The movement of goods and people throughout the SCAG region is crucial to our economy. The SCAG region is home to the Ports of Long Beach and Los Angeles that serve as gateways for the distribution of goods throughout the nation. Between 2003 and 2012, 3,693 fatalities and 7,284 severe injuries involving commercial vehicles occurred.

California intends to employ the following strategies toward reducing the number of fatalities and severe injuries involving commercial vehicles:

- Improve training and education of commercial vehicle safety stakeholders.
- Increase the use of effective enforcement strategies to improve commercial vehicle safety.

FIGURE 10 Fatal Motorcycle Collisions (2008 - 2012)



- Identify and implement engineering features that reduce commercial vehicle-related crashes.
- Improve commercial vehicle safety data.
- Identify and promote use of technology for improving commercial vehicle safety.

SCAG STRATEGIES

SCAG supports and encourages the above strategies to help reduce fatalities and severe injuries involving commercial vehicles. In addition, SCAG will encourage Caltrans and CTCs to incorporate safety improvements into their plans and projects to address commercial vehicle safety issues.

CHALLENGE AREA 15: EMERGENCY MEDICAL VEHICLES

This specific challenge area focuses on the person that survives a serious motor vehicle collision. Improving Emergency Medical System (EMS) response time to the collision, transport time, and inter-facility transfer time (when appropriate) will result in achieving the targeted "Golden Hour" (the time period from the incident until the victim receives definitive specialized trauma care; ideally no longer than 60 minutes). Adherence to the "Golden Hour" concept is critical to survival and optimum outcome.

The first peak in post-collision deaths is within seconds or minutes of injury. If the number of these deaths is to be reduced, it must be through effective prevention programs. The second peak in deaths occurs within the first four hours after incident and is due to undiagnosed and untreated injuries. These patients, whose numbers are significant, would benefit most from appropriate level of trauma care. Regionalized trauma care facilitates rapid transport to the nearest trauma center appropriate for the severity of injury. These complications can be positively affected by prompt initial resuscitation efforts in an appropriate level trauma center.

California intends to employ the following strategies to help improve post-crash survivability:

- Increase involvement by EMS leaders in the California SHSP.
- Develop strategies to improve the time to definitive care.
- Improve data from the time of the crash.
- Improve access to information to enable interoperability of communications systems between all responders to crash sites.
- Develop guidance documents to share with EMS responders to increase crash scene safety.

SCAG STRATEGIES

SCAG supports and encourages the above strategies to help improve post-crash survivability rates. In addition, SCAG encourages local jurisdictions to consider implementing the following strategy:

- Use ITS technology to improve response time for EMS to and from collision sites.

TRANSPORTATION SECURITY INTRODUCTION

Catastrophic events ranging from earthquakes, floods and fires to hazardous material incidents, dam failures and acts of terrorism within the SCAG region can occur at any given moment. The need for adequate preparation is critical as these events are not a matter of if but when. While we cannot eliminate the threat of disasters, good planning can help minimize their impacts. SCAG is committed to working with local governments to ensure that our region is as prepared as it can be. Since 1950, about 379 State or Federally declared disasters have occurred. There was a steady increase in disaster incidents through 2007, after which there has been a general decline. Within the SCAG region, the two most frequent disasters include floods (151 incidents since 1950) and fires (131 incidents since 1950).

DISASTER IMPACTS ON INFRASTRUCTURE

Disasters can have devastating impacts on our infrastructure and on our region’s livelihood. Our infrastructure is not only critical to the welfare of our residents, but is vital to our region’s economy. Infrastructure in the form of transportation, utilities, communications, fuel and water all provide services essential to the welfare and quality of life of residents. More specifically, transportation infrastructure is vital because it allows people and goods to reach necessary destinations. Compromised infrastructure as a result of a disaster may have impacts beyond the immediate SCAG region. In addition, the failure of multiple infrastructure elements may result in a catastrophic impact to our mobility needs. Ways in which infrastructure can be affected in a disaster or emergency are shown in the following tables.⁵

Each instance of infrastructure damage may severely restrict the abilities of emergency responders to provide service following a disaster. Some types of damage and their effects on emergency services are included in **TABLE 13**.

Basic assessments of the impacted areas are needed to produce an adequate emergency response to a disaster. An assessment of vulnerabilities to security and safety also may prevent or limit effects of a catastrophic incident.

Numerous agencies participate in the response to incidents and assist with hazard preparedness for individual jurisdictions. Collaboration occurs between many of these agencies. The Federal Emergency Management Agency (FEMA) oversees coordination. However, FEMA defines metropolitan areas and coordination different than the US Department of Transportation, limiting SCAG’s ability to participate at an agency level. SCAG aims to utilize its strengths and organization to assist planners, first responders and recovery teams in a supporting role.

While SCAG does not have a direct role as a first responder or emergency management, SCAG can play a role in:

- Providing a policy forum to help develop regional consensus and education on security policies and emergency responses.
- Assisting in expediting the planning and programming of transportation infrastructure repairs from major disasters.
- Leveraging projects and planning functions (including ITS) that can enhance or provide benefits to transportation security efforts and those responsible for planning and responding to emergencies.

TABLE 13 Possible Effects of Damage to the Infrastructure

Service	Effect
Transportation	Inability to get emergency service personnel into the affected area
	Inability to transport victims away from the area
Electrical	Increased risk of fire and electrical shock
	Possible disruption to transportation system if downed lines are across roads
Water	Disruption of service to homes, businesses, and medical providers
	Increased risk to public health if there is extensive damage or contamination to supply
	Inadequate water supply for firefighting.
Fuel Supplies	Increased risk of fire or explosion from ruptured fuel lines
	Risk of asphyxiation from natural gas leaks in confined areas

TABLE 14 Possible Impact of Damage on Emergency Services Providers

Type of Damage	Impact on Emergency Services
Roadways, Bridges, Tunnels, Interchanges	Inability to assess damage accurately
	Ambulances prevented from reaching victims and/or victims prevented from reaching emergency medical services
	Police prevented from reaching areas of civil unrest
	Fire departments prevented from getting to fires
	Flow of needed supplies is interrupted
	Inability to deploy assets as part of incident response and to manage transportation flows
	Inability for emergency service providers to manage an evacuation
Structural	Damaged hospitals unable to receive patients
	Increased risk of damage from falling debris
Disrupted Communication	Victims unable to call for help
	Coordination of services is hampered
	Inability for incident command structure to receive real time situational information, reducing its effectiveness
Fuel Line Damage	Fire and paramedic services overburdened
	Inability to sustain emergency response and recovery
Disrupted Water Service	Firefighting capabilities restricted
	Medical facilities hampered

- Integrating security into the regional ITS architecture.
- Becoming a central repository/mirror for regional geo-data that can be used for planning, training, response and relief efforts of law enforcement personnel and emergency responders.

BACKGROUND CONDITIONS

REGIONAL SYSTEM DESCRIPTION

The United States has nearly 3.8 million square miles and has a population of nearly 320 million people. Its transportation systems continue to evolve and expand to accommodate its population, workforce and economy. Security of the nation’s transportation systems and the lives of the people whose these systems are a top priority of government agencies at all levels. Transportation systems include airports, ports, waterways, rail, highways and pipelines.⁷

TABLE 15 System Statistics Overview

	System Statistics	
ROADWAYS AND FREEWAYS	Freeway Lanes Miles (excluding carpool)	10,820 miles
	Carpool Lanes Miles (including HOT lanes)	938 miles
	Road Lane Miles (arterials)	36,233 miles
PUBLIC TRANSIT	Buses	5,549 of vehicles
	Metro Rail	87 miles and 80 stations
	Metrolink	512 miles and 56 stations
AVIATION/PORTS	Commercial/General Aviation Ports	57
	LAX ranks among world’s airports	5th in passengers and 14th in cargo
	Long Beach/Los Angeles ranks among world’s container ports	5th

According to the Bureau of Transportation Statistics, the United States maintains more than four million miles of roadway (streets, roads, highways), nearly 600 thousand bridges, 150 thousand miles of railway, more than 5,000 public airports, 1.5 million miles of gas pipelines, and more than 150 thousand miles of oil pipeline.

The SCAG region covers more than 38,000 square miles and has a population of more than 18 million persons.⁸ The region endures as one of the largest economic engines in the United States and the world. In 2012, the region had a Gross Regional Product of more than \$800 billion. Southern California faces numerous challenges in maintaining its important role in the country and the world, including the ability to prevent or recover from catastrophic events. In the SCAG region, transportation infrastructure also encompasses a vast system.

Given the vast size of our region's transportation infrastructure, it would be physically and financially impossible to protect all transportation systems from natural disaster or human-caused incidents. Consequently, there is a subset of transportation infrastructure that is of specific interest to national, state and regional leaders. These critical facilities vary in degree of importance. In the risk assessment section, critical facilities are examined for the Southern California region.

CRITICAL INFRASTRUCTURE

Critical infrastructure, under the USA PATRIOT Act of 2001 (P.L. 107-56; 2001), is defined as follows:

“SYSTEMS AND ASSETS, WHETHER PHYSICAL OR VIRTUAL, SO VITAL TO THE UNITED STATES THAT THE INCAPACITY OR DESTRUCTION OF SUCH SYSTEMS AND ASSETS WOULD HAVE A DEBILITATING IMPACT ON SECURITY, NATIONAL ECONOMIC SECURITY, NATIONAL PUBLIC HEALTH OR SAFETY, OR ANY COMBINATION OF THOSE MATTERS (SEC. 1016(E)).”

In addition, the National Strategy for Homeland Security identified thirteen sectors of critical infrastructure as shown in [TABLE 16](#).

While many sectors will be impacted at one time or another during any type of incident or disaster, the scope of this section is specific to transportation infrastructure (e.g., aviation, maritime, mass transit, highway, freight rail and pipeline).

Critical Transportation Infrastructure (CTI) consists of transportation facilities whose removal from service would severely impact the public safety, national security, economic activity or environmental quality. Examples of Critical Transportation Infrastructure are shown in [TABLE 17](#).

TABLE 16 Critical Infrastructure Sectors

Agriculture	Information Technology and Telecommunications
Food	Energy
Water	Transportation
Public Health	Banking and Finance
Emergency Services	Chemical Industry and Hazardous Materials
Government	Postal and Shipping
Defense Industrial Base	

TABLE 17 Critical Transportation Infrastructure

1. Major arterial highways and bridges comprising the National Highway System (NHS), including Strategic Highway Network (STRAHNET) and National Intermodal Connectors.
2. International marine harbors, ports, airports and border crossings.
3. Major railroads, including depots, terminals and stations.
4. Oil and natural gas pipelines.
5. Transportation Control Systems (e.g., air traffic control centers, national control center).

As with most regions of the world, the transportation infrastructure in Southern California plays a major role in its residents' quality of life. The region's expansive urban form makes travel critical to daily life. A failure in the transportation system as a result of natural disaster or human-caused event would bring significant disruptions to the quality of life of many individuals and not to mention adverse economic impacts for the region.

A number of plans, programs, organizations and infrastructure are in place within the SCAG region to provide safety and security of the regional transportation system for many potential situations. The following sections provide an overall summary of efforts to maintain and increase the transportation safety and security of the region.

STRATEGIC HIGHWAY NETWORK

The Strategic Highway Network (STRAHNET) is a designation given to roads that provide "defense access, continuity, and emergency capabilities for movements of personnel and equipment in both peace and war." STRAHNET includes Routes (for long-distance travel) and Connectors (to connect individual installations to the Routes). STRAHNET routes within the SCAG region are essential to readily accommodate the movement of military supplies and personnel in times of national emergencies. STRAHNET routes were selected by the federal government, and include the National Interstate system, as well as key "non-interstate" routes and connectors to ports and military installations.

SCAG, through its planning processes, identifies the operation and maintenance needs of the interstate and state highway system within its jurisdiction, including STRAHNET. Within the SCAG region, all interstate facilities are part of the STRAHNET. Also, SR-14, SR-101 and Route 395 are part of the non-interstate STRAHNET routes. Various connectors between the ports as well as various military installations and STRAHNET are also included.

CALIFORNIA CRITICAL NEEDS ASSESSMENTS

There have also been several assessments of the critical state transportation infrastructure, which include identification of the key transportation facilities. Assessments have been conducted by the following bodies:

- California Governor's Office of Emergency Services (CalOES)
- The California Attorney General's Office
- The California Highway Patrol (CHP)

The results of such assessments have been shared with the transportation system operators and incorporated into their security planning in an effort to improve the overall safety and security of transportation infrastructure.

UNITED STATES DEPARTMENT OF DEFENSE

The Department of Defense (DOD) has several installations within the SCAG region. In the case of a large scale emergency, the DOD is authorized to provide resources when response and recovery requirements are beyond the capabilities of civilian authorities, and these efforts do not interfere with the DOD's core mission or ability to respond to operational contingencies.

Requests for Defense Support to Civilian Authorities (DSCA) are made through the local, county and State authorities as a request for assistance to the federal coordinating official in the appropriate lead federal agency and is normally accompanied by, or submitted after a request from the Governor for a disaster declaration from the President. The Defense Coordinating Officer coordinates the DOD resources to be provided. The California National Guard may be activated as part of the DSCA and can provide law enforcement support, crisis management and consequence management services. Activation of the National Guard for local support during emergencies is done by the Governor via the CalOES.

INTERNATIONAL BORDER CROSSINGS

Within the SCAG region, there are three international ports of entry along the Mexico-Imperial County border: Two at Calexico (Calexico and Calexico-East), and one at Andrade (near Yuma, Arizona). Traffic from these ports enters California on the I-8 corridor. U.S. Customs and the Border Protection Agency within the federal Department of Homeland Security (DHS) are charged with the management and control of the official ports of entry. Security planning includes local emergency services as well as the CHP.

Caltrans District 11 has developed Border Master Planning collaboration with local, state and federal stakeholders in the United States and Mexico. The plan established criteria to be used in future studies to coordinate and prioritize projects related to existing and new Ports of Entry (PEMA) as well as roads leading to the California Mexico PEMA. As part of the constrained portion of the 2016 RTP/SCS, improvements to the Calexico East Port of Entry are proposed including increasing the number of Commercial Vehicle inspection lanes and booths in an effort to ease border congestion.

In addition, as part of Caltrans *Border Infrastructure Needs Assessment*, safety is identified as an evaluation criterion amongst other variables to help prioritize projects along the Mexico-Imperial County border.

Future projects will consider operational improvements, design and retrofitting of border crossings, as well as roadway improvements designed to ease congestion at border crossings.

SEAPORTS

DHS has designated the seaports of Long Beach, Los Angeles and Port Hueneme as at risk for potential terrorist actions.⁹ Security at the ports is the joint responsibility of the U.S. Coast Guard, the U.S. Customs and Border Protection Agency, federal and state Homeland Security offices, Port police agencies, Harbor Patrols and emergency service agencies. The U.S. Coast Guard leads the local Area Maritime Security Commission which coordinates activities and resources for all port stakeholders.

The Port of Los Angeles is unique in that it has a dedicated police force, the Los Angeles Port Police, to patrol the area within the jurisdiction of the Port of Los Angeles. The Port Police enforces federal, state and local public safety statutes as well as environmental and maritime safety regulations in order to maintain the free flow of commerce and produce a safe, secure environment that promotes uninterrupted Port operations. In addition, the Port Police partners with other law enforcement agencies such as the Los Angeles Police Department, California Highway Patrol, and Customs and Border Protection in the Cargo Theft Interdiction Program (CTIP), which investigates cargo theft, and the High Intensity Drug Trafficking Area, which targets drug trafficking at the Ports of Los Angeles and Long Beach. Furthermore, per the Maritime Transportation Security Act of 2002, the Port of Los Angeles works with the Coast Guard to develop security plans for facilities at the port.

Similar to the Port of Los Angeles, security at the Port of Long Beach entails physical security enhancements, police patrols, coordination with federal, state and local agencies to develop security plans for the port area and investigate suspicious incidents, and obtaining federal funding to pay for these enhancements. As with the Port of Los Angeles, the Port of Long Beach works with the Coast Guard to develop security plans for facilities at the port.

In contrast to the Port of Los Angeles, however, the Port of Long Beach does not have its own dedicated police force. Instead, the Long Beach Police Department is responsible for patrolling the port area. In doing so, the Port reimburses the Long Beach Police and Fire Departments for their port-related activities and expenses. The Port also funds its own Harbor Patrol to supplement law enforcement work conducted by other agencies such as the Coast Guard.

In addition, several programs are in place to effectively monitor and screen seaport cargo. They include:

- **Investigations:** The federal Container Security Initiative (CSI) directs Customs agents, working with host governments, to inspect and examine all cargo containers deemed high-risk before they are loaded on U.S.-bound vessels. The CSI contains four core elements: Identifying high-risk containers; pre-screening containers before they reach U.S. ports of entry; using technology to pre-screen high-risk containers; and developing and using smart and secure containers.

- **Inspections:** The 24-hour rule requires manifest information on cargo containers to be delivered to U.S. Customs 24 hours before the container is loaded onto a vessel in a foreign port. Customs has the right to stop any container from being loaded, for any reason, while the container is still overseas.
- **Partnerships:** Most of the largest U.S. importers and their trading partners participate in the Customs-Trade Partnership Against Terrorism (C-TPAT), a public-private partnership designed to improve security standards throughout the cargo supply chain.
- **Technology:** U.S. Customs uses X-ray, gamma ray and radiation-detection devices to screen incoming cargo at U.S. ports.

AIRPORTS

Airport security planning is the joint responsibility of the federal Transportation Security Administration (TSA), the airlines and the individual airports. There are ten airports in the SCAG region offering commercial service, and two offering commuter service. In addition, over 50 general aviation airports in the region are available for public use, including some of the most active general aviation airports in the country. Airports in the SCAG region have upgraded their security systems since 9/11 using a variety of strategies in conjunction with local, state and federal law enforcement.

In addition, airports serve a vital role in recovery efforts. Airports can serve as evacuation centers, and if in working order after an incident, can serve as staging centers for relief efforts. Large flat areas at airports provide excellent staging areas for emergency relief including supplies and equipment, in addition to the staging of aerial relief fleets such as helicopters.

TRANSPORTATION MANAGEMENT CENTERS

Caltrans, in conjunction with the California Highway Patrol (CHP), has created Transportation Management Centers (TMCs) to rapidly detect and respond to incidents while managing the resulting congestion. TMCs serve as the nerve center for our urban freeway and highway systems. Real time information is gathered from many sources such as electronic sensors in the pavement, freeway call boxes, video cameras, 911 calls, officers on patrol, Caltrans highway crews, ramp meter sensors, earthquake monitors, motorist cellular calls, and commercial traffic reporters, which is sent to the TMC 24-hours a day, seven days a week.

With the help of ITS technologies such as electronic sensors in the pavement, freeway call boxes, video cameras, ramp meter sensors, earthquake monitors, motorist cellular calls, and commercial traffic reports, as well as Caltrans highway crews, 9-1-1 calls and officers

on patrol, the TMC provides coordinated transportation management for general commutes, special events and incidents affecting traffic.

The TMCs are operated within each Caltrans district. For the SCAG region, Districts 7, 8, 11 and 12 all have TMCs.

RAIL AND MASS TRANSIT SECURITY

Rail and mass transit systems have long been an attractive target for terrorists and criminals. Since the early 1990s, the California Public Utilities Commission has required that transit agencies operating rail systems prepare a comprehensive System Safety Program Plan (SSPP) that also included a security component.

Most transit agencies have a security and emergency management plan, which details how the agency would coordinate with first responder (law enforcement and fire) agencies, their respective County Office of Emergency Services and the statewide Standardized Emergency Management System (SEMS).

Transit agencies that apply for DHS Transit Security Grants Program (TSGP) funds are required to develop a regional transit security strategy. Several transit agencies within the SCAG region have worked together to develop a regional transit security strategy. The Federal Highway Administration and Federal Transit Administration (FHWA/FTA) require Metropolitan Planning Organizations, such as SCAG, to be consistent with transit safety and security planning and to review processes, plans and programs, as appropriate.

After the Chatsworth Metrolink train crash, the federal government initiated a requirement for train operators to develop and implement Positive Train Control (PTC) on their locomotives. PTC is an automated system that can stop a locomotive if the engineer does not respond to warning signals. Fortunately, since the 2012 RTP/SCS was adopted, Metrolink became the first commuter railroad in the nation to implement PTC. SCAG anticipates this will eventually expand to light rail and integration of PTC into the regional ITS Architecture.

THREATS AND HAZARDS

As part of this chapter, an overview of local plans as related to threats and hazards resulting from disasters affecting transportation infrastructure will be presented. The list of threats/hazards that can disrupt regional continuity has been divided into three categories:

- Natural
- Accidental Technological / Infrastructure Failure

- Terrorism and Behavioral

The Transportation Research Board has classified emergency events that affect transportation agencies into several categories as detailed in [TABLE 18](#).

ASSET CATEGORIES AND DESCRIPTIONS

As previously mentioned, the United States' transportation network is vast and expansive. Because millions of passengers and goods use some aspect of the transportation sector each year, critical transportation assets have become highly attractive targets for terrorist attacks.

As outlined in the Transportation Systems Sector-Specific Plan, the transportation systems sector has been divided into six key sub-sectors: aviation, freight rail, highway, maritime, mass transit and pipeline. Identified below are fifteen critical transportation assets found within the SCAG region that fall within one of the sub-sectors:

- Public roads/highways
- Bridges/interchanges/overpasses/tunnels
- Traffic management and operations centers
- Intelligent Transportation Systems
- Airports
- Mass transit bus and rail facilities (public)
- Mass transit bus and rail facilities (operations and maintenance)
- Bus and rail transit vehicles
- Port and harbor facilities
- Rail freight vehicles
- Rail cargo facilities
- Rail tracks and alignments
- Intermodal connections
- Pipelines

With all of these different critical transportation assets located throughout the SCAG region and which people depend upon for continuity of life, it can be a difficult task to determine which ones are most vulnerable to threats / hazards.

TABLE 18 Emergency Events Impacting Transportation Agencies

Naturally Occurring	Human Caused	
	Intentional	Accidental/Non-Intentional
Earthquake	Bomb threat/other threat of violence	Accidental contamination or hazardous materials spills
Flood	Fire/arson	Accidental damage to or destruction of physical plant and asset(s)
Storm surge	Riot/civil disorder	Accident that affects transportation system
Hurricane/typhoon	Sabotage (external and/or internal actors)	Gas outage
Ice storms	Security breach	HVAC system failure or malfunction
Snow storm/ blizzard	Cyber attack	Inappropriate training on emergency procedures
Landslide/mudslide	Terrorist assault using explosives, firearms, or conventional weapons	Power outage
Naturally occurring epidemic/pandemic	War	Software/hardware failure or malfunction
Tornadoes	Workplace violence	Unavailability of key personnel
Tsunamis		Uninterruptible power supply (UPS) failure or malfunction
Volcanic eruptions		Voice and data telecommunications failure or malfunction
Wildfires		Water outage

**National Cooperative Highway Research Program, Report 777, "A Guide to Regional Transportation Planning for Disasters, Emergencies, and Significant Events," Deborah Materly and Neeli Langdon, 2014*

As can be seen by performing risk assessments, the critical transportation assets that become the most important to protect are the ones that are used by the greatest number of people, contribute significantly to the economic well-being of the region, and provide the greatest connectivity between all of the different transportation components.

APPLICABILITY OF THREATS TO ASSETS

Based on review of local and state documents, including hazard mitigation plans, the potential threats/hazards within the SCAG region have been pre-identified. As mentioned earlier, SCAG is in a great position to coordinate the cooperation of relevant agencies, particularly transportation and emergency management, throughout the six counties of the SCAG region. Coordination throughout the SCAG region is vital due to the interconnectedness of transportation critical infrastructure located throughout the SCAG region.

SECURITY AND EMERGENCY PREPAREDNESS

SCAG's Regional Preparedness Goal is stated as, "to achieve and sustain at risk target levels of capability to prevent, protect against, respond to, and recover from major human-caused or natural events in order to minimize the threat and impact to lives, property and the region."

Prior to the September 11, 2001 terrorist attacks on the United States, there was not a single incident that impacted transportation facilities as result of a national consequence. Prior aircraft incidents involved hostage taking or placing explosives on the plane. The use of passenger aircraft as missiles, and recent transit related terrorism in other countries created a new awareness of the vulnerabilities of transportation facilities.

As concerns about the threat of terrorism have grown, government agencies at all levels have taken new measures to secure the welfare of its citizens. Hurricane Katrina and other natural disasters have also brought attention to how critical emergency preparedness is to the response and recovery of a catastrophic event. Transportation and transit agencies throughout the United States are taking increased steps to protect their facilities against the threats of crime, terrorist activity, and natural disasters.

As stated earlier, there are numerous agencies that have been developed to participate in the response of a disastrous and assist with hazard preparedness for individual jurisdictions.

CALIFORNIA EMERGENCY MANAGEMENT AGENCY

Domestic security at the state government level in California is primarily handled by the California Emergency Management Agency (EMA). The role of EMA is to 'coordinate overall state agency responses to major disasters in support of local government. The office is responsible for assuring the State's readiness to respond to and recover from natural, man-made, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts. The EMA serves as the central contact point in the State for any emergency or imminent disaster. It coordinates the notification of appropriate State administering agencies that may be required to respond, as well as the emergency activities of all state agencies in the event of an emergency.

In doing so, the EMA does not focus on security specifically, but rather more broadly on addressing all potential incidents that could impact the State, such as earthquakes, fires, floods, and terrorist attacks. Furthermore, EMA coordinates with federal agencies such as the Department of Homeland Security and Federal Emergency Management Agency, as well as other state and local agencies such as the California Highway Patrol.

The EMA released the 2010–2015 Statewide Emergency Management Strategic Plan, which outlines California's vision, mission, principles for emergency management, as well as goals and objectives for the period of 2010-2015. In addition to the strategic plan, EMA has released a local planning guide on terrorism, which provides guidance to local cities in planning for potential terrorist acts.

The EMA is required to develop model guidelines for local government agencies and community based organizations to develop a (voluntary) disaster registry program for long-term and community health facilities and for individuals that are disabled or elderly. Individuals registered in the program should be prepared to be self-sufficient for at least 72 hours.¹⁰

MULTI-HAZARD MITIGATION PLANS

Mitigating hazards before the occurrence of a disaster is the primary step in preparing for emergencies, rather than the final step of recovery. The goal of hazard mitigation plans is to guide implementation activities in order to achieve the greatest reduction of vulnerability, which will result in saved lives, reduced injuries, reduced property damage, and greater protection of the environment.

FEMA requires state and local governments to develop hazard mitigation plans and update them every three years. The Disaster Mitigation Act of 2000 (DMA 2000), Section 322 (a-d) requires that local governments, as a condition of receiving federal disaster mitigation funds, have a mitigation plan that describes the process for identifying hazards, risks and vulnerabilities; identifies and prioritizes mitigation actions; encourages the development of local mitigation; and provides technical support for those efforts. "Local Governments" are defined in the DMA 2000 to typically include counties, local municipalities, and tribal governments; but can also include other local agencies and organizations, including Councils of Governments, schools and other special districts.

California updated its State of California Multi-Hazard Mitigation Plan in 2013.¹¹ The state is required to adopt a federally-approved State Multi-Hazard Mitigation Plan to be eligible for certain disaster assistance and mitigation funding. The Plan is an evaluation of the hazards California faces and the strategies, goals and activities the state will pursue to address these hazards. The Plan:

- Documents statewide hazard mitigation planning in California;
- Describes strategies and priorities for future mitigation activities;
- Facilitates the integration of local and tribal hazard mitigation planning activities into statewide efforts; and
- Meets state and federal statutory and regulatory requirements.

All six SCAG counties and a number of cities within the SCAG region have completed Hazard Mitigation Plans. EMA dictates that these plans must also be updated every three years.

COUNTY OFFICES OF EMERGENCY SERVICES

Counties and cities are the first responders to any security or emergency situation. These responders include fire departments, police and sheriff department, hospitals, ambulance services and transportation agencies. Coordination among public and private agencies within various cities and counties makes the most use of all available resources in the event of any emergency.

While each city and county has their own security procedures, the policies are generally similar. Mutual Aid agreements between cities, counties and private organizations help to maximize resources and reduce the human suffering associated with disaster situations. Each SCAG county has a department in charge of security and emergency response.

NATIONAL INCIDENT MANAGEMENT SYSTEM / STANDARDIZED EMERGENCY MANAGEMENT SYSTEM

The National Incident Management System (NIMS) is a tool for states, counties and local jurisdictions to respond to catastrophic events through better communication and coordination.

NIMS provides a consistent nationwide template to enable federal, state, local and tribal governments, and private-sector and nongovernmental organizations to work together effectively and efficiently to prepare for, prevent, respond to and recover from domestic incidents, regardless of cause, size or complexity, including acts of catastrophic terrorism.¹²

California has a similar management system called the Standard Emergency Management System (SEMS) which is mandated under California Government Code Section §8607(a). State of California Executive Order S-2-05 requires the state to integrate, to the extent appropriate, the NIMS, into the State's SEMS.

The NIMS Integration Center strongly recommends that all elected officials who will be interacting with multiple jurisdictions and agencies during an emergency incident to take the following NIMS courses, at a minimum:

- FEMA IS-700: NIMS, an Introduction
- ICS-100: Introduction to Incident Command System (ICS) or equivalent

(Note: FEMA IS-700 "NIMS, and Introduction" and ICS-100 are used extensively in the development of this section)

All federal, state, local, tribal, private sector and non-governmental personnel with a direct role in emergency management and response must be NIMS and ICS trained. This includes all emergency service related disciplines such as Emergency Medical Technicians (EMTs), hospitals, public health, fire service, law enforcement, public works/utilities, skilled support personnel, and other emergency management response, support and volunteer personnel.

The NIMS employs two levels of incident management, depending upon the type of incident.

Incident Command System (ICS) is a standard, on scene, all-hazard incident management system. ICS allows users to adopt an integrated organizational structure to match the needs of single or multiple incidents.

Multi-Agency Coordination Systems are a combination of facilities, equipment, personnel, procedures and communications integrated into a common framework for coordinating and supporting incident management.

ICS has been in use for over 30 years and is used for planned events, fires, earthquakes, hurricanes, acts of terrorism, etc. ICS helps all responders communicate and effectuate logistics.

NIMS requires all emergency plans and standard operating procedures to incorporate NIMS components, principles and policies; include emergency planning, training, response, exercises, equipment, evaluation and corrective actions. Chief elected and appointed officials in a community need to be directly involved in these NIMS preparedness elements, especially the elements that deal with exercising community emergency management policies, plans, procedures and resources. It is important to recognize that the NIMS is a dynamic system, and the doctrine as well as the implementation requirements will continue to evolve as emergency management capabilities change.

MUTUAL AID AGREEMENTS (MAA)

Immediately following the 1994 Northridge earthquake, city and county emergency managers in the Governor’s Office of Emergency Services (EMA) Coastal, Southern, and Inland Regions developed a coordinated emergency management concept called the Emergency Managers Mutual Aid (EMMA) system. EMMA provided a valuable service in the emergency response and recovery efforts at the Southern Regional Emergency Operations Center (REOC), local Emergency Operations Centers (EOCs), the Disaster Field Office (DFO), and community service centers. The purpose of Emergency Managers Mutual Aid (EMMA) is to support disaster operations in affected jurisdictions by providing professional emergency management personnel. In accordance with the Master Mutual Aid Agreement, local and state emergency managers have responded in support of each other under a variety of plans and procedures.

The objectives of the EMMA Plan include:

- Providing emergency management personnel from unaffected areas to support local jurisdictions, Operational Areas, and regional emergency operations during proclaimed emergencies.
- Providing a system, including an organization, information and forms necessary to coordinate the formal request, reception, assignment and training of assigned personnel.
- Establishing a structure to maintain this document (the Emergency Managers Mutual Aid Plan) and its procedures.
- Providing for the coordination of training for emergency managers, including Standardized Emergency Management System (SEMS/NIMS) training, emergency management course work, exercises, and disaster response procedures.

- Promoting professionalism in emergency management.¹⁵

The transportation sector, as are other critical sectors of the country, is continuously striving to improve prevention, preparedness, response, recovery and mitigation capabilities at all levels of society. As is discussed below, MPOs can play a significant role in promoting preparedness and recovery capabilities.

INTELLIGENT TRANSPORTATION SYSTEMS RELATED TO SECURITY

Effective in April 2001, FHWA required the integration of the deployment of regional ITS systems through a Final Rule and Policy mandate. In the development of an ITS architecture, “agencies that own and operate transportation systems must collaborate and consider current and future needs to ensure that today’s processes and projects are compatible with future ITS projects.” Under federal mandate, responsible transportation agencies had four years to comply with the ITS law. In 2005, SCAG completed the regional ITS architecture in compliance with the federal rulings. The regional ITS architecture has been regularly updated on a modular basis since 2005. The Regional ITS Architecture covers the following user needs of Critical ITS elements:

- Maintenance and management by the ITS Working Group made up of Caltrans and County Transportation Commission (CTC) representatives;
- Limited ITS Maintenance Resources;
- Communications standards – XML Regional Approach; and
- Did not fully examine ITS use for Emergency Management.

The SCAG Regional ITS Architecture includes all six counties within its jurisdiction: Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura. The region’s ITS architecture is a framework for ensuring institutional agreement and technical integration of technologies for the implementation of projects or groups of projects under an ITS strategy. All ITS related projects must be consistent with the SCAG Regional ITS architecture in order to be eligible for federal funds. These projects also must comply with federal system engineering requirements and applicable federal standards. Local components to the ITS architecture exist for Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura Counties.

Currently, traffic incidents are responsible for a large proportion of the congestion delay on the region’s freeways. In order to mitigate non-recurring congestion, such as traffic collisions, Transportation Management Centers (TMCs) have been established throughout the region. Sensors, closed circuit cameras, news reports and traveler tips are relayed to TMCs who initiate a response, often within the first minute of an incident. Freeway Service Patrols are pre-positioned to further reduce the response time.

The region needs to reduce the number of incidents that occur as well as to continue to reduce the amount of time it takes to clear incidents when they do occur. Special attention should be directed to clearing major incidents including those involving injuries, fatalities, hazardous materials, or large trucks. A regional 5-1-1 system alerts travelers to dangerous road conditions, incidents and general congestion. In the event of an emergency, a reverse 9-1-1 system can notify households of staging locations for evacuations.

In the SCAG Region, ITS systems may be able to assist in case of emergencies by managing road closures, evacuation management, public transportation security, dissemination of real-time information to motorists and first responder agencies, allocation of resources for responders' ingress and evacuation egress, and provide routing information for out-of area responders.

In 2008, SCAG updated the region's ITS architecture for areas related to security. These systems are considered as a resource and are defined into eight security areas:

- Disaster Response and Evacuation;
- Freight and Commercial Vehicle Security;
- HAZMAT Security;
- ITS Wide Area Alert;
- Rail Security;
- Transit Security;
- Transportation Infrastructure Security; and
- Traveler Security.

In 2011, SCAG updated the ITS Architecture again, in part to incorporate Positive Train Control into the regional Architecture in order to increase rail safety and security.

FEDERAL REQUIREMENTS

Transportation safety and security emphasis is reflected in MAP-21, the transportation reauthorization law. MAP-21 authorized the federal surface transportation programs for highways, highway safety, and transit for a 2-year period (2012-2014). Subsequent reauthorizations have extended MAP-21 a number of times. It is possible that it will continue to be reauthorized as needed until the next long term transportation bill is enacted. As part of MAP-21, MPOs are required to develop a metropolitan planning process that provides for consideration of projects and strategies that are consistent with the Highway Safety Improvement Program (HSIP). Under MAP-21, the metropolitan transportation planning process should be consistent with the Strategic Highway Safety Plan, and other transit safety and security planning and review processes, plans, and programs, as appropriate.

SCAG'S ROLE IN SECURITY

SCAG does not have a direct role in first response or emergency management. As an MPO, SCAG can potentially play a role in providing a coordinating forum working with the region's transportation agencies and planning agencies. In this role, SCAG could offer the capacity to identify policy directions and conduct planning regarding resource needs. In addition, the agency's Geographic Information Systems and transportation modeling expertise offers a regional tool that may support security and emergency management planning and deployment and evacuation preparedness and response.

INFORMATION SHARING ROLE

The region's transportation system is both an asset that needs to be protected from catastrophic events, as well as a resource used to respond to such events. SCAG's primary focus is on planning for this transportation system. As the regional planning agency for transportation, SCAG houses a wealth of transportation related data and information that could be brought to bear in planning for and preparing for emergency events. So, SCAG should be viewed as a resource agency that can provide meaningful assistance in preparing emergency preparedness, prevention and evacuation plans.

REGIONAL SECURITY PLANNING

While there are a number of agencies that have direct roles in safety and security operations, there is no single entity that focuses on broad policies related to disaster prevention and response within the region. SCAG could partially fill this void in conjunction with its role in security planning as part of its broader transportation planning responsibilities.

SCAG could help bring situational awareness of security to the region for the array of potential disasters. This recognizes the fact that the region's ITS planning and deployments provide an opportunity for the region to leverage this investment to enhance situational awareness and further the efforts of the emergency management community.

SCAG's active role in the security planning process (within the policy arena) would require:

- Emphasizing transportation as a resource and itself as a stakeholder in security planning and operations.
- Educating officials about transportation-related issues with regards to safety and security.
- Participating in a regional security working group.
- Assisting with the identification of opportunities and resources that support emergency management.

- Leveraging federal funds to support security preparedness.
- Increasing its knowledge of best practices and how to implement them, and then identifying its role with regard to their implementation.
- SCAG would also increase its role as a data source and further serve as a clearinghouse for various types of data sets.¹⁶
- SCAG would play a role in supporting situational awareness for safety and security purposes by using geospatial data.

REGIONAL PREPAREDNESS

SCAG's regional preparedness goal is to prevent, protect, respond and recover from major human-caused or natural events in order to minimize the threat and impact to lives, property and the regional economy. Its transportation security plans will help ensure that there is a productive movement of persons and goods when a disastrous event strikes the region. SCAG has the following opportunities to elevate its role in the region and its ability to provide a policy forum and serve as a data clearinghouse:

- Develop proactive transportation security strategies that support economic vitality in the region.
- Enhance the effectiveness of agencies responsible for security preparedness and emergency response.
- Ensure that regional transportation technology investments meet the needs of emergency responders through interoperable, robust and strategically redundant ITS and communications infrastructure.
- Provide a regional forum for members of the transportation and emergency management communities to coordinate transportation and security initiatives, and to reach agreement on how to work more closely together during the decision notification process prior to and following an event.
- Update the regional ITS architecture and associated County architectures, describing specific systems interoperability requirements to support regional safety and security objectives.¹⁷

In 2008, SCAG participated in the development of the (draft) Southern California Catastrophic Earthquake Preparedness Plan¹⁸. The Plan, finalized by Cal EMA and FEMA in 2010, looked at possible damage from a major earthquake and the resources the region would need and have available to both respond and recover. The Plan examines the initial impacts, inventory of resources, care for those wounded and homeless and developed a long-term recovery process. The process of Long-Term Regional Recovery (LTRR) provides a mechanism for coordinating federal support to state, tribal, regional, and local governments,

nongovernmental organizations (NGOs), and the private sector to enable recovery from the long-term consequences of extraordinary disasters. The LTRR process accomplishes this by identifying and facilitating the availability and use of sources of recovery funding, and providing technical assistance (such as impact analyses) for recovery and recovery planning support. "Long-Term" refers to the need to re-establish a healthy, functioning region that will sustain itself over time. Long-term recovery is NOT debris removal and restoration of utilities, which are considered immediate or short-term recovery actions.

Once a disaster has been proclaimed, the LTRR process may be activated for incidents that require a coordinated federal, state, tribal, regional and local government response to address significant long-term impacts (e.g., impacts on housing, government operations, agriculture, businesses, employment, regional infrastructure, the environment, human health, and social services) to foster sustainable recovery. The three main focus areas of LTRR are:

- Housing
- Infrastructure (including transportation); and
- Economic Development.

When a disaster occurs, the initial operational focus is centered on response activities. This effort may last from a few hours to an extended period of time (several days or longer) depending on the situation. SCAG's response during this period is to coordinate the funding of regionally significant transportation infrastructure repairs. As response activities begin to taper off and non-life safety issues begin to be addressed, the operational focus begins to shift from response to recovery. Federal and state support will be heaviest during the beginning phase of the recovery effort when:

- Long-term impact analyses are performed;
- When necessary technical support to establish local long-term recovery strategies and/or plans is provided; and
- When coordination of long-term recovery resources needed by the region to launch its recovery efforts are complete.

State and federal support lessens in the later stages of the LTRR process once the region has sufficient capacity to implement its long term recovery plan.¹⁹

PROMOTER OF REGIONAL ITS SOLUTION

SCAG also envisions developing a comprehensive ITS, as SCAG controls the regional ITS architecture, funding, and programming. Major elements of SCAG's role include:

- Identifying more command and control for Critical Transportation Infrastructure (CTI);
- Developing mechanisms to make data available through Traffic Management Centers (TMC) to assist first responders and training first responders to take advantages of these resources;
- Identifying system detection gaps and using this to prioritize funding;
- Prioritizing command and control infrastructure through funding; and
- Supporting County Office of Emergency Services through the programming and planning of funding to TMCs and other activities.

Continuity of government is another area SCAG may be able to provide leadership within the region. There is a lack of agreement between agencies for mutual aid (in many cases, especially in the transportation arena). SCAG could play a role in facilitating this process and identifying needs and prioritizing agreements and planning at the regional and sub-regional level between agencies, particularly for long-term recovery after events.

REGIONAL PROVIDER OF DATA AND INFORMATION

SCAG has a strong desire and commitment to be a major data repository. However, SCAG will undertake this role where and if appropriate to facilitate the planning processes and activities of local and regional stakeholders. SCAG's goal is to be an acquirer and source for regional level data and information. This role is consistent with the one mentioned earlier in this section.

Several relevant transportation and security planning documents illustrate that SCAG has a challenging task in serving the region. It also has a tremendous opportunity to not only serve the region in transportation security planning efforts, but to serve as an example for the rest of the nation. As mentioned above, federal mandates have recently passed to make security planning part of the purview of MPOs. However, the mandates do not clearly delineate the roles and steps of MPOs. Essentially, SCAG will be breaking new ground in shaping its role in the arena of transportation security planning.

POLICIES AND RECOMMENDATIONS

SCAG has developed an action plan and policies detailing eight measures that the agency will undertake in the regional transportation security planning.

1. SCAG should help ensure the rapid repair of transportation infrastructure in the event of an emergency.

- SCAG, in cooperation with local and state agencies, should identify critical infrastructure needs necessary for emergency responders to enter the region, the evacuation of affected facilities and the restoration of utilities.
 - SCAG, in cooperation with CTCs, State and Federal agencies should develop a transportation recovery plan for the emergency awarding of contracts to rapidly and efficiently repair damaged infrastructure.
2. SCAG should continue to deploy and promote the use of ITS technologies that enhance transportation security.
 - SCAG should work to expand the use of ITS to improve surveillance, monitoring and distress notification systems and to assist in the rapid evacuation of disaster areas.
 - SCAG should incorporate security into the Regional ITS Architecture.
 - Transit operators should incorporate ITS technologies as part of their security and emergency preparedness and share that information with other operators.
 - Aside from deploying ITS technologies for advanced customer information, transit agencies should work intensely with ethnic, local and disenfranchised communities through public information/outreach sessions ensuring public participation is used to its fullest. In case of evacuation, these transit dependent persons may need additional assistance to evacuate to safety.
 3. SCAG should establish transportation infrastructure practices that promote and enhance security.
 - SCAG should work with transportation operators to plan and coordinate transportation projects, as appropriate, with the Department of Homeland Security grant projects, to enhance the regional transit security strategy (RTSS).
 - SCAG should establish transportation infrastructure practices that identify and prioritize the design, retrofit, hardening and stabilization of critical transportation infrastructure to prevent failure, to minimize loss of life and property, injuries and avoid long term economic disruption.
 4. SCAG should establish a forum where policy-makers can be educated and regional policy can be developed.
 - SCAG should work with local officials to develop regional consensus on regional transportation safety, security and safety/security policies.
 5. SCAG will help enhance the region's ability to deter and respond to acts of terrorism and human-caused or natural disasters through regionally cooperative and collaborative strategies.

- SCAG should work with local officials to develop regional consensus on regional transportation safety, security and safety/security policies.
 - SCAG should encourage all SCAG elected officials to be educated in National Incident Management System (NIMS).
 - SCAG should work with partner agencies, federal, state and local jurisdictions to improve communications and interoperability and to find opportunities to leverage and effectively use transportation and public safety/security resources in support of this effort.
6. SCAG will work to enhance emergency preparedness awareness among public agencies and with the public at large.
- SCAG should work with local officials to develop regional consensus on regional transportation safety, security and safety/security policies.
 - SCAG should work to improve the effectiveness of regional plans by maximizing the sharing and coordination of resources that would allow for proper response by public agencies. SCAG should encourage and provide a forum for local jurisdictions to develop mutual aid agreements for essential government services (including in the transportation arena) during any incident recovery.
7. SCAG will help to enhance the capabilities of local and regional organizations, including first responders, through provision and sharing of information.
- SCAG should work with local agencies to collect regional GeoData in a common format, and provide access to the GeoData for emergency planning, training and response.
 - SCAG should develop and establish a regional information sharing strategy, linking SCAG and its member jurisdictions for ongoing sharing and provision of information pertaining to the region’s transportation system and other critical infrastructure.
8. SCAG should provide the means for collaboration in planning, communication and information sharing before, during or after a regional emergency.
- SCAG should develop and incorporate strategies and actions pertaining to response and prevention of security incidents and events as part of the on-going regional planning activities.
 - SCAG should offer a regional repository of GIS data for use by local agencies in emergency planning, and response, in a standardized format.

NOTES

¹ Unless otherwise noted, all data referenced is from 2012, the most recent year that complete data was available

² 2012 National Safety Council

³ 2012 Statewide Integrated Traffic Reporting System (SWITRS)

⁴ 2012 National Safety Council

⁵ Federal Emergency Management Agency: Community Emergency Response Team (IG-317) Student's Guide

⁶ The American transportation sector is dependent on foreign oil sources; in fact 51.5 percent of petroleum used in the United States is currently imported (Bureau of Transportation Statistics 2009)

⁷ United States Census Bureau

⁸ Fiscal Year 2006 Infrastructure Protection Program. U.S. Department of Homeland Security, September 25, 2006.

⁹ <http://www.dhs.gov/xlibrary/assets/nipp-ssp-transportation-systems-2010.pdf>

¹⁰ <http://hazardmitigation.calema.ca.gov/docs/ESA-all8-06-final.pdf>

¹¹ http://hazardmitigation.calema.ca.gov/plan/state_multi-hazard_mitigation_plan_shmp

¹² <https://www.fema.gov/national-incident-management-system>

¹³ <https://training.fema.gov/is/courseoverview.aspx?code=IS-700.a>

¹⁴ <http://www.training.fema.gov/is/courseoverview.aspx?code=IS-100.b>

¹⁵ <http://www.caloes.ca.gov/PlanningPreparednessSite/Documents/EMMA%20PlanAnnexes%20A-F,%202012.pdf>

¹⁶ In its Ten Year Strategic Plan, SCAG has indicated that it wished to be a central source for data and information about the southern California Region. SCAG has a strong desire and commitment to be a major data repository. However, SCAG will undertake this role where and if appropriate to facilitate the planning processes and activities of local and regional stakeholders. SCAG goal is to be an acquirer and source for regional level data and information.

¹⁷ The ongoing investment in ITS region-wide provides a resource that needs to be recognized and leveraged for enhancing situational awareness and analysis capabilities. The ongoing investment in ITS region-wide provides a resource that needs to be recognized and leveraged for enhancing situational awareness and analysis capabilities.

¹⁸ [http://www.caloes.ca.gov/PlanningPreparednessSite/Documents/SoCalCatastrophicConops\(Public\)2010.pdf](http://www.caloes.ca.gov/PlanningPreparednessSite/Documents/SoCalCatastrophicConops(Public)2010.pdf)

¹⁹ Adapted from Draft Southern California Catastrophic Preparedness Plan, IWG 14 – Staff Estimate.



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APPENDIX

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