



# Security and Emergency Preparedness

## THE CHALLENGE

Southern California is home to significant threats; including earthquakes, tsunamis, wildfires, flooding and mudslides. More recently, terrorism has been added to the threats that the region must prepare against. The complexity of the SCAG region, with a range of potential terrorism targets, presents significant challenges in coordinating and implementing effective homeland security programs. The unexpected and complex nature of these natural and human-caused incidents require extensive coordination, collaboration and flexibility among all of the agencies and organizations involved in planning, mitigation, response and recovery.

This chapter focuses on safety and security. Given the complexity of these issues, definitions can help frame the discussion. **Safety** is defined as the protection of persons and property from unintentional damage or destruction caused by accidental or natural events. **Security** is defined as the protection of persons or property from intentional damage or destruction caused by vandalism, criminal activity or terrorist attacks.<sup>1</sup> The Transportation Research Board has classified emergency events that affect transportation agencies into several categories, which is illustrated below in **Table 9.1**.

The interdependency of the jurisdictions and organizations makes regional cooperation and coordination essential to security and emergency preparedness. No significant event is truly local, as political boundaries are permeable and critical local infrastructure may serve the entire region. No jurisdiction stands alone. A high-risk, well-resourced municipality may be as dependent on a smaller jurisdiction for support in an emergency and vice-versa. Typically, no single agency is responsible for transportation security. At the local level, safety may be handled within one office, especially within transit agencies. However, the security of a surface transportation mode is often managed by more than one entity. For example, highways and transit networks traverse multiple police jurisdictions, local fire departments generally fill the incident command role after terrorist events, regional command and control centers respond to both natural and intentional disasters, and federal agencies intervene as needed and based on specific guidelines such as the crossing of state boundaries.

A proactive region that improves its homeland security programs and prepares for emergencies is better insulated against the economic, public health, transportation, and other impacts from natural and human-caused accidents. When a disaster occurs, there is a cascading effect on the transportation, utili-



**HOW SECURITY AND EMERGENCY PREPAREDNESS POLICIES PRODUCE MULTIPLE BENEFITS**

*Land Use and Housing:* Minimizing impacts related to emergencies should influence land use decisions, such as minimizing tsunami or flood-related impacts could result in rezoning low-lying land, bringing potentially high value land off of the housing market.

*Open Space and Habitat:* Weighing wildfire risk would likely limit development in certain high wildfire risk areas.

*Water:* Drinking water supply is a sensitive target for both natural and human-caused emergencies. Investments that minimize risks to drinking water will necessarily benefit our ability to ensure an adequate, safe water supply.

*Energy:* Minimizing our reliance on petroleum sources of energy insulates us from acute oil shortages due to terrorist or natural events (e.g., hurricanes impacting refineries).

*When a disaster occurs, there is a cascading effect on the transportation,*

ties, communications, fuel, and water infrastructure services and delivery systems that we depend on. When one of these critical elements in our support system breaks down, it has a domino effect on other elements. When multiple elements break down, the effect can be crippling. Some of the ways in which the infrastructure can be affected in a disaster or emergency and effects on emergency service providers are shown in **Tables 9.2 and 9.3.**

A continuing, cooperative and collective regional effort will be needed to assist the region in the planning, preparation and response to emergencies, whether caused by natural or human elements. To assist in this effort, this chapter identi-

fies SCAG’s potential role and responsibility in regards to the relationship between transportation and emergency preparedness. It describes the current programs at the federal, State and local levels; identifies security issues in the transportation infrastructure; and recommends policies for SCAG and other stakeholders.

The continued emphasis on enhancing transportation security is also reflected in the most recent transportation authorization bill, known as SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users). SAFETEA-LU specifies that Metropolitan Planning Organizations (MPOs) such as SCAG develop a metropolitan

**TABLE 9.1 EMERGENCY EVENTS IMPACTING TRANSPORTATION AGENCIES<sup>2</sup>**

Naturally Occurring	Human Caused	
	Intentional	Non-Intentional
Droughts	Bomb Threats and Other Threats of Violence	Accidental Contamination or Hazardous Materials Spills
Dust/Wind Storms	Disruption of Supply Sources	Accidental Damage to or Destruction of Physical Plant and Assets
Earthquakes	Fire/Arson	Accidents That Affect the Transportation System
Electrical Storms	Fraud/Embezzlement	Gas Outages
Floods	Labor Disputes/Strikes	Human Errors
High Winds	Misuse of Resources	HVAC System Failures or Malfunctions
Hurricanes	Riot/Civil Disorder	Inappropriate Training on Emergency Procedures
Ice Storms	Sabotage: External and Internal Actors	Power Outages
Landslides	Security Breaches	Software/Hardware Failures or Malfunctions
Naturally Occurring Epidemics	Terrorist Assaults Using Chemical, Biological, Radiological, or Nuclear Agents	Unavailability of Key Personnel
Snowstorms and Blizzards	Terrorist Assaults Using Explosives, Firearms, or Conventional Weapons	Uninterruptible Power Supply (UPS) Failure or Malfunction
Tornadoes	Theft	Voice and Data Telecommunications Failures or Malfunctions
Tropical Storms	Vandalism	Water Outages
Tsunamis	War	
Wildfires	Workplace Violence	
	Cyber Attacks	

planning process that provides consideration for projects and strategies that will “increase the security of the transportation system for motorized and non-motorized users.”

**THE PLAN**

The RCP aims to achieve and sustain risk-based 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 regional economy. This centers around coordinating the numerous plans, programs, organizations and infrastructure in place within SCAG’s purview to provide safety and security of the regional transportation system for many potential situations.

SCAG’s role in homeland security is based on the potential role of a MPO in relationship to six phases of an incident/ disaster:<sup>3</sup>

- Prevention: Stopping an attack before it occurs; improved facility design; surveillance, monitoring
- Response/Mitigation: Reducing impacts of an attack; evacuation; identifying best routes; effective communication system
- Monitoring: Monitoring and evaluating incidents; surveillance, monitoring, sensing, public information
- Recovery: Facilitating and reconstruction, restoring operation of transportation system
- Investigation: Determination of causes, and responsible parties; security/police activity
- Institutional Learning: Self-assessment of actions; feedback to prevention element

**TABLE 9.2 POSSIBLE EFFECTS OF DAMAGE TO INFRASTRUCTURE<sup>3</sup>**

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.
Telephone	Lost contact between victims, service providers, and family members. System overload due to calls from or to friends or relatives.
Water	Disruption of service to homes, businesses, and medical providers. Inadequate water supply for firefighting. Increased risk to public health if there is extensive damage to the water supply or if it becomes contaminated.
Fuel Supplies	Increased risk of fire or explosion from ruptured fuel lines. Risk of asphyxiation from natural gas leaks in confined areas.



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POLICIES PRODUCE MULTIPLE  
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*Air Quality:* Reducing our exposure to emergency scenarios can substantially protect short- and long-term air quality as Southern California’s existing air quality challenges could be exasperated by terrorist attacks or other disasters. For example, a fire at one of the region’s oil refineries would cause a significant acute increase in emissions of particulates and toxic air contaminants.

*Transportation:* Increasing funding for transportation system preservation and maintenance reduces the likelihood of facility failure (e.g., a bridge collapse) that can cause short-term disruptions to circulation. However, it could also reduce funding transportation system expansion.

*The RCP aims to prevent, protect against, respond to, and recover from*

Because of its traditional role as the MPO for the six-county Southern California region, SCAG is best suited to provide a forum where plans and data can be developed and coordinated with other regional planning efforts; and work towards developing regional consensus, but not be responsible for operation and implementation of plans and programs. SCAG should play a lead role in some areas, a minor role in others, or play no role at all. For example, SCAG has almost no role in the investigation aspect of security and only a minor role as a champion. However, SCAG could play a lead role in championing prevention and developing the institutional learning. SCAG could play a significant role in helping the region coordinate planning in preparation and anticipation of potential future incidents; and coordinate public information dissemination strategies.

A data provision role is designed to support federal, state and local security and emergency responders. The RCP proposes that SCAG support these front-line responders to ensure that planning and information are available to help the region deal with inevitable emergencies.

The recommended policies of this plan are also designed to urge transportation planning agencies to devote adequate funding to the operations and maintenance of our aging transportation system. Failing infrastructure is often the result of insufficient roadway, bridge, and transit system maintenance due to lack of funding or other resources. While not as glamorous as earmarking funding for roadway and transit system expansions, our region must improve its commitment to ensuring that the

**TABLE 9.3 POSSIBLE EFFECTS OF DAMAGE ON EMERGENCY SERVICE PROVIDERS<sup>4</sup>**

Type of Damage	Effect
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.

*major events to minimize impacts to lives, property, and the economy.*

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**REGIONAL COMPREHENSIVE PLAN**

existing transportation system is safe and secure from natural and man-made incidents. To that end, the RCP recommends that SCAG work with partner agencies, federal, state and local jurisdictions to find opportunities to leverage and effectively utilize transportation and public safety/security resources in support of this effort. In the event of a natural or man-made incident, SCAG would work with the state and federal government to “fast track” the programming of transportation infrastructure repairs (i.e., accelerated contracting process or streamlined environmental review).

**Table 9.4** highlights SCAG’s role in responding to specific threats to the region.

**Wildfires.** Wildfires are the most frequent threat to the region. Depending on atmospheric conditions and location, wildfires could damage small amounts of vegetation, or they could wipe out entire communities. Homes on hillsides or canyons are especially at risk, not just during the fire, but also after the fire has passed when the hillsides and canyons are vulnerable to landslides, mudslides, and flooding. Homes in these vulnerable areas often have few evacuation route options.

**TABLE 9.4 SCAG’S ROLE IN SECURITY AND EMERGENCY PREPAREDNESS**

Incident Phase	Traditional	Convener	Champion	Developer	Operator
Prevention	●	☑	☑	●	☒
Response/Mitigation	●	☑	☑	●	☒
Monitoring/Information	●	☑	☑	●	☒
Recovery	●	☑	●	☒	☒
Investigation	●	☒	☒	☒	☒
Institutional Learning	☑	☑	☑	☑	☑

No Role ☒

Minor Role ●

Lead Role ☑

**Roles:**

- Traditional** Help manage the system management and operations role in the ongoing transportation planning activities. The primary responsibility for projects rests elsewhere.
- Convener** The MPO acts as a forum where operations plans can be discussed and coordinated with other plans in the region, still not responsible for operation and implementation.
- Champion** The MPO works aggressively to develop regional consensus on operations planning. MPO planners develop programs and projects and the MPO takes the lead in developing regional agreements on coordinated operations.
- Developer** MPO develops regional operation plans and incorporates operations strategies into the transportation plan. System-oriented performance measures would be used to identify strategic operations gaps in the transportation system.
- Operator** The MPO would be responsible for implementing operations strategies that were developed as part of the MPO-led planning process.



### HOW SECURITY AND EMERGENCY PREPAREDNESS POLICIES PRODUCE MULTIPLE BENEFITS

*Economy:* Taking risk adverse positions on investments may result in overinvestment in security-related improvements to the detriment of other public needs.

*Public Health:* Preventing man-made events can reduce impacts to public health in a number of ways. For example, during severe wildfires, children who do not have asthma experience asthma-like symptoms, including noise, eye, and throat irritations.

*Environmental Justice:* Developing effective plans for ensuring public safety and emergency preparedness system must avoid, minimize, or mitigate disproportionately adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations. It must also ensure full and fair participation by all affected communities in the decision-making process.

## We must increase per capita funding for transportation system

In response, local governments have begun using innovative emergency warning systems, such as reverse 911 to warn residents when the need to evacuate arises. New Intelligent Transportation System technologies can also aid the free flow of evacuees away from a danger area by monitoring traffic to prevent congestion.

**Earthquakes.** The most dangerous threat to the region, the earthquake, is one that we have faced many times in varying severity. The 1971 Sylmar earthquake and the 1994 Northridge trembler caused significant transportation damages to the region. An even greater earthquake in the SCAG region is not just a statistical possibility, but a certainty.

SCAG's role in an earthquake would be based on the severity of the earthquake. For smaller earthquakes, SCAG would work with local agencies to program transportation infrastructure repairs. For moderate earthquakes, SCAG would work with the State and federal government to "fast track" the programming of transportation infrastructure repairs.

For significant earthquakes, SCAG would provide GeoData to responders to help identify transit dependent areas for rescue and evacuation, and critical transportation infrastructure that would need to be repaired to most efficiently help in the relief and recovery efforts. SCAG should maintain mutual aid agreements with other metropolitan areas in the event the organization is disabled by the event, maintaining the flow of data to responders.

There is also a danger that an earthquake or series of earthquakes may cause water retention facilities to fail. Dam owners are required by California Regulations to provide a technical study and an inundation map, showing the area downstream of a dam that would be inundated or otherwise affected by the failure of the dam and accompanying large flood flows.

Based upon a review of inundation maps or based upon information gained by an on-site inspection and consultation with the affected local jurisdiction (when the requirement for an inundation map is waived), the Office of Emergency Services shall determine and designate areas where death or personal injury would, likely result from the partial or total failure of a dam. The appropriate public safety agencies of any city, county, or city and county, the territory of which includes any of those areas, may adopt emergency procedures for the evacuation and control of populated areas below those dams.<sup>5</sup>

**Tsunamis.** Tsunamis, while less frequent than earthquakes, have happened in the past, and will likely happen in the future. An August 31, 1930 tsunami resulted in a three meter run-up (maximum vertical elevation wave reached above sea level at the time of tsunami ) wave observed in Santa Monica bay. One man drowned and several swimmers required rescuing. Even small tsunamis can be dangerous, producing dangerous undertows that can drown swimmers, rip ships from their moorings and damage low lying structures.

While development along the coast would be affected, based on the size of the waves, the greatest threatened areas would be

## *maintenance and preservation programs over existing levels.*

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the ports of Long Beach and Los Angeles, which have a dock height of only a few feet above the high tide line. The major sources of tsunami energy that could reach our seaports are from the northern regions offshore of Alaska and from southern regions near Chile. Tsunamis from great earthquakes in the Far East do not appear to impact the Ports as much as those from generation regions in the north and the south.<sup>6</sup>

**Flooding.** Much of the SCAG region is composed of alluvial fans, gently sloping landforms created over time from the erosion of the surrounding mountains. Flooding, even though characterized by shallow depth, can be quite destructive, traveling at relatively high speeds and carrying sediment and debris.

In 1938, after a tremendous flood that killed 113 people, the Army Corps of Engineers began channelizing the major rivers in Los Angeles County, developing six catch basins and 14 smaller mountain dams in an effort to reduce flooding. While flooding has not been eliminated, the impacts in urban areas of Los Angeles County have been reduced.

Since then, the regional population has grown significantly into the Inland Empire and North Los Angeles County. Many of the alluvial floodplains in these areas have been developed, primarily with residential housing. Droughts and wildfires increase the risk of flash floods and mudslides during rain storms. The combination of damaged hillsides, alluvial fans and inclement weather allow some degree of accuracy in

predicting danger areas for flooding, allowing precautionary evacuations and road closures.

### **SECURITY AND EMERGENCY PREPAREDNESS GOALS**

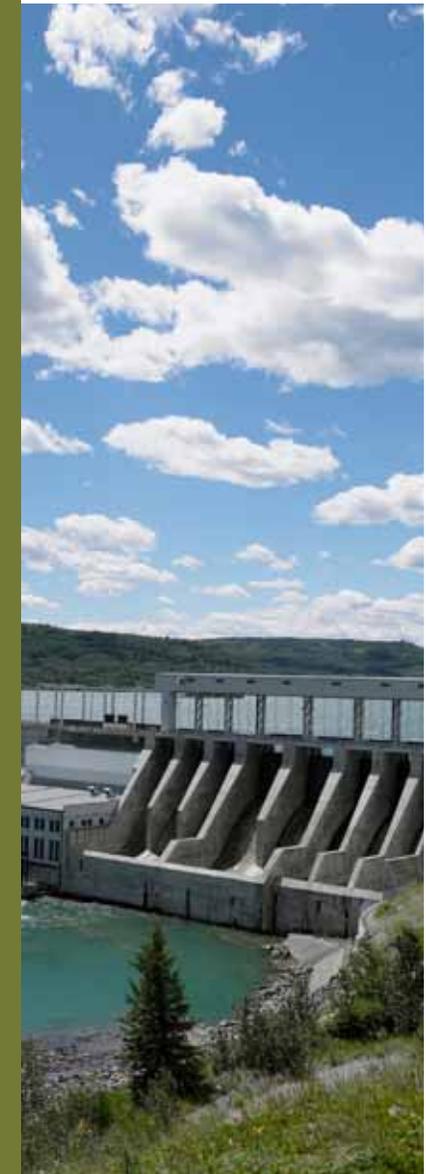
- Ensure transportation safety, security, and reliability for all people and goods in the region.
- Prevent, protect, respond to, and recover from major human-caused or natural events in order to minimize the threat and impact to lives, property, the transportation network and the regional economy.

### **SECURITY AND EMERGENCY PREPAREDNESS OUTCOMES**

- Increase per capita funding by 2012 for transportation system maintenance and preservation programs over 2007 levels.
- Increase per capita funding for Intelligent Transportation Systems projects that enhance or benefit regional transportation security.
- 100 percent of government agencies and organizations involved in planning, mitigation, response and recovery involved in improving emergency preparedness coordination, collaboration and flexibility.

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**REGIONAL COMPREHENSIVE PLAN**



### THE WILDLAND-URBAN INTERFACE

In recent years extensive growth in the wildland-urban interface (where man-made structures intermingle with wildland vegetation) has occurred all over the Western U.S., especially in California. It is becoming increasingly clear that building in these fire-prone areas increases both the risk of human-caused wildfire ignitions and the burden on fire-fighting resources. Therefore mitigation that focuses on fire avoidance is key. These actions include requiring ignition-resistant construction, including greenspace buffers between developments and wildlands, understanding the role of fire in California's ecosystems, and most importantly land-use planning and construction codes that anticipate the risks of building in these areas.

### Footnotes

- <sup>1</sup> National Cooperative Highway Research Program Report 525 Volume 3 "Incorporating Security into the Transportation Planning Process" McCormick Taylor Inc. 2006
- <sup>2</sup> National Cooperative Highway Research Program Report 525 Volume 9 "Guidelines for Transportation Emergency Training Exercises" McCormick Taylor Inc. 2006
- <sup>3</sup> Michael D. Meyer, Ph.D, P.E., Georgia Institute of Technology: The Role of the Metropolitan Planning Organization (MPO) in Preparing for Security Incidents and Transportation System Response.
- <sup>4</sup> Federal Emergency Management Agency: Community Emergency Response Team (IG-317) Student's Guide
- <sup>5</sup> California Government Code Section 8589.5
- <sup>6</sup> Tsunami Hazard Assessment For The Ports Of Long Beach And Los Angeles, (Moffatt and Nichol) 1997. [http://www.portoflosangeles.org/DOC/REPORT\\_Tsunami\\_%20April\\_2007.pdf](http://www.portoflosangeles.org/DOC/REPORT_Tsunami_%20April_2007.pdf)

SECURITY AND EMERGENCY PREPAREDNESS ACTION PLAN

Best Practices	Legislation	Coordination	Constrained Policies	Potential for Direct/Indirect Benefits							Other Benefits	
				Land Use	Transportation	Air Quality	Water	Energy	Open Space	Economy	Solid Waste	Public Health
<b>SCAG Best Practices</b>												
		X	SE-1 SCAG should help ensure the rapid repair of transportation infrastructure in the event of an emergency.		X					X		X
		X	SE-1.1 SCAG, in cooperation with local and state agencies, should identify critical infrastructure needs necessary for: a) emergency responders to enter the region, b) evacuation of affected facilities, and c) restoration of utilities.		X		X	X		X		X
		X	SE-1.2 SCAG, in cooperation with county transportation commissions, California and the federal Government, should develop a transportation recovery plan for the emergency awarding of contracts to rapidly and efficiently repair damaged infrastructure.		X					X		
		X	SE-2 SCAG should continue to deploy and promote the use of intelligent transportation system (ITS) technologies that enhance transportation security and reduce air pollution.		X	X		X		X		X
		X	SE-2.1 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.		X							
		X	SE-2.2 SCAG should incorporate security into the Regional ITS Architecture.		X							
X			SE-3 SCAG should establish transportation infrastructure practices that promote and enhance security.		X							
X			SE-3.1 SCAG should work with transportation operators to plan and coordinate transportation projects, as appropriate, with Department of Homeland Security grant projects, to enhance the regional transit security strategy (RTSS).		X							X
X			SE-3.2 SCAG should encourage 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.		X					X		X
		X	SE-3.3 SCAG should establish a Transportation Security Working Group (TSWG) with goals of RTP consistency with RTSS, and to find ways SCAG programs can enhance RTSS.		X							X
		X	SE-4 SCAG should establish a forum where policy makers can be educated and regional policy can be developed.		X							
		X	SE-4.1 SCAG should work with local officials to develop regional consensus on regional transportation safety and security policies.		X							
		X	SE-5 SCAG should help to enhance the region's ability to deter and respond to acts of terrorism, human-made or natural disasters through regionally cooperative and collaborative strategies by:		X							
		X	SE-5.1 Working with local officials to develop regional consensus on regional transportation safety, security, and safety-security policies.		X							
		X	SE-6 SCAG should help to enhance the region's ability to deter and respond to terrorist incidents, human-made or natural disasters by strengthening relationship and coordination with transportation.		X							
		X	SE-6.1 SCAG should encourage all SCAG elected officials to be educated in the National Incident Management System (NIMS) and California Standard Emergency Management System (SEMS).									X

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Best Practices	Legislation	Coordination	Constrained Policies	Potential for Direct/Indirect Benefits							Other Benefits			
				Land Use	Transportation	Air Quality	Water	Energy	Open Space	Economy	Solid Waste	Public Health	Climate Change	
		X	SE-6.2 SCAG should work with partner agencies, federal, state and local jurisdictions to improve communications and interoperability and to find opportunities to leverage and effectively utilize transportation and public safety/security resources in support of this effort.		X									
		X	SE-7 SCAG should work to enhance emergency preparedness awareness among public agencies and with the public at-large.		X									
		X	SE-8 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 by:		X									
		X	SE-8.1 Encouraging and providing a forum for local jurisdictions to develop mutual aid agreements for essential government services during any incident recovery, particularly for those issues that are multi-county.		X									
		X	SE-9 SCAG should help to enhance the capabilities of local and regional organizations, including first responders, through provision and sharing of information by:		X								X	
		X	SE-9.1 Working with local agencies to collect regional GeoData in a common format, and provide access to the GeoData for emergency planning, training and response.	X	X	X	X	X	X	X	X	X	X	
		X	SE-9.2 Establishing a forum for cooperation and coordination of these plans and programs among the regional partners including first responders and operations agencies.		X									
		X	SE-9.3 Developing and establishing 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.	X	X	X	X	X	X	X	X	X	X	X
		X	SE-10 SCAG should provide the means for collaboration in planning, communication, and information-sharing before, during, or after a regional emergency by:										X	
X			SE-10.1 Developing and incorporating strategies and actions pertaining to response and prevention of security incidents and events as part of the ongoing regional planning activities.		X									
		X	SE-10.2 Offering a regional repository of GIS data for use by local agencies in emergency planning, and response, in a standardized format.	X	X	X	X	X	X	X	X	X	X	
		X	SE-10.3 Entering into mutual aid agreements with other MPOs to provide data sharing in the event that SCAG is no longer able to function due to an incident.										X	