

Higuera Street Emergency Evacuation Analysis

Prepared by:

San Luis Obispo Community Fire Safe Council

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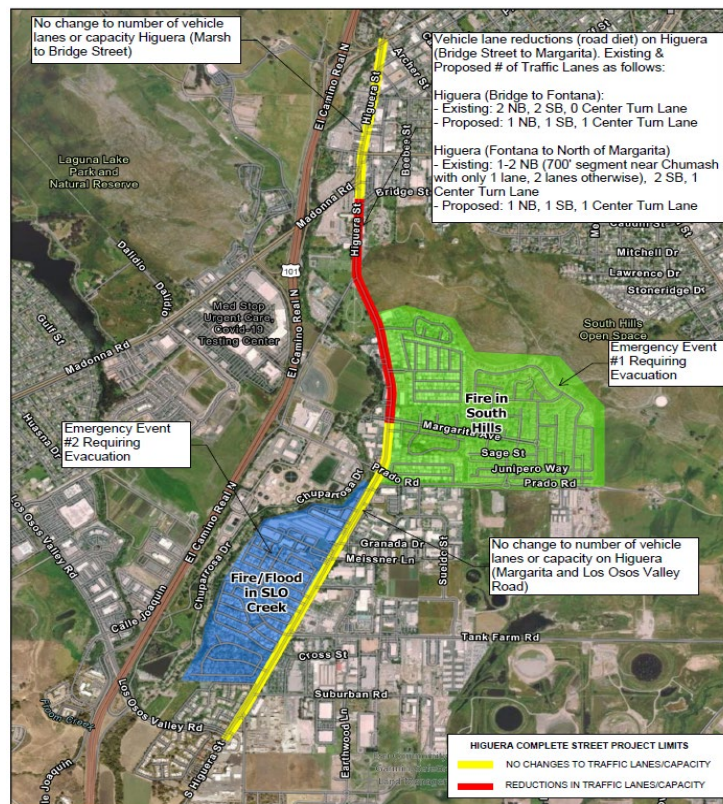
City of San Luis Obispo

Executive Summary

This report evaluates emergency evacuation conditions along the Higuera Street corridor and assesses the potential effects of the proposed Higuera Complete Street Project on evacuation performance. The analysis focuses on evacuation clearance time, route efficiency, and operational constraints under both fire and flood emergency scenarios. Two evacuation zones, SLO-024 and SLO-025, were analyzed using conservative assumptions reflecting maximum allowable development and worst-case evacuation demand.

1. Purpose and Scope

The purpose of this study is to evaluate emergency evacuation conditions along the Higuera Street corridor and to assess changes in evacuation clearance time, route efficiency, and operational performance associated with implementation of the Higuera Complete Street Project. The analysis is intended to support emergency planning, transportation design review, and environmental documentation.



2. Emergency Scenarios Evaluated

Two emergency scenarios were evaluated independently based on known hazards affecting the Higuera corridor. Scenarios are not assumed to occur at the same time

Scenario A – Fire or Flooding in San Luis Obispo Creek (Evacuation Zone **SLO-024**)

This scenario models either a fire or flooding event affecting creek-adjacent neighborhoods west of Higuera Street. Zone SLO-024 contains mobile home parks, multifamily areas, and commercial parcels located close to the creek corridor, where hazards can develop quickly and restrict access.

Flooding may limit creek crossings, reduce roadway capacity, or obstruct access routes. Fire conditions along the creek corridor can also generate rapid evacuation needs. This zone relies heavily on Higuera Street as its primary evacuation pathway, making it sensitive to congestion and roadway constraints.

Scenario B – Wildfire in South Hills Open Space (Evacuation Zone **SLO-025**)

This scenario evaluates a South Hills wildfire requiring evacuation of the Margarita Area and surrounding neighborhoods. Zone SLO-025 covers a larger geographic area with both built and entitled parcels under current land-use designations.

Evacuation performance is influenced by total population loading, merging onto arterial routes, and traveling distance to safe areas. Compared with Zone SLO-024, the zone has more route options but a larger number of households, requiring careful modeling of demand and travel time.

3. Data Sources and Key Assumptions

The analysis uses conservative assumptions to reflect **worst-case evacuation conditions** and maximum possible population.

3.1 Roadway Network Data

County roadway centerline and functional classification data were used as the base transportation network. These were modified to incorporate the proposed Higuera Complete Street Project, including:

- Reduction to one vehicle lane in each direction (Bridge St. → Margarita Ave.)
- Addition of a continuous center turn lane
- Reduced operating speeds (–5 mph corridor-wide) to represent traffic-calming features

3.2 Address, Land Use, and Population Data

Residential address data were sourced from City of San Luis Obispo land-use and zoning datasets. Evacuation demand reflects the maximum population allowed under existing zones, regardless of whether all units are currently developed. This ensures modeling accounts for full build-out conditions and long-term emergency planning needs.

3.3 Vehicle Assumptions

A standard assumption of two vehicles per address was applied to all residential units. This is consistent with regional household vehicle ownership and provides a conservative planning-level estimate of evacuation demand.

3.4 Mobile Home Parks

Mobile home parks with a single parcel address require manual population estimation. Each park's total number of dwelling units was counted using satellite imagery to identify individual mobile homes, ensuring accurate representation of evacuation demand in higher-density communities.

3.5 LADRIS Evacuation Modeling Tool

LADRIS (Life and Death Response Information System) served as the modeling platform for this analysis. LADRIS simulates evacuation behavior by loading population and vehicle demand onto the roadway network using GIS data, route assignment logic, and congestion modeling.

It is a planning-level tool designed to compare evacuation performance across scenarios, not a detailed traffic engineering simulator. LADRIS does not fully account for traffic signal operations, stop controls, officer-directed traffic, contraflow, or special evacuation signal timing plans.

Therefore, results represent planning-level estimates intended to guide emergency preparedness, roadway design decisions, and policy, not precise real-time operational forecasts.

4. Transportation Network Conditions

Existing roadway lane configurations, intersection geometry, traffic control, and prevailing operating speeds were assumed for baseline conditions. The primary evacuation routes for this area are southbound Higuera Street toward Los Osos Valley Road, northbound Higuera Street toward Madonna Road, eastbound on Tank Farm Road, and eastbound on Prado Road toward northbound Highway 101. This analysis also assumes that Prado Road to Highway 101 will be closed during the flooding scenario.

The Complete Street Project configuration reflects reduced vehicle lanes between Bridge Street and Margarita Avenue, the addition of a continuous center turn lane, and an assumed five-mile-per-hour reduction in operating speeds along the Higuera Street corridor due to proposed traffic-calming and complete street design features such as speed feedback signs, protected bike lanes, and reduced traffic lane widths.

5. Evacuation Clearance Time Results

Evacuation clearance time represents the total time required for all vehicles within an evacuation zone to reach a designated safe area under emergency conditions.

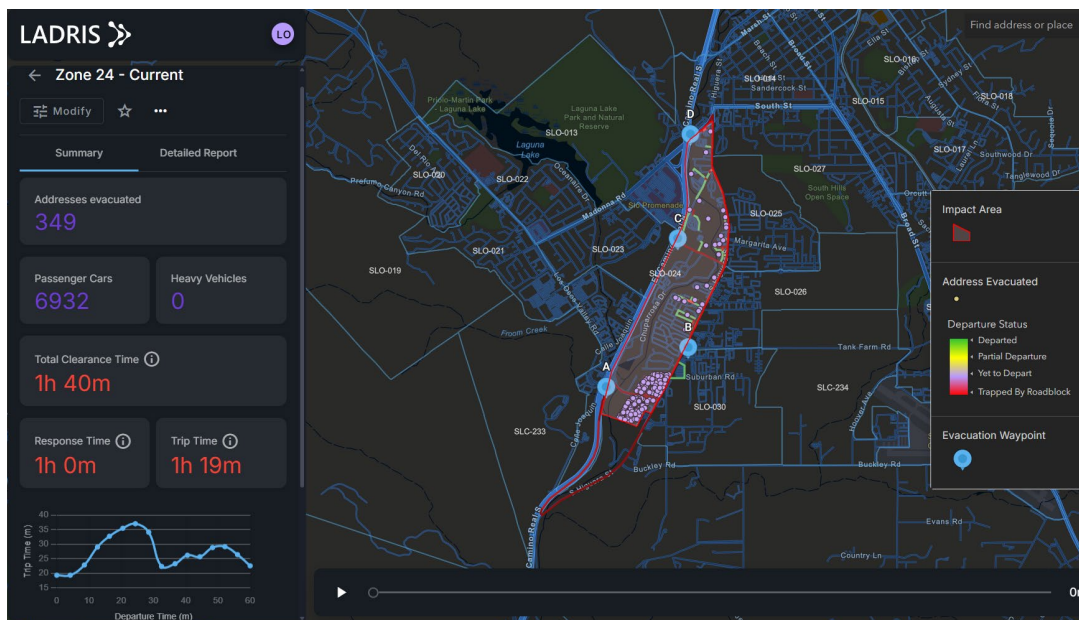
5.1 Evacuation Zone SLO-024

Creekside / West of Higuera – Fire and Flood Scenarios

- Total residences to be evacuated: **349**
- Total evacuating vehicles: **6,932**

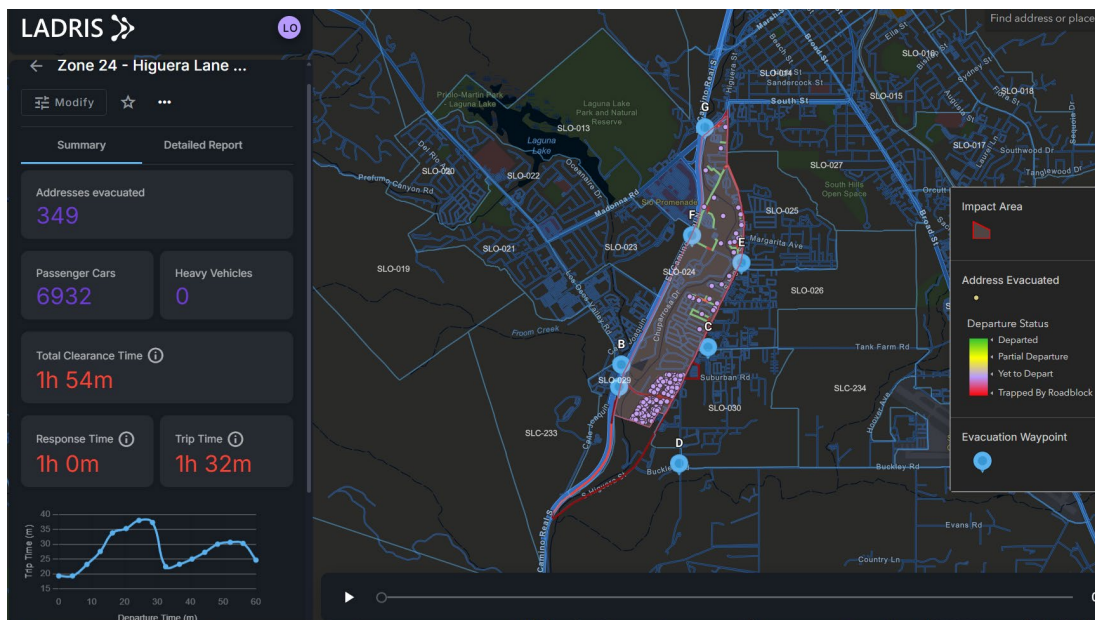
Fire Scenario A:

Existing Conditions – Total Evacuation Time: **1 hour 40 minutes**



Fire Scenario A:

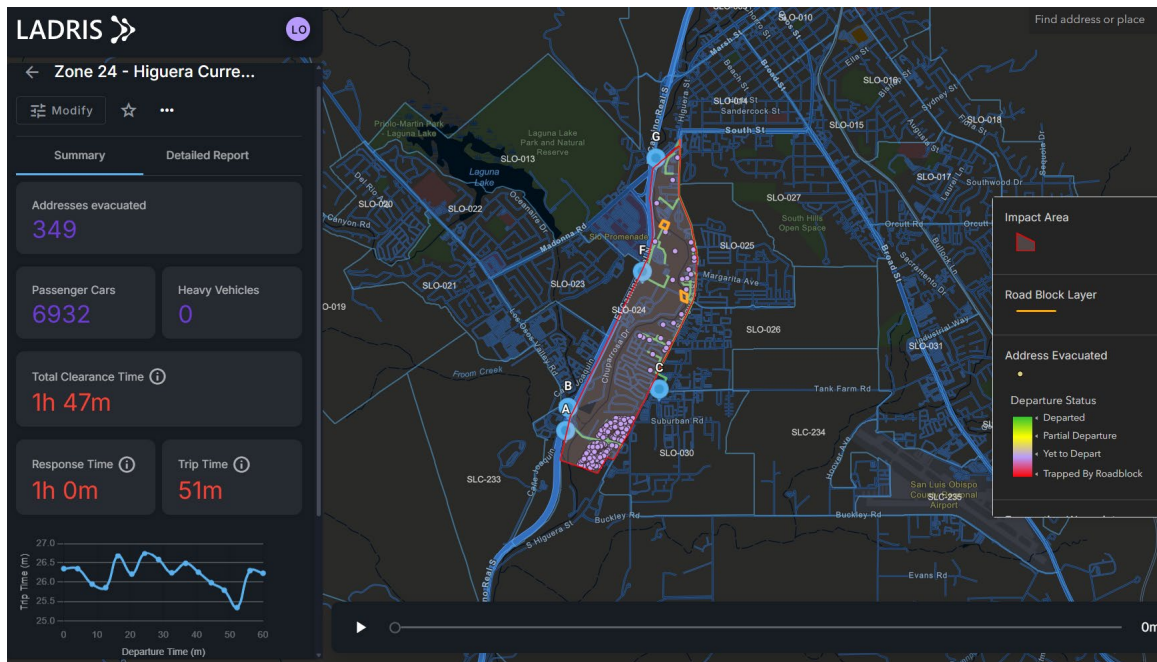
Complete Street Project – Total Evacuation Time: **1 hour 54 minutes**



5.1 Evacuation Zone SLO-024

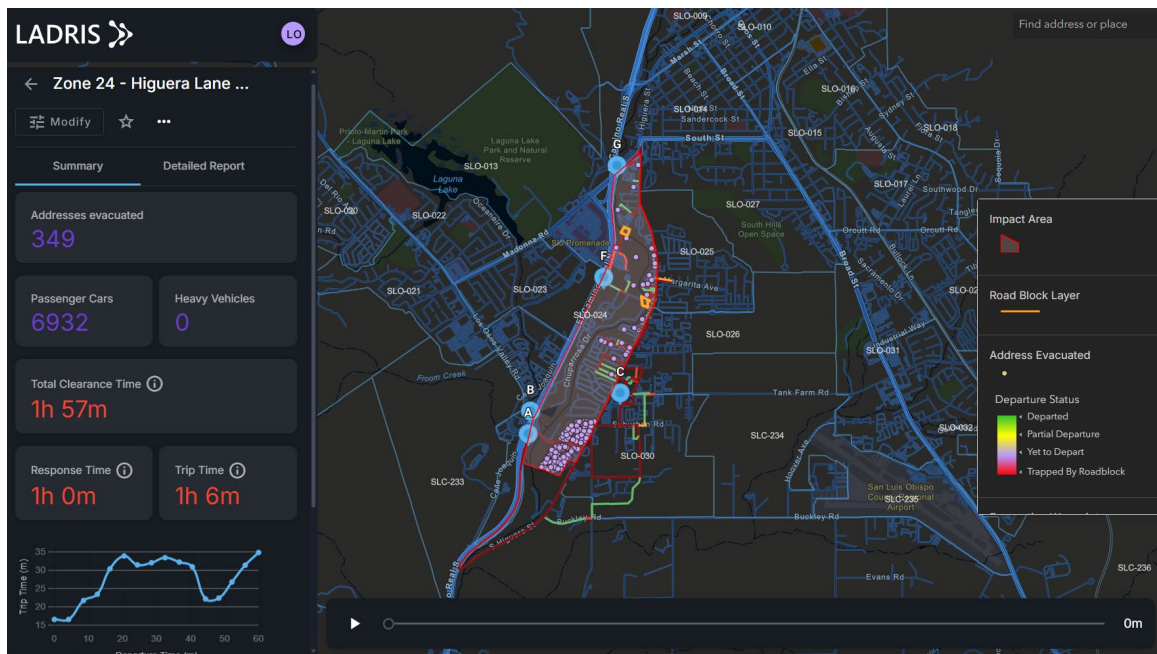
Flood Scenario A:

Existing Conditions – Total Evacuation Time: **1 hour 47 minutes**



Flood Scenario A:

Complete Street Project – Total Evacuation Time: **1 hour 57 minutes**



Note: Fire and Flood scenarios use identical demand assumptions. Results differ due to network constraints, the closure of Prado Rd due to flood history, and routing conditions specific to each scenario.

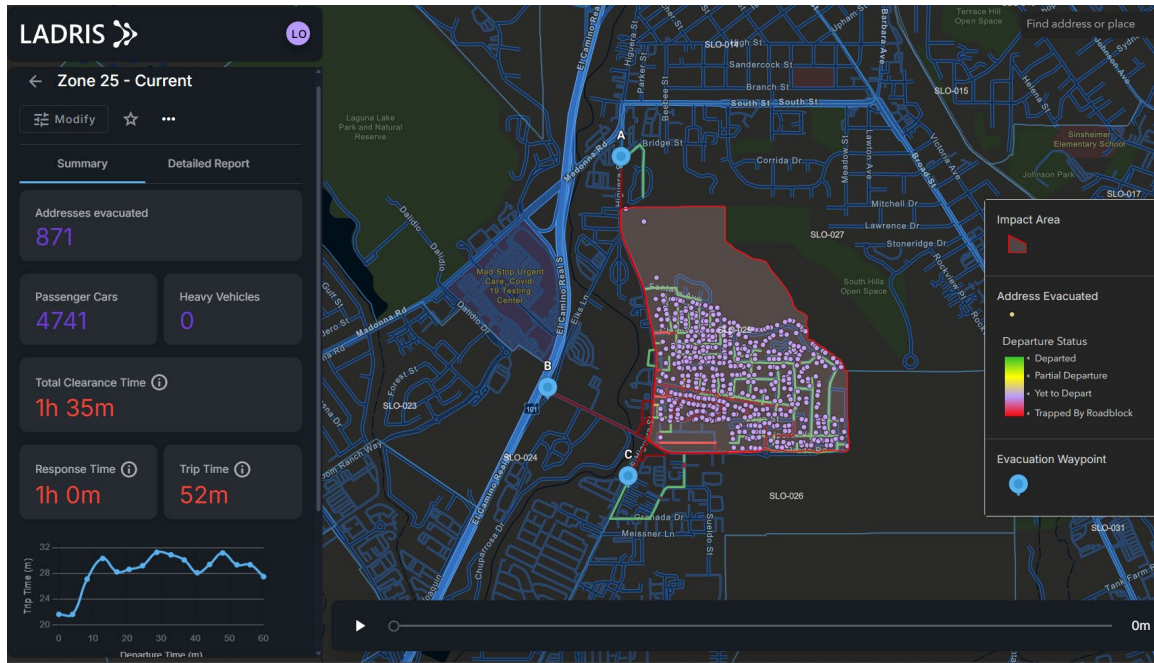
5.2 Evacuation Zone SLO-025

South Hills / Margarita Area – Fire Scenarios

- Total addresses to be evacuated: **871**
- Total evacuating vehicles: **4,740**

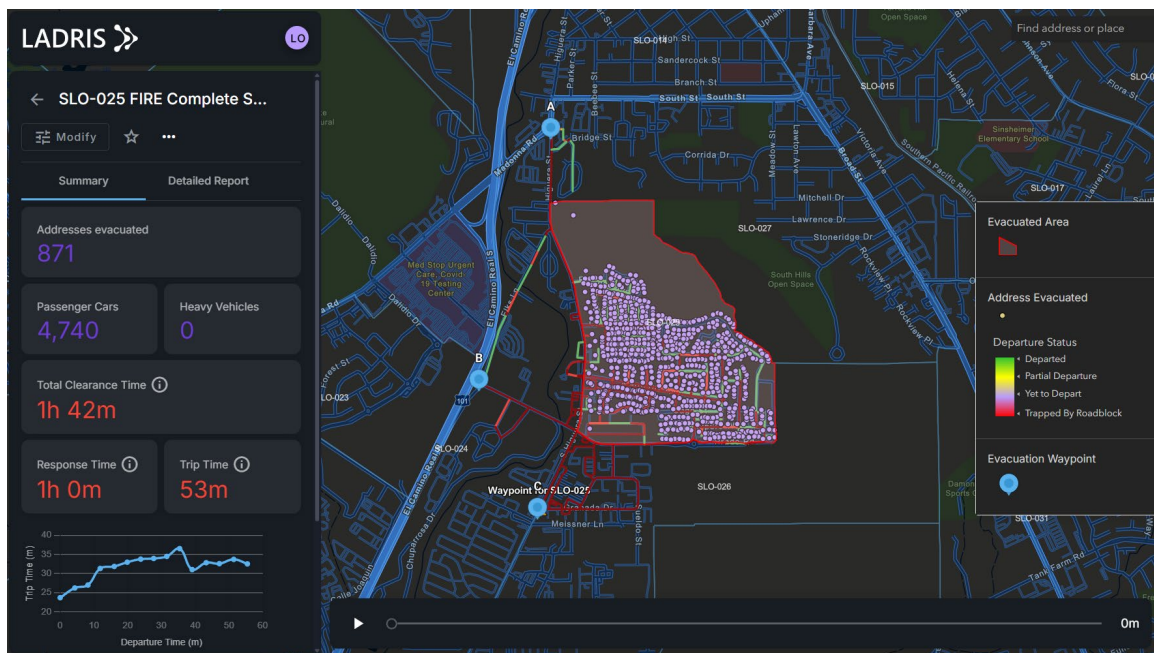
Fire Scenario B:

Existing Conditions – Total Evacuation Time: **1 hour 35 minutes**



Fire Scenario B:

Complete Street Project – Total Evacuation Time: **1 hour 42 minutes**



6. Summary of Evacuation Clearance Times

Evacuation Zone	Emergency Type	Roadway Condition	Clearance Time
SLO-024	Fire	Existing	1 hr 40 min
SLO-024	Fire	Complete Street	1 hr 54 min
SLO-024	Flood	Existing	1 hr 47 min
SLO-024	Flood	Complete Street	1 hr 57 min
SLO-025	Fire	Existing	1 hr 35 min
SLO-025	Fire	Complete Street	1 hr 42 min

7. Conclusions and Key Findings

The analysis indicates that the Higuera Complete Street Project would result in increases in evacuation clearance times for both fire and flood scenarios within Evacuation Zones SLO-024 and SLO-025. These changes are primarily associated with reduced vehicular capacity and lower operating speeds consistent with the project's safety and traffic-calming objectives. Importantly, the modeled evacuation clearance times remain within the City's two-hour performance benchmark used in recent evacuation and emergency planning evaluations. With early evacuation activation, coordinated traffic management, pre-programmed evacuation signal timing, and effective public communication, the transportation network is expected to continue to function acceptably under emergency conditions.

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