Local Highway Safety Improvement Program (HSIP) and How It Works

For 4th STIC Local Roadway Departure Safety Workshop
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Richard Ke, P.E.
HSIP Manager
Division of Local Assistance
California Department of Transportation
(CALTRANS)
This presentation covers:

- Federal Legislation, SHSP and Performance Measures;
- Role of Local HSIP Advisory Committee;
- Eligible applicants and eligible projects;
- Safety countermeasures and Benefit/Cost Ratio;
- Funding and project selection;
- Project delivery requirements and status; and
- Systemic Safety Analysis Report Program (SSARP).
Federal Legislation

- The purpose of the HSIP program is “to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. (23 USC § 148 (b)(2))
- HSIP projects:
  - must be based on elements of the Strategic Highway Safety Plan (SHSP);
  - Are identified through a data-driven process;
  - Target identified safety issue;
  - Reduce fatalities and serious injuries.
California Strategic Highway Safety Plan (SHSP)

- First developed in 2005, amended in 2010, and updated in 2014;
- Statewide, coordinated safety plan;
- Focus on 4Es: Engineering, Enforcement, Education and Emergency Medical Services;
- Identified 15 Challenge Areas:

<table>
<thead>
<tr>
<th>Roadway Departure and Head-On collisions</th>
<th>Intersections, Interchanges, and other Roadway Access</th>
<th>Work Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol and Drug Impairment</td>
<td>Occupant Protection</td>
<td>Speeding and Aggressive Driving</td>
</tr>
<tr>
<td>Distracted Driving</td>
<td>Driver Licensing and Competency</td>
<td>Pedestrians</td>
</tr>
<tr>
<td>Bicycling</td>
<td>Young Drivers</td>
<td>Aging Road Users</td>
</tr>
<tr>
<td>Motorcycles</td>
<td>Commercial Vehicles</td>
<td>Emergency Medical Services</td>
</tr>
</tbody>
</table>

Visit [http://www.dot.ca.gov/trafficops/shsp](http://www.dot.ca.gov/trafficops/shsp) for more info.
National Performance Management Measures for the HSIP


Five Performance Measures (5-Year Rolling Averages):

- Number of Fatalities
- Rate of Fatalities per 100 million VMT
- Number of Serious Injuries
- Rate of Serious Injuries per 100 million VMT
- Number of Non-motorized Fatalities and Non-motorized Serious Injuries

Target setting:

- Caltrans establishes statewide targets by August 31 for the next calendar year.
- MPOs will then establish their targets by
  1) agreeing to plan and program projects so that they contribute toward the accomplishment of the State targets or
  2) committing to a quantifiable HSIP target for the metropolitan planning area.
California Traffic Fatalities (2011 to 2015)

<table>
<thead>
<tr>
<th>Traffic Fatalities</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>2,816</td>
<td>2,966</td>
<td>3,107</td>
<td>3,102</td>
<td>3,176</td>
</tr>
<tr>
<td>Involving a Roadway Departure</td>
<td>1,337</td>
<td>1,399</td>
<td>1,442</td>
<td>1,374</td>
<td>1,458</td>
</tr>
</tbody>
</table>

From 2011 to 2015, 46% of the traffic fatalities in California involved a roadway departure!
Local HSIP Advisory Committee

- Members from:
  Caltrans; California Transportation Cooperative Committee; California State Association of Counties; League of California Cities; Rural County Task Force; RTPAs; MPOs
- Provides high-level balanced strategic guidance to California’s Local HSIP and other safety programs and efforts regarding safety on California local roadways.
- Meet about 6 times per year.
Eligible Applicants:
Any local agency that owns, operates, and maintains the public roadways
- City and County agencies
- Tribal Governments
- Others (reviewed on a case-by-case basis)

Eligible Projects:
Work on publicly owned roadway or bicycle/pedestrian pathway that corrects or improves the safety for users
- Prefer projects that can be delivered quickly and have minimal ROW and Environmental impacts.
- Work must be tied to safety countermeasures in the pre-defined lists.
Safety Countermeasures (CMs)

Safety CMs in the pre-defined lists:

<table>
<thead>
<tr>
<th></th>
<th>Signalized Intersections</th>
<th>Non-signalized Intersections</th>
<th>Roadway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of CMs</td>
<td>18</td>
<td>20</td>
<td>38</td>
</tr>
</tbody>
</table>

Each CM is associated with:

- A crash type (all; Ped & Bike; Night; etc.);
- A Crash Reduction Factor (CRF): 10% to 70%; and
- A Service Life: 10 or 20 years.

Example:

<table>
<thead>
<tr>
<th>No.</th>
<th>Type</th>
<th>Countermeasure Name</th>
<th>Crash Type</th>
<th>CRF</th>
<th>Expected Life (Years)</th>
<th>Federal Funding Eligibility</th>
<th>Systemic Approach Opportunity?</th>
</tr>
</thead>
<tbody>
<tr>
<td>R9</td>
<td>Geometric Mod.</td>
<td>Install raised median</td>
<td>All</td>
<td>25%</td>
<td>20</td>
<td>90%</td>
<td>Medium</td>
</tr>
</tbody>
</table>
Benefit/Cost Ratio (BCR) Calculation

**Crash Data Summary**
(Use Excel Template)
(Summaries No. 1, 2, ...)

... Multiple if needed

**CM Benefits Calculation**
(Use Excel Benefit Calculator)
(Calculation Runs 1, 2, ...)

... Multiple if needed

**Benefit Summary Sheet**
(Use Excel Template)
Summarizing all calculation runs

**Construction Cost Estimate**
(Use Excel Template
"Detailed Engineer's Estimate
and Cost Breakdown by
Countermeasure")

Total Construction Cost;
Max "HSIP/Total" %;
Cost Breakdown by CMs

**Project Cost Estimate**
(Use Section III of the Application Form)

Total Project Cost;
Cost Breakdown by CMs

**Benefit/Cost Ratio Calculation**
(Use Section IV of the Application Form)

**Benefits:**
- Collision History (3 to 5 years);
- CM's and CRF's

**Project Costs:**
- All phases;
- All funding sources.

\[
BCR = \frac{\text{Benefits}}{\text{Costs}}
\]
**BCR Calculation - Example**

- Project: Install raised median  
  CRF=25%; Expected life = 20 years
- Crash history:  
  1 fatal crash and 2 severe injury crashes in the last 5 years;
- Cost Estimate: PE $105,000 + CON $620,000 + CE 45,000 = $770,000

**CALCULATION:**

- Benefit:  
  \[ \frac{3 \text{ (fatal/severe injury crashes)}}{5 \text{ years}} \times 25\% \times 1,730,000 \times 20 \text{ years} = 5,190,000 \]

- \[ BCR = \frac{\text{Benefits}}{\text{Costs}} = \frac{5,190,000}{770,000} = 6.7 \]
Key to Successful Applications

1. Develop good projects:
   - Select locations where safety improvements are most needed (high crash-concentration spots vs. systemic approach).
   - Apply effective safety countermeasures.

2. Prepare your applications – no fatal flaws.
   - A technical process not grant writing – engineer’s work.
   - Collect/verify data and use data correctly.
Local HSIP: Funding and Project Selection

- Local HSIP apportionments: approx. $81 million per year (2016-2020 average)

<table>
<thead>
<tr>
<th>National</th>
<th>California</th>
<th>California Local HSIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2.317 billion/year</td>
<td>$204 million/year</td>
<td>$81 million/year</td>
</tr>
</tbody>
</table>

- Calls for Projects:
  - Interval: every one to two years (8 calls from 2007);
  - Most recent call (Cycle 8): May, 2016;
  - Next call (Cycle 9): expected to be around April, 2018.
Local HSIP: Funding and Project Selection
Cycle 8 Call for Projects (2016):

- Announced on May 9, 2016;
- Applications Due August 12, 2016;
- Min: $100k per application;
- Max: $10 million per application and per agency.
- Three Categories:
  - Benefit/Cost Ratio (BCR) projects:
    Application’s minimum BCR: 3.5
  - Set-aside for guardrail upgrades:
    For upgrades of existing guardrails and end treatments
  - Set-aside for crosswalk enhancements and pedestrian countdown heads
Local HSIP: Funding and Project Selection
Cycle 8 Call for Projects (2016):

<table>
<thead>
<tr>
<th></th>
<th>Applications</th>
<th>Selected Projects</th>
<th>% Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>247</td>
<td>225</td>
<td>91%</td>
</tr>
<tr>
<td>Federal Funds</td>
<td>$252 million</td>
<td>$216.9 million</td>
<td>88%</td>
</tr>
</tbody>
</table>

Selected Projects:

<table>
<thead>
<tr>
<th>Category</th>
<th>Benefit/Cost Ratio</th>
<th>“Guardrail upgrade” set-aside</th>
<th>“Crosswalk enhancements/ pedestrian countdown heads” set-aside</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Projects</td>
<td>167</td>
<td>24</td>
<td>34</td>
</tr>
<tr>
<td>Federal Funds</td>
<td>$187.6 million</td>
<td>$21.9 million</td>
<td>$7.4 million</td>
</tr>
</tbody>
</table>
Local HSIP: Funding and Project Selection

Cycle 8 Call for Projects (2016):

Projects with Roadway Departure Safety Related Components

<table>
<thead>
<tr>
<th>Number of Projects</th>
<th>Federal Funds</th>
<th>Benefit/Cost Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>All BCR Projects</td>
<td>167</td>
<td>$187.6 million</td>
</tr>
<tr>
<td>Roadway Departure Safety Related</td>
<td>56 (34%)</td>
<td>$47.4 million (25%)</td>
</tr>
</tbody>
</table>
Cycles 4-8: Selected Projects

<table>
<thead>
<tr>
<th>Cycle</th>
<th>Release Date</th>
<th>Number of Applications</th>
<th>Number of projects selected</th>
<th>Federal funds approved ($M)</th>
<th>Average BCR of selected projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2/23/2011</td>
<td>357</td>
<td>179</td>
<td>$74.5</td>
<td>7.9</td>
</tr>
<tr>
<td>5</td>
<td>10/19/2012</td>
<td>276</td>
<td>221</td>
<td>$111.3</td>
<td>14.6</td>
</tr>
<tr>
<td>6</td>
<td>11/14/2013</td>
<td>389</td>
<td>231</td>
<td>$150.0</td>
<td>10.7</td>
</tr>
<tr>
<td>7</td>
<td>11/12/2015</td>
<td>212</td>
<td>182</td>
<td>$160.5</td>
<td>16.9</td>
</tr>
<tr>
<td>8</td>
<td>11/21/2016</td>
<td>247</td>
<td>225</td>
<td>$216.9</td>
<td>10.3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1,481</td>
<td>1,038</td>
<td>$713.2</td>
<td>12.3</td>
</tr>
</tbody>
</table>

Expected benefits: $8.8 billion!
Local HSIP: Project Delivery Requirements

- Need to follow federal-aid process;
- Requirements established to ensure safety projects are delivered in a timely manner
  - PE Authorization - within 9 months; and
  - CON Authorization - within 36 months
  - Can not apply for new HSIP funds if either milestone is not met
  - If there is still no CON authorization within 5 years, project will be removed from the program.
## Local HSIP Project Delivery Status

### Status of Local HSIP Projects (as of 9/7/17)

<table>
<thead>
<tr>
<th>Status</th>
<th>Number of Projects (all 8 cycles)</th>
<th>%</th>
<th>Number of Projects (cycles 1 to 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Authorization</td>
<td>158</td>
<td>11%</td>
<td>9</td>
</tr>
<tr>
<td>In Preliminary Engineering / Right of Way</td>
<td>322</td>
<td>23%</td>
<td>27</td>
</tr>
<tr>
<td>In Construction</td>
<td>408</td>
<td>29%</td>
<td>248</td>
</tr>
<tr>
<td>Completed</td>
<td>510</td>
<td>37%</td>
<td>492</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1399</strong></td>
<td><strong>100%</strong></td>
<td><strong>776</strong></td>
</tr>
</tbody>
</table>
Systemic Safety Analysis Report Program (SSARP)

- Provides state funds to do a comprehensive systemic safety analysis on roadway networks.
- Assists local agencies that do not have safety analysis expertise.
- Up to $250,000 for one agency; up to $500,000 for a joint application (two or more agencies).
Systemic Safety Analysis Report Program (SSARP)

- **Oct. 2015:** CTC Allocated $10 million
- **Jan. 2017:** CTC Allocated another $7.7 million
- **7/15/2016:** 61 funded projects released (41 cities/15 counties/5 joint)
- **5/12/2017:** 46 funded projects released (41 cities/5 counties)
- **As of 8/28/2018:** $11.2 million sub-allocated to 68 projects. Local agency has three years to complete the study/report.
- **107 SSARP projects funded** (82 cities/20 counties/5 joint)
Questions?
Thank you …

- **Local HSIP Website:**
  http://www.dot.ca.gov/hq/LocalPrograms/hsip.html

Or

- **Google search:** “CA Local HSIP”