



APPENDIX D
Evacuation Technical Memorandum



EVACUATION TECHNICAL MEMORANDUM PARADISE TRANSPORTATION MASTER PLAN

April 5, 2022

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Executive Summary

The Town of Paradise experienced an unprecedented disaster and evacuation with the 2018 Camp Fire. Since that time, recovery and planning efforts have focused around creating a resilient community and roadway network to facilitate future growth and evacuation needs. This technical memorandum is one of several memorandums forming the *Paradise Transportation Master Plan (TMP)* and is focused on transportation related elements relating to evacuation.

This *Evacuation Technical Memorandum* aligns with key roadway related priorities from the *Long-Term Recovery Plan* and was prepared to address key areas of the 2018 Camp Fire *After Action Report (AAR, Constant Associates)* and follow-up *Corrective Action Plan (CAP)*.

This report provides:

- ▶ **Current Initiatives:** A summary of proposed evacuation related improvement projects and achievements that have been implemented or are planned to be implemented soon.
- ▶ **Future Projects:** A prioritized list of roadway improvement projects to facilitate evacuation (**Figure 1**) that were derived from the *Roadway Improvements Report* for the *TMP*.
- ▶ **Anticipated Improvements:** An analysis of each roadway project describing the potential benefit to capacity and evacuation operations.
- ▶ **Multiagency Task Force:** A list of achievements and future endeavors from the Multiagency Task Force, created to facilitate collaboration among the various agencies responsible for roadway or intersection control during an evacuation of Paradise. The team joined forces to identify and address evacuation challenges outside the Town of Paradise related to intersection control, contraflow, and communication.
- ▶ **Recommendations:**
 - » *Potential temporary modifications* to key roadways and intersections, including manned control and temporary intersection reconfiguration, with an emphasis on modifications that could be completed quickly with limited resources.
 - » Roadways that should be considered for *contraflow* (flowing vehicles in the opposite direction lanes to increase capacity along routes) during an evacuation
 - » Updates to existing public *evacuation information resources* (e.g., plans, public-facing maps, and websites).

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Introduction

The Town of Paradise experienced an unprecedented disaster and evacuation during the 2018 Camp Fire. Since that time, recovery and planning efforts have focused on creating a resilient community and roadway network to facilitate future needs. This technical memorandum, one of several documents forming the *Paradise Transportation Master Plan (TMP)*, focuses on transportation elements pertaining to evacuation. Other transportation related documents in the *TMP* include:



Exhibit 1. Recovery efforts are focused on building a more resilient roadway network to serve the Town of Paradise.

- ▶ *Roadway Improvements Report* – Documents daily circulation and capacity needs on roadways and at key intersections. This report developed roadway and intersection recommendations to benefit both future capacity needs and facilitate future evacuations. ***The projects identified in this report provide the foundation for permanent evacuation recommendations and are analyzed and prioritized in this report as they relate to evacuation.***
- ▶ *Local Road Safety Plan (LRSP)* – Documents crash data patterns and provides recommendations for roadway and intersection safety improvements.
- ▶ *Active Transportation Plan (ATP)* – Documents recommendations for improvements to pedestrian and bicycle facilities.
- ▶ *Parking Analysis* – Identifies parking supply, current usage, planned changes, and long-term recommendations for parking considerations in the downtown area.
- ▶ *Public Outreach* – Documents the traffic and evacuation planning public outreach process and public survey results.

Long-Term Community Recovery Objectives

Recovery efforts have provided an opportunity to build a more resilient roadway network to better serve the Town as its population returns. The *TMP* supports the *Long-Term Community Recovery Plan (LTCRP)*, a program created in response to the 2018 Camp Fire to coordinate resources and planning efforts and establish a vision for the new Town of Paradise. Key roadway-related priorities for evacuation from the *LTCRP* (Urban Design Associates 2019) were:

- ▶ Improve evacuation routes and chokepoints
- ▶ Install multipurpose pathways on evacuation routes that could be used by first responders
- ▶ Enhance roadway connectivity
- ▶ Connect dead-end streets
- ▶ Eliminate open ditches on evacuation routes
- ▶ Improve chokepoints outside of the Town of Paradise

Evacuation Memorandum Objectives

Key objectives of this technical memorandum are to provide:

- ▶ A prioritized list of recommended roadway and intersection improvements to facilitate an evacuation. (**Proposed Roadway Improvements** section)
- ▶ An additional list of recommendations to facilitate an evacuation that are not roadway projects, but are transportation related (**Non-Roadway Transportation Related Projects** section)
- ▶ An analysis of permanent roadway improvements, temporary roadway modifications, primary evacuation routes, and contraflow routes to identify potential benefits during an evacuation (**Evacuation Analysis** section)
- ▶ The key actions and recommendations from the Multi-agency Task Force created to identify and address evacuation challenges outside the Town of Paradise related to intersection control, contraflow, and communication (**Multiagency Task Force** section)
- ▶ The results of the public outreach campaign conducted to help identify and prioritize evacuations needs (**Public Outreach** section)
- ▶ Key updates and recommendations regarding the Magalia community, land adjacent to evacuation routes, Population with Disabilities and Others with Access and Functional Needs (DAFN) (**Additional Considerations** section)
- ▶ An affirmation of how recommendations from this report and other actions stemming from the *TMP* development address the *Corrective Action Plan*, developed in response to the *After-Action Report* (**After Action Report/Corrective Action Plan Response** section).
- ▶ A summary of implemented (or soon to be implemented) improvements, proposed roadway improvement projects, and temporary/emergency recommendations (**Key Findings and Recommendations** section)

Other evacuation considerations not related to transportation (such as alert/warning systems) are addressed in other recovery efforts/documents.

Previous Town of Paradise Efforts, Studies, and Documentation Review and Incorporation

Public Literature on Evacuation Preparation

Public literature on evacuation preparedness and awareness were reviewed and recommendations were provided to improve clarity and update information. This prior evacuation literature includes:

- ▶ Paradise One-way Evacuation Brochure
- ▶ Paradise Emergency Fire Zones and Assembly Points Brochure
- ▶ “Ready, Set, Go” Evacuation Plan

Town of Paradise Emergency Operation Plan (2011)

This plan covers a wide array of emergency operations topics including identifying hazards, emergency operation management, roles, and responsibilities. Relating to evacuations, the plan identifies organizations’ assignments (Police for the Town of Paradise, Sheriff for the County), and discusses the need for evacuation plans.



After-Action Report (AAR)/ Corrective Action Plan (CAP)

The *After-Action Report* (Constant Associates) documents experiences, lessons learned from the Camp Fire, and best practices with the goal of implementing improvements that will benefit the community in future evacuations and events. The follow up to this report was the *Corrective Action Plan (CAP)*, a matrix identifying actions and responsible parties. The *CAP* drove many of the actions and recommendations developed throughout this report. The *CAP* is a plan developed in response to the *After-Action Report (AAR)*. The *CAP* identifies approximately eleven objectives, the responsible agency, priority, funding, etc., presented in a matrix format. The *CAP* covers a wide array of topics relating to evacuation, training, multi-agency coordination, and communication. Overall objectives addressed in this report are:

- ▶ **Develop Traffic Control Recommendations for Evacuation.** This technical memorandum provides recommendations (both permanent improvements and temporary emergency modifications) at key evacuation intersections and along corridors – both within and outside of the Town of Paradise.
- ▶ **Facilitate Multiagency Collaboration.** This technical memorandum includes details on the Multiagency Task Force developed to address traffic control outside the Town during an evacuation.
- ▶ **Additional CAP Objectives.** Other specific objectives are covered outside of the *TMP*; however, additional projects or recommendations that may contribute towards other *CAP* priorities are documented in the *TMP*.

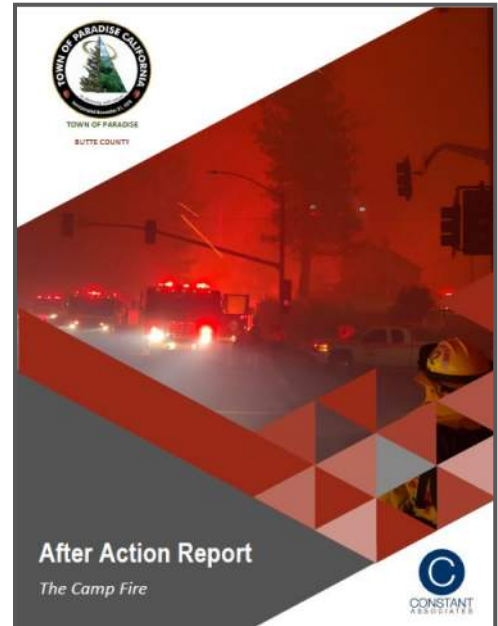


Exhibit 2. After-Action Report (AAR)

The *CAP* matrix is provided in **Appendix A** and the response actions are detailed in the **Key Findings and Recommendations** section of this report.

Adopted Town of Paradise Evacuation Control Plan (2015)

The plan identifies by zone the primary and secondary routes, potential actions at key locations, staffing needs, and traffic control resources such as signs, traffic cones, etc. It also provides recommendations such as:

- ▶ Staging resources needed for traffic control (message signs, cones, etc.) in safe places near key intersections and routes.
- ▶ Starting evacuation process early as possible.

The plan was reviewed, and recommendations are provided in **Appendix B**. The current *Traffic Control Plan* describes needs for each individual zone, useful for smaller evacuation needs, such as a police event, gas leak, etc. The recommendations focus a larger scale scenario, which may require multiple zones or a full evacuation. For planning purposes, partial evacuation scenarios include approximately one third of the zones in the Town.

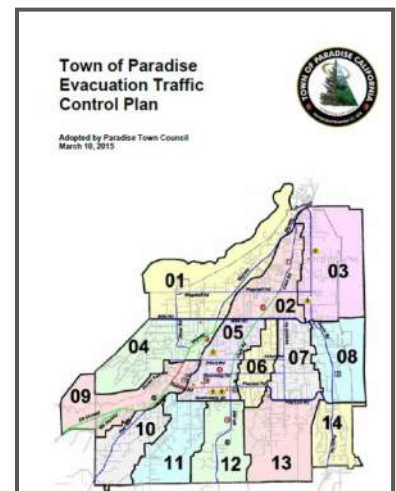


Exhibit 3. Town of Paradise Evacuation Control Plan



Proposed Roadway Improvements

Proposed roadway and intersection improvements were developed through the *TMP* process and are included in the *Roadway Improvements Report* for the *TMP*. Many of the proposed improvements developed for the daily capacity needs, such as road widenings will also benefit evacuation needs, and were developed in response to the priorities from the *Long-Term Recovery Plan*. Recommended roadway improvements are shown in **Figure 1** and include:

- ▶ The downtown Skyway reconfiguration (Elliott Road to Pearson Road) will modify the portion of Skyway from three to four lanes. This is identified as a high priority project and is scheduled for completion in 2022-2023.
- ▶ Roe Road Extension, a project to connect Roe Road from Skyway to Pentz Road in phases, creating an additional east-west route in the southern portion of Paradise.
- ▶ Roadway widening from two lanes to three lanes, including a center turn lane, on portions of Skyway, Clark Road, Neal Road, and Pentz Road. Added multiuse paths may be used by first responders in an emergency.
- ▶ Extended dual southbound lanes on Clark Road, south of Pearson Road.

It is noted that one key project, the removal of the mid-block pedestrian crosswalk refuge center island on Skyway is already completed. The island was identified as a hinderance during the Camp Fire evacuation, preventing drivers from using the full pavement width. A recommendation was brought to the Town Council in September 2021 to remove the Skyway mid-block crossing at Town Hall and to establish a policy discouraging the use of vertical elements in future roadway projects. The Town action and policy are included in **Appendix C**.

Table 1 (below) from the *Roadway Improvements Technical Memorandum* shows the roadway projects, how each project supports the Long-Term Recovery Plan, cost estimates, and a relative prioritization. Project descriptions are included in the *Roadway Improvements Technical Memorandum*.

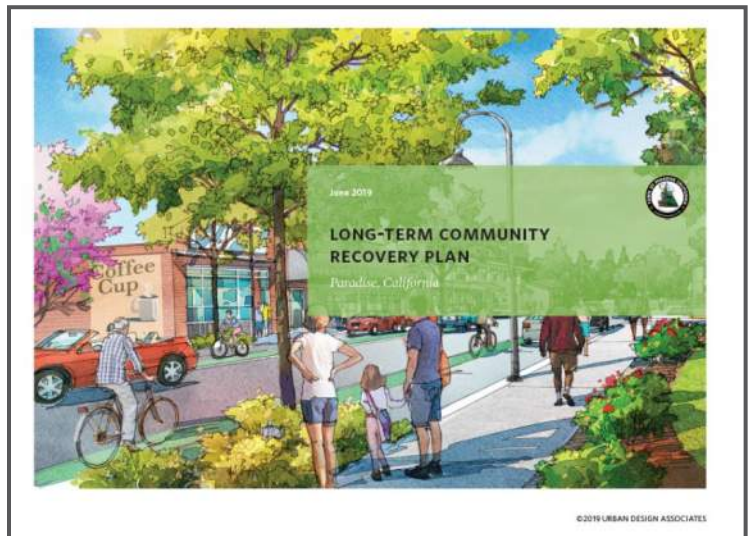


Exhibit 4. Long-Term Community Recovery Plan (June 2019)



Exhibit 5. Median Island (Skyway at Town Hall) removed in 2021.

Table 1. Roadway/Intersection Project Summary and Prioritization

Projects	Priority Category	Connection to Long Term Recovery	Estimated Costs
Skyway Capacity Improvements (Elliott Road to Pearson Road) ¹	1 - Addresses future capacity needs, and provides improvements along primary evacuation routes and intersections	Capacity & Evacuation	\$1,000,000
Foster Road/Black Olive Drive Intersection Improvements			\$5,000,000
Skyway/Pentz Road Intersection Improvements & adjacent segments			\$10,000,000
Pentz Road/Pearson Road Intersection Improvements			\$5,000,000
Upper Skyway Widening (Bille Road to Pentz Road)	2 - Widens major N/S evacuation routes for daily capacity and evacuation benefits	Capacity & Evacuation	\$49,000,000
Pentz Road Widening (Town Limits to Skyway)			\$89,000,000
Upper Clark Widening (Wagstaff Road to Skyway)			\$25,000,000
Neal Road Widening (Town Limits to Skyway)			\$25,000,000
Clark Road (spot widening between Wagstaff Road & Bille Road)			\$5,000,000
Clark Road (extend dual southbound lanes south of Pearson Road)			\$2,000,000
Roe Road Extension Phase 1 (S Libby to Pentz)	3 - Provides circulation, connectivity, and evacuation benefits on primary E/W routes	Circulation, Connectivity, Evacuation, & Capacity	\$60,000,000
Elliott Road Extension (west of Skyway)			\$1,000,000
Elliott Road Extension (End to Pentz Road)			\$7,000,000
Roe Road Phase 2 (SR-191 to S Libby)	4 - Provides circulation, connectivity, and evacuation benefits on E/W routes	Circulation, Connectivity, Evacuation, & Capacity	\$43,000,000
Roe Road Phase 4 (Skyway to Neal)			\$20,000,000
Roe Road Phase 3 (Scottwood to SR-191)			\$11,000,000
Roe Road Phase 5 (Neal to Scottwood)			\$21,000,000
Buschmann Extension between Clark Road & Libby Road			\$7,000,000
Sawmill Extension south to Roe Road Extension			\$3,000,000

Notes: 1. This project is scheduled for 2023



Table 1 continued. Roadway/Intersection Project Summary and Prioritization

Projects	Priority Category	Connection to Long Term Recovery	Estimated Costs
Buschmann Extension West of Foster Road	5 - Provides circulation, connectivity, and evacuation benefits	Circulation, Connectivity, & Evacuation	\$3,000,000
Moore Road (pavement improvements)			\$1,000,000
Middle Libby Road Extension between Pearson Road & Elliott Road			\$6,000,000
Forest Service Road Extensions			\$2,000,000
Honey Run Road Improvements			\$80,000
Toyon Lane Improvements (Foster Road to Roe Road)			\$4,000,000
Shay Lane Extension (to Center Pine Drive)			\$1,000,000
Bille Road Extension east of Pentz Road			\$3,000,000

Another potential project noted for evacuation benefit is the proposed Southgate interchange project on SR 99. This project would provide an additional connection from lower Skyway to SR 99 with an interchange and would alleviate traffic at the signals between Honey Run Road and SR 99. This project is in the early planning stages, without identified funding sources.

Non-Roadway Transportation Related Projects

Other transportation-related evacuation projects (not included in the *Roadway Improvements Report*) include:

- ▶ Additional evacuation route signage to direct motorists. One sign was noted in the field visit, reading “Road Information Turn Radio to AM 1500”. Given the importance of disseminating timely information, additional signs should be placed along key evacuation routes to provide real-time information sources.
- ▶ Create a *Traffic Management Center (TMC)* with the ability to monitor signalized intersections and implement timing plans. Establishing a *TMC* and connecting signalized intersections via fiber optic or other communication methods allows emergency timing plans to be implemented, and intersections to be monitored remotely.
- ▶ Traffic signal interconnect for remote connection to signalized intersections.
- ▶ Portable changeable message signs for real-time information along evacuation routes that could deliver pertinent, timely information such as road closures, assembly locations, etc.



Exhibit 6. Increase evacuation route signage to direct motorists.

Project descriptions for non-roadway improvements are included in **Appendix D**.

Table 2 shows the non-roadway projects, how each project supports the *Long-Term Recovery Plan*, cost estimates, and a relative prioritization.

Table 2. Non-Roadway Projects Summary and Prioritization

Projects	Priority Category	Connection to Long Term Recovery	Estimated Costs
Evacuation Route Signage	1. Short-term improvements to aid in an evacuation	Evacuation	\$100,000
Portable Changeable Message Signs			\$100,000
Traffic Management Center	2. Long-term improvements that may reduce personnel needs and aid in implementing timing plans and monitoring during an event		\$1,000,000-
Traffic Signal Interconnect			\$5,000,000
			\$10,500,000

Evacuation Analysis

Previous Analysis and Observations

A study conducted by Old Dominion University projected that it would take eight (8) hours under “blue-sky” normal traffic conditions to evacuate the entire Town of Paradise and over five (5) hours with the immediate contraflow of Skyway between Neal Road and the City of Chico. During the Camp Fire, Paradise achieved a Town-wide evacuation in approximately (6) six hours. Reported areas of congestion during the Camp Fire were:

- ▶ Skyway at the signalized intersections outside of Paradise at SR 99, Notre Dame Boulevard, Bruce Road, and Honey Run Road
- ▶ Neal Road at the signalized intersection with SR 99
- ▶ Clark Road/Durham-Pentz intersection. Following the Camp Fire, this intersection was converted from All-Way stop control to a roundabout.
- ▶ Pentz Road/SR-70 (stop-controlled intersection)
- ▶ SR-99 near Skyway

Roadway Network and Evacuation Parameters

The Town of Paradise and the neighboring town of Magalia, to the north, sit on a ridge. The roadway network supporting an evacuation consists of north-south and east-west routes, and a mixture of intersection types. Evacuations are most likely to be toward the south of Paradise into neighboring communities; therefore, north-south routes are denoted as primary routes, and east-west routes are denoted as secondary routes. **Figure 2** shows the primary evacuation routes (Skyway, Neal Road, Clark Road and Pentz Road), secondary east-west evacuation routes, and the number of existing travel lanes on each. **Figure 3** shows the existing intersection controls in the Town of Paradise at signalized and all-way stop intersections. All other intersections are side-street stop controlled.



Evacuations continue beyond the town limits, and the surrounding roadway network needed to carry evacuating traffic completely out of harm's way, must be considered. **Figure 4** shows the regional roadways and intersections outside of the Town that are likely to be utilized in an evacuation and illustrates the responsible jurisdiction, highlighting the importance of multiagency cooperation.

Evacuations can occur at any time, with or without advance notice. Evacuations may be town-wide, or only a portion of the Town, and may or may not include the neighboring Magalia community. It is noted that shadow evacuations are likely to occur in the event only some zones are evacuated. Shadow evacuations occur when residents not in the zones called for evacuation leave anyway out of caution.

The 2021 population of the Town of Paradise has decreased to approximately one third of its 20,000 residents pre-Camp Fire. It is anticipated that over time the population will return to pre-Camp Fire levels.

Therefore, the analysis and recommendations presented in this report are intended to be generalized and flexible to apply to a range of evacuation scenarios. The general considerations for the purposes of identifying and prioritizing recommendations for evacuation is a full evacuation, with population at pre-Camp Fire levels, with no advanced notice.

Overall Town-wide Evacuation Analysis

High-level town-wide evacuation analysis was completed using the *Fast Local Emergency Evacuation Times Model (FLEET)* on-line analysis tool. This tool appears to be an updated version of the model used in the previous Old Dominion Study. This tool is available to the public via a website¹ where the user can create various "scenarios" for evacuation and run travel time estimates. The FLEET website describes the program as:

"The Fast Local Emergency Evacuation Times Model (FLEET) simulation provides quick and accurate estimates of evacuation clearance times for user-defined areas anywhere in the United States. FLEET is best used in short notice evacuations such as those for wildfires, flash floods, or human-caused disasters. With FLEET, communities can quickly assess evacuation plans and accurately estimate evacuation clearance times even when trained, dedicated emergency management teams are not available."

¹ <https://fleet.vmasc.odu.edu/>



Some of the various elements that can be used to test different evacuation scenarios are:

- ▶ Evacuation area (town-wide or only certain zones)
- ▶ Seasonal factors to adjust population estimates
- ▶ Response times to evacuation and starting hours
- ▶ Destination/endpoint and the percentage of evacuating traffic to each
- ▶ Roadway modifications such as closed routes and contraflow

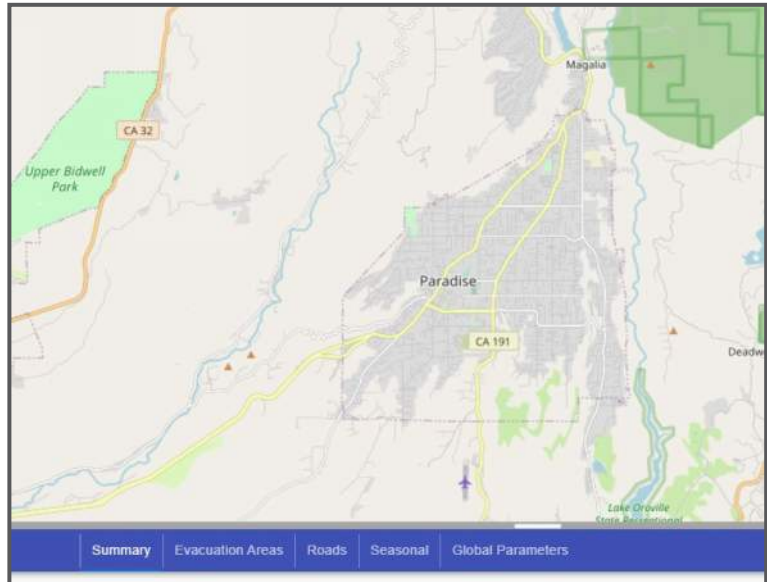


Exhibit 7. Fleet Program

Given the vast number of combinations of assumptions, variables, factors and scenarios, overall trends were identified, rather than travel time estimates. Overall baseline assumptions used in this planning-level analysis were:

- ▶ Zones were selected based on an estimate of the areas likely to evacuate for each scenario.
- ▶ The population data appears to align with pre-Camp Fire conditions.
- ▶ 100 percent of population evacuates (with default values used for people per vehicle, percent using private vehicles, etc.).
- ▶ Response time set to one hour (the lowest time option) to represent a “no notice” evacuation.
- ▶ Most of the evacuation traffic leaves toward the CA 99/Chico area using Skyway (approximately 70% consistent with results of the public outreach survey which asked about evacuation destinations).

This is a high-level tool used to estimate relative differences in evacuation times and was not used to test operations at individual intersections or roadway segments, or to analyze the impact of roadway or intersection improvements. This analysis is not intended to quantify evacuation times.

Various evacuation scenarios and the relative differences in travel times and roadway conditions are shown in **Table 3**.

Table 3. Overall Evacuation Analysis Summary

Tested Scenario	Impact on Evacuation Time
Full Town of Paradise (Baseline Scenario)	N/A – Baseline Scenario
Partial Evacuation of Paradise (North to South from Clark Road to Pentz Road)	Total evacuation time decreases by over 50%
Partial Evacuation of Paradise (North to South from Skyway to Clark Road)	Total evacuation time decreases by over 50%
Full Town of Paradise & Magalia	Total evacuation time increases by 15% from Baseline Scenario
Staggered Full Town of Paradise & Magalia	Total evacuation time decreases by approximately 30% from full town of Paradise & Magalia scenario

Table 3 confirms general expectations regarding evacuation durations. The progression of tested scenarios in FLEET can be viewed showing color-coded roadway segments depicting the speed throughout the evacuation simulation timeline. Green segments represent speeds closer to free flow speeds, while yellow segments indicate slowing speeds and red represents slowest speeds, indicating congestion. In general, for the tested scenarios above, “slowed” segments in the Town of Paradise were most noted at major intersections along Skyway, Clark Road, and Pearson Road.

Primary Evacuation Routes Evaluation

Skyway is considered the main evacuation route. In the northern portion, from Bille Road to Pentz Road, the roadway is two (2) lanes with a proposed project to widen it to three (3) lanes with a center turn lane that could be used as a through lane during an evacuation. The current limiting segment is between Pearson Road and Elliott Road, which is planned to be widened to increase capacity in this section. The capacity is proportional for an evacuation to the south – more lanes exist in the southern portion, which would carry more evacuation traffic.

Clark Road, from Wagstaff Road to Skyway, is two (2) lanes with a proposed project to widen to three (3) lanes with a center turn lane that could be used as a through lane in an evacuation. The capacity constraints are south of Pearson Road where the number of lanes reduces from five (5) to two (2). In an evacuation to the south, this may be a pinch point as a portion of traffic may need to divert to Pearson Road to reach an alternate route. It is recommended that the dual southbound lanes on Clark Road be extended further south of Pearson Road to create a longer merge length.

Pentz Road is two (2) lanes with a proposed project along the entire length to widen to three (3) lanes with a center turn lane that could be used as a through lane in an evacuation.

Neal Road is two (2) lanes and extends south from lower Skyway (south of Pearson Road). There is a proposed project to widen to three (3) lanes with a center turn lane.



Proposed Improvements Evacuation Analysis

The proposed improvements to the roadway network identified in the *Roadway Improvements Technical Memorandum* are shown in **Figure 1. Table 4** indicates the potential spot benefit to evacuation capacity and times (the improvement specific to that location, not the total evacuation duration). The intersection capacity increase was estimated based on an approximate distribution of volumes until the intersection exceeded the capacity. This is a high-level assessment as many factors would influence the operation of an intersection during an evacuation. The benefit is noted for each intersection only and does not represent a change for the total network.

Table 4. Potential Roadway/Intersection Improvement Analysis

Projects	Potential Spot Benefit to Evacuation Capacity (percent increase)	Potential Benefit to Evacuation Times
Skyway Capacity Improvements (Elliott Road to Pearson Road)	Approximately 50%	Adding a lane along a primary evacuation route between Elliott Road and Pearson Road will significantly help the flow of traffic in an evacuation and may eliminate or postpone the need for contraflow.
Foster Road/Black Olive Drive Intersection Improvements	Not expected to service significant evacuation traffic; however, modifications will improve traffic flow during an evacuation.	
Skyway/Pentz Road Intersection Improvements & adjacent segments	Varies depending on modification - Approximately 30%	Intersection improvements will provide a benefit for evacuation
Pentz Road/Pearson Road Intersection Improvements	Modifications will improve traffic flow during an evacuation.	
Upper Skyway Widening (Bille Road to Pentz Road)	Up to 50% if center lane is used as an unimpeded evacuation flow lane.	A center turn lane can be used for additional capacity in case of an incident, can potentially be used for contraflow, or can be used by emergency responders. The multiuse path can also be used by emergency responders, all of which can potentially have a significant benefit during an evacuation.
Pentz Road Widening (Town Limits to Skyway)		
Upper Clark Road Widening (Wagstaff Road to Skyway)		
Neal Road Widening (Town Limits to Skyway)		
Clark Road (spot widening between Wagstaff Road & Bille Road)		



Table 4 continued. Potential Roadway/Intersection Improvement Analysis

Projects	Potential Spot Benefit to Evacuation Capacity (% increase)	Potential Benefit to Evacuation Times
Clark Rd (extend dual southbound lanes south of Pearson Rd)	Approximately 15%	Allows more merge distance to facilitate flow of both southbound lanes at Clark/Pearson intersection and reduces backups from the merging traffic.
Roe Rd Extension Phase 1 (South Libby Road to Pentz Road)	Improves overall circulation	Provides an additional east-west evacuation route, which reduces the demand on adjacent roadways and spreads out the demand on key intersections; potentially preventing bottlenecks.
Roe Road Phase 2 (SR-191 to South Libby Road)		
Roe Road Phase 3 (Scottwood Road to SR-191)		
Roe Road Phase 4 (Skyway to Neal Road)		
Roe Road Phase 5 (Neal Road to Scottwood Rd)		
Elliott Road Extension (west of Skyway)		
Elliott Road Extension (End to Pentz Road)		
Buschmann Road Extension between Clark Road & Libby Road	Improves overall circulation	Connects a north-south route, which may reduce demand on other north-south evacuation routes.
Sawmill Road Extension south to Roe Road Extension		
Buschmann Road Extension West of Foster Rd	Improves overall circulation	Provides an additional east-west evacuation route, which reduces the demand on adjacent roadways and spreads out the demand on key intersections; potentially preventing bottlenecks
Moore Road (Public, pave)	Improves overall circulation	Improving road quality will facilitate flow in an evacuation
Middle Libby Road Extension between Pearson Road & Elliott Road	Improves overall circulation	Connects a north-south route which may reduce demand on other north-south evacuation routes
Forest Service Road Extensions	Improves overall circulation	Provides an additional east-west evacuation route, which reduces the demand on adjacent roadways and spreads out the demand on key intersections; potentially preventing bottlenecks
Honey Run Road Improvements	Unknown	Improving road quality will facilitate flow in an evacuation and may reduce the demand on other north-south routes
Toyon Lane Improvements (Foster Road to Roe Road)	Unknown	Improving road quality will facilitate flow in an evacuation



Table 4 continued. Potential Roadway/Intersection Improvement Analysis

Projects	Potential Spot Benefit to Evacuation Capacity (% increase)	Potential Benefit to Evacuation Times
Shay Lane Extension (to Center Pine Drive)	Improves overall circulation	Connects route which may reduce demand on other evacuation routes
Bille Road Extension east of Pentz Road	Improves overall circulation	

The proposed roadway and intersection improvements, shown in **Table 4**, will have a significant benefit on evacuation by increasing the capacity of key roadway sections and intersections and by creating additional evacuation routes to reduce demand on existing evacuation routes. By improving capacity of the roadway network, more vehicles can be moved through the system, thereby reducing evacuation times. It should be noted that downstream roadway network limitations may cause bottlenecks, queuing, and limit the overall network capacity. Due to these limitations, other actions such as temporary modifications and/or staff-control during an evacuation for intersections both inside and outside the Town of Paradise is critical.

Temporary Control / Modifications Analysis

Intersections of primary north-south evacuation routes with east-west secondary evacuation routes are most likely to become over capacity during an evacuation. Particularly, in a Town-wide evacuation toward the south, the southernmost intersections are more likely to become congested as evacuation traffic flows increase from north to south. The actual demands on the intersections will vary greatly depending on several factors, including the nature of evacuation, response times, route availability, etc. However, public works personnel could make temporary modifications to repurpose lane configurations or direct flow at intersections to temporarily increase the capacity and flow toward the evacuation endpoints.



Exhibit 8. Temporary modifications by personnel may increase capacity and flow toward the evacuation endpoints.

Several primary/secondary evacuation route intersections, for which potential temporary modifications using manned control may increase the capacity during an evacuation, are shown in **Table 5**. For any intersections, manned control can be used to prioritize evacuation movements. These modifications are not full-segment contraflow, only repurposing movements and/or control at the intersection that could be accomplished quickly and with minimal staff. All signalized intersections should operate with evacuation/emergency operations signal timing



plans to prioritize critical movements. Movements for non-critical directions should be limited during initial stages and if necessary, restricted completely to keep traffic moving in the evacuation direction.

Temporary modifications/staffed control should be implemented where and when needed as directed by the Incident Commander. The descriptions below are conceptual, and the responding staff should ensure any temporary modifications can be made safely and are necessary to balance the needs of an immediate evacuation with the potential safety risks associated with temporary modifications. Contraflow considerations are included in the **Contraflow** section.

Table 5. Potential Temporary Intersection Modifications

Intersection	Control	Potential Temporary Modification During An Evacuation	Potential Increase in Spot Capacity
Skyway/Wagstaff Road	Signalized	Enable an additional southbound through lane using a turn lane and limit/restrict movements in non-critical direction. Merge additional lane short distance downstream (not needed on Pearson-two receiving lanes).	40%
Skyway/Elliott Road ¹	Signalized		
Skyway/Pearson Road ¹	Signalized		
Skyway/Black Olive Drive	Signalized		
Skyway/Neal Road	Signalized	Use southbound left lane to funnel traffic down Neal Road to essentially keep three lanes southbound moving. Additional capacity could be realized if needed by restricting the movements from Neal westbound turning onto Skyway.	35%
Clark Road/Wagstaff Road	Signalized	Limit/Restrict non-critical movements using manned control, enable eastbound/westbound turns to southbound from through lanes (essentially creating dual turn lanes) and/or enable three southbound through lanes using the center turn lane	30%
Clark Road/Bille Road	Signalized		
Clark Road/Elliott Road	Signalized		
Clark Road/Pearson Road	Signalized		
Clark Road/Durham-Pentz Road	Roundabout	Manned presence to prioritize southbound flow/restrict movements	Varies depending on restricted volume
Pentz/Wagstaff	All-Way Stop	Manned presence to prioritize southbound flow/restrict movements	50%
Pentz/Bille Road	All-Way Stop		
Pentz/Pearson Road	All-Way Stop		

Notes: 1. Will not be applicable after the Skyway Reconfiguration, two southbound lanes will be provided. Recommendations will then change to police control to limit non-critical movements.



The temporary modifications are based on existing geometry. As projects develop, such as Roe Road or other improvement projects, recommended temporary modifications on new or improved intersections may need to be revisited. The locations in the Town of Paradise most likely to require temporary control or modification are the intersections with a primary north-south route and a secondary east-west route in the southern portion of the Town, potentially:

- ▶ Skyway at Pearson Road
- ▶ Skyway at Elliott Road
- ▶ Clark Road at Pearson Road
- ▶ Clark Road at Elliott Road

Locations outside the Town which may require modifications are discussed in the subsequent **Multiagency Task Force** section, and may include:

- ▶ Skyway at the signalized intersections outside of Paradise at SR 99, Notre Dame Boulevard, Bruce Road and Honey Run Road
- ▶ Neal Road at the signalized intersection with SR 99
- ▶ Clark Road/Durham-Pentz Road (roundabout)
- ▶ Pentz Road/SR-70
- ▶ SR-99 near Skyway

The intersections above may benefit from police/manned control to prioritize movements and prevent extensive queues from forming on critical approaches.

Contraflow

Contraflow, also known as lane reversing, is the reversal of traffic flow in the inbound lane(s) to increase outbound traffic capacity. Contraflow is typically used for special events or evacuations on limited-access roadways and is a powerful tool with the potential to significantly increase capacity on evacuation routes and move people to safety in less time. During the Camp Fire evacuation in 2018, Skyway was contra-flowed between Neal Road and the City of Chico. This was described in the AAR as the single most effective tool deployed for evacuating the public.

Recommended Practices

Typically, contraflow is conducted on limited-access (highly access controlled) roadways such as freeways since contraflow routes should be secured to prevent access and wrong-way driving.

Several contraflow variations exist, but the most common variation is to reverse all inbound lanes to the outbound direction. It is possible to reverse only one lane of a multilane section, to allow one lane for entry/emergency services; however, this complicates the setup and increases the potential for crashes.

Contraflow should begin at a controlled location, such as a median crossover. The start point should be at a location with adequate capacity, to prevent the start point from becoming a bottleneck. The contraflow termini should also be chosen at a location that can be controlled with adequate capacity to return traffic flow to normal,



and flow safely without creating a bottleneck. Thus, in many cases the capacity and the beginning and endpoints dictates the capacity of the contraflow segments.

Prior to implementing contraflow:

- ▶ The beginning and endpoints should be secured and prepared.
- ▶ The segment should be fully cleared of opposing vehicles. In some cases, sweeps will be conducted via helicopter to ensure the route is secured.
- ▶ All access points to the contraflow sections should be secured with personnel or/or equipment to prohibit vehicles from entering and driving the wrong direction

Given the steps for implementation, it is common for contraflow to take hours to set up properly. It is acknowledged that in an extreme emergency, such as the Camp Fire, adequate time and resources were not available. In this sudden, life or death situation, contraflow was implemented spontaneously. This was done to move people quickly in a deadly and rapidly evolving situation, however, the importance of proper setup should not be minimized

Contraflow should typically be all lanes in the cross section and not use two-way left turn (TWLTL) lanes as a contraflow lane as this can increase the risk of crashes. However, if by nature of the emergency it is necessary to contraflow partial lanes or use the TWLTL, extreme care should be applied to use cones, signage, and other safety features to prevent crashes, particularly side swipe and head-on collisions.

Existing and Potential Contraflow Routes and Cross-Over Points

The potential contraflow routes as noted in the *Paradise One-way Evacuation Brochure* are:

- ▶ Skyway (Elliott Road to Pearson Road) – This segment will have two southbound through lanes when the Skyway reconfiguration is completed. This may eliminate the need for contraflow on this section.
- ▶ Pentz Road (Pearson Road to Hwy 70)

Skyway remains the primary route choice for contraflow as it provides the highest potential capacity. Although any section could be utilized, it is likely that contraflow would be needed in the southern portion to carry evacuation traffic to SR 99. A potential start point is the intersection with Neal Road, as this would allow for emergency services to use Neal Road to access Skyway and travel northbound. Other potential starting points are the crossover locations to the south/west of Neal Road. If possible, contraflow should extend to SR 99. Additional detail on the potential Skyway contraflow route can be found in **Multiagency Task Force** section. However, other routes may need to be considered for contraflow especially if an incident or the nature of the emergency renders Skyway unusable.

Any primary route may potentially be used for contraflow if the start/endpoints and section length can be maintained to prevent wrong-way driving. In addition, ingress for emergency services must be provided either on the contraflow route or an adjacent route.

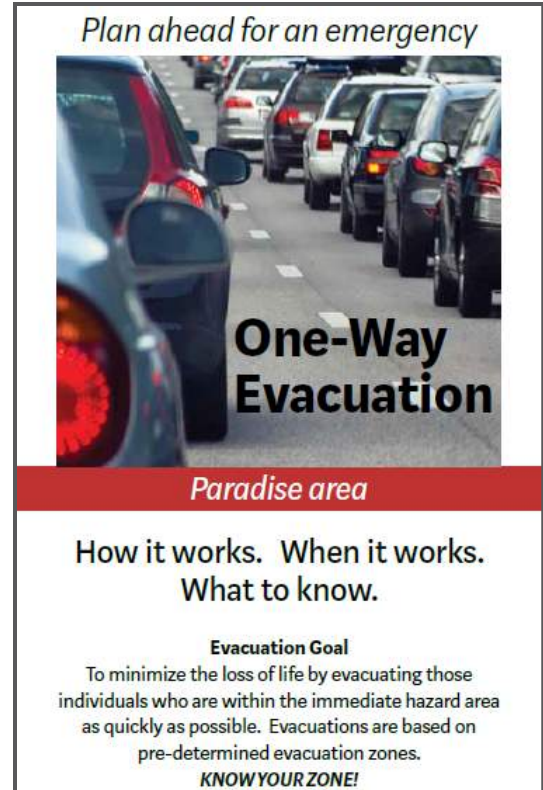


Exhibit 9. Town of Paradise One-Way Evacuation Brochure

Multiagency Task Force

Purpose

A Multiagency Task Force was established in response to the CAP to coordinate traffic control inside and outside the Town during an evacuation. The goal of the meetings was to identify the traffic control ownership, needs during an evacuation, resource allocation, communication needs, and create working agreements to facilitate flow through and beyond the Town of Paradise limits into surrounding communities. Meeting agendas and materials are found in **Appendix E**.

Task Force

The working group was comprised of over 20 regional partner agencies including, but not limited to:

- ▶ Butte County (BC)
- ▶ BC Information Systems
- ▶ BC Development Services
- ▶ BC Sheriff's Department
- ▶ BC Social Services
- ▶ Cal Fire
- ▶ Cal OES
- ▶ California Highway Patrol
- ▶ Caltrans Maintenance & Operations
- ▶ Chico (City of)
- ▶ Chico Police Department
- ▶ Gridley Police Department
- ▶ Headway Transportation
- ▶ KSN inc.
- ▶ Mark Thomas
- ▶ Oroville (City of)
- ▶ Oroville Fire Department
- ▶ Oroville Police Department
- ▶ Paradise (Town of)
- ▶ Paradise Police Department
- ▶ State Parks Division

Meetings, Goals, and Identified Needs

Three meetings and a field exercise were conducted between July 2021 and February 2022. All meetings were conducted remotely/online; the field training exercise was an in-field and remote hybrid. The goal of the first meeting was to explain the purpose, finalize appropriate agencies and representatives, and initiate discussions about goals for the group. The group established a list of short-term and long-term needs. The third meeting reviewed draft agreements and identified a need for a tabletop/field exercise to simulate an all-at-once evacuation via Skyway using contraflow for both field operations and Incident Command at the Emergency Operations Center (EOC). The fourth meeting was a hybrid training for all-at-once evacuation via Skyway combining an on-site field exercise and Microsoft Teams to simulate an EOC.

Short-Term Needs

The following short-term needs were identified, as well as an action plan and responsible agencies:

- ▶ Coordinate Caltrans/CHP/Chico control for four signals on Skyway at Honey Run Road, Notre Dame Boulevard, Bruce Road/Dominic Drive, SR-99 NB Ramps, and SB-99 SB Ramps.



- ▶ A published plan or formal agreement to expedite resources and personnel to evacuation intersections quickly and efficiently.
- ▶ Further explore northern routes (Upper Ridge) in evacuation planning (i.e., additional capacity and signage, including wayfinding signs to SR-32)
- ▶ Communicate key information to residents before and during an evacuation to prevent bottlenecks and efficiently move traffic from the evacuation zone.
- ▶ Flexible contraflow that can be implemented when/where needed with the necessary resources.
- ▶ Provide single public facing evacuation zone map online and put into place protocols which ensure concurrent updates of mapping and emergency alerts to affected areas.
- ▶ All parties are aware of agreements/MOUs in place.



Exhibit 10. Additional signage to communicate key information to residents in real time.

Long-Term Needs

The following long-term needs were identified, as well as an action plan and responsible agencies:

- ▶ Future SR-99/Southgate interchange
- ▶ Incorporate key evacuation signals on Skyway into an ITS system for remote monitoring and timing changes.
- ▶ Incorporate key evacuation signals in Chico into an ITS system for remote monitoring and timing changes.
- ▶ Incorporate key signalized intersections in Paradise into an ITS system for remote monitoring and timing changes.
- ▶ Facilitate advanced discussion with mobile applications focused on mapping (Waze, Google Maps, etc.) to help provide guidance during an evacuation.

Hybrid Field Exercise

This exercise provided training for a comprehensive regional evacuation coordination of the Town of Paradise and nearby communities (Paradise Ridge). The goals were to:

- ▶ Practice a hypothetical evacuation scenario as close as possible to an actual event, including communication between the field personnel and the Emergency Operations Center (EOC).
- ▶ Train staff and identify areas that need resources, further planning, or agreements among agencies.
- ▶ Use the exercise to create the “Skyway Evacuation Flow Plan”, a reference guide for a worst-case scenario type of evacuation (i.e., full evacuation of Paradise and potentially the Upper Ridge with little to no advance notice).



Exhibit 11. Field exercise / Emergency Operations Center simulation

Accomplishments of Multiagency Task Force

Skyway Evacuation Flow Plan

They *Skyway Evacuation Flow Plan* was a result of the hybrid field exercise with the goal of optimizing traffic flow on Skyway and minimizing congestion at traffic signals along Skyway near State Route 99 (SR-99), Notre Dame Boulevard, and Bruce Road, while considering implementation of contraflow between Chico and Paradise.

The *Skyway Evacuation Flow Plan* is included in **Appendix F**. Primary components of the plan include:

- ▶ Roles and responsibilities of key agencies
- ▶ Communication structure
- ▶ Details regarding key traffic signals along Skyway
- ▶ Potential plan for contraflow on Skyway

Short/Long-Term Needs Matrix

The long and short-term needs were outlined in a matrix identifying the target output, responsible agency, agency champion, partner agencies, actions, and next steps. The matrix is included in **Appendix E**.

Assembly Points Outside of the Town

The Multiagency Task Force also discussed assembly points outside of the Town. Assembly points are temporary areas for evacuees to gather until conditions subside and evacuation routes are accessible, or for evacuees who otherwise cannot evacuate the community on their own and need assistance to be moved to a shelter². These points are often used by residents without a personal vehicle who are transported by public transportation, and transit fees are typically waived. Assembly points are designated on public transportation routes when possible. The discussion was to determine assembly points outside the Town typically used for an evacuation of Paradise. Assembly points in Paradise may be used for a smaller scale event or an event in Magalia or Sterling City.

Assembly points are well defined in Paradise and to the north, with less defined points to the south. The Neighborhood Church off Skyway/Notre Dame



Exhibit 12. The Multiagency Task Force reviewed traffic signals along Skyway and key information needed during an evacuation.



Exhibit 13. During active evacuation, the Neighborhood Church shelter off Skyway/Notre Dame Boulevard should close to facilitate traffic flow.

² Source: Town of Paradise & Upper Ridge “Ready, Set, Go” Evacuation Plan



Boulevard is used as a shelter. This location poses logistical challenges since it requires a left turn from Skyway to enter with a short (approximately 125') left turn lane that could easily queue and block flow on Skyway. If this were to occur during an evacuation, this could impede evacuation flow on Skyway. It is recommended that during times of active evacuation when flow on Skyway is critical for safety that the shelter be closed, or that westbound lefts are restricted to facilitate flow on Skyway. In this scenario, the shelter may open after active evacuation has subsided. Otherwise, traffic may be routed around to avoid a turn movement that could hinder flow on Skyway. If it is necessary to have the westbound left movement open, it is recommended that the intersection be staffed, and priority is given to ensuring that the westbound left does not block flow on Skyway.

Additional assembly points to the south were discussed. Locations down the ridge should be easy to access, and it is preferred that these points have restrooms, shade, and are on a transit line, etc. It is noted that any established points must have agreement from the property owner. Also, it is preferred to avoid locations that are designated staging zones for CalFire or police. Potential assembly points are included in **Appendix E**.

Continuation

The platform established with the Multiagency Task Force should continue. Future collaboration will ensure that the group stays abreast of the latest information and maintains a working relationship that will service many types of future needs.

Public Outreach

Public outreach for the *Paradise Transportation Master Plan (TMP)* included four (4) workshops on various topics held in person at Town Hall, with an option for virtual (online) participation. The workshops included a presentation, question and answer session, and online survey access. The **Roadway and Traffic Evacuation Planning** workshop was held on Tuesday, June 22, 2021, at 6:00 p.m., followed by an online public survey that remained open for three weeks until July 14, 2021. The full details of the public outreach and survey results are detailed in the *Roadway and Traffic Evacuation Planning Public Outreach* technical memorandum in the *TMP*.

In summary, the public preferences pertaining to evacuation are:

- ▶ Design options for Skyway downtown, with more lanes to improve evacuation.
- ▶ Honey Run Road to be improved and maintain traffic in both directions.
- ▶ Roadway connections/extensions were generally favored to provide more routes for evacuation.
- ▶ Potential Evacuation improvements ranked in order of preference were:
 - » Increase the number of lanes on Skyway downtown
 - » Three lanes on Upper Skyway, Upper Clark Road, Pentz Road, and Neal Road
 - » Add roadway connections/connecting dead-end streets
 - » Multi-purpose pathways on evacuation routes that can be used by first responders in an emergency
 - » Covering open ditches on evacuation routes
 - » Remote operation of traffic signals for evacuation patterns



- ▶ A policy discouraging the use of vertical elements (raised medians, bulb outs, splitter islands) on future roadway projects and removing them from existing roadways.
- ▶ The survey included several open-ended questions and opportunities for typed comments. General themes were:

- » Evacuation is a top priority
- » Desire that Skyway be restored to the original number of lanes
- » More routes for evacuation
- » Better signage
- » Consider elderly and vulnerable populations
- » Consider Magalia in planning efforts
- » The majority of residents travel toward Chico in an evacuation

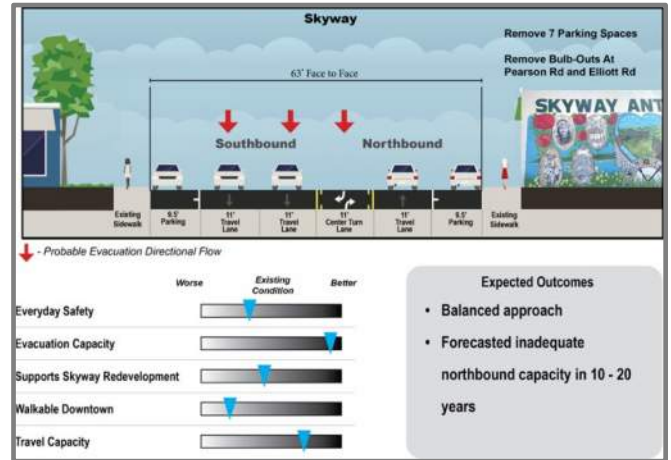


Exhibit 14. Preferred Option for Skyway (Elliott Road to Pearson Road)

Additional Considerations

Community of Magalia Considerations

Magalia is a neighboring community to the north of Paradise that, during an emergency, potentially evacuates concurrently with and through the Town of Paradise. Therefore, this community’s evacuation needs should be incorporated with evacuation considerations for Paradise. Several existing studies and documents include evacuation information related to Magalia.

The *Upper Ridge Community Plan* (Public Review Draft December 2021) includes evacuation planning and recommendations for multiple communities on the upper ridge.

The *Butte County Upper Ridge Transportation Existing Conditions* (Fehr and Peers April 2021) documented existing traffic volumes, crash patterns, bicycle, and pedestrian facilities in support of the *Upper Ridge Community Plan*.

The *Town of Paradise Evacuation Traffic Control Plan* (2015) indicates that Magalia traffic should be considered in every scenario.



These documents form the basis for Magalia considerations; however, any improvements in Paradise or along evacuation routes will also benefit Magalia.

Land Adjacent to Evacuation Routes

The outer edges of evacuation roadways can play a critical role in facilitating an evacuation. Shoulders can be used by emergency personnel or for clearing an incident. Adding shoulders and/or converting V-ditches to drivable shoulders can benefit everyday safety and provide vital infrastructure during an evacuation.

Keeping a “clear zone”, or an unobstructed, traversable roadside area, has benefits for everyday roadway safety (lessening the severity of run-off-road crashes) and would help to prevent the spread of fire across a roadway. The 2018 Camp Fire cleared much vegetation from surrounding roadways. As routine maintenance is performed or crash data indicates the need for clear zones (included in the LRSP), these projects should be prioritized for their role in fire safety/evacuation.



Exhibit 15. Magalia, to the north of Paradise, may evacuate with and through the Town.

Evacuation for Population with Disabilities and Others with Access and Functional Needs (DAFN)

The prominent resource for evacuation preparedness for DAFN population is found on the Butte County Office of Emergency Management (OEM) website, which contains two documents:

- ▶ “Preparing Makes Sense for People with Disabilities, Others with Access and Functional Needs, and the Whole Community. Get Ready Now” – This two-page instructional document outlines recommendations for emergency supplies, planning, and staying informed.
- ▶ “Emergency Preparedness: Taking Responsibility for Your Safety, Tips for People with Disabilities and Activity Limitations” – This guideline provides useful information for emergency preparedness.

The effort is coordinated through the County Adult Protective Services. This organization provides a Special Needs Awareness Program (SNAP), a voluntary program for those with access and functional needs and/or transportation disadvantaged individuals in need of evacuation assistance. Individuals can register for the program by filling out a form.

These resources should be advertised regularly through means such as social media and public display at select locations to ensure that the resources become familiar to those that may need to use them in an emergency.

Regarding population with disabilities and others with access and functional needs (DAFN), the *After-Action Report (AAR)* notes that “they were aided by fellow community members, who offered to drive them to safety. Schools, hospitals, and other large facilities were quickly evacuated in large part with the help of their own faculty and staff, who stayed behind to coordinate those efforts before evacuating themselves. Those “in the moment” decisions made by residents, volunteers, and staff in the field have been cited as having saved countless lives.” The AAR also recommends that action is taken to prepare for the evacuation of DAFN population.



After Action Report/Corrective Action Plan Response

This section outlines how specific areas of the *After Action Report (AAR)* and *Corrective Action Plan (CAP)* have been addressed in this report and the *TMP*.

After Action Report

Various key takeaways, and *TMP* actions as a result of the AAR are:

- ▶ **AAR Takeaway:** The planned and trained use of contraflow (one-way evacuation) along Skyway between Neal Road and the City of Chico was the single most effective tool deployed for evacuating the public.

TMP Action:

- ▶ The Multiagency Task Force conducted training exercises for Skway evacuation.
 - ▶ The *Skyway Evacuation Flow Plan* was created to facilitate flow on this primary evacuation route.
 - ▶ This report documents contraflow recommendations and applications in the Town of Paradise.
 - ▶ The *Roadway Improvements Report* provided recommendations for improving flow on Skyway and throughout the Town to facilitate future evacuations.
- ▶ **AAR Takeaway:** A lesson learned was to evacuate by zones to prevent traffic jams. Delay occurred between the time the Police Department advised the EOC of CAL FIRE's request to evacuate the Town and when the appropriate mass alert and warning messaging were triggered.
 - ▶ *TMP* Action: The multiagency coordination included recommendations to revise evacuation zones and improve coordination to ensure earlier evacuation notifications.
 - ▶ Recommendations for improved communication protocols:
 - ▶ *TMP* Action: The multiagency coordination included a training workshop to practice communication in a hypothetical event.
 - ▶ The Evacuation Plan for the Town of Paradise is tailored to the existing transportation infrastructure and was never intended to support an immediate, Town-wide evacuation. In fact, in exercises and real-world events where specific zones of the Town were required to evacuate, the Evacuation Plan succeeded in efficiently and effectively evacuating residents. The plan was created on the premise that evacuations could occur in multiple zones at a time for the most threatened areas of town. Due to the constraints of the Town's transportation infrastructure and topography, an "all-at-once", Town-wide evacuation scenario was not explicitly identified in the Evacuation Plan.
 - ▶ *TMP* Action: The recommendations, evacuation analysis, multiagency coordination and Skyway Evacuation Flow Plan have all been geared toward preparing for an "all-at-once" evacuation.



Corrective Action Plan

- ▶ *Specific CAP Objective:* Address areas where evacuation traffic typically bottlenecks and determine a plan of action for proactively preventing traffic congestion in these areas.
 - » *TMP Action:* The **Evacuation Analysis** and **Proposed Roadway Improvements** sections identify intersections and roadway segments of concern and provide proactive recommendations in two categories:
 1. Permanent improvements
 2. Temporary emergency traffic control, with emphasis on measures that can be implemented quickly and minimize the use for personnel during the evacuation (manned control).

- ▶ *Specific CAP Objective:* Document evacuation successes and incorporate into plans, procedures, training, exercises, and education programs.
 - » *TMP Action:* The **Multiagency Task Force** section details this response and documents experiences, successes, and lessons learned related to traffic flow during the evacuation through multi-agency meetings and incorporated these lessons into a plan and training exercise.

- ▶ *Specific CAP Objective:* Within the updated Evacuation Plan, the Town should include multi-disciplinary mechanisms and resources for ensuring the provision of emergency services to areas under evacuation, including emergency clearance of evacuation and emergency response routes.
 - » *TMP Action:* A Multiagency Task Force was formed and conducted meetings to identify the traffic control measures needed within and outside the Town of Paradise during an evacuation, including measures to ensure that in the event of contraflow, routes remained open for emergency responders to access the evacuation area.

- ▶ *Specific CAP Objective:* The Town of Paradise should continue to participate in efforts to convene Operational Area and regional stakeholders to develop an Operational Area and regional Evacuation Plan. Stakeholders should include the County, Operational Area stakeholders, Cal OES, Mutual Aid Coordinators and contiguous Operational Areas, local first responder agencies, relevant non-profit organizations, and California Highway Patrol.
 - » *TMP Action:* The Multiagency Task Force has been formed and should remain in place and continue to meet and conduct trainings.



Key Findings and Recommendations

Implemented and Planned Near-Term Key Improvements



Roadway projects benefiting evacuation, specifically the Skyway reconfiguration to four lanes between Elliott Road and Pearson Road, is high priority for the Paradise community.

Source: Long-Term Community Recovery Plan

- ▶ The mid-block pedestrian crosswalk refuge island located in the center of Skyway near Town Hall was removed in 2021. This island was identified as a hinderance during the Camp Fire evacuation since evacuating traffic was not able to use the full pavement width of Skyway while evacuating.
- ▶ A policy to discourage the use of vertical elements in future roadway projects has been adopted.
- ▶ The three-lane portion of Skyway between Elliott Road and Pearson Road is planned to be reconfigured to four lanes in 2022 or 2023. This section was noted as a pinch point during the 2018 Camp Fire evacuation as only one southbound lane was available. The details regarding this roadway improvement project can be found in the *Roadway Improvements Report*.
- ▶ A Multiagency Task Force met collaboratively, held training exercises, and discussed issues in addressing regional needs during an evacuation. This group created the “Skyway Evacuation Flow Plan”, a reference guide for maximizing vehicular traffic flow along Skyway for evacuating traffic to exit the Town limits and access SR 99.

Recommended Projects

Proposed projects include improvements such as road widenings, multiuse paths, and additional evacuation signage.

A summary of the recommended projects is provided in **Figure 1** and **Tables 1** and **2**, which include roadway, intersection, and other transportation-related proposed projects. The benefit these projects have on capacity and/or evacuation is noted in the **Evacuation Analysis** section of the report. These projects include:



Source: Long-Term Community Recovery Plan

Exhibit 16. Increase evacuation route signage.



- ▶ Widening and reconfiguring existing roadways to increase vehicle capacity.
- ▶ Constructing roadway extensions/connections to provide additional routes and additional roadway network connectivity, particularly for dead-end streets.
- ▶ Improving intersections to increase vehicle capacity.
- ▶ Installing multiuse paths that could be used by emergency responders during an evacuation.
- ▶ Adding more evacuation route signage.
- ▶ Creating a Traffic Management Center and implementing traffic signal interconnect capabilities.
- ▶ Utilizing portable Changeable Message Signs for real-time information dissemination along evacuation routes.

Key Temporary/Emergency Actions Modifications

Multiagency efforts developed regional guidelines for evacuations and a reference guide for an “all-at-once” evacuation on Skyway.

- ▶ A Multiagency Task Force developed plans and strategies for regional collaboration to guide the evacuating public through potential pinch points within Paradise and then beyond the Town limits to fully exit the area.
- ▶ The *Skyway Evacuation Flow Plan* was prepared as a reference guide for implementing an evacuation along Skyway during an “all-at-once” evacuation.
- ▶ The intersections most likely to require manned control and/or temporary emergency modifications were identified with potential strategies; however, the nature of each event will dictate the most impacted intersections or roadway segments. This may include potentially restricting access to specific assembly points along Skyway (e.g., Neighborhood Church) until movement into the site would not cause vehicle queues that would impact Skyway and restrict evacuating vehicle flow during an active evacuation.



Exhibit 17. The Multiagency Task Force conducted a hybrid in-field/virtual evacuation exercise in February 2022.

Other Recommendations and Key Findings

The public favored roadway improvement projects that would be beneficial during an evacuation.

- ▶ The public favored roadway improvement projects that would be beneficial during an evacuation, with the Skyway reconfiguration between Elliott Road and Pearson Road being the most endorsed project.
- ▶ Staggering the evacuation process will reduce evacuation times and should reduce congestion throughout the roadway network during an evacuation.
- ▶ Update public-facing content (websites, instructional materials, etc.) such as the “Paradise One-way Evacuation” brochure, the “Paradise Emergency Fire Zones and Assembly Points” map, and the “Ready, Set,



Go” evacuation plan, and regularly advertise these resources via social media and other public informational outlets.

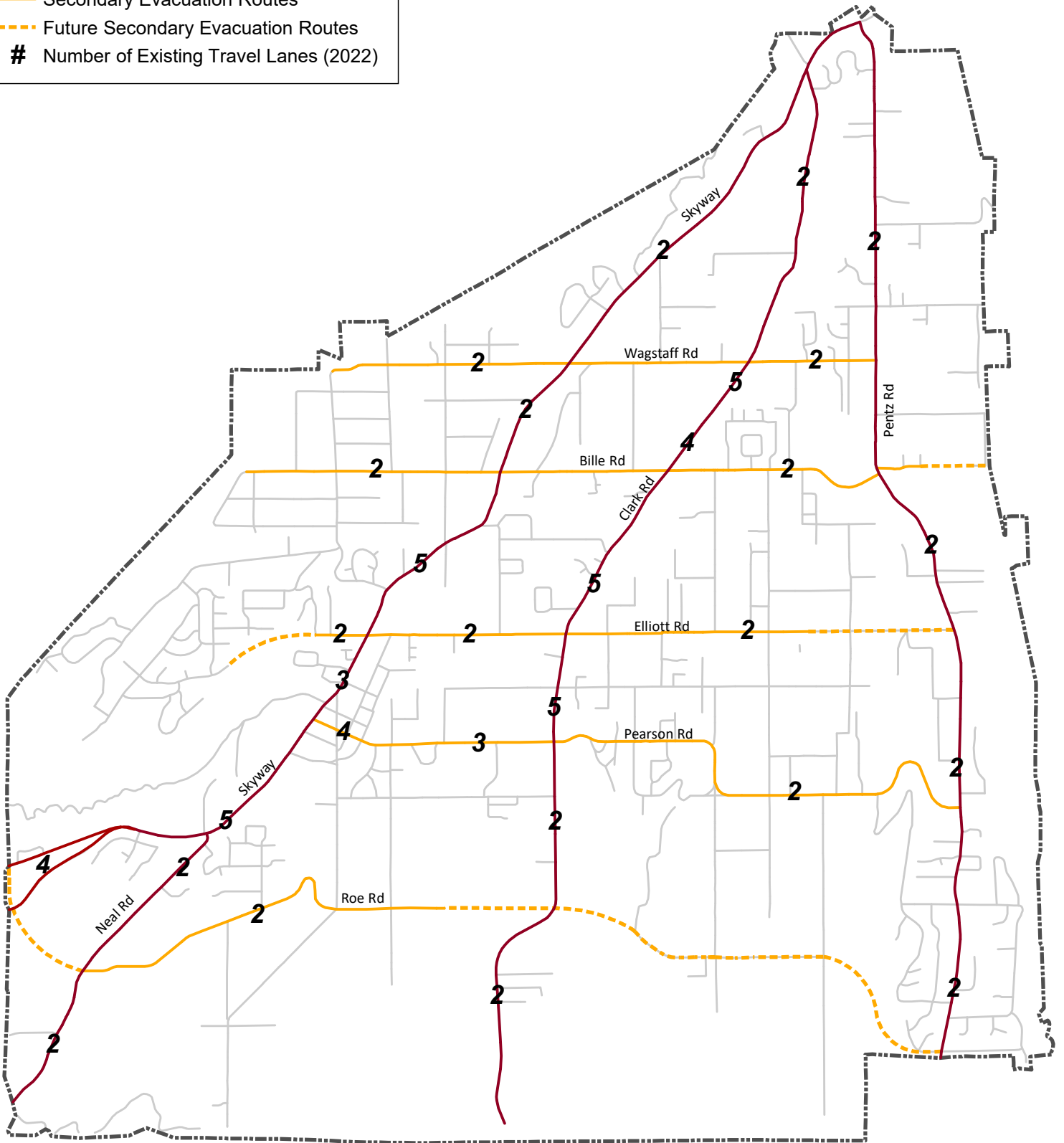
- ▶ Update the 2015 Traffic Control Plan for full evacuation or a partial (multiple zones at once) evacuation.
- ▶ Consider additional and alternative assembly points.
- ▶ Keep the roadside shoulder areas (“clear zone”) free of obstructions and vegetation. Construct shoulders and cover roadside ditches on evacuation routes to make drivable roadway sections wider. This could be done through routine maintenance operations or as larger projects are implemented in the future. Keeping the shoulder areas immediately adjacent to roadways useable in an evacuation will enable them to be used by emergency responders and used to clear stalled vehicles.
- ▶ Resources available to populations with disabilities or with access and functional needs (DAFN) should be advertised regularly through social media, public display, etc. to ensure these populations are familiar with the resources should they ever need to be used.




**Exhibit 18. Paradise Evacuation Zone Map
(August 2020)**

Legend

- Primary Evacuation Routes
- Secondary Evacuation Routes
- Future Secondary Evacuation Routes
- # Number of Existing Travel Lanes (2022)



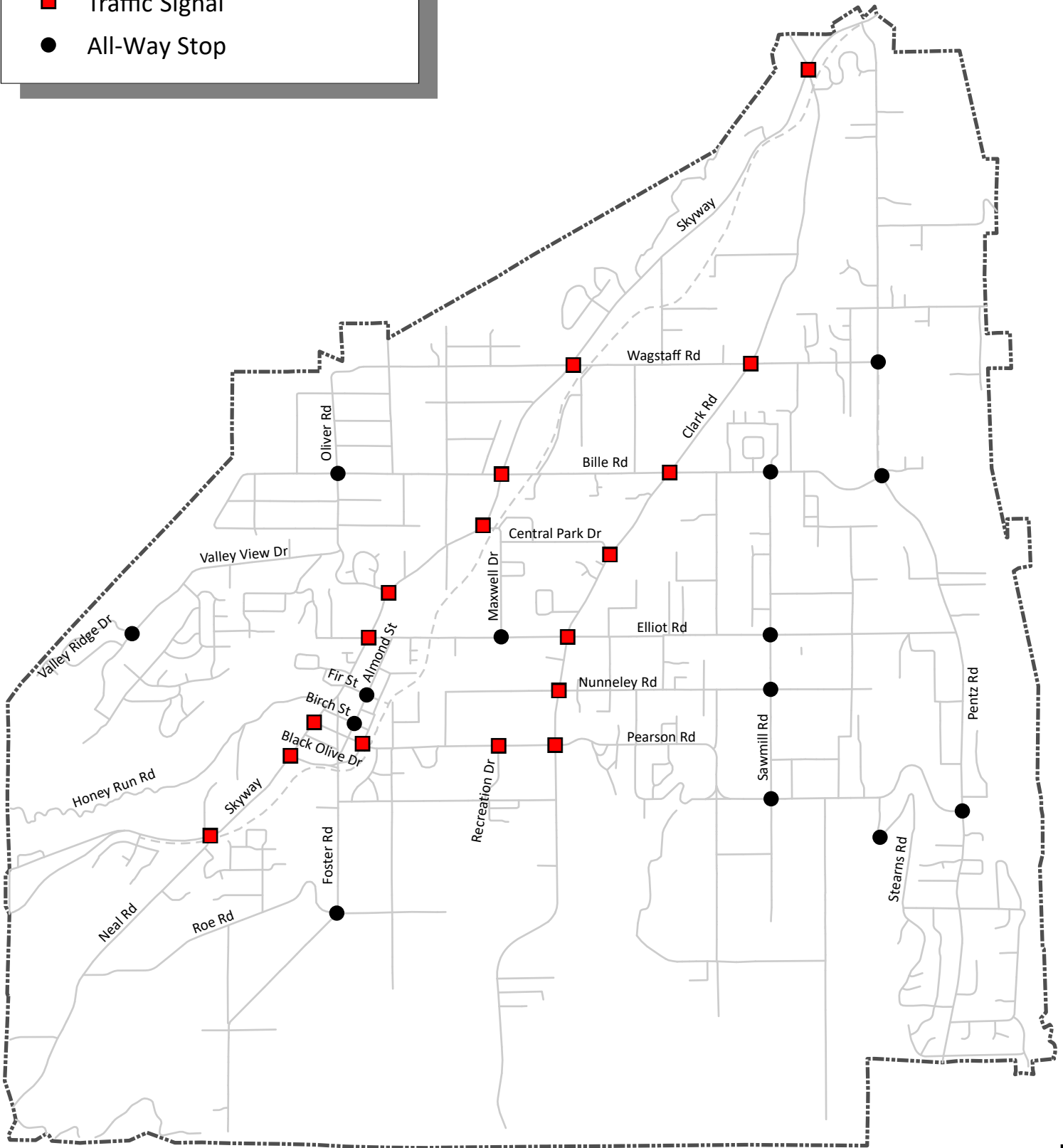
 Town of Paradise

*Estimated 2023 section will be restriped to a four-lane cross section

Figure 2

Legend

- Traffic Signal
- All-Way Stop




 Town of Paradise



Figure 3

Existing Intersection Controls
Evacuation Technical Memorandum for
Town of Paradise Transportation Master Plan

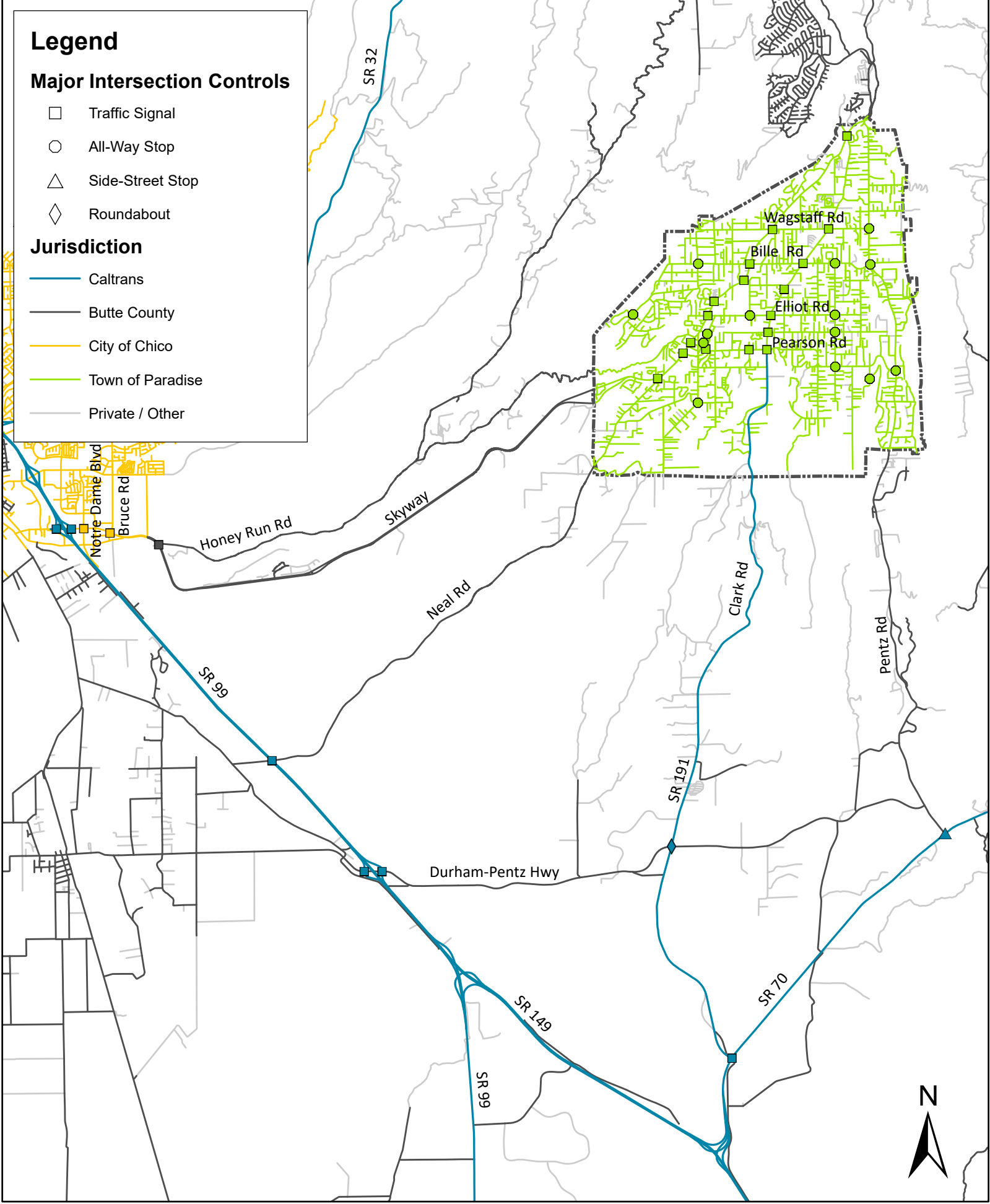
Legend

Major Intersection Controls

- Traffic Signal
- All-Way Stop
- △ Side-Street Stop
- ◇ Roundabout

Jurisdiction

- Caltrans
- Butte County
- City of Chico
- Town of Paradise
- Private / Other




 Town of Paradise

Figure 4

Appendix A

Corrective Action Plan Matrix



CATEGORY	OBJECTIVE
Evacuation	Address areas where evacuation traffic typically bottlenecks and determine a plan of action for proactively preventing traffic congestion in these areas. Incorporate these findings and processes into the Evacuation Plan.
Evacuation	Document evacuation successes and incorporate into plans, procedures, training, exercises and education programs.
Evacuation	Within the updated Evacuation Plan, the Town should include multi-disciplinary mechanisms and resources for ensuring the provision of emergency services to areas under evacuation including emergency clearance of evacuation and emergency response routes.
Evacuation	The Town of Paradise should continue to participate in efforts to convene Operational Area and regional stakeholders to develop an Operational Area and regional Evacuation Plan. Stakeholders should include the County, Operational Area stakeholders, Cal OES, Mutual Aid Coordinators and contiguous Operational Areas, local first responder agencies, relevant non-profit organizations, and California Highway Patrol.
Evacuation	Within the preparedness campaign, ensure specific action is taken to engage persons with DAFN as to better situate them to evacuate successfully.
Evacuation	Work with Butte County and Operational Area stakeholders to ensure that the zone evacuation system is understood and standardized throughout the Operational Area.
Evacuation	Facilitate a discussion with Butte County departments regarding communication pathways for shelter updates between the County EOC and affected towns and cities.
Evacuation / Tech / Info - Notification External	The Town of Paradise should initiate a meeting with the BCSO to develop an effective strategy for coordinating mass notification efforts facing the Town of Paradise. This coordinated process should eliminate the potential for duplication of effort and should promote the health and safety of Paradise residents. Further, the process should be documented and reflected in all relevant policies, plans, and procedural documents at the Town and the County levels.
Evacuation / Tech / Info - Notification External	Town of Paradise leadership should coordinate a meeting with Paradise Police Department and CAL FIRE leadership to review and discuss thresholds for issuing evacuation orders on behalf of the Town. Special attention should be given to the necessary thresholds and processes for determining the need for a Town-wide evacuation. Processes identified and agreed upon should be documented and incorporated in all relevant policies and plans.
RFP / Evacuation	Continue to cultivate a strong working relationship with Butte County and continue to improve disaster response coordination through joint Operational Area and Region planning, trainings, and exercises for region-wide disasters.
RFP / Evacuation	Engage County Office of Emergency Management (OEM) and Operational Area stakeholders in developing joint procedures and mechanisms to support and further facilitate inter-EOC communications and coordination. Regularly exercise these procedures.

Appendix B

Traffic Control Plan Recommendations



2015 Town of Paradise Evacuation Traffic Control Plan Recommendations

Purpose

The current *Traffic Control Plan* describes needs for each individual zone, useful for smaller evacuation needs, such as a police event, gas leak, etc. The plan describes goals and objectives, and a description of the actions, staffing and resources for key intersections in each zone. The plan is a resource guide but does not contain specifics such as available resources, equipment locations or figures showing layouts of each intersection and equipment placement.

This appendix describes zone scenarios for a larger scale evacuation, which may require multiple or all zones. For planning purposes, partial evacuation scenarios include approximately one third of the zones in the Town. It is noted that shadow evacuations are likely to occur in the event of partial zones evacuated. Shadow evacuations occur when residents who are not located in the zones called for evacuation leave anyway out of caution.

The appendix discusses various scenarios, and the likely roadway segments or intersections that would be most in need of manual control or special control. These are general guidelines; each scenario will have different requirements as evacuation needs are dependent on many variables. This section does not replace the zone-by-zone recommendations in the *2015 Plan*, but provides practical guidance if resources are limited in an evacuation.

Additionally, the *Skyway Flow Plan* was developed to serve as a general reference guide for managing evacuation flows on Skyway beyond Paradise to State Route (SR) 99 during a full evacuation. The goal of the *Skyway Flow Plan* is to optimize evacuation traffic flow on Skyway and minimize evacuation related traffic congestion at the traffic signals along Skyway, particularly near SR-99.

Partial Evacuation Scenarios

Primary routes, secondary routes, potential intersection needs, and key considerations were developed for the following scenarios, corresponding to zones in the plan:

- ▶ Scenario 1: West Zones (1, 4, 9)
- ▶ Scenario 2: Central Zones – N/S (2, 5, 6, 10, 11, 12)
- ▶ Scenario 3: East Zones (3, 7, 8, 13, 14)
- ▶ Scenario 4: North Zones (1, 2, 3)
- ▶ Scenario 5: Central Zones – E/W (4, 5, 6, 7, 8, 9)
- ▶ Scenario 6: South Zones (10, 11, 12, 13, 14)
- ▶ Scenario 7: All Zones 1-14

General Considerations

- ▶ This section describes scenarios evacuating to the south. Intersections further south along primary evacuation routes may be most in need of resources. In the case of an evacuation to the north, Skyway/Clark Road and other key northern intersections may need resources.
- ▶ Skyway is the primary evacuation routes in most scenarios. If Skyway becomes unusable, Clark Road would likely be the primary evacuation route.
- ▶ Contraflow may be necessary on Skyway or other primary routes. On Skyway, contraflow may be needed between Elliott Road and Pearson Road prior to the Skyway widening or starting at Neal Road. The *Skyway Flow Plan* details contraflow considerations on Skyway.
- ▶ The *Evacuation Technical Memorandum* for the *Paradise Transportation Master Plan (TMP)* discusses both permanent improvements and temporary modifications and the benefit to evacuation.

Scenario 1: West Zones (1, 4, 9) Evacuation

- ▶ Primary Evacuation Route: Skyway
- ▶ Secondary Evacuation Routes: Clark Road, Neal Road, Wagstaff Road, Bille Road, Elliott Road, Pearson Road
- ▶ Potential Intersection Needs:
 - » Skyway/Pearson Road – evacuation signal timing plan or manual control
 - » Skyway/Elliott Road – evacuation signal timing plan or manual control
 - » Skyway/Bille Road – evacuation signal timing plan or manual control
 - » Skyway/Wagstaff Road – evacuation signal timing plan or manual control

Scenario 2: Central Zones (2, 5, 6, 10, 11, 12) Evacuation

- ▶ Primary Evacuation Route: Skyway, Clark Road
- ▶ Secondary Evacuation Routes: Pentz Road, Neal Road, Wagstaff Road, Bille Road, Elliott Road, Pearson Road
- ▶ Potential Intersection Needs: Most traffic is expected to use Skyway, less on Clark Road. Intersections further south will likely need more resources to manage side-street volumes moving onto main evacuation routes as southbound volumes increase.
 - » Skyway/Pearson Road – evacuation signal timing plan or manual control
 - » Skyway/Elliott Road – evacuation signal timing plan or manual control
 - » Clark Road/Pearson Road – evacuation signal timing plan or manual control
 - » Clark Road/Elliott Road – evacuation signal timing plan or manual control

Scenario 3: East Zones (3, 7, 8, 13, 14) Evacuation

- ▶ Primary Evacuation Route: Clark Road, Pentz Road
- ▶ Secondary Evacuation Routes: Skyway, Sawmill Road, Pearson Road
- ▶ Potential Intersection Needs:

- » Pentz Road/Bille Road – manual control
- » Pentz Road/Pearson Road – manual control

Scenario 4: North Zones (1, 2, 3)

- ▶ Primary Evacuation Route: Skyway
- ▶ Secondary Evacuation Routes: Clark Road, Pentz Road, Wagstaff Road, Bille Road
- ▶ Potential Intersection Needs
 - » Skyway/Wagstaff Road – evacuation signal timing plan or manual control
 - » Skyway/Bille Road – evacuation signal timing plan or manual control
 - » Clark Road/Wagstaff Road – evacuation signal timing plan or manual control
 - » Clark Road/Bille Road – evacuation signal timing plan or manual control

Scenario 5: Central Zones – E/W (4, 5, 6, 7, 8, 9)

- ▶ Primary Evacuation Route: Skyway
- ▶ Secondary Evacuation Routes: Clark Road, Pentz Road, Bille Road, Elliott Road, Pearson Road
- ▶ Potential Intersection Needs
 - » Skyway/Elliott Road – evacuation signal timing plan or manual control
 - » Skyway/Pearson Road – evacuation signal timing plan or manual control
 - » Clark Road/Elliott Road – evacuation signal timing plan or manual control
 - » Clark Road/Pearson Road – evacuation signal timing plan or manual control
 - » Clark Road/Bille Road – evacuation signal timing plan or manual control

Scenario 6: South Zones (10, 11, 12, 13, 14)

- ▶ Primary Evacuation Route: Neal Road, Clark Road, Pentz Road
- ▶ Secondary Evacuation Routes: Skyway, Buschmann Road, Pearson Road
- ▶ Potential Intersection Needs
 - » Skyway/Neal Road – evacuation signal timing plan or manual control
 - » Pearson Road/Pentz Road - manual control

Scenario 7: All Zones 1-14

- ▶ Primary Evacuation Route: Skyway, Neal Road, Clark Road, Pentz Road
- ▶ Secondary Evacuation Routes: Wagstaff Road, Bille Road, Elliott Road, Pearson Road
- ▶ Potential Intersection Needs: Most traffic is expected to use Skyway. Contraflow and intersection resources should be focused on Skyway unless this route is unusable. Intersections further south will likely need more resources to manage side-street volumes moving onto main evacuation routes as southbound volumes increase.
- ▶ See *Skyway Flow Plan* for additional details.
- ▶ Potential Intersection Needs

- » Skyway/Neal Road – evacuation signal timing plan or manual control
- » Skyway/Pearson Road – evacuation signal timing plan or manual control
- » Skyway/Elliott Road – evacuation signal timing plan or manual control
- » Clark Road/Pearson Road – evacuation signal timing plan or manual control
- » Clark Road/Elliott Road – evacuation signal timing plan or manual control
- » Pentz Road/Pearson Road – manual control
- » Others as needed

Recommendations

- ▶ The *Traffic Control Strategy* should include verbiage to ensure that routes are available for emergency responders to access the evacuation area.
- ▶ The *Traffic Control Strategy* should include verbiage that Assembly Points should be available off the ridge in a location such that ingress will not hinder flow on key evacuation routes.
- ▶ The plan be updated as new evacuation zones are established.
- ▶ The plan should be updated to reflect what resources are available, where the resources are located and a flexible staffing and communication plan that can be implemented and updated immediately during an event.

Appendix C


Roadway Vertical Elements Policy



Town of Paradise Vertical Elements in the Roadway Policy

Policy

Vertical elements located within or that extend into the roadway are discouraged in future public works projects. Examples of vertical elements include, but are not limited to:

<p>Bulb-Outs (aka Curb Extensions)</p>	<p>Bulb-outs are curb or sidewalk extensions that reduce the effective width of the roadway for traffic calming or pedestrian/bicyclist accommodations. Bulb outs can be implemented on roadways or at intersections.</p>	
<p>Raised Center Islands</p>	<p>Raised center islands, or medians, are used to physically separate opposing traffic movements. Raised islands can also be used as a mid-block pedestrian refuge.</p>	
<p>Splitter Islands</p>	<p>Splitter islands are often channelizing islands on the minor approach of an intersection to prevent or separate movements.</p>	

The policy particularly pertains to arterial, collector and other roadways used as evacuation routes. These vertical elements are typically used to promote everyday safety and traffic calming but may be an impediment during an evacuation and prevent the entire roadway width from being used by evacuating vehicles or emergency response personnel.

Purpose

The need for this policy arose after the 2018 Camp Fire evacuation. Evacuating traffic was reportedly impeded by vertical elements in the roadway. In particular, the mid-block pedestrian crosswalk refuge center island on Skyway was identified as a hinderance during the 2018 Camp Fire evacuation since drivers were not able to use the full pavement width (i.e., the center turn lane as an additional evacuation lane). Public outreach efforts conducted during the Transportation Master Plan (*TMP*) process confirmed the public preference that roadways generally be clear of vertical elements. The everyday safety benefit of these elements was weighed against the potential evacuation implications. A recommendation was

brought forward to the Town Council on September 14, 2021, to remove the Skyway mid-block crossing at Town Hall and to establish a policy discouraging the use of vertical elements in future roadway projects.

The agenda item stated:

***Item 6b:** "Direct staff to include a policy in the Transportation Master Plan to discourage vertical elements in future public works projects such as bulb-outs, center islands and splitter islands on emergency access roadways."*

Exceptions

Exceptions may be granted if it is determined that the benefits of a particular vertical element outweigh the potential risks on a case-by-case basis. The policy is particularly geared toward arterial, collector and other roadways used as evacuation routes. Vertical elements may be considered at local roads as applicable.



Raised Mid-block Pedestrian Island outside of Paradise Town Hall was removed in 2021

Appendix D

Project Descriptions



Evacuation Route Signage Project

Project Limits: Evacuation Routes Within Town Limits

Description:

The project is deployment of additional signage along major evacuation routes. These signs are useful in non-emergency times to inform motorists of the major routes and other key information, which may save time in an emergency. During an evacuation, the signs guide motorists to the evacuation routes and assembly/shelter locations and provide the radio station for additional information.

Evacuation route signs would be placed along the major north-south major evacuation routes (Skyway, Neal Road, Clark Road and Pentz Road) spaced appropriately or where major east-west routes intersect. Signs should also be placed along key east-west routes directing motorist to the evacuation routes.

Additional signage would be used to direct motorist to Assembly Points, or other key facilities. Signs would include the plaque with the radio station information. Examples of evacuation signs are shown below:



EM-1



EM-7a

The project cost includes development of the formal evacuation signage plan and approximately 50 signs with posts and hardware.

Estimated Cost: \$ 100,000

Changeable Message Signs (Trailer Mounted)

Project Limits: For Use at Various Locations within Town Limits

Description:

The project is to provide approximately 10 mobile changeable message signs to be deployed along evacuation routes and at key intersections in the Town of Paradise during emergency events. The signs are intended to be equipped with remote programming/controls, noting that wireless communications could potentially be down during an emergency and manual programming would then be required. Some signs may be used regularly or during pending events to relay important information.

The project cost includes ten (10) mobile, trailer mounted signs at approximately \$10,000 each.

Estimated Cost: \$100,000

Traffic Management Center (Town of Paradise)

Project Limits: Operations Within Town Limits

Description:

The project would construct a Traffic Management Center (TMC) for the Town of Paradise. The TMC will be the central hub for Town of Paradise control of the roadway network during an emergency, particularly the signalized intersections (approximately 16 signals). Within the TMC, trained personnel will be able to monitor traffic signals in-real time and manage the signals and roadway system by:

- Viewing the intersections via video detection cameras or other surveillance cameras on a closed-circuit television (CCTV)
- Remotely changing traffic signal timings and implementing emergency timing plans
- Viewing sections of roadway through 360-degree surveillance or pan/tilt/zoom cameras on a CCTV. This can be used to detect stalled vehicles or other hazards hindering flow and to deploy assistance to remove obstructions.
- Changing dynamic, or variable, message signs.

TMC personnel will have the ability to share information and coordinate with state and local authorities during emergencies. If possible, the TMC building should be within an emergency response facility such as law enforcement, fire, or EMS to facilitate communication and improve response.

The general components of a TMC system are a dedicated room or small building, computers, large screens, communications infrastructure, and field devices (cameras). Traffic signals must be outfitted with compatible equipment and interconnected for communications (separate project).

Cost of implementation could vary greatly depending on the building facilities and existing equipment at the intersections, but would generally include the cost for a building/dedicated room, computers, large screens, control software, signal equipment upgrades at each intersection, additional cameras along roadway segments and at key intersections, and communications for all field devices to the TMC.

Estimated Cost Range: \$ 1,000,000 to \$ 5,000,000

Traffic Signal Interconnect (Town of Paradise)

Project Limits: Town Owned Traffic Signals

Description:

The project would provide signal interconnect to all signalized intersections in the Town of Paradise (16 signals) connecting to the proposed Traffic Management Center (TMC). The purpose is to provide remote monitoring of intersections and changing of signal timings in real-time during an evacuation or other emergency events to reduce evacuation times. Interconnect should be underground and hardened to protect against fire threat.

Depending on the equipment at each signal, each controller and cabinet will receive upgraded equipment as necessary. Conduit and interconnect cable will be installed from each signal location to the TMC.

Estimated Cost: \$ 10,500,000

Appendix E

Multiagency Task Force Materials



AGENDA

Paradise Transportation Master Plan

Roadmap to Infrastructure Recovery

Date: June 2, 2021
Time: 10:00 am
Location: Video Conference via Microsoft Teams
Meeting Length: 90 minutes
Purpose of Meeting: Multi-Agency Evacuation Transportation Planning Task Force

Invited Agencies

Butte County (BC)	California Highway Patrol	Mark Thomas
BC Information Systems	Caltrans Maintenance & Ops	Oroville (City of)
BC Development Services	Chico (City of)	Oroville Fire Department
BS Sheriff's Department	Chico Police Department	Oroville Police Department
BC Social Services	Gridley Police Department	Paradise (Town of)
Cal Fire	Headway Transportation	Paradise Police Department
Cal OES	KSN inc.	State Parks Division

Abstract

During the Camp Fire emergency in 2018, evacuation was impeded by pinch points (roadway/intersection congestion) on along major routes exiting the Town of Paradise (and ridge communities) at State Route 99 (SR 99). It is imperative that future evacuation efforts be coordinated with multi-disciplinary agency partners to facilitate traffic flow past Town limits off the ridge, into surrounding communities, and out of harm's way. It is critical to keep all roads and intersections along evacuation routes flowing to bring Paradise and County residents to safety. Achieving this goal will require assistance, defined actions, and assigned responsibilities for implementation by partner agencies.

Purpose and Goals

The purpose of the Task Force will be to develop agreements and a plan among agencies for emergency traffic control at intersections and along roadways outside the Town of Paradise for the full length needed for evacuation. The goals are to identify resources, personnel, a plan and a communication structure to implement during an emergency. The plan should include a Memorandum of Understanding or Agreement (MOU/MOA). A preliminary list of action items include:

1. Identify the stakeholders
2. Identify the roadway limits and key intersections
3. Identify the resource needs (ie, emergency timing plans and/or manned control at various intersections)
4. Identify a communication plan
5. Prepare an MOU formalizing the agreement

6. Incorporate new actions and protocol into the evacuation plan

Agenda Topics:

1. **Welcome & Introductions**
 - a. Transportation Master Plan (TMP) Project Team
 - b. Multiagency Task Force Team
 - c. Other agencies/ personnel to include?
2. **Purpose and Goals of the Multiagency Task Force**
 - a. Traffic Evacuation Engineering Needs & Recommendations
 - b. Traffic Evacuation Communication Needs & Solutions
3. **Potential Solutions and Agreements**
4. **Initial Discussion on Communication structure**
5. **Scenarios and threats other than fire (i.e. Dam breach)**
6. **Proposed Future Meetings (frequency of 4-6 weeks)**
 - a. Meetings 1-3: Focused on Paradise/Ridge Traffic Evacuation
 - b. Meetings 4-6: Focused on Butte County Regional Needs/Solutions
7. **Review Action Items**
8. **Next Steps**



AGENDA

Paradise Transportation Master Plan

Multi-Agency Evacuation Transportation Planning Task Force Meeting #2

Date: September 23, 2021
Time: 10:00 am – 11:30 a.m.
Location: Video Conference via Microsoft Teams
Purpose of Meeting: Multi-Agency Evacuation Transportation Planning

Invited Agencies

Butte County (BC)	California Highway Patrol	Mark Thomas
BC Information Systems	Caltrans Maintenance & Ops	Oroville (City of)
BC Development Services	Chico (City of)	Oroville Fire Department
BC Sheriff's Department	Chico Police Department	Oroville Police Department
BC Social Services	Gridley Police Department	Paradise (Town of)
Cal Fire	Headway Transportation	Paradise Police Department
Cal OES	KSN inc.	State Parks Division

Purpose and Goals

The purpose of the Task Force will be to develop agreements and a plan among agencies for emergency traffic control at intersections and along roadways outside the Town of Paradise as needed for future evacuation events. This meeting will build upon the initial introductory meeting and work towards multiagency agreements and definition of responsibilities. Specific meeting goals are to:

1. Follow up on Action Items from Meeting #1
2. Refine list of needed actions or agreements
3. Discuss examples and sample verbiage

Agenda Topics:

1. Welcome & Introductions

- a. Introduction of new attendees
- b. Recap of Overall Goals

2. Areas for Coordinated Actions

- a. For each, discuss status, needed actions, champions, next steps
- b. **Interim/Short Term Priorities**
 - i. Include northern routes (Upper Ridge) in evacuation planning
 - ii. Coordinate Caltrans/CHP/Chico control for signals on Skyway at Honey Run, Notre Dame, Bruce and SR-99.
 1. Select a single agency to manage traffic signals
 2. Provide flexibility for partner agency to manage traffic signals upon first



- arrival or if delegated.
3. Potential Agreement (designed for flexible implementation):
 - a. Chico PD to be present at/man the signals on lower Skyway near SR-99 (with flexibility for Chico traffic staff to fill this role as well)
 - b. CHP control traffic on Skyway between Paradise and lower Skyway
 - c. Paradise PD manage traffic within the Town.
 - iii. Provide interconnect for remote traffic signal management by City of Chico on Bruce Road and 20th Street.
 - iv. Inform residents before and during an evacuation on key messages such as the following:
 1. Adhere to CHP instructions
 2. Keep moving to prevent congestion, particularly at gas stations. Caltrans has gasoline and can fuel as needed.
 3. Move completely out of harm's way and do not re-enter the area until advised. Keep moving even if it is not the direction you prefer to be headed.
 - v. Review and update contraflow plans for implementation at appropriate triggers for traffic evacuation.
 1. Managing communication, staffing and resources at start/end points.
 2. Designing flexible contraflow that can be implemented easily where and when needed.
 3. Ensure the public is aware of contraflow locations and when to utilize contraflow activity based on evacuation need.
 - vi. Ensure that existing agreements (example: between Caltrans EOC and CHP) are integrated into the plan and other agencies are added as needed
 - vii. Create a plan/communication structure to:
 1. Reduce (or eliminate) time for police to request public works personnel to manage traffic signal intersection.
 2. Utilize Caltrans or other local agency public works staff for intersection management as much as possible for law enforcement to focus on other public safety priorities
 3. Provide flexibility for pre-designated partner agency to manage specific traffic signals upon first arrival or if delegated (to alleviate the issue of staff not being able to reach an intersection quickly.)
 4. Utilize the plan that currently exists for intersections and what is needed and expands to different agencies so that intersections can be assigned as needed and by who is closest
 - viii. Facilitate advanced discussion with mobile applications focused on mapping (Waze, Google Maps, etc.) to help provide guidance during an evacuation.
 - ix. Maintain one consistent public facing zone map with clarity on responsible party that manages and updates the map.
- c. **Long-Term Needs**
- i. Future SR-99/Southgate interchange
 1. Status



2. Agreements or support to expedite the project and secure funding
 - ii. ITS system (Chico, Paradise, Caltrans)
 1. Status
 2. Funding/ grant opportunities
 3. Champion
 4. Support/resources
3. Other priorities
 - a. Open discussion for other priorities not previously identified
4. Review Action Items
5. Next Steps and Meeting



AGENDA

Paradise Transportation Master Plan

Multi-Agency Evacuation Transportation Planning Task Force Meeting #3

Date: December 15, 2021
Time: 10:00 am
Location: Video Conference via Microsoft Teams
Meeting Length: 90 minutes
Purpose of Meeting: Multi-Agency Evacuation Transportation Planning Task Force Meeting #3

Invited Agencies

Butte County (BC)	California Highway Patrol	Mark Thomas
BC Information Systems	Caltrans Maintenance & Ops	Oroville (City of)
BC Development Services	Chico (City of)	Oroville Fire Department
BS Sheriff's Department	Chico Police Department	Oroville Police Department
BC Social Services	Gridley Police Department	Paradise (Town of)
Cal Fire	Headway Transportation	Paradise Police Department
Cal OES	KSN inc.	State Parks Division

Purpose and Goals

The purpose of the Task Force is to develop agreements and a plan among agencies for emergency traffic control at intersections and along roadways outside the Town of Paradise for the full length needed for evacuation. The goal of this meeting is to establish a template, refine actions/outcomes and prepare draft verbiage for the various multiagency agreements. The agreements were developed from the matrix created in the previous multiagency meetings.

Agenda Topics:

1. Welcome & Introductions
 - a. Agency Roll Call
 - b. Recap of overall goals and Meeting #2
2. Review Draft Agreements – interactive discussion of the draft verbiage – purpose and need, partner agencies, initiation, agreement items, etc. Specific items for clarification/discussion are highlighted.
3. Review Action Items
4. Next Steps
5. Future Meetings

Attachments: Draft Agreements



Town of Paradise
Public Works Department
5555 Skyway
Paradise, CA 95969
(530) 872-6291

Paradise Transportation Master Plan

Multi-Agency Evacuation Transportation Planning Task Force Meeting #4 – Hybrid Virtual/Field Walkthrough

Date:	February 23, 2022
Time:	9:00-11:00 am
Location:	Video Conference via Microsoft Teams / Field along Skyway Corridor
Meeting Length:	2.5 Hours
Active Participants:	Paradise PD/PW, Chico PD/PW, BCSO, BCPW, CHP and Caltrans
Passive Participants:	Remaining Task Force Entities
Purpose of Meeting:	Hybrid training for all-at-once evacuation via Skyway: On-site Field exercise combined with Microsoft Teams to simulate Emergency Operations Center

Background / Objectives

This is a training for a comprehensive regional evacuation coordination of the Town of Paradise and nearby communities (Paradise Ridge). The goal is to practice hypothetical evacuation scenarios as closely as possible to an actual event including communication between the field personnel and the Emergency Operations Center (EOC). There will be no actual field changes made by any participants which would affect the public.

The goals are to train staff and identify areas that need resources, further planning, or agreements among agencies. The exercises will be used to create the “Skyway Maximized Flow Plan”, a reference guide for a worst-case type of evacuation – full evacuation of Paradise and potentially the Upper Ridge with little to no advance notice. Specific goals are to optimize traffic flow on Skyway and minimize congestion at traffic signals along Skyway near State Route 99 (SR-99), Notre Dame, and Bruce Road while considering implementation of contra-flow between Chico and Paradise.

Active Participant Expectations

Each active participant entity is expected to have at least two individuals representing the jurisdiction:

- (1) Individual online using the Teams [link](#) who would normally function in an Incident Command management role, and
- (2) Individual in the field at their respective Jurisdictional Spotlight location and time shown in the agenda on the next page. Individuals may adjourn following their respective agenda item clearance.

Online participants will engage one another and talk through objectives, needs and concerns (prepared in advance). Field participants will be asked to provide a ground-view, open signal cabinets (if applicable) and dialogue any questions from virtual participants. Please note that each Jurisdictional Spotlight will be provided with a Town of Paradise representative solely dedicated to using a phone/tablet to bring the field representative at each location into the view of the virtual teams meeting.

Walkthrough Attendee List (Subject to Change)

Agency/Jurisdiction	Name	Field or Virtual	Role
Town of Paradise	Eric Reinbold	Virtual	Incident Commander
	Cameron Kovacs	Virtual	Agency Lead LE
	Marc Mattox	Virtual	Agency Lead PW
	Mike Houdek	Field	Neal Spotlight
	Kevin Peppas	Field	Field Tech Support
	Paul Martin (MT)	Field	Field Tech Support
	Lauren Picou (Headway)	Virtual	Facilitator
Butte County	Stephen Collins	Virtual	Agency Lead LE
	Josh Pack	Virtual	Agency Lead PW
	Josh Jimmerfield	Virtual	Support
	TBD	Field	Honey Run Spotlight
Chico	Billy Aldridge	Virtual	Agency Lead LE
	Skyler Lipski	Virtual	Agency Lead PW
	TBD	Field	Notre Dame Spotlight
CHP	Eric Walker	Virtual	Agency Lead LE
	Dan Canalia	TBD	Agency Lead LE
	TBD	Field	Rocky Bluff Spotlight
Caltrans	Patrick Bishop	TBD	TBD
	Eric Cummings	TBD	Agency Lead
	TBD	Field	NB On/Off Ramp Spotlight

Advance Prompts

To facilitate a useful discussion through the exercise and concurrent development of the Skyway Maximized Flow Evacuation Plan, please consider the following questions:

1. What are your jurisdiction's prioritized objectives for this evacuation scenario?
2. What resources does your jurisdiction need to accomplish your objectives?
3. How much time does your jurisdiction need to accomplish your objectives?
4. What are your safety concerns/unintended consequences we need to be aware of?
5. Does your jurisdiction have tools/resources which could be helpful for others?
6. Any other items pertinent to this discussion to your jurisdiction?

Please prepare responses and return to the Town of Paradise no later than **Wednesday February 16**. Please be prepared to discuss during your respective jurisdiction spotlight.

Day of Exercise Agenda

- | | |
|----------|--|
| 9:00 AM | Meeting Opens / Quick Attendance / Walkthrough Objectives |
| 9:05 AM | Paradise PD / Incident Command is informed of developing scenario, requiring all-at-once evacuation of the Town of Paradise and Upper Ridge using Skyway only. Request for signal optimization only. |
| 9:10 AM | Jurisdiction Spotlight #1 – Caltrans @ Skyway/NB On-Off Ramp |
| 9:25 AM | Jurisdiction Spotlight #2 – City of Chico @ Skyway/Notre Dame |
| 9:40 AM | Jurisdiction Spotlight #3 – Butte County @ Skyway/Honey Run |
| 9:55 AM | Incident Command is informed of disabled truck and travel trailer is blocking one lane of westbound Skyway east of Rocky Bluff Drive . Request for contraflow between Paradise and Chico at a minimum. |
| 9:55 AM | Virtual contraflow discussion and tour |
| 10:10 AM | Jurisdiction Spotlight #4 – CHP @ Skyway/Rocky Bluff Drive |
| 10:25 AM | Jurisdiction Spotlight #5 – Town of Paradise @ Skyway/Neal |
| 10:35 AM | Virtual Spotlight of remaining Skyway Corridor to Magalia Dam |
| 10:50 AM | Debrief/ Open Discussion (as time allows) <ul style="list-style-type: none">- Strengths, Weaknesses & Opportunities- What are our communications strategies between jurisdictions?- Can we prepare an information flow diagram based on today's experience?- Spontaneous contraflows initiated by the public- Which decisions can be made now vs in real-time?- Other intersections outside the Town (Neal/ SR 99...) |
| 11:30 AM | Adjourn |



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Paradise Transportation Master Plan

Multi-Agency Evacuation Transportation Planning Task Force Meeting #4 – Hybrid Virtual/Field Walkthrough

Date:	February 23, 2022
Time:	9:00-11:00 am
Location:	Video Conference via Microsoft Teams / Field along Skyway Corridor
Meeting Length:	2.5 Hours
Active Participants:	Paradise PD/PW, Chico PD/PW, BCSO, BCPW, CHP and Caltrans
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Purpose of Meeting:	Hybrid training for all-at-once evacuation via Skyway: On-site Field exercise combined with Microsoft Teams to simulate Emergency Operations Center

Background / Objectives

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The goals are to train staff and identify areas that need resources, further planning, or agreements among agencies. The exercises will be used to create the “Skyway Maximized Flow Plan”, a reference guide for a worst-case type of evacuation – full evacuation of Paradise and potentially the Upper Ridge with little to no advance notice. Specific goals are to optimize traffic flow on Skyway and minimize congestion at traffic signals along Skyway near State Route 99 (SR-99), Notre Dame, and Bruce Road while considering implementation of contra-flow between Chico and Paradise.

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	Dan Canalia	TBD	Agency Lead LE
	TBD	Field	Rocky Bluff Spotlight
Caltrans	Patrick Bishop	TBD	TBD
	Eric Cummings	TBD	Agency Lead
	TBD	Field	NB On/Off Ramp Spotlight

Advance Prompts

To facilitate a useful discussion through the exercise and concurrent development of the Skyway Maximized Flow Evacuation Plan, please consider the following questions:

1. What are your jurisdiction's prioritized objectives for this evacuation scenario?
2. What resources does your jurisdiction need to accomplish your objectives?
3. How much time does your jurisdiction need to accomplish your objectives?
4. What are your safety concerns/unintended consequences we need to be aware of?
5. Does your jurisdiction have tools/resources which could be helpful for others?
6. Any other items pertinent to this discussion to your jurisdiction?

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| 9:00 AM | Meeting Opens / Quick Attendance / Walkthrough Objectives |
| 9:05 AM | Paradise PD / Incident Command is informed of developing scenario, requiring all-at-once evacuation of the Town of Paradise and Upper Ridge using Skyway only. Request for signal optimization only. |
| 9:10 AM | Jurisdiction Spotlight #1 – Caltrans @ Skyway/NB On-Off Ramp |
| 9:25 AM | Jurisdiction Spotlight #2 – City of Chico @ Skyway/Notre Dame |
| 9:40 AM | Jurisdiction Spotlight #3 – Butte County @ Skyway/Honey Run |
| 9:55 AM | Incident Command is informed of disabled truck and travel trailer is blocking one lane of westbound Skyway east of Rocky Bluff Drive . Request for contraflow between Paradise and Chico at a minimum. |
| 9:55 AM | Virtual contraflow discussion and tour |
| 10:10 AM | Jurisdiction Spotlight #4 – CHP @ Skyway/Rocky Bluff Drive |
| 10:25 AM | Jurisdiction Spotlight #5 – Town of Paradise @ Skyway/Neal |
| 10:35 AM | Virtual Spotlight of remaining Skyway Corridor to Magalia Dam |
| 10:50 AM | Debrief/ Open Discussion (as time allows) <ul style="list-style-type: none">- Strengths, Weaknesses & Opportunities- What are our communications strategies between jurisdictions?- Can we prepare an information flow diagram based on today's experience?- Spontaneous contraflows initiated by the public- Which decisions can be made now vs in real-time?- Other intersections outside the Town (Neal/ SR 99...) |
| 11:30 AM | Adjourn |

Multi-Agency Evacuation Transportation Planning Task Force
Town of Paradise TMP
Evacuation Agreement Strategy Table



Goals & Objectives

The goal of the Task Force will be to develop agreements and a plan among agencies for emergency traffic control at intersections and along roadways outside the Town of Paradise as needed for future evacuation events.

#	Need	Target Output	Responsible Agency	Agency Champions	Partner Agencies	Actions
Short Term						
1	Coordinate Caltrans/CHP/Chico control for 4 signals on Skyway at Honey Run, Notre Dame, Bruce-Dominic, SR-99 NB Ramps, SB-99 SB Ramps.	An agreement document that intersection control, specifically: 1. Delegate authority to Caltrans to manage 4 traffic signals on Skyway at SR 99, Notre Dame, Bruce-Dominic, and Honey Run 2. Provide flexibility for partner agency staff to manage traffic signals upon first arrival or if delegated during an event. 3. Potential Agreement (designed for flexible implementation): a. Chico PD to staff the signals on lower Skyway near SR-99 (with flexibility for City of Chico traffic staff to fill this role as well) b. CHP control traffic on Skyway between Paradise and lower Skyway c. Paradise PD manage traffic within the Town.	Caltrans		Caltrans Chico PD Paradise PD Town of Paradise CHP Chico Traffic Eng	1. Draft Agreement OR equivalent direction 2. Distribute Agreement to all parties
2	A published plan or formal agreement to expedite resources and personnel to evacuation intersections quickly and efficiently	A Plan and communication structure to: 1. Reduce (or eliminate) time for police to request public works personnel to manage traffic signal intersection. 2. Utilize Caltrans or other local agency public works staff for intersection management as much as possible for law enforcement to focus on other public safety priorities 3. Provide flexibility for pre-designated partner agency to manage specific traffic signals upon first arrival or if delegated (to alleviate the issue of staff not being able to reach an intersection quickly.) 4. Utilize the plan that currently exists for intersections and what is needed and expands to different agencies so that intersections can be assigned as needed and by who is closest	Paradise Public Works	Marc Mattox	Butte County, BC Sheriffs, Cal Fire, Cal OES, CHP, Caltrans, Chico Police, Gridley Police, Oroville Fire, Oroville Police, Paradise Police, Chico Traffic Eng	1. Draft Plan 2. Distribute Plan to all parties 3. Routine Follow Up
3	Further explore northern routes (Upper Ridge) in evacuation planning -- ie additional capacity and signage (including wayfinding signs to SR-32)	Documented evacuation recommendations for Magalia and northern routes serving the entire ridge.	Butte County	Joshua Pack	Town of Paradise, Paradise, PD, Chico PD	1. Define specific routes/intersections and review the need for permanent or temporary improvements 2. Include a plan for a Northern evacuation in emergency plans 3. Increase signage in Northern/Magalia area 4. Identify and implement better communication and information specific to Magalia
4	Communicate key information to residents before and during an evacuation to prevent bottlenecks and efficiently move traffic from evacuation zone.	Inform residents before and during an evacuation on key messages such as the following: 1. Adhere to CHP instructions 2. Keep moving to prevent congestion, particularly at gas stations. Caltrans vehicles are equipped with gasoline to help fuel stranded travelers if needed. 3. Move completely out of harm's way and do not re-	Town of Paradise		Chico PD Paradise PD Paradise Public Works CHP Chico Traffic Eng Caltrans	1. Update printed materials and guidance on websites 2. Prepare these message for DMS, social media, radio and any other communications

#	Need	Target Output	Responsible Agency	Agency Champions	Partner Agencies	Actions
Short Term						
5	Flexible contraflow that can be implemented when/where needed with the necessary resources	Update contraflow documentation for flexible implementation including guidance on: 1. Managing communication, staffing and resources at start/end points. 2. Designing flexible contraflow that can be implemented easily where and when needed. 3. Ensure the public is aware of contraflow locations and when to utilize contraflow activity based on evacuation need.	Paradise Public Works	Marc Mattox	Chico PD Paradise PD CHP Chico Traffic Eng Caltrans	1. Draft staff-level and public-facing documentation regarding contraflow activity 2. Distribute Agreement to all parties
6	Provide single public facing evacuation zone map online and put into place protocols which ensure concurrent updates of mapping and emergency alerts to affected areas.	Maintain one consistent public facing evacuation zone map with designated manager to make updates. Partner agencies point to the single source map for consistency.	Butte County	Josh Kincheloe (Butte IS)	Jurisdictions with Butte County, Caltrans, Public Safety Departments within County	Josh will inform when the map is ready for distribution
7		Maintain a list of websites that link to the map and publications with images of the map. Ensure that all sources use the current map and website links are functional.	Butte County	Josh Kincheloe (Butte IS)		
8		Ensure that the map is understood by first responders				
9	All parties are aware of agreements/MOUs in place	Ensure that existing agreements (example: between Caltrans EOC and CHP) are integrated into the plan and other agencies are added as needed				Use this platform to distribute agreements and keep taskforce members updated.
10	What are we missing?					
Long Term						
101	Future SR-99/Southgate interchange	1. promote the project and help to progress it 2. Keep community informed of progress 3. Incorporate into evacuation planning				
102	Incorporate key evacuation signals on Skyway into an ITS system for remote monitor and timing changes	Incorporate into an ITS system - Skyway at Honey Run, Bruce, Notre Dame, SR 99	TBD depending on which agency takes ownership			1. Design 2. Secure funding 3. Implement
103	Incorporate key evacuation signals in Chico into an ITS system for remote monitor and timing changes	Incorporate into an ITS system - Bruce Rd and 20th St signals	Chico Traffic Eng	Bikram Kahlon or Wyatt West		1. Design 2. Secure funding 3. Implement
104	Incorporate key signalized intersections in Paradise into an ITS system for remote monitor and timing changes	Interconnect all signalized intersections and connect to a Traffic Management Center	Paradise Public Works	Marc Mattox		1. Design 2. Secure funding 3. Implement
105	Facilitate advanced discussion with mobile applications focused on mapping (Waze, Google Maps, etc.) to help provide guidance during an evacuation.	Facilitate advanced discussion with mobile applications focused on mapping (Waze, Google Maps, etc.) to help provide guidance during an evacuation.				
106	What are we missing?					

Potential Assembly Points Outside of Paradise

Preferred locations are those with restroom facilities and with transit access. It is noted that the B line does not charge for transit use during traffic evacuation.

Parks

- ▶ Forebay Parking Lot; State Parks at dam (location is used by CalFire and/or law enforcement)
- ▶ DeGarmo Park
- ▶ River Bend Park
- ▶ Feather River Parks & Rec District
- ▶ Nelson Park

Education

- ▶ Butte College (Noted that this location is used by law enforcement and therefore may not be able to accommodate)
- ▶ Butte College in Chico
- ▶ Las Plumas High School
- ▶ Local High Schools

Religious

- ▶ Pleasant Valley Church
- ▶ OroNaz Church

Retail

- ▶ Old Kmart Parking Lot in Chico at Cohasset/Pillsbury
- ▶ Lowes, WalMarts, Tractor Supply or other big-box retailers

Casino/Fairgrounds

- ▶ Silver Dollar Fairground (advance confirmation would be needed)
- ▶ Feather Falls Casino
- ▶ Gold Country Casino

Appendix F

Skyway Evacuation Traffic Flow Plan



Skyway Evacuation Flow Plan

Purpose

This *Skyway Evacuation Flow Plan* is intended to serve as a general reference guide for managing evacuation flows on Skyway. The plan is focused on the potential needs during a full evacuation of Paradise, and possibly the Upper Ridge, with little advance notice. The goal of this document is to provide suggestions to optimize evacuation traffic flow on Skyway and minimize evacuation related traffic congestion at the traffic signals along Skyway, particularly near State Route 99 (SR-99).

Users of this guide recognize that other primary evacuation routes exist that may require resources and/or contraflow and that the actual evacuation routes to be used in each emergency will be dependent on the nature of the event and roadway accessibility. This plan is focused on Skyway since it is the key access route into and out of Paradise, so it is the route most likely to be preferred in an evacuation. However, since this plan is intended to be flexible and scalable, it provides guidance that can be applied in several types of emergency scenarios.

The *Skyway Evacuation Flow Plan* is presented in two phases:

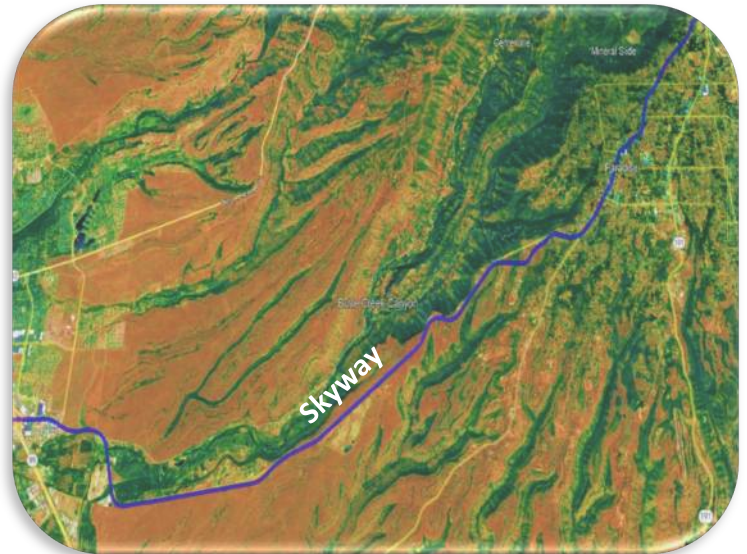
- Phase 1: Optimized Traffic Signal Operations
- Phase 2: Contraflow

Phase 1 – Optimized Traffic Signal Operations

Phase 1 Plan Guidelines

This plan may be initiated before or during an active evacuation when contraflow has not been deemed necessary. This section outlines a basic plan for the signalized intersections along Skyway to facilitate southbound flow to SR 99. **Figures 1-9** depict the *Skyway Flow Plan* and the assigned jurisdiction for key roadway segments and intersections.

- The Incident Commander will determine which intersections should have modified signal timings or staffed control. The normal jurisdiction, police, or other agency (potentially that can respond quickly) will report to the intersection. Most agencies should be able to modify most signals via



**Exhibit 1: Skyway Overview
SR 99 to Pentz Road**

the police panel. Police or first responders may be able to use emergency vehicle preemption (Opticom) to activate and set desired signal phases.

- The staff will modify the signal timing, use the stop time feature, or manually control the movements to increase flow on Skyway and restrict other side street movements. Movements from the side streets in the evacuation area will be permitted in the direction of evacuation flow (likely to the south along Skyway). Movements on side streets outside the evacuation area may be completely restricted to facilitate Skyway flow.



Exhibit 2: Field Personnel on a Skyway Evacuation Training Exercise

Key Intersection details

- **SR 99/Skyway Interchange** (Jurisdiction - Caltrans)
 - The northbound and southbound off-ramps may be closed to prevent vehicles on SR 99 from entering Skyway during an evacuation and keep the interchange clear. This can be accomplished by barricades or law enforcement vehicles (which may be quicker than delivering and setting up barricades).
 - The signals should then be set to green on Skyway.
 - Changeable Message Signs (CMS) should be placed on SR 99 to inform motorists that emergency evacuation traffic control patterns are in place.
- **Notre Dame Boulevard/Skyway and Bruce Road-Dominic Drive/Skyway** (Jurisdiction - City of Chico)
 - The signal timing should be set to manual control/ stop time with a technician or law enforcement officer to manage the side streets.
 - Left turns from Skyway should be restricted if the notably impede flow on Skyway. Of note is the church which provides emergency shelter on Notre Dame. It is recommended that shelters be selected off main evacuation routes whose access may impede evacuation flow. If this shelter is active during an evacuation, this intersection should be monitored and controlled to prevent queue spillback from the left turn.
- **Honey Run Road/Skyway** (Jurisdiction - Butte County)
 - The signal timing should be set to manual control/stop time with a technician or law enforcement officer to manage Honey Run Road.
 - Honey Run is an evacuation route and must remain open to allow traffic to flow onto Skyway in the direction of the evacuation – likely via a right turn to the south.
 - The bicycle path adjacent to Honey Run should be restricted. Vehicular access could cause backups and issues outweighing the potential benefit when considering the bollards and the tie-into the Chico roadway network.

- Neal Road/Skyway (Jurisdiction - Town of Paradise)
 - The signal timing should be set to manual control/stop time with a technician or law enforcement officer to manage Neal Road.

- Other signalized intersections in Paradise along Skyway (Jurisdiction - Town of Paradise)
 - The signal timing should be set to modified timing/manual control/ stop time with a technician or law enforcement officer to manage side streets as needed. Signals on Lower Skyway where key east-west evacuation routes tie in (Pearson Road and Elliott Road) are expected to need assistance first as these intersections will carry heavy traffic loads from Skyway southbound as well as from the evacuating side streets.
 - Other signalized intersections along Skyway with key east-west evacuation routes (Bille Road and Wagstaff Road) are expected to be the next highest need for staffed control.
 - Intersections on Skyway with Clark Road (signalized) and Pentz Road (potential future signal) may need to be optimized to facilitate flow in the direction of the evacuation along both routes. The Pentz Road/Skyway intersection is of particular concern for safety due to its angle. It is recommended that a trained public works or law enforcement professional staff this intersection.

Phase 2 – Contraflow

Phase 2 Plan Guidelines

- The Incident Commander determines if contraflow is necessary, initiates contraflow, and communicates the start and end points with advisement from first responders in the field.
- The route is secured for use of all lanes for one direction of travel as best as possible given the allowable timing, weighing the criticalness of the event. The route should be secured from the “bottom up” - ending point to the start point.
 - The end point is secured first prohibiting flow in the direction that will be used for contraflow.
 - The route is secured to prevent wrong way movements and keep the contraflow route moving by restricting side streets and driveways. If the street or driveway is in the evacuation area, movements onto the evacuation route in the direction of contraflow are permitted. If the street is outside the evacuation area, the street should be closed completely or staffed. To the extent possible CMS, barricades, agency vehicles and staff should be used to secure the route. First responders should communicate and confirm that the route is clear prior to starting contraflow.



Exhibit 3: Contraflow Example

- Median openings and other connections along the contraflow route should be closed to prevent drivers from switching between contraflow and normal flow lanes, slowing evacuation traffic.
- The start point is modified to initiate contraflow. The lead vehicle should be a marked and conspicuous (first responder or public works) with flashing beacons.
- During contraflow, first responders in the field should communicate progress and resource needs. The Incident Commander determines when the contraflow ends with advisement from first responders in the field.
- A practical starting point for contraflow on Skyway is at or near Neal Road. See **Figure 9** for a conceptual layout of the potential crossover concepts. Starting at Neal Road would allow for emergency responders to access the evacuation area via Neal Road to Skyway northbound.
 - By starting the contraflow at the Neal Road signal, first responders could use the southbound left turn lane to queue vehicles, essentially flowing three lanes southbound into four lanes southbound; however, the setup may require more set up/barricades to crossover at a signalized intersection.
 - Starting the contraflow south of the Neal Road signal at the Skyway split may be easier for set up and maintenance than at a signalized intersection; however, this would essentially flow two lanes to four lanes.
 - Either starting point option could still use the Neal Road/Skyway intersection to direct evacuation traffic down Neal Road for additional capacity.
 - Changeable Message Signs should be placed southbound on Skyway at the crossover and upstream, informing motorist of the crossover and contraflow limits. Changeable Message Signs should be placed northbound on Neal Road alerting motorists of the contraflow on Skyway.
- The recommended contraflow point of termination (end point) is SR 99. See **Figure 8** for a conceptual layout of the potential crossover. It is necessary to carry contraflow traffic to this point and distribute traffic flow onto SR 99 to prevent bottlenecks from forming on Skyway. Eastbound traffic on Skyway should be restricted at Dr. Martin Luther King Parkway or routed to SR 99 southbound.
- It should be recognized that any contraflow setup and operation will be a balance of best practices versus criticalness of situation. It is recommended that key intersections along the contraflow route be secured first, as many as time and resources permit, using barricades, police/public works vehicles and staff.
- The Incident Commander and field personnel should communicate which routes are and are not available for first responders to access the area during contraflow.



Exhibit 4: Changeable Message Sign

- Field personnel should communicate the status of other evacuation routes such as Clark Road and Pentz Road.

Communication Structure

Formal communication is channeled through the Incident Commander using the Incident Command Structure (ICS) process in a command post in the Emergency Operations Center (EOC). The IC assigns roles, tasks, and actions. A representative from each responding/affected agency as designated by the Incident Commander should be present to disseminate information through the chain of command accordingly. Other noted communication structures include:

- The Sheriff’s Office initiates communication to impacted agencies individually.
- The Sheriff’s Office initiates Mutual Aid coordination for the region, which includes 13 counties. The communication platform is the WhatsApp messenger application, and each county has two law enforcement Aid Coordinators.
- Radio networks are also used for communication, particularly among law enforcement and emergency responders. Identifying radio needs and preparing communication process for the radio channels during an emergency is a work in progress.

Although applications such as WhatsApp are used for communication, these do not replace the ICS. To bolster communication efforts, a comprehensive list of possible agencies, contact information, including social media/messaging services would be beneficial to serve as a “quick reference” guide for communication needs during an emergency. This contact list will change frequently and require regular updating. An initial template is provided below.

Name	Agency	Role	Email	Office #	Cell	Other social media/ messaging application groups or other communication groups
	Butte County					
	Town of Paradise					
	Butte County Sheriff’s Department					Included in WhatsApp Group Title “”
	Paradise Public Works					
	California Highway Patrol					
	Chico Police					
	Butte County OEM					
	City of Chico					

**Exhibit 5: Quick Reference Emergency Contact List Template
(with example data)**

Recommendations

The following are recommendations to reposition the Skyway corridor for optimal flow during an evacuation:

- The largest identified resource need during an evacuation is trained and available personnel. It is recommended to staff and train as many responders as possible and maintain and grow Mutual Aid agreements with neighboring communities that can be activated quickly to assist with staff limitations. The Town should also consider creating volunteer roles for less critical or easily trained needs.
- The Town should continue to work to establish emergency shelter points away from Skyway and/or primary evacuation routes with ingress points that would not impede flow on major evacuation routes. In particular, the emergency access point for the Church on Notre Dame should be relocated away from Skyway or not opened until evacuating traffic is no longer the critical need.
- The Town should consider installing cameras on Skyway that can be viewed remotely. This would provide extra eyes on the critical Skyway corridor to monitor traffic flows and help to make critical decisions without the need for field personnel to relay information to the EOC.
- The Town should continue efforts to inform the public of the potential contraflow plans and likely contraflow routes, closures, etc. The more the public is aware prior to an event, the less congestion will be caused by driver confusion and the cleaner traffic will flow.
- The Town or EOC should designate staff to maintain the emergency contact roster on a regular basis.



Exhibit 6: Signal Cabinet on Skyway



See Figure 8 for crossover detail

Roadway/Intersection Jurisdiction

- Caltrans
- City of Chico
- Butte County

NO SCALE

Conceptual evacuation guideline.
Actual actions to be determined based on nature of event as directed by Incident Command.

- Signal to be controlled by responsible jurisdiction, police, or as assigned by Incident Commander
- # - Number of Travel Lanes (including center turn lane for 3 and 5 lane sections)

- Side street closures/restrictions shown at major signalized intersections. All streets and driveways connected to the contraflow route should be secured to prevent wrong way movements.
- Potential Contraflow Route
- Close all median openings prior to contraflow

Match Line A - See Figure 5b (different scale)

Figure 1
Town of Paradise Transportation Master Plan
Skyway Flow Plan



Roadway/Intersection Jurisdiction

- Butte County
- Town of Paradise

Match Line A - See Figure 5a (different scale)

Match Line B - See Figure 5c (different scale)



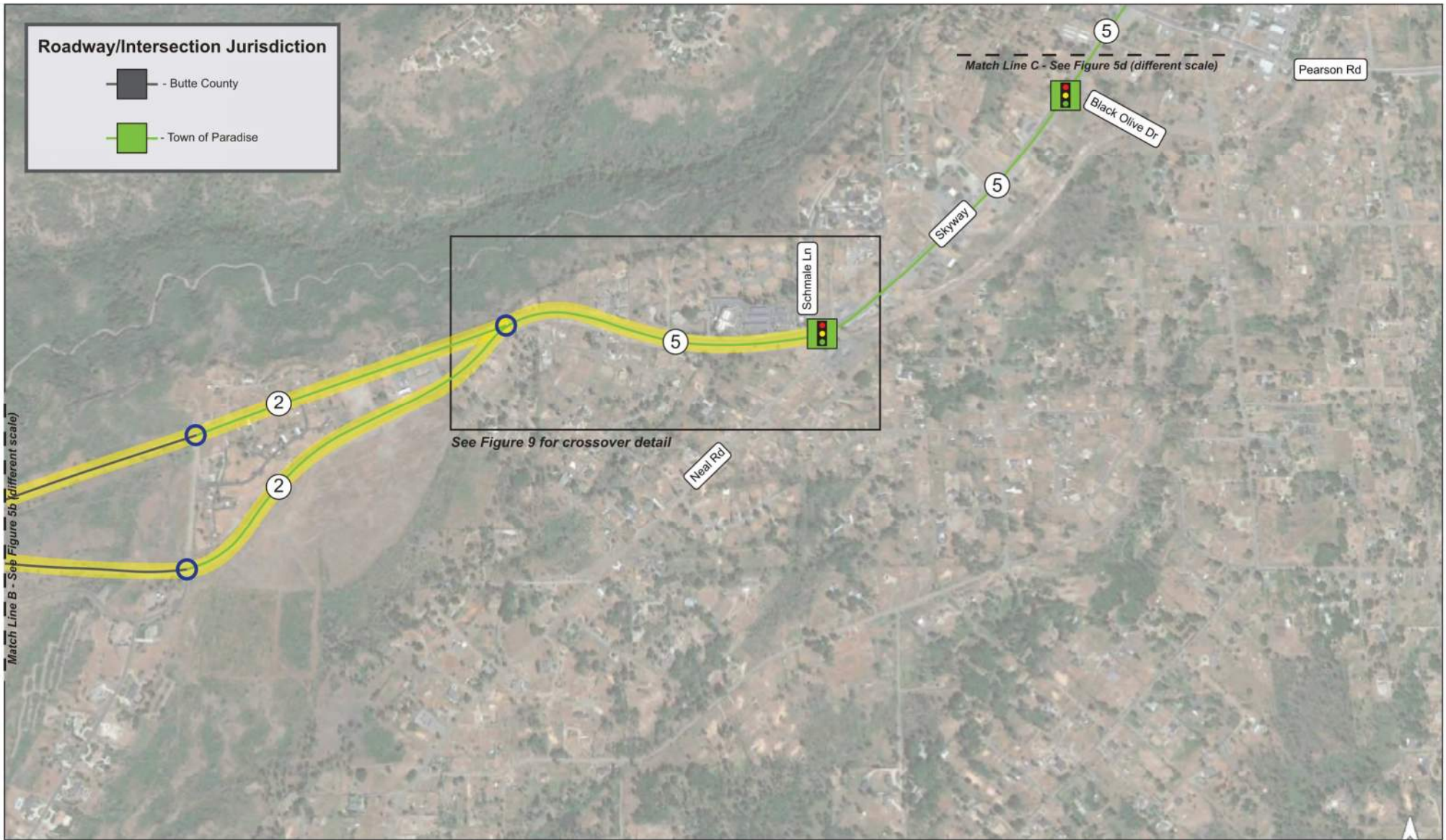
NO SCALE

*Conceptual evacuation guideline.
Actual actions to be determined based on
nature of event as directed by Incident
Command.*

- Signal to be controlled by responsible jurisdiction, police, or as assigned by Incident Commander
- # - Number of Travel Lanes (including center turn lane for 3 and 5 lane sections)

- Side street closures/restrictions shown at major signalized intersections. All streets and driveways connected to the contraflow route should be secured to prevent wrong way movements.
- Potential Contraflow Route
- Close all median openings prior to contraflow

Figure 2
Town of Paradise Transportation Master Plan
Skyway Flow Plan



Roadway/Intersection Jurisdiction

- Butte County
- Town of Paradise

Match Line B - See Figure 5b (different scale)

Match Line C - See Figure 5d (different scale)

See Figure 9 for crossover detail




NO SCALE
 Conceptual evacuation guideline.
 Actual actions to be determined based on
 nature of event as directed by Incident
 Command.

- Signal to be controlled by responsible jurisdiction, police, or as assigned by Incident Commander
- Number of Travel Lanes (including center turn lane for 3 and 5 lane sections)

- Side street closures/restrictions shown at major signalized intersections. All streets and driveways connected to the contraflow route should be secured to prevent wrong way movements.
- Potential Contraflow Route
- Close all median openings prior to contraflow



Roadway/Intersection Jurisdiction

 - Town of Paradise

Match Line D - See Figure 5e (different scale)

Oliver Rd

5

Elliott Rd

Skyway

3

Project to widen to 4 lanes from Elliott Rd to Pearson Rd Expected 2023


Pearson Rd

5

Match Line C - See Figure 5c (different scale)



Conceptual evacuation guideline.
Actual actions to be determined based on nature of event as directed by Incident Command.

 - Signal to be controlled by responsible jurisdiction, police, or as assigned by Incident Commander


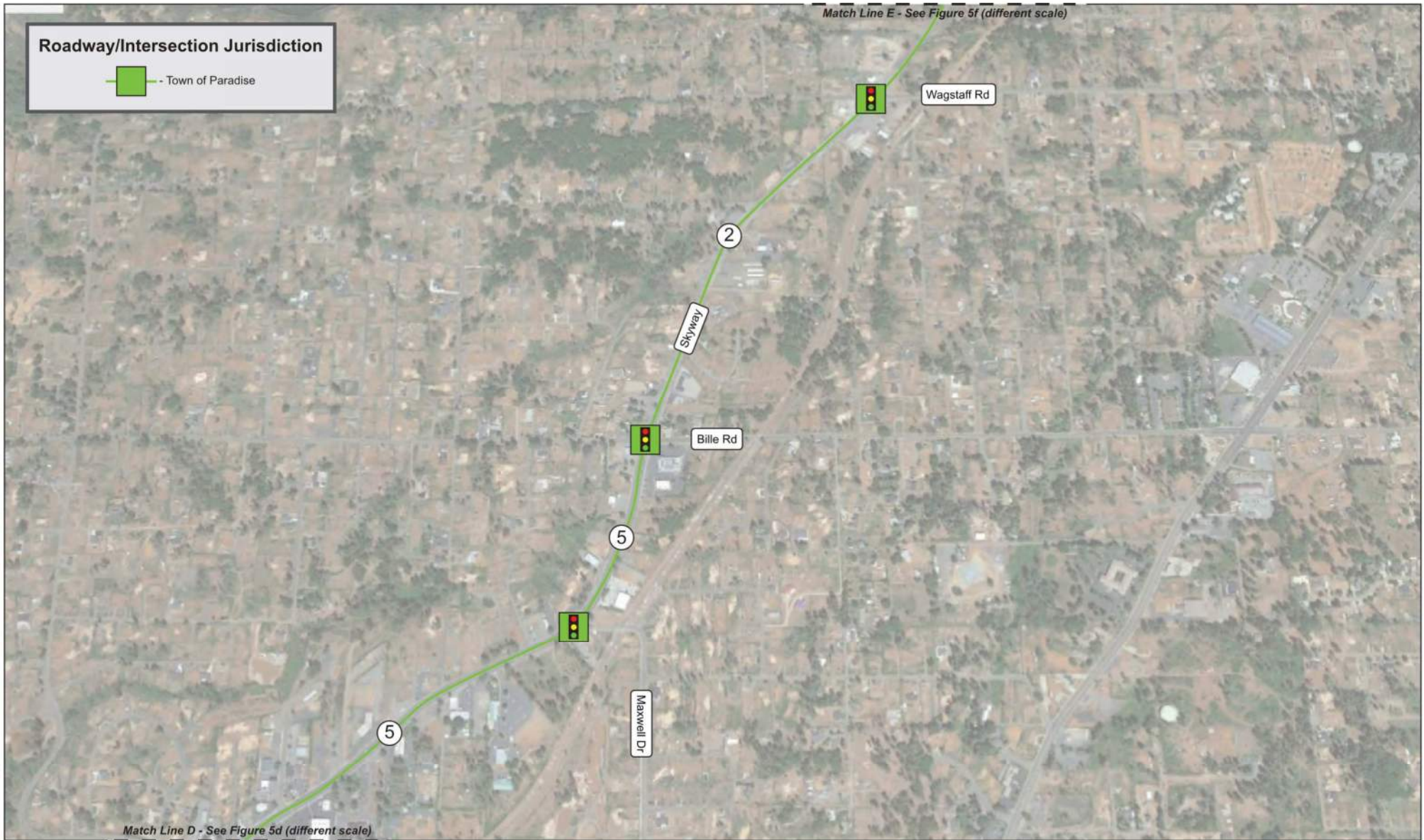
 - Number of Travel Lanes (including center turn lane for 3 and 5 lane sections)

Figure 4



Roadway/Intersection Jurisdiction

 - Town of Paradise

Match Line E - See Figure 5f (different scale)

Match Line D - See Figure 5d (different scale)



Conceptual evacuation guideline.
Actual actions to be determined based on
nature of event as directed by Incident
Command.



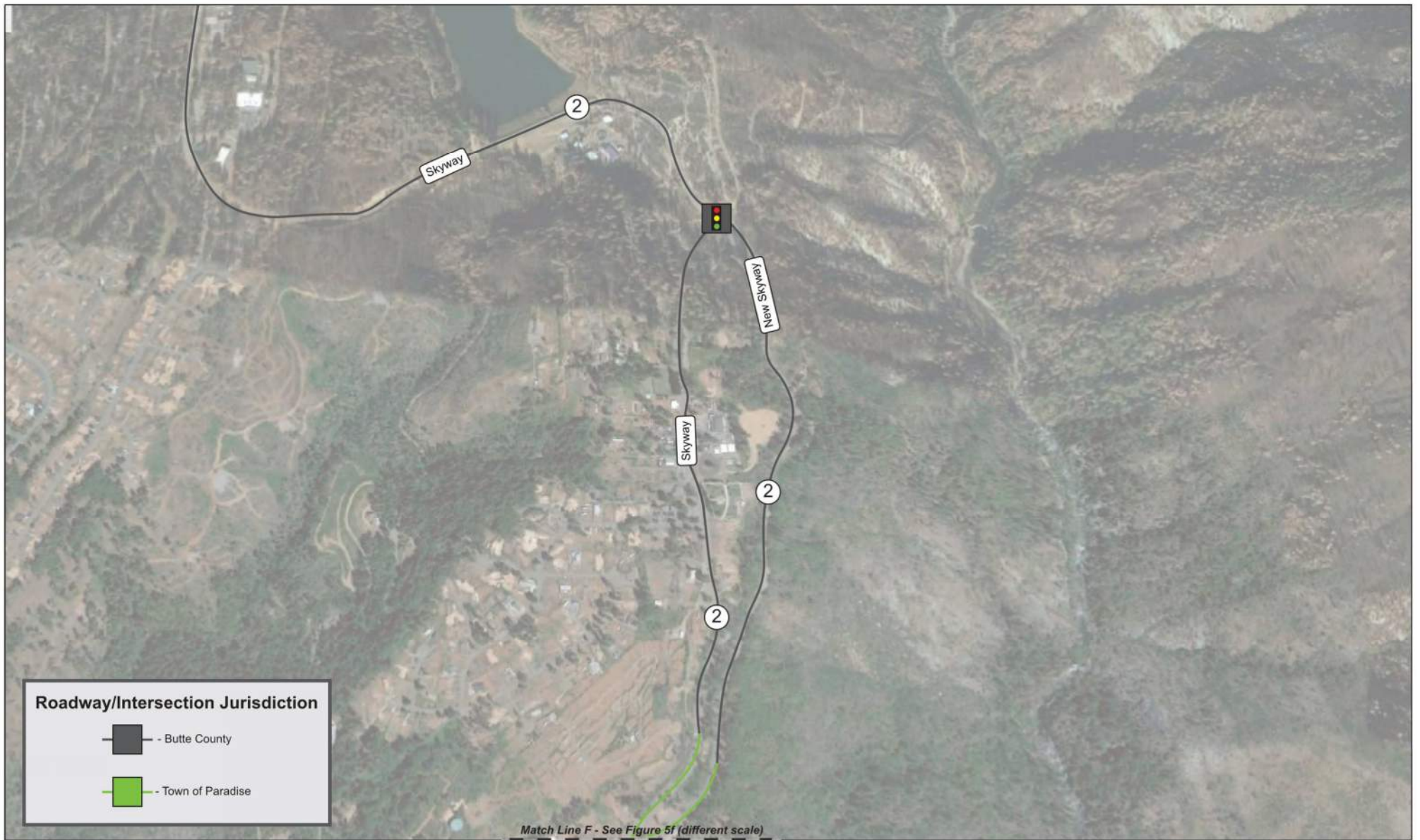
- Signal to be controlled by responsible jurisdiction,
police, or as assigned by Incident Commander



- Number of Travel Lanes (including center turn
lane for 3 and 5 lane sections)

Figure 5





Roadway/Intersection Jurisdiction

-  - Butte County
-  - Town of Paradise

Match Line F - See Figure 5f (different scale)



Conceptual evacuation guideline.
Actual actions to be determined based on
nature of event as directed by Incident
Command.

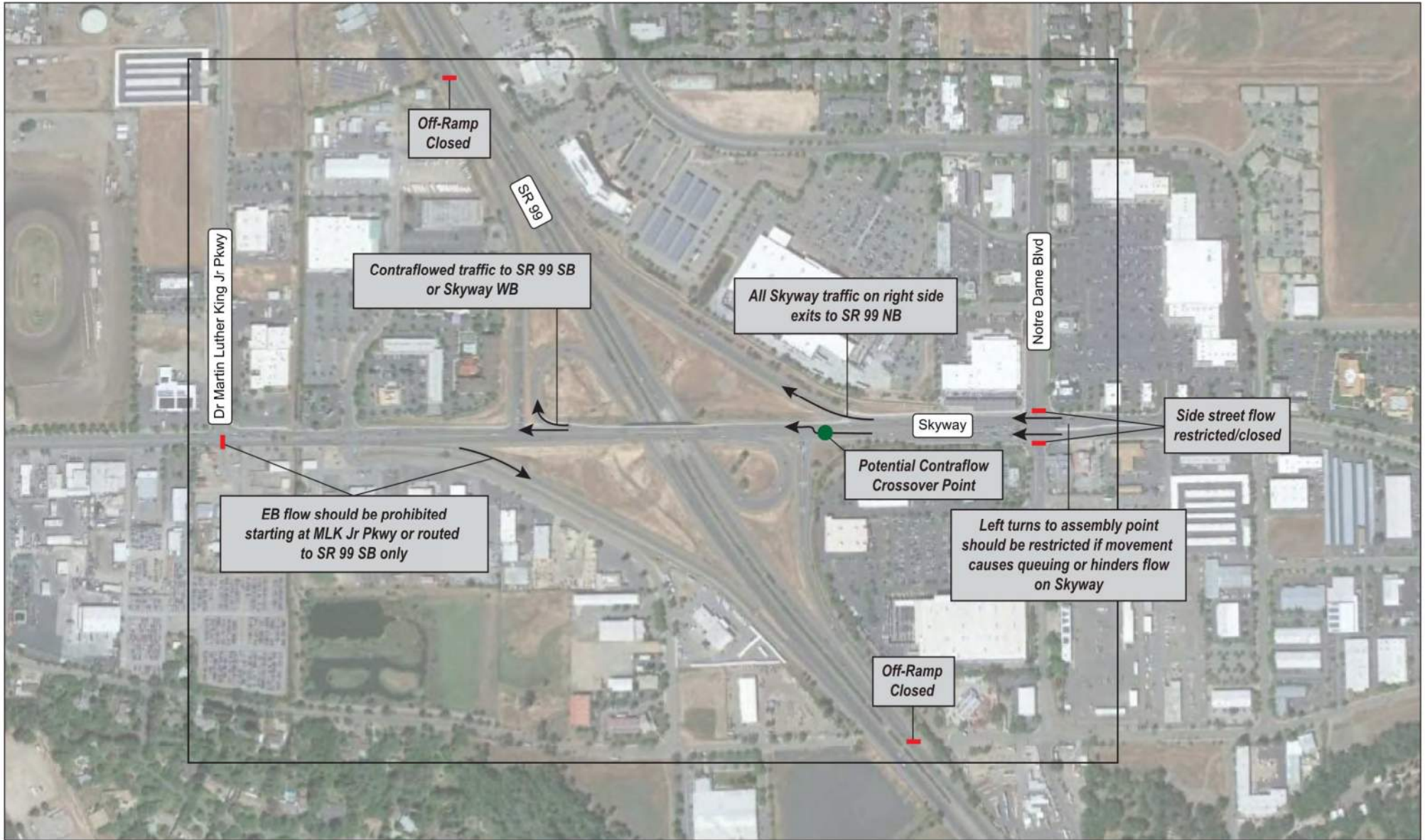


- Signal to be controlled by responsible jurisdiction,
police, or as assigned by Incident Commander



- Number of Travel Lanes (including center turn
lane for 3 and 5 lane sections)

Figure 7



Conceptual evacuation guideline.
 Actual actions to be determined based on
 nature of event as directed by Incident
 Command.

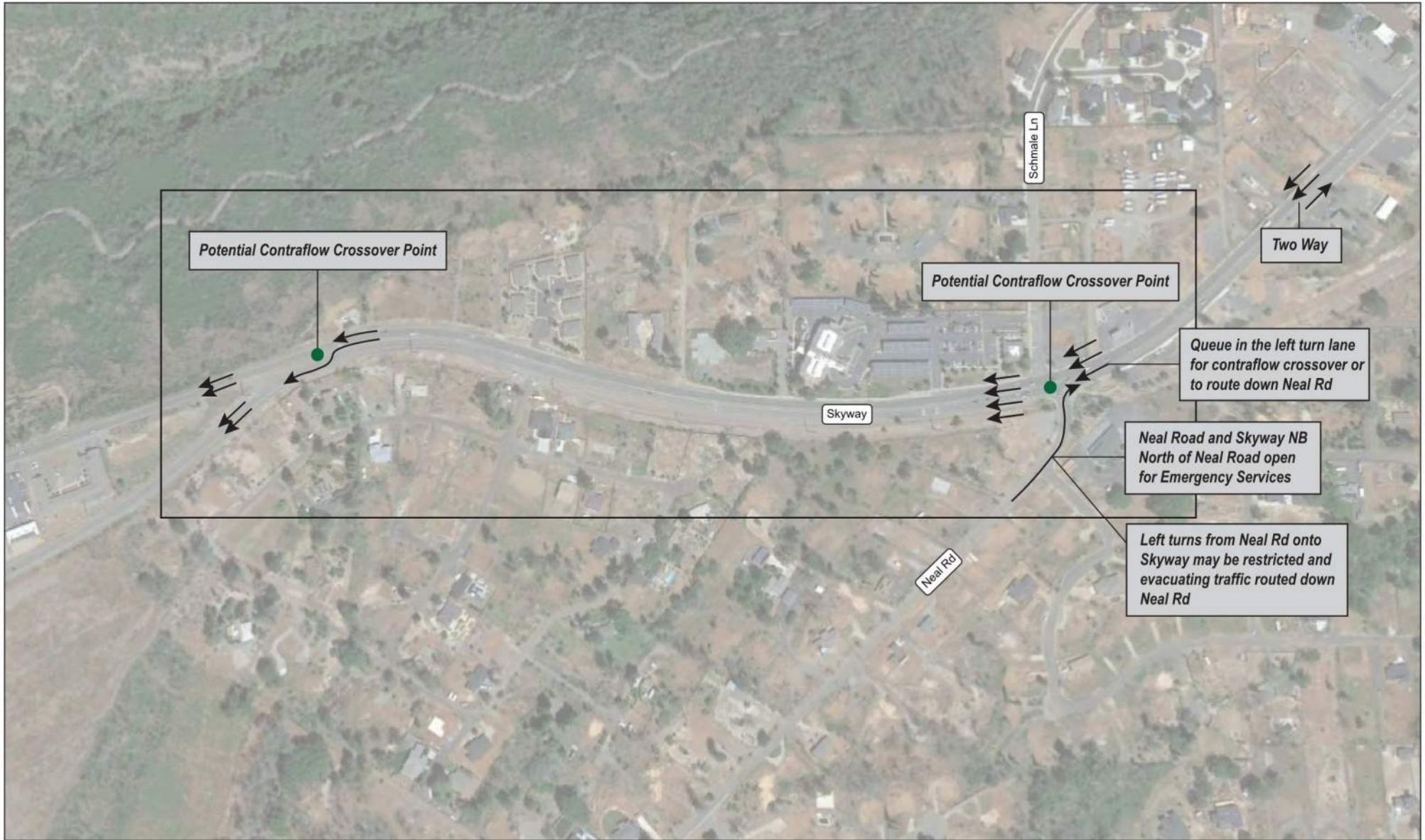
← - Directional flow during contraflow

● - Potential crossover location during contraflow

■ - Closed or restricted roadways

Figure 8

Town of Paradise Transportation Master Plan
 Potential Contraflow Crossover, Skyway Flow Plan



Conceptual evacuation guideline.
Actual actions to be determined based on
nature of event as directed by Incident
Command.

← - Directional flow during contraflow

● - Potential crossover location during contraflow

Figure 9

Town of Paradise Transportation Master Plan
Potential Contraflow Crossover, Skyway Flow Plan