Systemic Safety Analysis Report Program (SSARP) Guidelines

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Division of Local Assistance
California Department of Transportation

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1 INTRODUCTION

These guidelines describe the policy and procedures for implementing the Systemic Safety Analysis Report Program (SSARP). The guidelines were developed in consultation with the California Local Highway Safety Improvement Program (HSIP) Advisory Committee which includes representatives from:

- Federal Highway Administration (FHWA)
- California Department of Transportation (Caltrans)
- California Transportation Cooperative Committee
- California State Association of Counties
- League of California Cities
- Regional Transportation Planning Agency
- Metropolitan Planning Organization
- Rural County Task Force

1.1 BACKGROUND

Systemic analysis is a proactive safety approach that focuses on evaluating an entire roadway network using a defined set of criteria. It looks at crash history on an aggregate basis to identify high-risk roadway characteristics, rather than looking at high-collision concentration locations through site analysis. Systemic analysis acknowledges that crashes alone are not always sufficient to prioritize countermeasures across a system. This is particularly true for many local streets and highways in rural areas with low volumes where crash densities tend to be low and there are few high crash locations, and in urban areas where vehicles interact with vulnerable road users (pedestrians, bicyclists, and motorcycles).

The following are examples of infrastructure improvement countermeasures identified through the systemic analysis approach:

<u>Signalized Intersection Countermeasures</u>

- Improve signal hardware: lenses, retro-reflective back-plates, mounting, size, and number
- Provide protected left turn phase (left turn lane already exists)
- Install flashing beacons as advance warning
- Create directional median openings to allow (and restrict) left-turns and U-turns
- Install pedestrian countdown signal heads
- Install advance stop bar before crosswalk (Bicycle Box)

<u>Non-Signalized Intersection Countermeasures</u>

- Add intersection lighting
- Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs
- Install flashing beacons as advance warning
- Create directional median openings to allow (and restrict) left-turns and U-turns
- Install raised medians/refuge islands (Pedestrian/Bike only)
- Install enhanced pedestrian crossing features, e.g. signs/markings, rapid rectangular flashing beacon or curb extensions, etc.

Roadway Segment Countermeasures

- Road diet (striping only)
- High friction surface treatment
- Upgrade signing through Roadway Safety Signing Audit
- Upgrade pavement markings through Roadway Safety Pavement Marking Audit
- Install delineators, reflectors and/or object markers
- Install guardrail and impact attenuators
- Install bike lanes
- Install centerline rumble strips/stripes
- Install edge line rumble strips/stripes

Additional information on the systemic approach for roadway safety analysis can be found on the Federal Highway Administration's "Systemic Approach to Safety" webpage.

1.2 Program Goal

The goal of the SSARP is to help local agencies identify safety projects to submit for HSIP funding consideration. Through the funding of Systemic Safety Analysis Reports (SSAR), local agencies will be encouraged to evaluate their roadway networks with an approach that has been effective for addressing safety issues.

Although not a prerequisite to applying for HSIP funds, the use of results documented in their SSAR will identify high benefit-cost ratio safety projects that have been found to be competitive in previous HSIP cycles.

1.3 Program Schedule

The SSARP will be implemented in two phases to facilitate outreach with the Strategic Highway Safety Plan (SHSP) Regional Summits. The following is a tentative schedule of major milestones for the SSARP:

Milestones	Phase 1	Phase 2
Call for Applications	February 2016	June 2016
Applications Due Date	March 2016	July 2016
Awarded Applications Posted	April 2016	August 2016

*Strategic Highway Safety Plan (SHSP) Regional Summits: February and April 2016.

2 Funding

2.1 Source

$10 million of the California HSIP was set-aside and exchanged for state funds from the State Highway Account to fund the SSARP. The use of state funds is to increase the participation of underserved local agencies unfamiliar with federal administrative requirements.

2.2 Matching Requirement

A local match of ten (10) percent of the total project cost is required for SSARP projects.

2.3 Reimbursement

The SSARP is a reimbursement program for eligible costs incurred. Reimbursement is requested through the invoice process detailed in Chapter 5, Invoicing, of the Local Assistance Procedures Manual (LAPM). Costs incurred prior to funding allocation are not eligible for reimbursement.

2.4 Timely Use of Funds

The project sponsor must complete the study and the SSAR report within thirty-six (36) months of the funding allocation. The Final Report of Expenditures and the final invoice must be submitted within six (6) months of the report completion. If these requirements are not met, the project sponsor must pay back the state funds expended.

3 Eligibility

3.1 Applicants

Cities and counties in California that are able to comply with all the laws, regulations, policies and procedures required to enter into a State-only Funds Master Agreement are eligible to apply for SSARP funding. Refer to Chapter 4, Agreements, of the LAPM for guidance and procedures on Master Agreements.

3.2 Location of Study Area

Funds are eligible for the systemic safety analysis of any roadways publically owned or on tribal lands.

4 Application and Selection Process

4.1 Project Application

Section 1.3 provides a tentative program schedule. Actual calls-for-applications will be announced online at the Division of Local Assistance (DLA) HSIP website. The Application Form, its instructions and other documents related to SSARP are also available at this website. The completed applications are submitted to the District Local Assistance Engineer (DLAE).

Funding for proposed study areas may only be requested once (i.e. funding requests for a study area cannot be requested in multiple applications).

4.1.1 Maximum Fund Request

Each local agency may submit only one application requesting a maximum of $250,000 SSARP funds, in either Phase 1 or Phase 2 call for applications. Alternatively two or more local agencies may choose to

submit a joint application through partnership. A maximum of $500,000 of SSARP funds can be requested per joint application.

Additional funds beyond the maximum amount will need justification and approval by the Office of Bridge, Bond, and Safety Programs (OBBSP) in the DLA.

4.1.2 Award Phases

Funds will be awarded in two phases to facilitate outreach with the Strategic Highway Safety Plan (SHSP) Regional Summits. Refer to the Section 1.3, Program Schedule, for dates of award.

4.2 Selection Process

If requests exceed available SSARP funding, priority will be given to applications from local agencies that

- Have the highest numbers of fatality and severe injury (F+SI) (based on the most recent / available data from California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS));
- Have the highest crash rates of F+SI per 100 Million Vehicle Miles Traveled (MVMT) ;
- Have never submitted applications in Cycle 5 through Cycle 7 HSIP calls-for-projects; or
- Have submitted applications but have had no projects selected for federal funding in Cycle 5 through Cycle 7 HSIP calls-for-projects.

There are no order or priority associated with the above selection criteria. When necessary, the Local HSIP Advisory Committee may review the priority ranking of the applications and approve for funding.

4.3 Application Award

The OBBSP will post the list of awarded applications on the DLA HSIP website. A notification letter will be sent to the sponsor of each successful application.

5 Implementation

In addition to the applicable provisions of the LAPM, local agencies will need to follow the implementation steps in this section. Any work done prior to the funding allocation is at the cost of the project sponsor and will not be eligible for reimbursement.

1. When ready to proceed with their study, the project sponsor submits the following documents to their DLAE to request an allocation of funds:
    a. A letter of request for SSARP Funding Allocation
    b. Finance Letter
    c. Copy of the SSARP Application
    d. Copy of the award notification letter from Caltrans DLA

    Templates of the above (a) and (b) are available for downloading at the DLA HSIP website.

    As an SSARP project utilizes state funds for a study only and no right-of-way or construction is involved, the allocation will be under Preliminary Engineering (PE) phase. No right-of-way or environmental documents are required for the allocation request.

The amount of state funds requested should not exceed the amount of funds awarded. Additional funds shall not be allocated without the written approval from the OBBSP.

2. The DLAE reviews the allocation request package for consistency with the application, assigns project numbers and Advantage IDs, and forwards the request to the DLA HQ Area Engineer for allocation. An allocation request will be rejected if the scope or request amount does not match the application. Any change to the scope of work needs to be approved by the OBBSP in advance of the allocation.
3. After receipt of a complete request package, the DLA HQ Area Engineer will:
    a. Prepare an allocation letter which will serve as the authorizing document for the project sponsor to begin reimbursable work. A copy of the allocation letter and Finance Letter will be distributed to the project sponsor, DLAE, the OBBSP, and Local Programs Accounting (LPA). Note that any work performed prior to the effective date of the allocation letter is not eligible for reimbursement.
    b. Prepare a Program Supplement Agreement (PSA) and send it to the local agency for execution. If a local agency does not have a "State-only Funds Master Agreement" on file with Caltrans, one will need to be executed in conjunction with the PSA.
4. The project sponsor invoices Caltrans (Refer to LAPM Chapter 5 and Exhibit 5-C). In order for the project to remain active, the project sponsor must submit invoices to Caltrans at least every six (6) months after funds are allocated.
5. The analysis and the SSAR report must be completed within thirty-six (36) months of allocation. The project sponsor must submit the final report (refer to Section 6, Reporting Requirements) to the DLAE. The DLAE reviews and verifies that the report has been completed in accordance with the approved scope and the program guidelines, and then forward a copy of the report to the DLA OBBSP.
6. The project sponsor must submit the Final Invoice (LAPM Exhibit 5-C) and the Final Report of Expenditures (LAPM Exhibit 17-M) to the DLAE within six (6) months of the report completion. The DLAE reviews the submittals for compliance and then forward the package to Local Programs Accounting (LPA) for processing.
7. The LPA and the DLA close out the project.

6 Reporting Requirements

To be eligible for final reimbursement, the SSAR must identify and prioritize future safety projects. If no safety projects are identified, reasons must be documented within the SSAR. The following sections and discussions must also be included in the final report.

6.1 Executive Summary

This section should include the applicant's objectives and focus for the SSAR and a brief summary of the major results. Include discussion on what methodologies were used to limit the data analysis and studies to stay within the funding limits. Other high-level discussions may include crash trends, corridors identified, countermeasures considered, conceptual projects identified, benefit-cost ratios for the projects, etc.

6.2 Engineer's Seal

Chapter 7; Article 3; Section 6735 of the Professional Engineer's Act of the State of California requires engineering calculation(s) or report(s) be either prepared by or under the responsible charge of a licensed civil engineer. Analysis must be completed under this provision and the SSAR must be signed by the local agency transportation manager and signed/stamped by a licensed civil engineer.

The engineer's signature must be accompanied by a statement similar to the following:

> *By signing and stamping this Systemic Safety Analysis Report, the engineer is attesting to this report's technical information and engineering data upon which local agency's recommendations, conclusions, and decisions are made.*

6.3 Statement of Protection of Data from Discovery and Admissions

It is recommended that applicants include the following language in the SSAR which is from Section 148 of Title 23, United States Code [23 U.S.C. §148(h) (4)] about reports prepared under State's Strategic Highway Safety Plan and HSIP:

> *REPORTS DISCOVERY AND ADMISSION INTO EVIDENCE OF CERTAIN REPORTS, SURVEYS, AND INFORMATION—Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section, shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists, or other data.*

6.4 Safety Data Utilized (Crash, Volume, Roadway)

Applicants are required to analyze at least three (3) years of the most current crash data. Crash data from their own crash database, the California I-SWITRS database, or UC Berkeley Transportation Injury Mapping (TIMS) are recommended.

Applicants should consider the guidance in Section 2 of the Local Roadway Safety Manual (LRSM) to complete this section of the SSAR.

6.5 Data Analysis Techniques and Results

Crash trends and crash concentrations should be analyzed based on overall numbers, identifying the leading causes of fatalities and severe injuries. In addition, applicants are encouraged to identify crashes on a 'rate' basis and compare the results of numbers vs. rates.

Applicants are not expected to analyze all of the individual crashes, crash locations, and/or crash types. The following are examples of how local agencies can focus the scope of the SSAR:

- Counties with a large percentage of High Risk Rural Road (HR3) eligible roadways may choose to focus on identifying and prioritizing future HR3 eligible safety projects.
- Cities and counties with primarily urban roadways may choose to identify and prioritize future urban Highway Safety Improvement Program projects for motorized and/or non-motorized users.

- Cities and counties with a wide mixture of roadways may choose to focus on only rural or urban roadways or a mix of roadway and user types at a limited number of locations.

Applicants should consider the guidance in Section 3 of the LRSM to complete this section of the SSAR.

6.6 Highest Occurring Crash Types

Applicants can focus on their top 3 to 10 crash types responsible for the fatalities and severe injuries occurring on their roadway network. If an applicant chooses to focus on specific "high-risk corridors and intersections," they are still expected to briefly review and discuss their top crash types occurring on the overall network.

Applicants should consider the guidance in Section 3 of the LRSM to complete this portion of the SSAR.

6.7 High-risk Corridors and Intersections (Crash History and Roadway Characteristics)

Applicants can choose to focus on their top 3 to 10 high-risk corridors and top 5 to 20 intersections responsible for fatalities and severe injuries occurring on their roadway network. If an applicant chooses to focus on specific crash types, they are still expected to briefly review and discuss their high-risk corridors and intersections on the overall network.

Applicants should consider the guidance in Section 3 of the LRSM to complete this portion of the SSAR.

6.8 Countermeasures Identified to Address the Safety Issues

Applicants are required to use crash reduction factors provided in the LRSM to identify potential low-cost systemic countermeasures that mitigate the local agencies' primary crash type trends. In addition, applicants should use their crash concentrations (system-wide, corridors, and spot locations) to identify the countermeasures with a high likelihood of addressing the crashes that are appropriate for the characteristics of the roadway.

Applicants should consider the guidance in Section 4 of the LRSM to complete this section of the SSAR.

6.9 Viable Project Scopes and Prioritized List of Safety Projects

Once the crash areas, trends, and corresponding systemic countermeasures have been identified, local agencies need to create preliminary safety project scopes. It is recommended that the applicant focus on finding the ideal balance between collision analyses on a systemic basis while also addressing high-crash locations. For the lowest cost improvements, like signing and striping, it may be an appropriate goal to have the entire roadway network eventually upgraded to a minimum level.

In contrast, the costlier systemic countermeasures may only be feasible to install at higher crash locations/characteristics on a corridor-by-corridor basis. Estimating total-project costs and calculating Benefit/Cost (B/C) ratio are the next steps in prioritizing the list of safety projects. Cost estimates may be based on individual construction items or lump sum project costs per mile or per location. For calculating the B/C ratio of a project, the TIMS B/C Calculation Tool from the University of California, Berkeley Safe Transportation Research and Education Center website should be used. This tool relies on existing crashes to calculate a project's expected benefit.

Applicants should consider the guidance in Section 5 of the LRSM to complete this section of the SSAR.

6.10 Attachments and Supporting Documentation

Attach and reference supporting documents as appropriate to meet their long-term intended use for the report.

7 Resources

SSARP Funding Application: http://www.dot.ca.gov/hq/LocalPrograms/HSIP/apply_now.htm

Caltrans Local Roadway Safety Manual (LRSM): http://www.dot.ca.gov/hq/LocalPrograms/HSIP/CA-LRSM.pdf

Local Assistance Procedures Manual (LAPM): http://www.dot.ca.gov/hq/LocalPrograms/lam/lapm.htm

California Strategic Highway Safety Plan (SHSP): http://www.dot.ca.gov/hq/traffops/shsp/

California I-SWITRS: http://iswitrs.chp.ca.gov/Reports/jsp/CollisionReports.jsp

UC Berkeley Transportation Mapping (TIMS): http://tims.berkeley.edu

FHWA – A Systemic Approach to Safety: http://safety.fhwa.dot.gov/systemic/index.htm

FHWA Local and Rural Road Safety Program: http://safety.fhwa.dot.gov/local_rural/

FHWA Systemic Project Selection Tool: http://safety.fhwa.dot.gov/systemic/fhwasa13019/

FHWA Road Diets Informational Guide: http://safety.fhwa.dot.gov/road_diets/info_guide/