

MODEL INVENTORY OF ROADWAY ELEMENTS (MIRE)

HSIS LIAISON MEETING - OCTOBER 25, 2018

PRESENTED BY

RYAN MAK, CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

WHAT IS MIRE?

- TRAFFIC SAFETY DATA HAS THREE COMPONENTS – COLLISIONS, INVENTORY OF ROADWAY ELEMENTS, AND VOLUMES
- ALL THREE COMPONENTS OF SAFETY DATA ENABLE DATA DRIVEN SAFETY ANALYSIS THAT SUPPORTS THE “TOWARDS ZERO DEATHS” EFFORT
- MIRE IS A BEST PRACTICE FOR THE INVENTORY AND VOLUMES COMPONENTS OF TRAFFIC SAFETY DATA

FEDERAL HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

- IN 2016 FEDERAL RULEMAKING AMENDED THE HSIP
- SAFETY PERFORMANCE MANAGEMENT WAS INTRODUCED FOR ALL PUBLIC ROADS
- IT INCLUDED TARGETS FOR FATAL & SERIOUS INJURY COLLISIONS AND A PLAN TO ACHIEVE THE TARGETS (STRATEGIC HIGHWAY SAFETY PLAN FOR STATEWIDE AND REGIONAL TRANSPORTATION PLANS FOR REGIONS)
- IT REQUIRED A SUBSET OF MIRE TO BE IN PLACE BY 2026
- THE SUBSET IS TITLED 'FUNDAMENTAL DATA ELEMENTS' (FDE)

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Table 1 – MIRE Fundamental Data Elements for Non-Local (based on functional classification) Paved Roads

FC 1-6

| MIRE Name (MIRE Number) [^] | |
|--------------------------------------|--|
| Roadway Segment | Intersection |
| Segment Identifier (12) | Unique Junction Identifier (120) |
| Route Number (8)* | Location Identifier for Road 1 Crossing Point (122) |
| Route/street Name (9)* | Location Identifier for Road 2 Crossing Point (123) |
| Federal Aid/ Route Type (21)* | Intersection/Junction Geometry (126) |
| Rural/Urban Designation (20)* | Intersection/Junction Traffic Control (131) |
| Surface Type (23)* | AADT (79) [for Each Intersecting Road] |
| Begin Point Segment Descriptor (10)* | AADT Year (80) [for Each Intersecting Road] |
| End Point Segment Descriptor (11)* | Unique Approach Identifier (139) |
| Segment Length (13)* | |
| Direction of Inventory (18) | Interchange/Ramp |
| Functional Class (19)* | Unique Interchange Identifier (178) |
| Median Type (54) | Location Identifier for Roadway at Beginning Ramp Terminal (197) |
| Access Control (22)* | Location Identifier for Roadway at Ending Ramp Terminal (201) |
| One/Two-Way Operations (91)* | Ramp Length (187) |
| Number of Through Lanes (31)* | Roadway Type at Beginning Ramp Terminal (195) |
| Average Annual Daily Traffic (79)* | Roadway Type at Ending Ramp Terminal (199) |
| AADT Year (80)* | Interchange Type (182) |
| Type of Governmental Ownership (4)* | Ramp AADT (191)* |
| | Year of Ramp AADT (192)* |
| | Functional Class (19)* |
| | Type of Governmental Ownership (4)* |

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[^]Model Inventory of Roadway Elements—MIRE, Version 1.0, Report No. FHWA-SA-10-018, October 2010.

Table 2- MIRE Fundamental Data Elements for Local (based on functional classification) **Paved Roads** FC 7

| |
|--------------------------------------|
| MIRE Name (MIRE Number)^ |
| Roadway Segment |
| Segment Identifier (12) |
| Functional Class (19)* |
| Surface Type (23)* |
| Type of Governmental Ownership (4)* |
| Number of Through Lanes (31)* |
| Average Annual Daily Traffic (79)* |
| Begin Point Segment Descriptor (10)* |
| End Point Segment Descriptor (11)* |
| Rural/Urban Designation (20)* |

Table 3- MIRE Fundamental Data Elements for **Unpaved Roads** FC 1-7

| |
|--------------------------------------|
| MIRE Name (MIRE Number)^ |
| Roadway Segment |
| Segment Identifier (12) |
| Functional Class (19)* |
| Type of Governmental Ownership (4)* |
| Begin Point Segment Descriptor (10)* |
| End Point Segment Descriptor (11)* |

BENEFITS OF MIRE

- SUPPORTS PERFORMANCE MEASURES
- ALLOWS ANALYSIS THAT CAN BE INCORPORATED INTO SAFETY PLANS
- ENABLES DATA DRIVEN DECISIONS TO BE MADE FOR SAFETY INVESTMENTS
- CAN BE USED STATEWIDE, REGIONALLY, AND LOCALLY

STANISLAUS COUNTY SYSTEMIC SAFETY ANALYSIS REPORT PROGRAM

GOAL: IMPLEMENT THE HSM PREDICTIVE METHOD COUNTY-WIDE



*Slide courtesy of Andrew Malizia, PE,
Stanislaus County Public Works*

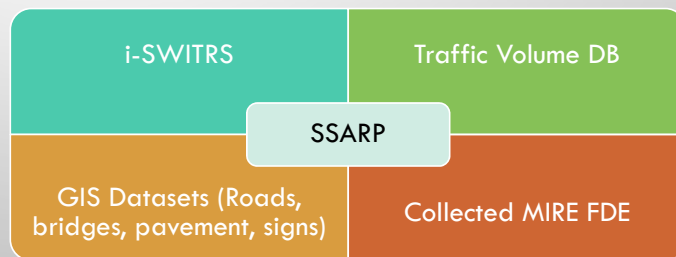
IMPLEMENT THE HSM

1. Collect Roadway Attributes - Extensive FDE for HSM
2. Locally calibrate the HSM Predictive Model
3. Correlate safety performance and roadway features
4. Generate a Prioritized Project List (Hot Spots/Systemic)
5. Identify systemic safety strategies to implement into Capital Projects and County Standards (performance based)
6. Screen Network on simplified datasets

*Slide courtesy of Andrew Malizia, PE,
Stanislaus County Public Works*

DATA UTILIZATION

- WILL UTILIZE EXISTING DATA SOURCES WITH THE GOAL TO NOT IMPACT EXISTING USERS OR PROCESSES.
- HSM CONCENTRATES ON ROADWAY ELEMENT INFLUENCE/CORRELATION TO PERFORMANCE
- SAFETY PERFORMANCE FUNCTIONS CAN INCLUDE NOT JUST ROADWAY ELEMENTS, BUT BEHAVIORAL, SO LONG AS THE DATA IS AVAILABLE.
- SYSTEM RELIES HEAVILY ON CORRECT COLLISION LOCATION



*Slide courtesy of Andrew Malizia, PE,
Stanislaus County Public Works*

NEW POTENTIAL USES

- POTENTIAL TO ROLL OUT AND STANDARDIZE LOCAL AGENCY DATA IF OTHER AGENCIES ARE WILLING TO USE IT.
 - **THE MORE OPEN SOURCE, THE MORE INDUSTRY MAY TRY TO WORK WITH AGENCIES FOR IMPLEMENTATION AND DEVELOP FURTHER**
- DEVELOPMENT ALONGSIDE CALTRANS OFFICE OF HIGHWAY SYSTEM INFORMATION AND PERFORMANCE (OHSIP) AND HPMS CONTACTS
 - **MAY BE ABLE TO SUPPLEMENT CALTRANS EFFORTS WITH HPMS REPORTING OF LOCAL ROADS**
- MIRE DATABASE WILL HELP LAY THE FOUNDATION FOR AN UPDATED ROADWAY ASSET MANAGEMENT PROGRAM.

*Slide courtesy of Andrew Malizia, PE,
Stanislaus County Public Works*

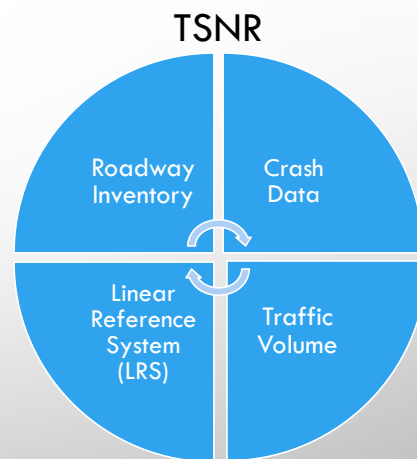
STEPS TO ACHIEVE MIRE BY 2026

- DATA GOVERNANCE
- FEDERAL, STATE, AND LOCAL AGENCIES COORDINATION
- COLLECTION/INTEGRATION OF MIRE DATA
- STORAGE OF MIRE DATA
- MECHANISM TO REGULARLY UPDATE & MAINTAIN MIRE DATA

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STORAGE AND MAINTENANCE OF DATA

- TSNR – TRANSPORTATION SYSTEM NETWORK REPLACEMENT



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MIRE PROGRESS

- MIRE FDE PRELIMINARY GAP ANALYSIS – [MAY 2017](#)
- TRCC MIRE FDE PROJECT MANAGEMENT PLAN – [JUNE 2017](#)
- CALTRANS MIRE FDE PROJECT CHARTER – [MAY 2018](#)
- TRCC EXECUTIVE MEETING MIRE PRESENTATION – [JUNE 2018](#)
- FHWA TECHNICAL ASSISTANCE – SAFETY DATA INTEGRATION PLAN – [FALL 2018](#)
- FHWA ROADWAY DATA IMPROVEMENT PLAN – [FALL 2018](#)
- TSNR DATA GOVERNANCE COMMITTEE – [DRAFT CHARTER](#)
- ANNUAL PAVEMENT CONDITION SURVEY 2020 COORDINATION – [ONGOING](#)
- COORDINATION WITH LOCAL PARTNERS – [ONGOING](#)