



2023

Sacramento Regional Emergency Preparedness Strategy

DRAFT



SACOG

Sacramento Area
Council of
Governments

BOARD MEMBERS AND MEMBER JURISDICTIONS

Karm Bains, Sutter County
Gary Bradford, Yuba County
Chris Branscum, City of Marysville
Pamela Bulahan, City of Isleton
Trinity Burruss, City of Colfax
Josh Chapman, City of Davis
Jill Gayaldo, City of Rocklin
Rich Desmond, Sacramento County
Alice Dowdin Calvillo, City of Auburn
Lucas Frerichs, Yolo County
Sue Frost, Sacramento County
Jill Gayaldo, City of Rocklin
Lakhvir Ghag, City of Live Oak
Bonnie Gore, Placer County
Martha Guerrero, City of West Sacramento
Shon Harris, City of Yuba City
Bruce Houdesheldt, City of Roseville
Rick Jennings, City of Sacramento
Paul Joiner, City of Lincoln
Patrick Kennedy, Sacramento County
Jenny Knisley, City of Loomis
Mike Kozlowski, City of Folsom
Jesse Loren, City of Winters
Rich Lozano, City of Galt
David Sander, City of Rancho Cordova
Michael Saragosa, City of Placerville
Tim Schaefer, City of Citrus Heights
Tom Stallard, City of Woodland
Darren Suen, City of Elk Grove
Wendy Thomas, El Dorado County
Mai Vang, City of Sacramento
Amarjeet Benipal, Caltrans Ex-Officio

SACOG MISSION

SACOG convenes and connects the region to advance an equitable, sustainable, and prosperous future.

SACOG VISION

A vibrant and thriving Sacramento region for all.

WHAT WE DO

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the six-county Sacramento region. Its members include the counties of El Dorado, Placer, Sacramento, Sutter, Yolo, Yuba and the 22 cities within.

SACOG provides transportation planning and funding for the region and serves as a forum for the study and resolution of regional issues. In addition to preparing the region's long-range transportation plan, SACOG approves the distribution of affordable housing in the region and assists in planning for transit, bicycle networks, clean air and airport land uses.

This report was funded in part through a grant from the California Department of Transportation, Caltrans. The views and opinions of the authors or agency expressed herein do not necessarily state or reflect those of Caltrans.

No part of this document may be reproduced or transmitted in any form or by any means — electronic, mechanical, photocopying, recording, or otherwise—without prior written permission by SACOG. Requests for permission or further information should be addressed to SACOG.

EXECUTIVE STAFF

James Corless
Executive Director

Erik Johnson
Deputy Executive Director
of Operations

Kacey Lizon
Deputy Executive Director
of Planning & Programs

PROJECT STAFF

Michael Rosson
Senior Transit Analyst

Barbara VaughanBechtold
Transportation Planner

Caroline Payne
Associate Analyst

Glossary of Abbreviations, Acronyms, and Initialisms

Term	Definition
ADA	Americans with Disabilities Act
ALS	Advanced Life Support
AMBER	America's Missing: Broadcast Emergency Response
ASL	American Sign Language
BEB	Battery Electric Bus
BRIC	Building Resilient Infrastructure and Communities
CA	California
Cal OES	California Office of Emergency Services
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDC	Centers for Disease Control
CDFA	CA Department of Food and Agriculture
CERT	Community Emergency Response Teams
CGS	California Geological Survey
CH	Citrus Heights
CHP	California Highway Patrol
CMS	Changeable Message Signs
COOP	Continuity of Operations Plan
CRC	Consumnes River College
CTC	California Transportation Commission
DAFN	Disabilities, Access, and Functional Needs
DBS	Direct broadcast satellite
DHS	Department of Homeland Security
DOC	Department Operations Centers
DUNS	Data Universal Numbering System
DWR	Department of Water Resources
EAS	Emergency Alert System
ECA	Earthquake Country Alliance
EG	Elk Grove
EIN	Employer Identification Number
EMA	Emergency Management Agencies
EMPG	Emergency Management Performance Grant
EMS	Emergency Medical Services
EMT	Emergency Management Team
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
ESL	English as a second language
ESS	Energy Storage System
EV	Electric Vehicle

Term	Definition
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FMA	Flood Mitigation Assistance
FRA	Federal Rail Administration
FTA	Federal Transit Administration
HOS	Hours of service
HSEEP	Homeland Security Exercise Evaluation Program
HUD	Housing and Urban Development
IAP	Incident Action Plan
IBSG	Intercity Bus Security Grant
ICARP	Integrated Climate Adaptation and Resiliency Program
ICP	Incident Command Post
ICS	Incident Command System
ICT	Innovative Clean Transit
IGA	Inter-Governmental Agreement
IP	Internet protocol
IPAWS	Integrated Public Alert & Warning System
ITS	Intelligent Transportation Systems
JIC	Joint Information Center
JIS	Joint Information System
LEP	Low English Proficiency
LHMP	Local Hazard Mitigation Plan
LTCAP	Local Transportation Climate Adaptation Program
MDT	Mobile Data Terminal
MHOAC	Medical and Health Operational Area Coordinator
MMAA	Master Mutual Aid Agreement
MOA	Memorandum of Agreement
MOU	Memoranda of Understanding
MPO	Metropolitan Planning Organization
MTC	Metropolitan Transportation Commission
MYTEP	Multi-Year Training and Exercise Plan
ND Grants	Non-Disaster Grants
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration
NOFO	Notice of Funding Opportunity
OA	Operational Area
OWP	Overall Work Program
PDM	Pre-Disaster Mitigation
PETS	Pets Evacuation and Transportation Standards
PCT	Placer County Transit

Term	Definition
PTASP	Public Transportation Agency Safety Plan
RCC	Regional Climate Collaboratives
RDMHS	Regional Disaster Medical & Health Specialist
REOC	Regional Emergency Operations Center
R-MACS	Regional Multi-Agency Coordination System
RT	Regional Transit
RTD	San Joaquin Regional Transit District
RTIC	Real-time information centers
RTPA	Regional Transportation Planning Agency
SacDOT	Sacramento County Department of Transportation
SacOES	Sacramento County Office of Emergency Services
SACOG	Sacramento Area Council of Governments
SacRT	Sacramento Regional Transit District
SCT	South County Transit
SDARS	Satellite digital audio radio service
SDOH	Social determinant of health
SEMS	Standardized Emergency Management System
SMS	System, text message
SMUD	Sacramento Municipal Utility District
SOC	State Operations Center
SRA	Senior Resource Association
SRRCS	Sacramento Regional Radio Communications System
STS	Storer Transportation Services
TAM	Transit Asset Management
TCC	Transit Coordination Committee
TIFIA	Transportation Infrastructure Finance and Innovation Act
TMC	Traffic Management Centers
TNC	Transportation Network Company
TRB	Transportation Research Board
TSA	Transportation Security Administration
UASI	Urban Area Security Initiative
UC	University of California
UEI	Unique Entity Identifier
UHF	Ultra-High Frequency
VHF	Very High Frequency
VOAD	Voluntary Organizations Active in Disasters
WEA	Wireless Emergency Alerts
YCTD	Yolo County Transportation District
ZE	Zero-emission
ZEV	Zero-Emission Vehicle

Contents

1	Introduction.....	1
1.1	Role of Transit in an Evacuation.....	1
1.2	Purpose.....	3
1.3	Methods.....	3
1.4	How to Use the Strategy.....	4
2	Equity and Inclusion Commitment.....	5
2.1	State and Federal Equity Guidance/Mandates.....	6
2.2	SACOG Racial Equity Action Plan.....	7
3	Situational Overview.....	8
3.1	County/Jurisdiction Overview.....	8
3.2	Regional Transit Agencies.....	12
3.3	Other Regional Stakeholders.....	13
3.3.1	Tribal.....	13
3.3.2	Medical Facilities.....	13
3.4	Stakeholder Trainings.....	14
3.5	Regional Hazards.....	16
3.5.1	Local Hazard Mitigation Plans.....	16
3.5.2	Events.....	18
3.5.3	Disaster Declarations.....	19
4	Concept of Operations.....	20
4.1	Organization and Responsibilities.....	20
4.2	Relocation of Operations.....	25
5	Interagency Coordination.....	27
5.1	Coordinate and Establish Interoperable Communications.....	28
5.2	Establish MOUs.....	29
5.3	Exercises and Trainings.....	30
5.3.1	Multi-Year Training and Exercise Plan.....	31
6	Transportation Resources.....	32
6.1	Transit Assets and Resources.....	32
6.1.1	Operator Agreements.....	32
6.1.2	Vehicle Data.....	33
6.1.3	Paratransit.....	38
6.2	Zero Emission Vehicles.....	38
6.2.1	Charging During an Emergency.....	39
6.2.2	Capital Strategies.....	39
6.2.3	Policy Strategies.....	41
6.3	Asset Staging.....	42
6.3.1	Staging Locations.....	44
7	Evacuation.....	44
7.1	Order and Warning Types.....	44
7.1.1	Evacuation Warning.....	45
7.1.2	Evacuation Order.....	45
7.2	Equity Considerations.....	45
7.2.1	Those Who Need Assistance Evacuating in the SACOG Area.....	45
7.3	Evacuation Zones and Routes.....	54

7.3.1	Existing Evacuation Zones and Routes	55
7.3.2	Evacuation Route Determination	56
7.4	Evacuation Protocols and Transportation Strategies	57
7.4.1	Traffic Flow	58
7.4.2	Contra-Flow Operations	59
7.4.3	Access Control	61
7.4.4	Roadway Design	62
7.5	Transportation of Pets and Service Animals	64
8	Communications	64
8.1	Stakeholder and Community Engagement Summary	64
8.1.1	Stakeholder Coordination	65
8.1.2	Public Survey	66
8.2	Interjurisdictional and Interagency Communications	69
8.2.1	Radio Communication	70
8.2.2	Real-Time Information Centers	70
8.3	Emergency Public Communications	71
8.3.1	Alert and Warning Technology Systems and Methods	73
8.3.2	Communicating with People with Disabilities, Access, and Functional Needs and Diverse Populations	77
8.4	Communications Between Transit Operators and the Public	79
8.4.1	Public Policies	80
8.4.2	Targeted Communications	81
8.5	Communications Between Transit Operators and Regional Emergency Managers ..	82
9	Implementing the Strategy	85
9.1	Roles and Responsibilities	85
9.1.1	SACOG	85
9.1.2	Transit Operators	89
9.1.3	Emergency Management Agencies	90
9.1.4	Stakeholder Working Group/Emergency Preparedness Subcommittee	90
9.2	Strategy Maintenance and Updates	91
10	Summary of Key Recommendations	92
11	Appendix	97
11.1	State and Federal References, Guidance, and Authorities	97
11.1.1	Communication	97
11.1.2	Pets	98
11.1.3	Exercises and Trainings	99
11.2	Funding Opportunities and Guidance	101
11.2.1	Federal Grant Programs	102
11.2.2	State Programs	107
11.2.3	Nongovernmental Organization Programs	108
11.2.4	Partner with Academia / Higher Education	109
11.3	Regional Hazards Maps	109
11.4	Regional Travel Assessment for Groups Who May Need Evacuation Assistance	117
11.5	Stakeholder Working Group	171
11.5.1	Meeting Notes	171
11.6	Public Survey Results	185
11.6.1	Methodology	185
11.6.2	Complete Results	186

TABLES

Table 1.	SACOG Region County Emergency Operations Plans.....	11
Table 2.	SACOG Regional Transit Agencies and Services.....	12
Table 3.	Tribal Emergency Operation Plans	13
Table 4.	Current Training and Exercise Practices for Transit Agencies and County OES Departments.....	15
Table 5.	Hazards with High Significance Identified in SACOG Region Local Hazard Mitigation Plans	17
Table 6.	Storm Deaths, Injuries, and Property Damage in SACOG Region Counties by Event Type, Jan. 1996–Jan. 2022 (data from NOAA Storm Events Database).....	18
Table 5.	Federal Disaster Declarations in SACOG Region by Type and County, 1953-2021 (data from FEMA Disaster Declarations Summary).....	20
Table 8.	Potential Staging Locations Provided by Transit Agencies	27
Table 9.	SACOG Region Transit Operators: Emergency Plans and Arrangements.....	33
Table 10.	Transit Resources Summary Information Provided by Transit Agencies.....	33
Table 11.	Transit Revenue Vehicle Information from TAM Data and Agencies.....	36
Table 12.	Transit Agencies Responses on Whether They Would Have Support from Specialized Transit During Evacuation Event.....	38
Table 13.	Potential Staging Locations Provided by Transit Agencies	44
Table 14.	Information on Evacuation Routes and/or Zones by County OES Departments	55
Table 15.	Radio Communication Types for Transit Agencies and County OES Departments	70
Table 16.	Existing Communication Practices	72
Table 17.	Eligible Types of Reimbursable Work.....	106

FIGURES

Figure 1.	SACOG Planning Area and Boundaries	10
Figure 2.	SACOG Region County Emergency Operation Plans (see links in table for image sources).....	11
Figure 3.	Storm Deaths and Injuries in SACOG Region Counties by Year, 1996-2001 (data from NOAA Storm Events Database)	19
Figure 4.	Count of SACOG Counties with Federal Disaster Declarations by Year and Type, 1953-2021 (data from FEMA Disaster Declarations Summary)	20
Figure 5.	Phases of Emergency Management.....	21
Figure 6.	SEMS Organizational Levels (adapted from State of California Emergency Plan).....	24
Figure 7.	California Mutual Aid Regions.....	25
Figure 8.	BEB Facility Microgrid with Redundant Power Sources	40
Figure 9.	Daily Trips Starting from a SACOG Area Census Tract	47
Figure 10.	Primary Modes of Transportation in the SACOG Area.....	48
Figure 11.	SACOG Area Household Income.....	48
Figure 12.	SACOG Area Race and Ethnicity	49
Figure 13.	SacRT Transit Stop Lines and Stations	49

Figure 14.	SACOG Area Transit Stop Boardings.....	50
Figure 15.	SACOG Area Transit Stop Alightings	51
Figure 16.	Private Vehicle Availability in Sacramento County Evacuation Zones.....	52
Figure 17.	Private Vehicle Availability in Sutter County	53
Figure 18.	Private Vehicle Availability in Yolo County.....	54
Figure 19.	Speed-Flow Curves from TRB Highway Capacity Manual: 6th Edition.....	57
Figure 20.	Contra-Flow Operations Flow Chart.....	60
Figure 21:	Response to "Do you receive general updates from your local transit operator (like SacRT, El Dorado Transit, Yolobus, and others)?"	67
Figure 22:	Response to "What are your preferred methods for receiving information from your local transit operator? [Select all that apply]"	68
Figure 23:	Response to "You indicated you might evacuate by transit. Check the following situations that may apply to you:"	69
Figure 24.	Elk Grove Real Time Information Center.....	71
Figure 25.	HSEEP Exercise Progression Diagram.....	100
Figure 26.	Stafford Act Disaster Declaration Request Process.....	105
Figure 27.	SACOG Region Transit Stops and Lines	110
Figure 28.	SACOG Region CalEnviroscreen Areas.....	111
Figure 29.	SACOG Region FEMA Floodplains	112
Figure 30.	SACOG Region Dam Breach Inundation Areas.....	113
Figure 31.	SACOG Region Earthquake Potential	114
Figure 32.	SACOG Region Fire Threat Classes.....	115
Figure 33.	SACOG Region Landslide Susceptibility	116
Figure 34.	Sacramento County Evacuation Zones.....	118
Figure 35.	Daily Trips Starting in a Sacramento County Evacuation Zone	119
Figure 36.	Primary Modes of Transportation Used in Sacramento County on a Typical Weekday.....	120
Figure 37.	Private Vehicle Availability in Sacramento County Evacuation Zones.....	121
Figure 38.	Daily Trips Taken by Those Without a Vehicle by Sacramento County Evacuation Zone	122
Figure 39.	Top 20 Sacramento County Evacuation Zone Origin Points for Those Without a Private Vehicle	123
Figure 40:	Top 20 Destinations for Those Without a Private Vehicle (In and Out of Sacramento County)	124
Figure 41.	Daily Trips Taken by Walkers and Bikers by Sacramento County Evacuation Zone	125
Figure 42.	Top 20 Sacramento County Evacuation Zone Origin Points for Walkers and Bikers	126
Figure 43.	Top 20 Destinations for Bikers and Walkers (In and Out of Sacramento County)	127
Figure 44.	SacRT transit stop lines and stations	128
Figure 45.	Number of Total Public Transit Trips by Sacramento County Transit Route	129
Figure 46.	Number of Sacramento County Transit Stop Boardings.....	130
Figure 47.	Number of Sacramento County transit stop alightings.....	131
Figure 48.	Daily public transit trips by Sacramento County evacuation zone	132
Figure 49.	Top 20 Sacramento County evacuation zones of origin for transit riders.....	133
Figure 50.	Top 20 destinations for public transit riders (in and out of Sacramento County)	134

Figure 51.	Sutter County evacuation zones	135
Figure 52.	Yuba City evacuation zones.....	136
Figure 53.	Daily trips starting in a Sutter County evacuation zone	137
Figure 54.	Primary modes of transportation used in Sutter County on a typical weekday	138
Figure 55.	Top 20 Sutter County evacuation zone origin points	139
Figure 56.	Private vehicle availability in Sutter County	140
Figure 57.	Top 20 evacuation zones of origin in Sutter County for those without a private vehicle.....	141
Figure 58.	Top 20 destinations for those without a private vehicle (in and out of Sutter County)	142
Figure 59.	Daily trips taken by those without a vehicle by Sutter County evacuation zone	143
Figure 60.	Top 20 evacuation zones of origin in Sutter County for bikers and walkers	144
Figure 61.	Top 20 destinations for bikers and walkers (in and out of Sutter County)	145
Figure 62.	Daily trips taken by walkers and bikers by Sutter County evacuation zone.....	146
Figure 63.	Number of Sacramento County transit stop boardings	147
Figure 64.	Number of Sutter County transit stop alightings.....	148
Figure 65.	Daily public transit trips by Sutter County evacuation zone	149
Figure 66.	Top 20 evacuation zones of origin in Sutter County for transit riders	150
Figure 67.	Top 20 destinations for transit riders (in and out of Sutter County)	151
Figure 68.	Yolo County evacuation zones.....	152
Figure 69.	Davis, Woodland, and West Sacramento evacuation zones.....	153
Figure 70.	Daily trips starting in a Yolo County evacuation zone.....	154
Figure 71.	Primary modes of transportation used in Yolo County on a typical weekday	155
Figure 72.	Top 20 Yolo County evacuation zone origin points	156
Figure 73.	Private vehicle availability in Yolo County.....	157
Figure 74.	Top 20 evacuation zones of origin in Yolo County for those without a private vehicle.....	158
Figure 75.	Top 20 destinations for those without a private vehicle (in and out of Yolo County).....	159
Figure 76.	Primary mode of transportation used by those without a private vehicle	160
Figure 77.	Daily trips taken by those without a vehicle by Yolo County evacuation zone	161
Figure 78.	Top 20 evacuation zones of origin in Yolo County for bikers and walkers.....	162
Figure 79.	Top 20 destinations for bikers and walkers (in and out of Yolo County).....	163
Figure 80.	Daily trips taken by walkers and bikers by Yolo County evacuation zone	164
Figure 81.	Unitrans weekday bus service in Davis	165
Figure 82.	Number of Yolo County transit stop boardings	166
Figure 83.	Number of Yolo County transit stop alightings	167
Figure 84.	Daily public transit trips by Yolo County evacuation zone	168
Figure 85.	Top 20 evacuation zones of origin in Yolo County for transit riders	169
Figure 86.	Top 20 destinations for transit riders (in and out of Yolo County)	170
Figure 87.	Response to "Do you receive general updates from your local transit operator (like SacRT, El Dorado Transit, Yobus, and others)?"	186
Figure 88.	Response to "What are your preferred methods for receiving information from your local transit operator? [Select all that apply]"	187

Figure 89.	Response to "Do you have a "go bag" ready in case of an emergency? (A go-bag is a packed bag with essential supplies you need to survive on your own for a few days.)"	188
Figure 90.	Response to "Do you have an emergency plan with your family (with contact numbers, meeting points)?"	188
Figure 91.	Response to "Have you ever had to evacuate your current home, work, or school due to an emergency?"	189
Figure 92.	Response to "What type of event required you to evacuate? [Select all that apply]"	190
Figure 93.	Response to "How prepared are you for an emergency that requires you to evacuate and leave your home?"	191
Figure 94.	Response to "How would you evacuate in an emergency? [Select all that apply]"	192
Figure 95.	Response to "You indicated you might evacuate by transit. Check the following situations that may apply to you:"	193
Figure 96.	Response to "Do you have pets?"	193
Figure 97.	Response to "What type of pet(s) do you have? [Select all that apply]"	194
Figure 98.	Response to "What would you do with your pet(s) during an evacuation?"	194
Figure 99.	Response to "Do you have the supplies you need to support your pet(s) during an evacuation? (Supplies could include animal carriers or crates, food and water, leashes or harnesses, muzzles, bowls, and plastic bags for animal waste.)"	195
Figure 100.	Response to "Have you ever had to shelter in place in your current home, work, school, or vehicle due to an emergency? (Shelter in place means find a safe, indoor location to stay put until an emergency has passed.)"	196
Figure 101.	Response to "What type of event required you to shelter in place? [Select all that apply]"	197
Figure 102.	Response to "How prepared are you for an emergency that requires you to shelter in place?"	198
Figure 103.	Response to "Do you or anyone in the household use a mobility device or medical device, and need special assistance during an evacuation or shelter in place situation?"	199
Figure 104.	Response to "Do you have a Caregiver or other support person to assist you with evacuation or sheltering in place?"	200
Figure 105.	Response to "How would you evacuate (by age)?"	201
Figure 106.	Response to "How would you evacuate (by income)?"	202

1 Introduction

Northern California has experienced dangerous natural hazards in recent years. The Camp Fire, Tubbs Fire, and LNU Lightning Complex Fire are just a few of the devastating fires which have led to loss of life and the destruction of tens of thousands of structures. The Sacramento area has also seen its share of wildfires, flood events, and other emergencies in recent years. These include the 2017 Oroville Dam crisis (which led to the evacuation of nearly 190,000 people) and the 2021 Caldor Fire (which burned over 200,000 acres in El Dorado, Amador, and Alpine Counties).

Interjurisdictional and interagency coordination is essential to effectively respond to such emergency events and efficiently deploy public assets, such as transit vehicles. Recent disasters have demonstrated the need for a flexible yet organized approach to emergency response and evacuation that accounts for the role of transit operators and how public transportation can be used to facilitate evacuations.

The Sacramento Area Council of Governments (SACOG) is responding to this need by developing a Sacramento Regional Emergency Preparedness Strategy (Strategy). This Strategy identifies existing emergency preparedness gaps and integrates the transportation system into response efforts by recommending emergency procedures and resources for transit agencies and transportation assets.

1.1 Role of Transit in an Evacuation

The role of a transit agency is to provide public transportation, and, in many cases, mass transportation. Their function is to move large numbers of people daily throughout their service areas, either on regular fixed route service or on-demand services. The knowledge and experience of providing daily service, as well as occasional concentrated service to special events and seasonal venues, provide transit agencies with the experience of moving large volumes of people in a short period of time. This includes driving, dispatching, scheduling, communications, and vehicle maintenance. As a result, transit agency logistical and personnel expertise can be lent to emergency service providers as well.

In addition to applying its logistical expertise, transit's role in an evacuation is first and foremost personnel and passenger safety. Transit agencies can and are expected to be called upon to assist with the evacuation of residents and others from emergency or disaster areas and out of harm's way. The transit agencies work with local and regional emergency preparedness officials to identify and transport evacuees to pre-determined locations, such as emergency shelters and congregate sites. To evacuate the maximum number of people possible, evacuation locations should be secured throughout the service area to allow transit vehicles to return to the emergency site to move additional people away from harm.

It is essential that transit agencies minimize exposing personnel to harmful or dangerous conditions. Concurrently, transit agencies must protect their assets to the greatest extent possible so that rolling stock, equipment, communications, and fueling and/or charging infrastructure and supplies, along with staff, are available for an evacuation event. This potentially includes temporarily relocating a

portion of the operation closer to the emergency location to enable faster evacuation of larger numbers of people.

This Strategy examines SACOG region emergency preparedness and response through the lens of incorporating the transportation system, and more specifically transit assets and operators, into these practices.

1.2 Purpose

The purpose of the Strategy is to identify emergency preparedness gaps in the SACOG region, specifically as they relate to transit and the broader transportation system, as well as interagency and interjurisdictional coordination, and develop recommendations for addressing these challenges.

The Strategy is organized around the following goals:

- Develop a clear vision for how transit assets and operators are deployed in evacuation situations in the SACOG region.
- Strengthen existing relationships between regional transit operators and emergency management personnel to facilitate efficient evacuations using transit assets.
- Evaluate challenges faced by transit operators in meeting emergency response needs, such as in public communications, interagency communications, fleet modifications (transitioning to zero-emission vehicles (ZEVs)), personnel and resources, training and exercise needs, evacuation policies, and responsibilities and logistics.
- Assess which SACOG area communities or populations may need evacuation assistance from regional transit operators.
- Consider how other transportation assets and strategies can be used in an evacuation to improve regional response, such as through contra-flow lanes or roadway redesign.
- Provide resources and tools for transit operators and regional emergency response managers to assist them in improving emergency preparedness and evacuations, and implementing the recommendations of the Strategy (e.g., funding opportunities).

The primary audience of the Strategy are the SACOG region transit operators and county Office of Emergency Services (OES) staff, which will be responsible for coordinating transit and transportation needs in an evacuation.

1.3 Methods

The Strategy was developed through a five-step process, outlined below:

1. **Stakeholder Outreach:** SACOG met with Sacramento region stakeholders including cities and counties, fire and police departments, state and local OES, Caltrans, and transit operators to collect information on emergency protocols, recent emergency experiences, challenges, and best practices. SACOG formed a stakeholder working group consisting of representatives from these organizations who met three times throughout the course of the project to review and provide feedback on products developed for the Strategy. This stakeholder working group also shared data and information on existing practices in the SACOG region and was instrumental in developing the final Strategy. For more information on the stakeholder working group see the "Stakeholder and Community Engagement Summary" and the Appendix for stakeholder working group meeting notes.
2. **Understanding Existing Conditions:** To improve the emergency preparedness of the Sacramento region, SACOG needed to develop a complete understanding of existing plans, protocols, and

data. Through stakeholder support, SACOG collected and reviewed existing Emergency Operations Plans (EOPs), recent emergency response experiences, available resources, and existing arrangements and agreements between regional partners.

3. **Identify Communication and Evacuation Needs:** In collaboration with the stakeholder working group, SACOG then developed a public survey to collect public feedback on communication needs and practices between transit operators and the public. The survey was also used to collect information on community emergency preparedness and how recent disasters have affected the traveling public. Using the input collected through the survey and stakeholder working group meetings, SACOG identified communication needs and gaps between transit agencies and with the public. These findings included social equity needs of communication, such as providing evacuation announcements in multiple languages and formats. SACOG also identified groups of people that may need evacuation assistance, such as those without personal vehicles, which could be met by regional transit operators.
4. **Identify Emergency Transportation Services and Infrastructure:** Another component of the Strategy is to identify transportation resources that can be deployed in an emergency. Through support from the stakeholder working group, SACOG compiled a list of all regional transportation assets that can be used in an evacuation. SACOG explored the most efficient ways to deploy these services when needed and reviewed transportation strategies that can be used to make evacuations more efficient, such as use of Intelligent Transportation Systems, evacuation routes, and contraflow lanes.
5. **Develop the Sacramento Regional Emergency Preparedness Strategy:** SACOG summarized the information collected and developed into the final Strategy, along with recommendations for improving regional emergency preparedness practices. Recommendations summarized in this Strategy relate to efficient leveraging of transit assets, best practices for interagency and public communication, exercises and trainings, use of ZEVs in an emergency situation, equity considerations of communications, and evacuation procedures. The Strategy is intended to complement, rather than duplicate, existing emergency plans and provide a vision of streamlined and coordinated emergency response in the Sacramento region between jurisdictions, emergency response personnel, and transit agencies. A summary of Strategy recommendations is provided in a later section titled "Summary of Key Recommendations."

1.4 How to Use the Strategy

There are many emergency management plans, processes, and procedures across the SACOG region. Many of these are developed and maintained by the local emergency management agencies as well as other emergency response organizations and associated stakeholders (e.g., transit agencies). Transit agencies have varying degrees of emergency management plans and processes specific to their own mission-essential functions, with the primary goal of continuing to provide mass transportation service to all people within their service area.

This Strategy document is not intended to supersede or circumvent any existing regulatory or operational emergency management plans, processes, or procedures. Rather, it complements them by allowing transit agencies to better integrate into public safety and emergency management organizations within the SACOG region through mutual cooperation and information sharing, as well as

joint emergency preparedness activities. As the lead facilitator, SACOG will use this Strategy document as a guide to enhance overall emergency preparedness within the SACOG region among these stakeholder partners. This document does not direct tactical operations or establish new lines of authority, which belong with each organization's emergency planning processes and legal requirements, in addition to their adherence with the National Incident Management System (NIMS), the Incident Command System (ICS), and the Standardized Emergency Management System (SEMS). Instead, it can provide insight and encourage improvements to them based on lessons learned and enhanced collaboration.

This Strategy summarizes existing practices in the SACOG region, identifies gaps and challenges, and provides recommendations for how to better integrate regional transit agencies and transportation strategies into SACOG area emergency management practices. The reader is encouraged to skip to the sections most relevant to the challenges or interests of their agency. A Summary of Key Recommendations is provided for easy access to a list of the top recommendations made in the document. An Appendix is also provided with additional detail on analyses completed for the Strategy, such as regional hazard mapping, and supplemental resources such as federal and state guidance and funding opportunities.

2 Equity and Inclusion Commitment

California's population is among the most diverse in the nation. Historical influx of immigrants, along with a growing racial and ethnic diversity, presents challenges and opportunities for continually improving strategies to address the needs of the those socially vulnerable in an emergency. Individuals in a local community who are potentially more vulnerable to disaster risk have been a critically growing concern. The intersectional nature defining an individual's ability to evacuate during an event is unique. Social capital, an individual's resilience, and the system that supports them all play a major role in risk exposure and response abilities:

Elevated risk factors and inherent social dynamics need to be considered for assessing individual resilience and response capacities and capabilities. Diverse populations with limited or lessened *social capital* (networks of relationships among people who live and work in a community) are implicitly at greater risk to harm. Communities with robust social networks are better able to coordinate response and recovery, quickly disseminate information and support physical assistance.¹

These shifts in California's and the SACOG region's social landscape have strong implications for addressing its diverse population risk issues pertaining to transportation and evacuation. Individuals with disabilities often need assistance with evacuation, as they may be unable to see approaching danger, hear announcements, or have the resources or abilities to evacuate. The planning and

¹ Daniel P. Aldrich. Building Resilience: Social Capital in Post-Disaster Recovery. University of Chicago Press. 2012

response efforts for the state's high-risk vulnerable populations came under intense scrutiny during the 2019 auditing of disaster response to recent wildfire events.²

The decision-making processes necessary to evacuate can be complex for all populations, but particularly for populations who are socially vulnerable. For effective evacuation preparedness, response, and recovery to occur, the population groups at risk need to have the capacity, skills, and knowledge to understand and access the transportation opportunities that are available to them during an event. Many people who are otherwise self-sufficient may have special circumstances due to short-term issues such as physical or mental health issues, or have temporary resource shortages that impact their evacuation and need for other transportation (e.g., fuel, transportation, etc.).

The ability of all high-risk populations to evacuate using the transportation systems available to them is of key concern in the SACOG region. The commitment by SACOG to support these needs is in alignment with the increasing focus nationally, statewide, and within the SACOG region for improving equity and inclusion in disaster resilience, response, and recovery. The National Advisory Council Report to the FEMA Administrator (dated November 2020) describes the issues of equity, cultural competency, and understanding and building social capital as being among the most critical challenges facing the field of emergency management.³

It is critical that modes of available transportation are identified that can accommodate people with disabilities and other access and functional limitations during an evacuation. Transportation that can accommodate people in wheelchairs, scooters, those dependent on medical support devices, service animals, or other mobility aids, needs to be available. Public transit operators can provide a critical resource to these populations in an emergency, especially when transit vehicles can accommodate people with mobility equipment such as lift-equipped buses or paratransit vans. Regional evacuation efforts should serve all displaced populations with equitable access to the same services, aids, and benefits in a manner that meets their needs.

For a list of transit assets available to support emergency evacuations, see the Transportation Resources section. For a summary of regional travel habits and patterns of some groups who may need evacuation assistance, including those without access to a private vehicle, regular active transportation users, and those who rely on transit, see the

Evacuation section ("Those Who Need Assistance Evacuating in the SACOG Area").

2.1 State and Federal Equity Guidance/Mandates

Ensuring accessibility complies with federal laws governing the Americans with Disabilities Act (ADA) directives. Two bills recently passed in California and were put into code that require disaster planning use culturally appropriate strategies and resources to effectively engage and serve culturally diverse communities and populations deemed to have higher vulnerability to hazards and less capacity for resilience. Federal ADA laws are now supported by amended California Code 8593.3 that addresses

² Auditor of the State of California. "California is not adequately prepared to protect its most vulnerable." <https://www.auditor.ca.gov/reports/2019-103/summary.html>

³ https://www.fema.gov/sites/default/files/documents/fema_nac-report_11-2020.pdf

Disabilities, Access, and Functional Needs (DAFN) support during disaster response and recovery. Equitably evacuating and communicating with all culturally diverse members of the community is addressed in the amended California code 8593.3.5.

- **Amended California code 8593.3.5 /CA Senate Bill 160 (cultural competency):** Passed on October 2019, the bill requires plans to address how culturally diverse communities within its jurisdiction are served. "Culturally diverse communities" includes, but is not limited to, the following: race and ethnicity, including Indigenous peoples, communities of color, and immigrant and refugee communities; gender, including women; age, including the elderly and youth; sexual and gender minorities; people with disabilities; occupation and income level including low-income individuals and the unhoused; education level; people with no or limited English language proficiency; and geographic location. Response actions must include culturally appropriate approaches, resources, and outreach in emergency communications, including the integration of interpreters and translators, and emergency evacuation and sheltering. Additionally, response engagement needs to create a forum for community engagement in geographically diverse locations.
- **Amended California Code, 8593.3/CA Assembly Bill 477 (access and functional needs):** Passed September 2019, the bill requires that jurisdictions specifically serve the access and functional needs population through the following actions: emergency communications, including the integration of interpreters, translators, and assistive technology; and emergency evacuation, including the identification of transportation resources and resources that are ADA compliant for individuals who are dependent on public transportation. (Note: emergency sheltering is also included.)

Considering these recent county-directed mandates, jurisdictions in the SACOG region must consider the individual needs of the region's culturally diverse communities articulated in California code 8593.3.5/CA Senate Bill 160 in evacuation planning. They will also include issues pertaining to digital equity and transportation dependencies. These considerations will be prioritized during SACOG's support to its member counties and jurisdictions during mass evacuation preparedness initiatives and in all response and recovery operations, including reentry. Additionally, SACOG will support its represented counties in engaging and integrating people from the spectrum of representative demographics of local jurisdictions in evacuation planning efforts and in providing quality assurance during response and recovery activities.

See Communicating with People with Disabilities, Access, and Functional Needs and Diverse Populations for more information on communicating with vulnerable groups in an emergency.

2.2 SACOG Racial Equity Action Plan

The commitment to equity and inclusion outlined in this Strategy is in direct alignment with the SACOG Racial Equity Action Plan.

SACOG's Race, Equity, and Inclusion Working Group was established in 2020 to examine SACOG programs and projects through a racial equity lens.⁴ The group designed a "Framework for Advancing Racial Equity" that follows a process of "listen to learn and measure":⁵

- **Listen:** Listen to and elevate the experiences and input of Black people, Indigenous people, other people of color, women, and other marginalized communities, building a racial equity vision for the organization.
- **Learn:** Improve staff understanding related to racial equity through an educational program, providing proposals for modified approaches to projects/programs, exploring new approaches for stakeholder feedback, and exploring racial data to close opportunity gaps across sectors.
- **Measure:** Develop qualitative and quantitative goals and measurements to inform racial equity plan and tracking outcomes.

SACOG adopted a racial equity statement of change and commitment in February 2022. The key elements of the commitment statement were to acknowledge the role of government and SACOG in perpetuating racial disparities; develop a vision and commitment by SACOG to rectify those disparities and benefit everyone; and create a list of actions to address these concerns.

Most recently, SACOG developed a Racial Equity Action Plan in alignment with its statement of commitment and framework.⁶ The goals, objectives, and activities of the Racial Equity Action Plan align with this Strategy in all aspects to ensure equity in service, in communications about transportation services, and in the engagement of the region's diverse populations in both informing the Strategy and in the assessment of transportation services over time.

3 Situational Overview

3.1 County/Jurisdiction Overview

The SACOG region covers the six counties of Sacramento, Yolo, Sutter, Yuba, Placer, and El Dorado, and their cities (see Figure 1). SACOG is designated by the state as a Metropolitan Planning Organization (MPO), which requires that SACOG update the regional transportation plan for the region every four years. SACOG is also the Regional Transportation Planning Agency (RTPA) for Sacramento, Sutter, Yolo, and Yuba Counties. In addition to its role as an MPO and RTPA, SACOG works with its member counties and cities on challenges that are too large for any one jurisdiction to solve alone, including addressing issues related to equity, economy, and environment. SACOG assists its members with interregional coordination and planning, such as is addressed in this Strategy through the lens of emergency coordination between local emergency managers and transit operators.

⁴ <https://www.sacog.org/race-equity-inclusion-working-group>

⁵ <https://www.sacog.org/post/framework-advancing-racial-equity>

⁶ https://www.sacog.org/sites/main/files/file-attachments/sacog_reap_-_working_draft_july_25_2022.pdf?1664226225

Each of the SACOG region's six counties has an OES that provides emergency management services for the County/Operational Area. The OESs are integrated with the SEMS and NIMS processes. Each has its own EOP as documented in Table 1. All six counties have Hazard Mitigation Plans.

At the local level, cities also conduct emergency management activities. There are 22 member cities in the SACOG region.⁷ Many of the cities prepare EOPs including Sacramento,⁸ Elk Grove,⁹ and Winters.¹⁰

⁷ https://www.sacog.org/sites/main/files/file-attachments/factsheet_sacog.pdf

⁸ <https://www.cityofsacramento.org/-/media/Corporate/Files/Emergency-Services/2018-City-of-Sacramento-Emergency-Operations-Plan.pdf?la=en>

⁹ http://p1cdn4static.civiclive.com/UserFiles/Servers/Server_109585/File/Departments/emergency_preparedness/city_of_elk_grove_emergency_operations_plan.pdf

¹⁰ <http://www.cityofwinters.org/wp-content/uploads/2018/05/WintersEOP2018.pdf>

Figure 1. SACOG Planning Area and Boundaries

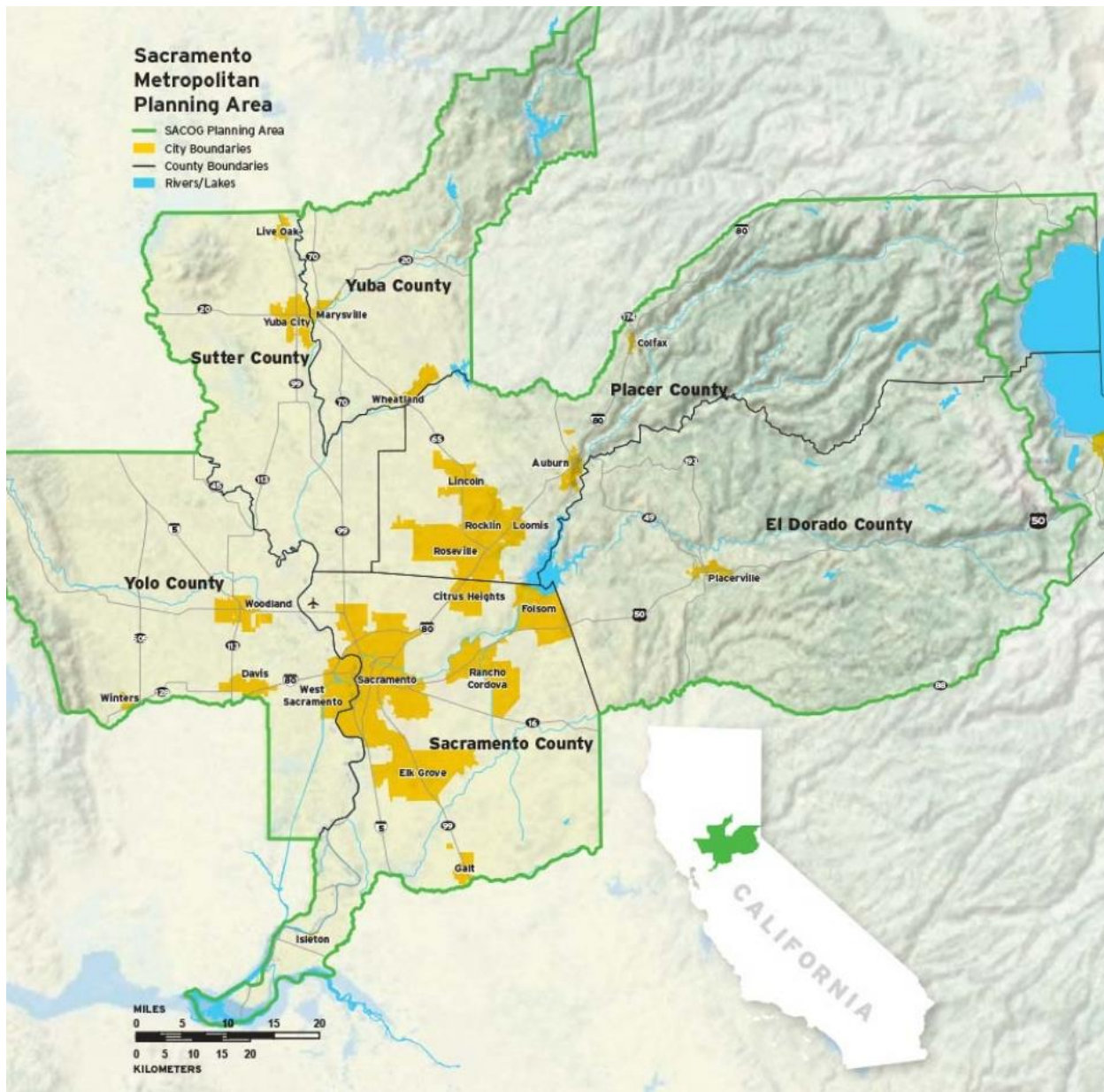
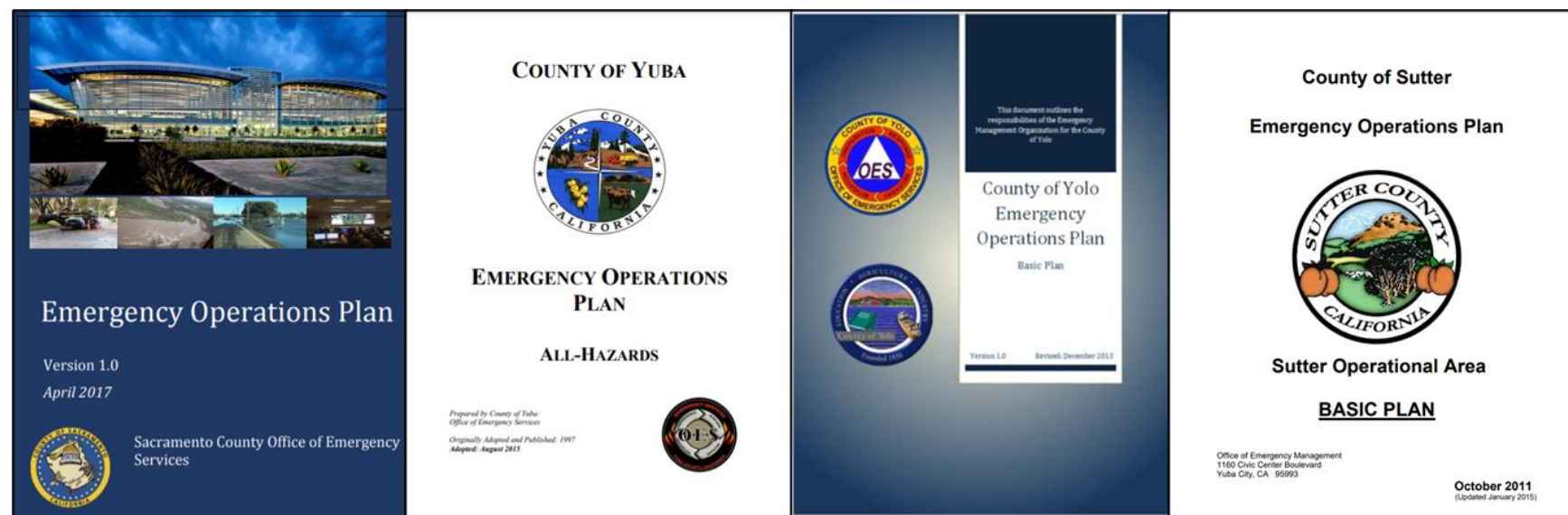


Table 1. SACOG Region County Emergency Operations Plans

County	OES Office and Contact Information	Emergency Operations Plan Information
El Dorado	330 Fair Ln, Placerville, CA 95667 (530) 621-5895	El Dorado County Emergency Operations Plan (revised 2014).
Placer	2968 Richardson Dr, Auburn, CA 95603 (530) 886-5300	Placer County Emergency Operations Plan (revised 2010; according to the County's website, a revision was pending in 2021) and associated annexes.
Sacramento	3720 Dudley Blvd, McClellan Park, CA 95652 (916) 874-4670	Sacramento County Emergency Operations Plan (revised 2017) and associated annexes: https://sacoes.saccounty.gov/EmergencyManagement/Pages/Planning.aspx
Sutter	1130 Civic Center Blvd. Yuba City, CA 95993 (530) 822-4575	Sutter County Emergency Operations Plan (revised 2015; another revision is pending) and associated annexes: https://www.suttercounty.org/home/showpublisheddocument/1040/637475219003170000
Yolo	625 Court Street, Woodland, CA 95695 (530) 666-8150	Yolo County Emergency Operations Plan (revised 2013) and associated annexes: https://www.yolocounty.org/government/general-government-departments/office-of-emergency-services/reports-and-publications
Yuba	915 8 th St # 117, Marysville, CA 95901 (530) 749-7520	Yuba County Emergency Operations Plan (revised 2015) and associated annexes: https://files4.revize.com/yubaca/Yuba%20County/Emergency%20Services/YubaCounty_EOP_ADOP_TED_August-2015.pdf

Figure 2. SACOG Region County Emergency Operation Plans (see links in table for image sources)



3.2 Regional Transit Agencies

Twelve different transit agencies provide service in the SACOG region, providing trips between local jurisdictions and outside of the region. Table 2 provides a short summary of each agency, the areas they serve, and the services they provide (e.g., paratransit).

Table 2. SACOG Regional Transit Agencies and Services

Transit Agency	County and Cities Served	Services Offered
Auburn Transit	Within the City of Auburn and portions of unincorporated Placer County	Bus (fixed route and recreational route) rideshare options
Davis Community Transit	Within one mile of either a Unitrans bus route or any local portion of a YoloBus route (see below)	Complementary paratransit provider for Unitrans and YoloBus for ADA riders only, scheduled pickups and drop offs, paratransit
El Dorado Transit	Placerville, El Dorado County, Sacramento, Folsom, Sacramento County	Bus (fixed route), and paratransit services (dial-a-ride)
Paratransit, Inc.	HQ in Sacramento – programs supported are listed on their website: https://paratransit.org/programs-and-services/	Mobility training (teaching how to navigate fixed-route bus and light-rail systems), contracted transportation for agencies, driver trainings, vehicle maintenance for non-profit organizations, accessible vehicle rentals, mobility management and consulting services
Placer County Transit	Placer County, Colfax, Lincoln, Rocklin. Commuter express bus connects Western Placer County to downtown Sacramento Note: PCT provides connections with Auburn Transit, Gold Country Stage (Nevada County), Lincoln Transit, Roseville Transit, and the SacRT at designated transfer points within respective jurisdictions. (https://pctpa.net/transit/public-transit/)	Bus (fixed route), vanpool program, paratransit (dial-a-ride), commuter express bus service
Roseville Transit	City of Roseville, City of Sacramento Note: Service operates on fixed routes in Roseville with connections to Placer County Transit and Sacramento Regional Transit	Bus (fixed route), commuter express bus service, paratransit (dial-a-ride), Game Day Express (service for Sacramento Kings home games)
SacRT	Sacramento County: Sacramento, Rancho Cordova, Citrus Heights, Folsom, Natoma	Bus, light rail, microtransit, community bus, paratransit (dial-a-ride)
San Joaquin Regional Transit District (RTD)	San Joaquin County, Sacramento, Dublin, Stockton, Tracy, Lodi, Manteca, Ripon, Lathrop, Escalon	Bus (fixed route), BRT Express, Metro Hopper (deviated fixed-route), Commuter BART/RTD, "Van Go!" (pilot program on-demand rideshare with no transfers or zones), paratransit (dial-a-ride)
South County Transit (SCT)/Link	Sacramento County, Sacramento, Galt, Lodi, Elk Grove, Isleton	Bus (fixed route), paratransit (dial-a-ride), paratransit expanded services (Lifeline Service, Medical Run)
Unitrans	Davis	Bus (fixed route)
YoloBus	Davis, West Sacramento, Sacramento, Winters, Woodland with stops at UC Davis, SMF, UC Davis Medical Center, Sutter Health Park, and Cache Creek Casino Resort	Bus (fixed route), microtransit, paratransit, and airport service

3.3 Other Regional Stakeholders

3.3.1 Tribal

There are four federally recognized Tribes in the SACOG region: the Wilton Rancheria, United Auburn Indian Community, Yocha Dehe Wintun Nation, and the Shingle Springs Band of Miwok Indians. The project team reached out to staff from each of the Tribes to understand existing emergency management activities and plans, challenges they face in emergency preparedness and evacuation, and if they have vehicles such as school buses, tribal office vehicles, and casino shuttles that are available for use in an evacuation. Table 3 summarizes information about Tribal EOPs. The Yocha Dehe Wintun Nation's emergency management processes are well-documented in the Yolo County HMP. It is unknown whether the other three Tribes have EOPs in place; the project team reached out to learn more about their current plans.

Table 3. Tribal Emergency Operation Plans

Name	County	EOP Information
Shingle Springs Band of Miwok Indians	El Dorado	Unknown
United Auburn Indian Community	Placer	Unknown
Wilton Rancheria	Sacramento	Worked with local law enforcement, the FBI, and DHS to create an evacuation plan for the Sky River Casino
Yocha Dehe Wintun Nation	Yolo	Yocha Dehe Wintun Nation Community Profile ¹¹

3.3.2 Medical Facilities

REGIONAL TRANSIT AND MEDICAL FACILITY ACCESS

The SACOG region includes 20 general hospitals and hundreds of clinics, community health centers, skilled nursing facilities, psychiatric hospitals, mental health clinics, and more. Many patients, their family members, and visitors rely on regional transit systems to access healthcare facilities as well as other health-promoting services and support (e.g., pharmacies). The availability of public transportation is a key social determinant of health (SDOH) having a major impact on people's health, well-being, and quality of life. SDOH are a key focus area of the U.S. Department of Health and Human Services Health People 2030 public health strategy.¹²

REGIONAL TRANSIT AND DISASTERS/EMERGENCY EVACUATION

There are numerous regulatory and licensing requirements for medical facilities to have a written EOP, including California Code of Regulations Title 22, The Joint Commission, NFPA 99 Health Care Facilities Code, and those that receive funding from the Centers for Medicare & Medicaid Services, and more. These EOPs will likely include information for internal (horizontal and vertical) evacuation as well as complete facility evaluation.

If medical facilities need to completely evacuate patients/residents and staff to an off-site or alternate location, they will first utilize internal resources before moving to existing contracts/Memoranda of Understanding (MOU) with private transportation providers, if needed. If additional resources are still

¹¹ <https://www.yolocounty.org/home/showpublisheddocument/54349/636722714948200000>

¹² <https://health.gov/healthypeople>

required, they will look to other private sector providers. Following SEMS, if the medical facilities need additional resources (e.g., transportation, staffing, etc.), their local Medical and Health Operational Area Coordinator (MHOAC) will attempt to locate the requested resource from within their Operational Area (OA). The transportation resource identified to assist the medical facility may include private or public sector resources (e.g., a regional transit system or paratransit system). If the resource is not available within their OA, the MHOAC will send the resource request to their respective Regional Disaster Medical & Health Specialist (RDMHS) to be fulfilled. Medical facilities or any field-level provider do not contact the RDMHS directly for resource requests since these need to be vetted by the applicable MHOAC Program first and may be available within the OA.

Medical facilities coordinate with their local MHOAC to determine the destination of the evacuated patients, and to help identify preferred or prioritized routes to reach the evacuation collection site.

The type of transportation required is based on the acuity level and type of care required, ranging from an Advanced Life Support (ALS) ambulance to a minibus. The movement of patients includes the accompaniment of their medications, equipment, and medical records, as well as medical staff to provide ongoing care during transportation.

If the medical facility does not have existing transportation resources, does not have agreements in place, and is not knowledgeable or experienced in the MHOAC process, they are likely to call 9-1-1 for assistance. If this occurs, PSAPs need to have a process to escalate the request.

3.4 Stakeholder Trainings

Training and drills are part of the ongoing process to remain in a constant state of preparedness and will be an important part of implementing the Strategy to improve emergency preparedness in the SACOG region. Training allows transit agencies and other stakeholders to identify effective practices and build working relationships before an emergency event. Current practices for training and exercises vary significantly by transit agencies within the region. Table 4 documents the information provided by stakeholders. Blank entries in the "Response" column indicate that the status of stakeholder trainings is unknown.

Table 4. Current Training and Exercise Practices for Transit Agencies and County OES Departments

Agency	Response
Auburn Transit	—
Davis Community Transit	—
El Dorado Transit	Typically, emergency response training is on a smaller scale, dealing with internal practices in case of events. This is done for supervisor response, dispatch response, and operator response. These trainings are built with training tools we currently have, past events, and current events that affect transportation. El Dorado Transit also lends our buses annually to the El Dorado County Sheriff's Department for hostage training.
Paratransit Inc	Our agency has our own emergency response plan and has MOUs with City of Sacramento, County of Sacramento, and Cal OES. We also participate in the regular roundtables and exercises coordinated by the County.
Placer County Transit	--
Roseville Transit	The City has an Emergency Management Team (EMT) that meets monthly. This group, which is composed of individuals from all City departments, also holds one emergency exercise annually. Also, the City's police department and fire department work together to hold biannual drills, a monthly meeting, and one annual exercise.
SacRT	Full-size exercise and training program. Have received significant funding from DHS for this program. Get strong participation from other agencies (including the FBI). Provide training to emergency responders on SacRT. Training on NIMs, and ICS. Do one full-scale exercise every year. Emergency management training about four times a year, depending on who signs up for it. Interface with four TSA staff on a regular basis.
San Joaquin RTD	--
SCT/Link	All Storer Transit System Operation Centers promote training exercises and critical-event drill training to improve familiarity with STS transit fleet vehicles for First Responder Training. Training should include facility-yards and operation centers. Storer Transit Systems is committed to testing their emergency preparedness plans through disaster drills and exercises through fleet vehicle driver training workshops. Also, Storer Transit Systems Operation Centers are committed to participating in community emergency response exercises.
Unitrans	No exercises
Yolobus	In regular communication with relevant stakeholders (Yolo County OES, airport). Invited each year to Yolo County OES training.
Yuba Sutter Transit	No exercises
El Dorado County OES	--
Placer County OES	--
Sacramento County OES	Regular quarterly meetings with stakeholders including SacRT. Regular training and exercises.
Sutter County OES	No exercises
Yolo County OES	ESF1 Partners are invited (each year) for EOC training to understand the EOC and Field interface. Specific (smaller) drills and exercises are done per jurisdiction (at their request). Evacuations have happened annually in Yolo for the last seven years due to either fires or floods. Also, airport staff have come to EOC training meetings. Working on a project to film buses so they can share more information on existing resources.
Yuba County OES	--

In preparation for the development of the Strategy, the project team reviewed several trainings and drills currently used in the Sacramento region. One local transit agency simulated an evacuation of a correctional facility. The agency coordinated with the local police departments and dispatched buses to the correctional facility to "evacuate" residents. The agency had the following objectives:

- Determine an efficient process to provide emergency transportation
- Document vehicles available
- Practice emergency communications
- Utilize the ICS
- Train and orient staff in emergency management
- Test internal and external communication practices
- Demonstrate the ability to dispatch buses to a new location
- Work effectively with local law enforcement during emergencies
- Coordinate different modes for evacuation purposes
- Follow COVID-19 protocols during the exercise
- Satisfy Department of Homeland Security (DHS) grant requirements

The agency met these objectives while maintaining service to unaffected areas in their service area.

Through this simulation, the agency learned some valuable lessons about their operations. The agency provided recommendations to further improve their response during an emergency, centered around the following:

- Establishing an emergency management training program (includes training newer employees, division training modules for radios, scenario planning, etc.)
- Determining authority (e.g., stop/pull service or call in off-duty personnel)
- Establishing and/or updating MOUs with the local city and county
- Developing procedures (e.g., for calling in off-duty personnel)
- Learning the range of ZEVs
- Drafting a checklist to determine when to provide emergency services
- Creating and maintain a 24/7/365 on-call management list
- Developing evacuation routes and knowing which roads may not allow full-size buses
- Identifying other government agencies that may need assistance with evacuation

3.5 Regional Hazards

This section briefly summarizes information about hazards affecting the SACOG region.

3.5.1 Local Hazard Mitigation Plans

Each county in the SACOG region completes a FEMA-approved Local Hazard Mitigation Plan (LHMP) on a regular basis (updated every five years; reviewed annually). As part of the LHMP process, a risk assessment is conducted to identify the characteristics and potential consequences of hazards. This includes understanding where the hazard may occur and what people, property, or community assets may be in harm's way. The following table identifies hazards that are identified as having a high significance, indicating a potential widespread impact.

Table 5. Hazards with High *Significance Identified in SACOG Region Local Hazard Mitigation Plans*

County	High Significance Hazards	LHMP Information
El Dorado	<ul style="list-style-type: none"> • Dam Failure • Drought • Seiche (Lake Tsunami) • Severe Weather: Thunderstorms/Tornadoes • Wildfire 	El Dorado County LHMP (revised 2018): https://www.edcgov.us/Government/heriff/Documents/ElDoradoCounty_LHMP.pdf
Placer	<ul style="list-style-type: none"> • Dam Failure • Drought & Water Shortage • Floods • Seiche (Lake Tsunami) • Severe Weather: High Winds and Tornadoes • Tree Mortality • Wildfire 	Placer County LHMP (revised 2021): https://www.placer.ca.gov/1381/Local-Hazard-Mitigation-Plan
Sacramento	<ul style="list-style-type: none"> • Dam Failure • Floods • Levee Failure • Wildfire 	Sacramento County Multi-Jurisdictional LHMP (revised 2021): https://waterresources.saccounty.gov/Pages/Drainage--Draft-Local-Hazard-Mitigation-Plan-Report.aspx
Sutter	<ul style="list-style-type: none"> • Dam Failure • Drought & Water Shortage • Floods • Levee Failure • Pandemic 	Sutter County Local Hazard Mitigation Plan (revised 2021): https://www.suttercounty.org/government/country-departments/emergency-services/office-of-emergency-management-oem/hazard-mitigation
Yolo	<ul style="list-style-type: none"> • Climate change • Dam Failure • Drought • Earthquake • Levee failure/Flooding • Severe Weather: High winds, Fog • Wildfire 	2018 Yolo OA Multi-Jurisdictional Hazard Mitigation Plan (revised 2018): https://www.yolocounty.org/home/showpublisheddocument/55805/636796131647430000
Yuba	<ul style="list-style-type: none"> • Floods • Levee Failure • Wildfire 	Yuba County LHMP (revised 2021): https://files4.revize.com/yubaca/Yuba%20County/Emergency%20Services/Disaster%20Planning/2021%20Yuba%20County%20LHMP.pdf

In addition, SACOG's 2020 Vulnerability and Criticality Assessment analyzed the relative criticality and vulnerability of different transportation assets to climate change.¹³ SACOG leveraged data on hazards, assets, and communities to perform the assessment. The hazards assessed were tidal flooding/sea level rise, storm surge, wildfire, extreme heat, and riverine flooding. The asset types assessed were roadways, transit stops, light-rail lines, airports, and roadway bridges and culverts. For more information on the Vulnerability and Criticality Assessment and climate adaptation planning conducted by SACOG visit: <https://www.sacog.org/climate-adaptation-planning>

¹³ The assessment is available here:
https://www.sacog.org/sites/main/files/sacog_vulnerability_and_criticality_assessment_report.pdf

For this tech memo, the project team reviewed historical event data from FEMA and the National Oceanic and Atmospheric Administration (NOAA). In addition, the team mapped several hazard-related datasets in the SACOG region. These hazard maps can be found in the Appendix under Regional Hazards Maps.

3.5.2 Events

NOAA maintains a Storm Events Database with information on deaths, injuries, and property damages for different types of storms.¹⁴

Table 6 shows deaths, injuries, and property damage by event type for the SACOG region from 1996 through January 2022. According to the database, storms directly caused 65 deaths, 162 injuries, and over \$616 million in property damage over that period. Extreme heat caused the most deaths (12), and wildfire caused the most injuries (58). Wildfire was responsible for the most property damage (over \$523 million). The largest single property damage event in the region was the 2007 Angora wildfire in El Dorado County.

Table 6. Storm Deaths, Injuries, and Property Damage in SACOG Region Counties by Event Type, Jan. 1996–Jan. 2022 (data from NOAA Storm Events Database)

Event Type	Deaths (Direct)	Injuries (Direct)	Property Damage (Non-Crop)
Avalanche	9	12	\$-
Cold/Wind Chill	5	0	\$-
Debris Flow	0	0	\$7,305,000
Dense Fog	6	38	\$2,320,000
Extreme Heat	12	33	\$-
Flood	7	2	\$49,522,000
Frost/Freeze	0	0	\$200,000
Hail	0	0	\$113,030
Heavy Rain	2	1	\$475,000
High Wind	6	6	\$28,133,600
Lightning	0	1	\$152,000
Tornado	0	0	\$1,826,000
Wildfire	9	58	\$523,725,000
Winter Storm	9	11	\$2,381,000
Total	65	162	\$616,152,630

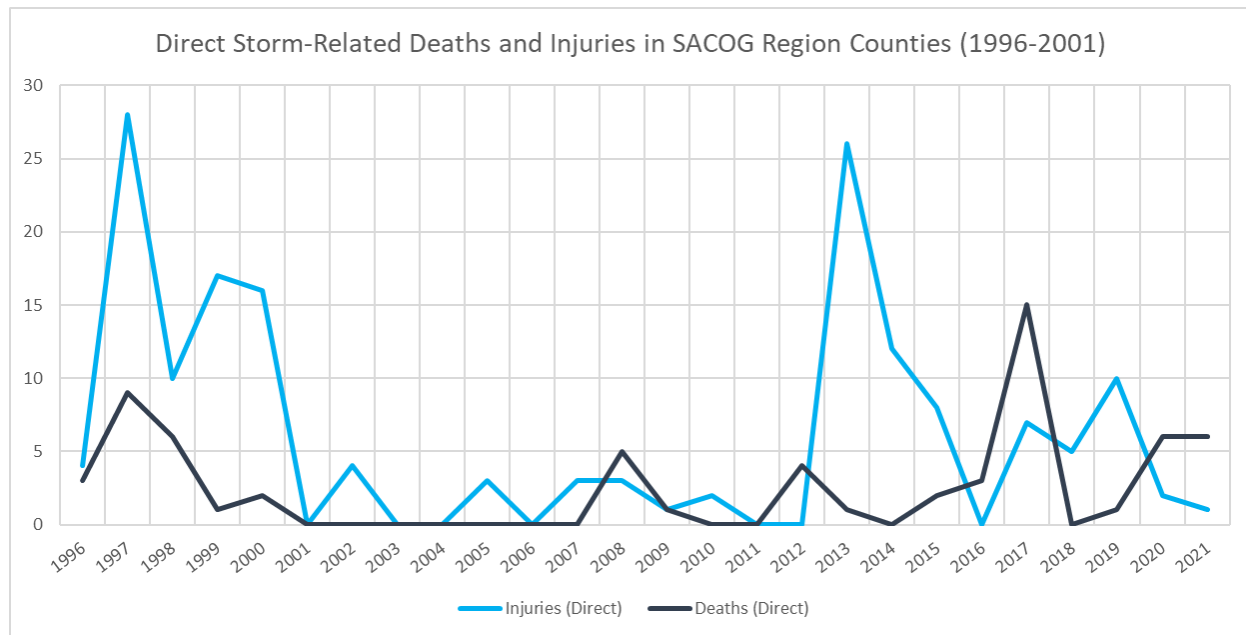
Table 6 includes storms that directly caused at least one injury or death, or at least some property damage, excluding crop damage.¹⁵

Figure 3 shows the number of deaths and injuries directly caused by storms in the SACOG region counties each year from 1996 through 2001.

¹⁴ <https://www.ncdc.noaa.gov/stormevents/>

¹⁵ Some event types have been consolidated in this table (e.g., Extreme Heat includes NOAA's Heat and Excessive Heat event types). Per NOAA, the query for the six SACOG counties (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba) returns events for the following zones, which are included in the totals: Central Sacramento Valley, Southern Sacramento Valley, Carquinez Strait and Delta, Motherlode, West Slope Northern Sierra Nevada, and Greater Lake Tahoe Area.

Figure 3. Storm Deaths and Injuries in SACOG Region Counties by Year, 1996-2001 (data from NOAA Storm Events Database)



3.5.3 Disaster Declarations

FEMA provides a Disaster Declarations Summary dataset that catalogues previous federal disaster declarations by location and incident type.¹⁶ Table 5 and Figure 4 summarize this information for the six-county SACOG region.¹⁷ Fire, flooding, and severe storms have resulted in the most federal disaster declarations over the past several decades in the region (1953-2021). Each of the counties has experienced at least 15 of these declarations in that period.

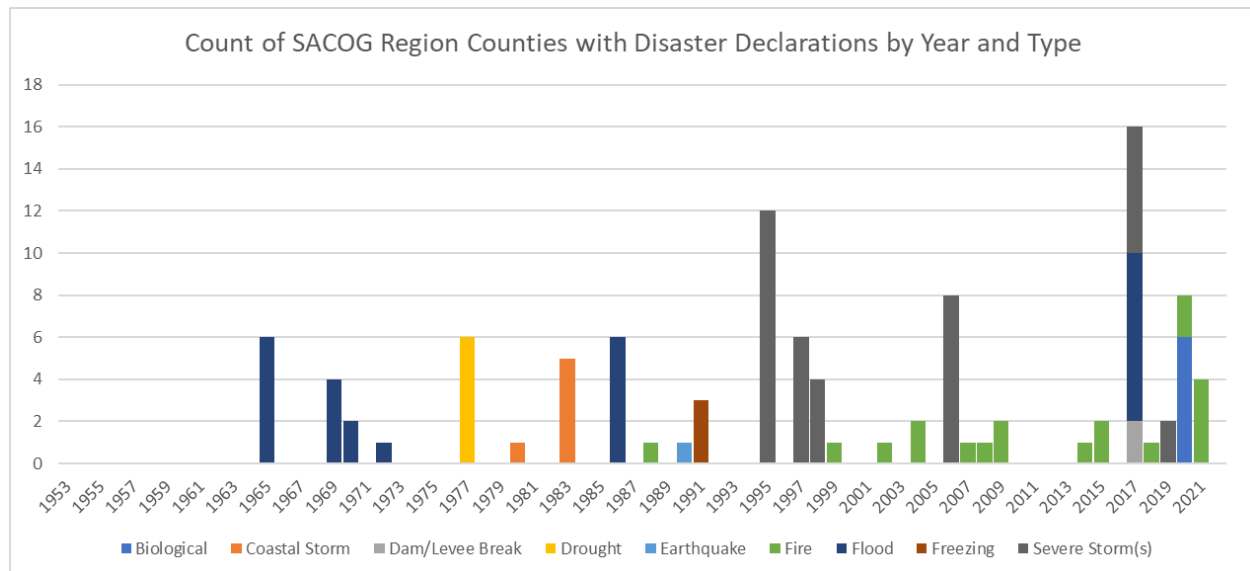
¹⁶ <https://www.fema.gov/openfema-data-page/disaster-declarations-summaries-v2>

¹⁷ In Table 5 and Figure 2, the project team removed some obvious duplicate entries and disasters from outside the region. Also, the 'Incident Type' reflects the category of incident assigned in the FEMA dataset. However, some of the incidents include multiple types of hazards. For instance, the 1983 incident labelled as 'Coastal Storm', but that event also involved tornadoes, flooding, and slides that affected portions of the SACOG region.

Table 7. Federal Disaster Declarations in SACOG Region by Type and County, 1953-2021 (data from FEMA Disaster Declarations Summary)

County	Bio-logical	Coastal Storm	Dam/Levee Break	Drought	Earth-quake	Fire	Flood	Freeze	Severe Storm(s)	Grand Total
El Dorado	1			1		4	5		7	18
Placer	1	1		1		7	3		6	19
Sacramento	1	2		1	1		6		6	17
Sutter	1	1	1	1			4	1	6	15
Yolo	1	1		1		2	4	1	7	17
Yuba	1	1	1	1		6	5	1	6	22
Grand Total	6	6	2	6	1	19	27	3	38	108
Grand Total (Unique)	1	2	1	1	1	19	7	1	8	41

Note: The Grand Totals by Incident Type count disasters that spanned multiple counties more than once. Therefore, a Grand Total (unique) row was added that counts each multi-county incident only once.

Figure 4. Count of SACOG Counties with Federal Disaster Declarations by Year and Type, 1953-2021 (data from FEMA Disaster Declarations Summary)

4 Concept of Operations

4.1 Organization and Responsibilities

This section reviews some main features of the existing emergency management structure and processes in the SACOG region, including at the federal, state, and local levels.

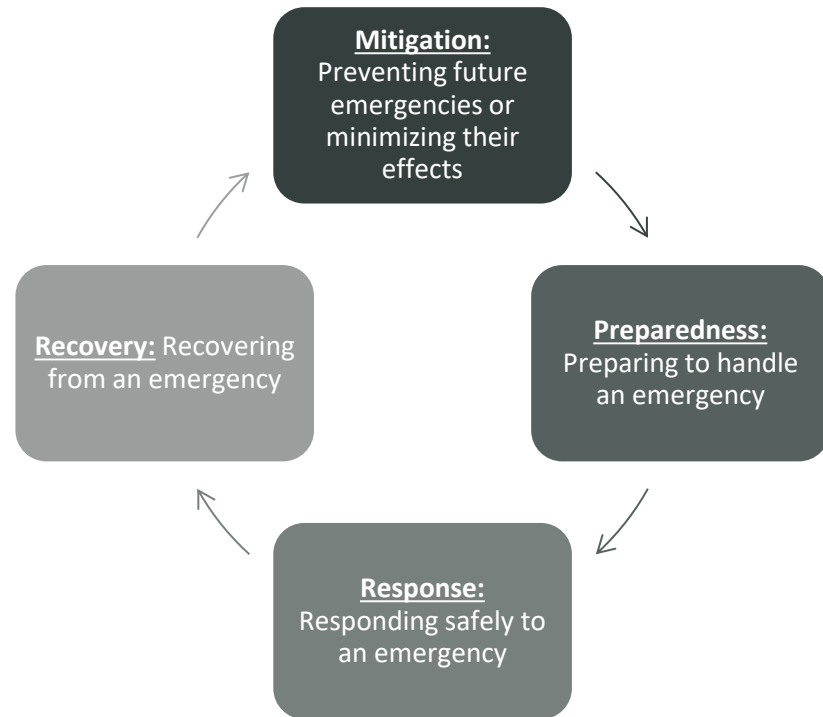
FEMA defines emergency management and identifies its mission as follows:

- **Emergency Management:** The function charged with creating the framework within which communities reduce vulnerability to hazards and cope with disasters.

- **Mission:** Protect communities by coordinating and integrating all activities necessary to build, sustain, and improve the capability to mitigate against, prepare for, respond to, and recover from threatened or actual natural disasters, acts of terrorism, or other human-made disasters.

According to FEMA and the California Governor's Office of Emergency Services (Cal OES), emergency management encompasses several phases: mitigation, preparedness, response, and recovery (Figure 5).¹⁸

Figure 5. Phases of Emergency Management



¹⁸ <https://training.fema.gov/emiweb/earthquake/neh0101220.htm>

FEDERAL

National Incident Management System

FEMA defines NIMS as follows:

A systematic, proactive approach to guide all levels of government, NGOs, and the private sector to work together to prevent, protect against, mitigate, respond to, and recover from the effects of incidents. NIMS provides stakeholders across the whole community with the shared vocabulary, systems, and processes to successfully deliver the capabilities described in the National Preparedness System. NIMS provides a consistent foundation for dealing with all incidents, ranging from daily occurrences to incidents requiring a coordinated Federal response.¹⁹

NIMS is a standardized approach to incident management developed in accordance with Homeland Security Presidential Directive-5. It is intended to facilitate coordination between all responders—including all levels of government—with public, private, and nongovernmental organizations.

Incident Command System

ICSs are one of the components of NIMS. As described by FEMA, "ICS is a standardized approach to the command, control, and coordination of on-scene incident management that provides a common hierarchy within which personnel from multiple organizations can be effective."²⁰ It specifies an organizational structure that can be used by all levels of government and other organizations for any scale of incident caused by any type of hazard.

An ICS covers several functions: Command, Operations, Planning, Logistics, and Finance/Administration. An ICS includes a command structure, led by either a Single Incident Commander or a Unified Command, supported by command staff and general staff.

Emergency Operations Centers

Emergency Operations Centers (EOCs) are another component of NIMS. FEMA defines EOCS as:

Locations where staff from multiple agencies typically come together to address imminent threats and hazards and to provide coordinated support to incident command, on-scene personnel, and/or other EOCs. EOCs may be fixed locations, temporary facilities, or virtual structures with staff participating remotely.²¹

Joint Information Systems

Joint Information Systems (JISs) are also a component of NIMS. As defined by FEMA, JISs are the "processes, procedures, and tools to enable communication to the public, incident personnel, the

¹⁹ https://www.fema.gov/sites/default/files/2020-07/fema_nims_doctrine-2017.pdf

²⁰ https://www.fema.gov/sites/default/files/2020-07/fema_nims_doctrine-2017.pdf

²¹ https://www.fema.gov/sites/default/files/2020-07/fema_nims_doctrine-2017.pdf

media, and other stakeholders."²² A Joint Information Center (JIC) is a facility that accommodates JIS operations.

STATE

California Standardized Emergency Management System

Per Cal OES, SEMS is "the cornerstone of California's emergency response system and the fundamental structure for the response phase of emergency management. The system unifies all elements of California's emergency management community into a single integrated system and standardizes key elements."²³

SEMS is designed to be compatible with NIMS. The primary SEMS functions are Command/Management, Operations, Planning/Intelligence, Logistics, and Finance/Administration.

By California law, state agencies must use SEMS when responding to emergencies involving multiple jurisdictions or multiple agencies. Local governments are strongly encouraged to use SEMS, and they must use SEMS in order to be eligible for state funding of certain response-related personnel costs.

SEMS provides for a five-level emergency response organization, activated as needed, to provide an effective response to multi-agency and multi-jurisdiction emergencies. SEMS allows the response to shrink and grow as the incident evolves. Only the levels needed to respond are activated. Each level utilizes the same ICS. The five different SEMS organizational response levels are as follows:

- **Field Level:** Commands emergency response personnel and resources to carry out tactical decisions and activities in direct response to an incident or threat.
- **Local Level:** Manages and coordinates the overall emergency response and recovery activities within their jurisdiction. Typically, when a local emergency is declared, an EOC is activated.
- **Operational-Area Level:** Manages and coordinates information, resources, and priorities among local governments and special districts within the OA and serves as the coordination and communication link between the local governmental level and the regional level. An OA is the geographical boundaries of a county.
- **Regional Level:** Manages and coordinates information and resources among operational areas within the mutual aid region and between operational areas and the state level. This level, along with the state level, coordinates overall state agency support for emergency response activities. The Regional level operates out of a Regional Emergency Operations Center (REOC). There are three Cal OES Administrative Regions: Inland, Coastal, and Southern. All six of the SACOG counties are in the Inland region.
- **State Level:** Manages state resources in response to the emergency needs of the other levels, manages and coordinates mutual aid among the mutual aid regions and between the regional level and state level, and serves as the coordination and

²² https://www.fema.gov/sites/default/files/2020-07/fema_nims_doctrine-2017.pdf

²³ https://www.CalOES.ca.gov/PlanningPreparednessSite/Documents/California_State_Emergency_Plan_2017.pdf

communication link with the federal disaster response system. The State level operates out of the State Operations Center (SOC).

Transit agencies would typically be involved in the Field Level, Local Level, Operational-Area Level, and Regional Level, depending on the type of assistance or coordination they are providing to the emergency incident. This may be in many different forms, including Unified Command participation, transit-specific resource management, operational supervision of transit assets in the field, and resource request processing.

California Master Mutual Aid System

Statewide mutual aid is voluntary aid provided between and among local jurisdictions and the State under the terms of the California Disaster and Civil Defense Master Mutual Aid Agreement (MMAA), as provided for in the California Emergency Services Act. The MMAA creates a formal structure wherein each jurisdiction retains control of its own facilities, personnel, and resources, but may also receive or render assistance without the expectation of reimbursement, to other jurisdictions within the State.

California Mutual Aid Regions

A multi-county area established by the Cal OES to facilitate coordination of mutual aid. California is divided into six mutual aid regions, all coordinated by the Cal OES. Each region has Mutual Aid Coordinators that will help to process mutual aid requests between counties and, if necessary, across regions. Mutual Aid Regions I through VI were established in California under the Emergency Services Act and each contains designated counties.

The Mutual Aid Regions are mapped in Figure 7 and listed below. El Dorado, Placer, Sacramento, and Yolo counties are in Mutual Aid Region IV, and Sutter and Yuba counties are in Mutual Aid Region III.

- **Mutual Aid Region I:** Los Angeles, Orange, San Luis Obispo, Santa Barbara, Ventura
- **Mutual Aid Region II:** Alameda, Contra Costa, Del Norte, Humboldt, Lake, Marin, Mendocino, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma
- **Mutual Aid Region III:** Butte, Colusa, Glenn, Lassen, Modoc, Plumas, Shasta, Sierra, Siskiyou, Sutter, Tehama, Trinity, Yuba
- **Mutual Aid Region IV:** Alpine, Amador, Calaveras, El Dorado, Nevada, Placer, Sacramento, San Joaquin, Stanislaus, Tuolumne, Yolo
- **Mutual Aid Region V:** Mariposa, Merced, Madera, Fresno, Tulare, Kings, Kern
- **Mutual Aid Region VI:** Mono, Inyo, San Bernardino, Riverside, San Diego, Imperial

Figure 6. SEMS Organizational Levels (adapted from State of California Emergency Plan)



- Relocate a part of operations closer to the front line of an emergency event to facilitate service provisions, such as evacuating residents. The determination of whether or not to relocate operations should be made in coordination with regional emergency preparedness and response agencies when a more forward, front-line site is required.

When staging operations elsewhere, it is critical that necessary operations and support personnel have access to staging facilities as well. Coordination with other agencies, such as law enforcement, may be needed to ensure these personnel are able to access these locations and the roadways leading to them.

Alternative facilities should have adequate external space to accommodate bus staging. The alternative location would preferably be located at a local or county governmental facility at which transit agencies can establish internal communications and employees can access necessary facilities.

For front-line use, a large open lot can be used, such as a large park-and-ride facility, shopping center, church, or employment site. The site should be large enough to accommodate buses, other transit agency vehicles, fuel tanker trucks, a trailer or large vehicle housing operations personnel, portable toilets (where standard facilities are unavailable), other support services (e.g., food trucks, Red Cross, emergency medical vehicles and equipment), and parking for operators and other agency employees. Access to electrical and water service is also important. Portable electric generators can help provide these services and are recommended for emergency situations.

Equipment that would be transported to an alternative site from the primary operating and communications base includes tents or canopies, folding tables and chairs, traffic cones, portable signs, flashlights, and portable lighting. It would be best for the transit agency to keep these items on hand so that they can be quickly deployed. They also need to be routinely tested and maintained. Any employee that is expected to use this equipment should also receive adequate training.

A secondary location can be secured to provide parking when the primary alternative location does not have sufficient space. The transit agency should operate a shuttle service between the two locations.

Agencies should investigate the range of potential alternative locations on a regular basis and work with facility and property owners to secure agreements for their emergency use as well as liability arrangements, and to determine the best way for the agency and owner to communicate during an emergency.

Alternative fueling and charging accommodations should be made in the event that access to the transit agency's fueling or charging facilities are disrupted. This can include use of commercial service stations, arrangements for direct fuel deliveries, and portable charging or pumping/dispensary equipment as needed.

Table 8 shows potential staging locations that were provided by the SACOG region's transit agencies.

Table 8. Potential Staging Locations Provided by Transit Agencies

Agency	Staging Locations
Auburn Transit	—
Davis Community Transit	—
El Dorado Transit	Day, event type, length of time, and size of vehicles may dictate where a vehicle could stage. The following are potential locations: <ul style="list-style-type: none"> • El Dorado County Fairgrounds • Placerville Station • Ray Lawyer Park and Ride • Ponderosa Park and Ride • Cambridge Park and Ride • El Dorado Hills Park and Ride • Coach and Rodeo (In Cameron Park) • Safeway Plaza (Pony Express Trail) • Green Valley Church
Paratransit Inc	—
Placer County Transit	—
Roseville Transit	Depends on location and type of emergency. For a large-scale emergency, a command center would be set up. Usually, a City building can be used. In this case, the occupants would be evacuated, and a command center set up. Beyond that, we look at what are our resources are and where the emergency is. The City of Roseville has 11 park-and-ride lots within City limits. These sites could be used for staging areas and assistance for various types of emergencies.
SacRT	Light-rail stations are staging areas. Others are predesignated in County/City Plans. Others depend on incident (Cal-Expo, parks, centers).
San Joaquin RTD	—
SCT/Link	Potential locations include: <ul style="list-style-type: none"> • Twin Cities Park and Ride • High schools • Additional locations with large parking lots
Unitrans	Potential locations include: <ul style="list-style-type: none"> • 800 Garrod Drive Operations/Maintenance Facility • Memorial Union Bus Terminal • Silo Bus Terminal
Yolobus	—
Yuba Sutter Transit	Three local park-and-ride lots are served by Yuba-Sutter Transit. The Plumas Lake Park and Ride and McGowan Parkway Park and Ride lots are both owned by Yuba County, and the Bogue Road Park and Ride lot is owned by Caltrans. The Bogue Road and Plumas Lake lots are relatively large and could potentially be used for staging.

5 Interagency Coordination

Regular collaboration is a key part of implementing the recommendations of this Strategy. Emergency Management Agencies (EMAs) and transit agencies could benefit greatly from different types of “blue sky” or non-emergency coordination, including periodic planning and coordination meetings, joint training exercises, joint testing of communications equipment, and potential mutual aid agreements. SACOG could serve as a cross-jurisdictional coordinator for regional emergency preparedness, focusing particularly on transportation’s role in preparedness. In this role, SACOG could make use of its existing committee, sub-committee, working group, or task force structures. Specific preparedness

activities could include regional exercise planning, regional preparedness planning, community engagement and communication standardization, project development/management for regionwide preparedness projects, financial management/procurement/funding assistance for regional preparedness, and resource typing.

This section provides general guidance and recommendations for improving interagency coordination in the SACOG region through establishing interoperable communications practices, signing MOUs, and holding blue sky exercises and trainings inclusive of local transit operators.

5.1 Coordinate and Establish Interoperable Communications

Increasing the shared regional understanding of the means and methods for communicating with one another during both emergency and non-emergency events would benefit the SACOG region. Communications problems can arise when systems are destroyed or damaged but also when systems are incompatible.

The project team documented the radio communications systems used in different portions of the region (see Radio Communication). For instance, the Sacramento County Office of Emergency Services (SacOES), SacRT, and other agencies use the Sacramento Regional Radio Communications System (SRRCS), whereas others use ultra-high frequency (UHF), very high frequency (VHF), or 700/800 megahertz (MHz). Identifying which platforms other agencies use is important to ensuring interoperable communications. SACOG area agencies may also consider using the same radio frequencies to more efficiently communicate with one another.

In addition, the counties of Sacramento, Yolo, and Placer have a joint alert system in place, whereas others use alternative systems (e.g., CodeRed) (see Alert and Warning Technology Systems and Methods). Another option to improve interagency coordination and clearer public communications would be to expand this joint alert system to the entire SACOG region.

The NIMS identifies the following important features of public safety communications and information systems:²⁴

- **Interoperable**, where systems are able to communicate within and across agencies and jurisdictions.
- **Reliable**, where systems are able to function in the context of any kind of emergency.
- **Portable**, where systems are built on standardized radio technologies, protocols, and frequencies.
- **Scalable**, where systems are suitable for use on a small or large scale as the needs of the incident dictate.
- **Resilient**, where systems are able to perform despite damaged or lost infrastructure.
- **Redundant**, where systems are able to use alternate communications methods when primary systems go out.

²⁴ FEMA, (2017), National Incident Management System: Third Edition, https://www.fema.gov/sites/default/files/2020-07/fema_nims_doctrine-2017.pdf

Regardless of the communications hardware used, standardized procedures, protocols, and formats are needed to gather and share accurate incident information. These can apply to the following types of communication:²⁵

- **Strategic Communications:** High-level directions, including resource priority decisions, roles and responsibilities determinations, and overall incident response courses of action.
- **Tactical Communications:** Communications between command and support elements and, as appropriate, cooperating agencies and organizations.
- **Support Communications:** Coordination in support of strategic and tactical communications (e.g., communications among hospitals concerning resource ordering, dispatching, and tracking from logistics centers; traffic and public works communications).
- **Public Address Communications:** Emergency alerts and warnings, press conferences, etc.

One way to ensure that these requirements and principles are met would be through the development of a regional communications guideline or policy framework. This would standardize the objectives, means, and methods for communicating and collaborating during emergent and non-emergent phases. All relevant stakeholders should be involved in planning sessions to formulate integrated communications plans and strategies. Technology and equipment standards should also be shared to provide stakeholders with the opportunity to be interoperable and compatible.

To formalize communication strategies, policies, and guidelines, there should be formal agreements among all participating stakeholders, including SACOG. Agreements should be executed among all relevant stakeholders through an agreement such as an MOU.

5.2 Establish MOUs

In the context of emergency preparedness, an MOU establishes clear understanding of what is expected by all participating parties, including terms and conditions for participation and the provision of any material or financial support of emergency preparedness efforts among any stakeholder within the SACOG region. If stakeholders agree that it would be beneficial, the MOU could facilitate assistance within the region and define the relationship between and among stakeholders for emergency preparedness and other related efforts. In general, the sections of this kind of MOU should include the following:

- **Purpose** – begins the MOU by identifying the parties who are entering into the agreement.
- **Background** – briefly states the background of and the rationale for pursuing the MOU.
- **Existing Agreements** – identifies other relevant existing agreements that the parties may wish to adopt or reference in the MOU.
- **Responsibilities of Parties** – outlines the primary roles and responsibilities of all participating parties.

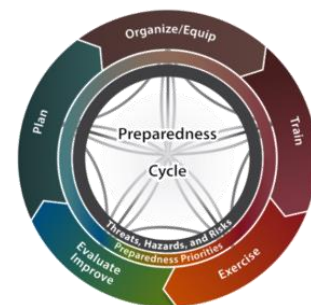
²⁵ FEMA, (2017), National Incident Management System: Third Edition, https://www.fema.gov/sites/default/files/2020-07/fema_nims_doctrine-2017.pdf

- **Commitments of Agencies** – outlines the obligations of the participating parties, similar to a contract where the signatory agrees to participate and fulfill the requirements and obligations written in this section.
- **Duration** – identifies how long the MOU is effective once signed and executed (e.g., three years). Keep in mind that MOUs should be reviewed often and revised as needed to ensure accurate needs and clear understanding of continued participation.
- **Amendments** – allows parties to amend the MOU as changes occur. Further, this section can be used to include additional agencies who would like to participate in the MOU in the future.
- **Termination** – allows parties to formally end their involvement in the MOU either singularly or as a group. This section acknowledges that parties may disagree and prescribes a method for exiting the agreement if amendments cannot be reached. In the spirit of collaboration, consider requiring notifications and/or consultation before the termination.
- **Issue Elevation** – provides a last resort process to resolve interagency disputes related to terms or implementation of the MOU.
- **Appendices** – lists additional information and resources to be incorporated into the MOU as attachments. Every MOU should include "Definitions," "Points of Contact," and "Brief Agency Description" Appendices to help facilitate communications across Agencies.
- **Signatures** – indicates the official authorization and date for the MOU by the agencies involved. Consider each agency's delegation of authority to identify the appropriate signatory person. Consider the required internal review processes in order for each Agency to become a signatory to an MOU. An agency's internal review processes typically involve multiple review cycles.

As a coordinating agency, SACOG should continue to have a dialogue about the content and expectations of the MOU(s) with regional stakeholders in addition to those of the working group that was formed for this Strategy. SACOG proposes turning this working group into a formal committee that meets more regularly, which may also consider forming an MOU between its members (see Roles and Responsibilities).

5.3 Exercises and Trainings

Being prepared for emergencies is critical for any organization, especially for one that is expected to provide assistance or other relevant services during a time of crisis. Preparedness is defined by FEMA as "a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action in an effort to ensure effective coordination during incident response." This continuous cycle is also known as the Integrated Preparedness Cycle.



The Sacramento Regional Emergency Preparedness Strategy document lays the foundation for transit agencies, EMAs, and public safety agencies within the SACOG region to work together toward achieving the goal of enhancing emergency preparedness among these organizations for the benefit of the whole community. All interagency outreach and collaboration on emergency preparedness

activities should occur when no major emergencies are currently happening (sometimes referred to as "blue sky" outreach).

An important component of the emergency preparedness cycle is training. Training should consist of formal and informal education on matters relating to general emergency management, in addition to specific and key information about how all stakeholder partners will work together during an emergency incident. This may include familiarization or orientation of a partner's emergency plans, processes, procedures, specialized equipment, subject matter expert staff resources, etc. Joint training with all stakeholder partners will enhance the overall emergency preparedness within the SACOG region. Through successful training, the other aspects of the emergency preparedness cycle will occur more smoothly.

Presently, SACOG and Sacramento-area transit operators, airport operators, and emergency management personnel do not typically train, exercise, or drill together on a routine basis, though some transit operators and EMAs within the region do train together. While FEMA, the Federal Transit Administration (FTA), the Federal Rail Administration (FRA), the Federal Aviation Administration (FAA), the California Department of Transportation (Caltrans), the Cal OES, and other similar state and federal agencies have published general guidance about training and exercises, they do not identify a specific timeline for the frequency at which they are to occur, to what degree training and exercises are to be conducted, and which specific entities are to be involved.

5.3.1 Multi-Year Training and Exercise Plan

Having a Multi-Year Training and Exercise Plan (MYTEP) would address this gap and enhance response capabilities among all Strategy stakeholders. SACOG could develop the plan with input from the Sacramento-area transit operators and other relevant stakeholders, such as the county OES staff, Cal OES staff, airport operators, regional partners, and Caltrans staff. This plan should be developed for a specific time period range (e.g., five years) and then reevaluated and revised as needed for the next time period range (e.g., the following five years).²⁶

Basic MYTEP components include the following:²⁷

- **Section 1. Purpose:** Provides a discussion of the purpose of your MYTEP.
- **Section 2. Points of Contact:** A primary contact list for personnel involved with training and exercises at your agency is maintained in this section. In addition, you should also include your local EMA training coordinator, and other emergency management contacts in your state and the SACOG region. It is important to keep this list and the associated contact information updated.
- **Section 3. Program Priorities/Capabilities-Based Training:** Program priorities are identified by first conducting or reviewing your most recent vulnerability assessment, existing plans, lessons learned from recent incidents, or previous years' training and exercises, Incident Action Plan (IAP), and any recent act, regulation, or initiative, considering how your efforts will support or

²⁶ U.S. DHS Homeland Security Exercise and Evaluation Program (HSEEP), (2007), Training and Exercise Plan Workshop User's Handbook, <https://www.hsd.org/?view&did=231795>

²⁷ Ibid.

complement your emergency preparedness priorities. Conducting this assessment of your priorities helps you to identify gaps, excesses, and deficiencies in your preparedness capabilities.

- **Section 4. Methodology and Improvement Tracking:** In this section, describe how the training courses and exercises were chosen and how they will be tracked with respect to progression and improvement. Keep in mind that a sequence, mix, and range of training courses and exercises ensure that the STRATEGY stakeholders increase their preparedness through different and progressively challenging training courses and exercise activities.
- **Section 5. Multi-year Training and Exercise Plan Schedule:** This is based on the agreed-upon range of years that the MYTEP covers and is intended to serve as a working schedule of when and what trainings and exercises will be conducted. Similar to a project workplan, the MYTEP schedule should be followed and adjusted as needed to accommodate any necessary adjustments.

The MYTEP should also take an incremental and progressive approach in building capacity and capability from year to year. Exercises planned as part of the MYTEP or other related needs should be compliant with the Homeland Security Exercise Evaluation Program (HSEEP). See the HSEEP Training and Exercise Plan Workshop User's Handbook for a sample MYTEP and more information on how to develop training and exercise plans.²⁸

6 Transportation Resources

6.1 Transit Assets and Resources

As part of the development of the Strategy, the project team requested data and information from SACOG region transit agencies to understand current operator agreements, vehicles used/available for evacuations, their concerns related to transitioning to ZEVs, and asset staging. The results of this data collection effort are summarized in this section.

6.1.1 Operator Agreements

As part of the outreach process, the project team asked the region's transit operators about what emergency plans they follow and their existing arrangements with other agencies pertaining to emergency management. These arrangements include MOUs, which are typically agreements between agencies that make it easier to share resources, such as personnel, vehicles, or equipment, during emergencies.

Table 9 documents responses to these questions. Some of the larger operators, like SacRT and YoloBus, have formal MOUs in place with other agencies, whereas many of the smaller operators rely on informal arrangements and coordination.

²⁸ U.S. DHS Homeland Security Exercise and Evaluation Program (HSEEP), (2007), Training and Exercise Plan Workshop User's Handbook, <https://www.hsd.org/?view&did=231795>

Table 9. SACOG Region Transit Operators: Emergency Plans and Arrangements

Transit Operator	What emergency plan(s) does your agency follow?	Existing MOUs, arrangements, and coordination for emergencies
Auburn Transit	Unknown	Unknown
Davis Community Transit	Unknown	Unknown
El Dorado Transit	El Dorado County OES Plan and internal emergency plan. Direction usually comes from local OES, which is informal.	El Dorado County, City of Placerville. No MOUs with neighboring jurisdictions.
Paratransit Inc	Internal emergency response plan, local plans	MOUs with City of Sacramento, County of Sacramento and Cal OES
Placer County Transit	Follow the lead of the county OES	Not aware of any MOUs
Roseville Transit	City EOPs, which dovetail with Placer County and other regional plans	Yes. Both Automatic and Mutual Aid agreements. The City has arrangements with many different agencies, with MOUs with all of them.
SacRT	Internal agency plans, Sacramento City, Sacramento County	MOUs with Sacramento City, Sacramento County, Yolo County and the city of Elk Grove.
San Joaquin RTD	Unknown	Unknown
SCT/Link	Storer Transportation Services (STS) [the contractor operating SCT/Link] emergency plans and state plans	Coordination with various local, state, federal agencies
Unitrans	City and University plans	None
Yolobus	Yolo County Emergency Plan, YCTD System Safety Program Plan, YCTD Public Transportation Agency Safety Plan	MOU with SacRT on shared equipment and operators. Coordinate with Yolo OES and the EOC.
Yuba Sutter Transit	Those of the local cities and counties	We serve 4 agencies and are committed to helping any in need. We do not have any MOUs. Requests for service must go through the jurisdiction's Emergency Management Officer.

6.1.2 Vehicle Data

This section summarizes relevant resources for the region's transit agencies, including number of drivers (i.e., operators) available and fleet information.

Table 10 shows information on number of operators, typical activation time, and fleet spare ratio. Several agencies stressed that the number of operators and support staff, rather than the number of vehicles, is the limiting factor in the level of service they can provide during an emergency.

Table 10. Transit Resources Summary Information Provided by Transit Agencies

Agency	# Operators Available During Emergency	Typical Activation Time	Fleet Spare Ratio
Auburn Transit	—	—	—
Davis Community Transit	—	—	—

Agency	# Operators Available During Emergency	Typical Activation Time	Fleet Spare Ratio
El Dorado Transit	All of El Dorado Transit's operators may get a call-in event of an emergency. There is not an assigned group of operators; it is typically on a volunteer and availability basis. About 40-50 people are licensed to drive all vehicles. This includes Administration, Maintenance and Operations Staff.	An estimated time will vary based on operator availability. During office hours, an activation could be 30 minutes or less. After hours, activation would be roughly an hour or more.	Currently our stats indicate roughly 62% spare ratio with current peak usage rate.
Paratransit Inc	—	—	—
Placer County Transit	—	—	—
Roseville Transit	Typically, Roseville has 40-50 operators available during emergencies. It should be noted that the bus operators are contract employees working for MV Transportation. However, they would be available if needed.	Depends on the situation.	~15%
SacRT	Approximately 365	Depends on day, time, holiday, school, events, COVID, etc.	Approximately 20% (FTA guidance)
San Joaquin RTD	—	—	—
SCT/Link	SCT/Link currently has 20 certified drivers. Staffing is tied to service need. However, Storer Transit Systems has operators/drivers which could be called upon during emergencies; this would be roughly 6 drivers.	Typical activation during daytime would be two hours. For nighttime, three hours.	During peak hours we have 13-14 buses out of 16 total on the road. This leaves us with 2-3 spare buses available as spares.
Unitrans	Depends; given the nature of workforce (parttime students) may result in no drivers being available. Number is unknown, but could be up to 175.	Daytime, 30-90 minutes; nighttime, same until 10 p.m.; then very little ability from 11 p.m. to 6 a.m. due to no staffing on site.	25%, fleet size is 48
Yolobus	—	—	—
Yuba Sutter Transit	Currently, the initial response would include up to four supervisors and a combination of up to 48 drivers and five dispatchers depending on the time of day and their personal availability.	Ten minutes when the service is in operation. Thirty to sixty minutes during other hours (late nights, Sundays and major holidays).	During most service periods, due to COVID-related service reductions, we currently have 10 fixed-route, six commuter, and two demand-response buses available.

Table 11. Transit Revenue Vehicle Information from TAM Data and Agencies

provides a consolidated list of revenue vehicles by agency and type. It was initially compiled using information from past Transit Asset Management (TAM) plans and then shared with the agencies for confirmation. The rightmost column indicates whether the information was confirmed by the agency as part of the outreach for this project. In other columns, the "?" indicates an unknown. One request

from a stakeholder was to gather information on the maximum depth of floodwater that each vehicle type could travel through; however, none of the transit agencies provided this information.

In future iterations of the Strategy, this table could be expanded to include other vehicle resources in the region, such as school buses and tribal vehicles. For example, Sky River Casino, operated by the Wilton Rancheria, has two 40-person shuttles on site and other casinos may have shuttle buses that could be used in an emergency.

Table 11. Transit Revenue Vehicle Information from TAM Data and Agencies

Operator	Revenue Vehicle Type (Bus/Cutaway/Van)	Make/Model	Vehicle Size (Length)	No. of Vehicles	Ambulatory Capacity (inc. sitting and standing)	Wheelchair Capacity	Fuel Type	Charge Time (if Fuel Type is Electric)	Can Vehicle be charged/ fueled outside of its Operating Base?	Typical Vehicle Range	Lift/ Ramp	Confirmed by Agency during outreach?
Auburn Transit	Bus	ElDorado XHF	?	1	?	?	CNG	Not Applicable	?	?	?	No
Auburn Transit	Cutaway Bus	Ford I Glaval	?	3	?	?	Gasoline	Not Applicable	?	?	?	No
Davis	Cutaway Bus	Ford E450	23'	4	?	?	Gasoline	Not Applicable	?	?	Yes	No
El Dorado Transit	Bus	MCI 4500	45'	16	57	2	Diesel	Not Applicable	Yes	400	Yes	Yes
El Dorado Transit	Minivan	Dodge Caravan	17'	10	5	2	Gasoline	Not Applicable	Yes	300	Yes	Yes
El Dorado Transit	Cutaway Bus	Ford F550	32'	7	39	2	Gasoline	Not Applicable	Yes	300	Yes	Yes
El Dorado Transit	Cutaway Bus	Chevrolet Topkick/Kodiak	32'	2	39	2	Gasoline	Not Applicable	Yes	300	Yes	Yes
El Dorado Transit	Cutaway Bus	Ford F450	25'	5	30	2	Gasoline	Not Applicable	Yes	300	Yes	Yes
El Dorado Transit	Bus	Gillig Low Floor	35'	10	46	2	Diesel	Not Applicable	Yes	300	Yes	Yes
Paratransit Inc.	Cutaway Bus	Ford StarTrans, Ford E450, Ford Candidate, GMC C5500	?	184	?	?	Gasoline	Not Applicable	?	?	Yes	No
Paratransit Inc.	Minivan	Dodge Caravan	?	17	?	?	Gasoline	Not Applicable	?	?	Yes	No
Paratransit Inc.	Wagon	Dodge Magnum	?	4	?	?	Gasoline	Not Applicable	?	?	No	No
SacRT	Bus	Gillig G27D102N4, Orion 7.501, Orion 7.701	40'	192	?	?	CNG	Not Applicable	?	?	Yes	No
SacRT	Cutaway Bus	Ford Starcraft	25'	6	?	?	Gasoline	Not Applicable	?	?	Yes	No
SacRT	Cutaway Bus	ElDorado Aero Elite 320	32', 27.5'	17	?	?	CNG	Not Applicable	?	?	Yes	No
SacRT (Elk Grove)	Cutaway Bus	ElDorado 240, General Coach 3500	22', 24'	8	?	?	Gasoline	Not Applicable	?	?	Yes	No
SacRT (Elk Grove)	Cutaway Bus	Starcraft Class C	24'	2	?	?	CNG	Not Applicable	?	?	Yes	No
SacRT (Elk Grove)	Bus	New Flyer C40LFR, New Flyer Xcelcier, Orion V, Orion VII	35', 40'	50	?	?	CNG	Not Applicable	?	?	Yes	No
SacRT (Folsom Stage Line)	Cutaway Bus	Chevy 4500/Aerotech 220	23'	6	12	2	Gasoline	Not Applicable	?	?	?	No
SacRT (Folsom Stage Line)	Bus	ElDorado Eazy Rider II	32'	5	25	2	Diesel	Not Applicable	?	?	?	No
Roseville	Bus	Gillig Phantom, SL-63752, ISL Low Floor, Low Floor	30', 29', 35', ?	12	28 plus 14-15+	?	Diesel	Not Applicable	?	?	Yes	Yes
Roseville	Bus	Gillig G27B102N4	35'	4	32 plus 10	?	Diesel	Not Applicable	?	?	Yes	Yes
Roseville	Bus	Gillig Phantom	40'	4	45 plus 14	?	Diesel	Not Applicable	?	?	Yes	Yes
Roseville	Bus	Gillig SL-63964, Low Floor	40', ?	9	39 plus 15	?	Diesel	Not Applicable	?	?	Yes	Yes
Roseville	Cutaway Bus	ARBOC Spirit of Mobility	26'	11	17 plus 3 or 6	?	Gasoline	Not Applicable	?	?	Yes	Yes
Roseville	Cutaway Bus	Champion Class F Low Floor	?	2	?	?	?	?	?	?	?	Yes
SCT/Link	Cutaway Bus	Ford E450 Starcraft/Allstar	26' ft. w/ bike rack	16	20 sitting	2	Gasoline	Not Applicable	Yes	<400 highway miles	Yes	Yes
Yolobus	Bus	Orion VII Low Floor, Orion V, Orion VII, Orion (?), Gillig (?)	?	51	?	?	CNG	Not Applicable	?	?	?	No
Yolobus	Bus	MCI (?)	?	6	?	?	Diesel	Not Applicable	?	?	?	No
Yolobus	Cutaway Bus	ElDorado Cutaway, ElDorado Aerolite, Chevrolet Duramax	?	11	?	?	Diesel	Not Applicable	?	?	?	No
Yuba-Sutter Transit	Cutaway Bus	Chevy/Ford Glaval Titan II 4500	27'	16	16	2	Gas (10) / Diesel (6)	Not Applicable	Yes	300	Yes	Yes
Yuba-Sutter Transit	Bus	Gillig 35DD	35'	22	31 & 32	2	Diesel	Not Applicable	Yes	600	Yes	Yes

Operator	Revenue Vehicle Type (Bus/Cutaway/Van)	Make/Model	Vehicle Size (Length)	No. of Vehicles	Ambulatory Capacity (inc. sitting and standing)	Wheelchair Capacity	Fuel Type	Charge Time (if Fuel Type is Electric)	Can Vehicle be charged/ fueled outside of its Operating Base?	Typical Vehicle Range	Lift/ Ramp	Confirmed by Agency during outreach?
Yuba-Sutter Transit	Bus	MCI D4500	45'	13	57	2	Diesel	Not Applicable	Yes	1,335	Yes	Yes
Unitrans	Bus	New Flyer CLR (2009)	40	23	80	2	CNG	Not Applicable	Yes	250	Ramp	Yes
Unitrans	Bus	New Flyer Xcelsior (2014)	40	3	80	2	CNG	Not Applicable	Yes	250	Ramp	Yes
Unitrans	Bus	New Flyer Xcelsior (2016)	40	4	80	2	CNG	Not Applicable	Yes	250	Ramp	Yes
Unitrans	Bus	New Flyer Xcelsior (2020)	40	5	80	2	CNG	Not Applicable	Yes	250	Ramp	Yes
Unitrans	Bus	New Flyer Xcelsior Charge NG (2020)	40	6	80	2	Electric	3-4 hours	Yes	165	Ramp	Yes
Unitrans	Double Decker Bus	Alexander Dennis Enviro500 Double Decker (2009)	40	2	120	2	Diesel	Not Applicable	Yes	250	Ramp	Yes
Unitrans	Double Decker Bus	Alexander Dennis Enviro500 Double Decker (2019)	40	2	120	2	Diesel	Not Applicable	Yes	250	Ramp	Yes
Unitrans	Cutaway Bus	Titan Glaval Low Floor	26	2	25	2	Gasoline	Not Applicable	Yes	250	Ramp	Yes

6.1.3 Paratransit

Paratransit, including specialized transit for people with disabilities, must be integrated into emergency management processes. Specialized transit is provided by a mix of sources, including skilled nursing and other medical facilities, paratransit companies, transit agencies, and municipalities.

The SACOG region transit agencies were asked whether they would have the support they needed from specialized transit services during an evacuation event, and Table 12 shows their responses. Most of the respondents indicated they either provide their own paratransit service or have the support needed from other providers. Note that Paratransit Inc. specializes in paratransit services and has a Mobile Incident Command Center that can be transported to a location and used to coordinate a response.

Table 12. Transit Agencies Responses on Whether They Would Have Support from Specialized Transit During Evacuation Event

Agency	Response
Auburn Transit	—
Davis Community Transit	—
El Dorado Transit	If this question is asking for support from paratransit or medical transport companies, then we do not have any arrangements or partnerships. However, El Dorado Transit can support certain transportation activities regarding paratransit activities such as ADA, Curb to Curb, and those who cannot use the fixed route system because of their disability. In addition, El Dorado Transit can provide transportation services to non-ambulatory individuals.
Paratransit Inc	Provides paratransit services. Has Mobile Incident Command Center.
Placer County Transit	—
Roseville Transit	Yes. We have the support we need.
SacRT	SacRT GO provides that service.
San Joaquin RTD	—
SCT/Link	Storer Transit Systems [the contractor operating SCT/Link] has 16 cutaway type buses used for paratransit service that should be more than sufficient for an evacuation event.
Unitrans	Yes, through combination of Davis Community Transit & YoloBus.
YoloBus	—
Yuba Sutter Transit	Yuba-Sutter Transit is the local provider of paratransit service, so coordination is not an issue.

6.2 Zero Emission Vehicles

Pursuant to the California Air Resources Board's (CARB) Innovative Clean Transit (ICT) regulation, all transit agencies within the State of California are required to transition their bus fleets to zero-emission (ZE) technologies, typically battery-electric or fuel cell electric, by 2040.²⁹ Considering the majority of the state's fleet rely on fossil fuels, a shift to reliance on hydrogen and electricity presents new

²⁹ "ZE bus (ZEB) purchase requirements begin in 2023 for large transit agencies and 2026 for small transit agencies, based on a percentage of new bus purchases each year that must be zero emission...The ZEB purchase requirements for articulated, over-the-road, double-decker, or cutaway buses do not start until 2026 or later. These bus types remain exempt from the ZEB purchase requirements until they pass the Altoona testing." ('Altoona testing' is the testing, including emissions measurements, required by Title 49 of the Code of Federal Regulations (CFR) section 665.13.) https://ww2.arb.ca.gov/sites/default/files/2019-07/ICTreg_factsheet.pdf

challenges and barriers that will have to be mitigated in order to deliver transit service during emergency events.

Transit serves as the backbone to a municipality's transportation network and is essential in enabling mass evacuations, transporting the public that do not have access or the ability to operate vehicles, and logistical support. Transit service resilience ensures that these services can continue to be provided during emergencies and can support emergency efforts. Under existing conditions, fuel is plentiful and available everywhere. With the transition to ZEVs—at least in the short-term—the support infrastructure is still in its infancy, which poses a risk for transit agencies' ability to deliver redundant service during emergencies.

6.2.1 Charging During an Emergency

Operation of a Battery Electric Bus (BEB) fleet is reliant on having power to operate and recharge buses. Ensuring that power will be available during an emergency is a major challenge. Power availability can be impacted by disasters, peak load increases, impacts on transformers and substations in particular locations, or an unintended result of time-of-use rates. Backup power can meet service requirements during short-term outages and long-term emergency events.

The following sections present capital-intensive and policy strategies that transit agencies in the SACOG region could consider in order to prepare for emergency situations.

6.2.2 Capital Strategies

The power grid, as it stands, is not prepared for the imminent transition to electric vehicles. The intensification of electrification has the potential to overwhelm the existing energy network, especially in the interim, leading to instability and blackouts. For this reason, agencies may need to invest in solutions that ensure they can continue to provide service if there are blackouts. Local energy storage, microgrids, and alternative sources of power can help maintain transit services utilizing BEBs during an emergency.

ENERGY STORAGE SYSTEM

Energy storage systems (ESS or colloquially "batteries") can enable SACOG transit agencies to continue transit operations and provide charging in an emergency event when power from the existing electrical grid becomes unavailable. Depending on their type and size, batteries typically provide emergency power during short outages. However, stationary batteries require considerable space.

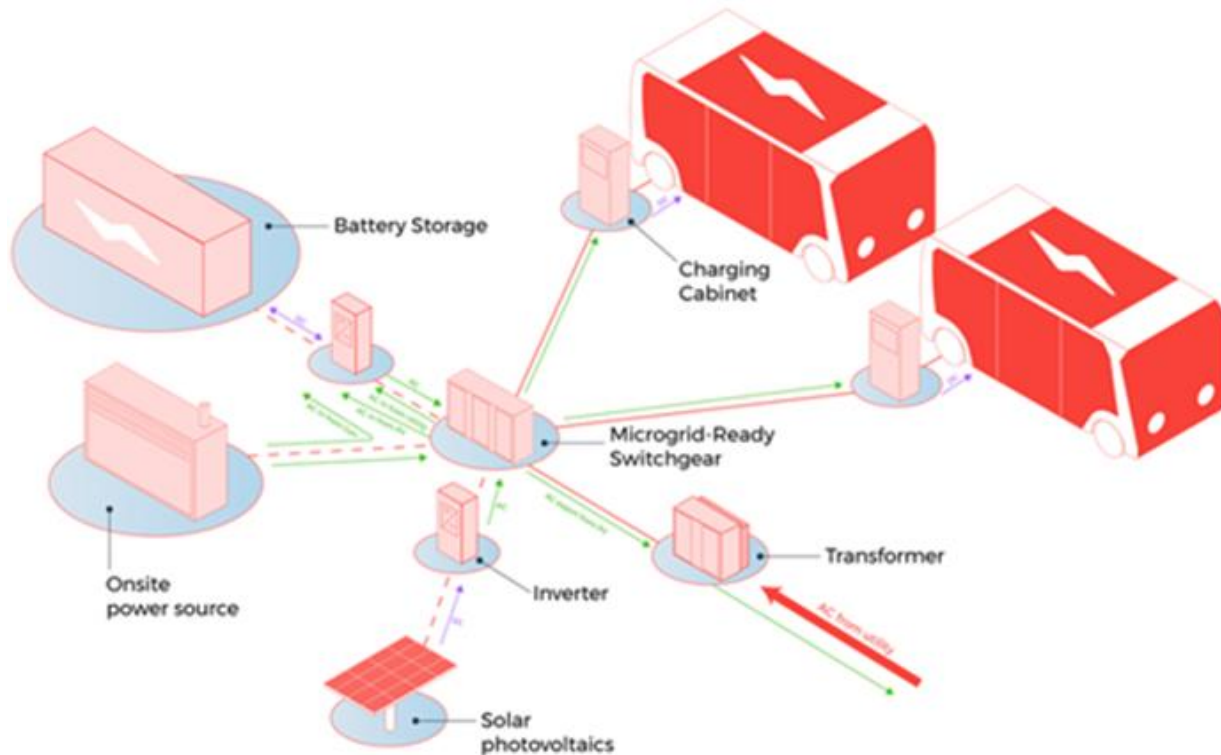
An ESS can also assist with the balancing of power supply and demand for the grid. A battery may also support revenue generation if, during typical conditions, an agency can store and resell the energy back to the utility company.

MICROGRID

A microgrid is a local electrical grid that can function independently with its own sources of electricity generation. It can also connect intermittently to the traditional areawide electrical grid and have a supplemental ESS.

A local microgrid can be used by transit agencies to provide supplemental power during high-demand periods, such as extreme weather, when interconnected with the grid. Microgrids can also feed the main grid during peak demand periods or incorporate alternative energy. The power supplied to the microgrid can either be provided by the main electrical grid or be self-sustaining via renewables such as photovoltaics, wind turbines, or fuel cells (see Figure 8). The importance of reinforcing electrical grids to endure any unforeseen event in the future can become more essential due to an increase in the frequency of service interruptions caused by extreme weather events.

Figure 8. BEB Facility Microgrid with Redundant Power Sources



Source: WSP

PHOTOVOLTAICS

With the increased focus on renewable energy solutions, photovoltaic solar panels can provide a source of renewable energy. Photovoltaic solar panels can be installed on the roof of buildings and as sunshade over parking decks. If overhead charging at an agency's facility is installed, assuming suitable structure design, a solar panel covered roof can provide free and sustainable electricity during emergencies, enabling the continued operation of transit.

REDUNDANCY

The transition to a BEB fleet requires modifications of existing facilities, construction of new equipment for its charging system, and upgrades to the electrical equipment to accommodate the significant increase in electrical power. At an additional cost to the utility provider – and potentially increases in spatial requirements – agencies can consider redundant feeders and circuits to the facility.

The ability of multiple feeders to provide reliable power during outages would depend on how the grid is configured in a given area. Given the proximity of these redundant feeders, a grid outage affecting one feeder could affect the others. Before implementing this solution, an agency should consult with the utility to determine if the circuits are separated and coming from different sources and whether outage of one is likely to correspond with outages of the others.

6.2.3 Policy Strategies

To provide service during emergencies, it is important to coordinate with other agencies to share resources and ensure that they efficiently transport people and things. Proper planning and understanding of how and where people need to move is essential with route planning for emergencies. The following sections summarize other policy- or decision-related actions that SACOG transit agencies can take to ensure they are adequately prepared for emergencies.

ESSENTIAL USER LISTS/PRIORITY WITH UTILITY

Agreements with utilities, if possible, should be established to ensure that they are aware of the agency's role during emergencies. This would also establish that the agency's facilities should be prioritized to maintain service if there are power outages. Agreements can include favorable electricity rates during emergencies and recovery and restoration prioritization.

PLANNING FOR STAGING AND ON-ROUTE CHARGING

The limited number of places to charge BEBs restricts the potential staging locations during an emergency. ZEV charging units most likely will not be evenly distributed across the service areas of transit agencies in the SACOG area, but will instead be grouped in particular locations. Emergency plans and emergency route configurations should take into consideration the limited availability for opportunities to recharge BEBs and their restricted geographical distribution. In an emergency, the staging locations to charge BEBs can be complemented by on-route charging. These on-route charging stations would be high-powered DC fast chargers that are owned/operated by one or several transit agencies.³⁰ While on-route charging is still susceptible to grid outages, incorporating on-route chargers as part of the ZEV strategy can potentially reduce the peak demand requirements at transit agencies facilities. In addition, in the case that the facility become directly affected by the emergency, these on-route charges can help maintain BEBs in service.

PROTECTING ZEV EQUIPMENT

Agencies may need to invest in capital strategies and solutions to ensure that they can continue to operate their service if there are blackouts. Local energy storage, microgrids, and alternative sources of power can help maintain transit services utilizing BEBs during an emergency. Stationary assets to charge BEBs and obtain power from the local utility such as pantograph chargers, transformers, and switchgears, as well building facilities, can be protected by establishing the following procedures:

- Fire suppression/fighting fires
- Containing material spills
- Shutting down equipment

³⁰ Thus, installation of on-route chargers could be categorized as a capital strategy as well.

- Covering or securing equipment
- Moving equipment to a safe location
- Identifying sources of backup equipment, parts, and supplies

Agencies can list additional actions and responses needed during an emergency to enable BEB use during an emergency.

Furthermore, staff should be trained on how to protect and operate BEBs and equipment during emergencies. This should include training for drivers to operate BEBs in emergency situations and route changes (e.g., evacuation routes, route closures, contraflow lane reversal).

6.3 Asset Staging

The nature and location of the emergency will largely dictate the need to move assets, including vehicles, from an affected area.

Generally, the primary responsibilities of a transit agency's fleet maintenance department during an emergency are to supply transit and support vehicles where needed and directed, secure and recover all agency vehicles, and supply fueling points to maintain operations.

Systems and procedures should be developed for the reporting and compiling of information on any damage assessment to vehicles, equipment, and property. A damage assessment team, with assessment capabilities and responsibilities, should be established. Responsibilities of the damage assessment team include determining if assets are suitable or unsuitable for continued use, directing temporary repairs as needed, and coordinating with contractors, where applicable, to assist with emergency repairs. All damage assessment information should be shared with the agency's EOC, if activated.

Regular training should be conducted with regional public safety and EMAs to prepare for mobilization of transit assets, including operations and communications functions supporting transit services.

Case Study: Cincinnati Metro

Public transit is often a major responder to an emergency event, but such events can also impact the ability of the transit agency to maintain service. This was the case – twice – in Cincinnati, Ohio, when two separate emergency events hampered the transit agency's ability to maintain both regular and emergency response service.

Cincinnati's Metro bus system is operated by the Southwest Ohio Regional Transit Authority (SORTA). The system consists of multiple routes, with 412 buses covering a service area of 289 square miles. Service is operated out of two facilities. The Queensgate garage, located a mile east of downtown (the system hub), houses about two-thirds of the fleet along with heavy maintenance functions, operations staff, and systemwide dispatch, and a Radio Communications Center (RCC); the smaller Bond Hill garage is located about 8 miles north of downtown and also includes an RCC.

The first major emergency event to impact transit operations occurred in 1997. A freight train derailment resulted in a chemical spill that forced the immediate evacuation of the surrounding area. Fortunately, the impacted area was entirely industrial with no residents that required evacuation, so buses were not needed. However, SORTA's Queensgate facility is located adjacent to the rail yard; as a result, the entire facility had to be evacuated and its operations relocated.

The chemical spill was quickly contained, the evacuation order was lifted, and Queensgate operations resumed. No service had been disrupted. However, the incident prompted a formal review process with responses, including procuring hazmat equipment for personnel.

The second major emergency event was weather-related and had a more significant impact on operations. On September 14, 2008, the Midwest was severely impacted by Hurricane Ike. In the Cincinnati area, nearly a million households lost power and recovery was slow due to the amount of downed trees and power lines.

The impact of the windstorm on SORTA's Metro system was severe. Both the Queensgate and Bond Hill garages lost power, Queensgate for half a day and Bond Hill for 10 days. Neither facility had backup generators. SORTA was able to obtain a small backup generator for Bond Hill, but it provided only limited power. Bond Hill-based buses had to be driven to Queensgate for refueling.

Once the emergency passed, power was restored, and normal operations resumed. SORTA established an internal task force to review the event and recommend improvements to procedures and infrastructure to better respond to regional emergencies. Improvements made over the next few years included the following:

- ❖ The radio communications system was upgraded; hand-held radios are still available for backup; the Queensgate RCC and Bond Hill RCC are tested twice a year.
- ❖ Arrangements were made to relocate one or both RCCs to a backup location at Cincinnati Water Works.
- ❖ Procedures were enhanced to facilitate self-dispatching during a major emergency event.
- ❖ The interface and Intelligent Transportation Systems (ITS) standards support between SORTA's Queensgate RCC and Riverfront Transit Center Operations Center were enhanced; improvements were made to alert notifications and status, emergency plan coordination, emergency transit service requests and response, and evacuation information.
- ❖ SORTA made improvements to its website to convey alerts to riders, and expanded efforts to maintain current contact information for Access customers (regular/eligible riders).

6.3.1 Staging Locations

Table 13 shows potential staging locations that were provided by the SACOG region's transit agencies.

Table 13. Potential Staging Locations Provided by Transit Agencies

Agency	Staging Locations
Auburn Transit	--
Davis Community Transit	--
El Dorado Transit	Day, event type, length of time, and size of vehicles may dictate where a vehicle could stage. The following are potential locations: <ul style="list-style-type: none"> • El Dorado County Fairgrounds • Placerville Station • Ray Lawyer Park and Ride • Ponderosa Park and Ride • Cambridge Park and Ride • El Dorado Hills Park and Ride • Coach and Rodeo (In Cameron Park) • Safeway Plaza (Pony Express Trail) • Green Valley Church
Paratransit Inc	--
Placer County Transit	--
Roseville Transit	Depends on location and type of emergency. For a large-scale emergency, a command center would be set up. Usually, a City building can be used. In this case, the occupants would be evacuated, and a command center set up. Beyond that, we look at what are our resources are and where the emergency is. The City of Roseville has 11 park-and-ride lots within City limits. These sites could be used for staging areas and assistance for various types of emergencies.
SacRT	Light-rail stations are staging areas. Others are predesignated in County/City Plans. Others depend on incident (Cal-Expo, parks, centers).
San Joaquin RTD	--
SCT/Link	Potential locations include: <ul style="list-style-type: none"> • Twin Cities park-and-ride • High schools • Additional locations with large parking lots
Unitrans	Potential locations include: <ul style="list-style-type: none"> • 800 Garrod Drive Operations/Maintenance Facility • Memorial Union Bus Terminal • Silo Bus Terminal
Yolobus	--
Yuba Sutter Transit	Three local park-and-ride lots are served by Yuba-Sutter Transit. The Plumas Lake Park and Ride and McGowan Parkway Park and Ride lots are both owned by Yuba County, and the Bogue Road Park and Ride lot is owned by Caltrans. The Bogue Road and Plumas Lake lots are relatively large and could potentially be used for staging.

7 Evacuation

7.1 Order and Warning Types

Evacuation warnings and orders may be initiated by law enforcement, fire departments, EMAs, and public health agencies when everyone is requested to vacate a specific area due to an imminent

threat. These warnings and orders may be announced via the jurisdiction's public notification systems, the media, and door-to-door contact.

7.1.1 Evacuation Warning

An evacuation warning indicates there is impending danger to life or property. An evacuation warning (sometimes called a voluntary evacuation order) is issued when individuals should begin preparing for the possibility of a mandatory evacuation order due to the potential for rapidly changing conditions to develop into a serious threat. Any individuals who need extra time to evacuate should leave when a warning is issued. Advance measures should be taken to mitigate the success of evacuating individuals with mobility issues or other types of access and functional needs. Access to the area under an evacuation warning may be restricted.

7.1.2 Evacuation Order

An evacuation order indicates that conditions exist that seriously endanger the lives of those in the defined area, and that danger is imminent. All non-essential persons are requested to leave the area immediately. Generally, residents will not be forcibly removed from their own property; however, those found to be on public property, including roadways and public parks, may be subject to removal from the area. Once out of the area, the general public (including residents) will likely not be permitted to return until conditions permit. Any non-essential persons found by officials traveling through or loitering in the area will be escorted out and not permitted to reenter the area. Those found to be interfering with the disaster response are subject to arrest. Authorized disaster workers, such as utility workers in work vehicles, shall be permitted beyond closures for official business only. The determination of who is authorized is based on the incident. Subsequent to § 409.5(d) PC, nothing shall prevent a duly-authorized representative of any news service, newspaper, or radio or television station or network from entering the area unless the area is determined to be a crime scene.

See the Emergency Public Communications for notification types and warning systems used in the SACOG region.

7.2 Equity Considerations

7.2.1 Those Who Need Assistance Evacuating in the SACOG Area

This section looks at different community characteristics and individual travel modes that may make populations more likely in need of assistance during an evacuation. For example, an elderly person without a car may typically rely on family members or public transit (e.g., paratransit) for rides and would need help during an evacuation. These same communities who need assistance during an evacuation may also benefit from specific communications targeted towards them, such as information about where transit providers will be setting pickup and drop-off points during an emergency.

ANALYSIS METHODOLOGY

This high-level analysis of community demographics and travel patterns uses evacuation zones provided by Sacramento, Sutter, and Yolo Counties to identify which groups may need assistance

evacuating from their evacuation zone of origin.³¹ El Dorado, Yuba, and Placer Counties did not provide their evacuation zones for this exercise. See the Appendix for a more detailed analysis of travel patterns and populations that may need evacuation assistance in Sacramento, Sutter, and Yolo counties.

The travel and population data included in the SACOG area summary below come from the Replica Sacramento region transportation model for fall 2020, using a Thursday to represent typical weekday trips.³² The travel and population data summarized for individual counties comes from the Replica California and Nevada megaregion transportation model for the fall of 2021, using Thursday as a typical weekday to represent regional travel.

The data summarize trips by origin (e.g., from a SACOG evacuation zone or census tract). Replica defines trips as "a movement by a person between places," which "begins when a person leaves a place and ends when a person stops to do a non-travel activity in a place." For example, leaving home to go shopping at a grocery store and then going back home is two trips. A person can also use multiple transportation modes within a single trip. For example, leaving to go shopping on foot and then getting on a bus to reach the grocery store is one trip with two segments. When a traveler uses multiple modes on the same trip, Replica assigns a primary mode to the trip using the following ranking:

1. Public transit
2. Driving/auto passenger/taxi/Transportation Network Company (TNC) (e.g., Uber)
3. Biking
4. Walking

SACOG AREA SUMMARY

On any given weekday, about 3.86 million travelers take about 13.1 million trips originating in the SACOG area. Figure 9 shows the typical weekday trips that start from a SACOG area census tract, with lighter colors indicating more trips from that area. About half (48%) of all trips originate and end outside of the SACOG region.

³¹ Note: trips are modeled by point of origin and destination and a starting evacuation zone may not necessarily be where an individual lives. It could be where they work, go to school, shop, etc.

³² <https://replicahq.com/>

Figure 9. Daily Trips Starting from a SACOG Area Census Tract

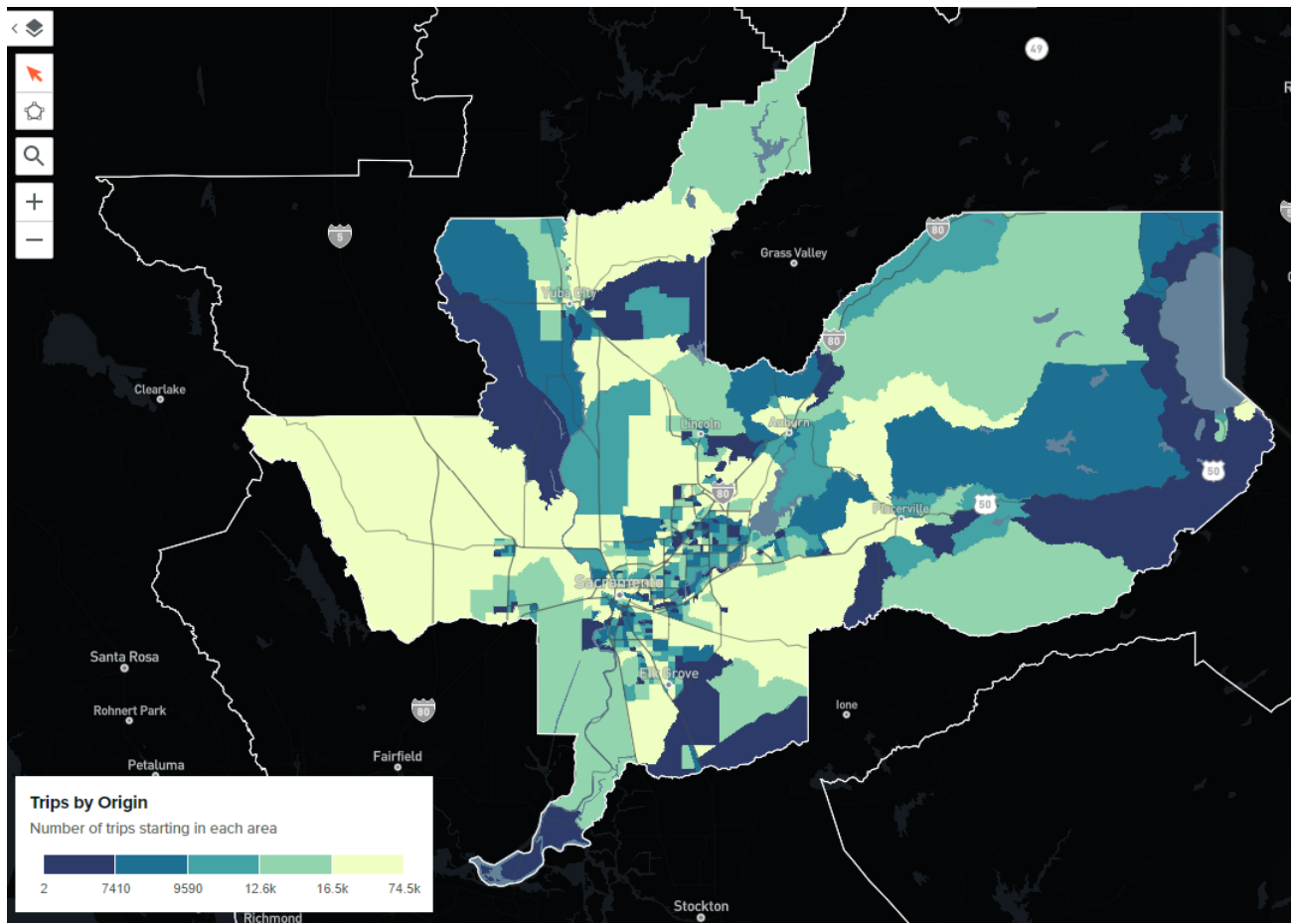


Figure 10 shows the primary modes of transportation used in the SACOG area. The most used method of transportation are private vehicles, either as a driver (47%) or passenger (26%). The next most popular method is walking (17%). Public transit makes up less than 1% of trips where it is used as the primary mode of transportation. Those who walk, bike, take taxis or TNCs, or use public transit as a primary mode of transportation, may not have access to a private vehicle and could be dependent on public transit or other transportation support during an evacuation.

Figure 10. Primary Modes of Transportation in the SACOG Area

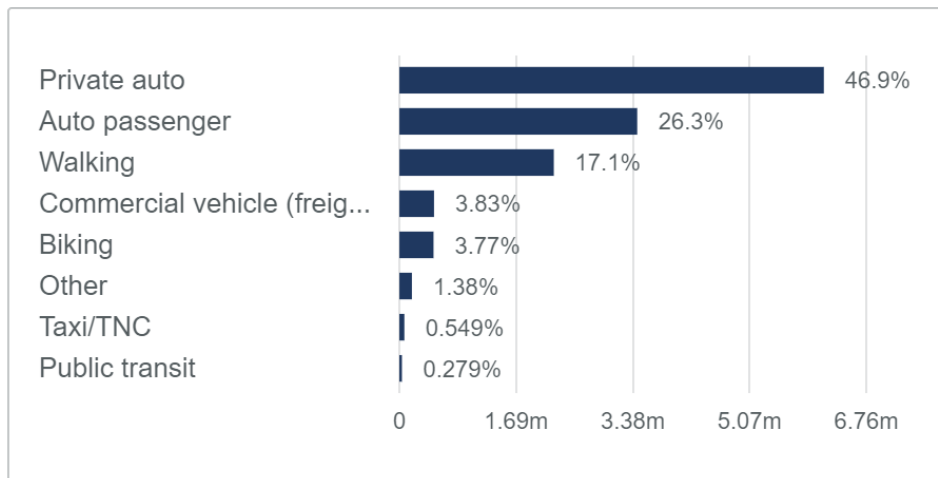


Figure 11 shows the varying household incomes in the SACOG area. The highest proportion of households have an income of \$100,000 to \$150,000, but the next most common income range is \$25,000 to \$50,000. Overall there is a wide range of incomes in the SACOG region.

Figure 11. SACOG Area Household Income

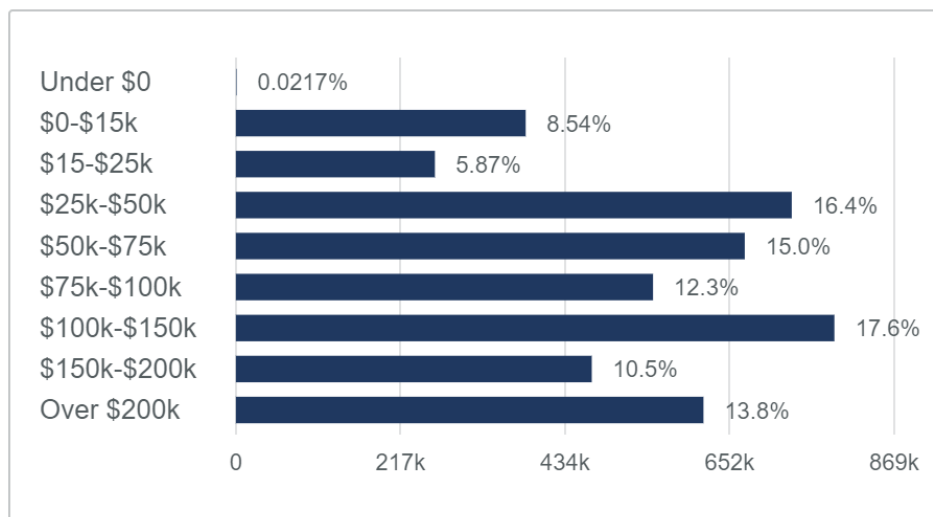
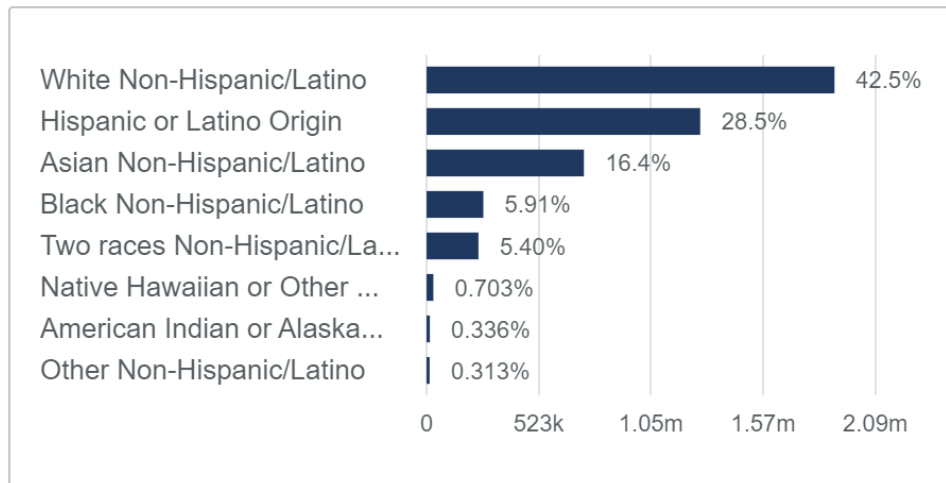


Figure 12 shows the diversity of races and ethnicities in the SACOG area. The greatest number of people are White (42%), followed by Hispanic/Latino (28%), Asian (16%), Black (6%), and two or more races (5%). Less than one percent of all other races are represented in the area.

Figure 12. SACOG Area Race and Ethnicity

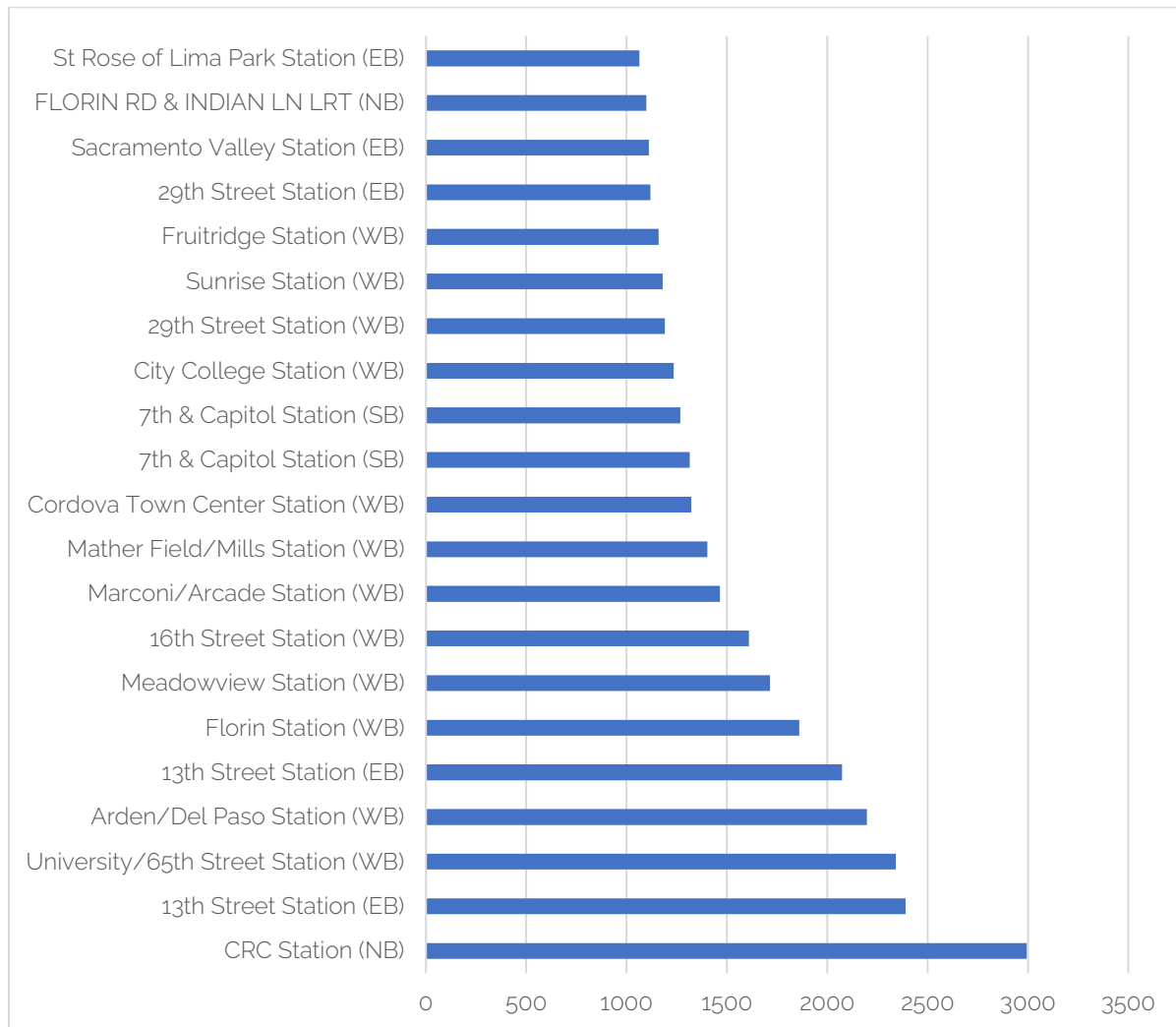


Public Transit Ridership

Figure 14 shows the total SACOG area boardings on a typical day by the most popular transit stops in the region. These transit stops were chosen because their daily boardings total over 1,000 passengers. Each of the most popular transit stops are on the SacRT light-rail system (see Figure 13 for a map of the SacRT light-rail system). The most popular station to board light rail is the Consumnes River College (CRC) station, northbound towards downtown Sacramento, with almost 3,000 passengers per day.

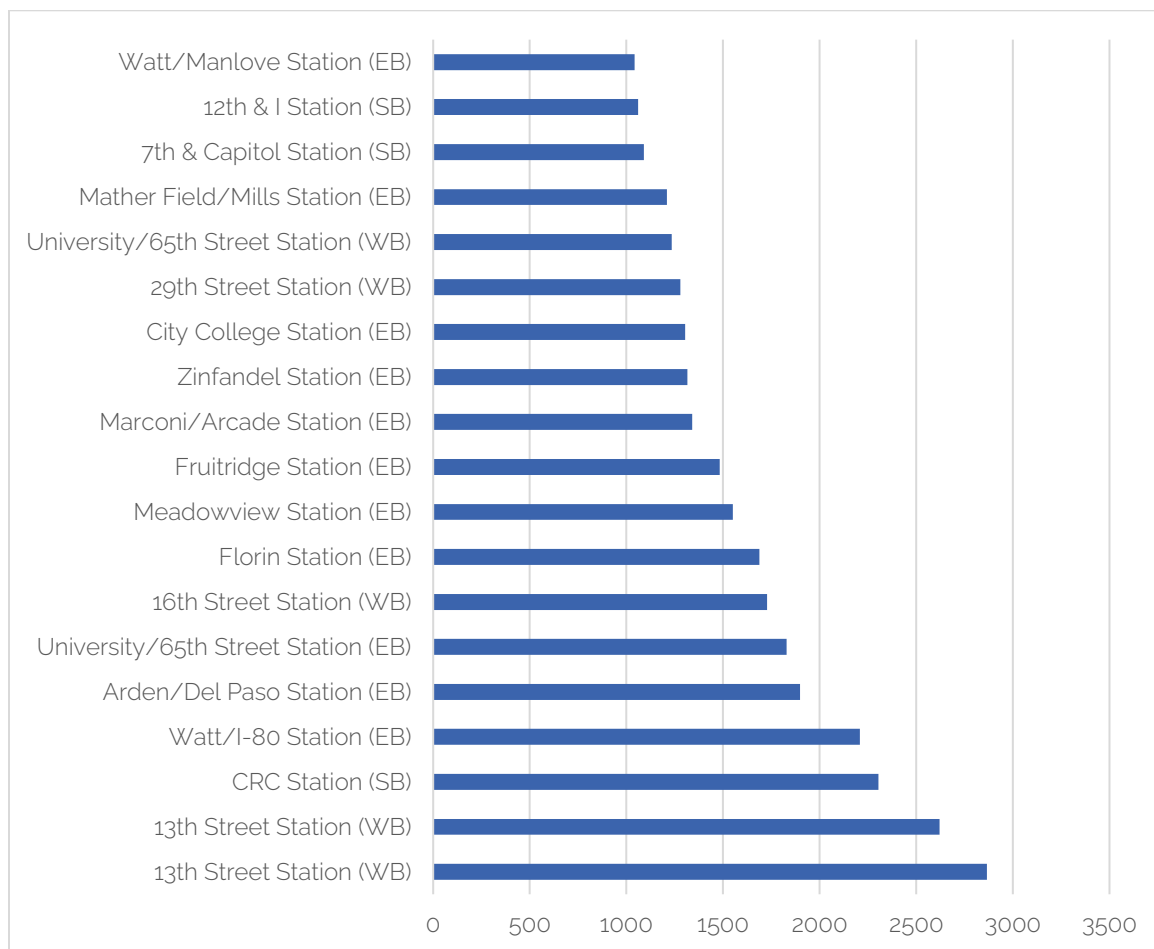
Figure 13. SacRT Transit Stop Lines and Stations



Figure 14. SACOG Area Transit Stop Boardings (stops with over 1,000)

Thirteenth Street Station (EB) on the Meadowview–Watt/I-80 line, University/65th Street Station (WB), Arden/Del Paso Station (WB), and 13th Street Station (EB) on the Downtown–Folsom line all total over 2,000 passenger boardings each. Like the 13th Street Station, the 7th and Capitol Station (SB) is listed twice because boardings are counted separately for each light-rail line. The 7th and Capitol Station (SB) on the Meadowview–Watt/I-80 line accommodates about 1,315 boarding passengers per day and the same stop receives about 1,268 passengers on the Downtown–Folsom line.

Figure 15 shows the total number of transit stop alightings (or departures) in the SACOG area per day for the most popular transit stops. Again, only stops with over 1,000 alightings per day are shown in the figure. As with the SACOG area transit boardings, the most frequented stops are on SacRT light-rail lines. The 13th Street Station (WB) for the Downtown–Folsom line is the most popular, with 2,866 alightings each day. The next most popular is still 13th Street Station, going westbound on the Meadowview–Watt/I-80 train.

Figure 15. SACOG Area Transit Stop Alightings (for stops with over 1,000)

Other stops where over 2,000 people depart each day include the CRC Station (SB), and the Watt/I-80 Station (EB).

This information suggests that each weekday thousands of Sacramento area commuters ride SacRT light-rail from more suburban areas such as near CRC Station in South Sacramento, University/65th Street Station in East Sacramento, and Arden/Del Paso Station in Arden Arcade to downtown Sacramento (13th Street Station).

COUNTY LEVEL ASSESSMENTS

The following sections briefly summarize community demographics and travel patterns to and from evacuation zones provided by Sacramento, Sutter, and Yolo Counties.³³ Specifically, the sections below summarize demographics and travel patterns of county travelers without access to a private vehicle, as these individuals may need assistance from transit services in an evacuation. See the Appendix for a more detailed analysis of each county, including an analysis of active transportation

³³ Note: trips are modeled by point of origin and destination and a starting evacuation zone may not necessarily be where an individual lives. It could be where they work, go to school, shop, etc.

and public transit user travel patterns, evacuation zone maps, and figures summarizing trips by mode and origin and destination.

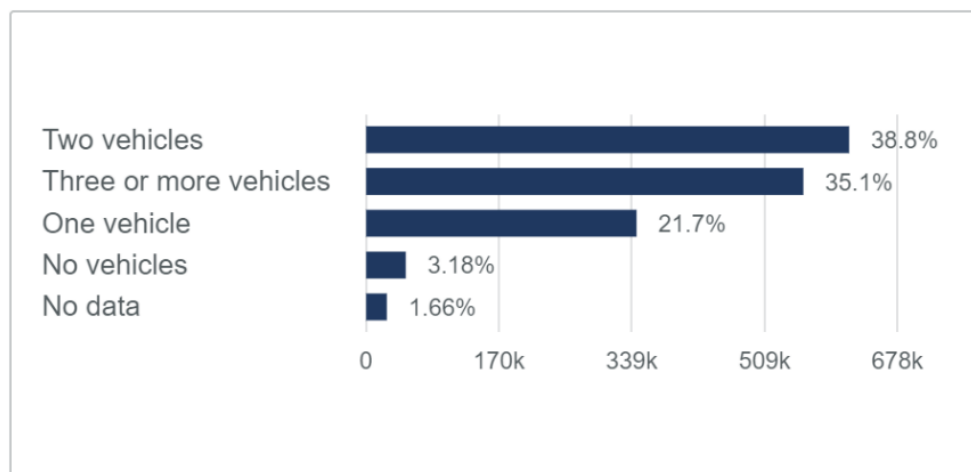
Sacramento County

An estimated 5.95 million trips are taken by 1.62 million people from Sacramento County evacuation zones as a point of origin on a typical weekday. Most people prefer to take their own car or carpool with others, followed by walking, commercial vehicles (medium and heavy trucks), biking, "other," taxi or TNC, and public transit.³⁴

Those that might need evacuation assistance in Sacramento County include travelers who do not have access to their own private vehicle and those who carpool, walk, bike, take a taxi/TNC, or ride public transit as their primary mode of transportation.

About 96% of travelers within these evacuation zones have access to one to three vehicles at home (see Figure 16). Of the approximately 3% of travelers with no car available, about 40% are white, 21% are Hispanic or Latino, 19% are Black, and 15% are Asian. Most (56%) are not in the labor force, and many (31%) are of retirement age (over 65). Most (76%) are making under \$50,000 a year. These data suggest that a little over half of the people in Sacramento County without a car are retired.

Figure 16. Private Vehicle Availability in Sacramento County Evacuation Zones



Even without a vehicle, these 50,600 people make about 175,000 trips on a typical weekday. They travel as car passengers (30%), walking (26%), with another private vehicle (e.g., a rental) (25%), biking (10%), by public transit (6%), "other" (2%), and taxi/TNC (less than 1%). The most popular trip starting points for travelers who do not have a private vehicle are from within the cities of Sacramento, Elk Grove, Citrus Heights, Folsom, Rancho Cordova, and the Carmichael/Arden area. The top destinations are within the City of Sacramento, outside of the region, the City of Elk Grove, the City of Citrus Heights, the Arden/Carmichael area, and the City of Folsom.

³⁴ "Other" encompasses all other modes, including some commercial vehicle trips.

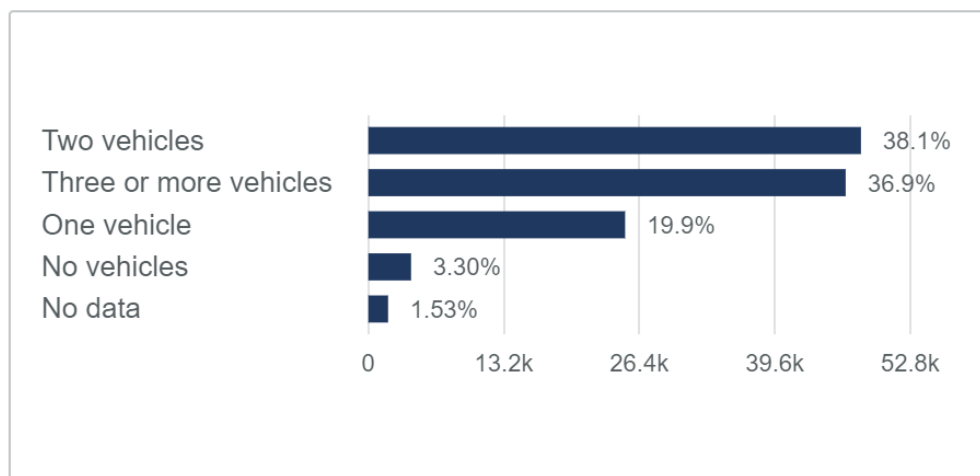
Sutter County

An estimated 392,000 trips are taken by 127,000 people from a Sutter County evacuation zone of origin on a typical weekday. Most trips are taken within a private vehicle, whether driving or as a passenger in a carpool. The next most popular mode of transportation is walking, followed by driving in a commercial vehicle (medium and heavy trucks), "other," biking, taxi or TNC, and public transit.³⁵ Many trips starting in Sutter County are headed out of the county (26.3%).

Those that might need evacuation assistance in Sutter County would include travelers who do not have access to their own private vehicle and those who carpool, walk, bike, take a taxi/TNC, or ride public transit as their primary mode of transportation.

Approximately 3% of individuals in Sutter County do not have a private vehicle at home (Figure 17). Of that 3%, 66% are not in the labor force, about 37% are over the age of 65, and 86% make under \$50k each year. These numbers suggest that most people without a vehicle in Sutter County are retired and on a fixed income.

Figure 17. Private Vehicle Availability in Sutter County



About 4,160 people without a car take 12,300 trips starting in Sutter County on a given day. Their primary modes of transportation are by car (as a passenger) (46.4%), a private vehicle (a rental or borrowed car) (31.7%), walking (17.3%), "other" (2.4%), biking (1.3%), public transit (1.2%), and taxi/TNC (less than 1%). Most people without a vehicle start their trips in Yuba City, Live Oak, Sutter, and near Abbott, and most are traveling outside of Sutter County.

Yolo County

An estimated 899,000 trips are taken by 308,000 people from within Yolo County on a typical weekday. Most trips originating in Yolo County are taken with a private vehicle, either as a driver or passenger. The next most popular primary modes of transportation are walking, biking, commercial

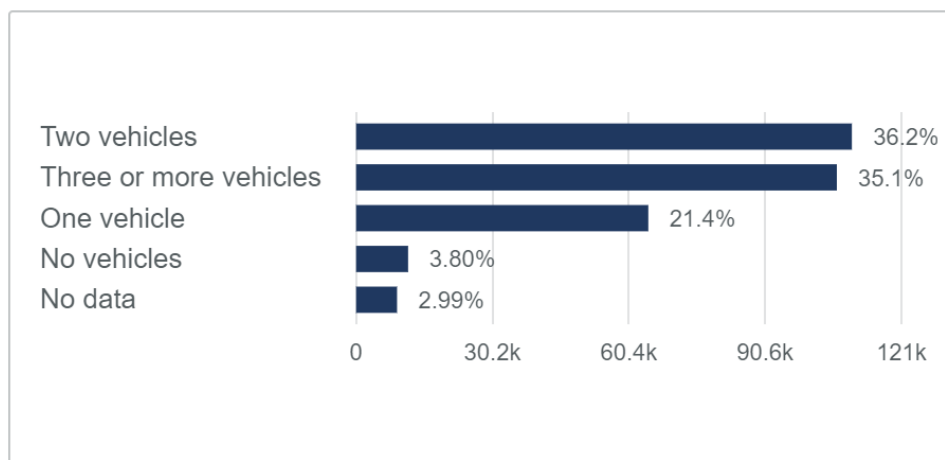
³⁵ Many trips use multiple modes, such as walking to a bus stop and then riding the bus. Figures and summaries only include the primary trip.

vehicle (e.g., heavy trucks), public transit, "other," and taxi/TNC. Many trips that start in Yolo County are headed outside of the county (27.5%).

Those that might need evacuation assistance in Yolo County include travelers who do not have access to their own private vehicle and those who carpool, walk, bike, take a taxi/TNC, or ride public transit as their primary mode of transportation.

About 93% of travelers starting in Yolo County have access to one to three vehicles at home and only about 4% do not have a vehicle (Figure 18). Those 11,500 travelers make a total of 34,200 trips in Yolo County on a typical weekday. About 40% of travelers without access to a vehicle are between the ages of 18 and 34, 42% make under \$15,000 a year, and 74% are not in the labor force. These numbers suggest that many of the travelers without a vehicle in Yolo County are students. Others may be retired as about 27% are over the age of 65.

Figure 18. Private Vehicle Availability in Yolo County



The three most popular starting points are from downtown Davis, the UC Davis campus, and West Sacramento. The most popular destinations are outside of the county, downtown Davis, and the UC Davis campus. The data suggest that many travelers without a private vehicle are traveling around Davis and between UC Davis and the downtown area.

7.3 Evacuation Zones and Routes

Each of the SACOG region's six counties has an OES that provides emergency management services for the County/OA. These OESs are integrated with National (NIMS) and State (SEMS) processes for incident management, which includes the decision to evacuate an area.

The decision whether to evacuate or shelter-in-place must be carefully considered with the timing and nature of the incident, given the complexity and stress evacuation causes to the system and to people. This "last-resort" option is determined by first responders in the field at the Incident Command Post and is often recommended from both fire and law enforcement personnel. An evacuation effort

involves an organized, coordinated, and supervised effort to relocate people across multiple agencies and jurisdictions.

This section discusses the existing evacuation zones and routes in the SACOG region and then evacuation route selection and implementation process.³⁶

7.3.1 Existing Evacuation Zones and Routes

Some of the SACOG region's counties have established evacuation zones or routes to help plan for evacuation. County OES department responses to requests for information about their routes or zones are listed in Table 14.

Table 14. Information on Evacuation Routes and/or Zones by County OES Departments

Agency	Response
El Dorado County OES	—
Placer County OES	—
Sacramento County OES	Zone based evacuation planning documented in the Evacuation Annex of the County's EOP (also available in GIS format here). There are 5-6 Sheriff's districts with evacuation zones within these districts. There are polygons associated with these zones that are incorporated into the emergency notification system so that zone-based notifications can be sent. Want to keep evacuees as close as possible (while remaining out of danger) so that they actually evacuate when needed. Mutual Aid (MARAC) Region 4 has older evacuation guidance; it establishes multi-county evacuation plan. Still available at Cal OES. Sets up transfer points, refueling, main corridors.
Sutter County OES	Zones under development.
Yolo County OES	Yolo evacuation zones and routes are in a hosted GIS environment and available via services URL . The State Dept of Technology also maintains a statewide evacuation service layer (ours feed that tool). We also have GIS data (non-hosted format) for Rally Points and Gas Stations as well.
Yuba County OES	Evacuation zones are available on Zonehaven platform here

It is important to distinguish planned potential evacuation routes from actual evacuation routes used during an incident. Actual evacuation routes depend on the location and nature of the incident and people affected, and thus cannot be fully determined ahead of time. However, it can be useful for jurisdictions to establish potential evacuation routes as part of preparedness efforts. This way, emergency and roadway managers can evaluate the suitability of different routes and infrastructure ahead of time, and both these experts and the general population can familiarize themselves with potential routes to better prepare for emergencies.

Evacuation zones are areas for which evacuation warnings or orders can be established. They are useful tools that allow notifications to be sent in a targeted manner. Furthermore, emergency managers can gather information about people, property, and infrastructure (including potential roadways for evacuation) for each zone as part of preparedness activities.

³⁶ Note that the next technical memorandum will delve into practices and challenges regarding public communications and evacuation.

7.3.2 Evacuation Route Determination

The first step in identifying evacuation routing and appropriate evacuation tactics, such as contra-flow lanes, is the identification of the evacuation areas and the downstream evacuation points based on the nature of the emergency incident. Through joint emergency preparedness planning and information sharing among all relevant organizations, evacuation points should be located based on the population of the evacuation areas that need to be accommodated. Evacuation routes should then be selected with the following considerations:

- Shortest route from evacuation areas to designated shelters or alternative destination areas
- Maximum roadway capacity
- Ability to increase/maximize roadway capacity and traffic flow utilizing traffic control strategies
- Maximum number of lanes that provide continuous flow through the evacuation area
- Availability and ability to rapidly deploy infrastructure to convey real-time conditions and messages to evacuees en route, such as Changeable Message Signs (CMS)
- Minimal number of potentially hazardous points and bottlenecks, such as bridges, tunnels, lane reductions, etc.

Ideally, potential primary evacuation routes should be identified in advance and consist of major interstates, highways, and prime arterials within the region. Local jurisdictions should coordinate and work together with the local sheriff's departments, Caltrans, CHP, local Departments of Public Works, and other applicable agencies/departments to pre-designate evacuation routes. As noted previously in this section, actual evacuation routes are distinct from potential evacuation routes because they depend on the exact nature of an incident. During an evacuation scenario, traffic conditions must be monitored along selected evacuation routes and operational adjustments should be made to maximize throughput, up to and including the identification of alternative evacuation routes.

ROADWAY CAPACITY & EVACUATION TIME

Roadway capacity refers to the maximum number of vehicles that can be reasonably accommodated on an evacuation route. The roadway capacity is a critical variable in the determination of evacuation times, or the time it takes to clear and fully evacuate a designated evacuation area. Based on current practices, evacuation time can be calculated by dividing the number of vehicles that need to evacuate by the local roadway capacity. The formula is provided below:

$$\text{Evacuation Time} = \frac{\left(\frac{\text{Evacuation Area Population}}{\text{Average Vehicle Occupancy}} \right)}{\text{Roadway Capacity}}$$

Roadway capacity is measured in vehicles per hour (vph) and is affected by the number of available lanes, number of traffic signals, accidents, obstructions, and access points onto the roadway. To maximize the throughput of a roadway, care should be taken to minimize the number of access points (for non-evacuees) along the evacuation route itself.

The Transportation Research Board (TRB) has conducted significant research in speed-flow relationships for multi-lane highways and arterials and has compiled best practice calculations in the

Highway Capacity Manual: 6th Edition. Basic freeway and multilane highway/arterial segments reach their maximum density at approximately 45 cars per mile per lane (pc/mi/ln). At this density, vehicles are spaced too closely to be affected by any perturbation of flow, such as lane changes or a vehicle entering the roadway. However, vehicles should be managed to enter an evacuation roadway at a select point to maintain this maximum density.

Using Exhibit 12-8 from the *Highway Capacity Manual: 6th Edition* (Figure 19), assuming a base density of approximately 45 pc/mi/ln, and an average travel free flow speed on the corridor of 45 mph, the average freeway/arterial capacity should be ~1,900 vehicles per hour per lane (pc/hr/ln).

Figure 19. Speed-Flow Curves from TRB [Highway Capacity Manual: 6th Edition](#)

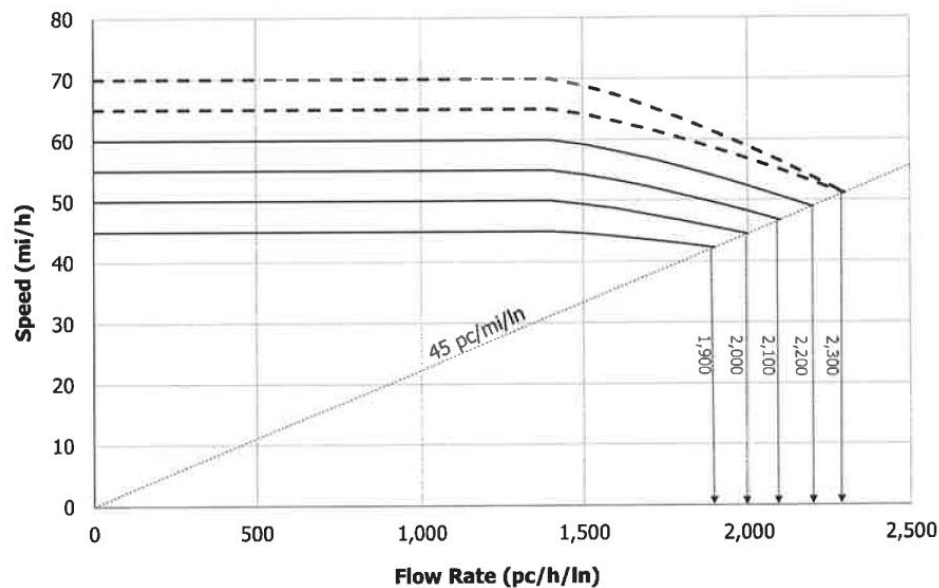


Exhibit 12-8
Speed-Flow Curves for
Multilane Highway Segments

Note: Dashed curves are extrapolated and not based on field data.

Using 1900 pc/hr/ln as a standardized roadway capacity makes it possible for local agencies and SACOG to evaluate the approximate capacities for major thoroughfares and freeways throughout the region and identify primary evacuation routes in advance of an evacuation incident. The roadway capacity of 1900 pc/hr/ln is also a standardized lane capacity that can be used to approximate the net benefit of increased capacity and decreased evacuation time for strategies such as contra-flow lanes.

7.4 Evacuation Protocols and Transportation Strategies

This section provides background on different transportation strategies that can be used to make evacuations quicker and more efficient. Each strategy includes a summary and high level guidance and recommendations for implementation. These strategies may not be applicable in all situations and emergency managers should use their discretion in selecting them.

7.4.1 Traffic Flow

Once a base maximum roadway capacity is determined, traffic control strategies can be investigated to increase roadway capacity and improve evacuation times for an area. Some traffic control strategies are described below.

TRAFFIC SIGNAL COORDINATION AND TIMING

Traffic signal coordination and timing plans can be re-timed and re-coordinated to maximize traffic flow in the outbound direction during an evacuation event. This is sometimes called a flush pattern. When possible, the agencies should consider developing the timing and modeling primary evacuation routes in advance of an evacuation incident. However, depending on the extent of the evacuation, this signal re-timing and re-coordination may be needed on a local, county, or state level. The use of Traffic Management Centers (TMCs) that provide the monitoring and control of jurisdiction traffic signals are ideal for quickly re-timing and re-coordinating signals. New timings could be preset for different evacuation scenarios and implemented in a timely manner.

In cases where remote re-timing is unavailable or not allowed, jurisdictions should consider alternate options for manual re-timing. One option is to have a stop-time switch on a signal box that can be flipped to freeze a traffic pattern in whatever signal configuration is occurring at the instant the switch is flipped. This way, a law enforcement officer or other emergency worker can simply flip a switch and enable increased flow on an evacuation route. In the Camp Fire case study developed for this Strategy (see at bottom of this section), this was highlighted as important strategy that could have facilitated faster evacuation on the primary evacuation route away from the Town of Paradise. Some training is required to teach personnel how to do this, but it allows a manual override of the prevailing traffic pattern without detailed knowledge of how to operate a signal box.

CLOSURE OF ON AND OFF-RAMPS AND INTERSECTING ROADWAYS

The closure of outbound on-ramps and detouring of intersecting roadways to minimize ingress points onto designated evacuation routes help reduce congestion on these roadways. The reduction in congestion also helps maintain the maximum roadway capacity and saturation flow rate of evacuees, while the closure of off-ramps helps to ensure that evacuees remain on the designated evacuation route. These types of closures will necessitate extensive coordination between CHP, Caltrans, local Sheriff's departments, and emergency personnel.

INTELLIGENT TRANSPORTATION SYSTEMS

ITS consist of a broad range of technology-based tools that help monitor and adjust traffic conditions, including responding to capacity-reducing events and real-time conditions. These tools and technologies can quickly detect, verify, and respond to incidents, such as recommending alternative evacuation routes, or re-syncing traffic signals to maximize throughput along an existing evacuation route. ITS tools and technologies include the following:

- Roadway electronic surveillance
- Automatic vehicle location
- CMS
- Highway advisory radio

- Coordinated traffic signal systems
- Transportation Management Centers (TMCs)

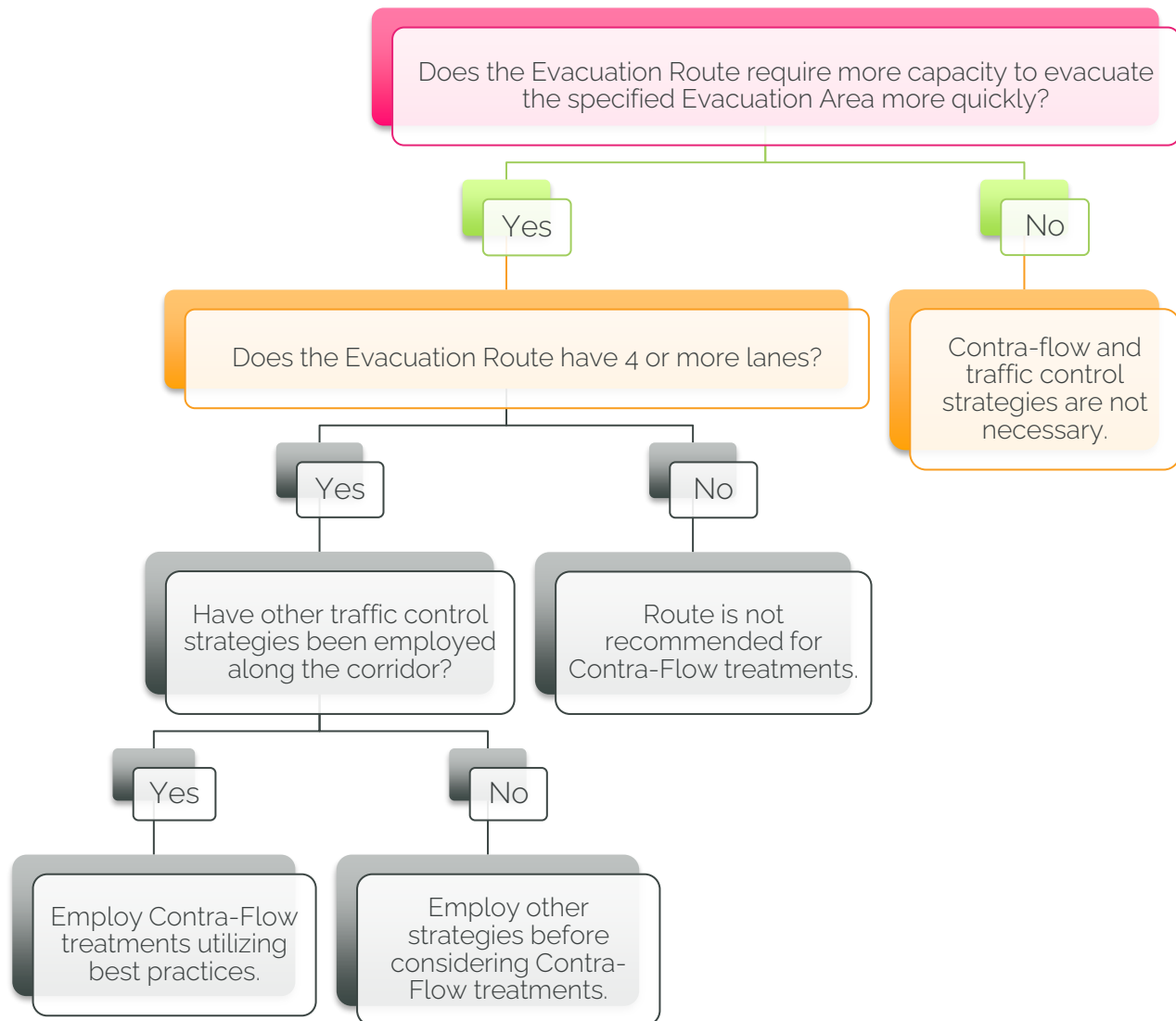
Furthermore, as mentioned in the Real-Time Information Centers subsection, UAVs can be used to help survey an incident and evacuation conditions to better inform a response.

7.4.2 Contra-Flow Operations

Contra-flow operations is an approach that reverses one or more lanes of roadway traffic to increase traffic flow in one direction. Contra-flow operations can provide a safety risk if not implemented appropriately due to the fact that vehicles will be traveling in the opposite direction in which vehicles typically travel. Major arterials and highways are more suited to contra-flow operations implementation due to their access-controlled configurations, minimal use of traffic signals and conflict points, and their divided directionality. When implementing contra-flow lanes, at least one emergency return lane must also be designated. Therefore, roadways with fewer than four lanes are not ideal candidates for contra-flow treatments, as capacity cannot be reduced without eliminating an emergency return lane. Based on all of these factors, contra-flow treatments should only be used when necessary. Figure 20 shows a flow chart of considerations before implementing contra-flow operations.

When implemented, contra-flow treatments should utilize best practices to ensure safe deployment and maximum efficiency of the operation. The following section highlights best practices for implementation.

Figure 20. Contra-Flow Operations Flow Chart



EARLY IDENTIFICATION AND DESIGNATION OF POTENTIAL CONTRA-FLOW ROUTES

Evacuation routes that can be utilized for contra-flow operations should be identified in advance when possible. By identifying routes in advance, investments can be made to purchase equipment such as signage, signals, and barriers to effectively implement contra-flow operations in an evacuation scenario.

IDENTIFY INCEPTION AND TERMINATION POINTS FOR THE CONTRA-FLOW CORRIDOR

As discussed above, contra-flow operations are used to increase roadway capacity and reduce evacuation time for a particular evacuation area. Therefore, the distance under which contra-flow treatments should operate is based on the evacuation time. In general, shorter contra-flow operations corridors are more effective as they result in fewer conflict points and junction points that can affect

safety and operations. The start and terminal points should be clearly established before deploying contra-flow lanes and should be specific to the evacuation scenario at hand.

HOURS OF OPERATION

Due to the safety concerns related to contra-flow operations, the deployment and use of contra-flow lanes should only be performed during daylight hours. Daylight hours help maximize visibility of signs, signals, barriers, emergency personnel and opposing vehicles.

ESTABLISHMENT OF OPERATIONS

Effective implementation of these plans includes the deployment of appropriate signs, signals, and barriers, and necessitates the use of the California Highway Patrol (CHP) and local sheriff's department personnel. For local arterial roadways where contra-flow operations are proposed, each local jurisdiction should decide whether or not to use the treatment on their local roadways. For highways, contra-flow should be determined by incident command and the local county sheriff's office and coordinated and implemented by CHP and Caltrans.

OTHER TRAFFIC CONTROL STRATEGIES

A variety of other strategies can be employed as well to help maximize the evacuation of individuals in an evacuation area. These require traffic control and each have their own costs and benefits. These could include the following:

- Segregation of pedestrian and vehicle traffic
- Exclusive bus and shuttle evacuation routes
- Phased evacuation
- Phased release of parking facilities
- Use of designated markings
- Road barriers

7.4.3 Access Control

When planning for evacuations and other uses for transit resources, it is critical that all agencies and their relevant staff have pre-arranged access to any areas that they will be expected to work in during an emergency. Any delays in getting resources to the places they need to be, when they need to be there, will hinder the overall incident response and directly impact the effective execution of any IAPs. Some ways to address and mitigate this include the following:

- MOA/MOU
- Inter-Governmental Agreements (IGA)
- Region-wide Vetting and Credentialing
- Access Control Procedures and Training
- IAP
- EOP
- COOP
- Integrated Staffing at EOCs, Department Operations Centers (DOC), and ICP.

7.4.4 Roadway Design

Most of the strategies and tactics discussed in this section have been operational, i.e., they aim to maximize throughput with the current built infrastructure. But evacuation planning should also be incorporated into design of roadway infrastructure and regularly considered as part of the design process. Design strategies, which typically take a longer timeframe to implement, might include widening narrow roads used for evacuation or connecting dead-end, hazard-prone roads. Installation of improved ITS or traffic control systems, different placement of barriers along roadways, and fuel reduction along roadways are also potential considerations. Some of these strategies may be difficult to implement, particularly if they are costly or conflict with other planning objectives. Regardless of which solution is best for each setting, it is critical that Caltrans, counties, and local jurisdictions integrate evacuation into the roadway design process.

Case Study: The 2018 Camp Fire and the Town of Paradise Roadway System

The 2018 Camp Fire was the deadliest and most destructive wildfire on record in California, with 85 fatalities and 18,000 destroyed structures, including most of the Town of Paradise. There were many acts of heroism by the whole community, including private citizens and staff from the Town of Paradise, Butte County, the State, and other agencies, and organizations to save lives and limit damages.

From the perspective of emergency management and transportation, the Camp Fire produced both lessons learned in terms of best practices and validations of previous preparations in the region. This case study focuses on the Town of Paradise and the transportation considerations for the Camp Fire response and recovery. The Town and Butte County each developed a Corrective Action Plan after the incident with action items for improving emergency management going forward.

The abnormally fast-spreading, intense, and unpredictable fire required an evacuation of the entire Town of Paradise. Paradise is a rural town in the foothills of the Sierra Nevada with limited major roadways in and out of town that can be used as evacuation routes. With the large-scale evacuation, the roadway network quickly reached capacity, becoming congested with long delays. Some left their vehicles and evacuated on foot due to the gridlock. Many residents assisted each other in escaping. Firefighting crews focused foremost on saving lives, with some using bulldozers to clear evacuation routes of debris and abandoned vehicles. Staff at schools and medical facilities evacuated students and patients. The evacuation of these facilities went quickly and smoothly, especially considering that Paradise has a relatively large population of people in senior care facilities. Having preexisting relationships between the facilities and transportation providers was an important aspect of successfully evacuating them.

Contra-flow – the reversal of lanes to increase traffic flow – was implemented to increase the speed of evacuation. All four lanes on Skyway, the route between Paradise and SR-99/Chico, were directed downhill toward Chico. The strategy did alleviate some of the congestion higher up in the Town. The choke points for the traffic then became intersections not prepared for the heavier traffic flow, such as the signaled intersections near where Skyway meets SR-99 in southern Chico. One of the issues was that the traffic signal patterns could not easily be adjusted to a “flush” or “flood” patterns to facilitate heavy flow during evacuation. While personnel can direct traffic in lieu of the signals, many personnel were occupied with other critical tasks and coordination among personnel was difficult given the dynamic, chaotic conditions.

The Town has nearly finished developing a Transportation Master Plan (TMP) funded by the Economic Development Administration. The TMP is an important element in the recovery effort and will help prepare the Town for future emergencies. The TMP “incorporates an analysis of the Town transportation network to serve traffic evacuation needs. The recommendations will build upon lessons learned from the Camp Fire and recent evacuations to address pinch points, improve the backbone network, identify new connections, facilitate operations during an evacuation, and coordinate with regional partners and public safety responders.”

One of the challenges is that some of the longer-term solutions that are ideal for facilitating evacuation are difficult to implement due to environmental review requirements and planning priorities. These potential solutions include measures like connecting dead end roads, adding more lanes to existing roadways, and reducing fuel – including vegetation – along roadways.

7.5 Transportation of Pets and Service Animals

During an emergency, certain laws apply to evacuating pets. Federal requirements mandate that any plans for sheltering or evacuation must include reasonable accommodations for qualifying pets. Pets and service animals are distinguished under the law, and the rules and laws regarding service animals are still effective even in an emergency.

The Pets Evacuation and Transportation Standards (PETS) Act (42 U.S.C.A. § 5196a-d (2006)) requires FEMA to "ensure that state and local emergency preparedness operational plans address the needs of individuals with household pets and service animals."³⁷ It authorizes funding and assistance for people with pets and services animals during emergencies, including shelters that accommodate these animals.

California Public Utilities Code § 99166 (2020) requires that if an evacuation order covers a transit provider's service area, that the transit provider allow people to ride with their pets based on best practices established by Cal OES and CA Department of Food and Agriculture (CDFA). It also specifies that these "best practices shall not prohibit a public transit operator from enacting policies that ensure the safety of transit riders."³⁸

Transit agencies should develop compliant plans in consultation with local EMAs to ensure consistency and clear understanding of limitations and capabilities. Once the plans have been vetted, transit agencies and EMAs should work together with appropriate members from the whole community to test and evaluate those plans to ensure assumptions and expectations are accurate and that procedures work according to the plans.

For more information on policies and guidance related to transportation of pets and service animals see the Appendix under State and Federal References, Guidance, and Authorities.

8 Communications

8.1 Stakeholder and Community Engagement Summary

Public and stakeholder engagement is most successful when the process is transparent, with access to decisions, services, and information for all interested stakeholders and community members. The active participation of the community ensures that the outcomes are better tuned to meeting the community's needs today and into the future. This participation also helps SACOG reduce inequities through its work to ensure that safe, healthy, accessible, and inclusive opportunities are available to all residents of the six-county region. Additionally, State and federal transportation laws, regulations, policies, and guidance require and encourage public involvement throughout the planning process, particularly regarding environmental justice populations and underserved communities, including low-income and minority populations.

³⁷ H.R.3858 - Pets Evacuation and Transportation Standards Act of 2006. <https://www.congress.gov/bill/109th-congress/house-bill/3858>.

³⁸ Public Utilities Code: Division 10. Transit Districts. Part 11 Provisions Applicable to All Public Transit. https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=99166.&lawCode=PUC.

This project prioritized stakeholder and community engagement through the development of a stakeholder working group, reaching out to Tribes in the six-county region, and conducting a public survey. The approach to this engagement and key findings from this process are summarized below.

8.1.1 Stakeholder Coordination

Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may be interested in a project. Stakeholders identified for this Strategy include SACOG region cities and counties, transit agencies, local fire and police departments, state and county OES staff, Caltrans, emergency service agencies, and tribal governments. The Project Team created a stakeholder database that included the names of the stakeholder representatives along with their emails and phone numbers in order to contact them for input throughout the development of the Strategy.

SACOG convened a stakeholder working group for the project mainly made up of the region's transit operators and county OES staff, as they are the primary audiences for this Strategy. The stakeholder working group was assembled to provide information to the project team about existing conditions and arrangements in the SACOG region, provide data such as transit asset vehicle data, and provide recommendations and feedback for the Strategy. The stakeholder working group collectively met two times throughout the course of the project (see the Appendix under Stakeholder Working Group for meeting notes).

The first meeting was used to introduce the project and gain initial feedback about existing arrangements in the region. A polling exercise was used to collect information about MOUs, coordination procedures for emergencies, emergency plans, and Public Transportation Agency Safety Plans (PTASPs). This information was directly incorporated into the Strategy under the Situational Overview section. This meeting was also used to identify topics of interest for the Strategy, such as the limitations of electric vehicles and policies surrounding transport of pets.

The second meeting was used as a listening session where transit agencies shared how emergency communications between agencies occur in practice. Through this meeting the project team learned that many times during an emergency, transit agencies receive requests for evacuation assistance from shelters and medical facilities that require the evacuation of a group of seniors, disabled people, incarcerated people, or those receiving medical assistance. They may receive direct calls from these facilities, which they direct back to the respective county OES. Transit agencies noted that sometimes they will receive direct calls from facilities due to personal relationships they have with staff, and without those relationships the transit agency may not have been notified of the evacuation need. In other cases, the transit agency may receive multiple calls about the same request, which can lead to confusion. Generally, transit agencies receive calls from OES or an ambulance company that realizes they will need assistance transporting stable patients from medical facilities. There is a need to streamline these requests in an emergency and make sure they are routed through the proper channels (OES). Findings from this meeting were used to inform content for the Strategy. This meeting was also used to collect feedback on public survey topics and directly informed the final survey questions.

Finally, separate one-on-one meetings were held with stakeholders throughout the course of the project to gather targeted input. The project team also solicited feedback from stakeholders over email. This correspondence was typically regarding additional information (e.g., transit vehicle data) and input (e.g., feedback on the public survey) needed for the Strategy.

TRIBAL ENGAGEMENT

The project team also reached out to the four federally recognized Tribes in the SACOG region: the Wilton Rancheria, United Auburn Indian Community, Yocha Dehe Wintun Nation, and the Shingle Springs Band of Miwok Indians. The purpose of engagement with the Tribes was to:

- Listen to their concerns related to how disasters have affected tribal members and property directly in recent years;
- Understand tribal community involvement in emergency response and evacuation efforts, including with their own vehicle fleets; and
- Identify the gaps and challenges they face in emergency response and evacuation (e.g., logistics of moving tribal members, communication gaps or needs).

SACOG identified appropriate staff contacts at each Tribe and reached out via phone and email to schedule short meetings to discuss the project.

The project team briefly spoke with the Yocha Dehe Fire Department and were directed to Yolo OES for additional information, as their office works for the Tribe through a contractual agreement. The project team directed questions to the Yolo OES office. The project team also held a meeting with staff at Wilton Rancheria's Sky River Casino.

See the Situational Overview section under Other Regional Stakeholders for a summary of the tribal emergency operations practices collected through this engagement.

8.1.2 Public Survey

A public survey available in English and Spanish was published and available online between September 26 and October 21, 2022. The survey asked the public for their input on how prepared they are for an emergency and how overall emergency preparedness can be improved in the Sacramento region. A total of 230 responses were collected and analyzed.

A social media campaign was used to bring awareness to the project and help boost online survey participation. Targeted social media advertisement via Facebook was used to ensure input was received from all segments of the six-county region. The project team prepared a social media piece that was posted to the SACOG Facebook page on September 26, 2022, and boosted on the page on October 18, 2022. The project team also prepared a Facebook advertisement campaign that ran in each of the six counties between September 27, 2022, through October 21, 2022. At a minimum, each county area had one zip code that was identified by CalEnviroScreen as "Disadvantaged Communities," per California Senate Bill 535. These zip codes were targeted to encourage input from communities that are historically disadvantaged and disproportionately burdened by pollution and environmental impacts. To further incentivize online survey participation, Facebook advertisements included a message that survey takers would be entered into a drawing to win a \$50 Amazon gift card.

The results of the survey were used to identify how many people currently received communications from their local transit operator, and their preferred methods of communication (Figure 21, Figure 22).

Figure 21: Response to 'Do you receive general updates from your local transit operator (like SacRT, El Dorado Transit, YoloBus, and others)?'

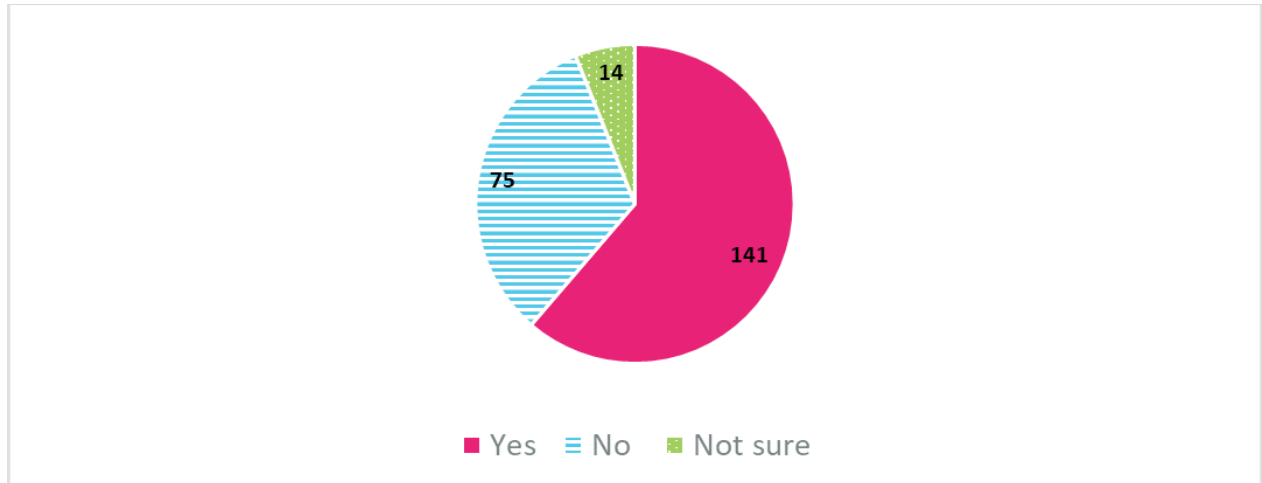
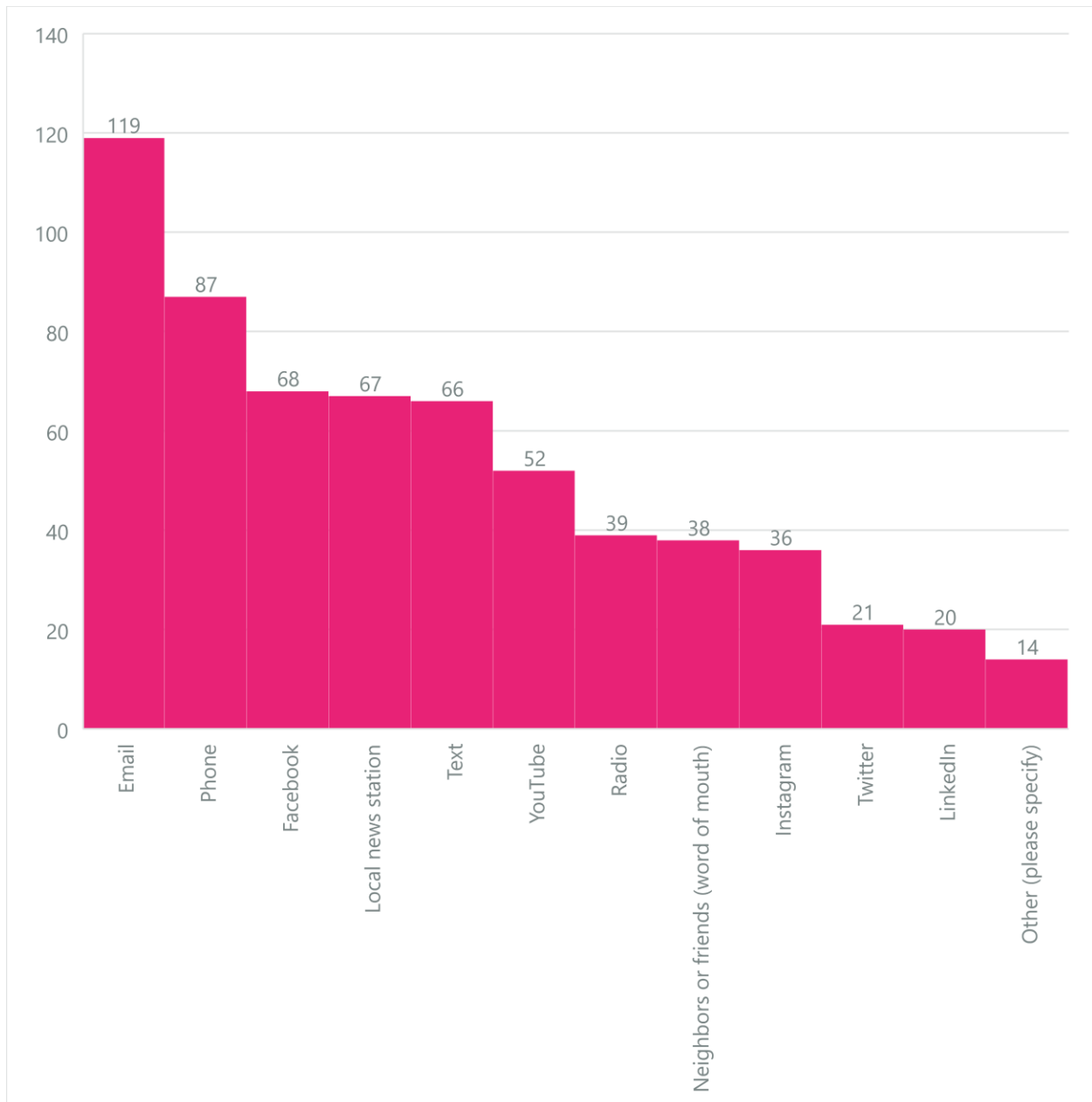


Figure 22: Response to "What are your preferred methods for receiving information from your local transit operator? [Select all that apply]"

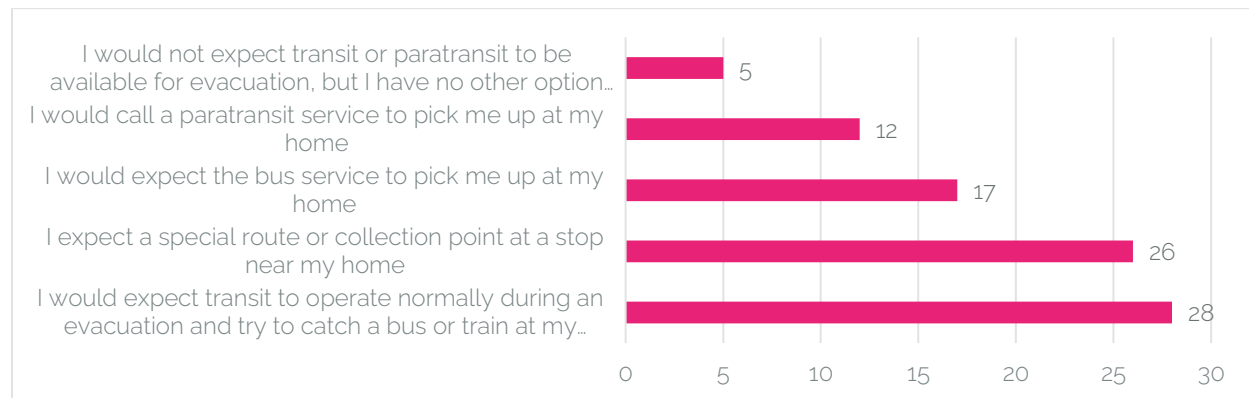


The survey was also used to understand the community's current level of emergency preparedness by asking questions about community member readiness for evacuation and sheltering in place, and steps they have taken to prepare themselves and their families, including developing emergency plans, packing "go-bags," and securing the supplies their pets would need in an emergency (e.g., crates). Most people responded that they were prepared and had the supplies they needed.

Finally, the survey asked about individual evacuation support needs and asked if respondents would use transit to evacuate in an emergency. Seventy-four out of 230 people responded that they would

potentially use a form of public transit to evacuate in an emergency. Respondents also shared their expectations related to transit in an emergency. Most expected a special collection route or point to stop near their home and/or they would expect transit to operate normally during an evacuation event (Figure 23).

Figure 23: Response to "You indicated you might evacuate by transit. Check the following situations that may apply to you:"



For the complete public survey methodology and results see the "Public Survey Results" section of the Appendix.

8.2 Interjurisdictional and Interagency Communications

It is critical to create a procedure for contacting agency employees both on duty and off duty for emergencies. This can be accomplished by developing and maintaining a contact phone tree or emergency call-down list. It may be necessary to require off-duty personnel to be called into service. Those personnel, in turn, will need instructions on where and when to report. If possible, those personnel should also be given some idea of how long they will be working and what they might be doing. It is the transit agency's responsibility to ensure proper hours of service requirements are being maintained regardless of the type of emergency unless a formal waiver has been approved and documented.

Notifying staff and employees should be conducted by all reasonable methods available at the time. This may include phone/text message, the agency website, local public alerting mechanisms, television, public radio, and social media. Agencies should maintain an accurate and up-to-date call tree with staff names and phone numbers. Regular test exercises using the phone tree should be conducted to facilitate its use and application.

Outside assistance should be requested from local and regional political jurisdictions or from organized volunteer groups (e.g., ham radio operators) to supplement transit agency communications as needed when an emergency threatens or expands beyond the response capabilities of the transit agency.

The agency may receive requests for emergency support directly from individuals. All such requests should be referred to the appropriate emergency management authorities for their assessment and proper coordination.

8.2.1 Radio Communication

Per stakeholder request, the project team asked transit agencies and county OES departments what type of radio communications systems they use for emergency and non-emergency communications purposes (e.g., UHF, VHF, 700/800 MHz). Table 15 documents the information provided by stakeholders. Establishing and maintaining interoperability among these systems is an important strategy for improving communications for the region.

Table 15. Radio Communication Types for Transit Agencies and County OES Departments

Agency	Response
Auburn Transit	—
Davis Community Transit	—
El Dorado Transit	UHF radio system. Cell phones if needed.
Paratransit Inc	—
Placer County Transit	—
Roseville Transit	Roseville uses all these systems. 800 Mhz are used on buses. Also, City uses VHF and other technology to communicate. Integrating Teams calls, as well as face to face.
SacRT	SRRCS: The Sacramento Regional Radio Communications System (SRRCS) is a network of radio communications that supports a regional public safety/public service partnership. It provides a two-way voice radio communications capability for emergency and routine business purposes throughout Sacramento County and neighboring areas. In January 2013, SRRCS began an eight-year transition from their current radio system to a new Project 25 (P25 or APCO-25) compliant system. P25 is a suite of standards for digital radio communications for use by federal, state, and local public safety agencies in North America to enable them to communicate with each other during emergencies.
San Joaquin RTD	—
SCT/Link	During emergencies, our communication would rely primarily on UHF radio and if needed via personal mobile phones.
Unitrans	800 MHz UC Davis system
Yolobus	—
Yuba Sutter Transit	700/800 MHz radio
El Dorado County OES	—
Placer County OES	—
Sacramento County OES	SRRCS P25 (see description under SacRT above)
Sutter County OES	VHF for Fire & Public Works and UHF for law
Yolo County OES	Davis, UCD and West Sac are on 800 MHz, the rest of Yolo is on VHF, Medical channels and some school bus channels are UHF, and then we also maintain the ability to use Amateur radio channels and Packet. Most of our county carries multi-band radios for that purpose.
Yuba County OES	—

8.2.2 Real-Time Information Centers

Another important technology for emergency managers to consider is the use of real-time information centers (RTICs), which allow live monitoring and coordination during emergency events.

The Elk Grove Police Department RTIC (shown in Figure 24) draws on live feeds from stationary cameras, drones, and other sources (e.g., social media) to monitor events. The Elk Grove RTIC staff can then coordinate with field personnel to support responses to various types of emergency events. Cal OES requested assistance during the Oroville Dam and Camp Fire incidents and Elk Grove RTIC staff and technology assisted. Both incidents occurred several counties north of Sacramento County, where Elk Grove is located. Using feeds from drones, the RTIC resources were able to assist with those efforts. The RTIC technologies are not yet in widespread use, as only a limited number of agencies in California and the United States have these capabilities.³⁹ Thus, the Elk Grove RTIC is a key potential resource for regional emergency management efforts.⁴⁰

Figure 24. Elk Grove Real Time Information Center



8.3 Emergency Public Communications

Local government organizations and officials are responsible for keeping the public informed about natural, human-caused, and technological disasters in addition to the actions members of the public need to take to protect themselves and their families. Depending on how the local area governments have organized and coordinated the local area alert and warning system, the local government responsibility can be inclusive of city, special district, county, and multi-county jurisdictions. Tribal elected officials may designate which public safety officials in their tribe are granted the authority to alert the public of emergency situations that can affect tribal members. Because local officials usually have the most accurate and timely understanding of the situation, they can rapidly and effectively communicate to the public what is occurring and any steps or actions the public needs to take. Such actions can include the following:

³⁹ Facilities with this technology are sometimes called real-time crime centers (RTCCs)

⁴⁰ Informed by conversation with Officer Jamie Hudson, the Elk Grove Police Department RTIC Manager

- Evacuation orders (Including evacuation routes, shelter info, key information, etc.)
- Locations of points of distribution (for food, water, medicine, etc.)
- Direction to move to higher ground
- HazMat incidents
- Red Flag warnings
- Weather alerts
- Lockdown
- Shelter-in-place guidance

The project team gathered information about existing communication practices and technologies from the SACOG region's transit agencies. Their responses are presented in Table 16.

Table 16. Existing Communication Practices

Agency Name	Information on existing communication practices and technologies
Cal OES	Wireless Emergency Alerts (concise, text like alerts to mobile phones during emergencies)
El Dorado County OES	El Dorado County uses CodeRED for their emergency alert notification system. It alerts community members by app, telephone, cell phone, text message, email, and social media about emergencies in the area. Community members can sign up on their website.
Placer County OES	Sacramento Region Emergency Notification System (opt-in, web-based alert system for Sacramento, Placer, and Yolo counties that enables authorized County, City, and Special District public safety officials to disseminate public safety information). They call it Placer Alert.
Sacramento County OES	Sacramento Region Emergency Notification System (reverse 911 and opt-in, web-based alert system for Sacramento, Placer, and Yolo counties that enables authorized County, City, and Special District public safety officials to disseminate public safety information). They call it Sacramento Alert.
Sutter County OES	Sutter County uses CodeRED to notify residents in the event of emergency situations or critical community alerts. Community members can sign up on their website.
Yolo County OES	Sacramento Region Emergency Notification System (opt-in, web-based alert system for Sacramento, Placer, and Yolo counties that enables authorized County, City, and Special District public safety officials to disseminate public safety information). They call it Yolo Alert.
Yuba County OES	Yuba County uses CodeRED to notify residents about emergencies. Community members can sign up on their website.
Auburn Transit	-
Davis Community Transit	-
El Dorado Transit	Distribution lists for emails
Paratransit Inc	-
Placer County Transit	-
Roseville Transit	-
SacRT	Website that is updated, app, text, changeable electronic sign boards, A-frame signs, will send individuals to key places to relay the message
San Joaquin RTD	-
SCT/Link	Contractor (Storer Transit Systems (STS)) can communicate with the general public through phone system, text message (SMS) – GovDelivery System, email – GovDelivery System and Company E-Mail, driver-to customer communication, printed brochures/flyers, posted signage, website, media
Unitrans	-
YoloBus	Social media, email databases, website
Yuba Sutter Transit	-

The below subsections provide some background on the types of emergency alerts and warnings, technology systems and methods, and how to best direct emergency public communications to DAFN and diverse populations.

8.3.1 Alert and Warning Technology Systems and Methods

There are three common terms used by the National Weather Service to alert the public to potentially dangerous weather:⁴¹

- **Advisory:** An advisory is issued when a hazardous weather or hydrologic event is occurring, imminent or likely. Advisories are for less serious conditions than warnings that cause significant inconvenience and if caution is not exercised, could lead to situations that may threaten life or property.
- **Watch:** A watch means weather conditions are favorable for dangerous weather to occur. In other words, a "watch" means watch out for what the weather could do and be ready to act accordingly.
- **Warnings:** A warning means the weather event is imminent or occurring somewhere in the defined warning area and that people need to take shelter as soon as possible. People indoors should listen to radios, TV or Weather Radio warnings to find out the latest information. Depending on local policy, other types of weather warnings may also broadcast via sirens.

During an event there are different types of emergency alert and warning systems that agencies use to disseminate information. These include the following:

- **Mass Notification Systems** sends a recorded message to an affected area by matching phone users to a physical address using landline E-911 data or through opt-in. While useful, fewer people are using landline phones, which reduces the number of those who will receive life critical messages. Those who use them must opt-in to receive messages. Additionally, hearing impaired may not receive a message.
- **Wireless Emergency Alerts (WEA)** sends a text notification message to all mobile phones in affected geographical area.
- **SMS Text Systems** sends SMS text message to users through agency database or required opt-in. These can also be used for non-emergency messages. Not all residents will receive alerts if an opt-in is required,
- **Outdoor Public Warning Systems** is a system of stationary sirens/speakers strategically placed throughout the community that will send out an alert tone or a message. These are activated individually or as a group. While opt-in is not required, the system will only reach those who can are in range and can hear the sound, so will not be effective for the hearing impaired.
- **Mobile Public Address Systems** that can be attached to aircraft and emergency response vehicles to notify people in more remote areas. These require care to ensure the entire messages are understand but can sometimes be challenging as the device can be hard to hear or understand.

⁴¹ <https://dps.mn.gov/divisions/hsem/weather-awareness-preparedness/Pages/alerts-warnings-types-of-warnings.aspx>

- **Alternative systems** can be used as effective alert and warning systems. These include church or community bells, digital outdoor billboards, and navigational apps.

EMERGENCY ALERT SYSTEM

The Emergency Alert System (EAS) is a national public warning system that requires broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service (SDARS) providers, and direct broadcast satellite (DBS) providers to provide the communications capability to the President to address the American public during a national emergency. The system also may be used by state and local authorities to deliver important emergency information, such as AMBER alerts and weather information targeted to specific areas.

- Messages can interrupt radio and television to broadcast emergency alert information.
- Messages cover a large geographic footprint. Emergency message audio/text may be repeated twice, but EAS activation interrupts programming only once, then regular programming continues.
- Messages can support full message text for screen crawl/display, audio attachments in mp3 format, and additional languages.
- It is important for authorities who send EAS messages to have a relationship with their broadcasters to understand what will be aired via radio, TV and cable based on their policies. Policies vary from station to station.

WIRELESS EMERGENCY ALERTS

WEAs are short emergency messages from authorized federal, state, local, tribal, and territorial public alerting authorities that can be broadcast from cell towers to any WEA-enabled mobile device in a locally targeted area. Wireless providers primarily use cell broadcast technology for WEA message delivery. WEA is a partnership among FEMA, the Federal Communications Commission (FCC) and wireless providers to enhance public safety.

WEAs can be sent to a mobile device when a person may be in harm's way without the need to download an app or subscribe to a service. WEAs

All-Hazards Radios

While primarily an auditory alert system, many off-the-shelf All-Hazards Radios are available with visual and vibrating alarm features and simple text readouts for use by deaf or hard of hearing individuals. Special adaptors can also be added to some models of All-Hazards Radios by certain vendors. These adaptors can include colorized warning lights to indicate the level of alert, and a Liquid Crystal Display readout of specific warnings. All-Hazards Radios are programmable state/country selections that screen out alerts from other areas and can be battery-operated and portable at home, work, school, or while traveling around the country.

Communication Pathways

- ❖ The Emergency Alert System (EAS) delivers alerts via AM, FM, and satellite radio, as well as broadcast, cable, and satellite TV.
- ❖ Cell phones and mobile devices receive Wireless Emergency Alerts based on location, even if cellular networks are overloaded and can no longer support calls, texts, and emails.
- ❖ NOAA delivers alerts through NOAA Weather Radio.
- ❖ Alerts are also available from internet service providers and unique system developers.

are messages that warn the public of an impending natural or human-made disaster. The messages are short and can provide immediate, life-saving information.

Types of WEA Alerts:

- **Presidential Alerts** are a special class of alerts only sent during a national emergency.
- **Imminent Threat Alerts** include natural or human-made disasters, extreme weather, active shooters, and other threatening emergencies that are current or emerging.
- **Public Safety Alerts** contain information about a threat that may not be imminent or after an imminent threat has occurred. Public safety alerts are less severe than imminent threat alerts.
- **America's Missing: Broadcast Emergency Response (AMBER) Alerts** are urgent bulletins issued in child-abduction cases. Rapid and effective public alerts often play a crucial role in returning a missing child safely. An AMBER Alert instantly enables the entire community to assist in the search for and safe recovery of the child.
- **Opt-in Test Messages** assess the capability of state and local officials to send their WEAs. The message will state that this is a "TEST".

Content: A WEA looks like a short, text message accompanied by a special tone and vibration. The most important actionable information needs to be conveyed through the message text. This ensures that all members of the public will receive information, even if they are unable to access the embedded reference, like a URL or phone number. The WEA message will show:

- Who is sending the alert
- What is happening
- Who is affected
- What action to take

Character Count: For newer devices the alerting authorities may send a 360-character version to communicate additional information to the public about emergencies to phones and networks that are ready to support 360-characters. For older devices the alerting authorities must include 90-character versions of their alerts to ensure the alert is received by older WEA-capable mobile phones. When a 90- and a 360-character message is included in the same alert, wireless providers that participate in WEA will send the 90-character version to older phones and the 360-character version to newer phones.

Spanish-language WEAs: When sending a Spanish-language alert, an English-language version is also required. Alerting authorities are responsible for translating their WEA messages into Spanish. The alert language displayed on a phone is dependent on the phone type and settings, so one cannot target a segment of the population to receive just Spanish-language WEAs.

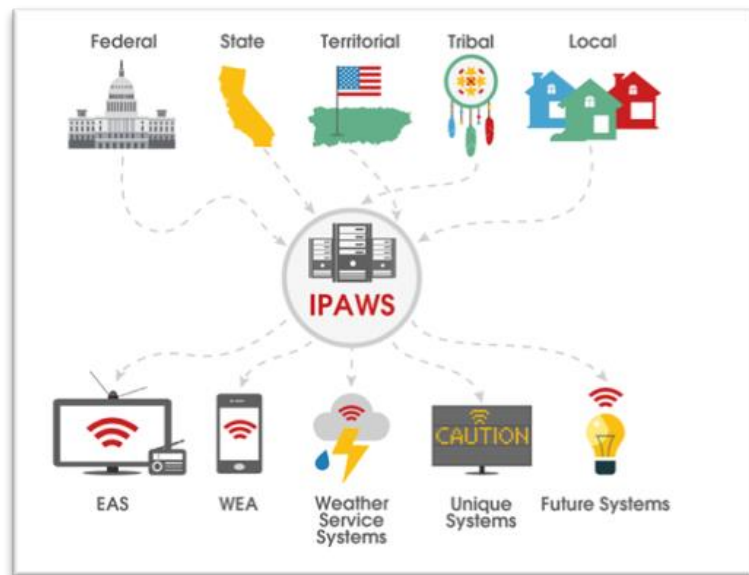
Geographic Accuracy: In December 2019, participating wireless providers were required to improve geo-targeting of alerts even further than originally required with an enhanced geo-targeting reaching 100 percent of the targeted area with no more than 1/10th of a mile (528 feet) overshoot.

Preservation of WEAs: Newer mobile devices will preserve alerts on the device so that they are accessible for at least 24 hours or until the user deletes them.

Embedded References: An embedded reference is data, like a hyperlinked URL or phone number, that an alert recipient can click to perform an action related to the alert. The availability of embedded content empowers emergency managers to offer the public alerts that can direct them to more comprehensive emergency response resources, including multimedia such as pictures or maps, which can lead to swifter community response on fast developing events.⁴²

INTEGRATED PUBLIC ALERT & WARNING SYSTEM

The Integrated Public Alert & Warning System (IPAWS) is FEMA's national system for local alerting that provides authenticated emergency and life-saving information to the public through mobile phones using WEAs, to radio and television via the EAS, and on the NOAA Weather Radio. IPAWS is the only way emergency managers can send WEAs. Through a partnership between the FCC, FEMA, and commercial mobile service providers, alerting authorities are able to use IPAWS to send WEAs, even when cellular networks are



overloaded and can no longer support person-to-person calls, texts, or emails. IPAWS is accessed through software that meets IPAWS system requirements. IPAWS is an online tool that federal, state, territorial, tribal, and local authorities can use to issue critical public alerts and warnings. IPAWS improves alert and warning capabilities by allowing alerting authorities to deliver alerts simultaneously through multiple communication devices reaching as many people as possible to save lives and protect property.

All EAS participants are required to monitor IPAWS for a national EAS emergency alert message. State and local authorities use IPAWS to route alerts to local EAS stations. IPAWS complements – but does not replace – the systems state and local authorities are currently using for EAS.

The IPAWS Program recently released its 2022-2026 IPAWS Strategic Plan. The four-year Strategic Plan focuses on making alerting available to more people and broader demographics, improving the

⁴² <https://www.fema.gov/emergency-managers/practitioners/integrated-public-alert-warning-system/public/wireless-emergency-alerts#enhancements>

effectiveness of alerts, improving the quality and sustainability of the national alerting ecosystem, and optimizing the IPAWS Program's service delivery and long-term capability development.⁴³

IPAWS-OPEN: The Integrated Public Alert and Warning System Open Platform for Emergency Networks (IPAWS-OPEN) receives and authenticates messages transmitted by alerting authorities. IPAWS-OPEN then routes the messages to IPAWS communications pathways. Software and hardware developers are creating IPAWS-OPEN-compatible alert origination and dissemination tools that allow messages to travel to the public via radio, television, cellular phone, NOAA Weather Radio, internet-based and other dissemination systems. State, local, territorial, and tribal alerting systems such as emergency telephone networks, giant voice sirens, and digital road signs may also receive alerts from IPAWS-OPEN. Private sector IPAWS technology vendors and developers and systems can easily be integrated into IPAWS.⁴⁴

Communication Pathways

- The [Emergency Alert System \(EAS\)](#) delivers alerts via AM, FM, and satellite radio, as well as broadcast, cable, and satellite TV.
- Cell phones and mobile devices receive [Wireless Emergency Alerts](#) based on location, even if cellular networks are overloaded and can no longer support calls, text, and emails.
- NOAA delivers alerts through [NOAA Weather Radio](#).
- Alerts are also available from [internet service providers](#) and unique system developers.

8.3.2 Communicating with People with Disabilities, Access, and Functional Needs and Diverse Populations

The evacuation of people with DAFN and cultural differences can pose additional requirements with respect to accessible communications for alerts, warnings, notifications, and information dissemination that ensures equitable evacuation processes, protocols, and emergency transportation. When issuing timely information during a disaster, diverse populations are often more challenging to reach effectively, particularly disproportionately impacted populations. Understanding the influence of social factors on each jurisdiction's hard-to-reach populations is critical for successful communications.

Communicating timely information during an evacuation often relies on using mass communication products and alerts and warnings systems established by the county officials. SACOG can work with county officials and key stakeholders in the impacted jurisdictions to help support their communication operations regarding transportation resources and evacuation options, if requested.

As the demographic landscape of the SACOG area is rapidly and continually shifting, all communications should use a lens of cultural understanding. Outreach strategies and messaging should specifically target the unique populations residing and/or working in impacted jurisdictions being evacuated. Creating culturally competent communication strategies and messaging that will reach and be understood by all members of a community requires reflecting the needs and values of

⁴³ <https://www.fema.gov/emergency-managers/practitioners/integrated-public-alert-warning-system>

⁴⁴ <https://www.fema.gov/emergency-managers/practitioners/integrated-public-alert-warning-system/technology-developers/ipaws-open>

different audiences. Moving away from the "one-size-fits-all" approach and crafting understandable customized communications will help ensure the whole community is equitably reached by the wide range of public information efforts underway during an evacuation. Effective and culturally appropriate translation of message content is paramount to furthering understanding and promoting desired action.

Even with extensive commitment to supporting the tailoring of outreach to subpopulations, communication efforts alone may not remove or decrease barriers to successfully issuing information to hard-to-reach, disproportionately impacted populations. Communities may respond to messaging in an alert in different ways. Therefore, the goal is to support county efforts by working collaboratively with all public information officials and stakeholders so that the outreach and alerts and warnings are well received, accurately understood, personalized, and acted upon by hard-to-reach populations.

SACOG will assist county officials, as appropriate, in identifying and engaging with potential community partners that can serve as trusted messengers and "safe" environments for message distributions. Most hard-to-reach populations have organizations and champions that are trusted, knowledgeable about, and representative of, specific hard-to-reach populations. Each county's public information officials will have established key stakeholders and modes of communication that work best in their jurisdiction. They will have considered the unique communication modalities for reaching hard-to-reach populations.

Information resources may include the following:

- Community-based organizations
- Community health educators and promoters
- Cultural association leaders
- Cultural brokers
- English as a second language (ESL) teachers
- Bilingual/bicultural staff
- Ethnic and cultural organizations
- Ethnic business owners
- Ethnic media and ethnic media personalities
- Faith leaders and faith-based organizations
- Tribal organizations
- Advocacy and activist groups
- Community health centers
- Local ethnic businesses
- Sports clubs and team
- Tribal elders
- Community centers
- Family and youth centers
- Neighborhood associations
- Philanthropic organizations

The following methods for outreach distribution are among the options that may be used by officials to communicate with diverse populations regarding evacuation transportation.

- Accessible websites (508 compliant)
- American Sign Language (ASL) interpreting
- Computer assisted real-time translation (CART)
- Cars with loudspeakers
- E-mail
- Face-to-face outreach
- Fotonovelas (comic-style novels that use photos instead of illustrations)
- Pictograph or pictograms (visual symbols)

To ensure messages are developed for maximum accessibility for individuals with DAFN, alerting platforms should ideally include the ability to control the following:

- Teletype (TTY)/Telecommunications device for the deaf (TTD)
- Font size
- Color analyzer
- Sound & vibrations
- Flashes
- Use of attachments (video)
- 508 compliance (use of screen-readers)
- Posting of accessible electronic content, documents, and videos
- Video relay as an option

Ensuring information is accessible and equitable will assist in a culturally inclusive return to the community. The same public alert and warning systems used to disseminate evacuation information may be used to notify the public on the opening and re-accessibility of evacuated areas. For example, county websites used for information outreach must be updated with reentry information for the people who evacuated out of county or out of state.

8.4 Communications Between Transit Operators and the Public

Transit agencies consulted for the Strategy expressed the need for better communication with the public. This includes reviewing and documenting best practices for notifying the public about cancelled, modified, or temporary transit services, and how local and regional partner agencies can share and collaborate on public information and outreach.

Another idea was to develop a method to identify which residents would need evacuation assistance before or during events. This may include a pre-emergency communication such as an opt-in or opt-out text message with communication software to identify individuals who are likely to need assistance regardless of an event. The method would also need to include a more responsive component that varies based on the nature of each individual event.

Case Study: Palm Trans Communications with Pre-Registered Individuals

Palm Trans, located in Palm Beach County, Florida, uses Everbridge to communicate with more than 10,000 pre-registered individuals who are listed as potentially needing transportation. Palm Trans diverts passengers with special needs to their paratransit service, which transports passengers to shelters that meet their specific needs. To help ensure these individuals are prepared, Palm Trans also communicates that they will need to bring three to five days' worth of belongings with them to the shelter. The Senior Resource Association (SRA) has found it helpful to be in regular communication with the EOC, and they receive a list once a month of all the people who are registered for the shelter so that transit staff can plan how to evacuate each household (www.masstransitmag.com/management/article/21111559/best-practices-emergency-response).

8.4.1 Public Policies

Before emergencies, transit agencies should develop policies around evacuation and communicate those policies to the general public, including on the following topics.

PETS

Transit agencies should develop policies regarding whether or not people are allowed to bring their pets with them while being evacuated and make that information public. These policies need to be conveyed to the public before and during an emergency. Some agencies allow pets on board during evacuations; others have set policies noting that only service animals are allowed. Given the urgent circumstances of an emergency evacuation, transit agencies may be willing to make compromises. Anecdotally, some regional transit agencies shared incidences where people left their homes with animals wrapped in blankets or in crates, and the vehicle driver made the decision to allow them on board.

There are several federal and state policies and recommendations that transit agencies must follow related to evacuation, which should be considered in developing pet policies. See the Appendix under State and Federal References, Guidance, and Authorities for a list of relevant legislation. Transit agency pet policies should clarify the types of pets allowed on board a transit vehicle (e.g., pet size, service animals only) and any restrictions (e.g., carrier requirements) using the *State of California Best Practices for Allowing Pets on Public Transit* and federal/state requirements as references.⁴⁵ This information should be provided to vehicle operators along with instructions for what to do in cases of passenger/pet conflicts and in situations that breach policy.

Interagency coordination is needed to understand and pre-designate shelter locations for evacuees and to identify which shelters allow animals. Shelters are established at the local government level. Typically, local fairgrounds are used to shelter large animals such as livestock. Other shelters may be animal-only or cohabitated, where owners are housed with their pets.⁴⁶ Interagency coordination is

⁴⁵ https://www.cdfa.ca.gov/AHFSS/Animal_Health/pdfs/PUC99166BestPractices_08-12-2021_Final.pdf

⁴⁶ https://www.cdfa.ca.gov/AHFSS/Animal_Health/pdfs/PUC99166BestPractices_08-12-2021_Final.pdf

also needed to develop emergency plans that include household pets and service animals, including how to safely evacuate pets via transit.

PICKUP AND DROP-OFF POINTS

Policies regarding the location of pick-up and drop-off points during an evacuation should be in place. Regional emergency management staff should coordinate with transit agencies about route conditions, pick-up and drop-off points, and other safety information.⁴⁷ Transit agencies should also coordinate with other local emergency management officials for updates so that drivers have the most current information.⁴⁸ The transit agency may then need to convey relevant information about pick-ups and drop-offs to the public. During past emergency events, some members of the public expected that public transit would pick them up from their homes, which is often not the case. This finding was also reinforced through our public survey findings; respondents who said that they may take public transit in an evacuation had different expectations about where and how they could get picked up. See the Public Survey section for a summary of results and the Appendix for complete survey results. Setting a publicly available policy can make procedures and expectation clear to the public before and during an emergency.

Such policies about pick-up and drop-off points should also be communicated to vehicle operators and should be readily available to them if needed. This could be achieved by including them in a physical emergency plan kept on board each vehicle or as a digital reference on board via Mobile Data Terminal (MDT) or similar device.

8.4.2 Targeted Communications

Regional transit agencies may also consider developing targeted communications campaigns to specific audiences, such as those who are most likely to rely on transit in an evacuation, DAFN populations, and those with limited English proficiency. Targeted communications could also focus on specific locations of communities that may need evacuation assistance. For example, Sutter County transit riders primarily travel in Live Oak and Yuba City, so communications about transit pick-up and drop-off locations could be focused on these communities.

Targeted communications channels could include usual outlets such as email, phone, social media, and other sources that are preferred by the public (see the Public Survey section for a summary of preferences identified through the survey for this project). Other outlets could include the following:

- A rapid notification protocol designed with regional EMAs using their established public-alert systems. Keep in mind that this may also include those who choose to use public transit for the first time.
- Leverage and load local/regional agency-owned, earned, and paid media channels with essential and uniform messages regarding key service disruption and resumption times.
- Work with paratransit providers for special communication needs for both operators and passengers.

⁴⁷ https://www.cdfa.ca.gov/AHFSS/Animal_Health/pdfs/PUC99166BestPractices_08-12-2021_Final.pdf

⁴⁸ https://www.cdfa.ca.gov/AHFSS/Animal_Health/pdfs/PUC99166BestPractices_08-12-2021_Final.pdf

Communications should also consider the demographics of targeted communities and select platforms that they favor most. For example, many Yolo County residents who do not have a car and rely on transit/active transportation are students; therefore, communications about transit operations during an evacuation could use platforms they prefer (e.g., social media platforms, university webpage). Demographics are an important consideration to selecting multiple languages in which to provide communications. Finally, deliver messaging in a variety of channels to reach everyone equitably, including DAFN populations.

8.5 Communications Between Transit Operators and Regional Emergency Managers

Transit agencies can provide support in many different ways other than moving large amounts of people in an efficient and effective manner. These ways include the following:

- Support community response and recovery needs.
- Alternate or supplemental transportation in impacted areas.
- Vehicle maintenance assistance.
- Technical and professional assistance.
- Augmentation for local public safety.
- Emergency short-term shelter.
- Mobile rehabilitation for response and recovery workers in the field.
- Provide "eyes and ears" along routes for damage or situational assessments.

Emergency managers should recognize this and collaborate with transit agencies when emergencies are not being actively managed in order to appropriately explore additional support opportunities for the next emergency incident or event. Transit agencies want to help, but they look to the lead EMAs for guidance on how they can do it effectively. To aid in accomplishing this, emergency managers should have emergency procedures and contact information readily available, publicly or otherwise communicated, for the transit agency. Sometimes, it can be difficult for transit agency staff to locate this information.

Emergency managers should also understand the limitations and capabilities of each transit agency they work with. For example, as many transit agencies within the SACOG region and elsewhere in California begin transitioning their diesel fuel fleets to ZEVs, there will be some operational differences or challenges. These challenges may include vehicle range, capacity, refueling/charging needs, etc., in addition to challenges associated with outgoing diesel bus fleets. Other operational challenges for transit agencies may include employee or resource availability to fill support requests and impeded access to the vehicle yard(s) needed to operate the vehicles. Within the SACOG region, a standardized process needs to be established that allows essential workers, such as transit employees, to enter areas and roadways that may be otherwise closed to the general public. When making support requests of transit agencies, Emergency Managers need to keep these issues in mind to ensure an efficient and effective resource ordering and fulfillment process.

Unlike many other partners within the community, transit agency resources have not been formally typed in a FEMA or other formal Resource Typing Manual. Emergency Managers should be aware of

this when making a resource request and make strides to provide key information to transit agency partners that include the following:

- What is the support need?
- How many people will need to be moved?
- Where is the pickup and drop-off location?
- What time do people need to be picked up or dropped off by?
- What potential challenges exist?
- Are there any roadblock access procedures that need to be followed?
- How can the agency get beyond checkpoints/roadblocks with little to no delay?

Unless specifically stated by regulatory statute, most transit agencies are autonomous government agencies or non-governmental organizations that are not controlled by any one municipality, county, or city. While they are trained in NIMS, ICS, and SEMS, in many cases they have the authority and independence to make their own decisions when it comes to approving or denying resource support requests. Emergency Managers need to be aware of this as it may also affect the prioritization of resource requests among competing EMAs during multi-jurisdictional incidents or events. The ESF-1 representative in the Cal OES EOC or within Caltrans may be a helpful coordinator for navigating resource support challenges with transportation agencies. Additionally, SACOG may also serve as a coordination partner for transit agencies within the SACOG region.

Transit agencies in the region mentioned that there needed to be more collaboration across essential services before, during, and after an emergency. This collaboration could be achieved through the following:

- Documenting best practices of collaboration across public information leaders, essential services, and first responder technical teams.
- Establishing relationships with local emergency responders and emergency volunteer groups, such as Community Emergency Response Teams (CERT), Voluntary Organizations Active in Disasters (VOAD), and other similar organizations.
- Holding periodic planning and coordination meetings with relevant stakeholders.
- Host on-site familiarization and orientation exchanges with stakeholders to provide better operational insight.
- Explore mutual limitations and capabilities to determine gaps and implement improvement plans.
- Develop and execute mutual aid agreements such as MOU/MOA, IGA, Public-Private Partnership, or similar agreement.
- Mutual peer reviews of various plans, procedures, tactics, techniques, etc., as applicable.
- Develop and implement emergency employee credentialing processes.
- Joint venture regional emergency preparedness projects funded by grants or other similar funding sources.

- Develop a regional communications guideline or policy framework to standardize objectives, means, and methods for communicating during and before/after an emergency.
- Work with stakeholders to develop a new Regional Multi-Agency Coordination System (R-MACS) to standardize the resource typing and ordering process within the SACOG region.
- Integrate existing or new emergency management software and other technologies to streamline transit response.
- Conduct regular regional training activities
- Develop and maintain a MYTEP.
- Conduct HSEEP compliant joint drills and exercises of varying types and levels of effort.
- Joint testing and training of emergency communications capabilities (e.g., radios, phones, satellite phones, or web-based incident management software).
- Hold emergency management joint training opportunities (e.g., trainings on NIMS, ICS, SEMS, or plans familiarization).

Case Study: TriMet's Role in Regional Emergency Management

TriMet's emergency preparedness planning is based on partnerships with the Regional Disaster Preparedness Organization (RDPO), Regional Emergency Managers Technical Committee (REMTEC), and first-responder organizations of cities and counties throughout TriMet's service area, to develop workable emergency management protocols for all-hazards incidents or events, such as a natural disaster, or a National Security Special Event (NSSE). Following the terrorist attacks of 9/11/2001, TriMet officials have been working closely with officials of these emergency management organizations to: (1) include TriMet as a full-fledged member of these organizations for purposes of planning and preparing for regional emergency responses (including joint drills), and (2) ensure appropriate inclusion of TriMet in the emergency response and security alert procedures at the region's emergency operations centers.

As a core member of the RDPO TriMet leads the Transit Working Group as part of the Program Committee which has direct oversight of annual project planning tied to Urban Area Security Initiative (UASI) grant funding for the Portland-Metropolitan area. Additionally, in 2018 TriMet became the first transit agency in the country to receive the StormReady designation from the National Weather Service for their level of readiness to weather related emergencies. This also led to the adjustment of flood insurance points for the Portland-Metropolitan area under the National Flood Insurance Program.

Throughout the years TriMet has helped the people of the Portland-Metropolitan Area during various emergencies, including transporting firefighters and law enforcement into and out of dangerous areas, evacuating people due to wildfires or large neighborhood fires, providing mobile cooling or warming shelters, establishing COVID-19 testing sites for vulnerable populations, providing secure barriers for large crowds during special events, and more. Below is a summarized list of some recent emergencies or special events that TriMet has been involved with.

- ❖ COVID-19 Pandemic, 2020 – Present.
- ❖ Annual Winter Storms, 2016 – Present.
- ❖ City of Portland Special Events, 2016 – Present.
- ❖ Wildfire Evacuations in Clackamas and Washington Counties, 2020.
- ❖ Civil Unrest Activities in the City of Portland, 2017 – 2020.
- ❖ Atmospheric River Event, 2019.
- ❖ City of Portland Cully Neighborhood Fire Evacuations, 2018.
- ❖ Eagle Creek Wildfire Evacuations, 2017.
- ❖ Clackamas Town Center Shooting Incident, 2012

9 Implementing the Strategy

9.1 Roles and Responsibilities

9.1.1 SACOG

As the MPO for the Sacramento region, SACOG does not have an emergency response role for emergency incidents or events. Rather, SACOG could serve as the cross-jurisdictional coordinator for regional emergency preparedness, focusing particularly on transportation's role in preparedness. By virtue of its role as an MPO, SACOG has already established relationships with many, if not all, government organizations and many non-governmental organizations within the SACOG region. By

expanding its role to include regional emergency preparedness coordination and facilitation, SACOG could benefit the whole community during emergency events. A similar expanded role for the Bay Area's MPO, the Metropolitan Transportation Commission (MTC), has been beneficial for the neighboring nine-county region (see the case study below). Like SACOG, MTC's region spans multiple counties and is served by multiple transit agencies, showing that an MPO can be a helpful coordinator in these types of settings.

The primary mission of this expanded role could be to increase the SACOG region's resilience to major emergencies and disasters through collaboration and partnerships with relevant stakeholders within and outside of the SACOG region. The region's agencies and other stakeholders can more effectively respond to major emergencies or disasters and facilitate recovery if they prepare together. Regional collaboration is more cost-effective for taxpayers, develops roles and relationships needed for efficient emergency or disaster response and recovery, creates more consistent public messaging, and increases the ability to involve the whole community in preparedness.

To achieve this, SACOG and all member stakeholder partners could develop new or adopt the following example guiding principles:

- Provide opportunities for all jurisdictions and emergency preparedness organizations in the SACOG region to participate.
- Strive for a holistic regional perspective while honoring and respecting each partner's autonomy.
- Demonstrate organizational value to all stakeholder partner members.
- Practice transparency, accountability, and financial stewardship.
- Ensure equity and fairness in adopting regional policies, plans, tactics, techniques, procedures, etc.
- Make decisions by consensus whenever possible.
- Use a whole community approach in which all relevant stakeholder groups are integrated and considered.
- Build upon existing strengths and ensure regional capability investments are maintained.
- Use the National Preparedness Goal as a guide for enhancing regional preparedness across all mission areas.

To organize all of the emergency preparedness activities and member stakeholder partners, SACOG could make use of its existing committee, sub-committee, working group, or task force structures to manage this expanded role. While not intended just for transit agencies, specific preparedness activities could include but are not limited to the following:

- Regional drill and exercise planning and facilitation.
- Regional emergency preparedness planning development and coordination.
- Stakeholder partner and whole community integration and engagement facilitation.
- Public information, outreach, and alert/notification standardization.

- Training delivery, facilitation, and standardization.
- Project development and management for region-wide emergency preparedness projects.
- Regional financial management, procurement, and funding source pursuit assistance for region-wide emergency preparedness projects.
- R-MACS development and maintenance.
- Regional resource management standardization.

Case Study: Metropolitan Transportation Commission's Role in Regional Emergency Management

MTC, the San Francisco Bay Area's nine-county MPO and mega-region partner to SACOG, plays a relatively active role in emergency management. The region comprises approximately 27 public transit agencies plus many private transit operators. With this large number of operators, many of which span multiple counties, coordination is paramount and can be challenging. MTC sees its role as trying to coordinate communication between counties and transit agencies. This hybrid approach is not intended to bypass the counties but instead to facilitate collaboration where it is helpful.

Cal OES asked MTC to serve as conduit between transit agencies (including ferry, bus, and rail modes), Caltrans District 4 (D4), and California Highway Patrol (CHP). MTC collects the situational status of the transit operators after major events that disrupt transportation. To do this, it hosts an hour-long call after an emergency with transit agencies and other transportation agencies (Caltrans D4, CHP, airports, ferries, etc.). During that call they discuss status and what support is needed. MTC then sends a situational report to the Regional Emergency Operations Center (REOC) or State Operations Center (SOC) transportation branch. The REOC is activated by the Cal OES Regional Administrator, and the SOC is activated by Cal OES headquarters.

MTC has a seat on Cal OES REOC or SOC when activated. During an activation, MTC would be invited along with WETA, Caltrans D4, CHP, and Coast Guard to help create a transportation service plan. MTC is only focused on Emergency Support Function 1 (ESF 1) – Transportation and is not involved in emergency management for other sectors/functions. MTC has also played a role in situations where the transportation system is disrupted but REOC or SOC did not need to be evacuated. In these cases, MTC can take the lead or support trying to restore disruptions. In situations when they are activated, the REOC and SOC are responsible for allocating and prioritizing transportation resources and ironing out conflicts.

Much of the case study is based on a conversation with Stephen Terrin, MTC Emergency Coordinator. The project team thanks Mr. Terrin for his contributions.

Bay Area Transit Agencies



Source: <https://www.seamlessbayarea.org/blog/transitagencieslis>

9.1.2 Transit Operators

Whether required by law, best practices, or formal agreements, there are many reasons for a transit agency to be prepared for emergencies and support jurisdictional emergency management needs. The primary reason is that emergencies are bound to occur and are very likely to affect transit operations in various ways with differing levels of severity. During an emergency, transit agencies also have many formal or implied responsibilities, including the following:

- Safety of customers, employees, contractors, and the general public.
- Compliance with ADA and other regulatory requirements.
- Good stewardship of tax dollars.
- Meeting ethical or moral obligations.
- Effective integration of operational needs with emergency management efforts via the National Preparedness Goal and associated systems.

The National Preparedness Goal is "A secure and resilient nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk." This means that preparedness is a shared responsibility and requires the involvement of everyone, including transit agencies, and not just the jurisdictions (i.e., municipal, county, state, federal, and tribal governments). As it relates to emergencies not directly involving transit, there are many ways for transit agencies to directly support the whole community. These include the following:

- Support community response and recovery needs.
- Provide alternate or supplemental transportation in affected areas.
- Provide vehicle maintenance assistance.
- Provide technical and professional assistance.
- Provide augmentation for local public safety.
- Provide emergency short-term shelter.
- Provide mobile rehabilitation for response and recovery workers.
- Provide "eyes and ears" along routes for damage or situational assessments.

Within the SACOG region, all transit agencies should make efforts to join with jurisdictional partners and be prepared to help, as needed, during emergencies. In general, the transit agency should coordinate with the lead EMA for the emergency incident or event. Most of the time, this will involve providing a transit agency representative to act as a Liaison Officer to work within a county EOC. In addition to working with the lead EMA within or linked to their EOC, the transit agency may also be asked to provide a field representative or specialized teams to the Incident Command Post (ICP) to support the emergency response from a tactical level as part of a Unified Command or as a component of the Operations Section within the established ICS structure.

When providing support to an EMA, or multiple EMA's during multi-jurisdictional emergencies, the transit agency should be clear about their capabilities and limitations, especially when it comes to prioritizing transit assets for competing support requests. Unless instructed otherwise by the ICS, it is reasonable for a transit agency to prioritize filling support requests on a first-come, first-serve basis. Any emergency support provided by the transit agency must be feasible for all parties involved so that it does not create additional challenges during the emergency incident or event.

9.1.3 Emergency Management Agencies

Similar to other all-hazards planning conducted among the whole community, EMAs and transit agencies could benefit greatly from different types of blue sky or non-emergency coordination. Some of these recommendations include the following:

- Periodic planning and coordination meetings.
- Hosted on-site familiarization and orientation exchanges to provide better operational insight.
- Exploration of mutual limitations and capabilities to determine gaps and implement improvement plans.
- Conducting meaningful joint drills and exercises of varying types and levels of effort.
- Joint testing and training of emergency communications capabilities (e.g., radios, phones, or satellite phones).
- Expanded emergency management or joint training opportunities (e.g., trainings on NIMS, ICS, or SEMS).
- Development and execution of mutual aid agreements.
- Mutual peer reviews of various plans, procedures, tactics, techniques, etc., as applicable.
- Development and implementation of emergency employee credentialing processes.
- Joint venture regional emergency preparedness projects funded by various grants or other similar funding sources.
- Development of a new R-MACS to standardize the resource typing and ordering process within the SACOG region.
- Integration of existing or new emergency management software and other technologies.

9.1.4 Stakeholder Working Group/Emergency Preparedness Committee

Throughout the course of the development of the Sacramento Regional Emergency Preparedness Strategy, SACOG organized and met with members of a stakeholder working group organized for this project. The stakeholder working group is made up of regional emergency management professionals and transit agency staff as the primary audiences and users of the Strategy. SACOG is planning to leverage this existing stakeholder working group to develop a committee that continues to meet regularly.

This proposed "Emergency Preparedness Committee" would consist of SACOG and the same transit operators and emergency management personnel who have participated in the working group to date. Other potential invitees would include other transportation agencies within the region, such as Caltrans, rail agencies, and county public works departments, tribal partners, and local jurisdictions. Additional partners could be incorporated as full members or as secondary members who attend meetings less frequently, depending upon their interest and availability.

Upon initial establishment of the committee, the members could discuss the benefits of an interagency MOU. If it were deemed beneficial, an MOU could be drafted to formalize the committee

and its participants (for more on the benefits of such an MOU see "Establish MOUs"). The primary mission or vision of the committee would be to strengthen regional emergency preparedness to ensure a more resilient SACOG region. This would then be followed up by an establishment of different working groups or sub-committees to address more specific supporting strategies, projects, and activities

The committee could meet for an hour on Zoom every month during the emergency/fire season (from July to November) and every other month during the off-season (December to June). Or, SACOG could combine the Emergency Preparedness Committee meeting with its existing Transit Coordination Committee (TCC) Meeting since many Strategy partners already attend that meeting. The first option might be more conducive to including external partners such as emergency managers who do not already attend the TCC meetings. Availability and meeting frequency would be discussed and confirmed with potential subcommittee members.

The meetings would strengthen ties and communication between transit operators and emergency managers, as regularly coordinated meetings between the two partners have not occurred in the past. SACOG can be a facilitator for these meetings and strengthen crucial regional partnerships. In addition, these meetings could tie in partners outside of the region, such as Cal OES and state ESF 1 contacts.

SACOG is considering adding the Emergency Preparedness Committee as another work element within its Overall Work Program (OWP). This would allow SACOG to operate the working group without the need for additional or separate funding sources. SACOG is the responsible party for organizing the committee and convening meetings. The committee members would be responsible for attendance, contributing to meeting discussions, implementing key recommendations from the Strategy, and revisiting the Strategy for maintenance and updates as needed.

9.2 Strategy Maintenance and Updates

The Strategy is a living document and as on-the-ground conditions, relevant policies, transit practices, personnel, and equipment change over time, plans must be adjusted appropriately. A cogent example is the ongoing transition to ZEVs, driven by state policy and other factors, which is changing fleet compositions and how transit agencies operate. New lessons are learned from emergency events annually in California and adapting to these lessons would benefit the region's transportation and emergency management systems.

SACOG can update the STRATEGY periodically to keep the Strategy current, pertinent, and useful. The STRATEGY updates would be shorter additions or amendments that build on this work and would include lessons learned from the ZEV transition and other changes, coordination meetings (including from the proposed, ongoing Emergency Preparedness Subcommittee), and hazard events or disasters. It is typical in the emergency management practice to update a document every two years unless an event requires an out-of-cycle change.

10 Summary of Key Recommendations

This section provides a compiled list of the recommendations and guidance in the Sacramento Regional Emergency Preparedness Strategy. It is organized by relevant document section.

- Concept of Operations
 - Relocation of operations
 - When transit agencies are staging operations elsewhere, necessary operations and support personnel need access to staging facilities as well. Coordination with other agencies, such as law enforcement, may be needed to ensure these personnel are able to access these locations and the roadways leading to them.
 - Alternative facilities should have adequate external space to accommodate bus staging. The alternative location would preferably be located at a local or county governmental facility at which transit agencies can establish internal communications and employees can access necessary facilities.
 - Equipment that would be transported to an alternative site from the primary operating and communications base includes tents or canopies, folding tables and chairs, traffic cones, portable signs, flashlights, and portable lighting. The transit agency should keep these items on hand so that they can be quickly deployed. They also need to be routinely tested and maintained and employees should be trained on how to use the equipment.
 - A secondary location should ideally provide parking if the primary alternative location does not have sufficient space. The transit agency could operate a shuttle service between locations.
 - Agencies should investigate the range of potential alternative locations on a regular basis and work with facility and property owners to secure agreements for their emergency use as well as liability arrangements, and to determine the best way for the agency and owner to communicate during an emergency.
 - Alternative fueling and charging accommodations should be made in the event that access to the transit agency's fueling or charging facilities are disrupted.
 - Interagency Coordination
 - Coordinate and establish interoperable communications
 - SACOG could serve as a cross-jurisdictional coordinator for regional emergency preparedness, focusing particularly on transportation's role in preparedness
 - Regional transit agencies and EMAs should identify which radio frequencies other agencies use for coordination and consider using the same frequencies if possible, to more efficiently communicate in an emergency.
 - Regional EMAs should consider creating a joint alert system or singular platform to improve interagency coordination and clearer public communications.
 - Develop and implement a regional Communications Guideline or Policy Framework that standardizes the objectives, means, and methods for communicating during emergent and non-emergent phases.
 - Establish MOUs

- Consider formalizing communication strategies, policies, and guidelines through formal agreements among all participating stakeholders such as an MOU.
 - Create an MOU amongst stakeholder working group/Emergency Preparedness Committee participants.
- Exercises and Trainings
 - SACOG to develop a MYTEP with stakeholder working group/Emergency Preparedness Committee participants to formalize and schedule regional exercises and training.
- Transportation Resources
 - Vehicle data
 - Provide and collect information on vehicle heights and maximum water depth they can travel through for revenue vehicle asset database or future iterations of the Strategy (see Table 11).
 - Expand revenue vehicle asset database to include other vehicles in the region such as school buses and tribal vehicles (see Table 11).
 - ZEVs
 - Invest in capital strategies such as ESS or batteries, microgrids, and photovoltaics to ensure power availability to charge BEBs in case of a power outage.
 - Consider installing redundant feeders and circuits to facilities with BEB charging infrastructure.
 - Transit agencies should develop agreements with utilities to ensure that they are aware of the agency's role during emergencies. This would also establish that the agency's facilities should be prioritized to maintain service if there are power outages.
 - Emergency plans and emergency route configurations should take into consideration the limited availability for opportunities to recharge BEBs and their restricted geographical distribution.
 - In an emergency, the staging locations to charge BEBs can be complemented by on-route charging. These on-route charging stations would be high-powered DC fast chargers that are owned/operated by one or several transit agencies.
 - Protect ZEV equipment and charging infrastructure through a number of strategies including fire suppression, containing material spills, shutting down equipment as necessary in an event, covering or moving equipment, and identifying backup equipment, parts, and supplies.
 - Asset staging
 - Regular training should be conducted with regional public safety and EMAs to prepare for mobilization of transit assets, including operations and communications functions supporting transit services.
- Evacuation
 - Equity and inclusion, those who need assistance evacuating
 - Consider evacuation support needs of varying populations and their locations, such as for people who do not have access to a private vehicle and those who use transit or an alternative mode (e.g., active transportation) as their primary form of transportation. Consider targeting communications to these populations accordingly.
 - Transportation strategies

- Consider the viability of transportation strategies to improve evacuations such as modifying traffic flows, setting up contra-flow, and making changes to roadway design.
- Traffic signal coordination and timing plans can be re-timed and re-coordinated to maximize traffic flow in the outbound direction during an evacuation event. When possible, agencies should consider developing the timing and modeling primary evacuation routes in advance of an evacuation incident. However, depending on the extent of the evacuation, this signal re-timing and re-coordination may be needed on a local, county, or state level.
- The use of Traffic Management Centers (TMCs) that provide the monitoring and control of jurisdiction traffic signals are ideal for quickly re-timing and re-coordinating signals. New timings could be preset for different evacuation scenarios and implemented in a timely manner.
- Transportation of pets and service animals
 - Transit agencies should develop compliant plans in consultation with local EMAs to ensure consistency and clear understanding of limitations and capabilities of transporting pets and service animals.
- Communications
 - Emergency public communications and communicating with diverse populations
 - SACOG will assist county officials, as appropriate, in identifying and engaging with potential community partners that can serve as trusted messengers and "safe" environments for message distributions.
 - The following methods for outreach distribution are among the options that may be used by officials to communicate with diverse populations regarding evacuation transportation.
 - Accessible websites (508 compliant)
 - American Sign Language (ASL) interpreting
 - Computer assisted real-time translation (CART)
 - Cars with loudspeakers
 - E-mail
 - Face-to-face outreach
 - Fotonovelas (comic-style novels that use photos instead of illustrations)
 - Pictograph or pictograms (visual symbols)
 - To ensure messages are developed for maximum accessibility for individuals with DAFN, alerting platforms should ideally include the ability to control the following:
 - TTY/TTD
 - Font size
 - Color analyzer
 - Sound & vibrations
 - Flashes
 - Use of attachments (video)
 - 508 compliance (use of screen-readers)
 - Posting of accessible electronic content, documents, and videos
 - Video relay as an option
 - Radio communication

- Regional transit agencies and EMAs should identify which radio frequencies other agencies use for coordination and consider using the same frequencies if possible, to more efficiently communicate in an emergency.
- Communications between transit operators and emergency managers
 - Emergency managers should have emergency procedures and contact information readily available, publicly or otherwise communicated, for the transit agency.
 - Establish relationships with local emergency responders and emergency volunteer groups, such as CERT, VOAD, and other similar organizations.
 - Hold periodic planning and coordination meetings with relevant stakeholders.
 - Host on-site familiarization and orientation exchanges with stakeholders to provide better operational insight.
 - Explore mutual limitations and capabilities to determine gaps and implement improvement plans.
 - Develop and execute mutual aid agreements such as MOU/MOA, IGA, Public-Private Partnership, or similar agreement.
 - Mutual peer reviews of various plans, procedures, tactics, techniques, etc., as applicable.
 - Develop and implement emergency employee credentialing processes.
 - Joint venture regional emergency preparedness projects funded by grants or other similar funding sources.
 - Develop a regional communications guideline or policy framework to standardize objectives, means, and methods for communicating during and before/after an emergency.
 - Work with stakeholders to develop a new R-MACS to standardize the resource typing and ordering process within the SACOG region.
 - Integrate existing or new emergency management software and other technologies to streamline transit response.
 - Conduct regular regional training activities
 - Develop and maintain a MYTEP.
 - Conduct HSEEP compliant joint drills and exercises of varying types and levels of effort.
 - Joint testing and training of emergency communications capabilities (e.g., radios, phones, satellite phones, or web-based incident management software).
 - Communications between transit operators and the public
 - Consider alternative methods to identify which residents may need evacuation assistance, such as through a survey or pre-registration.
 - Develop a pet policy that clarifies the types of pets that can be brought onto a transit vehicle (e.g., service animal, household pet, pet size) and any restrictions (e.g., carrier requirements, animal spacing and placement) using the State of California Best Practices for Allowing Pets on Public Transit.
 - Work with local government emergency management planning officials to develop emergency plans that include household pets and service animals per the PETS Act, including how to safely evacuate pets via transit.
 - Make the agency's pet policy publicly available (e.g., on your website).
 - Develop a Q&A hand-out or webpage that answers the public's questions about bringing their pets on a transit vehicle.

- Familiarize/train vehicle operators on the pet policy and safety instructions they will need to provide to passengers regarding pets, including procedures to follow in the case of passenger/pet conflict or passenger misconduct.
- Coordinate with local government staff ahead of time to understand which shelter locations will be used to house pets. Request information on size restrictions and if shelters will house both owners and their pets, or animals only.
- Make the agency's evacuation pickup/drop-off policies publicly available (e.g., on your website).
- Develop hand-outs or a webpage that can help the public identify their pickup and drop-off points in case of emergency evacuation.
- Familiarize/train vehicle operators on neighborhood pickup and drop-off points in an emergency evacuation.
- Ensure pickup and drop-off points are readily available for vehicle operators to find, such as by keeping them in a physical emergency plan kept on each vehicle or as a digital reference onboard via MDT or similar device.
- Target communications about transit operations during an emergency to those who are most likely to rely on transit in an evacuation, including those who do not have a private vehicle.
- Consider the location of communities that may need evacuation assistance in targeted communications. For example, Sutter County transit riders primarily travel in Live Oak and Yuba City, so communications about transit pickup and drop-off locations could be focused on these communities.
- Consider the demographics of communities that may need evacuation assistance in targeted communications. For example, many Yolo County residents who do not have a car and rely on transit/active transportation are students, so communications about transit operations during an evacuation could use platforms they favor most (e.g., social media platforms, university webpage).
- Work with local EMAs to establish a rapid notification protocol for using their established public alerting systems to get messaging out to the public. Keep in mind that this may also include those who choose to use public transit for the first time.
- Leverage and load local/regional agencies owned, earned, and paid media channels with essential and uniform messages regarding key service disruption and resumption times.
- Use social media management as a key communication tool for amplifying the reach of urgent messages and proactively mitigating the spread of incorrect information.
- Work with paratransit providers for special communication needs for both operators and passengers.
- Deliver messaging in a variety of channels to reach everyone equitably, including Low English Proficiency (LEP) travelers and individuals dependent on the ADA.
- Strategically increase the frequency of public service announcements, including communicating reasonable expectations for return to service or those awaiting rescue.

11 Appendix

11.1 State and Federal References, Guidance, and Authorities

11.1.1 Communication

EMERGENCY RELIEF MANUAL: REFERENCE MANUAL FOR STATES & TRANSIT AGENCIES ON RESPONSE AND RECOVERY FROM DECLARED DISASTERS AND FTA'S EMERGENCY RELIEF PROGRAM (2015)⁴⁹

In this document, FTA addresses federal emergency response assistance and disaster relief programs for entities responsible for operating, funding, or directing public transportation in the event of an emergency or disaster. Chapter 2 discusses disaster preparation strategies for transit agencies to consider adopting and implementing before emergencies. The list of relevant policies are as follows:

- Develop policies to address personal belongings, pets, and service animals.
 - During an emergency, evacuees frequently want to bring their pets and personal belongings. Transit agencies should have policies in place to inform riders about what they can bring while evacuating.
- Educate passengers.
 - Transit agencies should provide passengers with both general preparedness information and specific directions for how to access transportation services during an emergency or other incident.
 - Transit agencies should provide the information in formats suitable for the populations they serve, including special needs passengers. Public information messages should be planned and coordinated with other local entities to ensure that people have access to emergency relief and essential services during and after an incident, not just access to and from transit stations or locations.
- Coordinate and pre-plan evacuation of special populations.
 - Transit agencies should develop a plan to assist with evacuations for special needs populations. They can use tools such as special paratransit scheduling software to facilitate evacuation planning. By working with community health and human service agencies, they can identify individuals who need special transportation assistance and pre-establish pick up locations for transport for these groups. This should coincide with creating agreements and coordinating information sharing with special needs facilities. Transit agencies can also plan the scheduling, dispatching, and rider notification processes needed for evacuation in advance.
- Pre-establish alternate and/or evacuation routes.
 - Make sure passengers, especially transit-dependent passengers, are aware of these routes.

⁴⁹ https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Emergency_Relief_Manual_and_Guide_-_Sept_2015.pdf

11.1.2 Pets

There are several federal and state policies and recommendations that transit agencies must follow related to animal evacuation:

- **US PETS Act (2006):**⁵⁰ Local government emergency management planning officials shall develop emergency plans that "account for the needs of individuals with household pets and service animals before, during, and following a major disaster or emergency."
- **California Senate Bill 397 (2019)/Public Utilities Code 99166:**⁵¹ Requires that public transit operators servicing an area where an evacuation order has been issued authorize passengers to board public transit vehicles with their pets (cats or dogs), consistent with best practices developed by Cal OES and the Department of Food and Agriculture.
- Cal OES and California Department of Food and Agriculture, State of California Best Practices for Allowing Pets on Public Transit (2021):⁵² Recommends the following best practices related to pet evacuations, as applicable to the SACOG region:
 - General:
 - Transit agencies have the discretion to prohibit passengers with pets due to safety concerns
 - Transit agencies will likely prioritize service animals over household pets
 - Pets cannot interfere with vehicle operation
 - Pet kennels or carriers should be used when available
 - Pet owners should put contact information on their pets' carriers
 - Vehicle operators can provide safety instructions to passengers with or without pets regarding safe behaviors around pets and owner responsibilities
 - Pets should stay in a secure carrier or dogs can be on a six-foot maximum leash
 - Keep pets spaced apart
 - Increase the number of vehicles used in evacuations to create extra space for pets
 - Consider transporting large pets in a separate vehicle that follows the transit vehicle with pet owners
 - Recommend that passengers avoid interacting with pets that are not their own
 - Recommend that cat carriers are not housed under a seat and instead are placed on the seat and covered with a cloth
 - Small pets:
 - Carriers for small pets should be spill proof and well ventilated for the pet

⁵⁰ <https://www.congress.gov/bill/109th-congress/house-bill/3858>

⁵¹ <https://legiscan.com/CA/text/SB397/id/2040211>

⁵² https://www.cdfa.ca.gov/AHFSS/Animal_Health/pdfs/PUC99166BestPractices_08-12-2021_Final.pdf

- Small pet carriers should fit on the lap of the owner or strapped to their body
- The carrier should not occupy a seat or block a walkway
- Pet owners must clean up after their pets
- Large pets:
 - Carriers for large pets should be spill proof and well ventilated for the pet - size requirements for large animals may vary by transit provider
 - The pet or its carrier cannot interfere with vehicle operations
 - The pet or its carrier cannot block a seat or walkway
 - Avoid more than two large, leashed pets in the same vehicle
 - Pet owners must clean up after their pets

11.1.3 Exercises and Trainings

HSEEP COMPLIANT EXERCISES

HSEEP provides a set of fundamental principles for exercise programs, as well as a common approach to program management, design and development, conduct, evaluation, and improvement planning.⁵³ According to HSEEP, "an exercise is an event or activity, delivered through discussion or action, to develop, assess, or validate plans, policies, procedures, and capabilities that jurisdictions/organizations can use to achieve planned objectives."

HSEEP also provides guidance on managing a program for achieving increasing levels of success through a progressive tiered process, allowing an agency or organization to take an incremental approach to developing and conducting productive exercises. The different types of exercises range from simple and less resource-intensive types, known as *Discussion-based*, to those that are complex requiring multiple resources with many moving parts, known as *Operations-based*.⁵⁴ Figure 25 below illustrates this tiered approach.

⁵³ DHS HSEEP, (2020), Homeland Security Exercise and Evaluation Program
<https://www.fema.gov/sites/default/files/2020-04/Homeland-Security-Exercise-and-Evaluation-Program-Doctrine-2020-Revision-2-2-25.pdf>

⁵⁴ Ibid.

Figure 25. HSEEP Exercise Progression Diagram



Source: <https://emilms.fema.gov/IS870/DCM0104summary.htm>

Discussion-based exercises focus on bringing key stakeholders together to gain understanding, provide familiarization, conceptualize plans or critical operational functions, gather input and feedback, or validate existing knowledge. The primary intent is usually for strategic planning. Below are examples of different types of discussion-based exercises.⁵⁵

- **Seminar** - A discussion-based exercise that orients participants to or provides an overview of authorities, strategies, plans, policies, procedures, protocols, resources, concepts, and ideas.
- **Workshop** - A discussion-based exercise often employed to develop policy, plans, or procedures.
- **Tabletop** - A discussion-based exercise in response to a scenario intended to generate a dialogue of various issues to facilitate a conceptual understanding, identify strengths and areas for improvement, and/or achieve changes in perceptions about plans, policies, or procedures.
- **Game** - A discussion-based exercise that is a structured form of play designed for individuals or teams in a competitive or noncompetitive environment. It is an event experienced by the players and guided by clear rules, data, and procedures for its execution. Games are designed to depict an actual or hypothetical situation to ensure that the participants make decisions and take actions that would be plausible. Games can be used to reinforce training, stimulate team building, or enhance operational and tactical capabilities.

Operations-based exercises focus on bringing key stakeholders together in a semi- or full-field setting to test and validate existing or draft plans or procedures, provide training on a revised or new plan or procedure, maintain skills proficiency, coordinate mutual aid and other joint operational agreements with other agencies or organizations through practical application, or test proficiency with new or

⁵⁵ Ibid.

existing equipment. The primary intent is usually practical application of strategic plans in a safe real-world setting.⁵⁶

- **Drill** - An operations-based exercise often employed to validate a single operation or function.
- **Functional Exercise** - An operations-based exercise designed to assess and evaluate capabilities and functions while in a realistic, real-time environment; however, movement of resources is usually simulated.
- **Full-Scale Exercise** - An operations-based exercise that is typically the most complex and resource intensive of the exercise types and often involves multiple agencies, jurisdictions/organizations, and real-time movement of resources.

Based on information gathered during the STRATEGY process, the following list include potential topics for exercises in the near future:

- NIMS/SEMS basics for those unfamiliar with processes and definitions
- Communications technology and procedures interoperability
- Emergency resourcing management: how are requests for transit assistance are handled
- Dam or levee mass evacuation where transit is needed
- Wildfire evacuation where transit is needed
- Event where transit assets & operations need to be temporarily relocated
- Evacuation of multiple medical facilities where transit assistance is needed
- Battery electric buses during emergencies, including charging during emergencies and how to manage if power is lost
- Event involving airport and transit, such as an airport evacuation

11.2 Funding Opportunities and Guidance

There are many ways to fund emergency preparedness projects and other activities. Different programs exist at the federal level, primarily through FEMA. Grant management, use, and other requirements will vary by program and the jurisdiction awarding these grants. In some cases, a funding match of a certain percentage may be required. In other cases, the funds are payable on a reimbursement basis for qualified expenditures. It is important to fully understand the requirements and stipulations of each individual funding source to ensure compliance and full funding. At this time, Cal OES does not manage or provide any state-level grant funding for emergency management efforts; they only manage and administer federal programs on behalf of sub-recipients for FEMA.

⁵⁶ Ibid.

11.2.1 Federal Grant Programs

FEMA

In most cases, FEMA is the primary emergency preparedness funding source at the federal level with different grant programs intended for use by state, tribal, and local jurisdictions. The end goal is to increase the overall preparedness of the nation. In almost all cases, Cal OES would be the primary grant manager and recipient on behalf of any agency within the State of California. Some of these programs include the following:⁵⁷

- **Emergency Management Performance Grant:** The Emergency Management Performance Grant (EMPG) provides state, local, Tribal and territorial EMAs with the resources required for implementation of the National Preparedness System and works toward the National Preparedness Goal of a secure and resilient nation. The EMPG's allowable costs support efforts to build and sustain core capabilities across the prevention, protection, mitigation, response, and recovery mission areas.
- **Emergency Operations Center Grant:** The EOC Grant Program is intended to improve emergency management and preparedness capabilities by supporting flexible, sustainable, secure, strategically located, and fully interoperable EOCs with a focus on addressing identified deficiencies and needs. Fully capable emergency operations facilities at the state and local levels are an essential element of a comprehensive national emergency management system and are necessary to ensure continuity of operations and continuity of government in major disasters or emergencies caused by any hazard.
- **State Homeland Security Program (SHSP):** This program provides funding to support the implementation of risk-driven, capabilities-based State Homeland Security Strategies to address capability targets.
- **Urban Area Security Initiative (UASI):** This program provides funding to enhance regional preparedness and capabilities in designated high-threat, high-density areas. Determinations are made annually depending on the risk ranking of established UASI regions. If SACOG is not part of a UASI region, additional steps may be needed to become one. Further coordination with Cal OES and FEMA would be required.
- **Intercity Bus Security Grant (IBSG):** The Intercity Bus Security Grant Program (IBSG) helps protect surface transportation infrastructure and the traveling public from acts of terrorism and aims to increase the resilience of transit infrastructure.
- **Individual State Earthquake Assistance (ISEA):** FEMA awards non-competitive grants to eligible states and territories with high to very high seismic risks. The purpose is to support the establishment of earthquake hazards reduction programming and the implementation of earthquake safety, mitigation, and resilience activities at the state and local level.
- **Transit Security Grant Program (TSGP):** This grant provides funding to eligible public transportation systems (which include intra-city bus, ferries, and all forms of passenger rail) to protect critical

⁵⁷ Source for many of these programs is the FEMA Preparedness Grants page: <https://www.fema.gov/grants/preparedness>.

transportation infrastructure and the travelling public from terrorism, and to increase transportation infrastructure resilience.

- **Building Resilient Infrastructure and Communities**

(<https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities>): Building Resilient Infrastructure and Communities (BRIC) will support states, local communities, tribes, and territories in supporting infrastructure project planning, design, and technical assistance to build community resilience and reduce impacts of disasters. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency.

- **Flood Mitigation Assistance** (<https://www.fema.gov/grants/mitigation/floods>): The Flood Mitigation Assistance (FMA) Program is a competitive grant program that provides funding to states, local communities, federally recognized tribes, and territories to reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program. FEMA chooses recipients based on the applicant's ranking of the project and the eligibility and cost-effectiveness of the project. Development and adoption of hazard mitigation plans is a condition for receiving this grant.

- **Pre-Disaster Mitigation:** The Pre-Disaster Mitigation (PDM) grant program makes federal funds available to state, local, tribal, and territorial governments to plan for and implement sustainable cost-effective measures designed to reduce the risk to individuals and property from future natural hazards, while also reducing reliance on federal funding from future disasters. Development and adoption of hazard mitigation plans is a condition for receiving this grant.

- **Hazard Mitigation Grant Program** (<https://www.fema.gov/grants/mitigation/hazard-mitigation>): Funding to state, local, tribal and territorial governments to develop hazard mitigation plans and rebuild in a way that reduces, or mitigates, future disaster losses in their communities. When requested by an authorized representative, this grant funding is available after a presidentially declared disaster.

Process for Pre-Disaster FEMA Grants

The following process summarizes how to access pre-disaster FEMA grants:

5. Determine whether your organization was previously assigned a [Data Universal Numbering System \(DUNS\) Number](#) when applying for federal assistance. The numeric DUNS system was phased out of use on April 4, 2022, and replaced by the alphanumeric Unique Entity Identifier (UEI) system.
 - If your organization was previously assigned a DUNS Number, it has been replaced by a new UEI value. Login to sam.gov to check your new UEI.
 - If your organization has not previously applied for federal assistance, move on to Step 2 below; you will automatically be assigned a UEI when registering in sam.gov.
6. Obtain an Employer Identification Number (EIN) and register in the System for Award Management at sam.gov; your organization will be assigned a UEI once registered.

7. Register with [grants.gov](https://www.grants.gov).
8. Create an account with [FEMA's Non-Disaster Grants Management System \(ND Grants\)](#).
9. Review details on each of the [Preparedness Grant Programs](#) to determine which grant(s) is the best fit for your organization.
10. Read the Notice of Funding Opportunity (NOFO) and any additional supporting documentation for the specific grant that your organization has chosen to pursue.
11. Search for the [NOFO Assistance Listing](#) on grants.gov and submit an initial application using the Grants.gov Workspace interface at least 7 days prior to the deadline.
12. Submit the final application in FEMA's [Non-Disaster Grants Management System \(ND Grants\)](#). After submitting the initial application in grants.gov, eligible applicants will be notified by FEMA and asked to proceed with submitting their complete application package in ND Grants.

For more details, please view the [Preparedness Grants Manual](#).

Processes for Post-Disaster Stafford Act Assistance

FEMA's Public Assistance Program provides supplemental grants to state, tribal, territorial, and local governments, and certain types of private non-profits so communities can quickly respond to and recover from major disasters or emergencies. After an event like a hurricane, tornado, earthquake or wildfire, communities need help to cover their costs for debris removal, life-saving emergency protective measures, and restoring public infrastructure. FEMA also encourages protecting these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

Prior to any federal assistance being sent or received to a state or local jurisdiction, there must first be a Presidential Disaster Declaration. This is a formal request for assistance from the Governor via Cal OES claiming that existing resources and capabilities have been expended and are not adequate to stabilize the incident without federal assistance. On behalf of the President, FEMA will review the request from the Governor and make a recommendation to the President to authorize or deny the request. Figure 26 below illustrates the general process for obtaining a Presidential Disaster Declaration.

2. A facility must be a building, public works system, equipment, or natural feature.
3. Work is categorized as either "emergency" or "permanent." It must be required as a result of the declared incident, located within the designated disaster area, and is the legal responsibility of the applicant.
4. Cost is the funding tied directly to eligible work, and must be adequately documented, authorized, necessary, and reasonable. Eligible costs include labor, equipment, materials, contract work, as well as direct and indirect administrative costs.

Additionally, reimbursable costs associated with work are further delineated into two types with specific categories. The table below indicates the types of work and the categories that fall under each. Reference the [Public Assistance Program & Policy Guide \(PAPPG\)](#) for more information on each category.

Table 17. Eligible Types of Reimbursable Work

Emergency Work (Must be completed within 6-months)	Permanent Work (Must be completed within 18-months)
Category A: Debris Removal	Category C: Roads and Bridges
Category B: Emergency Protective Measures	Category D: Water Control Facilities
	Category E: Public Buildings and Contents
	Category F: Public Utilities
	Category G: Parks, recreational and other facilities

Effective coordination among agencies is necessary to maximize potential pre- and post-emergency funding to avoid duplication of efforts and expedite grants and reimbursement funds. Cooperation and coordination also require that one agency take the lead in controlling and directing transportation services. As part of its assessment of stakeholders in the SACOG region, WSP will work with stakeholders to recommend options for which agency or agencies are best equipped to serve as the lead entity.

It may also be beneficial to seek out grant opportunities that are un-related to emergencies to improve overall transit and related infrastructure which can then improve evacuation or other emergency needs. Grants and other opportunities do not always become available on a regular cycle and may require ongoing research to see what comes available.

US DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

The U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant Disaster Recovery program (CDBG-DR) (<https://www.hudexchange.info/programs/cdbg-dr/>) - In response to extraordinary impacts from disasters, Congress may appropriate additional CDBG-DR funding. HUD will then formally announce the CDBG-DR awards and publishes rules for the awards in a Federal Register notice. Block grant funds can be used to construct or improve public facilities, such as streets, or meet an urgent need that threatens health or safety.

US DEPARTMENT OF TRANSPORTATION

US Department Transportation Infrastructure Finance and Innovation Act (TIFIA) program, (<https://www.transportation.gov/buildamerica/financing/tifiaome>) - The TIFIA program provides credit assistance for qualified projects of regional and national significance. Many large-scale, surface

transportation projects - highway, transit, railroad, intermodal freight, and port access - are eligible for assistance. Eligible applicants include state and local governments, transit agencies, railroad companies, special authorities, special districts, and private entities.

FEDERAL TRANSIT ADMINISTRATION

- Federal Transit Administration Emergency Relief Program (<https://www.transit.dot.gov/funding/grant-programs/emergency-relief-program>) - FTA's Emergency Relief program enables the FTA to aid public transit agencies in the aftermath of an emergency or major disaster. The program helps states and public transportation systems pay for protecting, repairing, and/or replacing equipment and facilities that may suffer or have suffered serious damage because of an emergency, including natural disasters such as floods, hurricanes, and tornadoes. The program can fund capital projects to protect, repair, or replace facilities or equipment that are in danger of suffering serious damage, or have suffered serious damage as a result of an emergency. The program can also fund the operating costs of evacuation, rescue operations, temporary public transportation service, or reestablishing, expanding, or relocating service before, during, or after an emergency.
- Urbanized Area Formula 5307 Grant (<https://www.transit.dot.gov/funding/grants/urbanized-area-formula-grants-5307>) - The FTA's largest formula program, the Urbanized Area Formula Grants Program (Section 5307) supports public transportation in urbanized areas with populations greater than 50,000. One of the Section 5307 program goals is to support public transportation by investing in crime prevention, public transportation safety and security equipment.
- State of Good Repair Formula 5339 Grant (<https://www.transit.dot.gov/funding/grants/state-good-repair-grants-5339>) - Can assist with funding capital security projects, including security equipment and systems. These projects must be included in a TAM Plan.
- Bus and Bus Facility Formula 5339 Grant (<https://www.transit.dot.gov/bus-program>) - provides capital funding for the purchase, rehabilitation, construction or lease of buses, bus facilities and bus-related equipment. This funding can be used to purchase driver compartment shields and other equipment that improves the safety or security of passengers or employees.

11.2.2 State Programs

CALTRANS

Caltrans Sustainable Transportation Planning Grants (<https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/regional-and-community-planning/sustainable-transportation-planning-grants>) - Includes funding for supporting sustainable regional transportation planning, assessing climate vulnerabilities and climate adaptation planning, and addressing statewide, interregional, or regional transportation deficiencies on the State Highway System.

CALIFORNIA TRANSPORTATION COMMISSION

California Transportation Commission (CTC) Local Transportation Climate Adaptation Program (LTCAP) (<https://catc.ca.gov/programs/local-transportation-climate-adaptation-program>) - Competitive grants to local agencies for the development and implementation of capital projects adapting local transportation infrastructure to climate changes.

CALIFORNIA OFFICE OF PLANNING AND RESEARCH

Integrated Climate Adaptation and Resiliency Program (ICARP) Adaptation Planning Grant Program (<https://opr.ca.gov/climate/icarp/grants/adaptation-planning-grant.html>) - This program provides \$25 million total over three years to develop a cohesive and coordinated response to the impacts of climate change across the state. Funding is for local, regional, and tribal planning needs to identify climate resilience priorities and support the development of climate resilient infrastructure projects across the state.

CALIFORNIA DEPARTMENT OF WATER RESOURCES

California Department of Water Resources (DWR) Flood Emergency Research Project Grants (<https://water.ca.gov/Work-With-Us/Grants-And-Loans/Flood-Emergency-Response-Projects-Grants>) - Provides funding for California public agencies whose primary responsibility is flood emergency response and coordination to improve local flood emergency response and contribute to increased public safety.

CALIFORNIA STRATEGIC GROWTH COUNCIL

- Transformative Climate Communities (TCC) (<https://sgc.ca.gov/programs/tcc/>) - Funds disadvantaged communities to develop and implement infrastructure projects that provide environmental, health, and economic co-benefits.
- Regional Climate Collaboratives (RCC) (<https://sgc.ca.gov/programs/cace/resources/rcc/>) - Funds under-resourced communities in strengthening local coordination and capacity to plan and implement climate mitigation, adaptation, and resiliency projects.

11.2.3 Nongovernmental Organization Programs

Partnership with local nongovernmental organizations and nonprofit organizations may result in financial as well as volunteers and other in-kind support. Some examples include:

- Lions Clubs (<https://www.lionsclubs.org/en/start-our-approach/grant-types/disaster-grants>) - Disaster Preparedness Grants support districts interested in partnering with local authorities and other community organizations to plan and prepare for future relief efforts. Lions' district governors may submit proposals for Disaster Preparedness Grants. Grants are awarded for up to US\$10,000.
- Rotary Disaster Response Grants (<https://my.rotary.org/en/take-action/apply-grants/rotary-disaster-response-grants>) - Districts that have been affected by natural disasters can use Rotary disaster response grants to launch their own projects or work with established relief organizations to help their communities recover. Districts should work closely with local officials and groups to ensure that the funding will meet a specific community need. Once qualified for Rotary grants, districts may apply for a maximum grant of \$25,000, based on the availability of funds. A district may apply for subsequent grants after it successfully reports outcomes from previous grants.
- Los Angeles Emergency Preparedness Foundation (<https://laepf.org/>) - Mission: to create partnerships, provide resources, share knowledge, and implement programs to enhance community resilience across all sectors. [They work in LA and beyond.]

- Earthquake Country Alliance (ECA) Mini Awards (<https://www.earthquakecountry.org/miniawards/>) - Provides materials, guidance, and support for ECA members (membership is free) to complete projects that improve resilience by promoting and implementing earthquake mitigation, awareness, education, and preparedness.

11.2.4 Partner with Academia / Higher Education

Collaborations between academic researchers and frontline practitioners are often beneficial to both parties and can result in a more detailed understanding of a problem, finding and addressing solutions from a different perspective, creating innovative tools, and more. There may be grant opportunities to work together, or the work may already be in the scope of researcher (ranging from a doctoral dissertation to an established professor looking to expand or delve deeper into their research) in which case, only minimal funding may be required to engage. Areas of academic study that may be ideal collaborators include transportation, urban planning, geography, geology, GIS and other technologies, sociology, plus many more.

In addition to reaching out to local colleges and universities, resources and contacts include the following and may assist in matchmaking practitioners and academics:

- FEMA Higher Education Program (<https://training.fema.gov/hiedu/>)
- IAEM-USA Higher Education Academician Caucus (<https://www.iaem.org/groups/us-caucuses/Higher-Education-AcademicianCaucus>)

Natural Hazards Center at CU Boulder offers small grants for research (many projects are collaborative), here is one example: <https://hazards.colorado.edu/research/mitigation-matters>

11.3 Regional Hazards Maps

The next series of figures show mapped hazard data for the SACOG region.

Figure 27Figure 28 shows the region's transit stops and light-rail lines. Figure 29 Figure 28 highlights the communities receiving top 25th percentile scores from CalEnviroScreen. CalEnviroScreen uses environmental, health, and socioeconomic information to identify disadvantaged communities that have higher pollution burdens compared to others.⁵⁹

Figure 29Figure 30 depicts FEMA flood hazard data, including the 100-year and 500-year floodplains. Figure 30 shows potential areas of inundation in the event of dam breaches from California DWR. Figure 32 Figure 31 maps earthquake shaking potential from the California Geological Survey (CGS) and U.S. Geological Survey. Figure 33 Figure 32 shows areas of different fire threat levels according to the California Department of Forestry and Fire Protection (CalFire). Figure 33 depicts deep-seated landslide susceptibility using information from CGS.

⁵⁹ <https://oehha.ca.gov/calenviroscreen/about-calenviroscreen>

Figure 27. SACOG Region Transit Stops and Lines

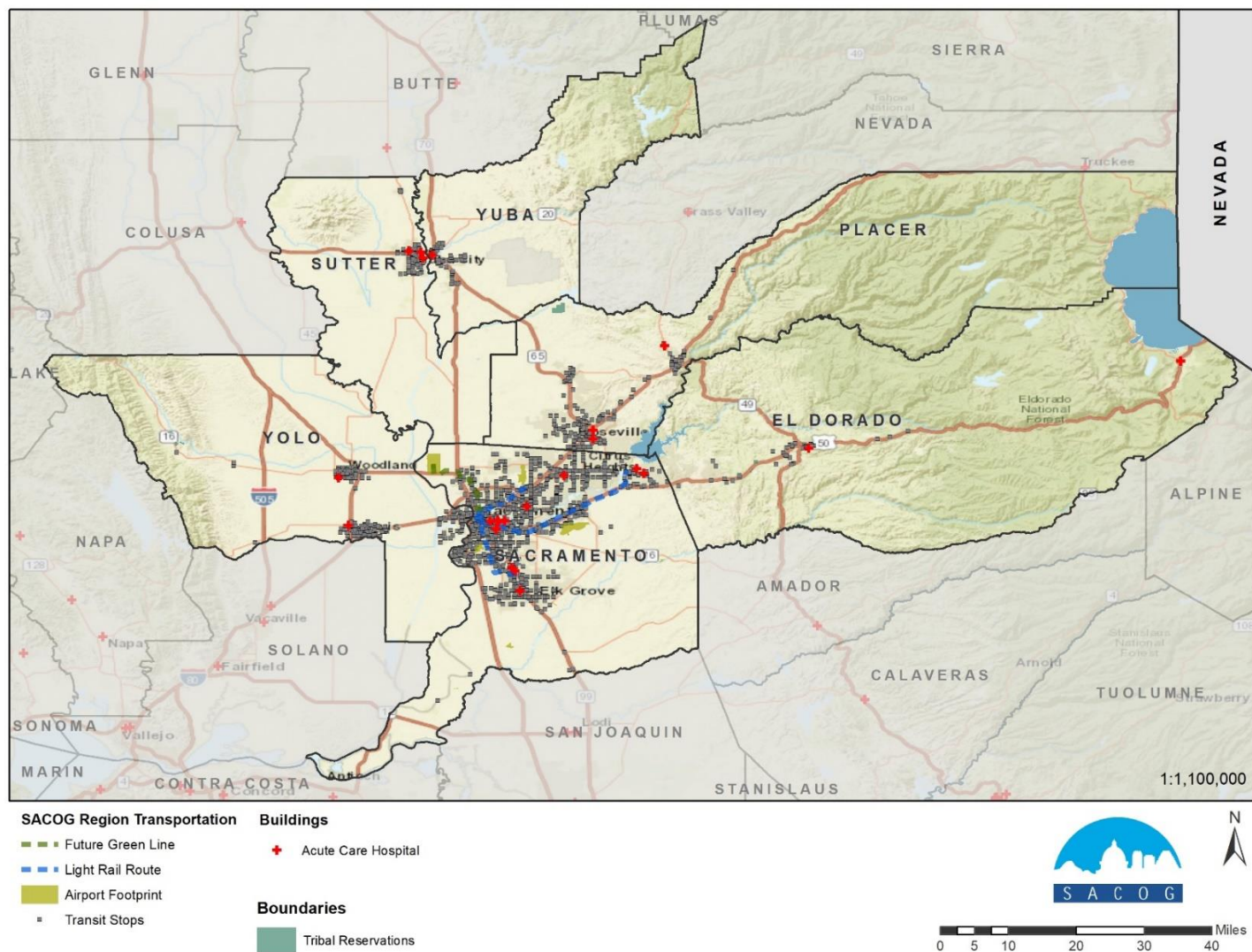


Figure 28. SACOG Region CalEnviroScreen Areas

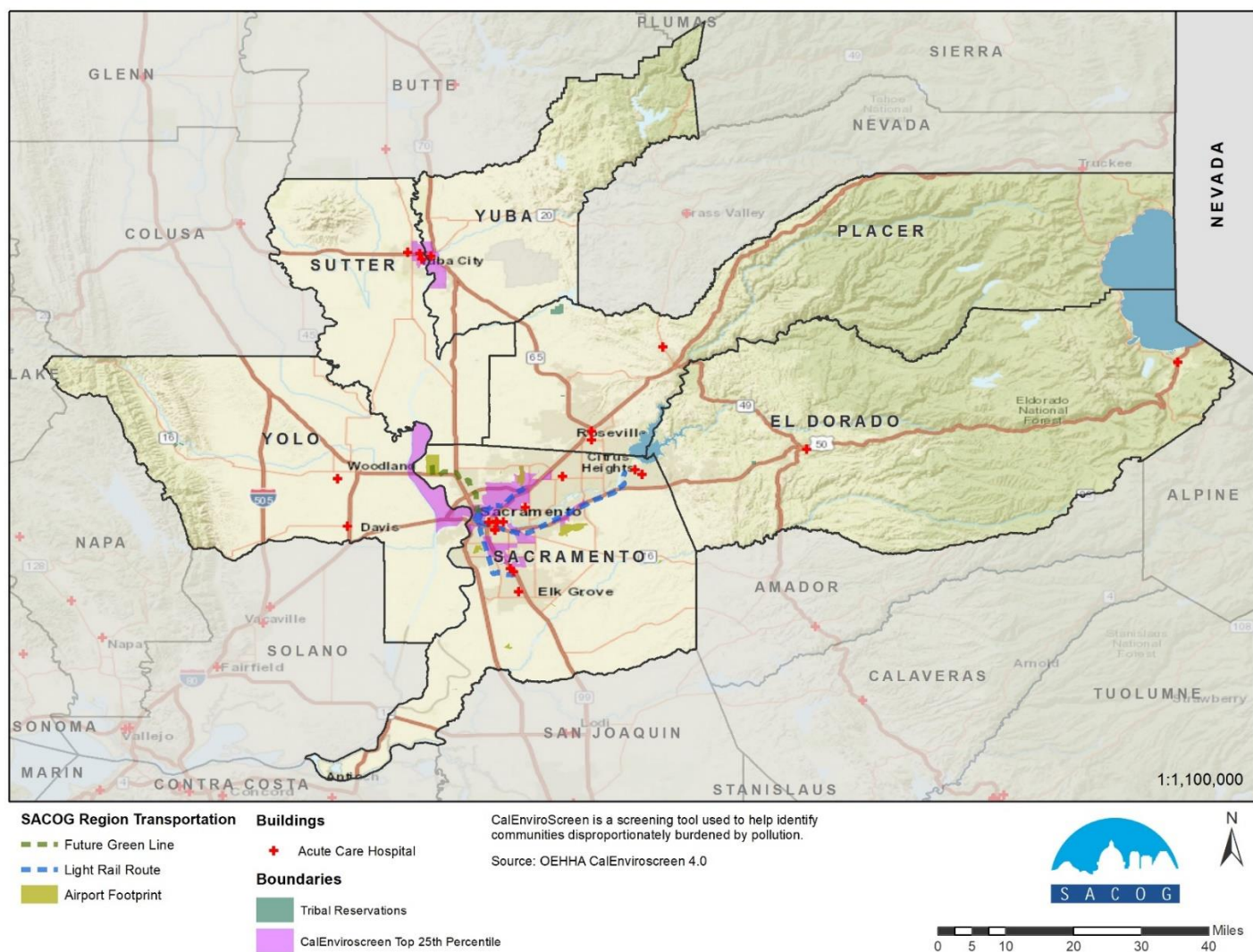


Figure 29. SACOG Region FEMA Floodplains

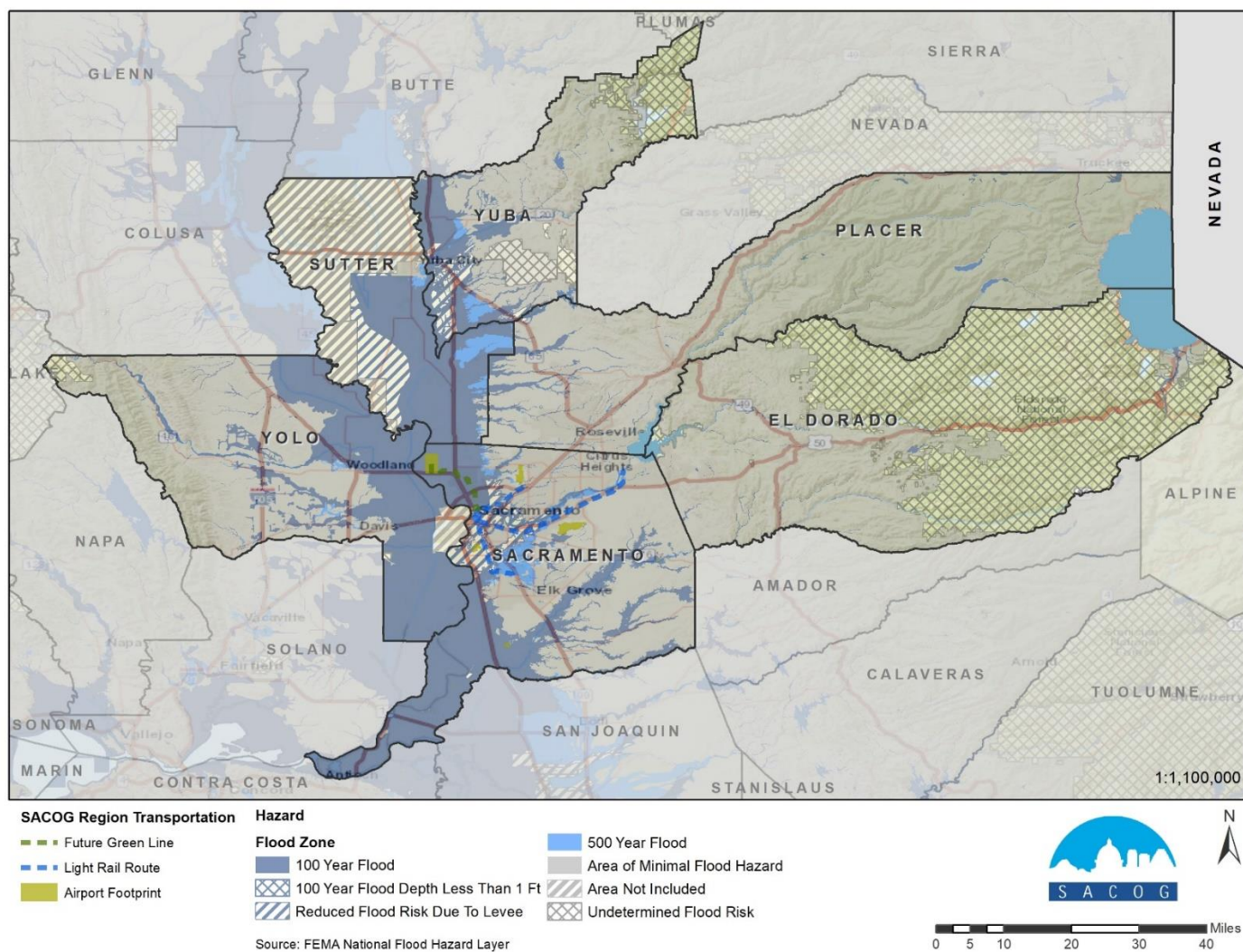


Figure 30. SACOG Region Dam Breach Inundation Areas

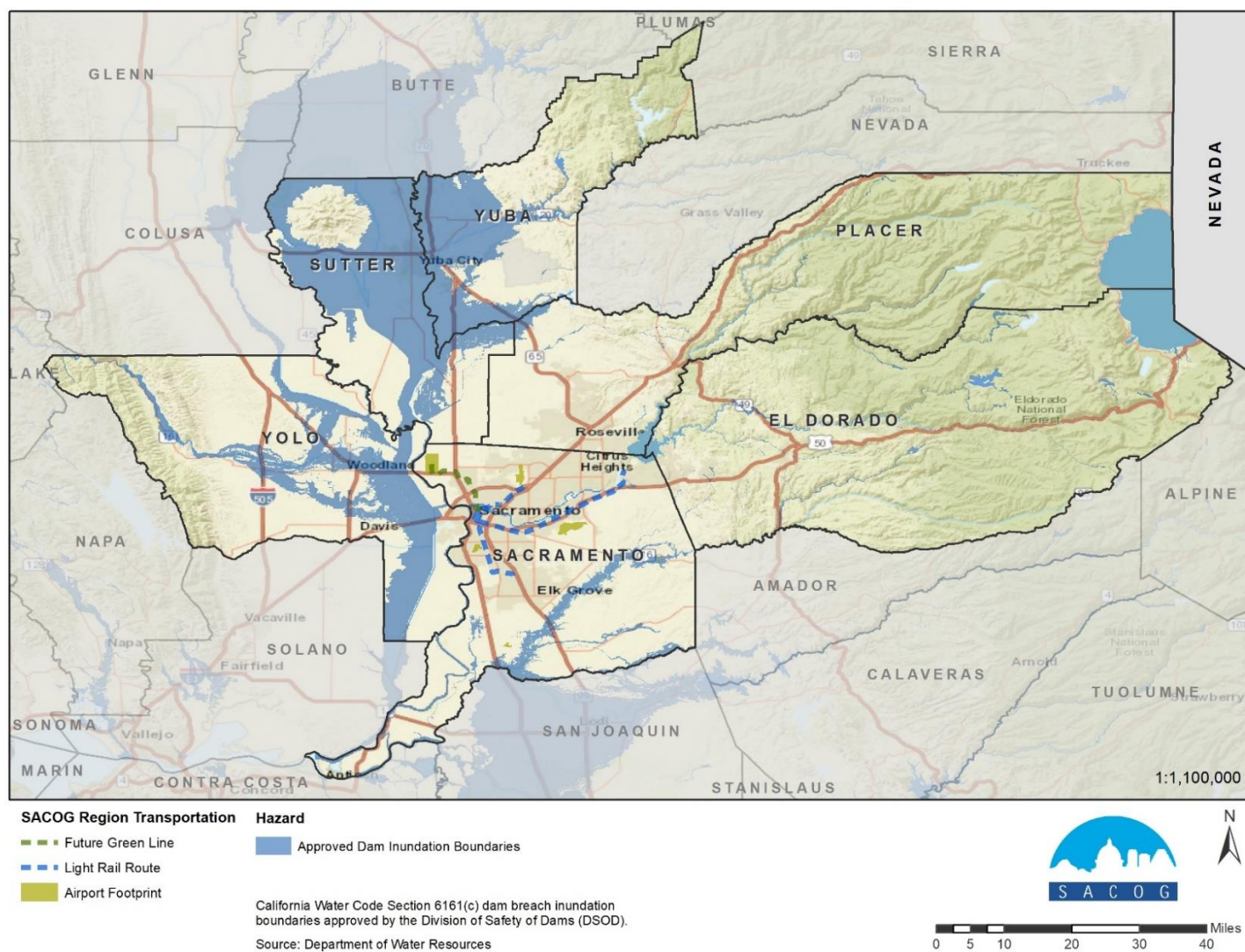


Figure 31. SACOG Region Earthquake Potential

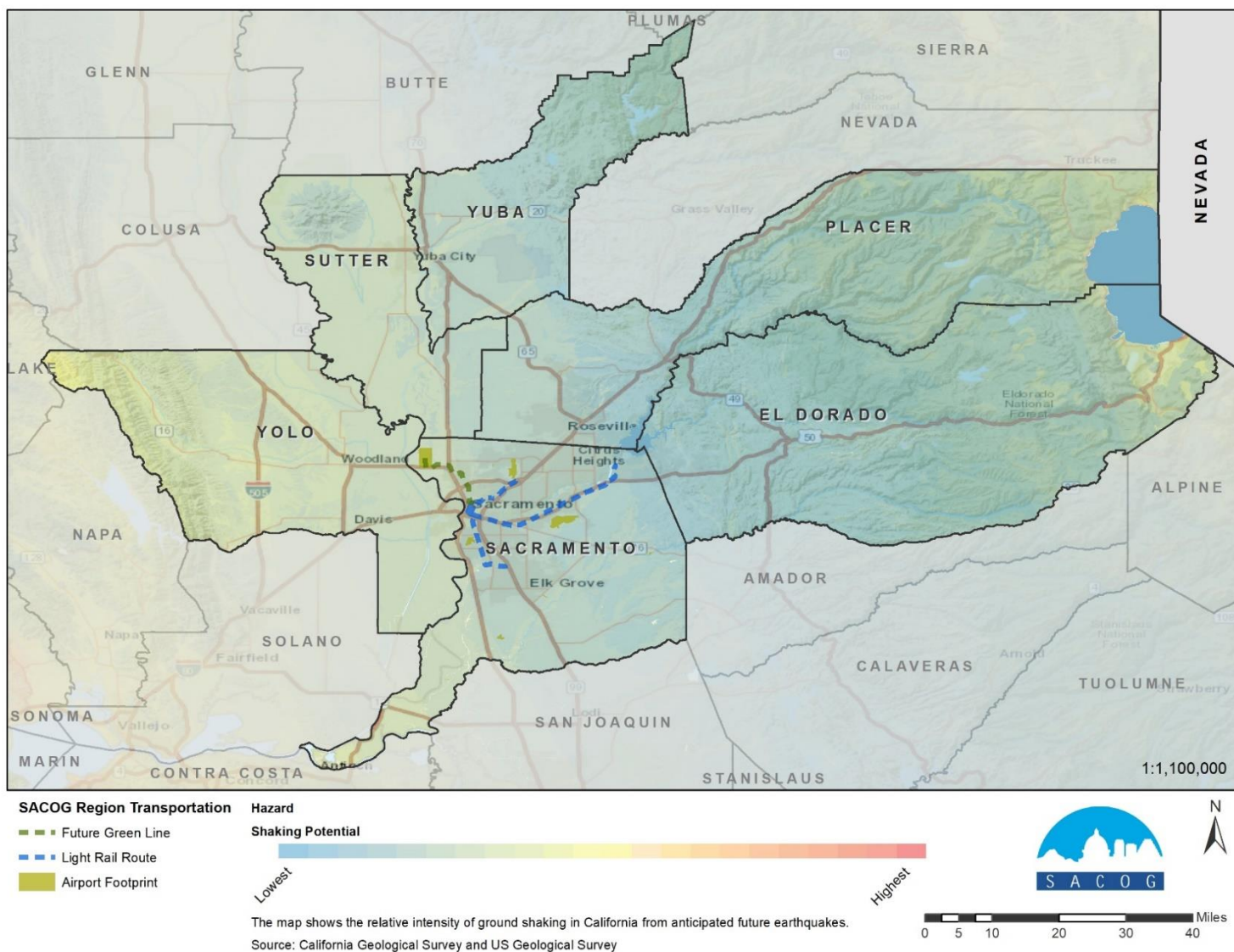
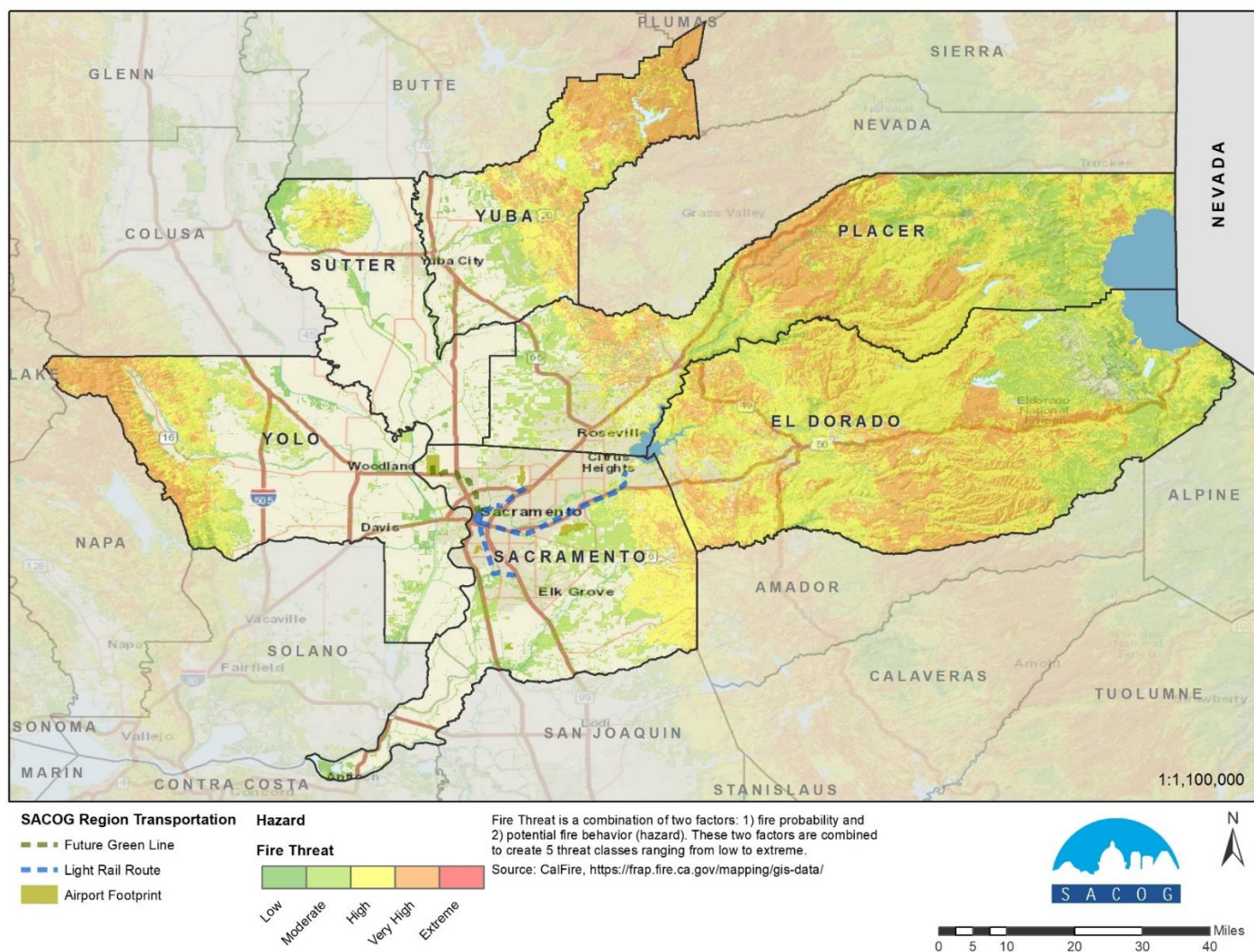


Figure 32. SACOG Region Fire Threat Classes



11.4 Regional Travel Assessment for Groups Who May Need Evacuation Assistance

This analysis of community demographics and travel patterns uses evacuation zones provided by Sacramento, Sutter, and Yolo counties to identify which groups may need assistance evacuating from their evacuation zone of origin.⁶⁰ El Dorado, Yuba, and Placer counties did not provide their evacuation zones for this exercise.

The travel and population data summarized here for individual counties comes from the Replica California and Nevada megaregion transportation model for Fall of 2021, using Thursday as a typical weekday to represent regional travel.

The data summarize trips by origin (e.g., from a SACOG evacuation zone or census tract). Replica defines trips as “a movement by a person between places. A trip begins when a person leaves a place and ends when a person stops to do a non-travel activity in a place.” For example, leaving home to go shopping at a grocery store and then going back home is two trips. A person can also use multiple transportation modes within a single trip. For example, leaving to go shopping on foot and then getting on a bus to reach the grocery store is one trip with two segments. When a traveler uses multiple modes on the same trip, Replica assigns a primary mode to the trip using the following ranking:

1. Public transit
2. Driving/auto passenger/taxi/TNC (e.g., Uber)
3. Biking
4. Walking

SACRAMENTO COUNTY

An estimated 5.95 million trips are taken by 1.62 million people from Sacramento County evacuation zones as a point of origin on a typical weekday. Figure 34 shows the Sacramento County evacuation zone boundaries and labels used in the analysis. Figure 35 shows the number of trips that started within a Sacramento County evacuation zone, with lighter colors indicating that more trips began in that zone.

⁶⁰ Note: trips are modeled by point of origin and destination and a starting evacuation zone may not necessarily be where an individual lives. It could be where they work, go to school, shop, etc.

Figure 34. Sacramento County Evacuation Zones

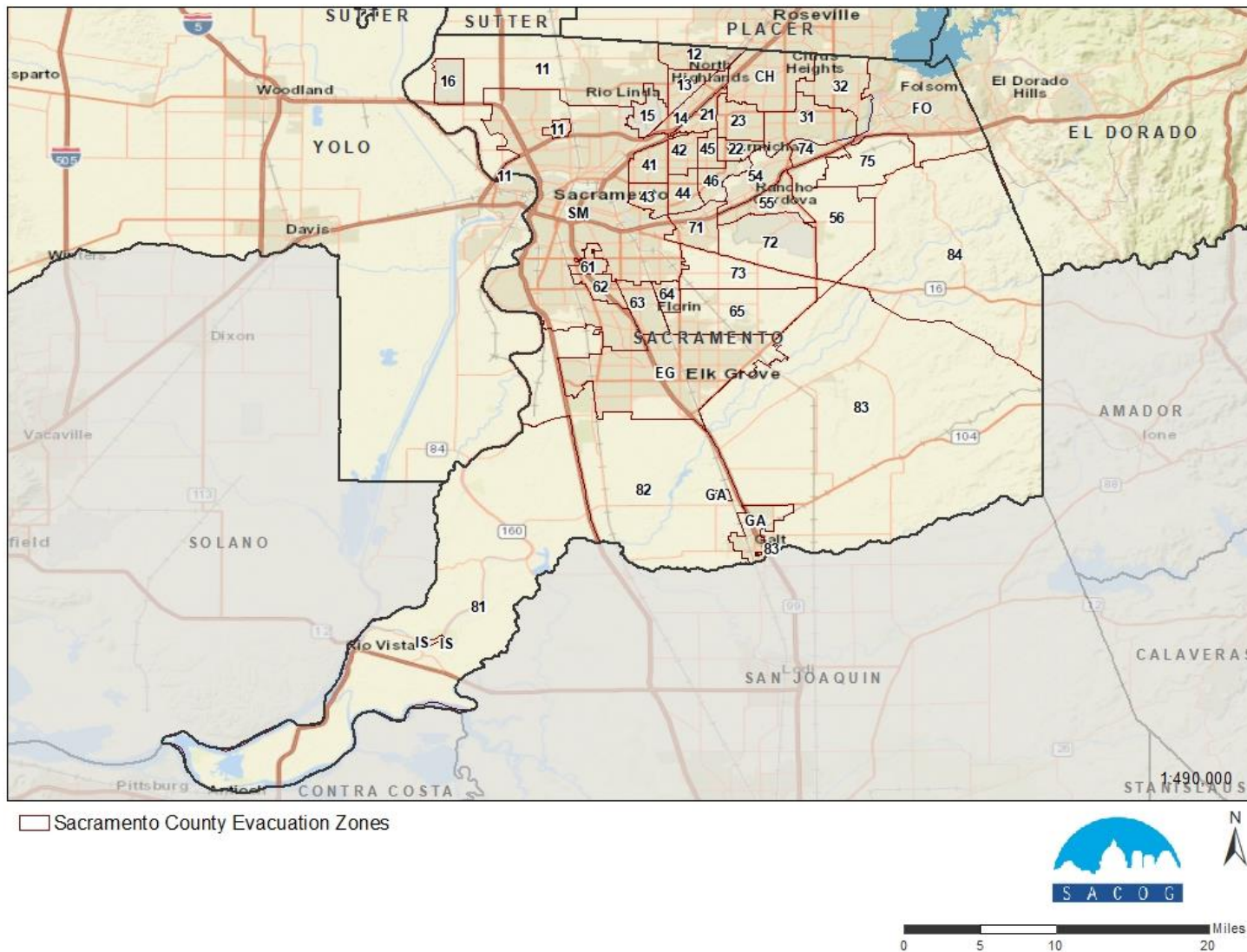


Figure 35. Daily Trips Starting in a Sacramento County Evacuation Zone

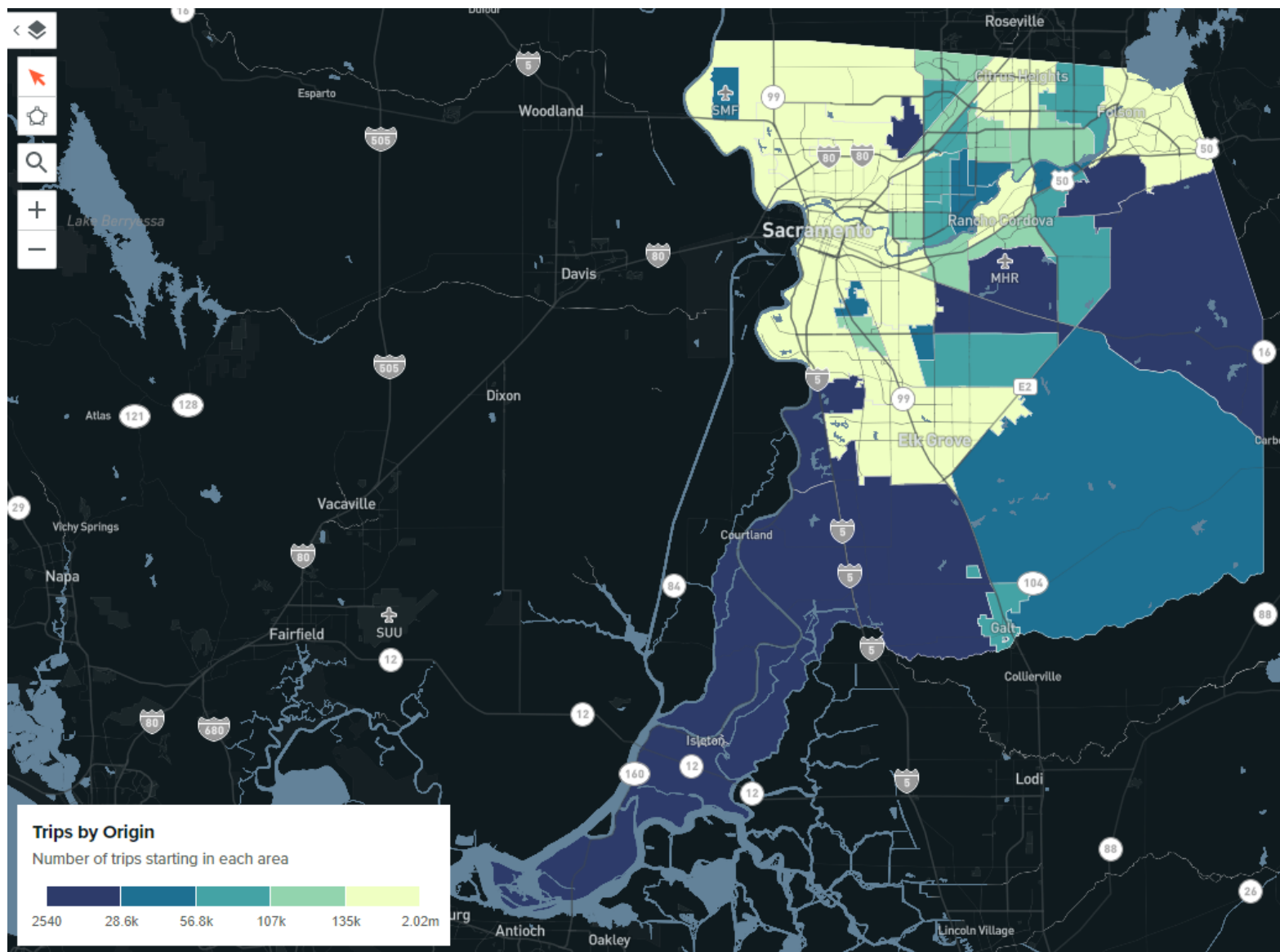


Figure 36. Primary Modes of Transportation Used in Sacramento County on a Typical Weekday

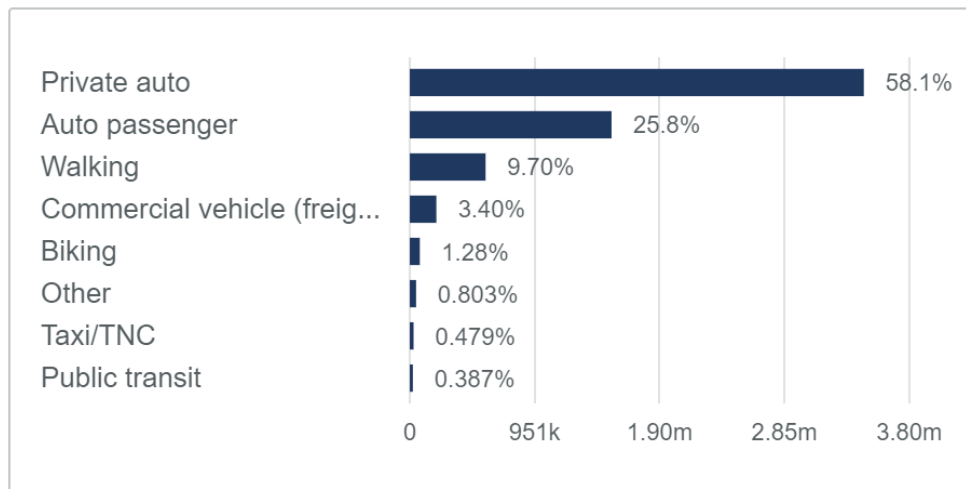


Figure 36 shows the primary modes of transportation used in trips that start from a Sacramento County evacuation zone. Most people prefer to take their own car or carpool with others, following by walking, commercial vehicles (medium and heavy trucks), biking, "other", taxi or TNC, and public transit.⁶¹ Note these are only the main modes of transportation used in each trip; many trips will use multiple modes from start to finish.

The highest proportion of trips (30%) that start within these zones are headed to the "SM" zone, which is the City of Sacramento. The next greatest proportion of trips (12.6%) are going somewhere outside the region (to a destination outside of Sacramento County).

Those that might need evacuation assistance in Sacramento County include travelers who do not have access to their own private vehicle and those who carpool, walk, bike, take a taxi/TNC, or ride public transit as their primary mode of transportation. The following sections summarize community characteristics and traveler origin and destination points for those who do not have a private vehicle at home, active transportation users, and transit riders. Those who carpooled or used taxis/TNCs as their primary modes of transportation were not analyzed in this exercise for the following reasons:

- Based on the data from Replica, most of those who carpooled or used taxis/TNCs as primary modes of transportation still had access to one or more vehicles at home.
- These travelers still ultimately chose a car as their primary mode of transportation, whereas bikers, walkers, and transit riders may have fewer options to take a car in an evacuation.

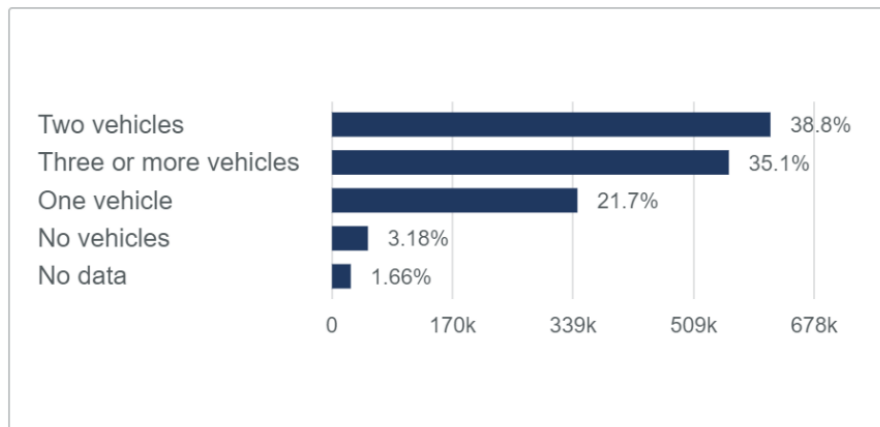
⁶¹ "Other" encompasses all other modes, including some commercial vehicle trips.

Private Vehicle Access

About 96% of travelers within these evacuation zones have access to one to three vehicles at home (see Figure 37). Of the approximately three percent of travelers with no car available, about 40% are white, 21% are Hispanic or Latino, 19% are Black, and 15% are Asian.

Most (56%) are not in the labor force, and many (31%) are of retirement age (over 65). Most (76%) are making under \$50,000 a year. These data suggest that a little over half of the people in Sacramento County without a car are retired.

Figure 37. Private Vehicle Availability in Sacramento County Evacuation Zones



Even without a vehicle, these 50,600 people are taking about 175,000 trips on a typical weekday (see Figure 38). They are traveling as car passengers (30%), walking (26%), with another private vehicle (e.g., a rental) (25%), biking (10%), by public transit (6%), "other" (2%), and taxi/TNC (less than 1%).

Figure 39. Top 20 Sacramento County Evacuation Zone Origin Points for Those Without a Private Vehicle

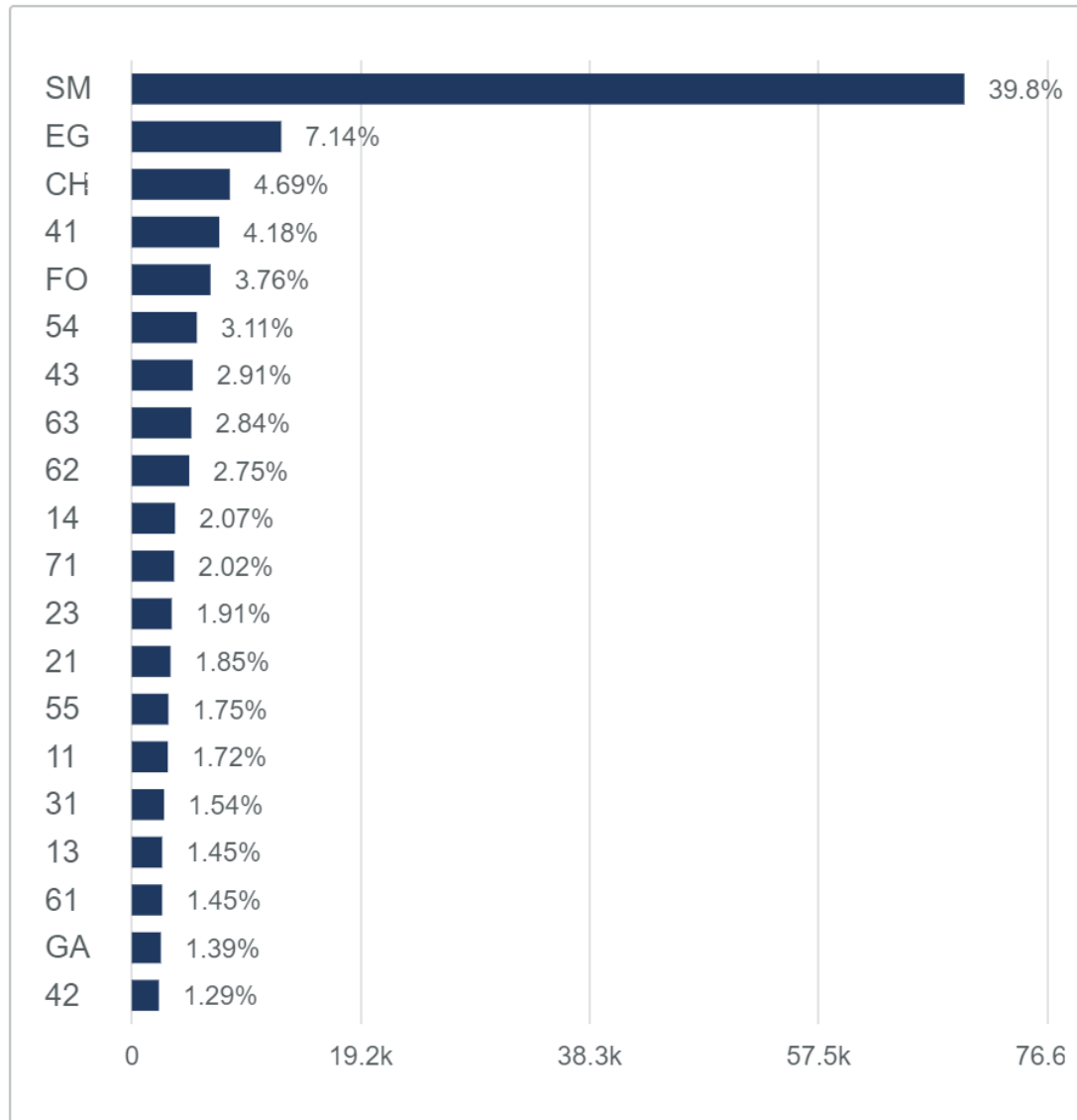
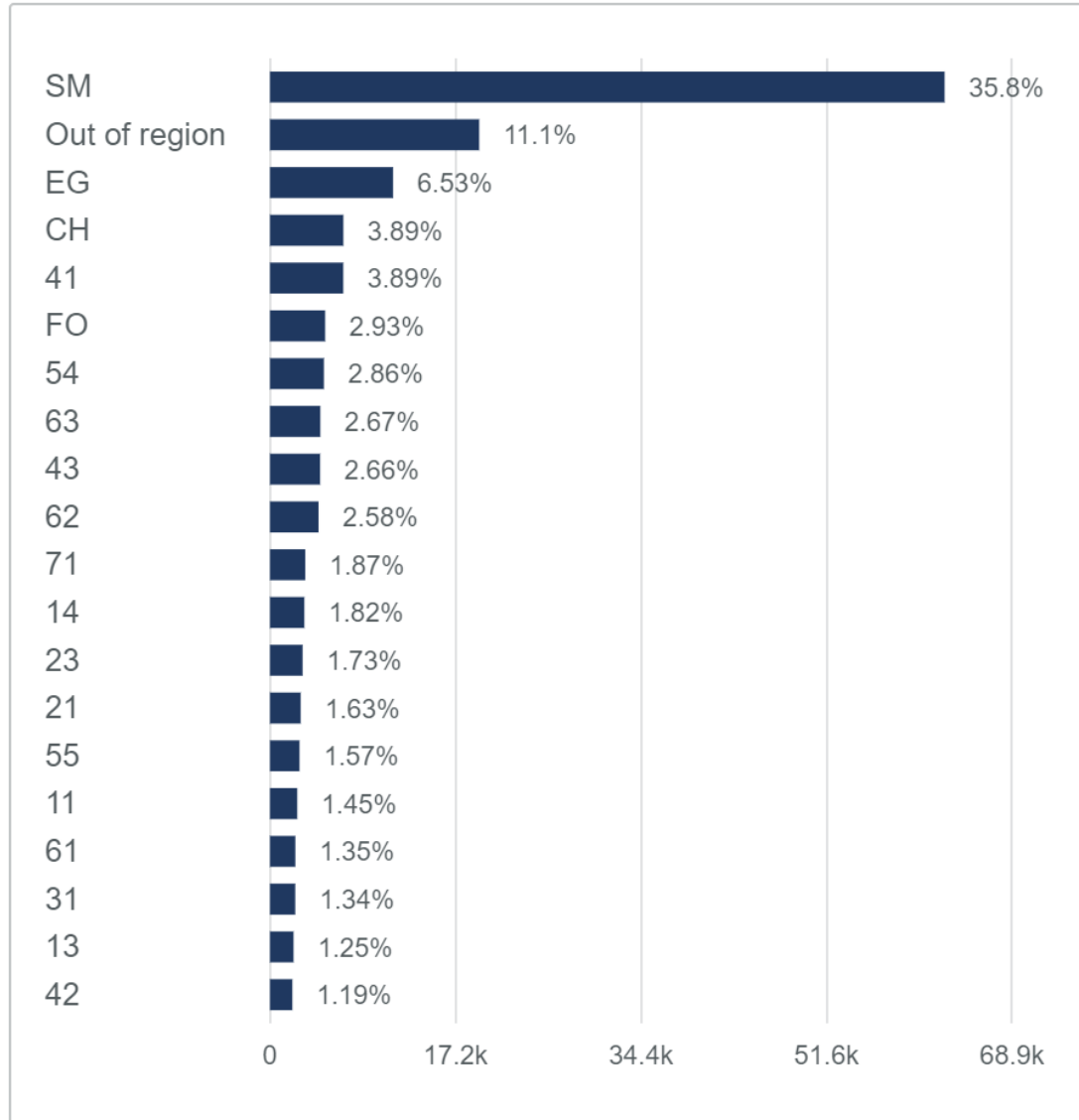


Figure 40 shows the top trip destinations for those without a vehicle by Sacramento County evacuation zone. The top three most popular end points are the City of Sacramento, outside of the region, and the City of Elk Grove.

Figure 40: Top 20 Destinations for Those Without a Private Vehicle (In and Out of Sacramento County)



Active Transportation Users

About 443,000 people make a total of 653,000 active transportation trips on a typical weekday starting from a Sacramento County evacuation zone. Most walk as their primary mode of transportation (88%). These walkers and bikers cover a diverse range of demographics in terms of age, income, and race, though about half (44%) are white and the highest proportion are between the ages of 18 and 34 (27%). Half of the daily walkers and bikers are unemployed, under 16, or no longer in the work force. Figure 41 shows the daily active transportation trips by their evacuation zone of origin in Sacramento County.

Figure 41. Daily Trips Taken by Walkers and Bikers by Sacramento County Evacuation Zone

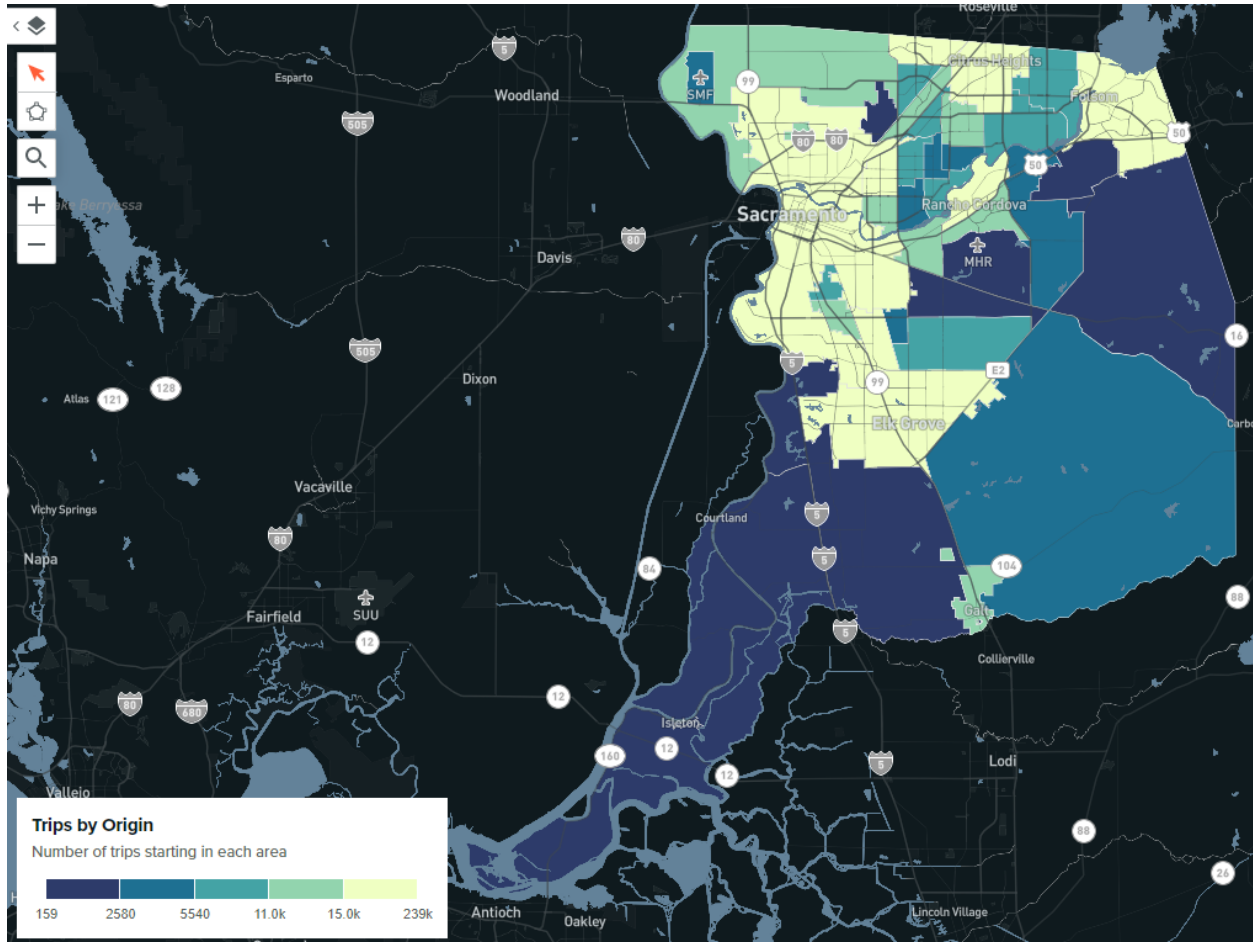


Figure 42 and Figure 43 show the most popular origin and destination Sacramento County evacuation zones for walkers and bikers. The City of Sacramento (SM), City of EG, City of Folsom (FO), and City of CH are the most common origin and destination points for active transportation users.

Figure 42. Top 20 Sacramento County Evacuation Zone Origin Points for Walkers and Bikers

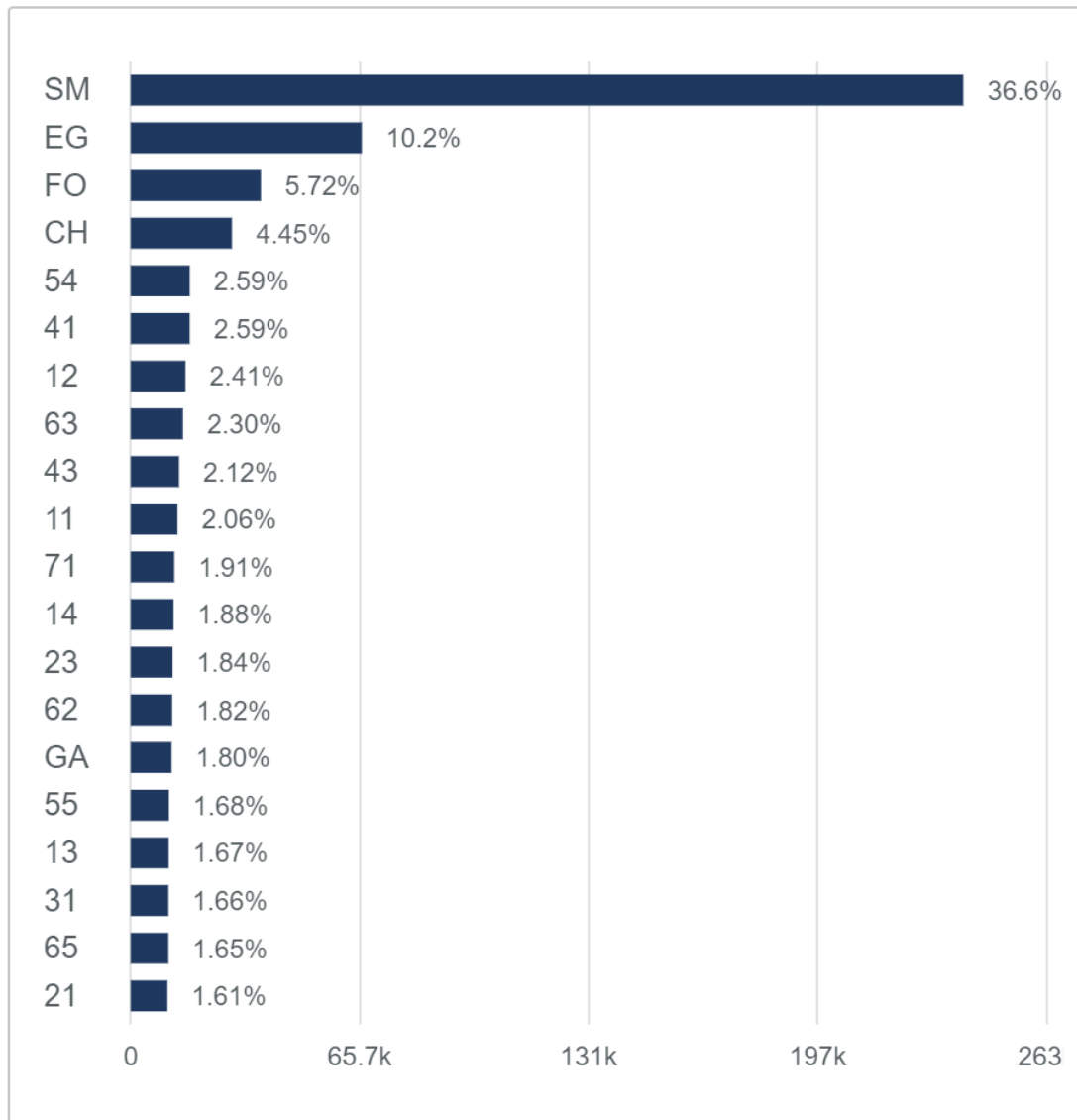
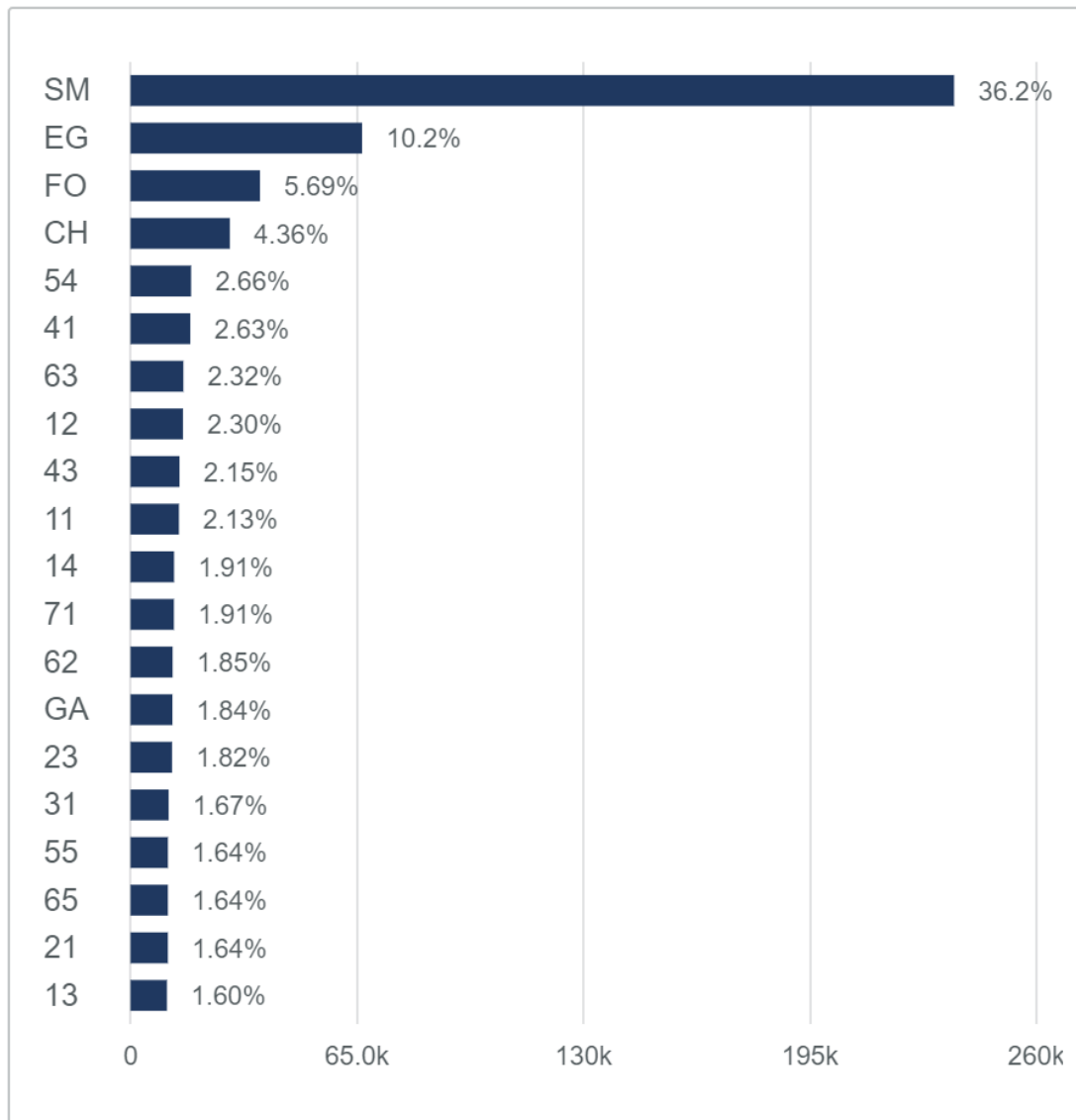


Figure 43. Top 20 Destinations for Bikers and Walkers (In and Out of Sacramento County)



Public Transit Riders

There are 23,000 trips taken each day by 15,100 people who use public transit as their primary mode of transportation from a Sacramento County evacuation zone origin point. Half are either unemployed, under 16, or no longer in the work force and 42% do not have a private vehicle. The highest proportion of public transit travelers are between the ages of 18 and 34 (29%) and about half (46%) are over the age of 50.

Figure 44 shows SacRT light-rail lines and stations within Sacramento County, which are some of the most popular routes and transit stops used by transit riders starting from a Sacramento County evacuation point of origin.

Figure 44. SacRT transit stop lines and stations

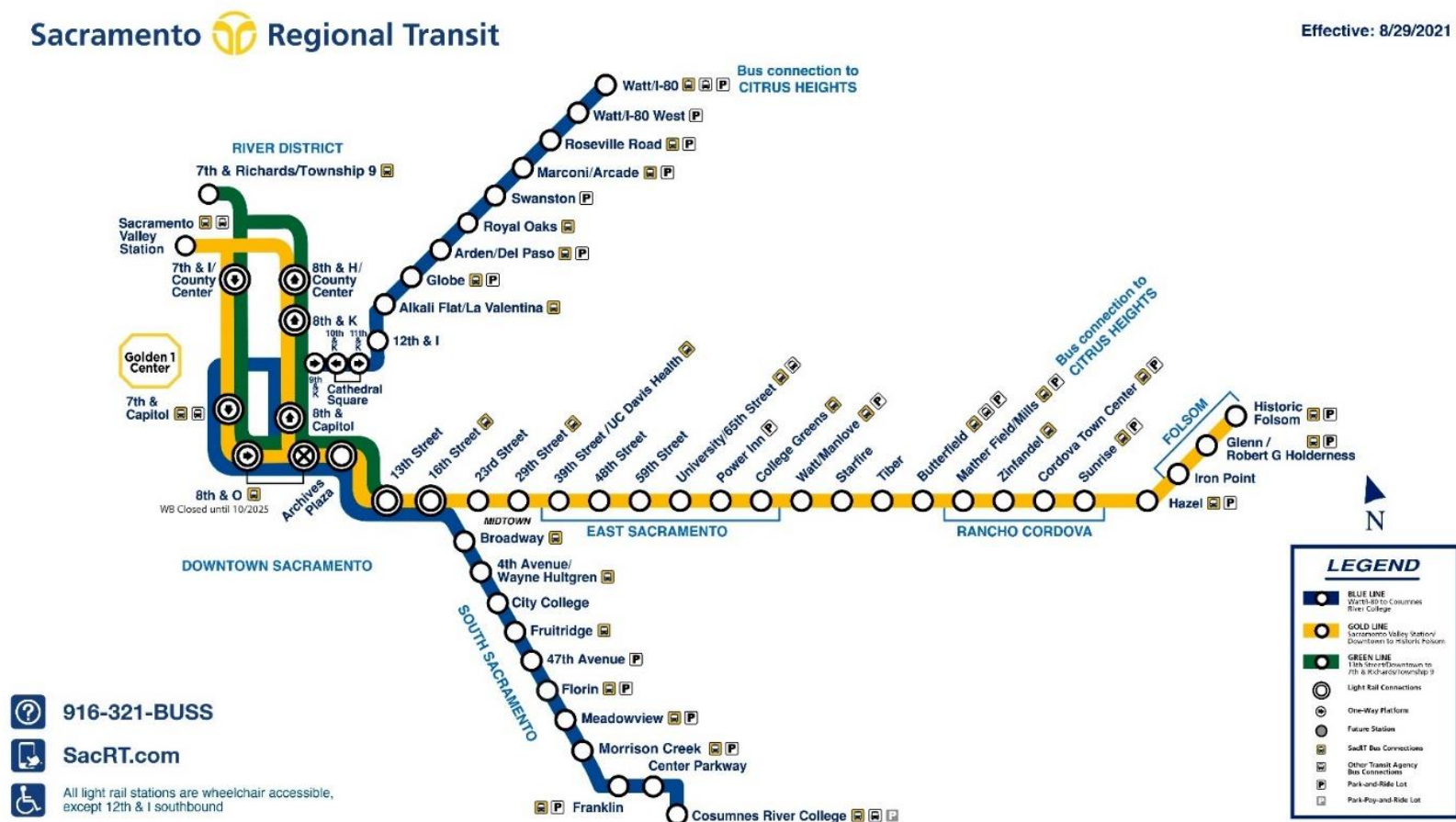


Figure 45 shows the top 20 transit routes used by public transit riders when starting a trip from within Sacramento County. All routes are operated by SacRT. The top two most popular routes are "Meadowview – Watt/I-80" and "Downtown – Folsom," which refer to light-rail lines. Meadowview – Watt/I-80 are stops on the SacRT blue line and Downtown – Folsom are stops on the SacRT gold line.

Figure 45. Number of Total Public Transit Trips by Sacramento County Transit Route

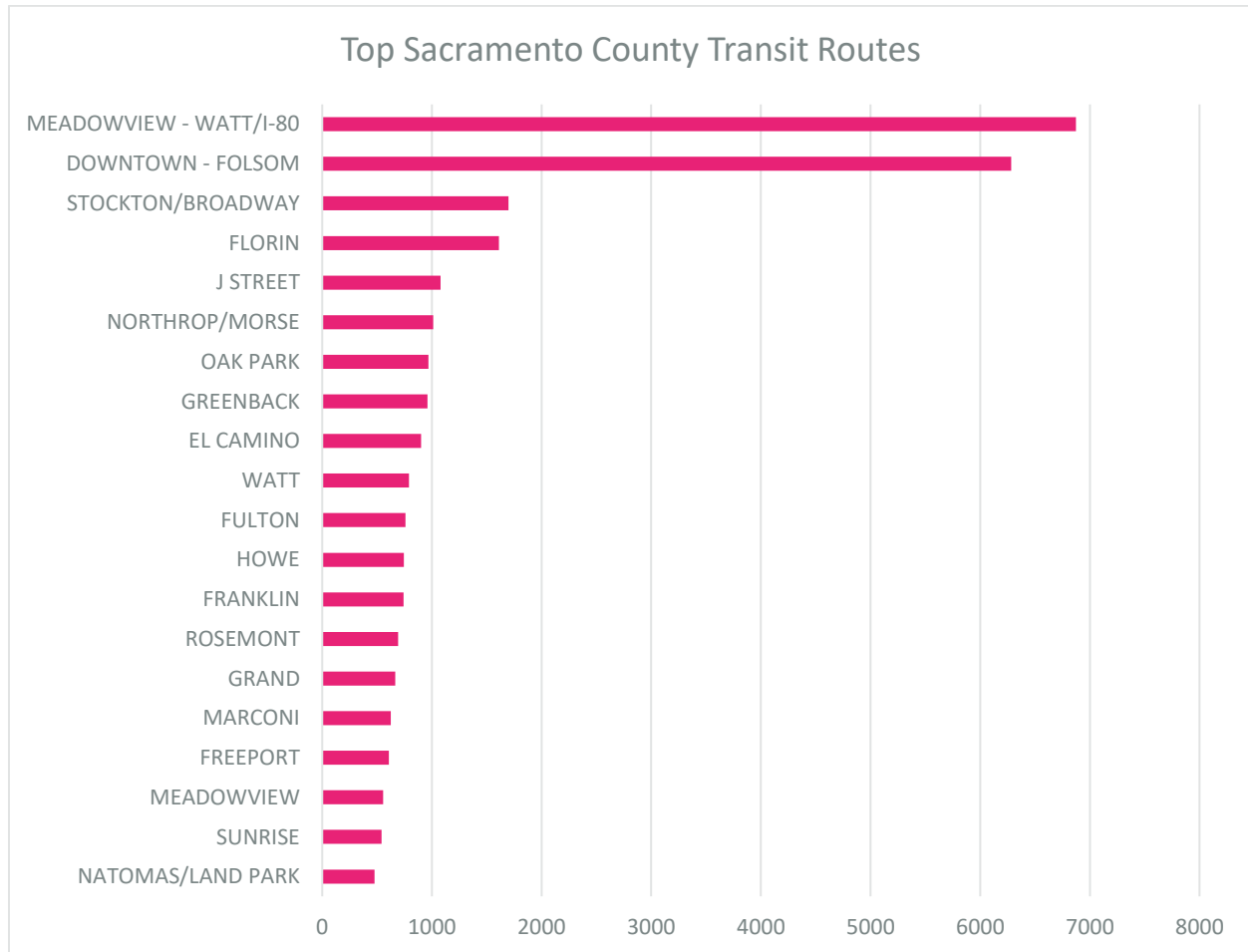


Figure 46 shows the total number of boardings by Sacramento County transit stop on a typical weekday, for the top 20 most popular stops for boarding. Each stop is a station on one of the SacRT light-rail lines (see Figure 44 for SacRT transit line and stop names).

Figure 46. Number of Sacramento County Transit Stop Boardings

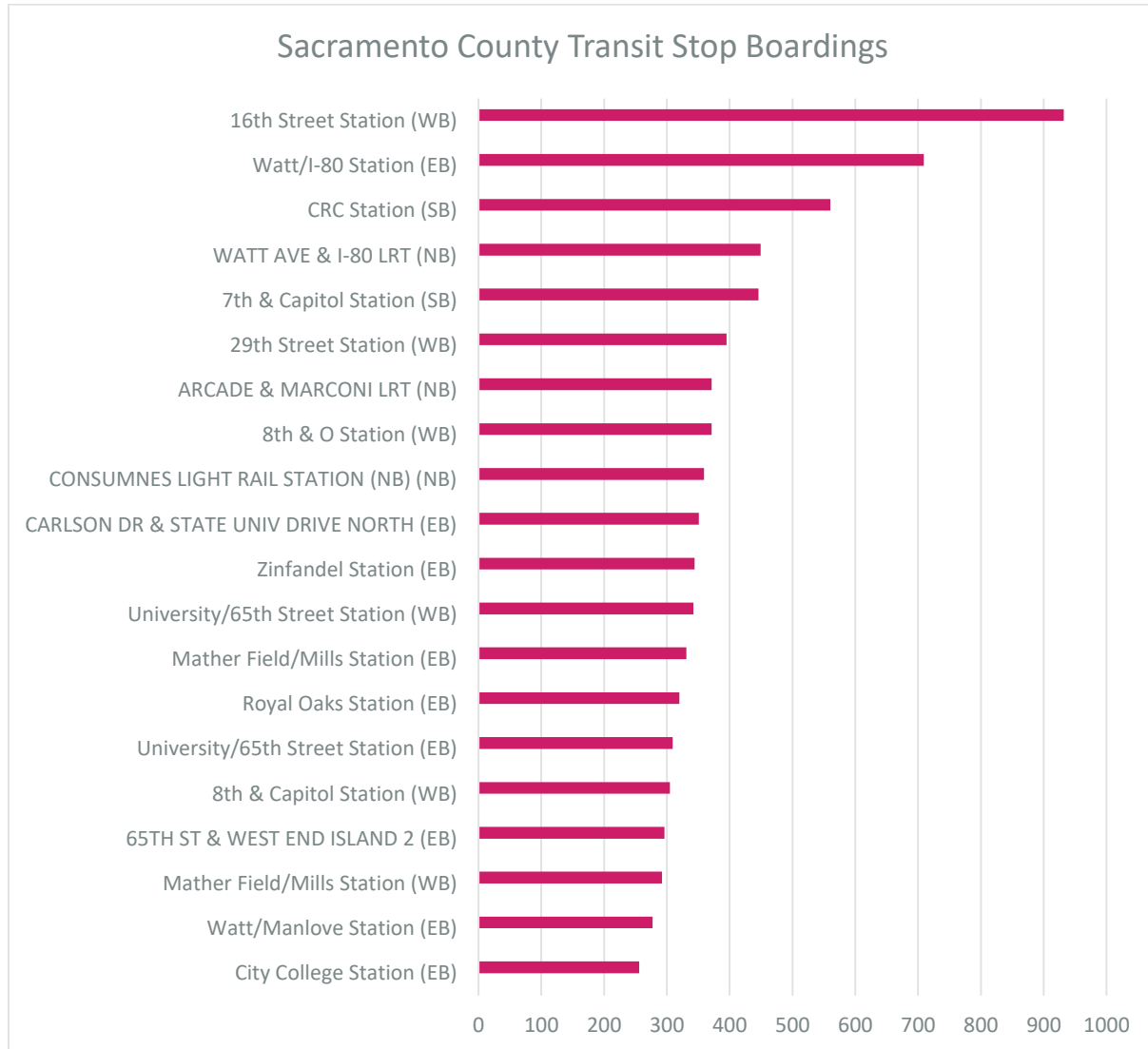


Figure 47 shows the total number of boardings by Sacramento County transit stop on a typical weekday, for the top 20 most popular stops for boarding. Each stop is a station on one of the SacRT light-rail lines.

Figure 47. Number of Sacramento County transit stop alightings

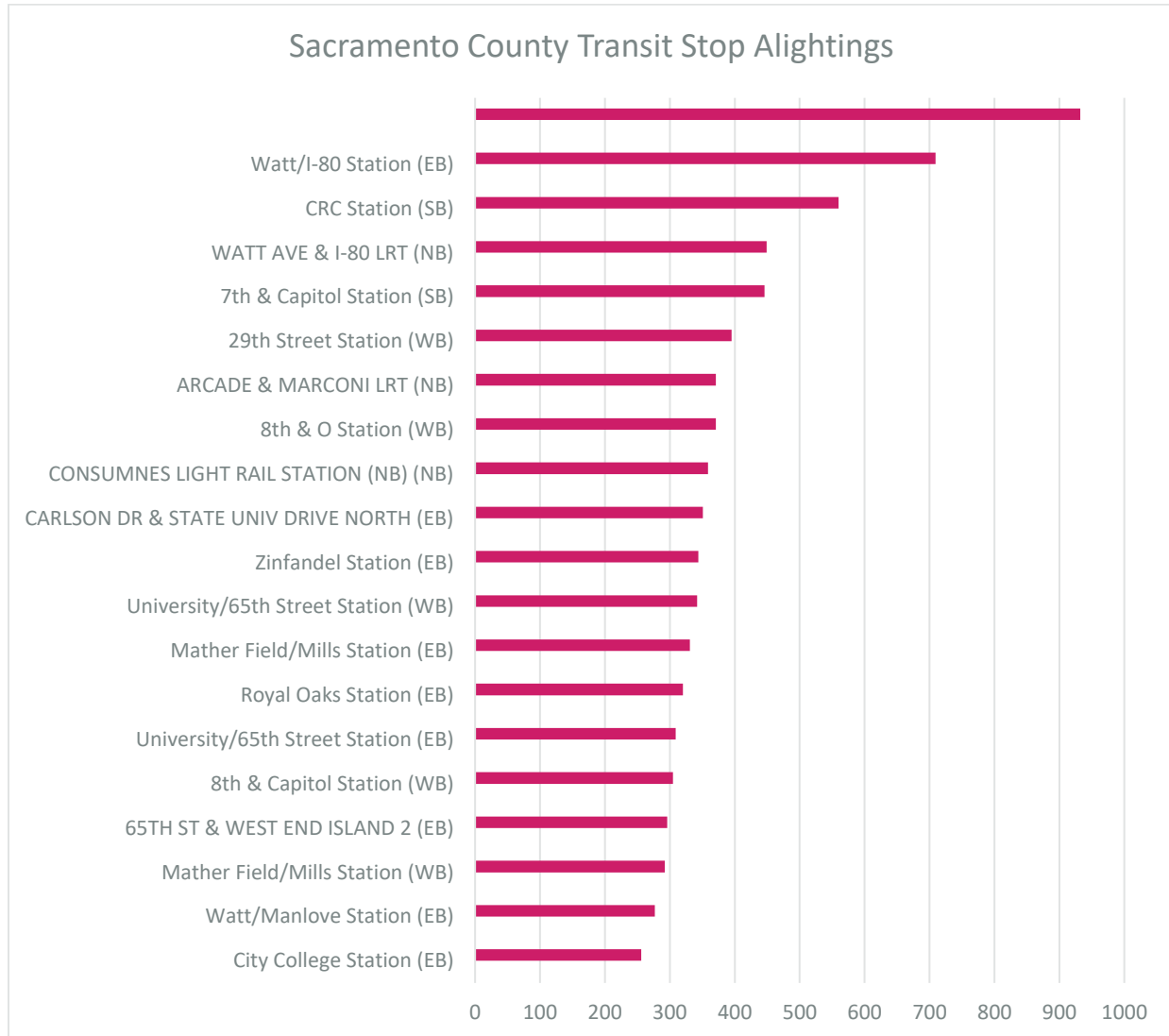


Figure 48 shows the number of daily trips taken by public transit riders starting from a Sacramento County evacuation zone. The most popular origin points are from within the cities of Sacramento, Elk Grove, Rancho Cordova, CH, and Folsom.

Figure 48. Daily public transit trips by Sacramento County evacuation zone

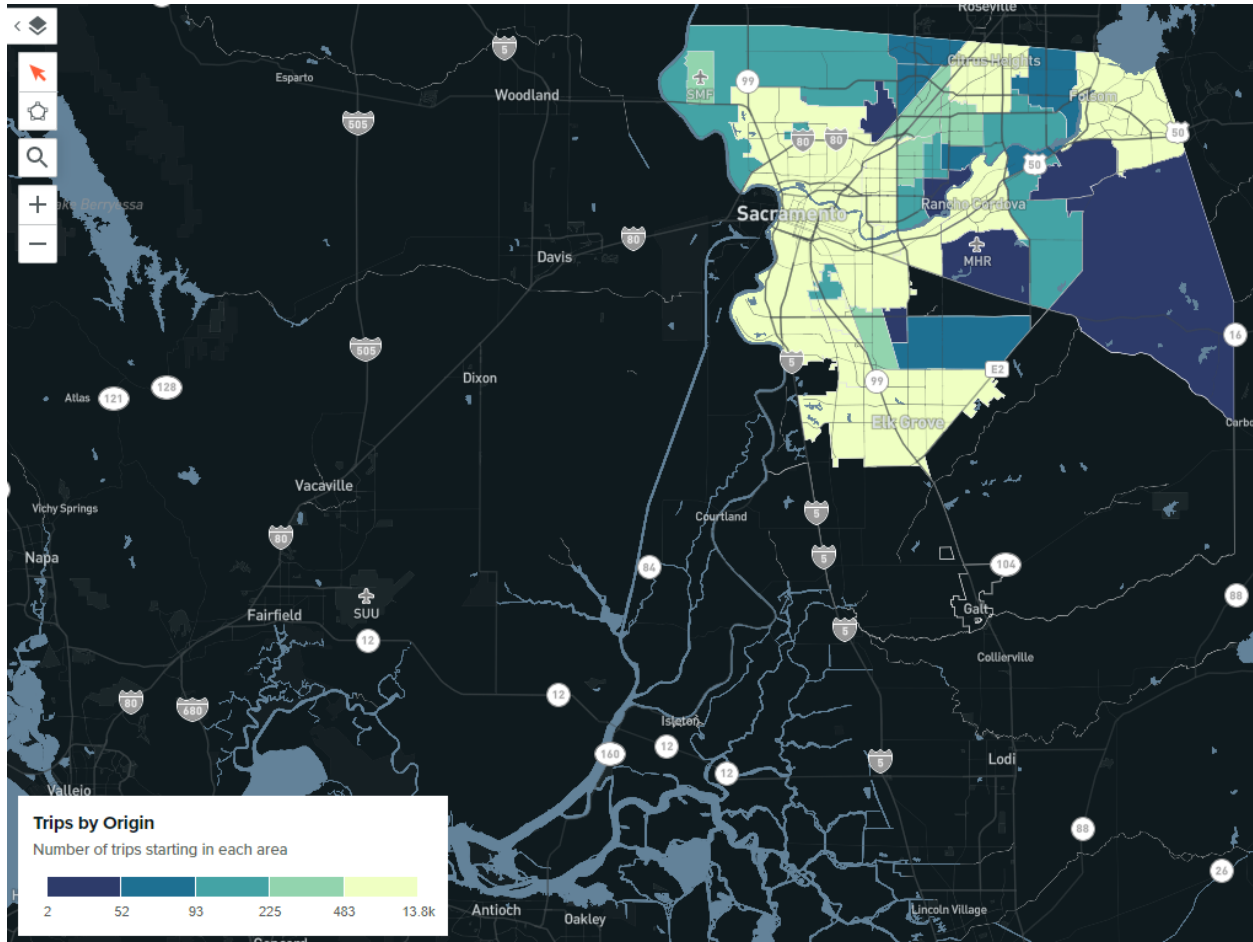


Figure 49 shows the top 20 trip starting points by Sacramento County evacuation zone for public transit riders. The vast majority (60%) start within the City of Sacramento.

Figure 49. Top 20 Sacramento County evacuation zones of origin for transit riders

Trip Origin: by Sacramento County Evacuation Zones

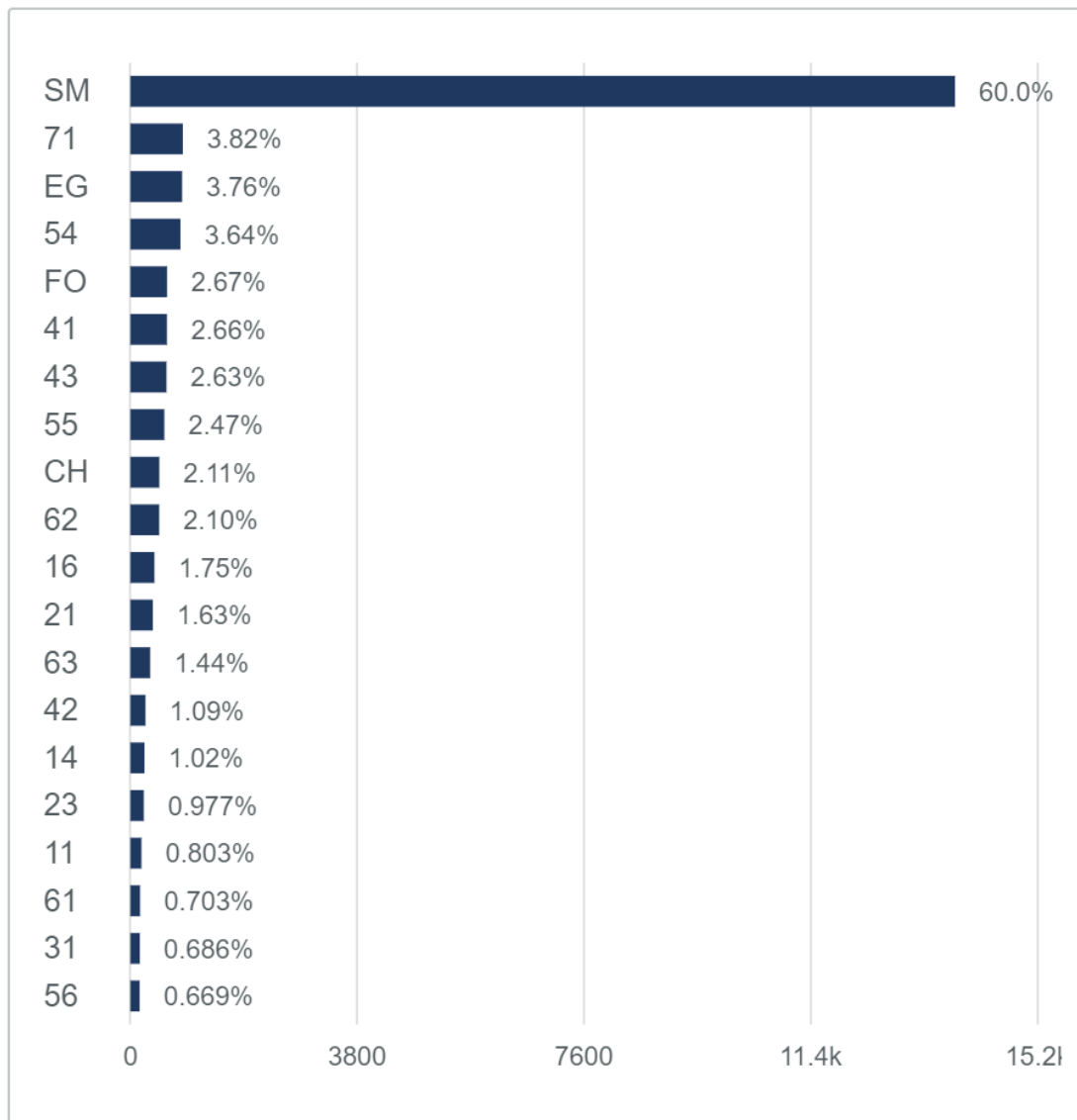
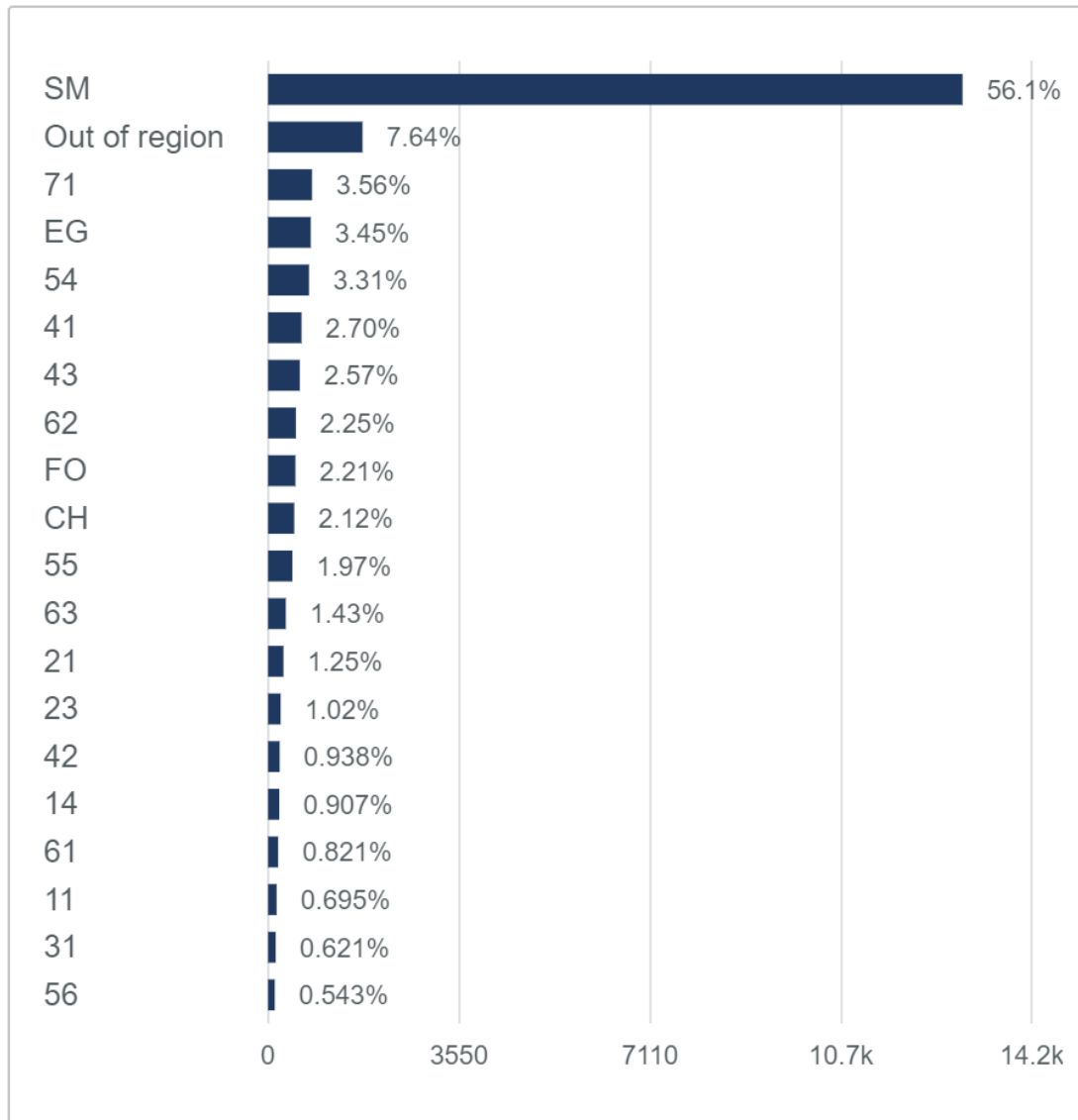


Figure 50 shows the top 20 trip destination points by Sacramento County evacuation zone for public transit riders. Most trip destinations are within the City of Sacramento (56%). The next highest proportion of trips end outside of the region (8%).

Figure 50. Top 20 destinations for public transit riders (in and out of Sacramento County)

Trip Destination: by Sacramento County Evacuation Zones



SUTTER COUNTY

Figure 51 Figure 52 shows the Sutter County evacuation zone boundaries and labels used in this analysis. Figure 52 provides a zoomed in view of the multiple evacuation zones in Yuba City.

Figure 51. Sutter County evacuation zones

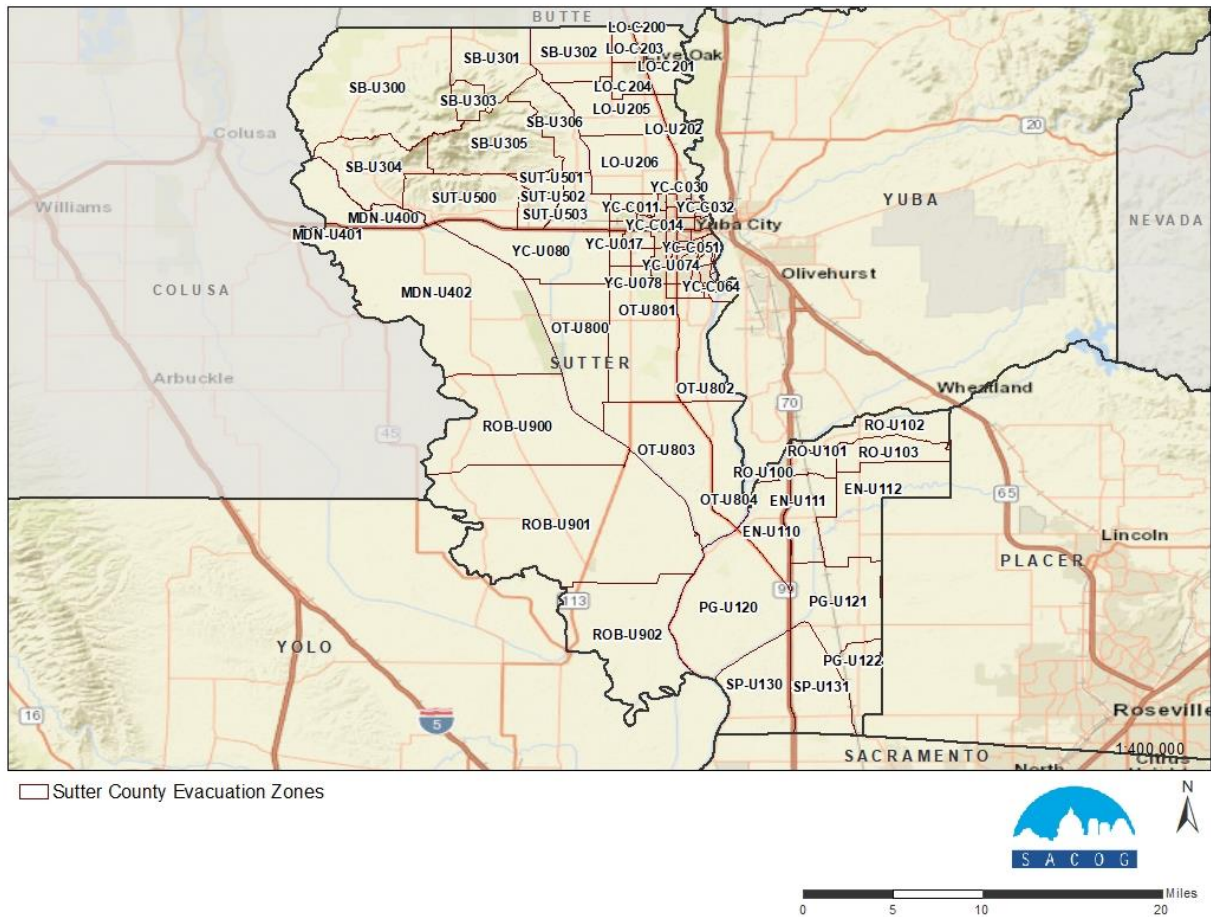
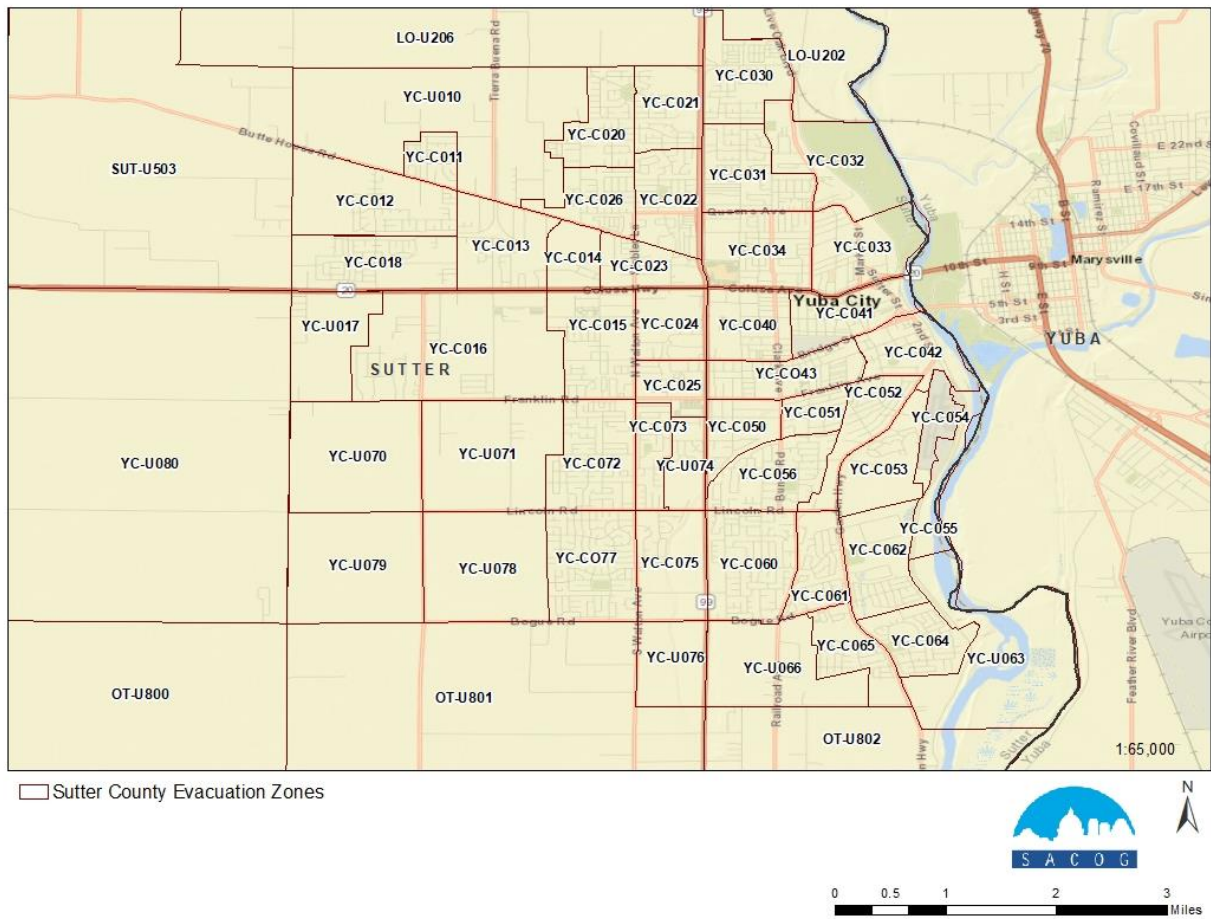
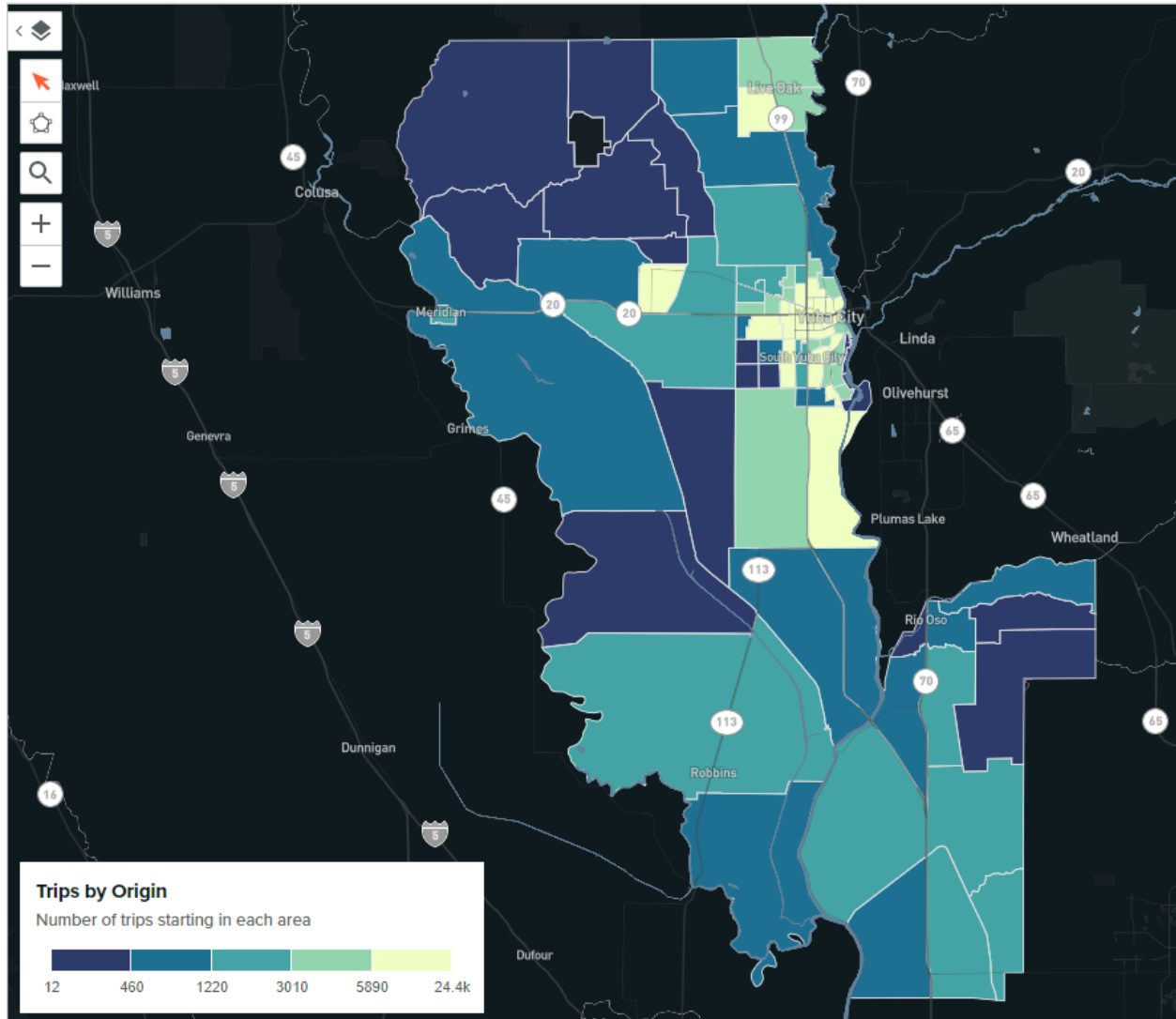


Figure 52. Yuba City evacuation zones



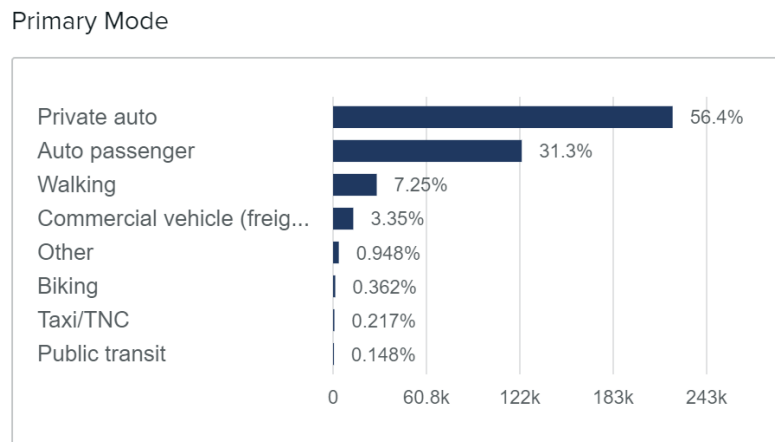
An estimated 392,000 trips are taken by 127,000 people from a Sutter County evacuation zone of origin on a typical weekday. Figure 53 below shows the number of trips that start within each evacuation zone in Sutter County, with lighter colors representing a larger number of trips.

Figure 53. Daily trips starting in a Sutter County evacuation zone



See Figure 54 for a summary of the primary transportation modes people use when traveling from Sutter County as their starting point. Most trips are taken within a private vehicle, whether driving or as a passenger in a carpool. The next most popular mode of transportation is walking, followed by driving in a commercial vehicle (medium and heavy trucks), other, biking, taxi or TNC, and public transit.⁶²

Figure 54. Primary modes of transportation used in Sutter County on a typical weekday

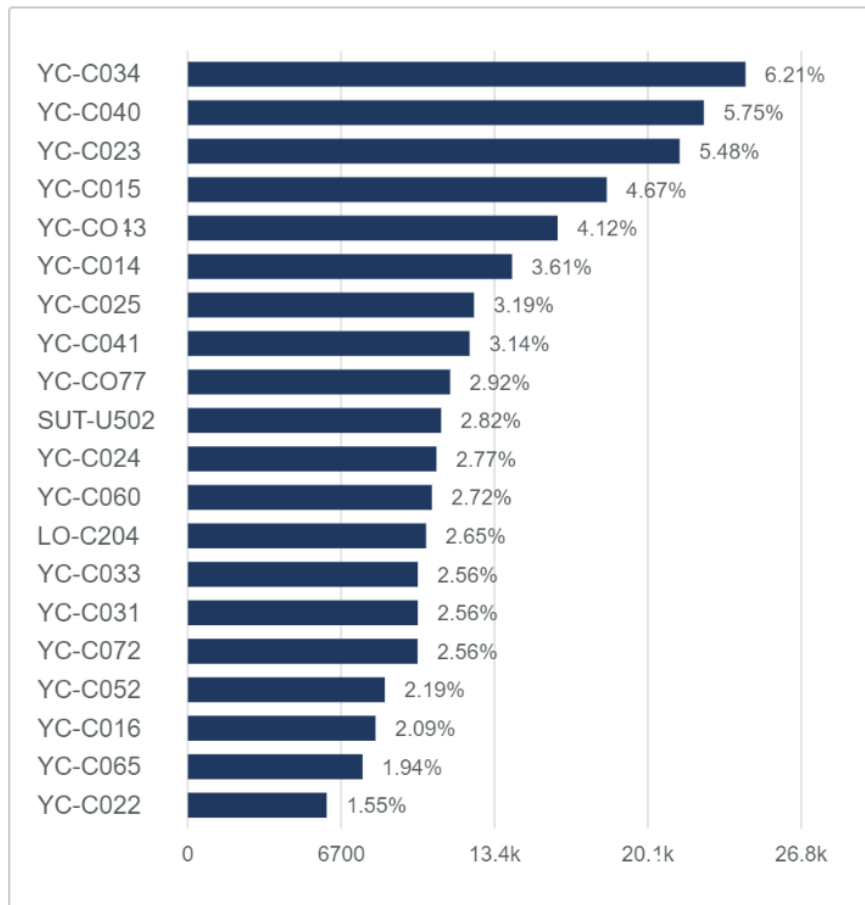


Many trips starting in Sutter County are headed out of the county (26.3%) and most trips originate from one of the top twenty evacuation zones as provided in Figure 55 below. The evacuation zones that start with "YC" are in Yuba City.

⁶² Many trips use multiple modes, such as walking to a bus stop and then riding the bus. Figures only show the primary mode of each trip.

Figure 55. Top 20 Sutter County evacuation zone origin points

Trip Origin: by Sutter County Evacuation Zones



Those that might need evacuation assistance in Sutter County include travelers who do not have access to their own private vehicle and those who carpool, walk, bike, take a taxi/TNC, or ride public transit as their primary mode of transportation. The following sections summarize community characteristics and traveler origin and destination points for those who do not have a private vehicle at home, active transportation users, and transit riders. Those who carpooled or used taxis/TNCs as their primary modes of transportation were not analyzed specifically in this exercise for the following reasons:

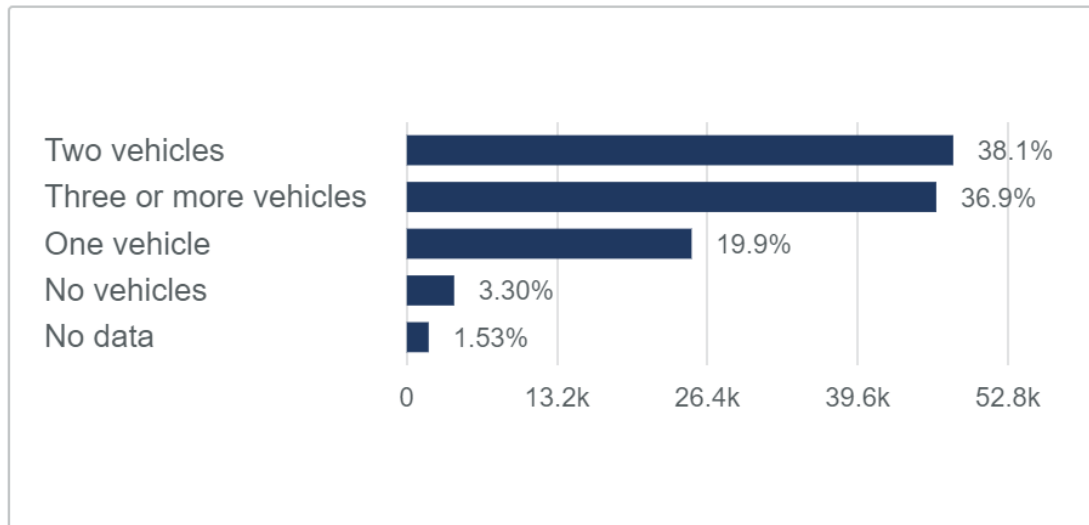
- Based on the data from Replica, most of those who carpooled or used taxis/TNCs as primary modes of transportation still had access to one or more vehicles at home.
- These travelers still ultimately chose a car as their primary mode of transportation, whereas bikers, walkers, and transit riders may have fewer options to drive as their evacuation option.

Private Vehicle Access

Approximately three percent of individuals in Sutter County do not have a private vehicle at home (see Figure 56). Of that three percent, 66% are not in the labor force, about 37% are over the age of 65, and 86% make under \$50k each year. These numbers suggest that most people without a vehicle in Sutter County are retired and on a fixed income.

Figure 56. Private vehicle availability in Sutter County

Private Auto Availability



There are about 4,160 people without a car that take 12,300 trips starting in Sutter County on a given day. Figure 57 summarizes the top 20 evacuation zones of origin for these travelers and Figure 58 shows the top 20 destinations. The most popular destination listed is "outside of the region," meaning it is outside of Sutter County. Figure 59 provides a map of trips by origin for those without a private vehicle. Most without a vehicle start their trips in Yuba City, Live Oak, Sutter, and near Abbott.

Their primary modes of transportation are in the car as a passenger (46.4%), a private vehicle (a rental or borrowed car) (31.7%), walking (17.3%), other (2.4%), biking (1.3%), public transit (1.2%), and taxi/TNC (less than 1%).

Figure 57. Top 20 evacuation zones of origin in Sutter County for those without a private vehicle

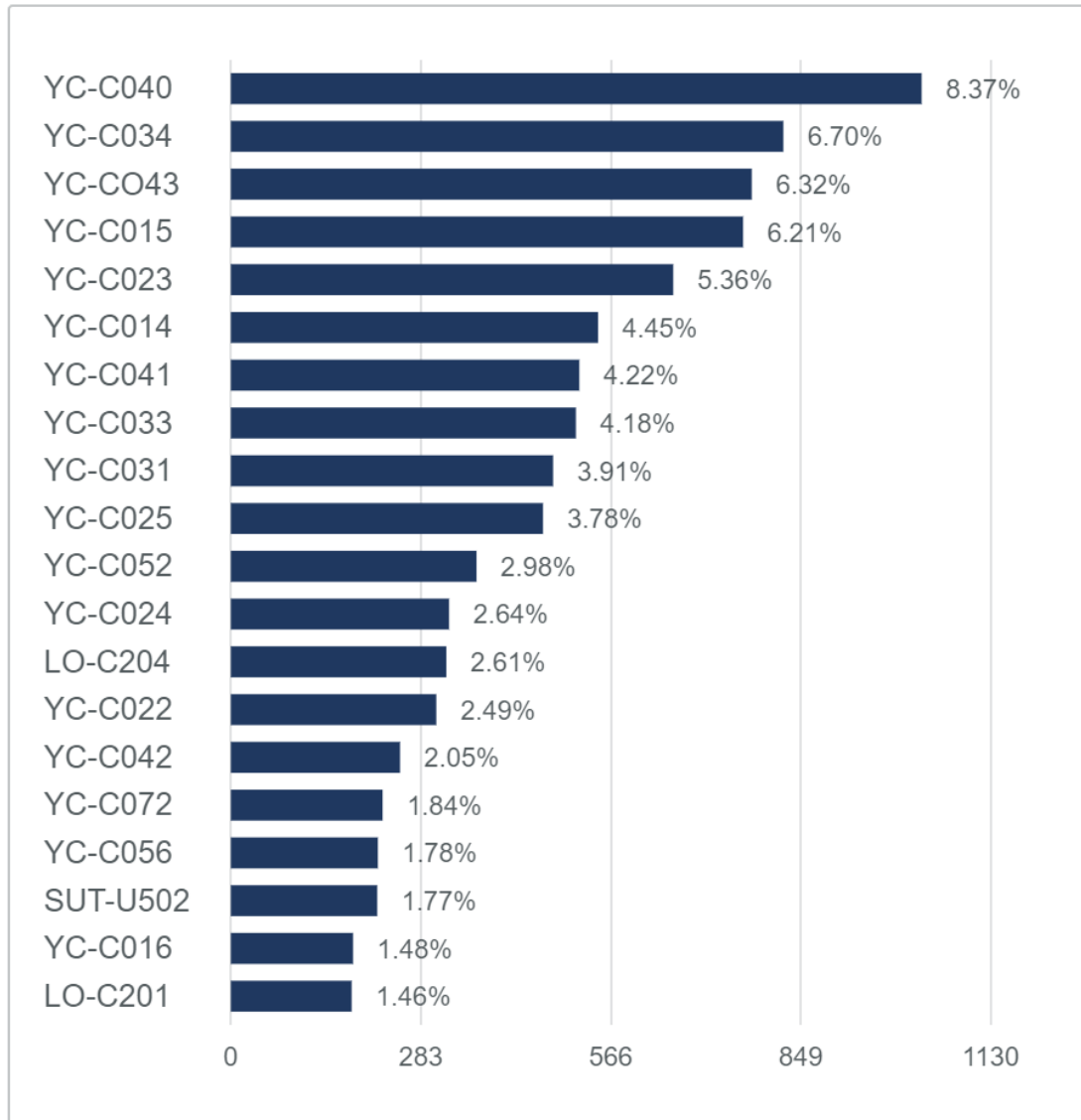
Trip Origin: **by Sutter County Evacuation Zones**

Figure 58. Top 20 destinations for those without a private vehicle (in and out of Sutter County)

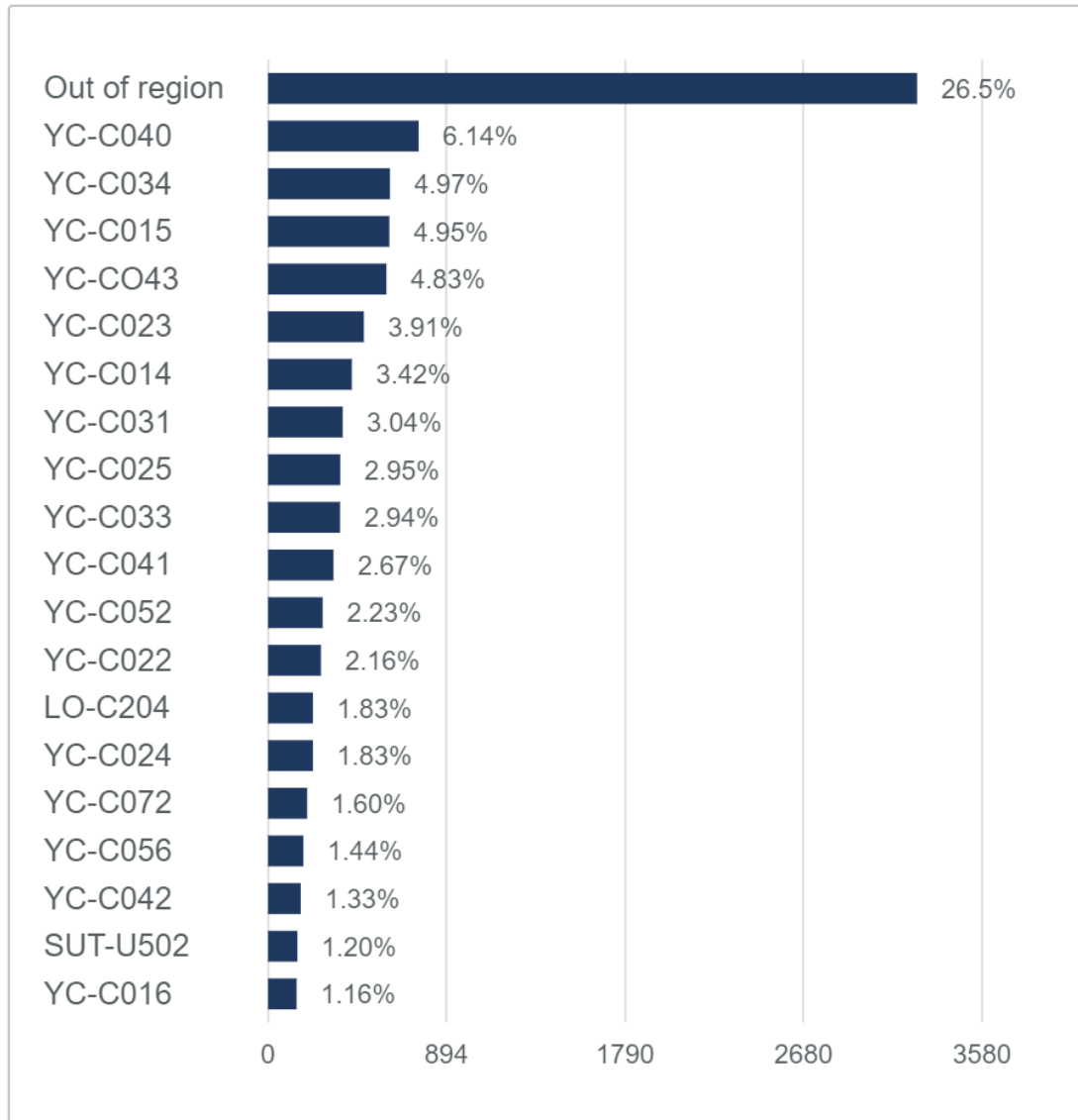
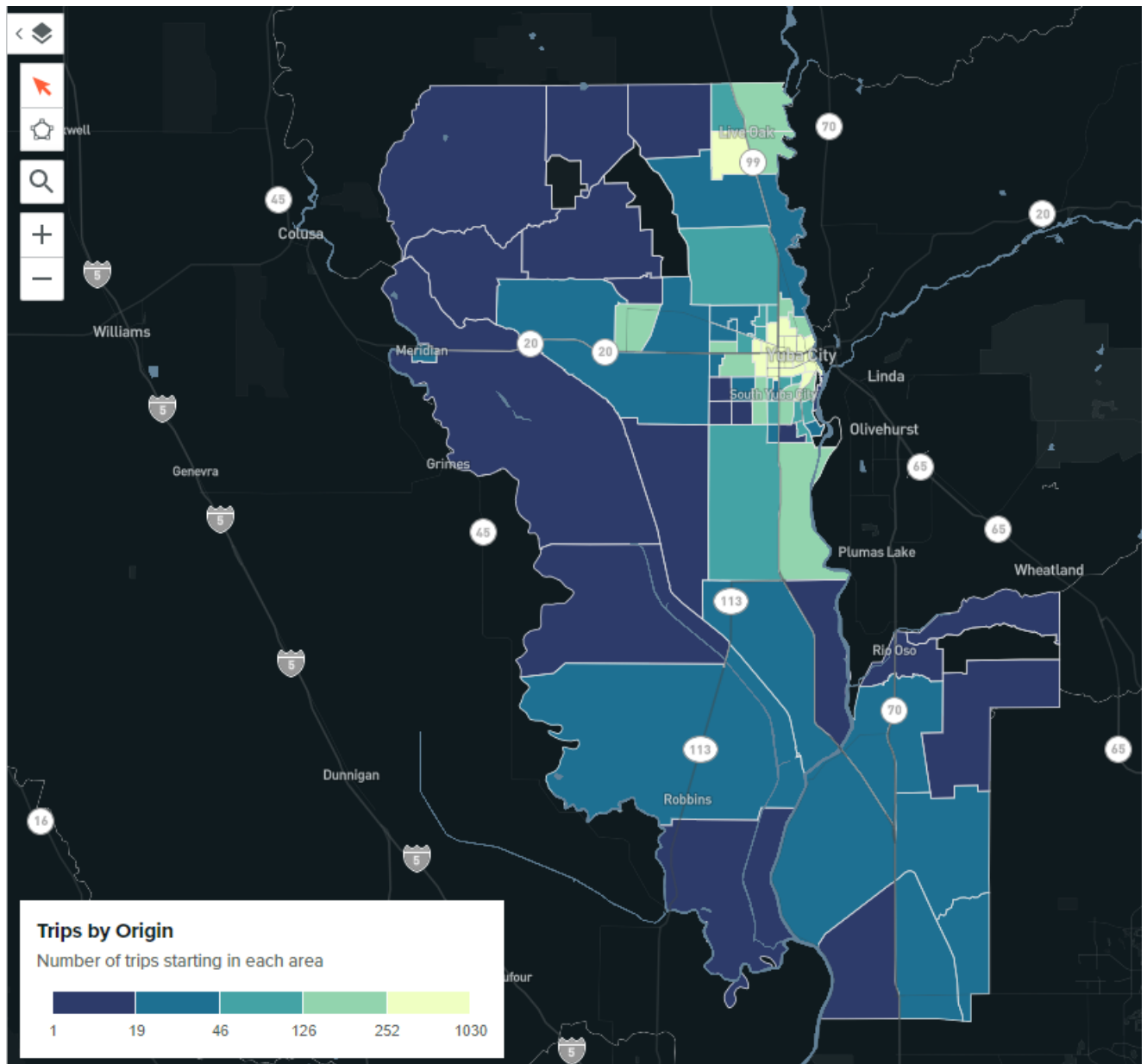
Trip Destination: **by Sutter County Evacuation Zones**

Figure 59. Daily trips taken by those without a vehicle by Sutter County evacuation zone



Active Transportation Users

An estimated 22,000 people walk or bike as their primary mode of transportation from a point in Sutter County as their origin, taking a total of 29,900 trips each day (Figure 62). Active transportation users cover a range of income levels and demographics, though the transportation mode is most popular among those ages 18 to 34 (about 30% of travelers). Most trips are under a half mile and five minutes and are within the evacuation zones provided in Figure 60 (origin) and Figure 61 (destination).

Figure 60. Top 20 evacuation zones of origin in Sutter County for bikers and walkers

Trip Origin: by Sutter County Evacuation Zones

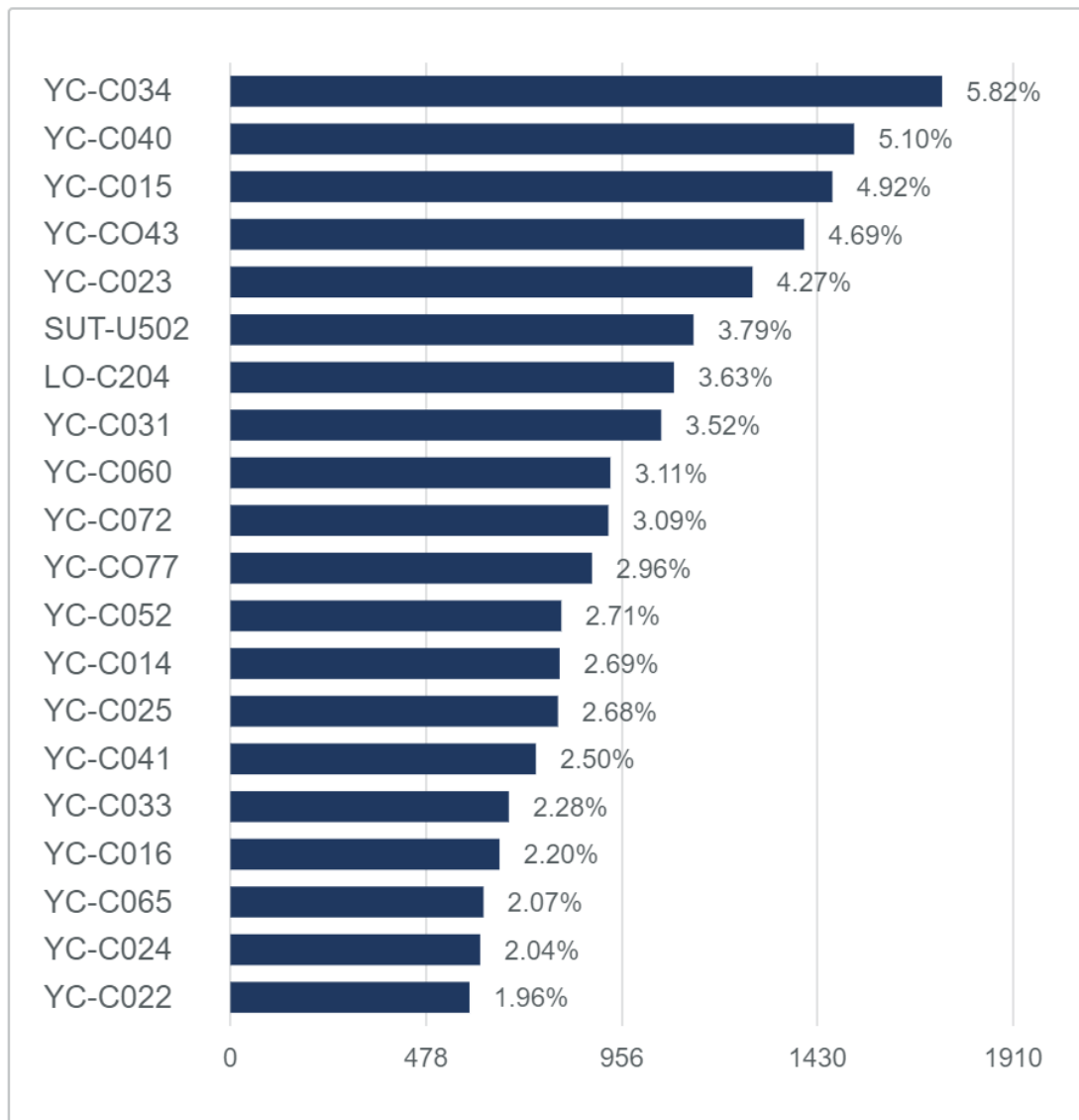


Figure 61. Top 20 destinations for bikers and walkers (in and out of Sutter County)

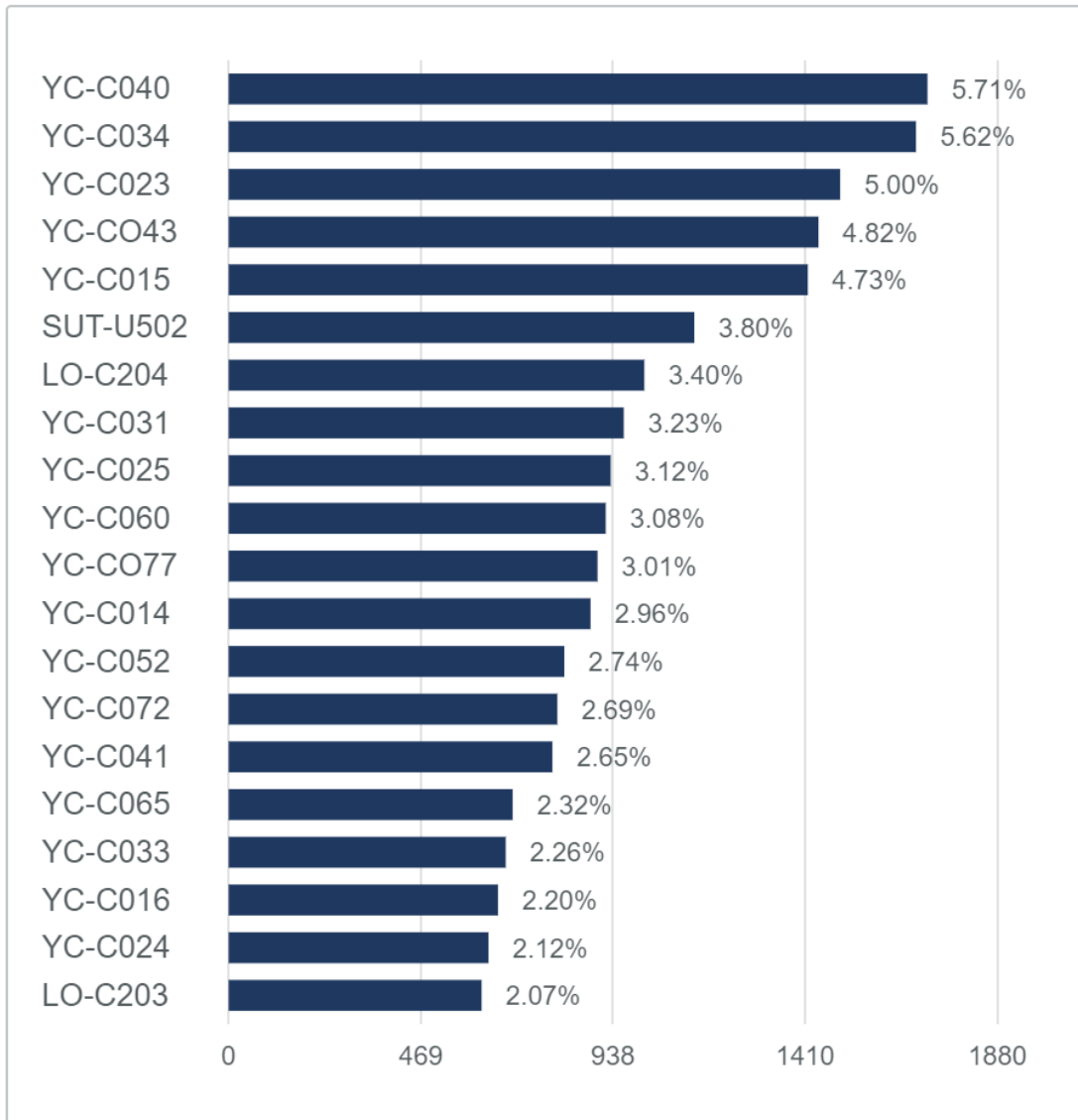
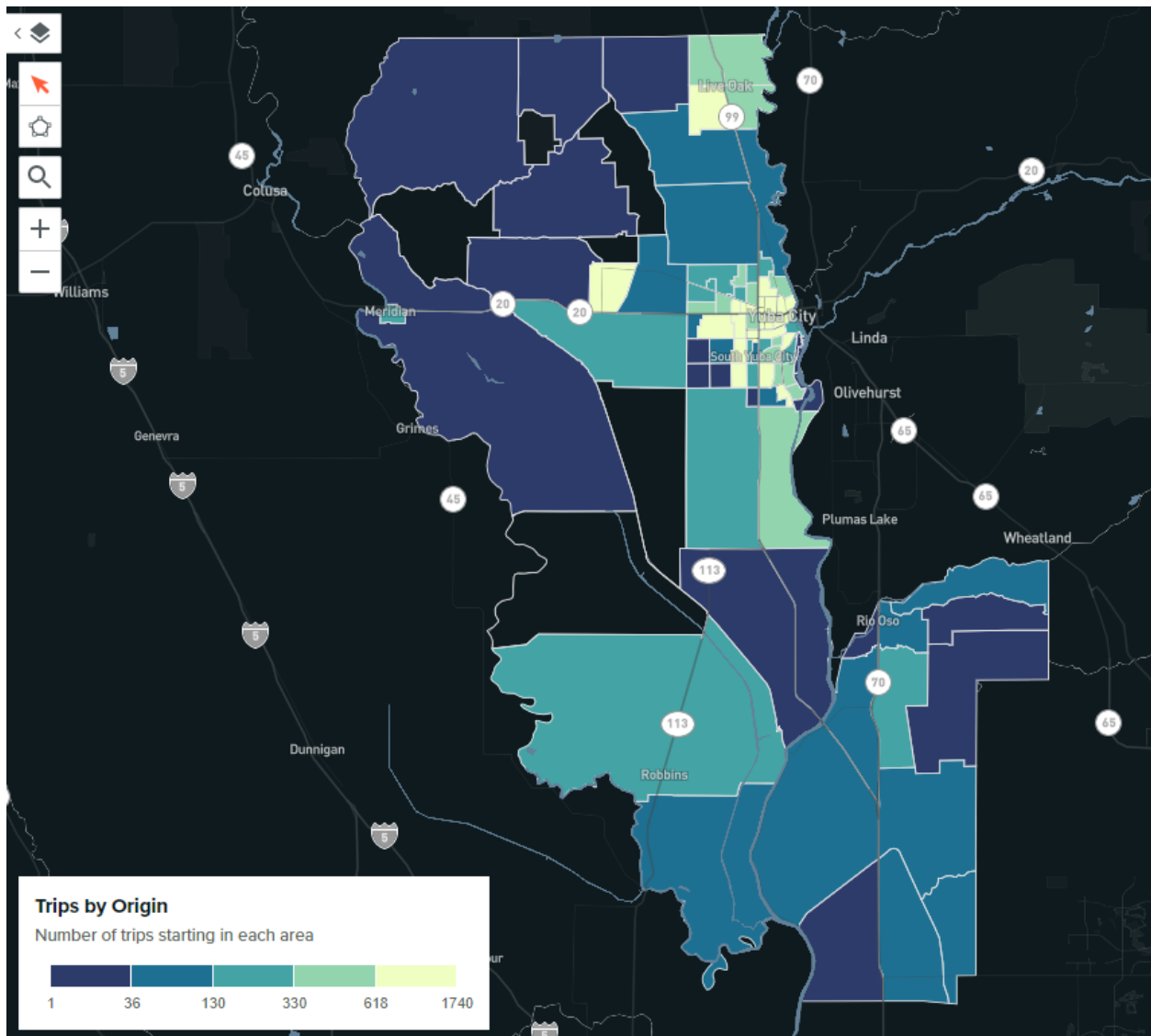
Trip Destination: **by Sutter County Evacuation Zones**

Figure 62. Daily trips taken by walkers and bikers by Sutter County evacuation zone



Public Transit Riders

A very small number of people took public transit as their *primary* mode of transportation, though other travelers used public transit as a leg in their trip. There are 448 daily trip takers completing 580 trips by public transit from a starting point within Sutter County. This small number of modeled ridership makes the following results very uncertain.

The top three most frequented transit routes are Yuba City to Yuba College, Yuba City Loop, and Southwest Yuba City, making up a total of about 83% of transit trips.

Figure 63 and Figure 64 show the most popular Sutter County transit stops for boarding and alighting. All but the Watt/I-80 station are serviced by Yuba-Sutter Transit.

Figure 63. Number of Sacramento County transit stop boardings

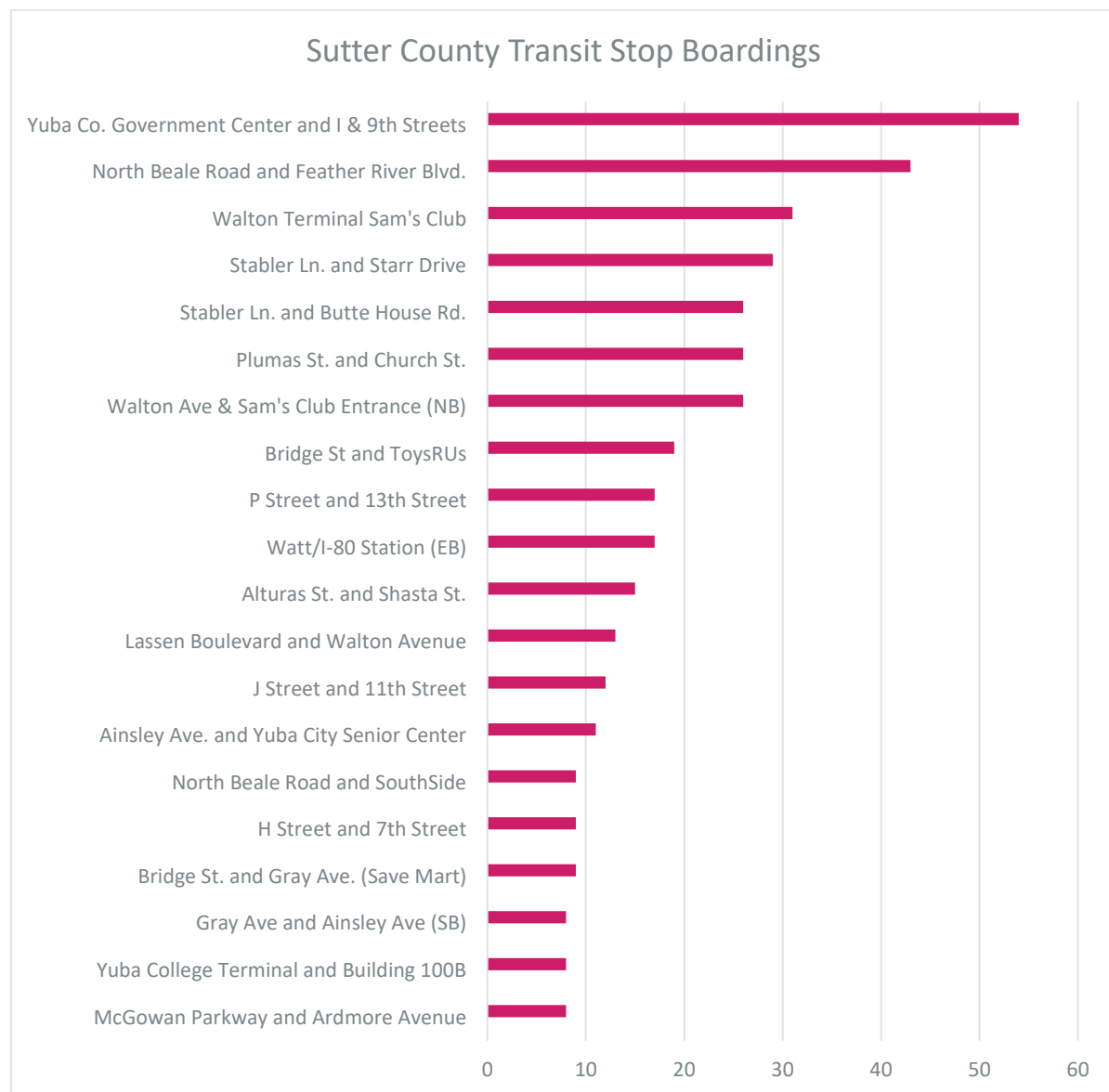


Figure 64. Number of Sutter County transit stop alightings

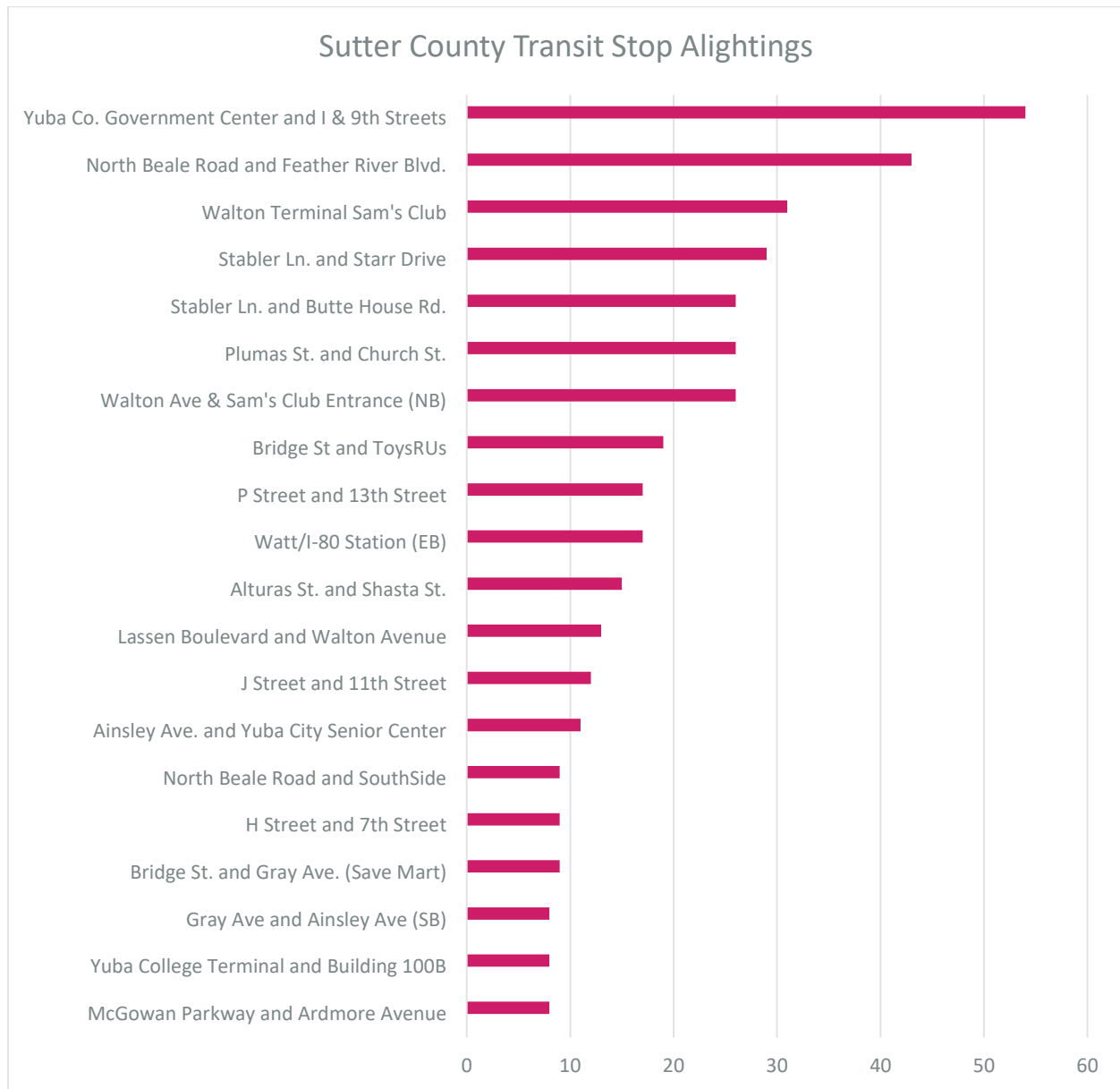


Figure 65 is a map of daily trips taken by public transit riders by point of origin. The small number of transit trips that begin in Sutter County start in the City of Live Oak or Yuba City. Figure 66 and Figure 67 show the origin and destination points for those who primarily use transit.

Figure 65. Daily public transit trips by Sutter County evacuation zone

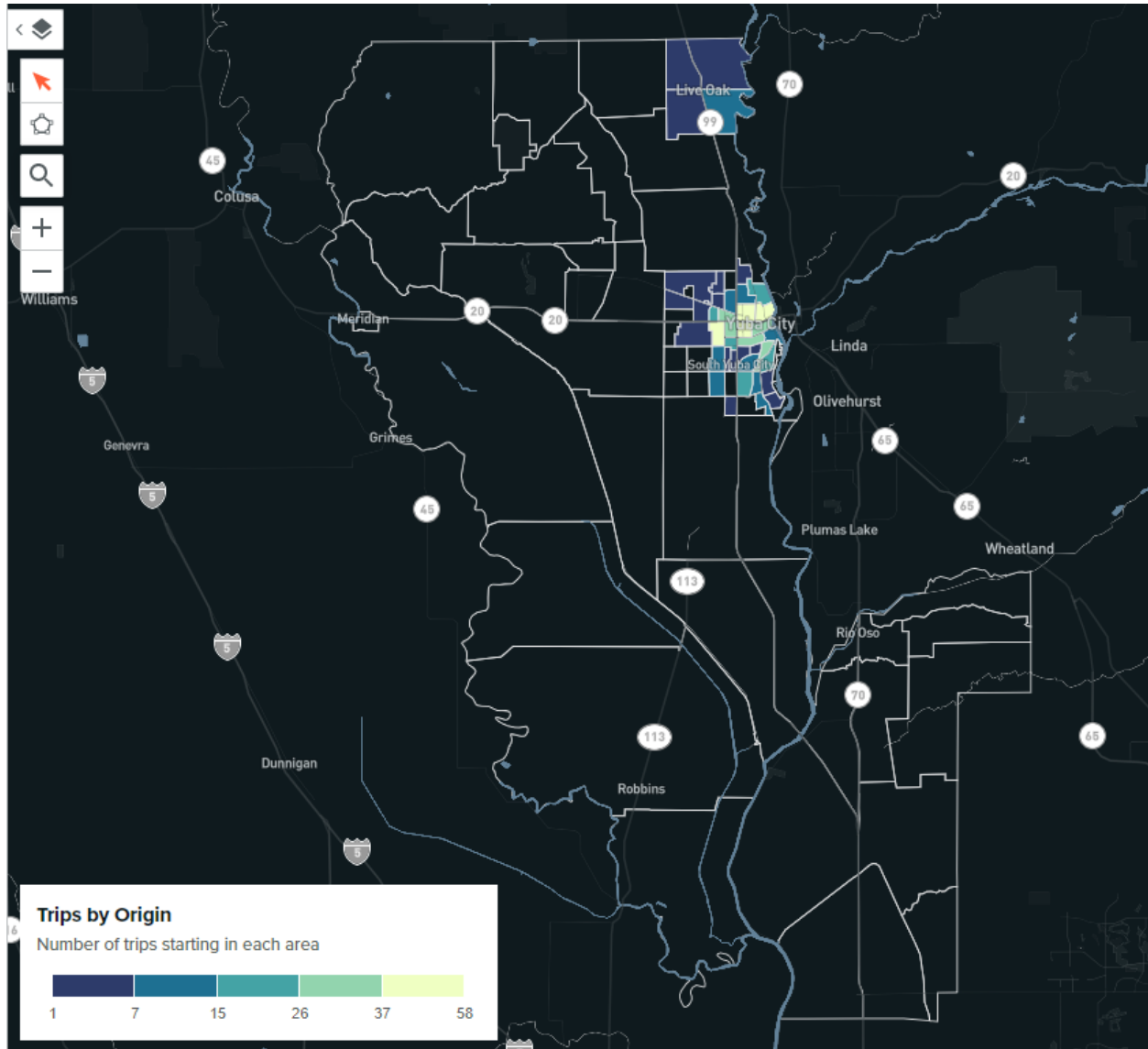


Figure 66. Top 20 evacuation zones of origin in Sutter County for transit riders

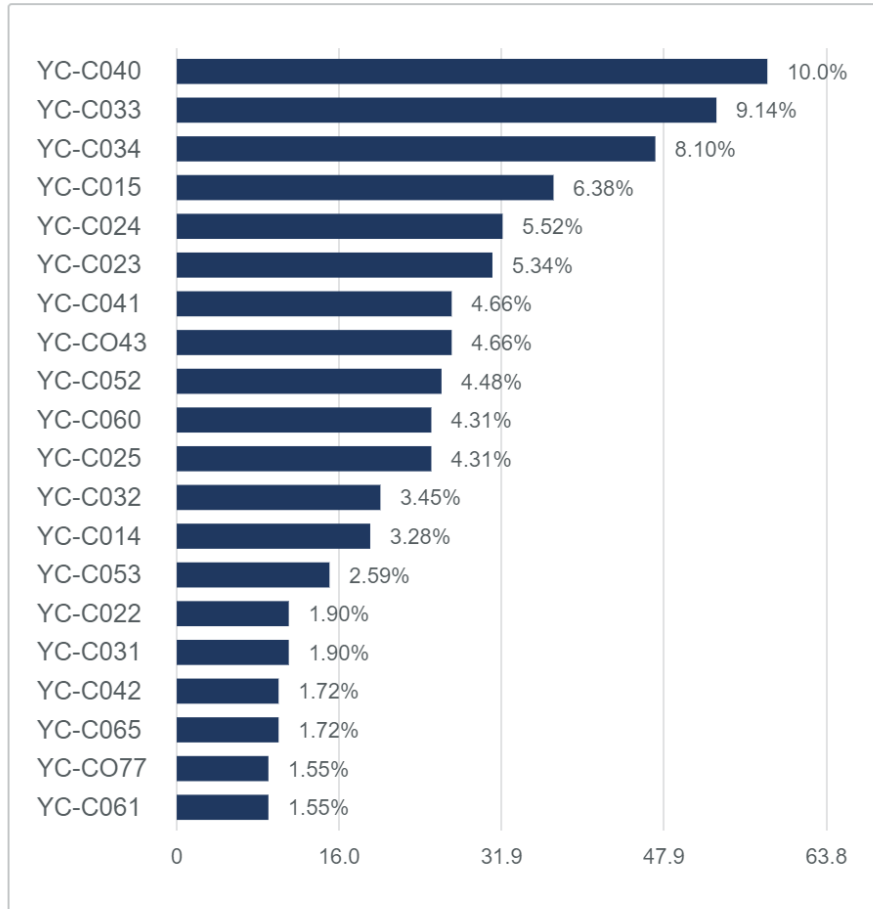
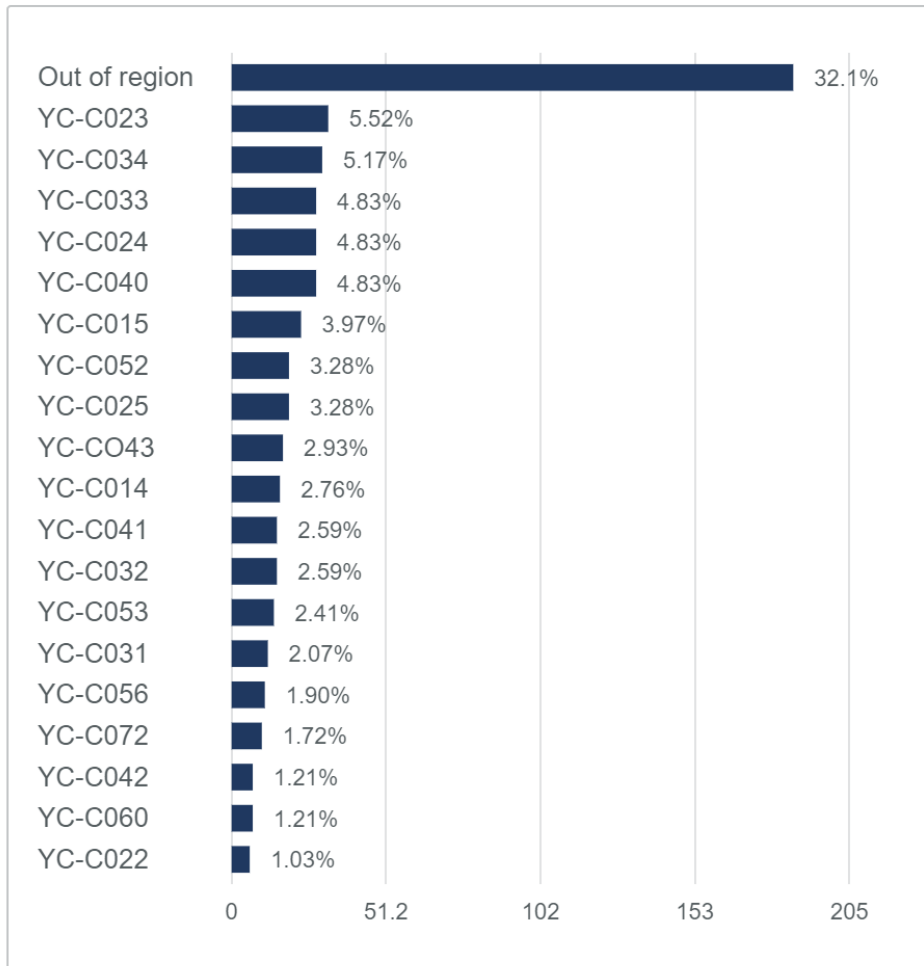
Trip Origin: by **Sutter County Evacuation Zones**

Figure 67. Top 20 destinations for transit riders (in and out of Sutter County)

Trip Destination: **by Sutter County Evacuation Zones**

YOLO COUNTY

Figure 68 shows the Yolo County evacuation zones and labels used in this analysis. Figure 69 is zoomed in on the evacuation zones in City of Woodland, City of Davis, and City of West Sacramento.

Figure 68. Yolo County evacuation zones

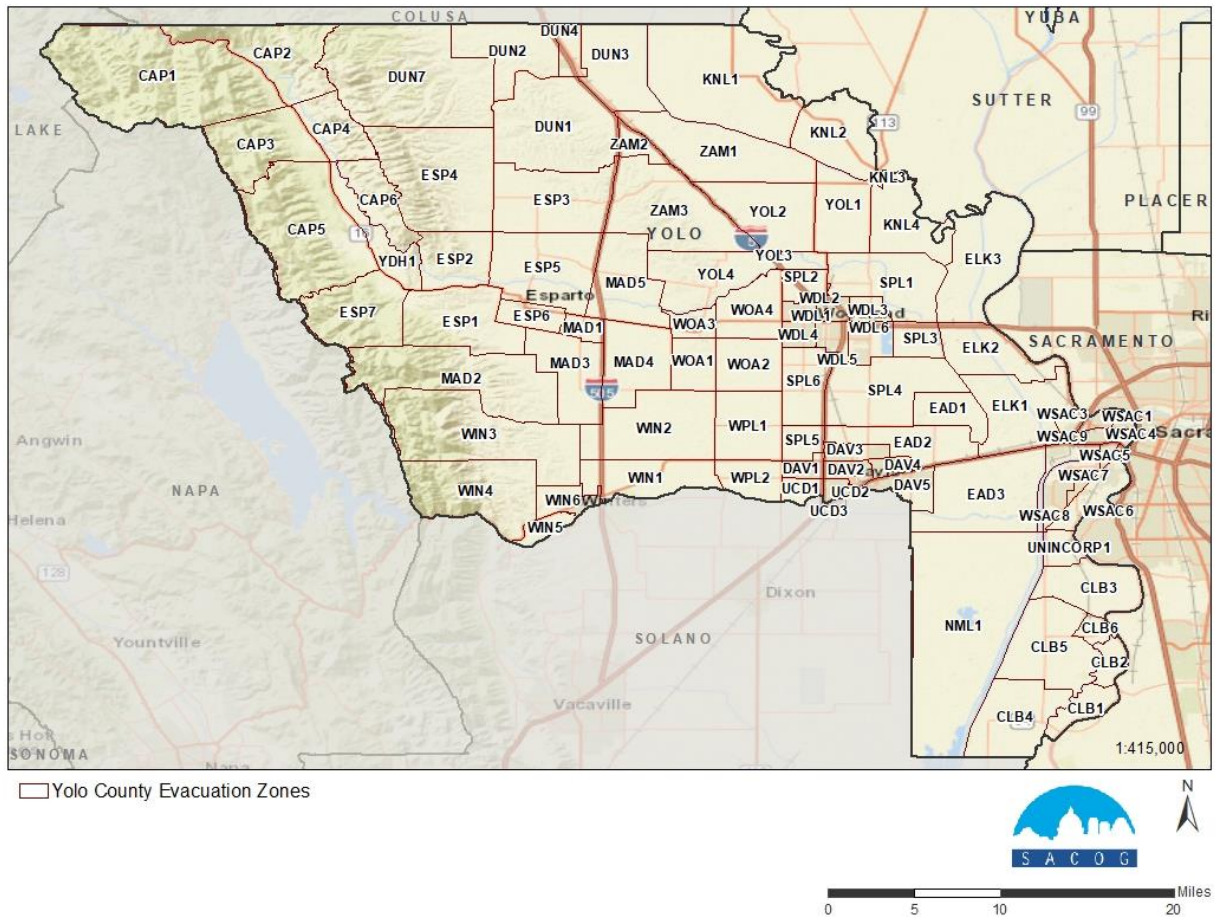
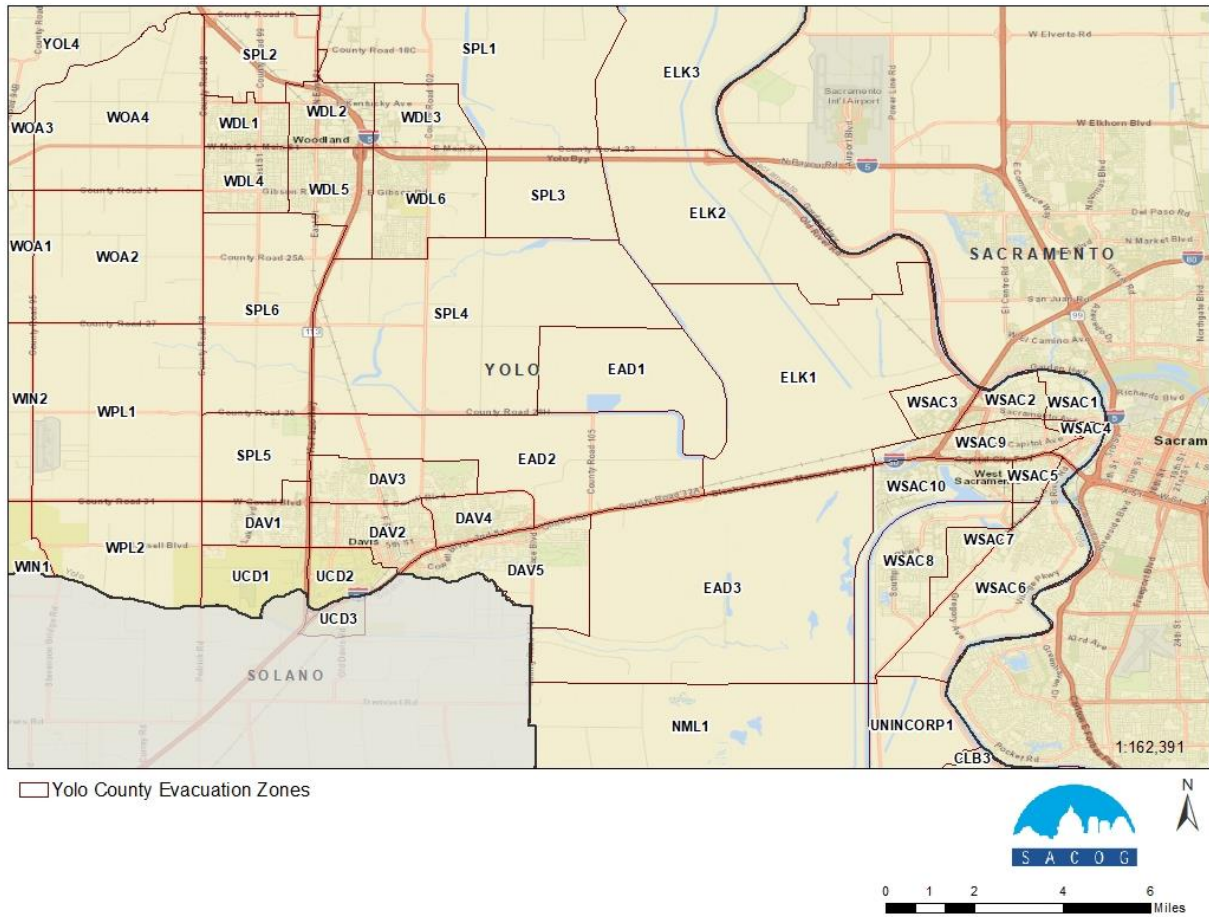
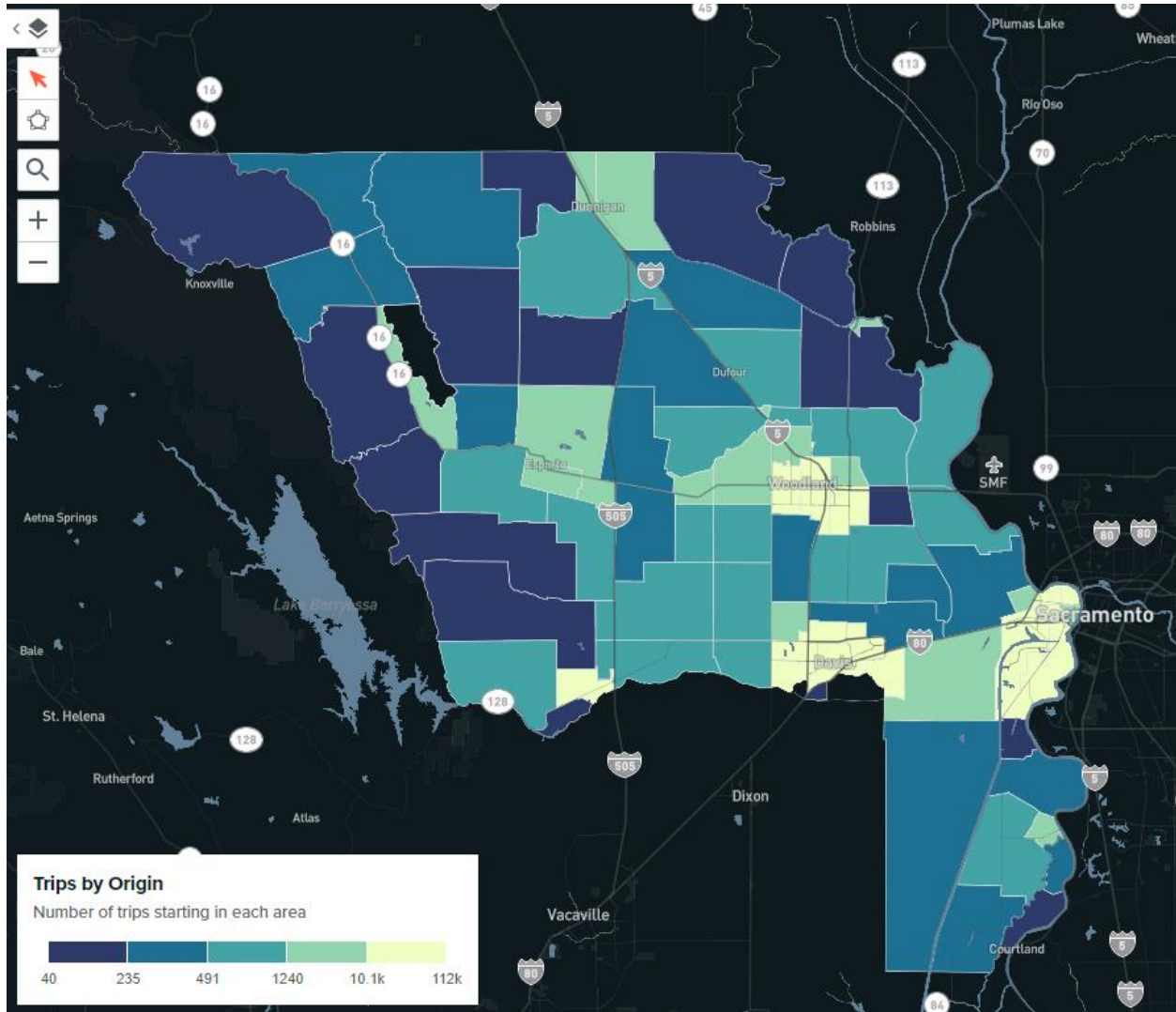


Figure 69. Davis, Woodland, and West Sacramento evacuation zones



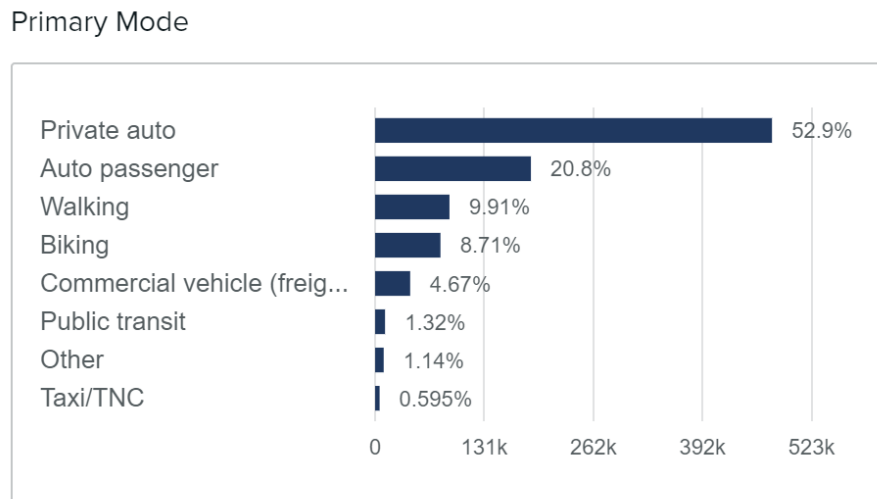
An estimated 899,000 trips are taken by 308,000 people from within Yolo County on a typical weekday. Figure 70 shows the number of daily trips that originate in a Yolo County evacuation zone. The most popular areas of origin include Davis, West Sacramento, Woodland, and Winters.

Figure 70. Daily trips starting in a Yolo County evacuation zone



Most trips originating in Yolo County are taken with a private vehicle, either as a driver or passenger. The next most popular primary modes of transportation are walking, biking, commercial vehicle (e.g., heavy trucks), public transit, other, and taxi/TNC (see Figure 71).⁶³

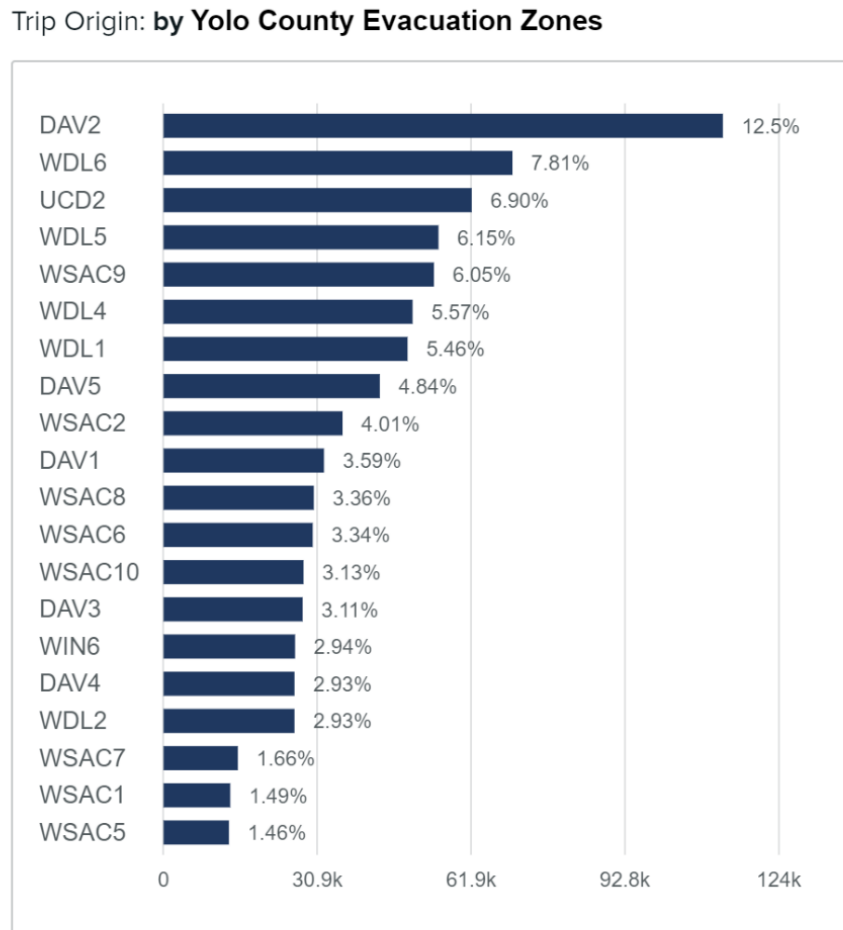
Figure 71. Primary modes of transportation used in Yolo County on a typical weekday



Many trips that start in Yolo County are headed outside of the county (27.5%) and start at one of the top 20 evacuation zones in Figure 72.

⁶³ Many trips use multiple modes, such as walking to a bus stop and then riding the bus. Figures only show the primary mode of each trip.

Figure 72. Top 20 Yolo County evacuation zone origin points



Those that might need evacuation assistance in Yolo County include travelers who do not have access to their own private vehicle and those who carpool, walk, bike, take a taxi/TNC, or ride public transit as their primary mode of transportation. The following sections summarize community characteristics and traveler origin and destination points for those who do not have a private vehicle at home, active transportation users, and transit riders. Those who carpooled or used taxis/TNCs as their primary modes of transportation were not analyzed specifically in this exercise for the following reasons:

- Based on the data from Replica, most of those who carpooled or used taxis/TNCs as primary modes of transportation still had access to one or more vehicles at home.
- These travelers still ultimately chose a car as their primary mode of transportation, whereas bikers, walkers, and transit riders may have fewer options to drive as their evacuation option.

Private Vehicle Access

About 93% of travelers starting in Yolo County have access to one to three vehicles at home and only about 4% do not have a vehicle (Figure 73). Those 11,500 travelers make a total of 34,200 trips in Yolo County on a typical weekday. About 40% of travelers without access to a vehicle are between the ages of 18 and 34, 42% make under \$15,000 a year, and 74% are not in the labor force. These numbers suggest that many of the travelers without a vehicle in Yolo County are students. Others may be retired as about 27% are over the age of 65.

Figure 73. Private vehicle availability in Yolo County

Private Auto Availability

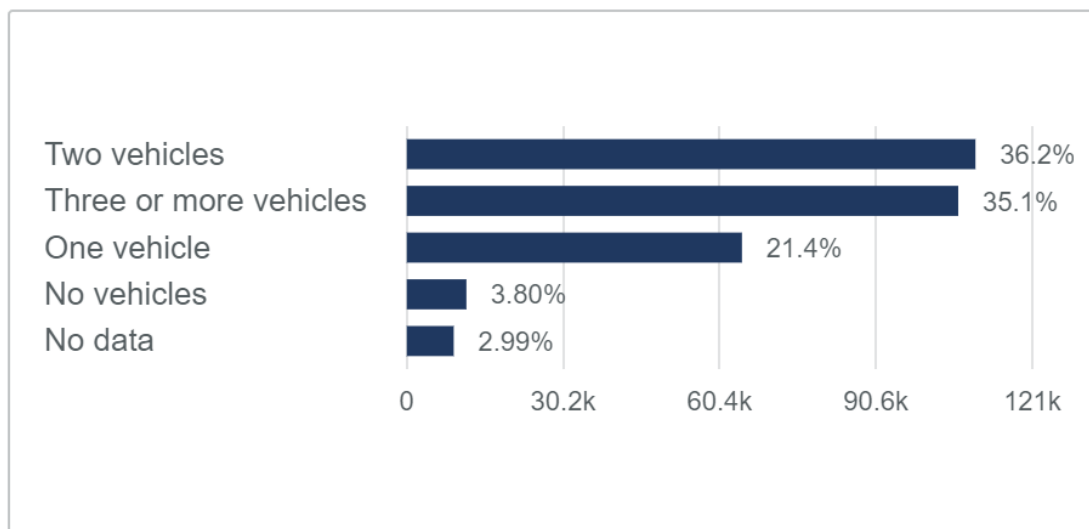


Figure 74 and Figure 75 summarize the Yolo County evacuation zone origin points and traveler destinations for those without a private vehicle. The three most popular starting points are from downtown Davis, the UC Davis campus, and West Sacramento. The most popular destinations are outside of the county, downtown Davis, and the UC Davis campus. The data suggest that many travelers without a private vehicle are traveling around Davis and between UC Davis and the downtown area.

Figure 74. Top 20 evacuation zones of origin in Yolo County for those without a private vehicle

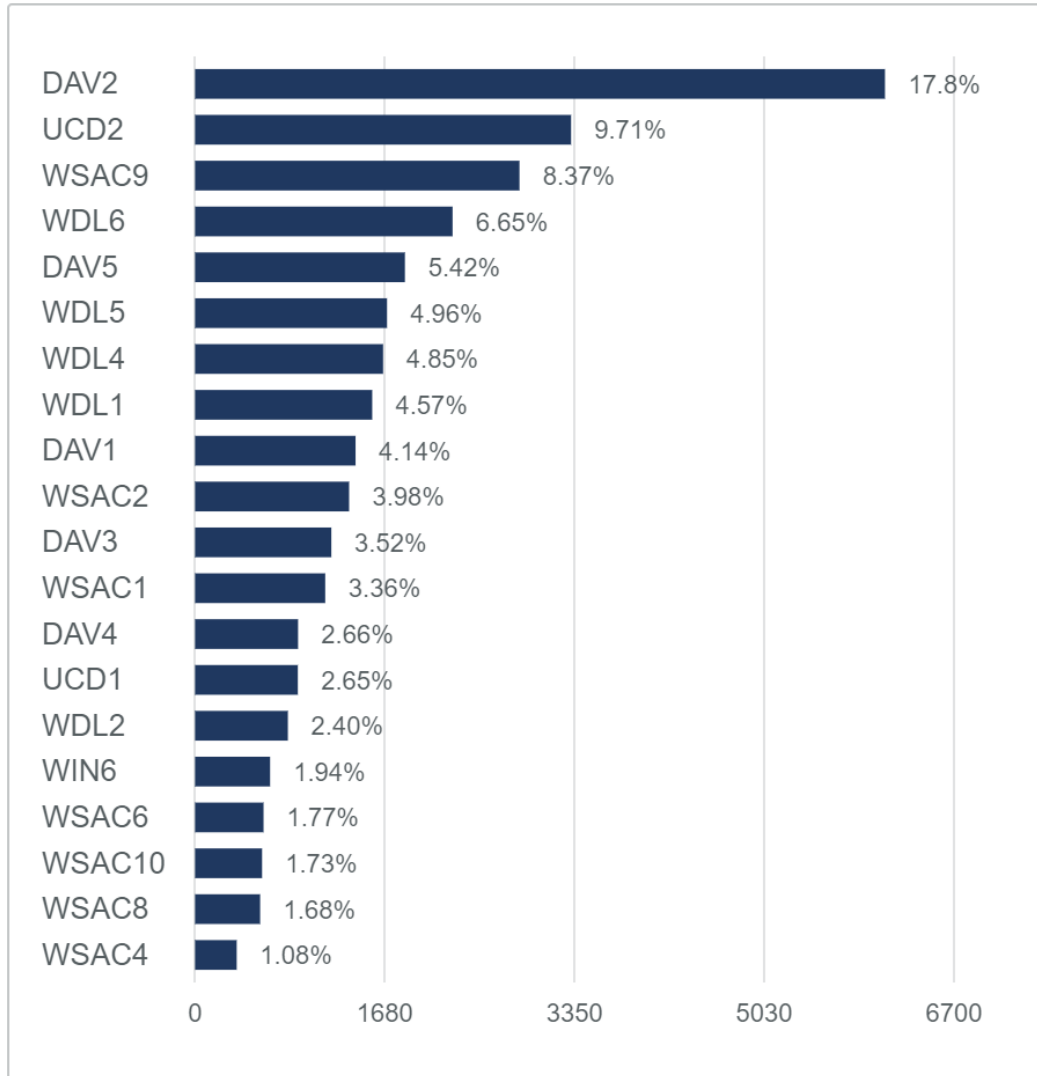
Trip Origin: **by Yolo County Evacuation Zones**

Figure 75. Top 20 destinations for those without a private vehicle (in and out of Yolo County)

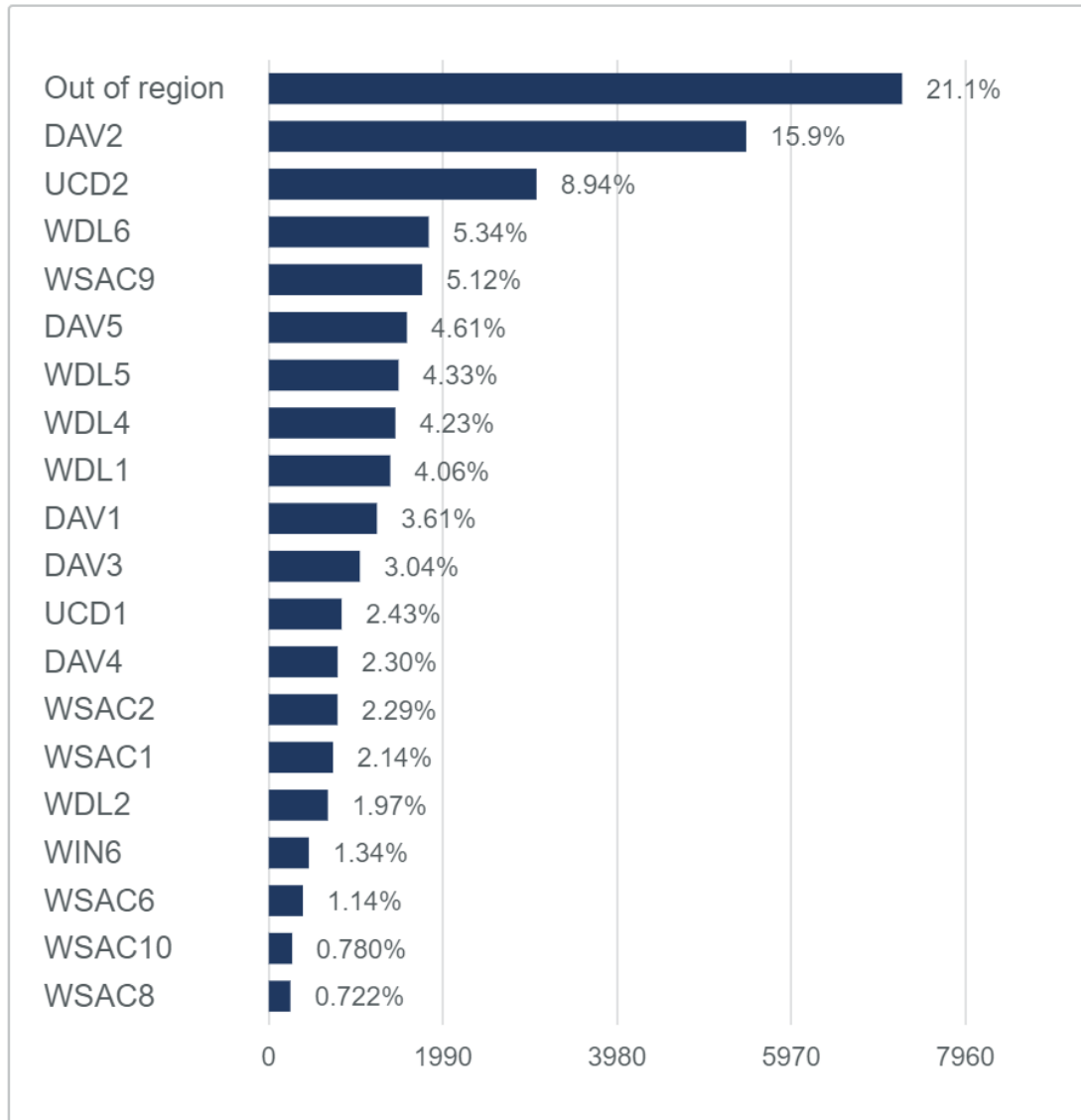
Trip Destination: **by Yolo County Evacuation Zones**

Figure 76. Primary mode of transportation used by those without a private vehicle

Primary Mode

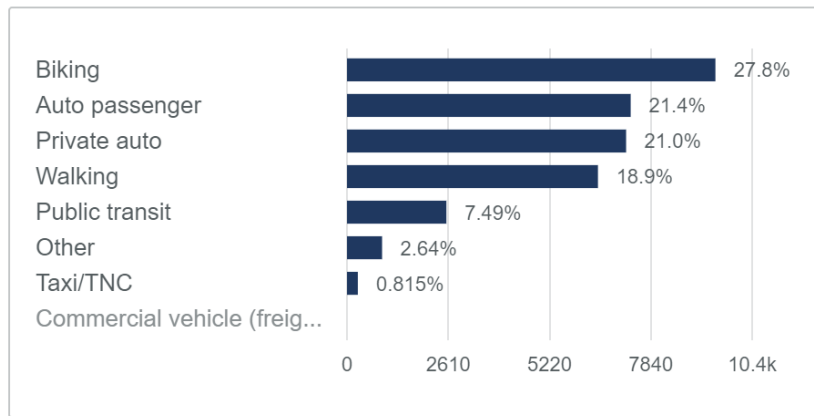
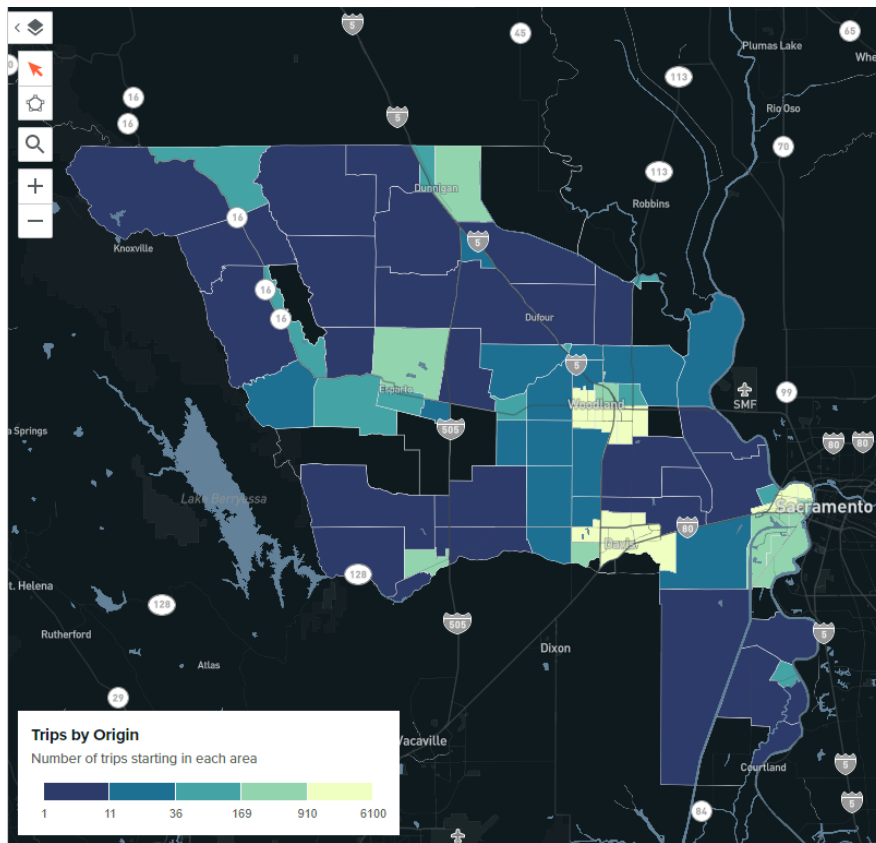


Figure 76 summarizes the primary transportation modes used by travelers without a private vehicle. The most popular form of transportation is biking, followed by carpooling, and driving a different private vehicle (a borrowed or rented car). Figure 77 shows the daily trips by those without a car by Yolo County evacuation zone.

Figure 77. Daily trips taken by those without a vehicle by Yolo County evacuation zone



Active Transportation Users

There are approximately 89,600 travelers who walk or bike as their primary mode of transportation in Yolo County on a typical weekday. Walkers and bikers cover a diverse range of demographics overall, though the greatest proportion are between the ages of 18 and 34. Most of their trips (87%) take five to 20 minutes.

Figure 78 shows the top 20 origin points in Yolo County by evacuation zone for walkers and bikers, and Figure 79 shows their top 20 destinations. Most of the walking and biking trips occur in Davis, Woodland, and West Sacramento (Figure 80).

Figure 78. Top 20 evacuation zones of origin in Yolo County for bikers and walkers

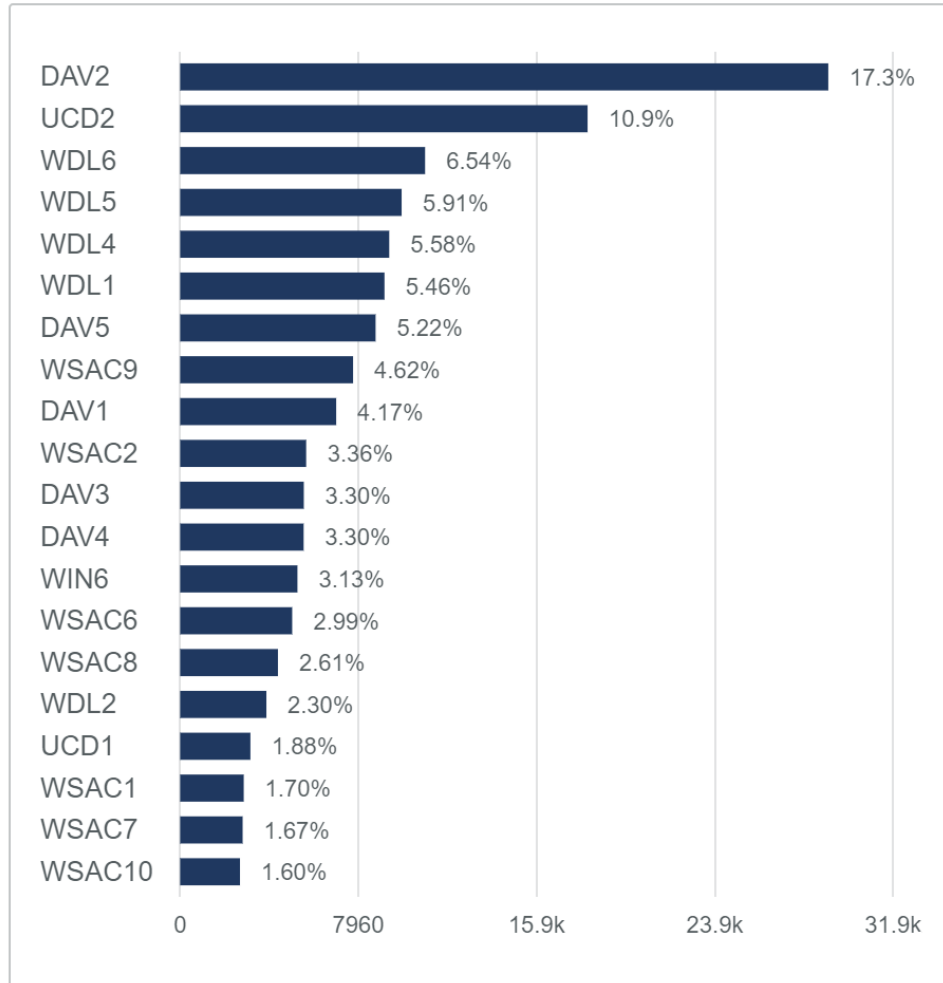
Trip Origin: **by Yolo County Evacuation Zones**

Figure 79. Top 20 destinations for bikers and walkers (in and out of Yolo County)

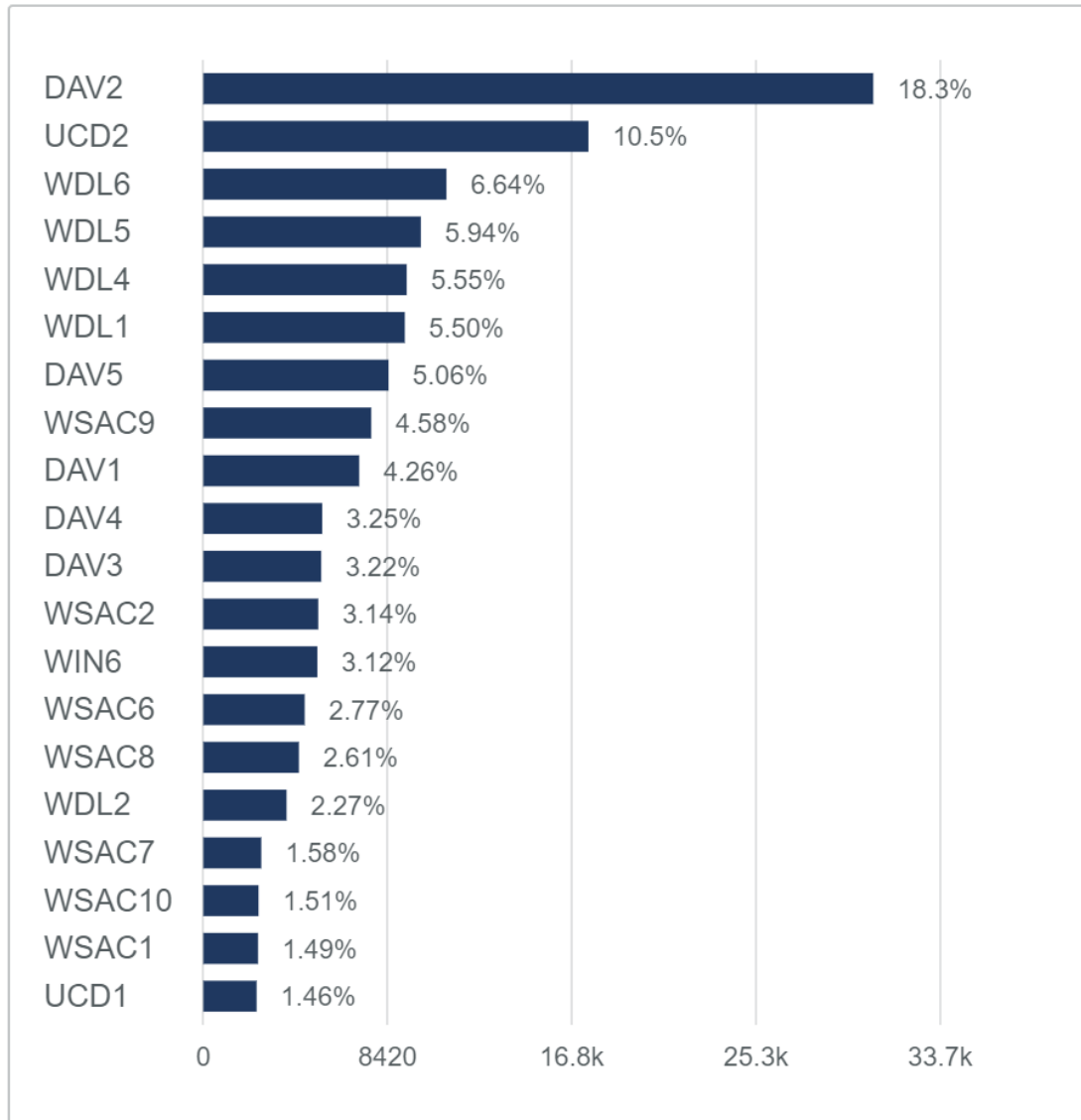
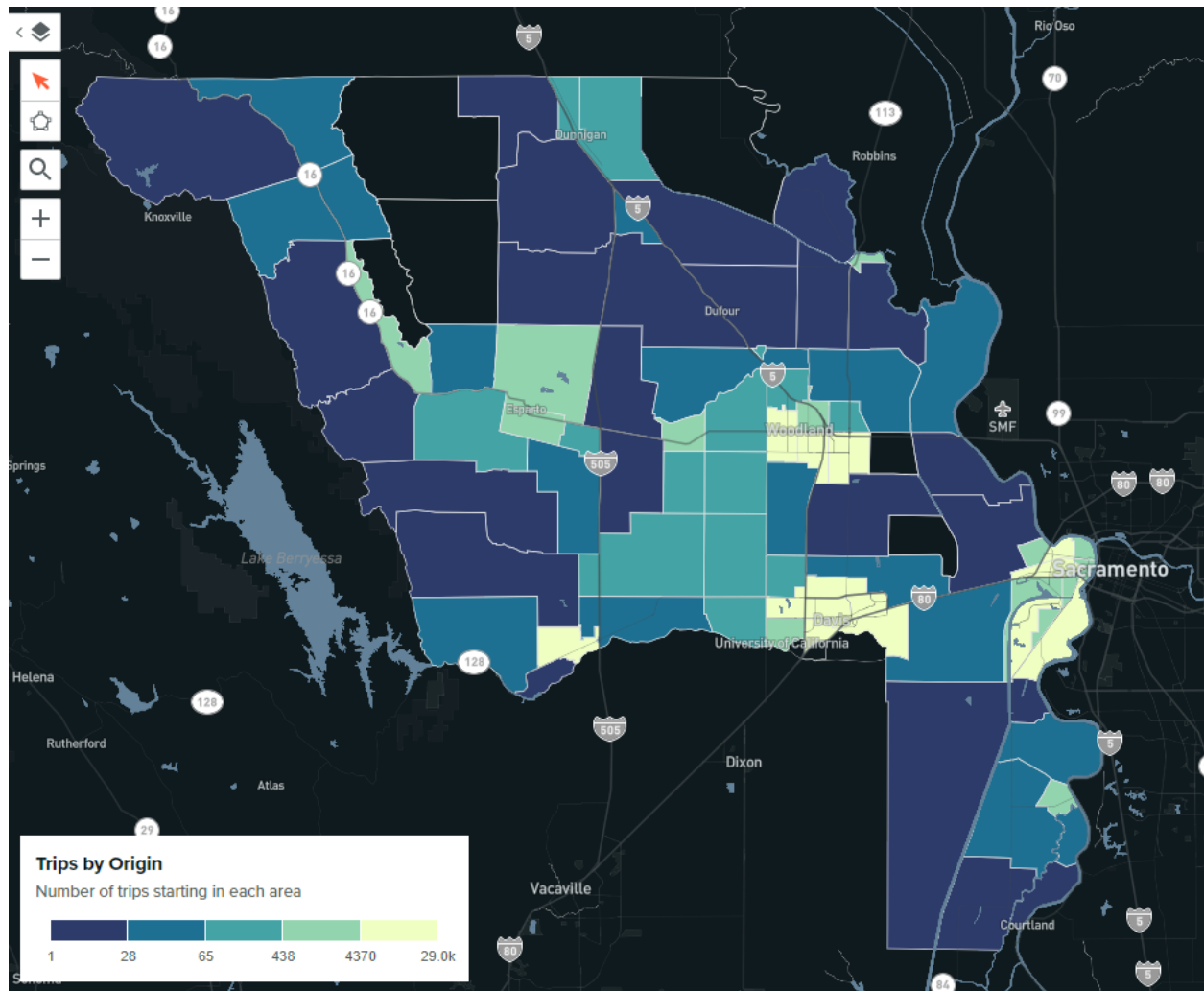
Trip Destination: **by Yolo County Evacuation Zones**

Figure 80. Daily trips taken by walkers and bikers by Yolo County evacuation zone



Public Transit Riders

There are about 8,610 people who use transit as their primary mode of transportation in Yolo County on a typical weekday. Most are between the ages of 18 and 34 (71%) and approximately 24% are above the age of 35. Transit riders are a mix of all races and ethnicities. About 36% make under \$15,000 a year.

Some of the most popular transit routes are Anderson/Alvarado/N Sycamore, Cowell/Lillard/Drummond, West Village, Lake/Arlington, and Davis Perimeter (Counter and Clockwise).

Figure 81 shows the Unitrans weekday bus service in the City of Davis, where most public transit riders begin their trips. Yolobus also operates three Express Routes in Davis: Route 43, which connects central and east Davis and downtown Sacramento, Route 43R, which connects UC Davis and downtown Sacramento, and Route 230, which connects west Davis and downtown Sacramento.

Figure 81. Unitrans weekday bus service in Davis

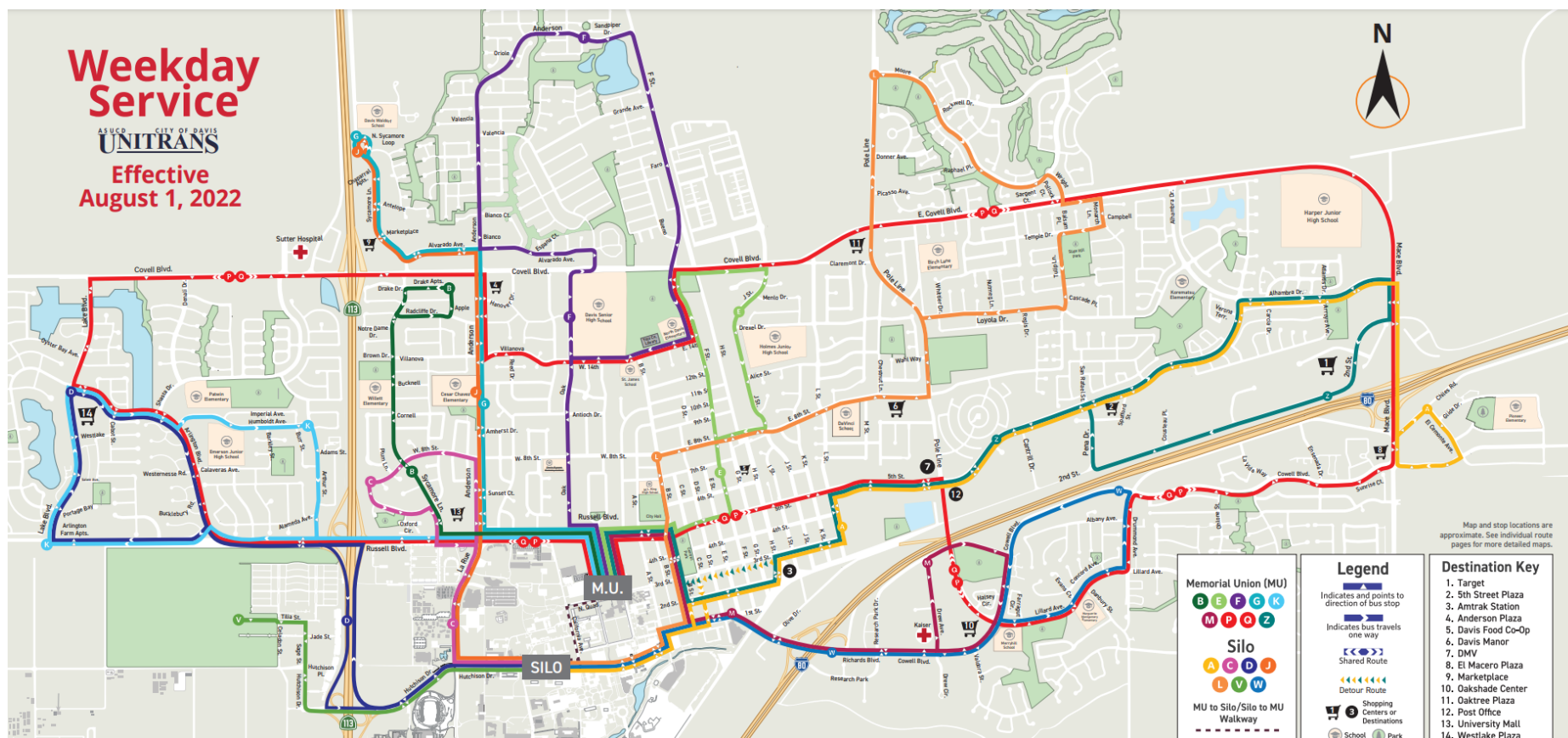


Figure 82 and Figure 83 show the top Yolo County transit stops for boarding and alighting, respectively. All transit stops are serviced by Unitrans buses and Memorial Union is also served by the YoloBus Davis Express Routes 43 and 43R. The two most popular stops, Memorial Union and Silo Terminal, are both on the UC Davis campus.

Figure 82. Number of Yolo County transit stop boardings

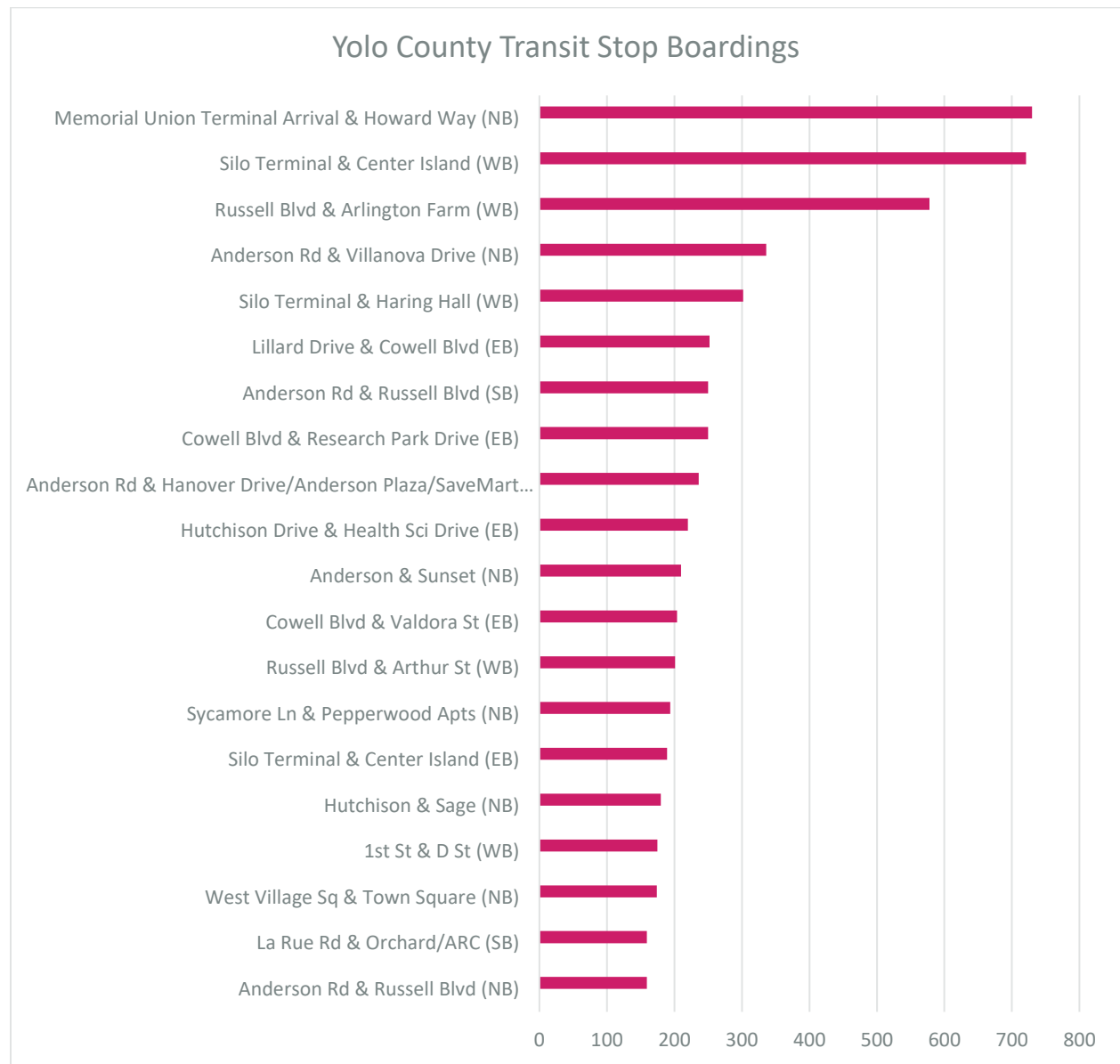


Figure 83. Number of Yolo County transit stop alightings

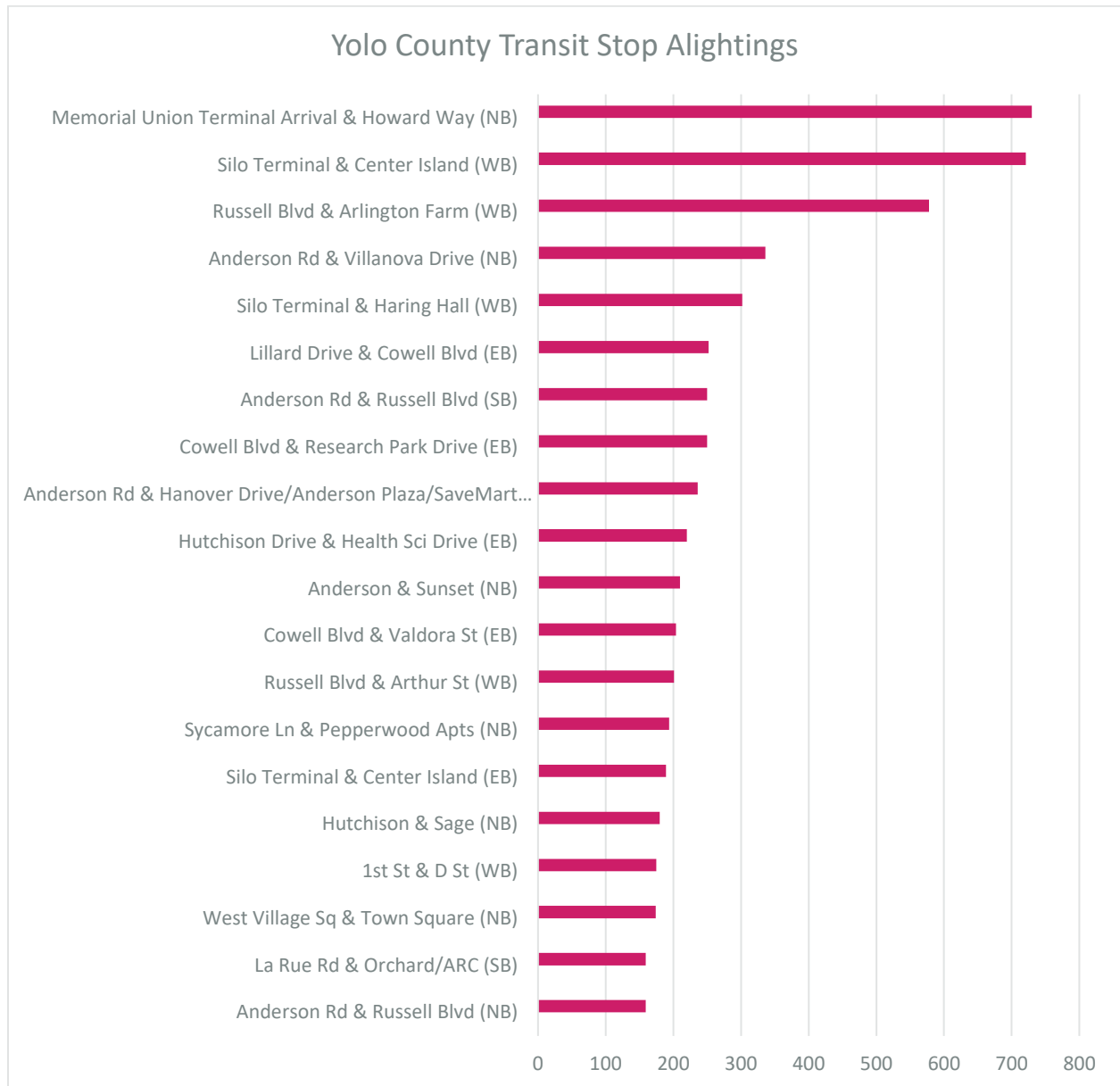


Figure 84Figure 85 shows the daily transit trips taken by evacuation zones across the county, Figure 85Figure 86 and Figure 86 show the top origins and destinations (inside and out of the county) for Yolo transit riders. These figures suggest that many transit riders are moving between areas in Davis (e.g., between UC Davis and town). Other areas where travelers take transit are in West Sacramento, Woodland, and near Capay.

Figure 84. Daily public transit trips by Yolo County evacuation zone

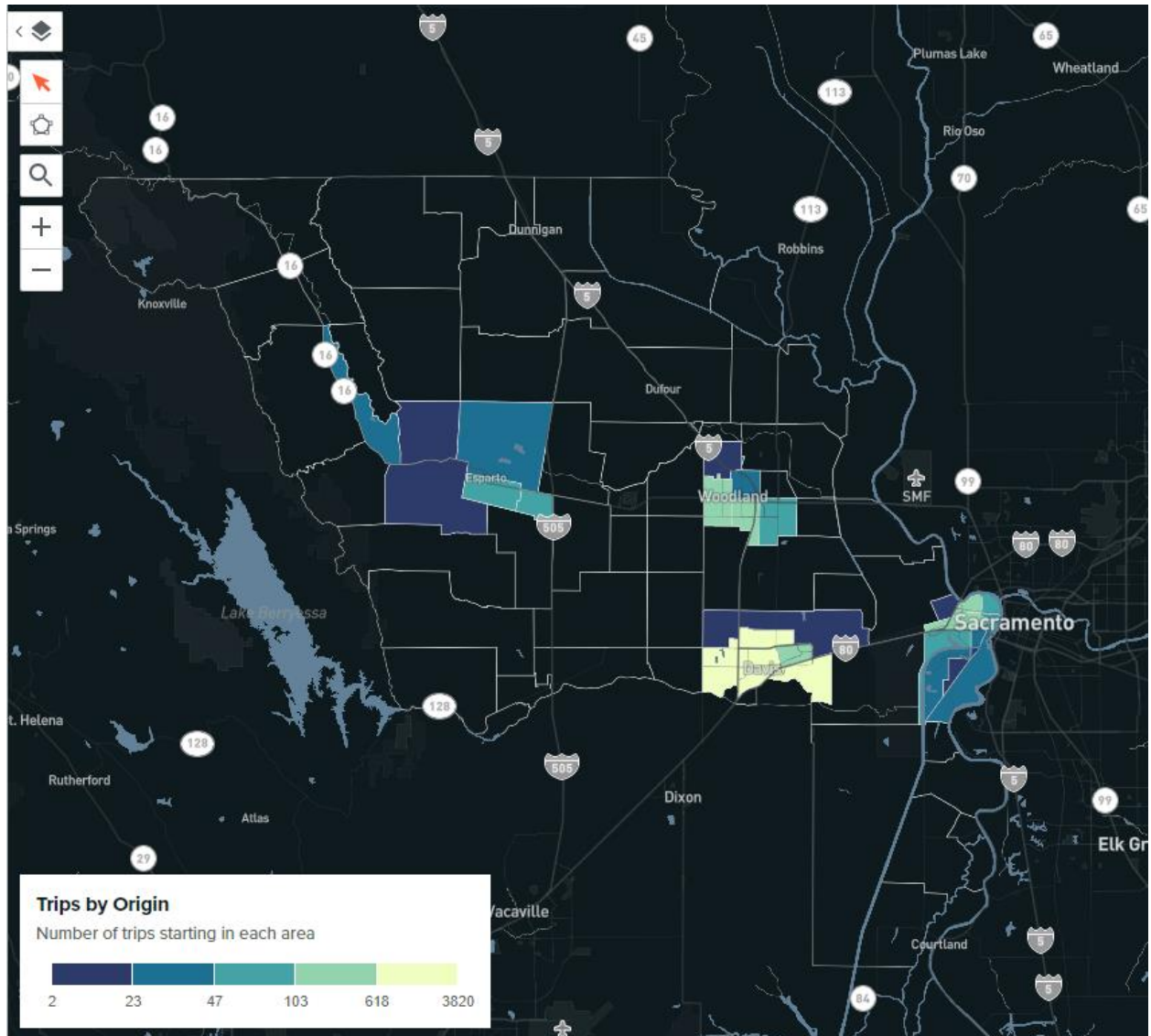


Figure 85. Top 20 evacuation zones of origin in Yolo County for transit riders

Trip Origin: **by Yolo County Evacuation Zones**

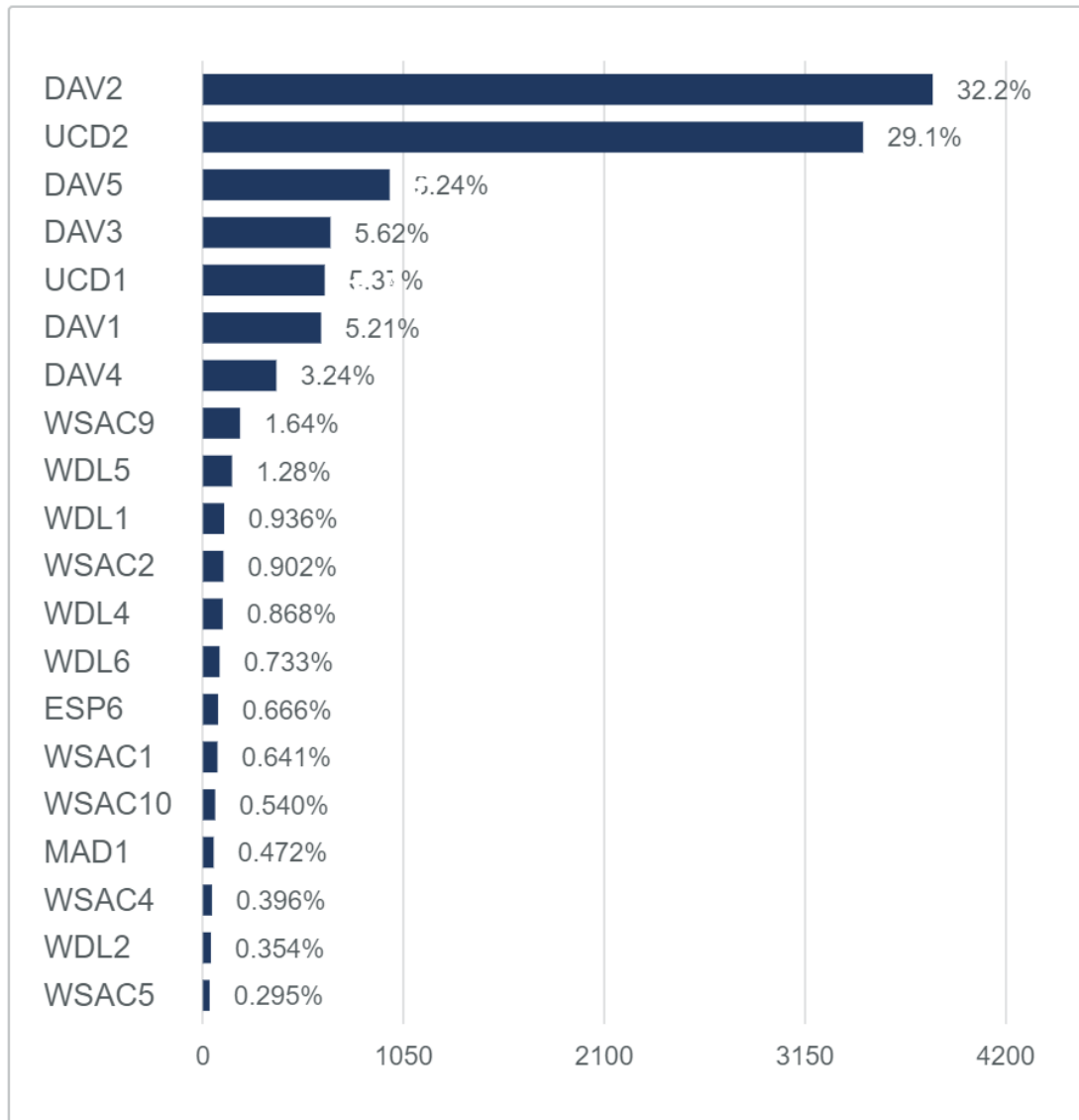
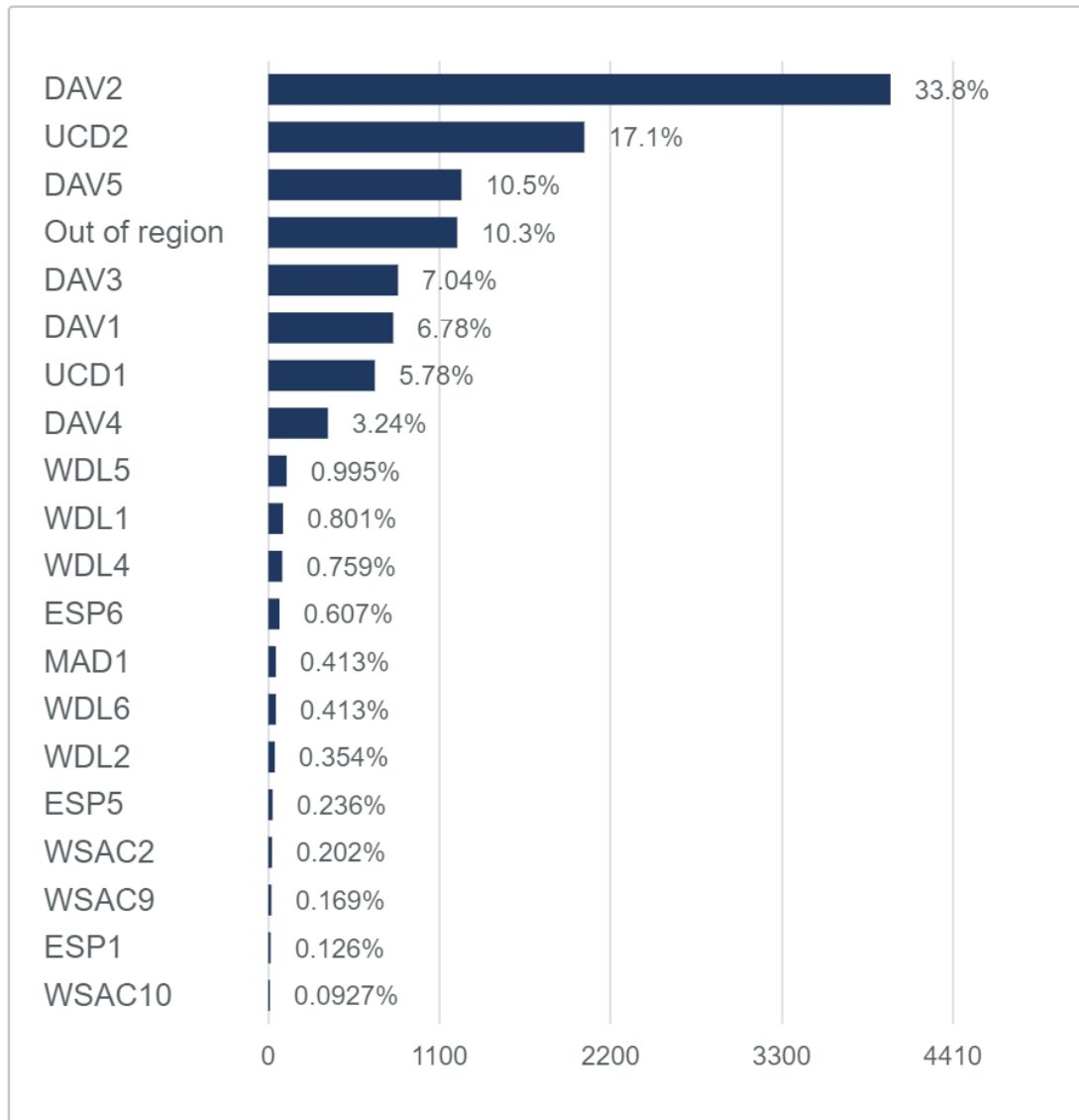


Figure 86. Top 20 destinations for transit riders (in and out of Yolo County)

Trip Destination: **by Yolo County Evacuation Zones**



11.5 Stakeholder Working Group

11.5.1 Meeting Notes

SACRAMENTO REGIONAL EMERGENCY PREPAREDNESS STRATEGY – STAKEHOLDER WORKING GROUP MEETING #1

March 10th, 2022

11 AM – 1 PM Pacific Time

Project Team: Michael Rosson (SACOG), Caroline Payne (SACOG), Tim Grose (WSP), Alex Ubiadas (WSP), Tim Reynolds (WSP), Annika Ragsdale (WSP)

Stakeholder Working Group:

Attendees: Jaime Wright (Placer County transit), Mikki McDaniel (Sacramento County), Jose Perez (YCTD), Adam Hansen (Yuba-Sutter), Dana Carey (Yolo County OES), Isamar Garcia (Placer County OES), Dave Atkinson (Placer County OES), Will Garner (Placer County), Tiffani Fink (Paratransit – TCC Chair), Mary Jo Flynn-Nevins (Sacramento County OES), Gary Cantwell (Yuba County OES), Ed Scofield (City of Roseville), Christine Parker (El Dorado Transit), Jeff Flynn (Unitrans), Brian James (El Dorado Transit), Lindsey Stanley (CAL OES), Mark Sakauye (SacRT)

Declined/did not attend: Mike Dour (City of Roseville), Matt Mauk (El Dorado Transit), Lisa Hinz (SacRT), Carmen Alba (SacRT), Teri Sheets (UC Davis), Autumn Bernstein (Yolo County Transportation District (YCTD)), Keith Martin (Yuba-Sutter), Zachary Hamill (Sutter County OES), Sgt. Leslie Schlag (El Dorado County OES), Dana Ellis (CAL OES)

Notes:

- Welcome and introductions
 - Mike Rosson (SACOG) welcomed the stakeholder working group and explained the background for the project, along with funding sources
- Project purpose:
 - Tim Grose (WSP) provided an overview of the project purpose, which includes the following goals:
 - Establish an emergency preparedness strategy for the SACOG region, with a focus on transit and the transportation system's role in emergency management
 - Identify transit and transportation system opportunities
 - Not to replace existing plans
 - Facilitate interjurisdictional coordination
 - Project schedule:
 - Stakeholder engagement is expected to be ongoing
 - March 2023 end date for final Strategy

-
- Working group involvement:
 - Provide recommendations, input, and feedback on deliverables, especially the draft Strategy
 - Participants: transit operators, SACOG, Cal OES, and county OES partners
 - May open up the working group to more stakeholders later in the process
 - 2-3 working groups throughout the project
 - Will also ask some stakeholders to be a part of short interview calls to ask more direct input
 - Potential strategy outline:
 - Intro and purpose
 - Existing plans and conditions
 - Protecting transportation assets
 - Emergency transportation services
 - Identification of evacuation assistance needs for individuals/communities
 - Identification of role of transit in evacuation
 - Transportation network strategies
 - Evacuation routes
 - Contraflow
 - Transit and Emergency Management Nexus
 - Alex Ubiadas (WSP) gave an overview of the nexus between transit vehicles and emergency management
 - Incidents and events are going to occur
 - Many different hazards present in the SACOG region
 - Changing priorities given global situations
 - Transit is a huge asset in emergency situations
 - By leveraging transit assets, this Strategy can support the whole community
 - Transit is needed for moving larger groups quickly
 - Expertise and capability to move lots of people quickly and efficiently
 - Operators also have institutional knowledge related to the size of buses to use, which roads to use, what are the best routes to take, etc.
 - Localized expertise and assistance to responders
 - Transit agencies also have resources in the form of staff that are available
 - Build resilience in the region by using the resources we have available (transportation and transit)

- Discussion

- Tim Grose (WSP) led a discussion of needs/gaps that can be addressed by the Strategy and information needed from transit agencies.
 - What are the current gaps regarding transit/transportation and emergency management in the region?
 - Dana: Gameplan for procedures on how to integrate the Sac paratransit systems into emergency response
 - ☐ ESF1 spot
 - ☐ Not looking for identification of evacuation routes as this has been done in Yolo. Evacuation zones and ESRI GIS services.
 - ☐ Would like for this Strategy to
 - Mark (SacRT): There's no overall guidance for the transit agencies
 - ☐ If there were an emergency county or region wide, emergency managers will call transit operators for assistance
 - ☐ Need more streamlined approach
 - ☐ Haven't had a meeting amongst all the
 - ☐ No one is using diesel these days
 - ☐ SACOG
 - Mikki (SCT):
 - ☐ Were involved with talks about warming centers in the Sacramento area, moving unhoused people
 - ☐ There isn't an understanding of what they *could* provide
 - ☐ Has a limited amount of vehicle service hours, so have a limited amount of time to move people during an emergency
 - ☐ Information on all the different resources and restrictions from each transit agency
 - ☐ SCT link does not have a voucher system, were asked to collect vouchers for emergencies (outside of their typical practice)
 - Tiffany (Paratransit):
 - ☐ Get called to outside the county a lot (including outside the SACOG region)
 - ☐ SMUD or Pacific Gas and Electric emergencies – gas line breaks
 - ☐ 14 social service agencies
 - ☐ Have a Mobile Incident Command Center – may be the only transit agency
 - SacRT does not have a mobile unit
 - Adam (YST): Sometimes it's hard to find emergency response procedures available publicly
 - Dana [chat]: Yolo also has been requested (several times) outside of the SACOG area (to our western border) so even though this is a SACOG developed plan....it should touch on capabilities outside of the SACOG Region
 - Dana [chat]: There are also more transportation resources that are smaller and can supplement the major providers on this call that we should consider...things like 10 person units controlled by Skilled Nursing Facilities or cities

-
- Dana [chat]: Also should include activation and response times that are achievable. How many hours does it take to stand up any provider.
 - Mary [chat]: Echoing what Dana just said, are there different times to stand up resources nighttime vs. daytime.
 - The slow version of trickle charging will hamper our ability to use buses for long term events.
 - Jose (YCTD): Need a clear chain of command
 - And need to hold regular conversations on this
 - Reimbursement procedures are also unclear
 - Some of these issues are case specific but by setting an overall process
 - Jeff (Unitrans): Chain of command is very important
 - Especially in an incident where multiple
 - Electric buses – how will transitioning fleets affect our ability to help respond to these events
 - Limited ranges
 - Recharge time
 - Diesel buses ca
 - Mary Jo [chat]: Thank you for mentioning the limitation of electric fleets!
 - Adam (YST): Unfair expectations
 - Often don't have timetables or information on logistics
 - Need to make capabilities of transit agencies much more clear
 - Dana: Also need to make it clear to the public what we can and cannot do in an emergency
 - The public sometimes gets the understanding that there will be someone picking them up at their doorstep
 - Mary: Nighttime vs daytime resources
 - At nighttime it will take much more effort to organize staff and vehicles
 - Tiffani: Range and evacuation issues for electric vehicles, testified at CARB
 - Exempted Cutaways due to limitations in range
 - Dana [chat]: Processes to trade vehicles and drivers (who can drive another agencies buses)....animal transportation on bus resources....AFN transportation that isn't truly needing Paratransit.
 - Contract considerations for those companies that have private contracts for drivers
 - Communications and real-time tracking of resources
 - Mary (SacOES): Echoes what Dana put in the chat.
 - Flooding is one of the primary concerns in the SACOG region, need to identify heights of vehicles and what levels of flood water they could go through
 - Any important lessons learned from recent events to note?
 - Dana: Include bus type specifications in actual evacuation needs (vans, buses – kneeling or not, etc.)

-
- ☐ Need to be speaking the same language
 - Mark: Need to know how many people to move and then where to take them
 - ☐ SacRT will then identify the assets available
 - ☐ Moving gurneys is specifically a fire function
 - ☐ Transit agencies only do
 - ☐ Moving animals is a concern and SacRT has stated only service animals
 - People get really upset about that
 - ☐ Dana [chat]: Fire doesn't do transport in Yolo at all...Sac City Fire does (so highlight differences in the SACOG area)
 - Mike: What are the policies/challenges related to animal evacuation?
 - ☐ Had the policy that only service animals are allowed
 - ☐ But in Oroville Dam evacuation, OES decided to allow other pets onboard
 - ☐ Mary: If animals are in a crate, then we should consider being open to it
 - ☐ Dana [chat]: Public Utilities Code 99166 no allows more animals that just service animals on transit resources
 - ☐ Dana: Yolo OES has seen people leaving with animals wrapped in blankets, so when these events happen quickly sometimes there are no other options
 - ☐ Lindsey: Dept of Food and Ag, Sb 397 Cal OES must develop best practices for emergencies, including how pets can be evacuated
 - ☐ Lindsey [chat]: Senate Bill 397 - CDFA and Cal OES best practices for use of public transportation for people with pets.
 - Dana: Should also consider
 - ☐ Buses from health facilities – have seen buses with medical equipment brought onboard in the cargo hold
 - Brian: Being notified ahead of time in case of an emergency is really helpful
 - ☐ Cited an example of where this was done
 - Polling questions:
 - Which emergency response plans do you follow?
 - Polling results:
 - Dana Carey (Yolo OES): EOP, ESF1 Annex, State Plans (list is really long)
 - Dave Atkinson (Placer County OES): Adopted county EOP & hazard annexes
 - Jeff Flynn (Unitrans) (he/him): City and University
 - Brian James: El Dorado County OES Plan
 - Christine Parker: We have an internal emergency plan, but as for an external plan, direction usually comes from local OES which is informal.
 - Will Garner (Placer County): We follow the lead of our OES
 - Adam Hansen (Yuba-Sutter Transit): Those of the local cities and counties.
 - M Sakauye: Internal agency plans, Sac City, & Sac County
 - Jose Perez: Yolo County Emergency Plan, YCTD System Safety Program Plan, YCTD PTASPs

-
- Tiffani Fink: Our agency has our own emergency response plan and has MOU's with City of Sac, County of Sac and Cal OES. We also participate in the regular roundtables and exercises coordinated by the County
 - Yolo County: <https://www.yolocounty.org/government/general-government-departments/office-of-emergency-services/reports-and-publications>
 - Cal OES: <https://www.CalOES.ca.gov/cal-oes-divisions/planning-preparedness/plans-publications>
 - Which MOUs do you have in place?
 - Polling results:
 - Dana Carey (Yolo OES): City of Davis with Unitrans, Yolo County with Yolo bus, both companies partner with each other and Sac Paratransit. EMS Agency also uses Paratransit have several MOUs for smaller resources too.
 - Dave Atkinson: Use of Placer County Transit and their contractors
 - Jeff Flynn# Unitrans (he/him): None
 - Brian James: El Dorado County, City of Placerville.
 - Will Garner (Placer County): Not aware of any MOUs
 - Adam Hansen (Yuba-Sutter Transit): We serve 4 agencies and are committed to helping any in need. We do not have any MOUs. Requests for service must go through the jurisdictions Emergency Management Officer.
 - Mark Sakauye: We have MOUs with Sac city, Sac county, Yolo county and the city of Elk Grove
 - Jose Perez: MOU w/SacRT on shared equipment and operators, Coordinate with Yolo OES and the EOC
 - Lindsey Stanley (Cal OES): No MOUs that I am aware of, but we have the State Emergency Plan ESF 1 - Transportation Annex; lead agency is the State Transportation Agency Sacramento County:
<https://sacoes.sacounty.gov/EmergencyManagement/Pages/Planning.aspx>
 - Mary Jo: MOUs with Sac RT and Paratransit
 - Dana [chat]: Character limit in poll is too small for answers (FYI)...happy to chat in email after mtg anytime
 - Tim G asked if Dana could provide over email
 - Mark: SacRT has multiple MOUs. He is the only one to have read emergency plans for multiple jurisdictions. SacRT works with many other jurisdictions so he needs to know what their rules are.
 - It's a gap that others don't understand rules outside of their own jurisdiction
 - Do you have MOUs with neighboring partners (e.g., between counties)?
 - Polling results:
 - Yes (5/11) (45%)

-
- No (4/11) (36%)
 - Breakdown of responses:
 - ☐ Dana Carey-Yolo OES: Yes
 - ☐ Dave Atkinson: Yes
 - ☐ Jeff Flynn (Unitrans) (he/him): No
 - ☐ Brian James: No
 - ☐ Will Garner (Placer County): No
 - ☐ Adam Hansen (Yuba-Sutter Transit): No
 - ☐ Mary Jo Flynn Nevins (SacOES): Yes
 - ☐ Mark Sakauye: Yes
 - ☐ Jose Perez: Yes
 - ☐ Lindsey Stanley (Cal OES): N/A
 - Mary Jo [chat]: Sac OES has an MOU with Placer Emergency management that functions like the Emergency Management Mutual Aid system.
 - Placer, Yolo and Sacramento Counties share an MOU system for alert notification.
 - Dana [chat]: We should look at transit companies that may have too many MOU's for the resources they have. Can't serve everyone at the same time.
 - Would it be beneficial for SACOG to be a part of regional MOUs?
 - Polling results:
 - Yes (3/9) (33%)
 - No (1/9) 11%
 - Not sure (5/9) (56%)
 - Breakdown of responses:
 - ☐ Dana Carey (Yolo OES): Not sure
 - ☐ Dave Atkinson: Not sure
 - ☐ Jeff Flynn (Unitrans) (he/him): Yes
 - ☐ Christine Parker : Yes
 - ☐ Will Garner (Placer County): No
 - ☐ Adam Hansen (Yuba-Sutter Transit): Not sure
 - ☐ Mary Jo Flynn Nevins (SacOES): Not sure
 - ☐ Mark Sakauye: Yes
 - ☐ Lindsey Stanley (Cal OES): Not sure
 - Mike: Would it be beneficial for SACOG to be a central point of communication?
 - Dana: Does SACOG have emergency response experience? Would SACOG be proposing to be involved in this space?
 - ☐ Mike: Noted he does have experience. SACOG has also been involved with coordinating responders for that evacuation.
 - ☐ Dana: So this would be more for a longer time frame evacuation? Not a short-term response.

-
- ☐ Mike: Correct. SACOG would have the correct resources to help with coordination for a long-term response and could assist with making contacts (e.g., FEMA), doing paperwork, helping with resident communication, and moving back home.
 - Mark: Many folks don't understand emergency management practices in California. SACOG could be involved with bringing stakeholders together and helping with emergency management understanding. SACOG is a perfect leader for education and set up.
 - Mary Jo: Need to be aware of not duplicating efforts. Agreed that the best role for SACOG is to bring together stakeholders and host these discussions
 - Lindsey: This effort should involve someone from the state level (ESF1, state logistics department). Lindsey oversees regional level at Cal OES.
 - ☐ Opportunity to also socialize what's going on in the SACOG region at the state level
 - Dana [chat]: There are also plans at Cal OES that indicate that they may try to force large scale evacuations that include counties outside of the SACOG area.
 - ☐ Dana: Noted that this would require evacuation in areas larger than currently (larger buffer areas)
 - So some people may be asked to evacuate when they normally wouldn't
 - Jeff Flynn: MTC handles mutual aid agreements for all the transit operators in the region
 - ☐ MTC does not do the emergency response, but can set up a JIC
 - ☐ MTC could be a great case study for the region
 - For transit operators, do you have a Public Transportation Agency Safety Plan (PTASP) and is it up to date?
 - Polling results:
 - Yes (7/11) 64%
 - No (0/11) 0%
 - N/A (4/11) 36%
 - Breakdown of responses:
 - ☐ Dana Carey (Yolo OES): N/A
 - ☐ Dave Atkinson: N/A
 - ☐ Jeff Flynn (Unitrans) (he/him): Yes
 - ☐ Brian James: Yes
 - ☐ Christine Parker: Yes
 - ☐ Adam Hansen (Yuba-Sutter Transit): Yes
 - ☐ Mark Sakauye: Yes
 - ☐ Jaime Wright (Placer County): Yes
 - ☐ Jose Perez: Yes
 - ☐ Lindsey Stanley (Cal OES): N/A
 - Mike: Shared that local PTASP plans are now required and must be provided to local MPO (SACOG). Requirement by December.
 - 2023 will be part of tri annual review. Will be asking for a copy of PTASP.

-
- Discussion:
 - Tim Grose (WSP) led a final discussion regarding more specific questions for the transit operators and OES, related to training, communications, and transportation resources.
 - What emergency mgmt. training does your agency follow?
 - What emergency drills does your agency do? How frequently? What, if any, other agencies are involved?
 - Mary Jo: Drills is a specific term used related to moving
 - Mark: Full size exercise program. Have received millions of dollars from Dept of Homeland Security. When they reach out, they get full participation (SWAT, FBI).
 - ☐ Provide training to emergency responders on SacRT
 - ☐ Training on NIMs and ICS
 - ☐ Have regional radio system
 - ☐ Emergency call up list
 - ☐ Transit operators are able to decline responding to emergencies (not emergency first responders)
 - ☐ Mark is happy to provide more information
 - ☐ Do one full scale exercise every year – it takes a lot of work
 - ☐ Emergency mgmt. training about 4 times a year, it depends on who wants it
 - Dana [chat]: Another point that comes to mind about communications....there are radio channels used on frequencies that aren't programmed into day-to-day radio systems.
 - Mike: Do you do training with the airport? Airport triage?
 - ☐ Mark: Have four TSA people that he interfaces with on a regular basis. Have a lot of contact with TSA and Homeland Security but have not done evacuation exercises
 - ☐ Jose: Have not have an exercise at the airport but are also in constant communication
 - ☐ Dana: Airport staff have come to EOC training meetings. Working on a project to video tape buses so they can share more information on the existing resources.
 - Lindsey [chat]: Cal OES typically exercises state-level plans; however, they are looking to build out more regional exercises based off of regional needs (all depends on funding and priority)
 - Adam (YST): No
 - Jeff (Unitrans): No
 - What platforms/practices do you use for interagency coordination?
 - GIS
 - AVLlocators
 - Dana: School buses use UHF for radio bands
 - ☐ 800 MH, UHF, and one other
 - ☐ As part of pre-work, need to understand the different frequencies and their inconsistencies
 - Brian: Sheriff's Department knows the radio frequencies being used by buses

-
- What platforms/practices do you use for communication with the public?
 - Mark: website that is updated, app, text, changeable electronic sign boards, A-frame signs, will send individuals to key places to relay the message
 - Brian: Distribution lists for emails
 - Jose: Social Media, Email databases, Website
 - Dana: All platforms that Yolo uses to communicate with the public -
<https://www.yolocounty.org/home/showpublisheddocument/54357/636722797868500000>
 - Mary Jo [chat]: During an emergency we would establish a JIC and invite public information officers to share messaging
 - Further, we have a joint alert system with the counties of Sac, Yolo, and Placer
 - How do you interact with medical facilities in preparation for/during emergency situations?
 - Mark: We are not EMS or fire rescue. It would be an extreme situation that SacRT would need to move people in medical facilities (they are not trained in moving anyone)
 - Mary [chat]: Transportation for medical facilities is coordinated through the MHOAC
 - I could see transit being used for walking wounded - similar to the Route 91 active shooter.
 - Dana: Need to become familiar with requirements
 - ESF8 does not want to have to move otherwise will need to become re-certified
 - Yolo Fire does not transport, EOA American Medical Response
 - Yolo can be fined if anyone other than American Medical Response does this
 - Mark: Agrees this is very complicated
 - Mike: Other centers could include dialysis centers
 - Dana: Still in the medical system
 - Smaller transit operations are needed to get someone to an appointment. Could use Lyft/Uber, medical facility rides
 - Can you identify groups and locations of people that may require evacuation assistance using transit assets?
 - Mary Jo: Zone based evacuation planning, have census demographic data for each of the zones
 - It would be useful to overlay existing ridership. Identify if we need to focus on any particular zones
 - Not sure this data exists currently
 - Mark: Seconds this. SacRT has the ridership data
 - Dana: Have been approached about creating a registry. Push back because don't want to set up an expectation that this is feasible without being absolutely certain
 - Yolo also has zone-based evacuation planning

-
- ☐ The staff servicing those zones will have an understanding of the demographics, but have not gone as far as asking people for individual needs
 - Mark: A key consideration for SacRT is time of day – are kids in school? If so, picking up the kids are priority.
 - ☐ Typically 80% can self-evacuate
 - ☐ Try to identify the 10% who absolutely can't move themselves
 - This also depends on the time of day
 - Many variables go into this
 - Can you identify vehicles that would be available during an emergency?
 - Mark: It depends on time of day and day of week. End of the day is going to be more challenging because they must fuel up. The operator is the scarcest/most costly resource. Can pull staff who are not typically drivers, but have a commercial license (e.g., mechanics).
 - Jose: Do have a contingency fleet available for emergencies, based in West Sacramento.
 - ☐ Similar constraints – availability of operators.
 - Have there been any additions to your fleet since your TAM plan?
 - No, all stated their plans were up-to-date or were being updated. Adam said he was updating their TAM right now.
 - Do you have an on-call list of drivers who will be available in case of an emergency? How often is that updated?
 - Mark: Every year in a police department, all staff are put on a list and are pre-designated an assignment in case of an emergency. This doesn't exist for transit operators.
 - ☐ Ask operators if they're willing to respond in an emergency and reach out to them as needed.
 - Jose:
 - ☐ As vehicles are transitioned, they can move to contingency fleet.
 - ☐ Employees are on-call as part of EOC in Yolo. YCTD and contractor staff.
 - Brian: In dispatch, list which vehicles are available and being used.
 - ☐ Haven't been updates to TAM plan
 - ☐ On-call staff list is updated every couple months
 - Adam: List of vehicles with seating capacities, fuel capacities
 - ☐ Have a list of operators which is updated
 - Jeff: Typically, you have extra board available to draw upon
 - ☐ There's fleet available
 - ☐ TAM is updated annually
 - ☐ Priority is the main need – all these transit agencies have these resources, but the main issue is prioritization of assets and staff
 - Can you provide information on evacuation routes and zones?

-
- Mark: Yes, have flood mapping (showing where waters would go in case of levee failure)
 - Mary Jo [chat]: The link I provided to our plans earlier links to our evacuation plan
 - Mary Jo: GEI has provided flood mapping in the Delta
 - Dana [chat]:
<https://yolo.maps.arcgis.com/apps/webappviewer/index.html?id=5458e2e8c8c54e19923da248ac3add0c/>
 - The routes are on a separate services at the moment....but will be combined with this app in the near future (along with Rally points, gas stations, etc.)
 - Existing practices and recommendations for transportation strategies such as contra flow, evacuation routes?
 - Mary Jo: For some locations, traffic is predictable (e.g., in DC) but here this behavioral pattern is not established. Emergency vehicles need to go back and forth. There are many two or single lane roadways within the region.
 - ☐ It should be considered, but it encompasses a huge behavioral change. Only possible after phased implementation
 - ☐ Be forward thinking. Need to also consider role of electric buses and autonomous vehicles – right now they are on fixed routes, which could be used.
 - Mark: Agreed on contraflow. CHP and law enforcement would be needed.
 - ☐ Contraflow is very expensive on a freeway and may even be more dangerous
 - ☐ Light-rail stations are staging areas
 - Dana: The routes are on a separate services at the moment.... but will be combined with this app in the near future (along with Rally points, gas stations, etc.)
 - ☐ Special Events are a huge challenge in predicting flow of any kind....example.... a big event at Golden One Center on a Friday during the exit commute from the Bay Area along I-80 stops a lot of Sac freeways.
 - Next steps:
 - Please share documentation requested in initial email if you haven't already
 - We will likely follow up soon with phone calls with individual agencies
 - Will hold another working group meeting later this year
 - Mike and Tim thanked everyone for their time and input

Mike noted that we will do a presentation to SACOG Board of Directors and Transit Coordinating Committee in May.

SACRAMENTO REGIONAL EMERGENCY PREPAREDNESS STRATEGY – STAKEHOLDER WORKING GROUP MEETING #2

July 28, 2022

12:00 PM – 1:30 PM Pacific Time

Project Team: Michael Rosson (SACOG), Tim Grose (WSP), Alex Ubiadas (WSP), Annika Ragsdale (WSP), Dena Graham (VRPA)

Stakeholder Working Group:

Attendees: Jaime Wright (Placer County Transit), Christine Parker (El Dorado Transit), Brian James (El Dorado Transit), Mark Sakauye (SacRT), Keith Martin (Yuba-Sutter Transit), Carmen Alba (SacRT), Benjamin Rady (SacDOT)

Declined/did not attend: Mike Dour (City of Roseville, Retired), Ed Scofield (City of Roseville), Will Garner (Placer County), Rachel Wells (City of Auburn), Mengil Deane (City of Auburn), Matt Mauk (El Dorado Transit), Tiffani Fink (Paratransit), Gary Vickers (Paratransit), Mikki McDaniel (SacDOT), Lisa Hinz (SacRT), Jeff Flynn (UC Davis), Teri Sheets (UC Davis), Autumn Benrstein (YCTD), Adam Hansen (Yuba Suter Transit),

Notes:

- Welcome and introductions
 - Tim Grose (WSP) welcomed the stakeholder working group to the second meeting focused on the transit operators' group
 - Agenda: Introductions, review of two technical memos and draft survey questions
 - Project Schedule – wrap up early (February | March) 2023, looking to wrap up deliverables by end of year
 - Mike Rosson (SACOG) thank the group for attending
- Technical Memorandum, #1 – Existing Conditions, Experience, Arrangements
 - Tim Grose (WSP) presented first deliverable, requested the group to review and provide input, highlighted Case Studies
 - Alex Ubiadas (WSP) highlighted NIMS, SEMS, and the ICS
 - What law requires California agencies to be SEMS compliant - California Government Code § 8607
 - If you strive for NIMS compliance you most likely will be SEMS compliant
 - Mike Rosson (SACOG) asked Keith Martin to share his recent emergency response experience with the Orville Dam disaster
- Technical Memorandum #2 – Transit Systems and Emergency Management
 - Tim Grose (WSP) presented the second deliverable and again requested the group to review and provide input
 - Alex Ubiadas (WSP) discussed handshake agreements along with more formal agreements
 - Mike Rosson (SACOG) Zero Emissions Vehicle – should hydrogen challenges be added to this document? We have it for battery and electric challenges pertaining to emergency response.
- Draft Public Survey

-
- Annika Ragsdale (WSP) – briefly gave an overview of the Draft Public Survey
 - Survey will be presented in both English and Spanish
 - Hoping to go out first week of August or the week there after, will be out for a month
 - Good comments provided to date
 - Keith Martin (Yuba Sutter Transit) – Are we looking for individual or household responses? Survey written for an individual. Would it be useful to have it for the household? Current questions can be interpreted differently. Will need to decide best approach.
 - Carmen Alba (SacRT) – highlighted accessible format and awareness
 - Carmen Alba (SacRT) – discussed a previous heat (heat wave) related experience with a SMUD power outage where they moved a large amount of people from current location to a location that had power/air conditioning and then back again when the power was restored. Can a different term be used there? They also provide transportation to cooling centers (services related to homelessness). Alex Ubiadas suggested excessive weather event. Keith Martin as mentioned current Public Safety Power Shut-Offs.
 - Keith Martin (Yuba Sutter Transit) – Evacuation from current location or over their lifetime?
 - Keith Martin (Yuba Sutter Transit) – This survey is targeted to individuals, but a lot of the demand during emergencies comes from Care Facilities, Group Homes, and similar. After action item here.
 - Carmen Alba – seconded Keith's above comment and suggested a survey to Paratransit agencies. Keith isn't sure where that database would come from. Carmen noted frequent pickup locations from Paratransit. Location may be available, but no contact.

All feedback is requested by August 8, 2022.

SACRAMENTO REGIONAL EMERGENCY PREPAREDNESS STRATEGY – STAKEHOLDER WORKING GROUP MEETING #3

Scheduled for April 7, 2023 – meeting notes will be added for final

12:00 PM – 1:30 PM Pacific Time

11.6 Public Survey Results

11.6.1 Methodology

A public survey available in English and Spanish was published online between September 26th to October 21st, 2022. It asked the public for input on how prepared they are for an emergency and how overall emergency preparedness can be improved in the Sacramento region. It specifically asked about transit communications related to how the public receives information from transit operators and emergency preparedness for an evacuation or shelter-in-place.

A social media campaign was used to bring awareness to the project and help boost online survey participation. Targeted social media advertisement via Facebook advertisements was utilized to ensure input was received from all segments of the six-county region. The project team prepared a social media piece that was posted to the SACOG Facebook page on September 26, 2022 and boosted on the page on October 18, 2022. The original post reached 595, had 1 share and 5 reactions. The boosted post reached 146, was shared once and had 3 reactions. The project team also prepared a Facebook advertisement campaign that ran in each of the six counties between September 27, 2022, through October 21, 2022. At a minimum, each county area had one zip code that was identified by CalEnviroScreen as "Disadvantaged Communities," per California Senate Bill 535. These zip codes were targeted to encourage input from communities that are historically disadvantaged and disproportionately burdened by pollution and environmental impacts. The total reach of these ads was 58,708 with 138,285 impressions. To further incentivize online survey participation, Facebook advertisements included a message that survey takers would be entered into a drawing to win a \$50 Amazon gift card.

Key dates from the survey including the following:

- Both the English and Spanish survey links were open to the public on August 24, 2022.
- An email with both survey links was sent around to SACOG stakeholders on September 26, 2022.
- A Facebook post was posted to the SACOG Facebook site on September 26, 2022.
- Facebook Ads for Sacramento County started on September 27, 2022.
- Facebook Ads for the remaining SACOG counties started on September 28, 2022.
- Facebooks Ads were closed on October 21, 2022.
- Survey links were closed on October 21, 2022.
- Survey data was cleaned up between October 21 and November 23, 2022.

DATA CLEANUP

In total, 1,868 responses were collected. While hundreds of these responses appeared to be legitimate, many appeared to be fake or automated responses. This may have occurred as the team offered a \$50 Amazon gift card as an incentive to complete the survey. As a result, many of the responses came from outside the SACOG area or even outside of the United States. The following steps were taken to filter the responses to improve survey result quality:

1. Remove any responses that gave zip codes that were not in the SACOG area.

2. Remove any responses that listed a county or other location instead of a SACOG zip code.
3. Remove all responses that took under two minutes (average response time was ten minutes).
4. Remove multiple responses that came from the same internet protocol (IP) address.⁶⁴
5. Remove any repeat responses from the same IP network.
6. Remove responses that list the same email.
7. Remove responses that did not list a county with a matching zip code in the SACOG region. For example, a zip code listed as 95993 should correspond to Sutter County.

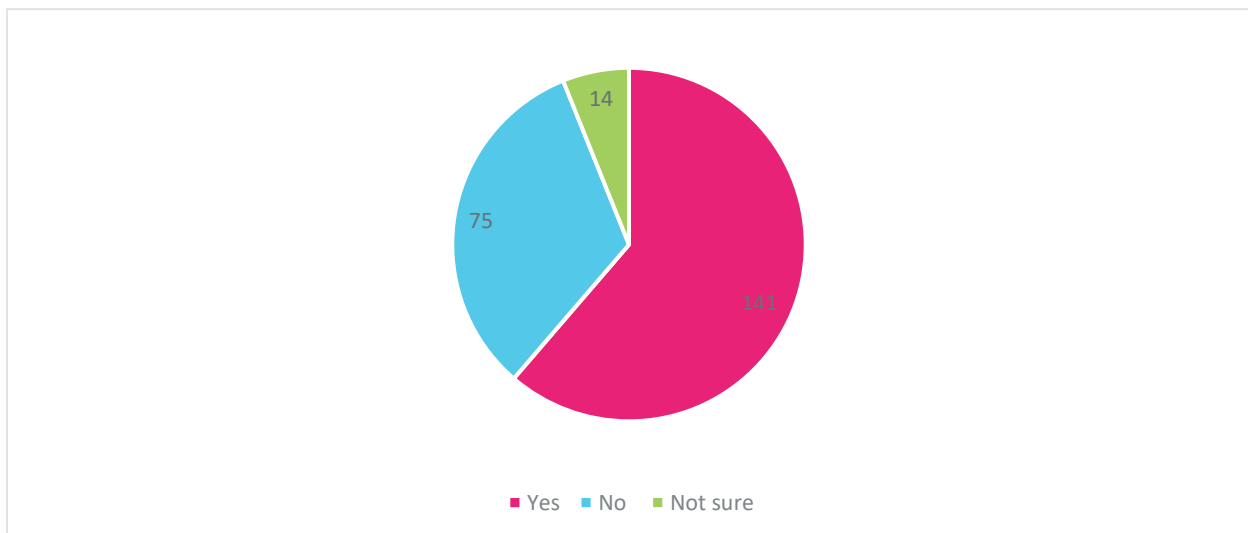
230 responses were analyzed and are summarized in the section below.

11.6.2 Complete Results

In this section, the results from the community member survey are visualized and discussed. Generally, people in the SACOG region receive transit operator updates and are prepared for emergencies. Many have evacuated and have plans and go bags ready for evacuation, as well as plans for their pets.

Figure 87 shows if respondents receive general updates from their local transit operators. Most people do receive updates (about 61%).

Figure 87. Response to 'Do you receive general updates from your local transit operator (like SacRT, El Dorado Transit, Yolobus, and others)?'



⁶⁴ It is possible that different members of the same household would complete the survey, however, the data show that many responses from the same IP address listed different zip codes or counties. If it were a different member of the same household completing the survey, the zip code and county would be the same. This indicates the possibility of someone providing fake answers for the survey from the same device. To remove this possibility we removed all duplicate IP addresses. See IP Tracking from SurveyMonkey: <https://help.surveymonkey.com/en/send/ip-tracking>

Figure 88 shows respondents' preferred methods for receiving information from their local transit operators. The most popular option is email (119), with the next most prevalent methods including phone (87), Facebook (68), local news station (67), and text (66).

Figure 88, Response to 'What are your preferred methods for receiving information from your local transit operator? [Select all that apply]'

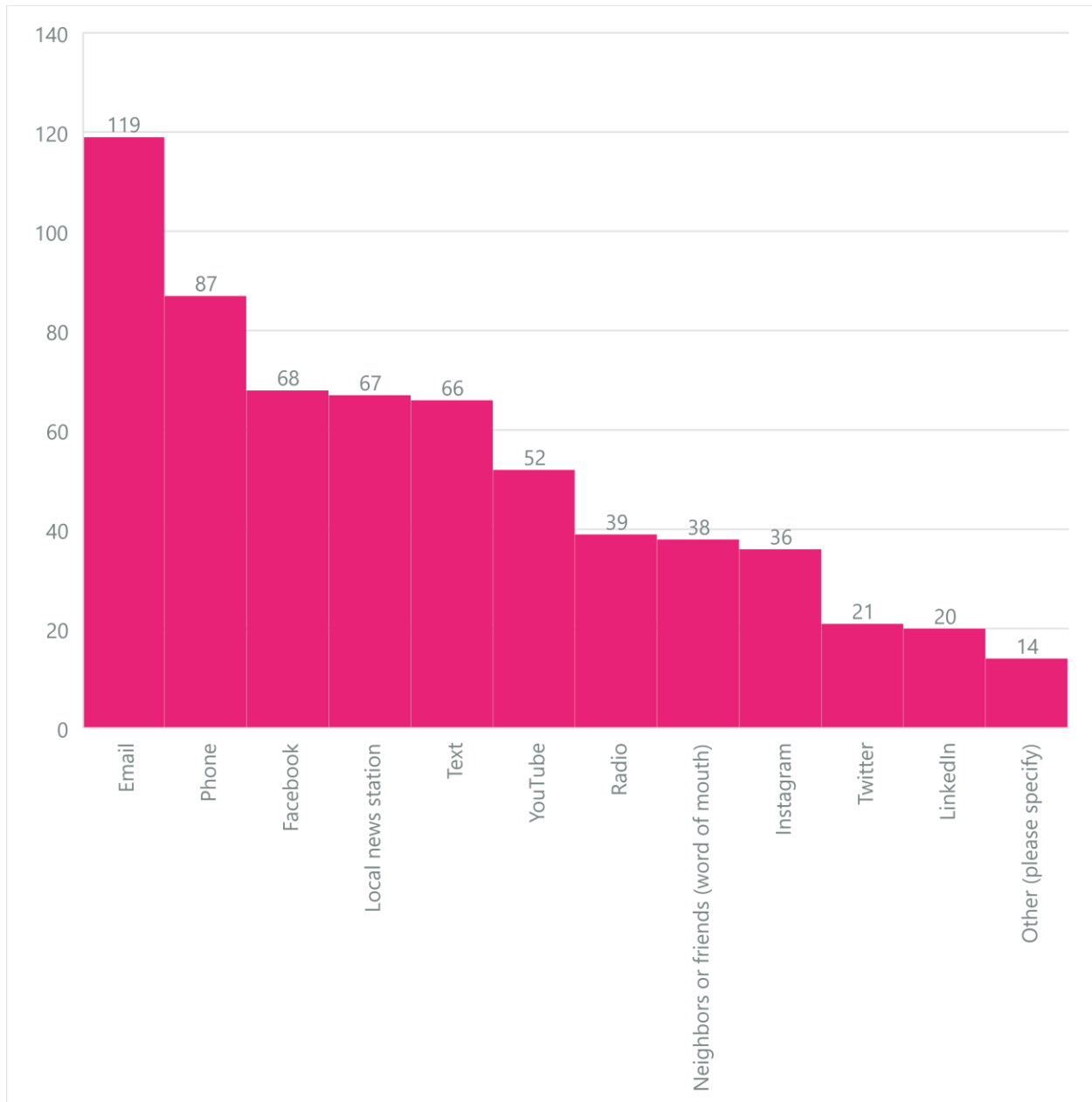


Figure 89 shows whether respondents have a go bag in case of an emergency. Most respondents are prepared and do have a go bag ready for emergencies (about 73%).

Figure 89. Response to 'Do you have a 'go bag' ready in case of an emergency? (A go-bag is a packed bag with essential supplies you need to survive on your own for a few days.)'

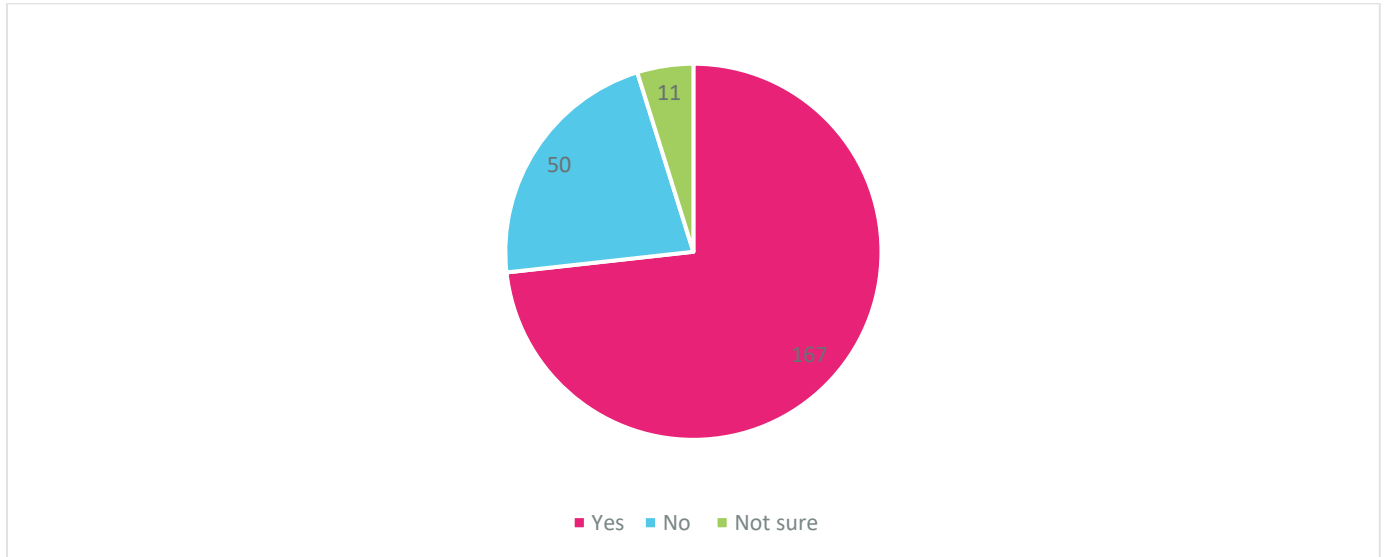


Figure 90 shows if respondents have an emergency plan with their families. The majority of respondents do have an emergency plan (about 68%); however, this is lower than the number of people who have go bags ready.

Figure 90. Response to 'Do you have an emergency plan with your family (with contact numbers, meeting points)?'

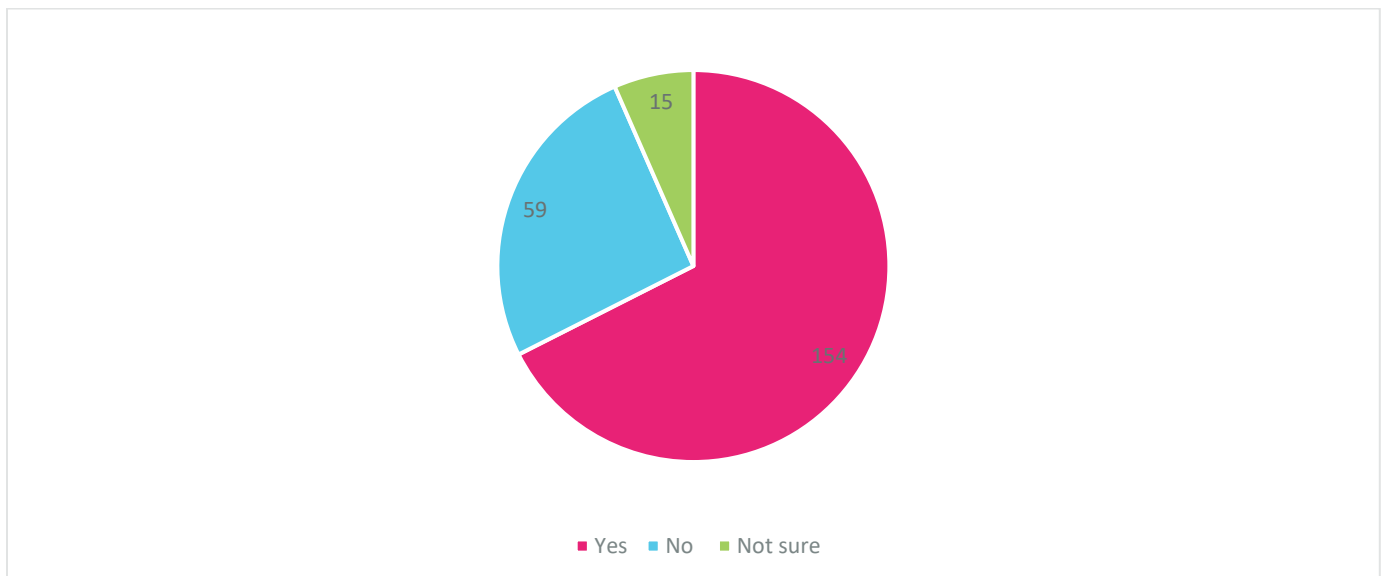


Figure g1 shows if people have ever had to evacuate their current home, work, or school due to an emergency. This response was surprising, as a majority of respondents (about 72%) said that they have had to evacuate due to an emergency. It is possible this number is unusually high because people included evacuations for fire alarms and drills as well as the emergencies listed in Figure g2.

Figure g1: Response to 'Have you ever had to evacuate your current home, work, or school due to an emergency?'

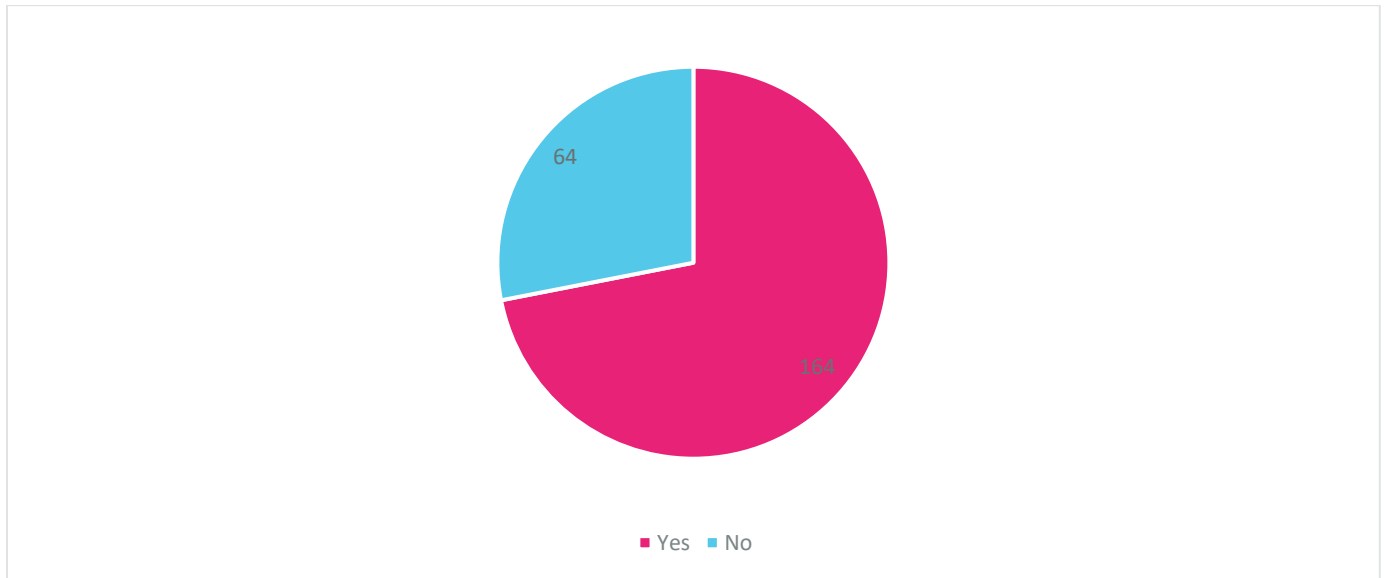


Figure 92 shows what type of event required respondents to evacuate. Most respondents (112) evacuated due to wildfires. The next closest included levee or dam failure (76) and floods (72). An unexpected result is that a significant number of responses included evacuating due to hazardous materials or chemical spills (69). The next most common event that caused evacuation was from an active shooter (66).

Figure 92. Response to "What type of event required you to evacuate? [Select all that apply]"

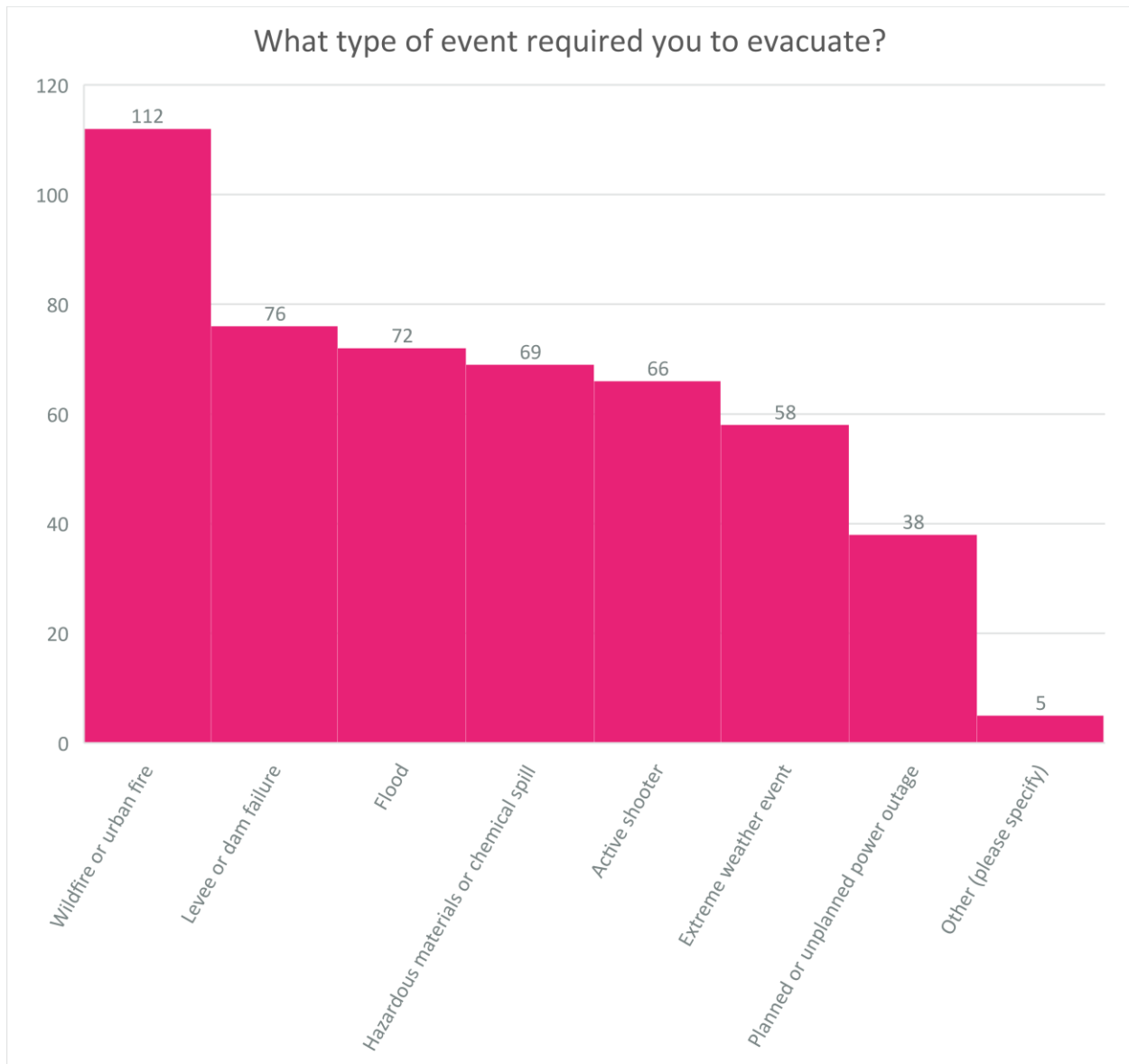


Figure 93 shows how prepared respondents feel they are for an emergency that requires them to evacuate. Most respondents are "Very Prepared" (55) or "Somewhat Prepared" (113).

Figure 93. Response to 'How prepared are you for an emergency that requires you to evacuate and leave your home?'

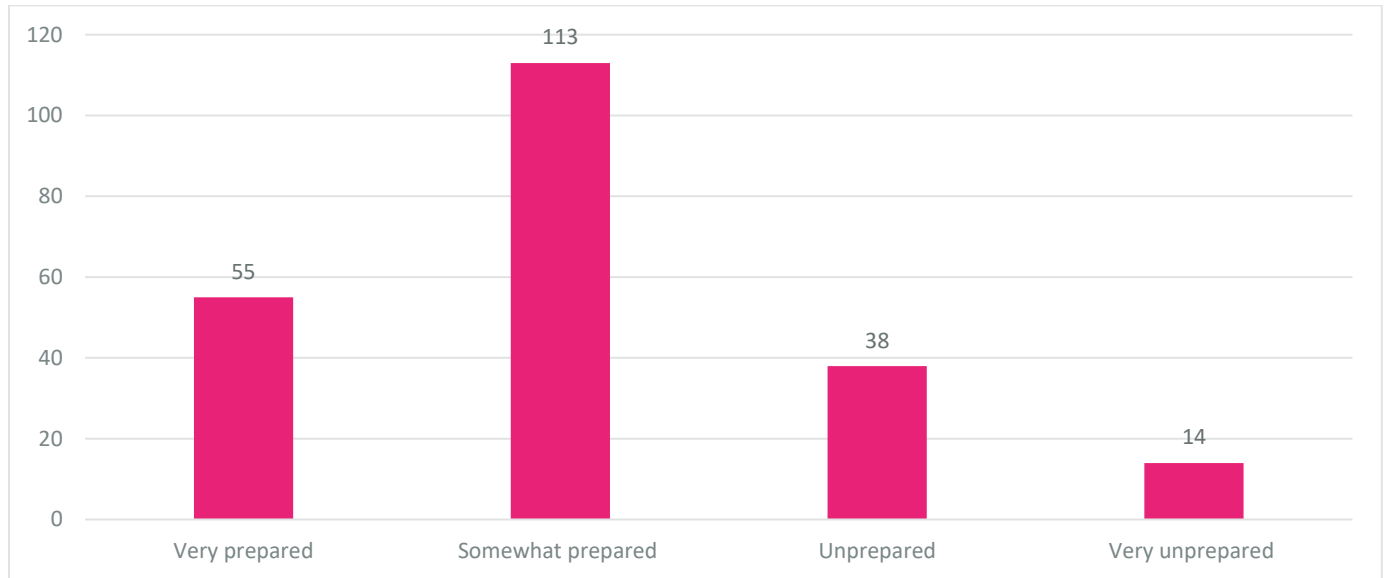


Figure 94 shows how respondents would evacuate in an emergency. Most respondents would evacuate in their household's car (191) or in a different car (59). Only 33 people said they would evacuate by bus, 26 said they would evacuate by paratransit, and 15 said they would evacuate by rail. This suggests that the SACOG region is heavily dependent on personal vehicles for evacuations. This could have widespread impacts as the region begins to transition to electric vehicles which have shorter ranges and may require charging during an emergency.

Figure 94. Response to 'How would you evacuate in an emergency? [Select all that apply]'

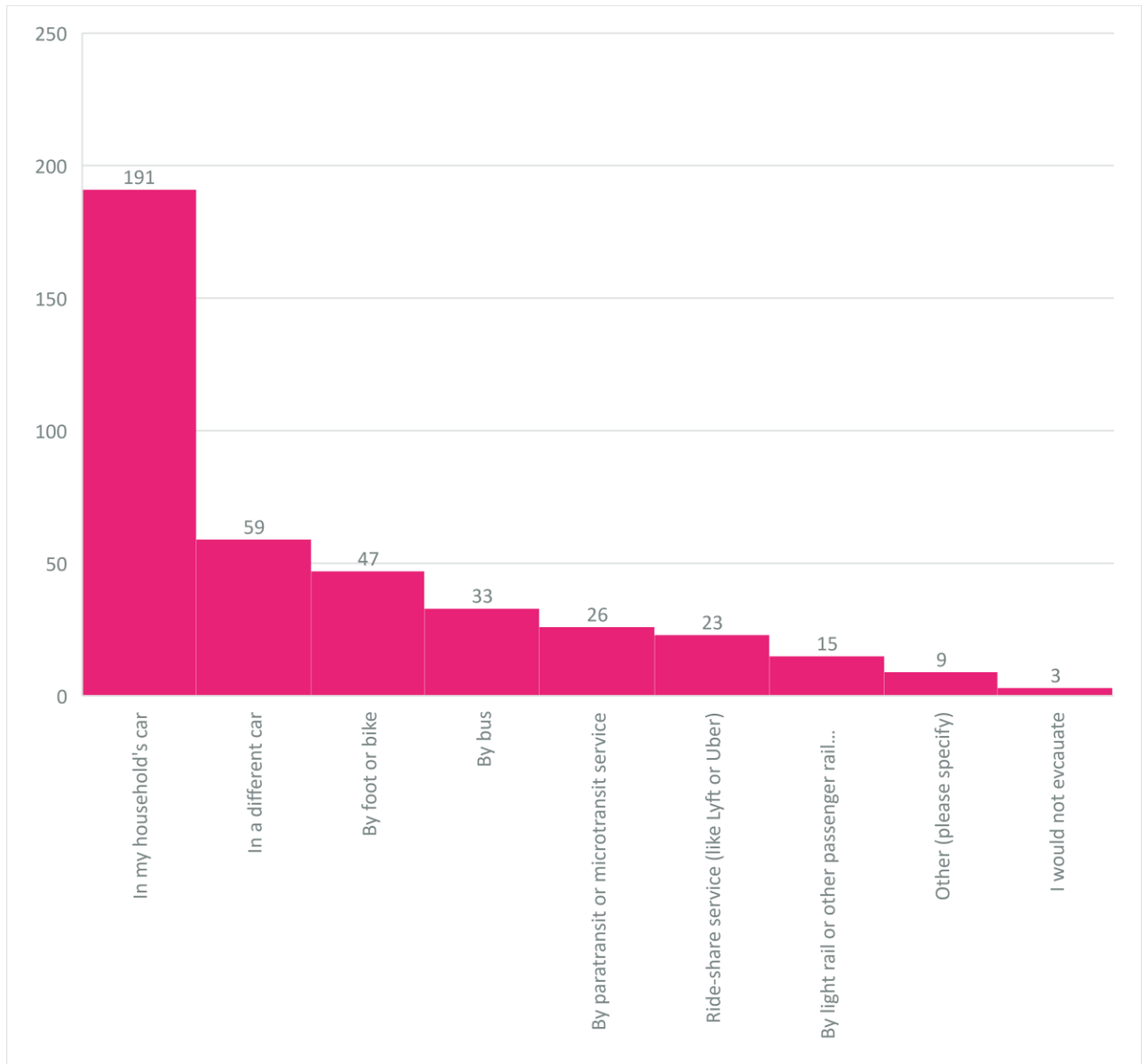


Figure 95 shows situations that may apply to respondents who rely on transit for evacuation. Many people (28) expect transit to operate normally during an emergency. This may be a common misconception, as transit may be disrupted during an emergency, changing service, stop locations, and frequency. The next greatest number of respondents (26) expected a special route or collection point to be set up near their home.

Figure 95. Response to 'You indicated you might evacuate by transit. Check the following situations that may apply to you:'

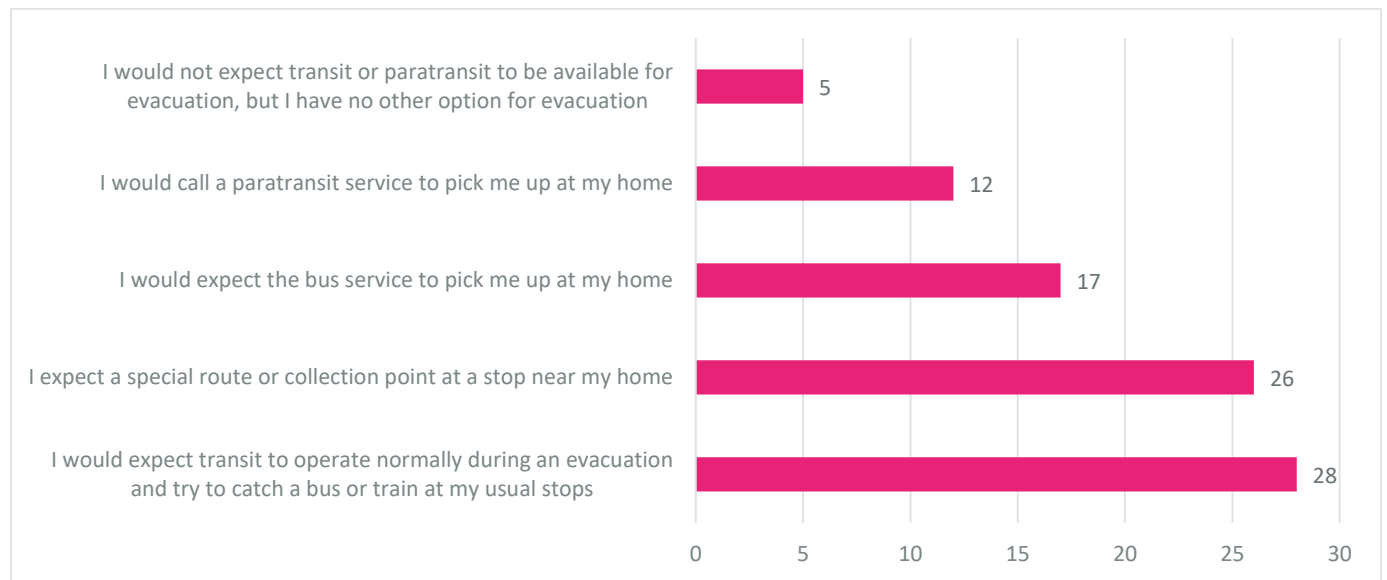


Figure 96 shows if respondents have pets. This was a relatively even split, as about 52% said they did and 48% said they did not.

Figure 96. Response to 'Do you have pets?'

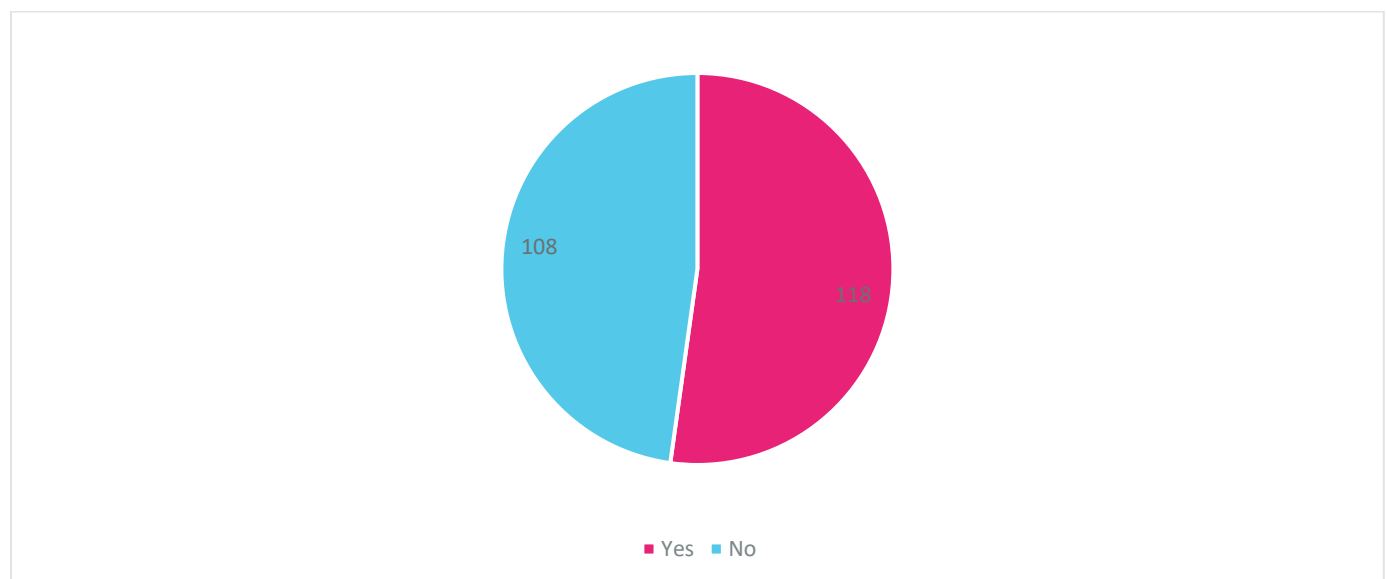


Figure 97 shows the type of pets that respondents have. The majority of pet owners have house pets such as dogs (75) and cats (62).

Figure 97. Response to "What type of pet(s) do you have? [Select all that apply]"

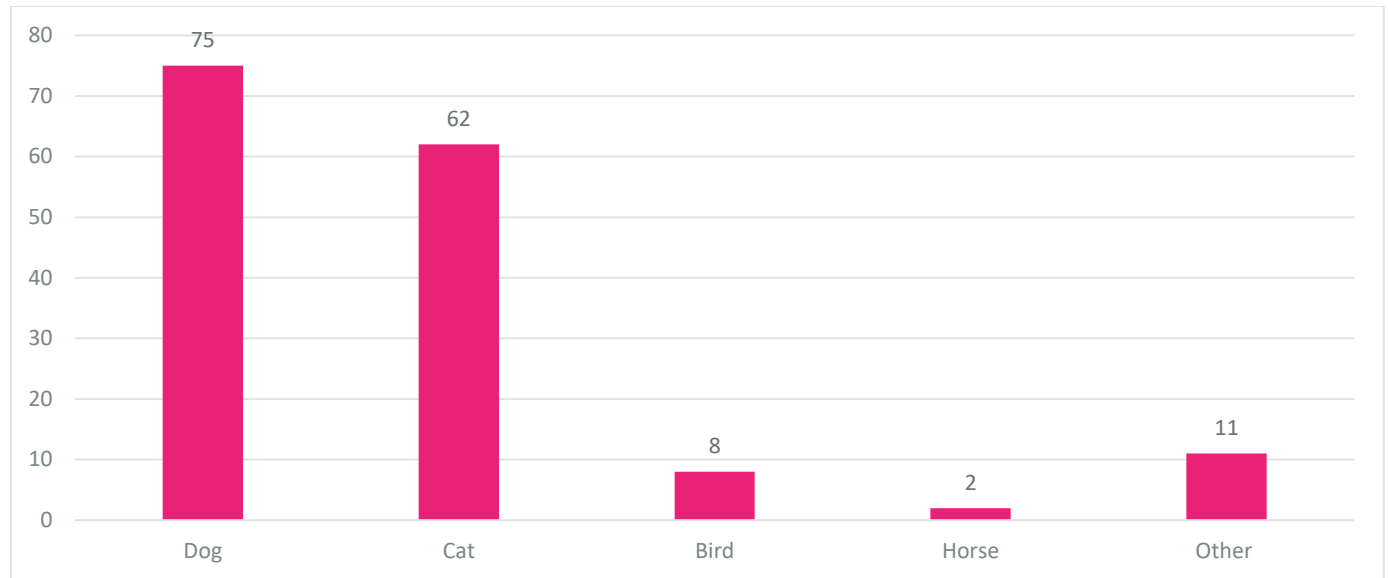


Figure 98 shows what respondents would do with their pets during an evacuation. The overwhelming majority said that they would take their pets with them in their car or trailer (100). Only 21 said they would take their pets with them on a transit vehicle. This shows that SACOG transit operators still need to be prepared to evacuate pets during emergencies.

Figure 98. Response to "What would you do with your pet(s) during an evacuation?"

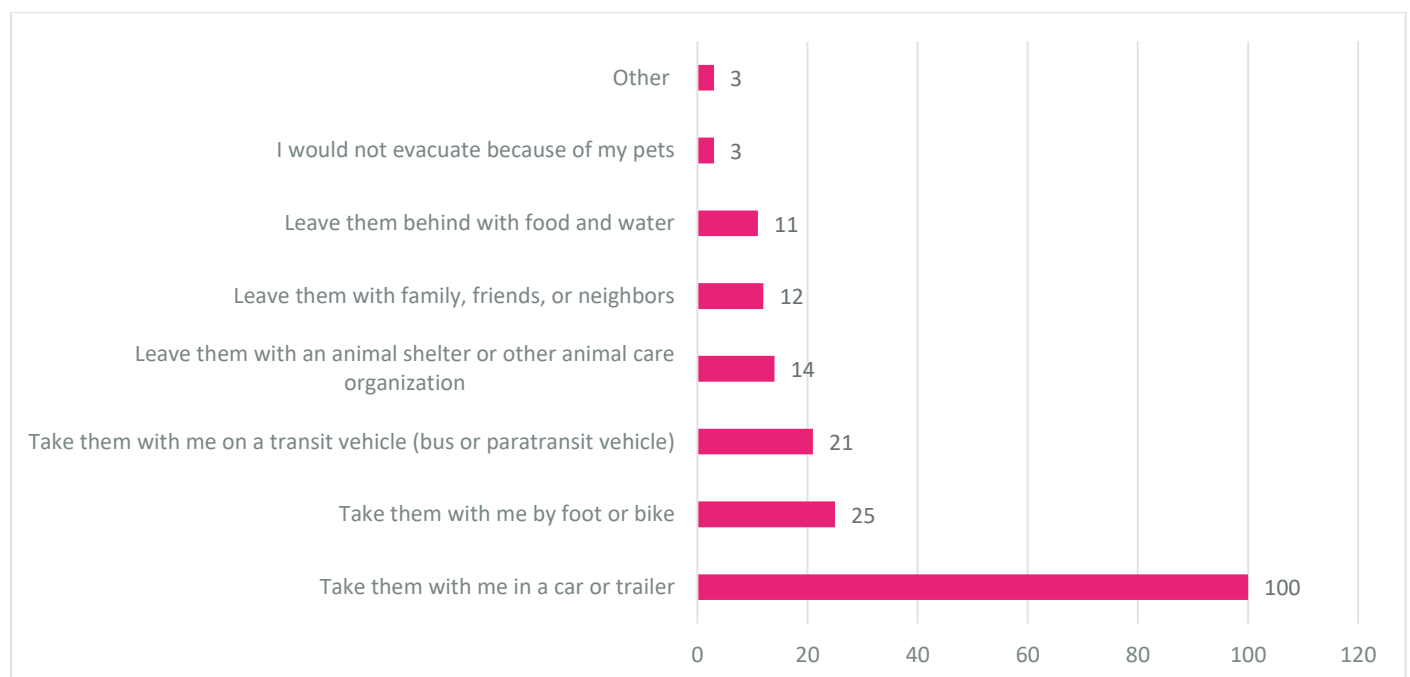


Figure 99 shows if respondents have the supplies they need to support their pets during an evacuation. Most respondents (around 93%) do have the necessary supplies to support their pets during an evacuation.

Figure 99. Response to 'Do you have the supplies you need to support your pet(s) during an evacuation? (Supplies could include animal carriers or crates, food and water, leashes or harnesses, muzzles, bowls, and plastic bags for animal waste.)'

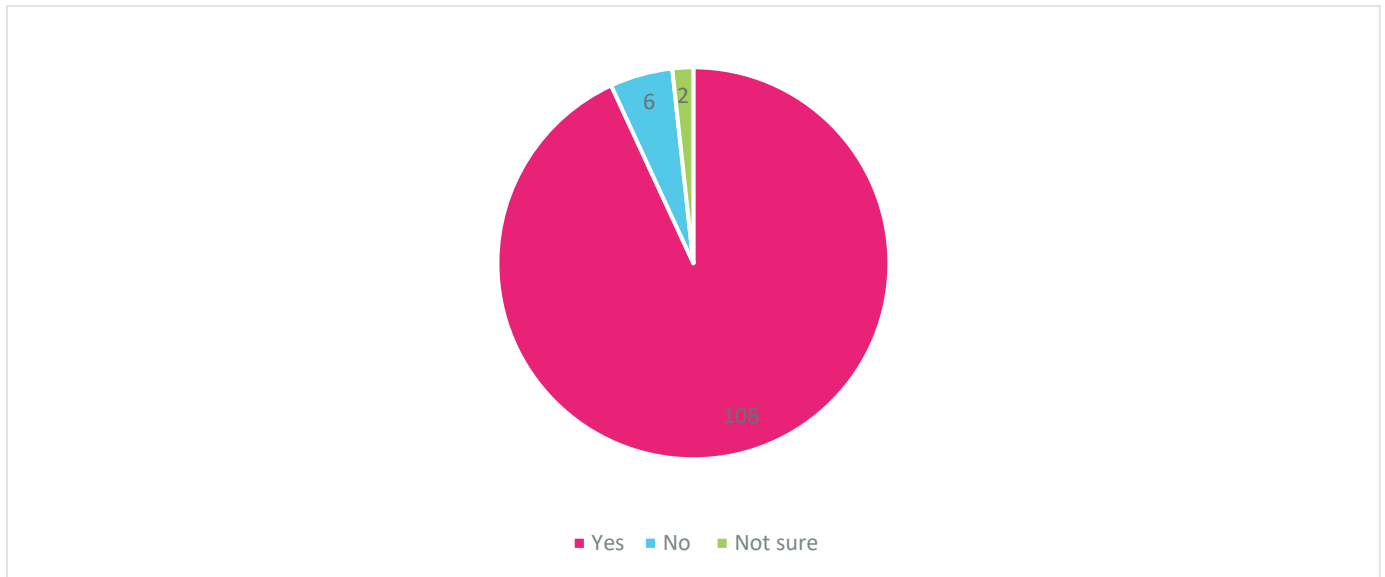


Figure 100 shows if respondents have had to shelter in place at their current home, work, school, or vehicle due to an emergency. Around 73% answered yes. This is about the same number of people who responded "Yes" to evacuating during an emergency. It is possible some respondents selected yes because they had to shelter in place during the COVID-19 pandemic starting in 2020.

Figure 100. Response to "Have you ever had to shelter in place in your current home, work, school, or vehicle due to an emergency? (Shelter in place means find a safe, indoor location to stay put until an emergency has passed.)"

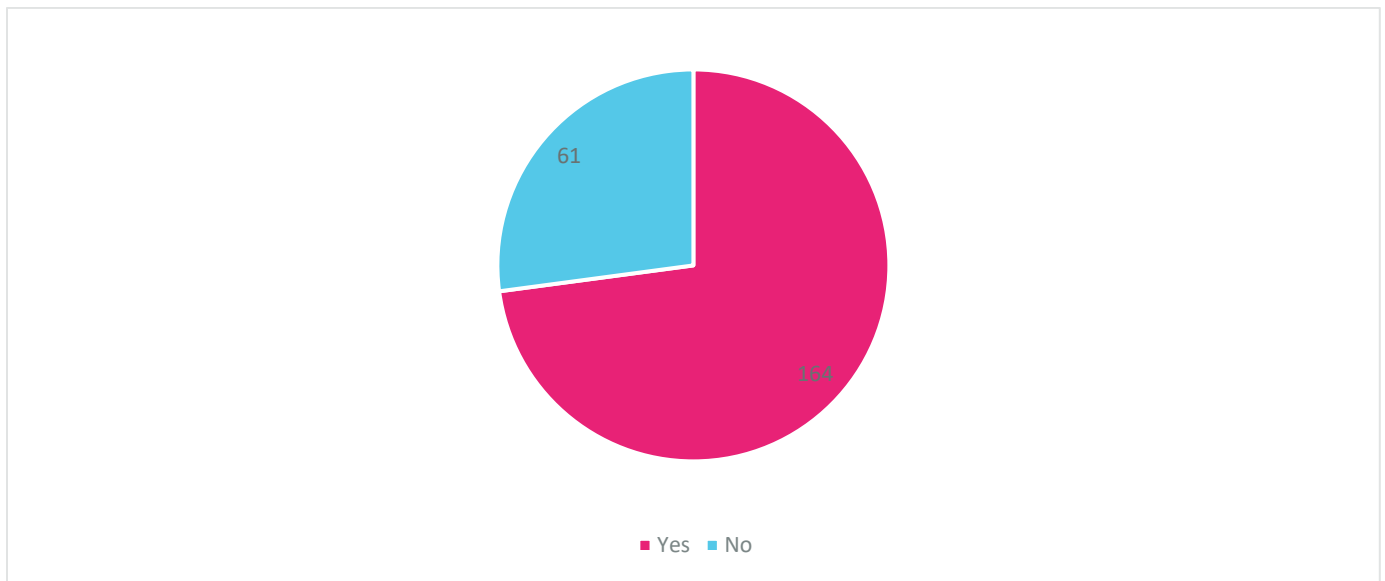


Figure 101 shows what type of event caused respondents to shelter in place. Most respondents cited extreme weather (120) and planned or unplanned power outages (91). 13 people said other and a majority of those wrote in "pandemic" or "COVID".

Figure 101. Response to 'What type of event required you to shelter in place? [Select all that apply]'

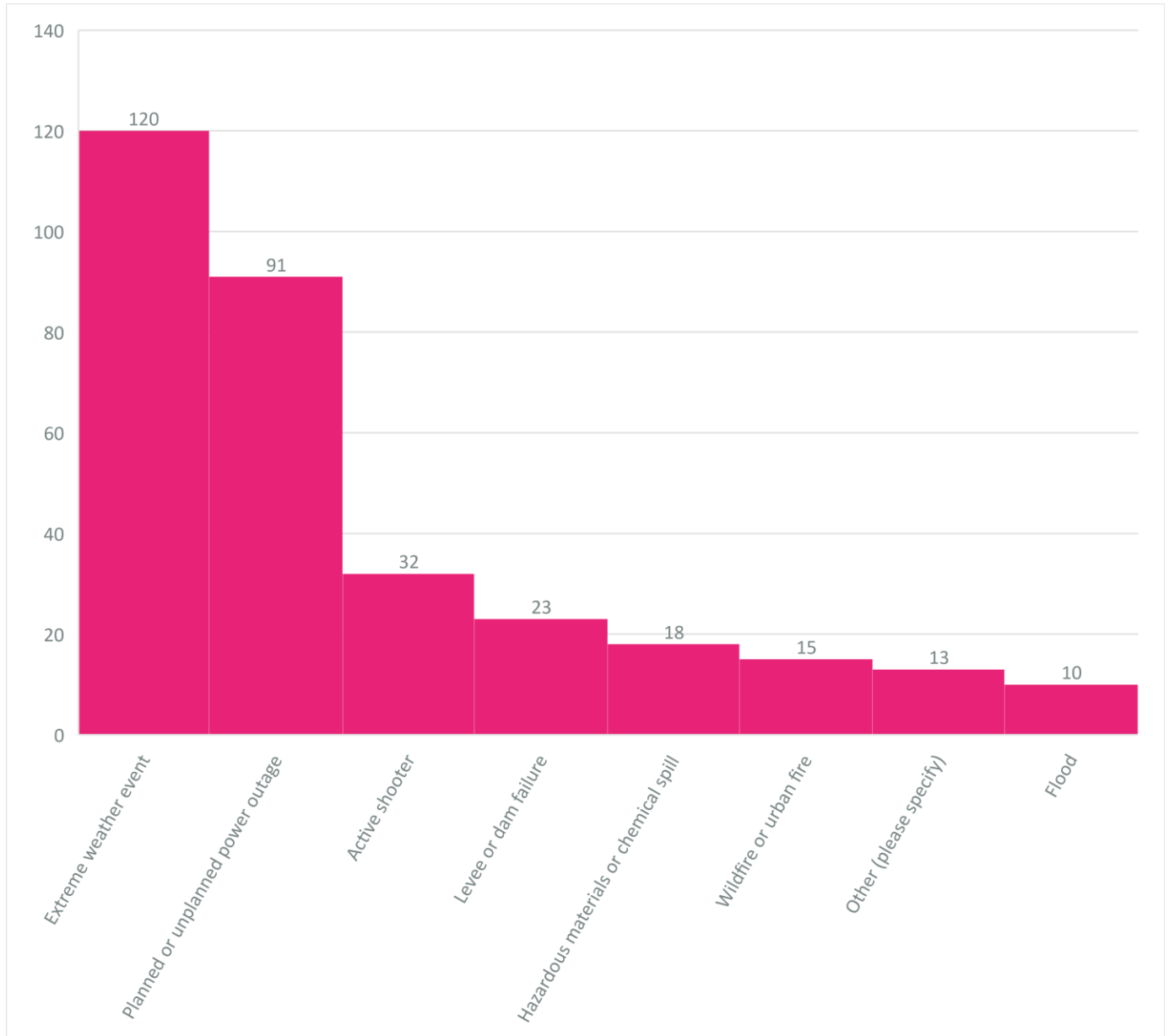


Figure 102 shows how prepared respondents feel they are for an emergency that requires them to shelter in place. Similar to the evacuation preparedness question, many respondents self-report being well prepared for shelter in place. 66 say they are "Very Prepared", and 103 say that they are "Somewhat Prepared."

Figure 102. Response to 'How prepared are you for an emergency that requires you to shelter in place?'

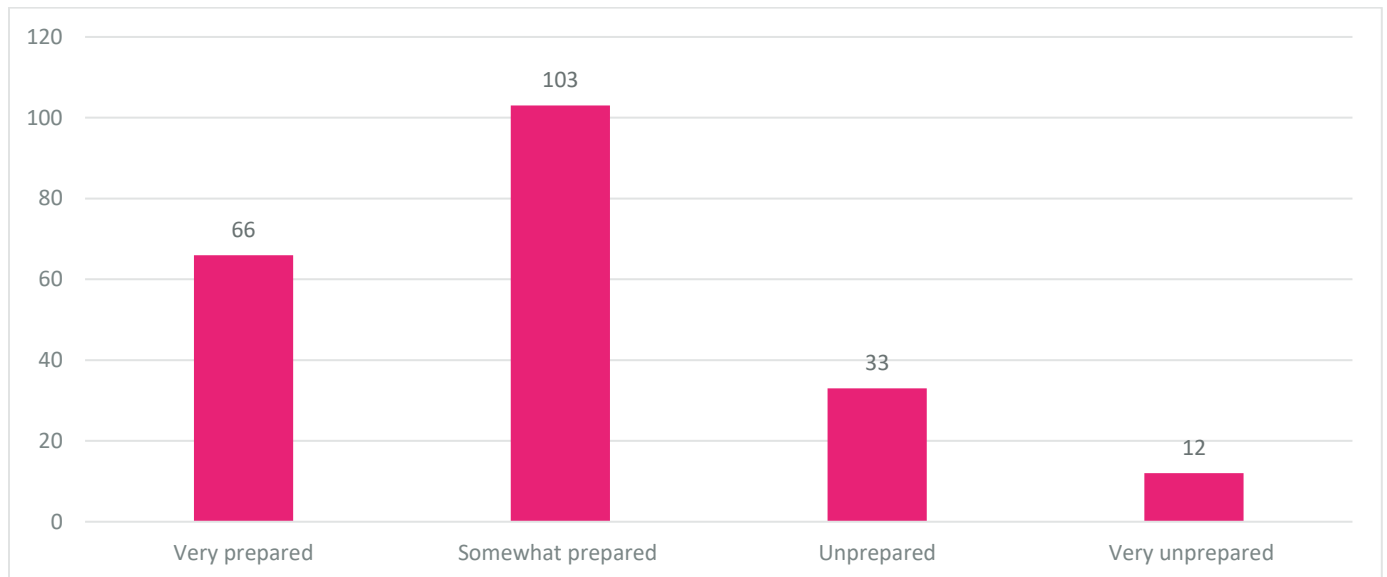
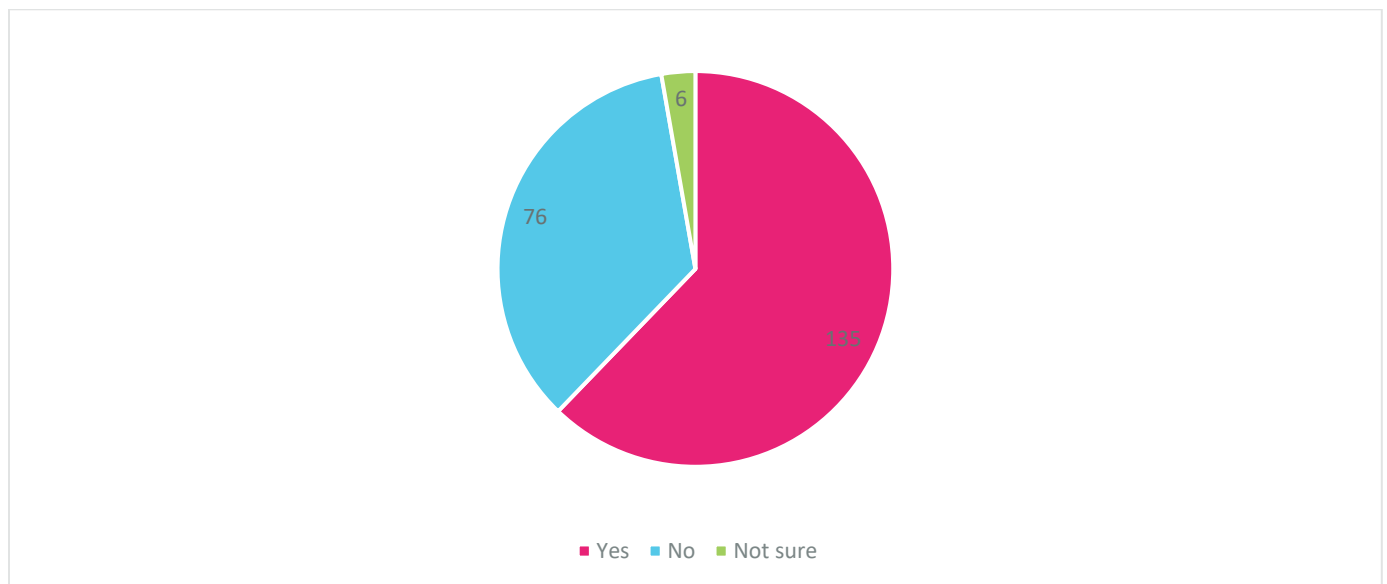


Figure 103 shows if anyone in the household uses a mobility device or medical device and would need special assistance during an evacuation or shelter in place situation. Over half of respondents said yes that they would need help (about 62%). This is unexpected as only 10% of adults in California have mobility disabilities according to the CDC⁶⁵ and only 9 million or 24% of people in California are 60+ years old.⁶⁶ We would recommend not making assumptions based on this question, as it seems that it was worded in a misleading way or respondents misunderstood the question. It is possible that respondents focused on the second half of the question and thought that they or someone in their household would need special assistance, even if that person does not necessarily have a mobility/medical device or disability.

Figure 103. Response to 'Do you or anyone in the household use a mobility device or medical device, and need special assistance during an evacuation or shelter in place situation?'

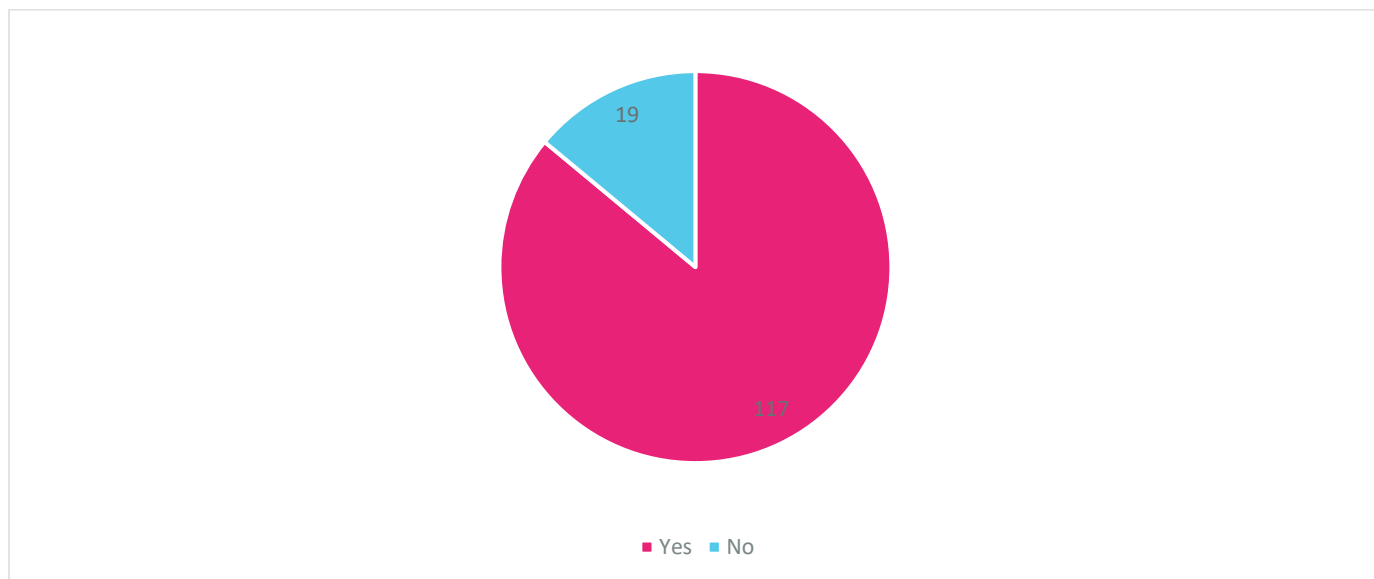


⁶⁵ <https://www.cdc.gov/ncbddd/disabilityandhealth/impacts/california.html>

⁶⁶ <https://aging.ca.gov/download.ashx?lE0rcNUV0zYSDQkxTL1zkg%3d%3d>

Figure 104 shows if respondents have a caregiver or other support person to assist them with evacuation or sheltering in place. Again, most respondents said yes (about 86%). This is unusual given the demographics in California. Perhaps, this question was also misleading and respondents thought that we were asking if they have support in case they need to evacuate or shelter in place.

Figure 104. Response to 'Do you have a Caregiver or other support person to assist you with evacuation or sheltering in place?'



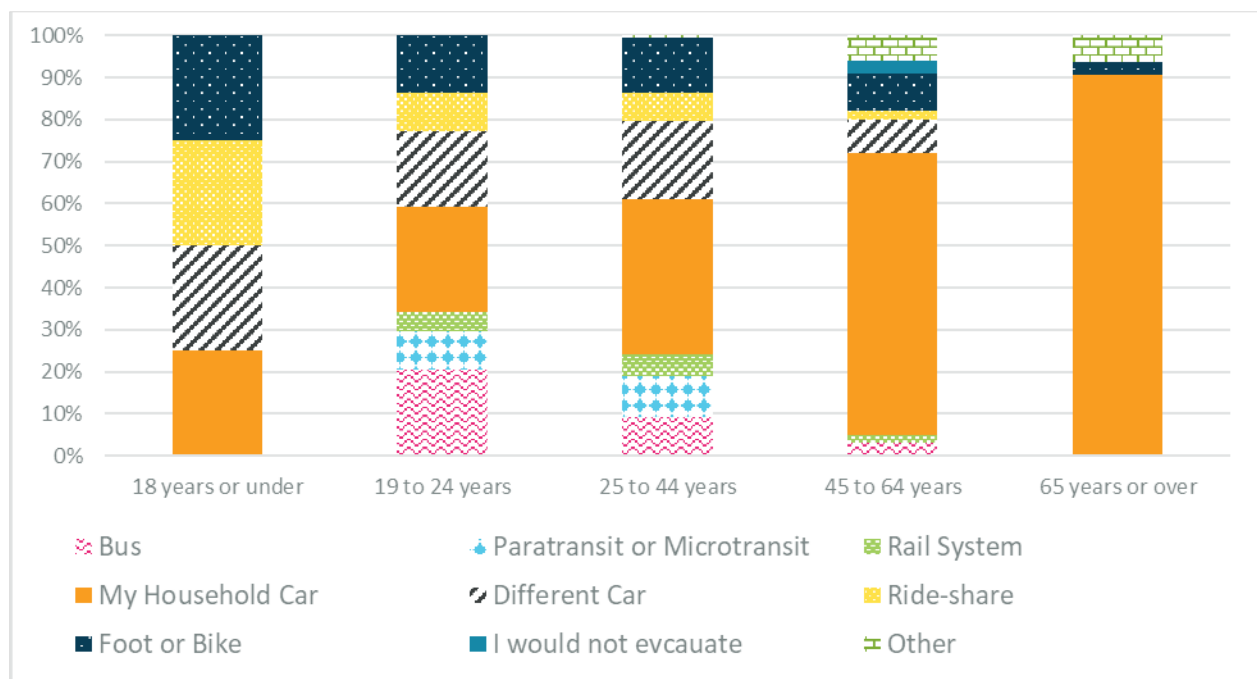
As the questions posed in Figure 103 and Figure 104 were also the last two questions in the survey, it's possible that respondents were clicking "yes" to try to get to the end. Given the uncertainty of these responses, the project team does not recommend making assumptions or decisions based on these questions.

The team also examined the correlation of demographic factors on how people would evacuate. For example, we would expect a higher proportion of seniors to rely on paratransit for evacuation. We would also expect a higher proportion of low-income families to be transit dependent and rely on transit or friends and family for evacuation.

Figure 105 shows how respondents would evacuate by age. As age increases, the number of people who respond "In my household car" also increases. For ages 18 and under and 19 to 24 years, only 25% said that they would evacuate in their household car. For 25 to 44 years, 37% said they would evacuate in their household car. For 45 to 64 years, 67% said they would evacuate in their household car and for 65 years and older, 91% said they would evacuate in their household car. Age and evacuation by household car have a strong, positive correlation with a r coefficient of 0.96.⁶⁷

This generally follows a pattern that we would expect – respondents under 24 years may be in school, not have a car, and rely on other modes of transportation and as respondents age they may have more income to purchase a car, need a car for work or family, and/or move somewhere they need a car.

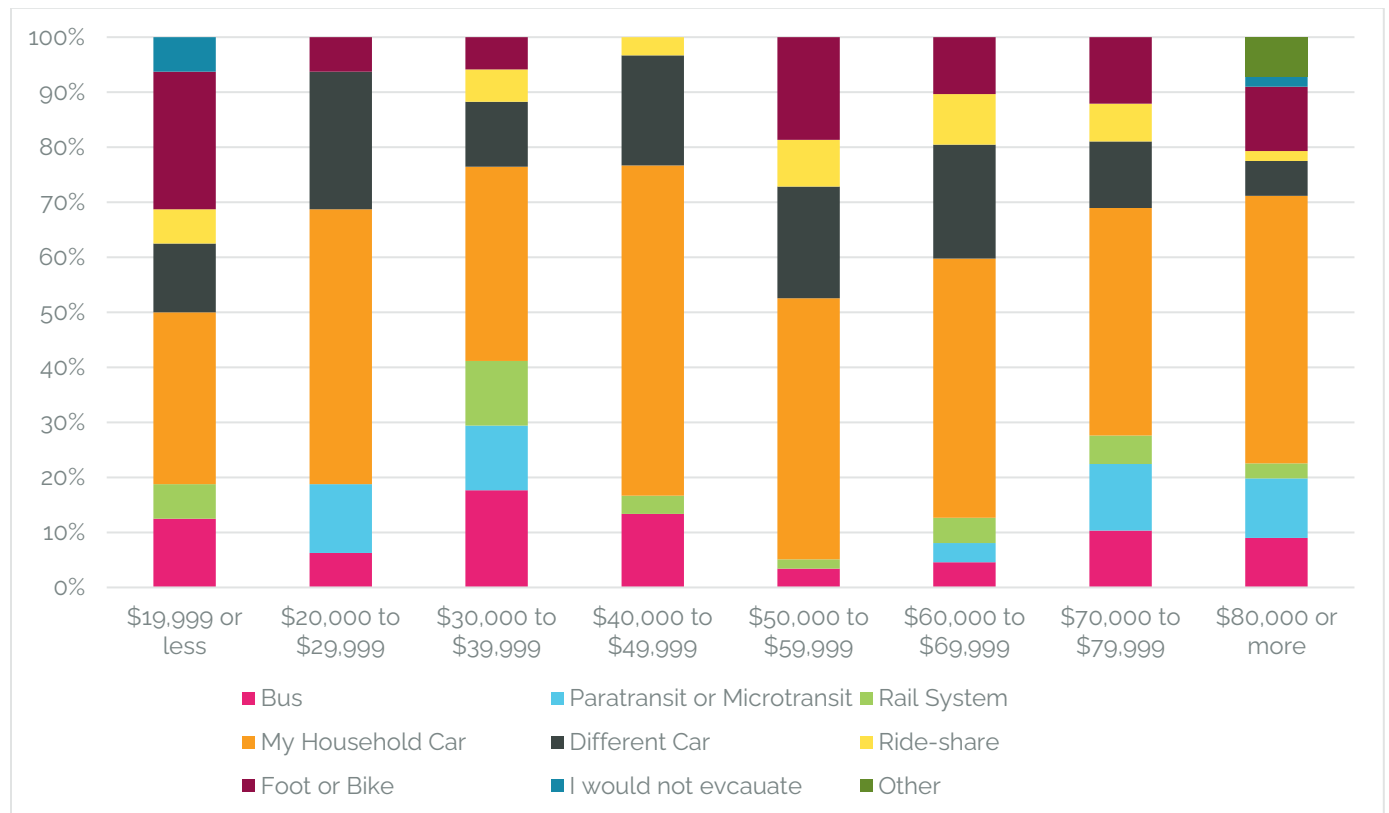
Figure 105. Response to "How would you evacuate (by age)?"



⁶⁷ A r coefficient summarizes the relationship between two variables. The r coefficient can fall between -1 and 1. A correlation becomes stronger as the coefficient approaches -1 or 1. A negative number suggests a negative relationship between the variables – as one increases, the other decreases. A positive number suggests a positive relationship between the variables – as one increases, the other also increases. Correlation does not necessarily imply causation.

Figure 106 shows how respondents would evacuate by income. Responses of "My household car" vary and only slightly increase with income. Income and evacuation by household car have a weak, positive correlation with a r coefficient of 0.33.⁶⁸ This means that as income increases, the number of people who evacuate in a household car may also increase. Income and evacuate by bus have a weak, negative correlation with a r coefficient of -0.33. This means that as income increases, the number of people who evacuate by bus may decrease. This also generally follows a pattern that we would expect – respondents with more income may be able to purchase a car and respondents with less income may be transit-dependent and rely on buses for their transportation needs.

Figure 106: Response to "How would you evacuate (by income)?"



⁶⁸ A r coefficient summarizes the relationship between two variables. The r coefficient can fall between -1 and 1. A correlation becomes stronger as the coefficient approaches -1 or 1. A negative number suggests a negative relationship between the variables – as one increases, the other decreases. A positive number suggests a positive relationship between the variables – as one increases, the other also increases. Correlation does not necessarily imply causation.



1415 L Street, Suite 300, Sacramento, CA 95814