

# North Monterey County Regional Transportation Vulnerability Assessment

Technical Advisory Committee

May 7, 2026

Credit: Pathways Climate Inst



# Agenda

1. Project Overview
2. Public Outreach Summary
3. Hazards
4. Exposure & Vulnerability Assessment
5. Hazard Viewer
6. Prioritization
7. Applications and Next Steps

# Project Overview

## Regional Transportation Vulnerability Assessment (RTVA)



Identified vulnerable transportation infrastructure to climate hazards



Assessed impacts to low-income and disadvantaged communities and sensitive habitats



Created a project prioritization list for adaptation strategies



Engaged with our TAC, Focus Group, and the public.

# Project Outcomes



- ✓ Help TAMC understand hazards of interest for every project
- ✓ Support future climate resiliency projects
- ✓ Benefit other agencies and asset-owners in the North Monterey County

# Project Team



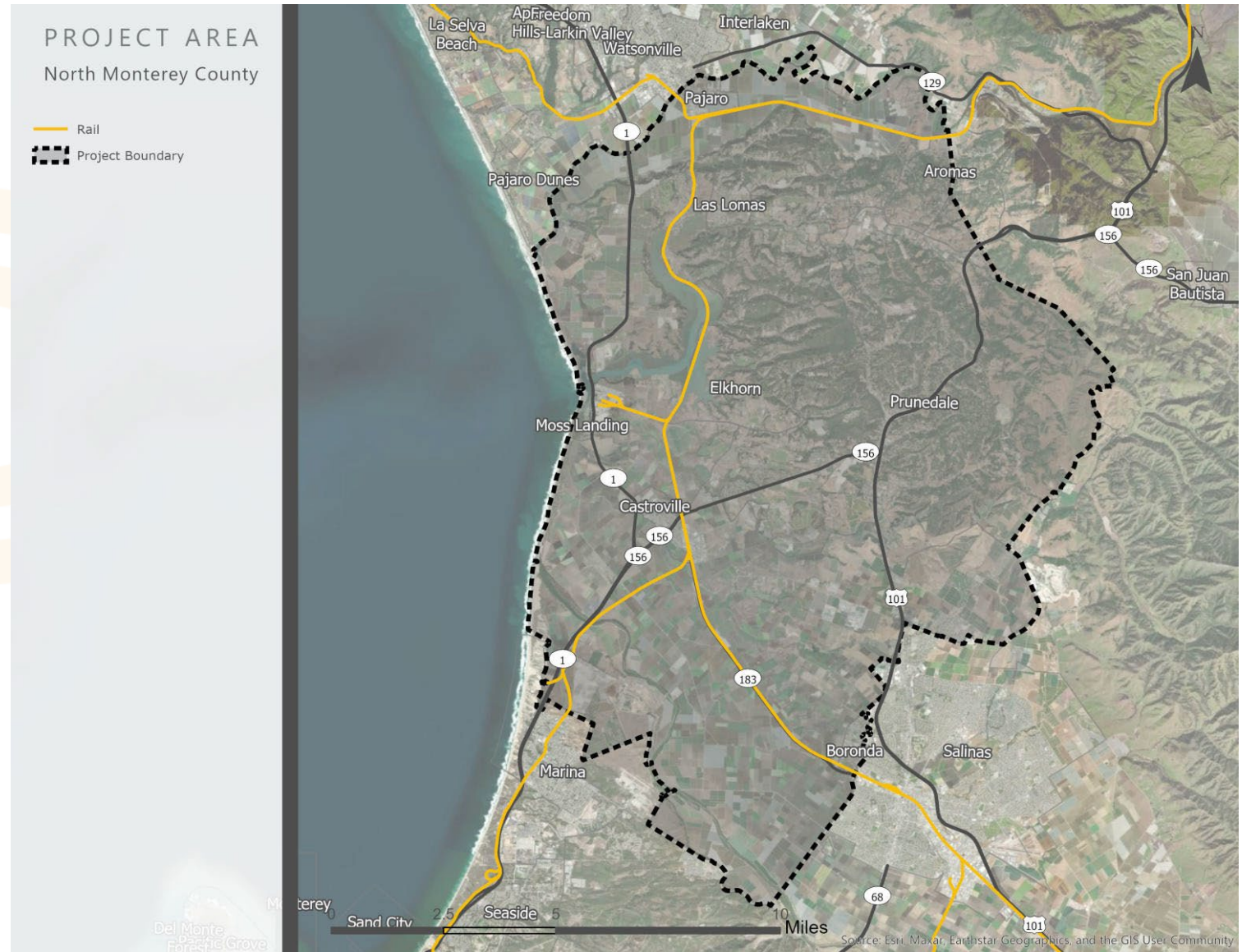
Technical  
Advisory  
Committee



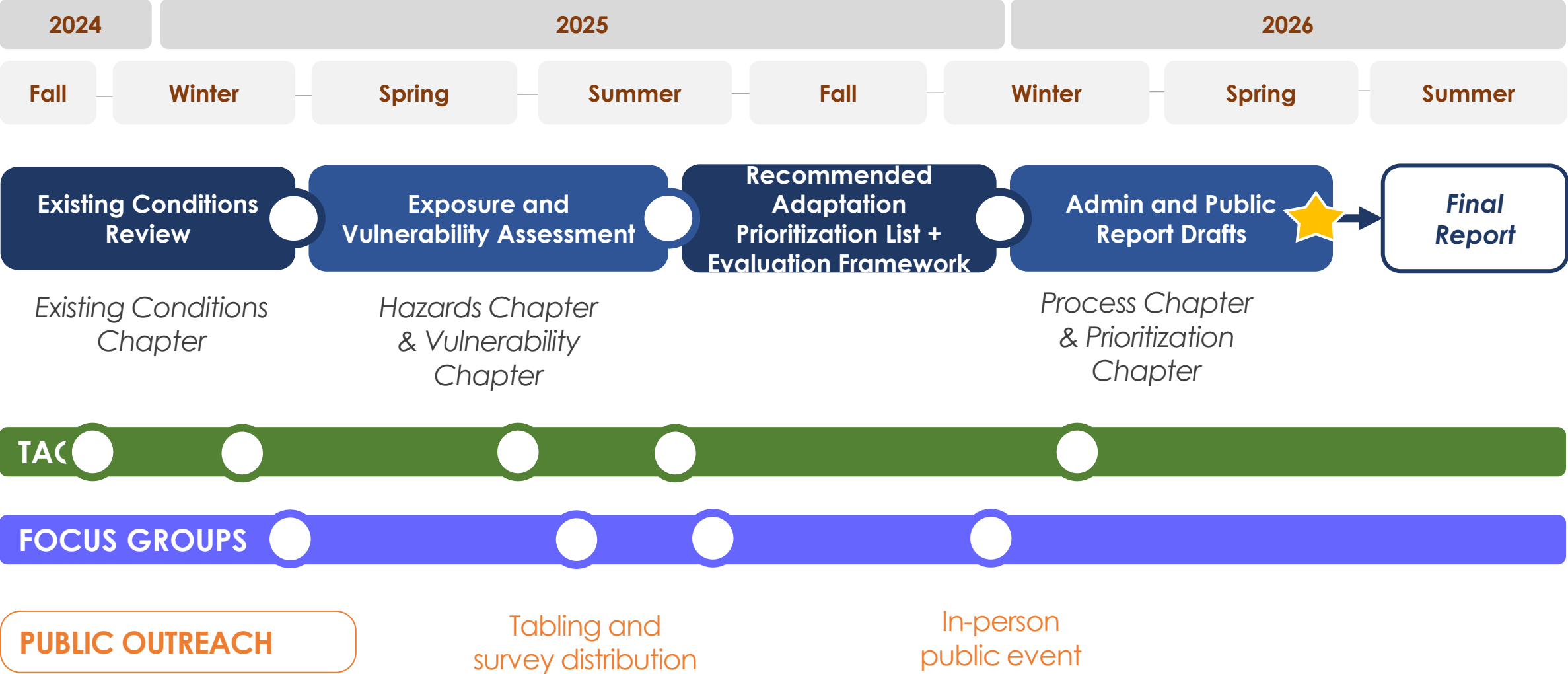
Focus  
Group

# Study Area

- Geography: Northern Monterey County
- Communities:
  - Moss Landing
  - Elkhorn
  - Pajaro
  - Castroville
  - Unincorporated coastal areas



# Project Workflow and Timeline





# Public Outreach Summary

Credit: Pathways Climate Institute

# Vulnerability and Prioritization



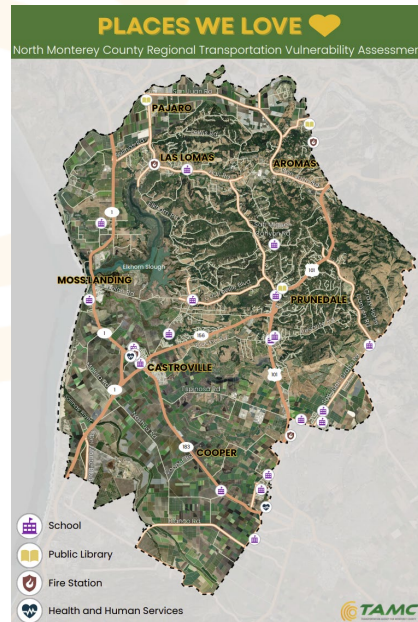
Vulnerability of transportation assets and roads

Relevance and impacts of transportation assets and roads to communities

Community informed recommended prioritization list

# Public Outreach Summary

- In-person events at farmers markets
- Collaboration with CSU Monterey Bay students
- Focus Group meetings
- Presentations to local relevant projects and organizations
- [TAMC RTVA Survey](#)
- Community Open House



# What We've Heard

- The winter / rainy season causes heavy flooding along
  - Blackie, Blanco, Dolan, Elkhorn, Hall, Strawberry and Werner Roads
- Unable to access destination / stranded during flood events
- Students are unable attend school due to flooded roadways
  - School buses turn around or arrive late
  - Unsafe driving conditions
  - Concerns over student safety
- Residents rely on communication with family / friends in other areas for road conditions

# Community Open House

- Castroville Public Library
- Science fair layout
- In-language content
- Bilingual staff support (Regeneración Pajaro Valley Climate Action)
- Kids table, light snacks, and refreshments

NORTH MONTEREY COUNTY REGIONAL TRANSPORTATION VULNERABILITY ASSESSMENT

## COMMUNITY OPEN HOUSE

Learn about how climate hazards will continue to impact North Monterey County's roads and help us decide which roads to prioritize!



Photo: Kerstin Wasson/ESNER

**December 4, 2025**

**5-7 PM**

**Castroville Library**

**What to expect:** An informal, drop-in event where you can:

- Visit different information stations at your own pace (like a science fair)
- View maps showing vulnerable areas
- Talk with our team and ask questions
- Share your ideas and concerns
- Enjoy light refreshments!

**Your input will shape future road investments in North Monterey County!**

**Learn more:**

<https://www.tamcmonterey.org/north-monterey-county-regional-transportation-vulnerability-assessment>



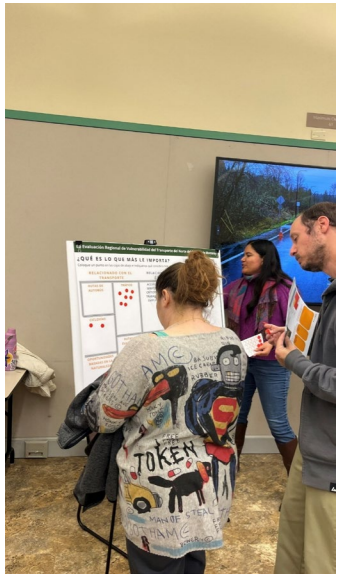
Project Area



# Findings from Open House

- Validated vulnerable areas (5)
- Validated proposed prioritization metrics
- Obtained information on additional roads of concern
- Confirmed community interest
- Received recommendations for future outreach





### La Evaluación Regional de Vulnerabilidad del Transporte del Norte del Condado de Monterey

#### ¿QUÉ ES LO QUE MÁS LE IMPORTA?

Coloque un punto en las cajas de abajo e indiquenos qué considera más importante.

RELACIONADO CON EL TRANSPORTE		RELACIONADO CON LA COMUNIDAD	
RUTAS DE AUTOBÚS	TRÁFICO	ACCESO A SERVICIOS CRÍTICOS O TRABAJOS Y EMPLEOS	SIRVE O ESTÁ CERCA DE UNA COMUNIDAD DESFAVORECIDA
CICLOVÍAS			
	RUTAS DE EVACUACIÓN	ACCESO A SENDEROS O ZONAS RECREATIVAS	
OPORTUNIDADES BASADAS EN LA NATURALEZA			

#### ¿QUÉ OTRAS COSAS DEBERÍAMOS TENER EN CUENTA?

Escriba su respuesta en una nota adhesiva a continuación. ¡Agregue puntos si está de acuerdo con alguna nota adhesiva ya escrita!

[Area with several blue sticky notes]

pathways TAMC

### La Evaluación Regional de Vulnerabilidad del Transporte del Norte del Condado de Monterey

#### PERFIL DE ÁREA VULNERABLE 5

##### CARRETERA BLANCO

##### INFORMACIÓN DE LA CARRETERA

4 millas en total de carretera en tierras bajas

Proporciona acceso crítico a:

- El centro médico Salinas Valley Health
- La ciudad de Salinas
- La ciudad de Marina y la costa

##### PUNTUACIONES DE VULNERABILIDAD

Peligro	Presente	Futuro (2080 - 2100)
Inundaciones de marea alta	2	2
Inundaciones costeras	4	4
Aumento de las aguas subterráneas	2	4
Inundaciones fluviales y tierras interiores	5	5
Hundimiento de la tierra	5	N/A

##### IMPACTOS EN LA COMUNIDAD

¿Cómo podría afectarle este cierre de carretera? Por favor coloque un punto en las cajas con las que esté de acuerdo o agregue una nota para proporcionar más información.

NO PUEDO ACCEDER AL TRABAJO O A SERVICIOS CRÍTICOS	CAMBIO DE RUTA O MÁS TIEMPO DE VIAJE	VARADO O AISLADO
[Red dots]	[Red dots]	[Red dots]

¿Qué le gustaría que se abordara en esta área? Por favor agregue sus comentarios en la caja.

[Area with a pink sticky note]

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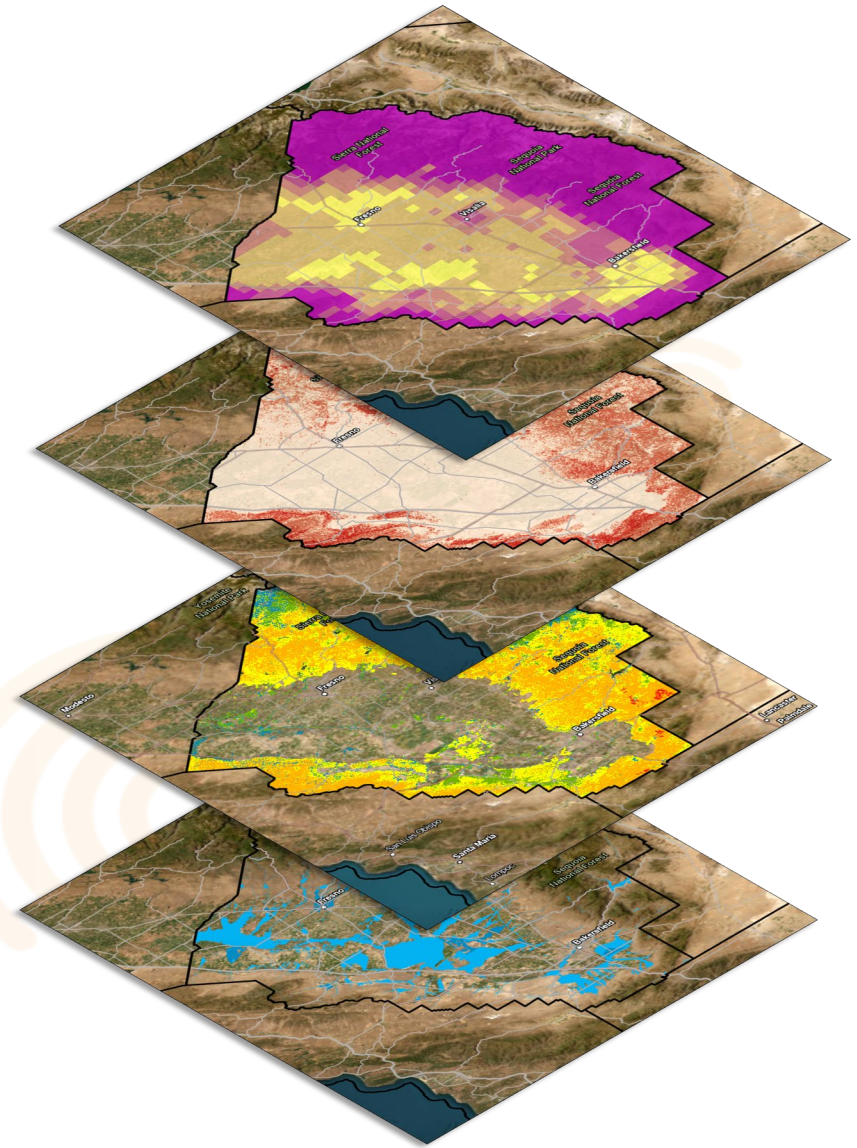
# Hazards



Credit: Pathways Climate Ins

# Hazards Chapter

- Best Available Climate Data Sources
- Climate Scenarios and Horizons
  - Mid and late century
- Climate Stressors
- Climate Hazards
- Compounding Hazards



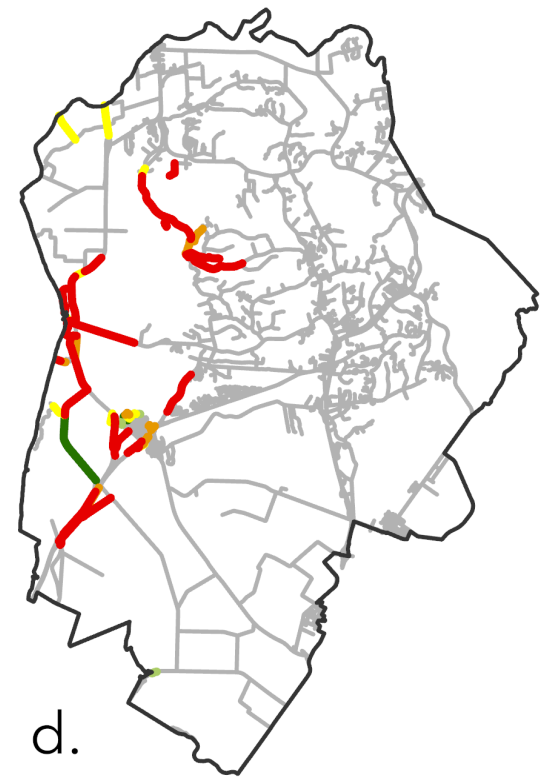
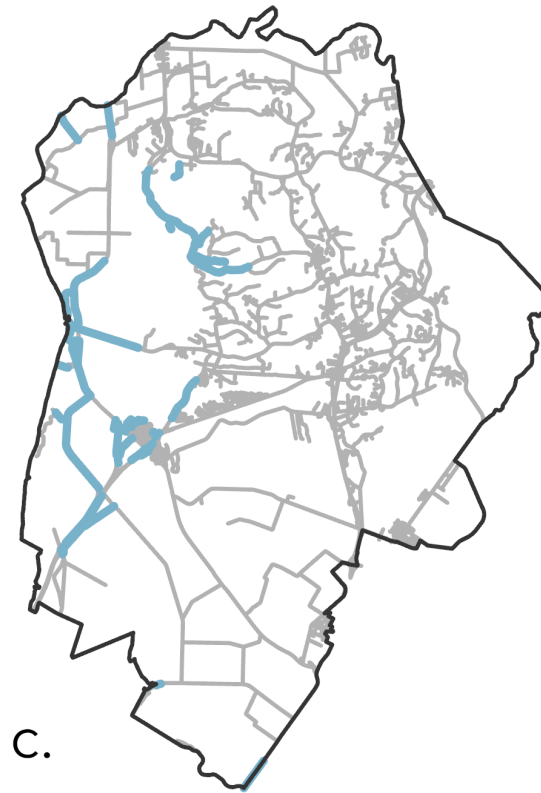
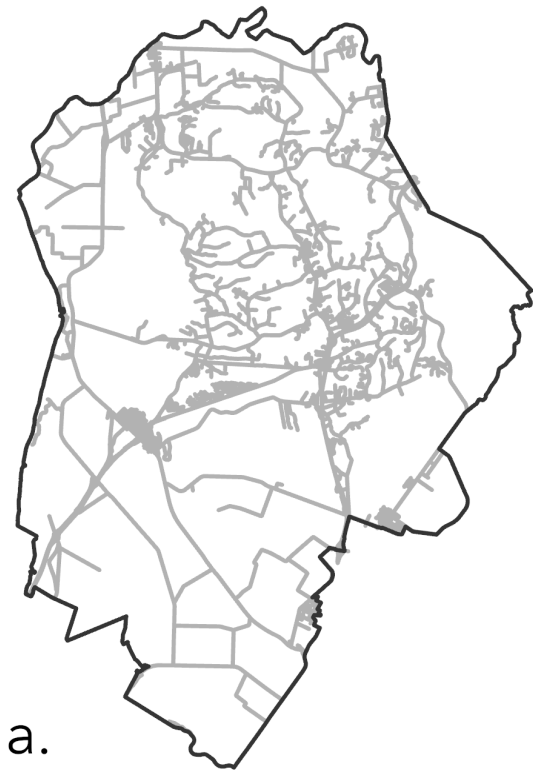


# Exposure & Vulnerability Assessment



Credit: Pathways Climate Ins

# Asset + Hazard $\rightarrow$ Exposure & Vulnerability



# Draft Exposure Results

- Exposure analysis completed for project area (North Monterey County)
- Roadways and Rail segmented into 1/10th mile segments
- Full array of Climate Stressor and Hazards tagged to each segment

# Vulnerability Assessment

- Climate vulnerability: the degree to which physical, biological, and socioeconomic systems are susceptible to and unable to cope with adverse impacts of climate change.
- Analyzed climate hazards and stressors for existing, mid-century, and late-century scenarios
  - Coastal flooding
  - Shallow groundwater rise
  - Subsidence
  - FEMA
  - Rainfall runoff

# Vulnerability Assessment Metrics

## Coastal, Low-lying Areas

- Coastal and Tidal Flooding (flood depth)
- Shallow Groundwater – Existing (depth below ground)
- Shallow Groundwater – Future (depth below ground)
- Subsidence (mm/year)

## Both

- FEMA Special Flood Hazard Areas
- Rainfall Runoff

## Inland, High-elevation Areas

- Uplift (mm/year)
- Landslides Susceptibility (susceptibility class)
- Wildfire Threat – Existing (threat class)
- Wildfire Threat – Future (change in probability)
- Post Wildfire Debris Flow (threat level)

# Vulnerability Criteria

Vulnerability	Rating	Hazard
Low	1	
	2	
Moderate	3	
	4	
High	5	

*Relevant citation for criteria noted under the tables*

- **Low:** Hazard causes limited impacts to roadways for both damage and operations; roadways can quickly recover
- **Moderate:** Hazard may cause short-term closures, damage, impact safety, take a longer time to recover, and/or shorten roadway lifespan
- **High:** Hazard can strand communities, damage is severe, substantial impacts to roadway lifespan (may require reconstruction), elevated threat to life safety and property

# Vulnerability Chapter

- Defines the vulnerability criteria by hazard
- Provides exposure results (e.g., length of roadway flooded by functional type)
- Presents vulnerability scores, rolled up by functional type
- *Asset geodatabase also includes exposure results for other asset types (e.g., critical services, railways)*

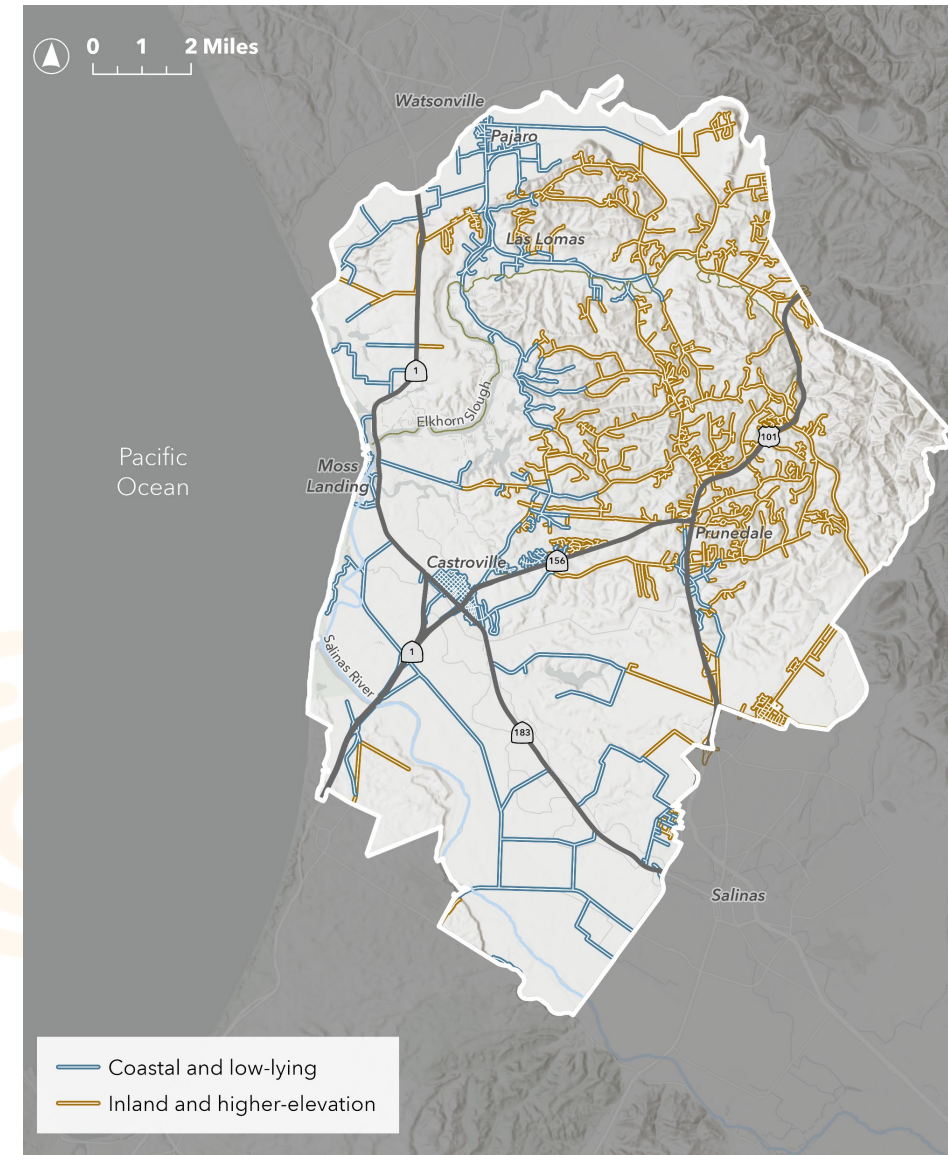


NORTH MONTEREY COUNTY REGIONAL  
TRANSPORTATION VULNERABILITY ASSESSMENT  
DRAFT CHAPTER 4 – VULNERABILITY

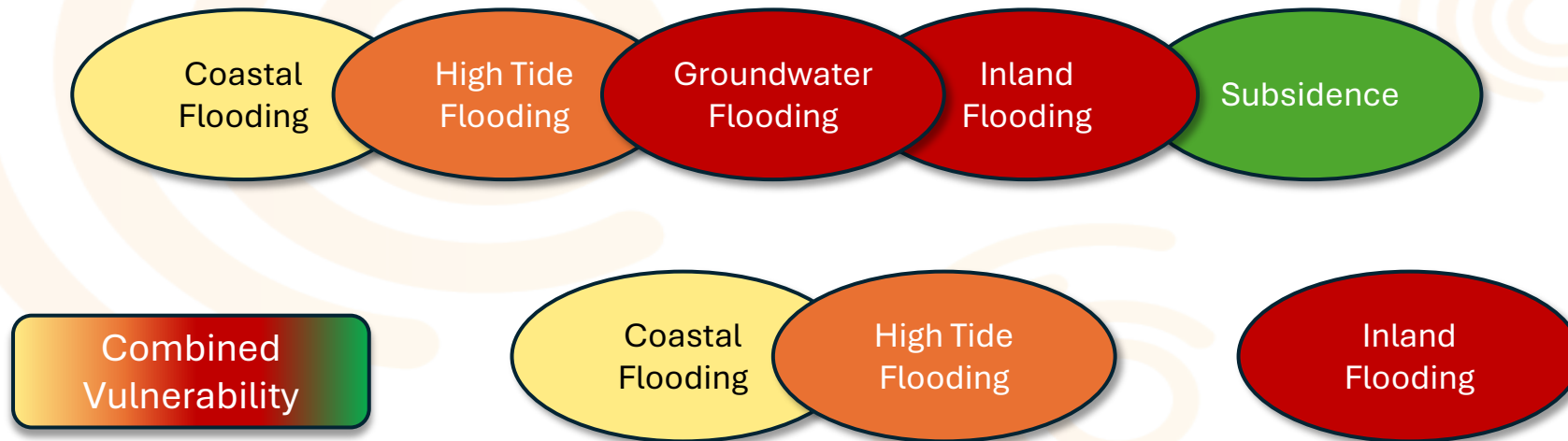


# Vulnerability Approach + Findings

- Combines *hazard vulnerability* and *consequences*
- Report includes:
  - Exposure summary tables by hazard
  - Vulnerability summary tables by hazard
- *But there are many more ways to look at the data*



# Vulnerability Ratings for All Roadways for All Hazards





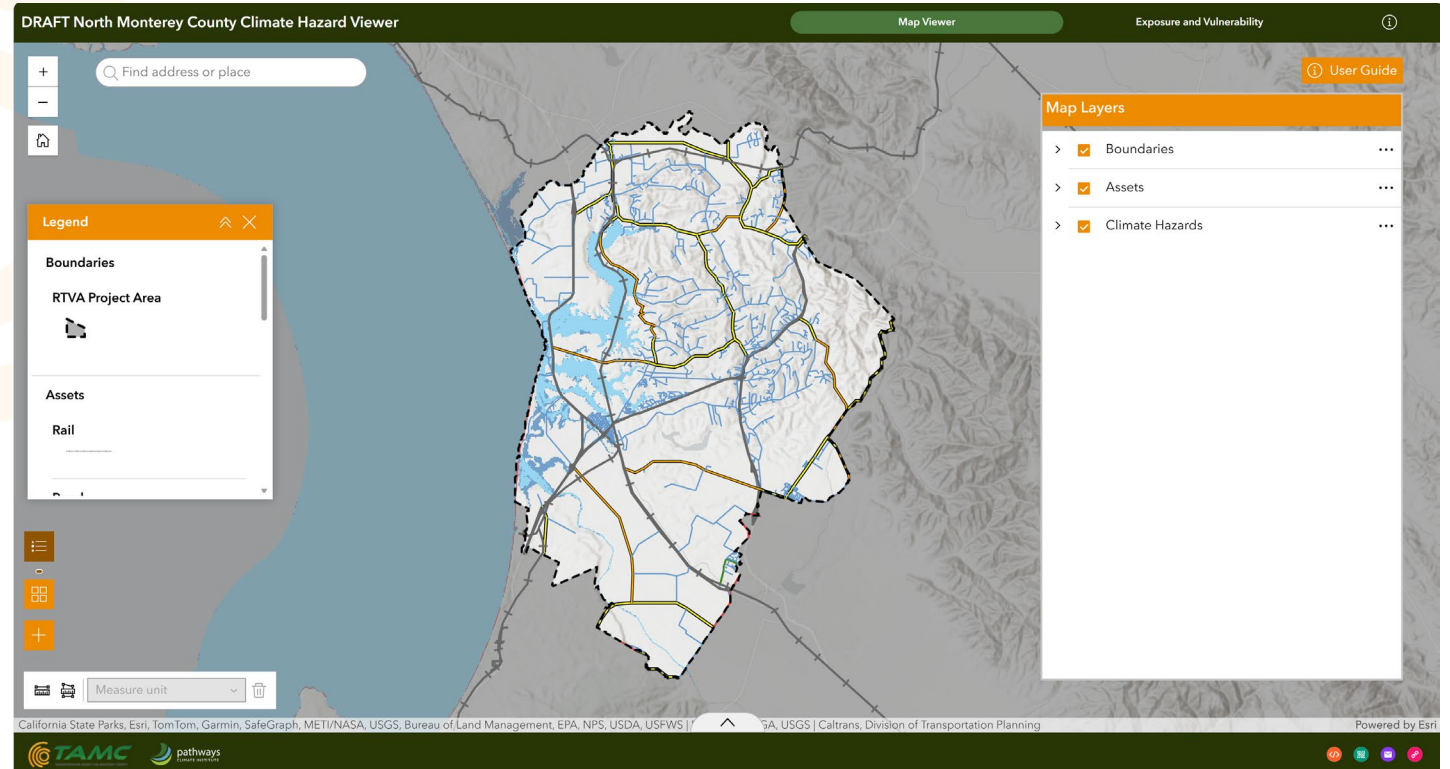
# Hazard Viewer



Credit: Pathways Climate Ins

# North Monterey County Hazard Viewer

- Dynamic online viewer
- Explore North Monterey hazards, exposure and vulnerability results





# Prioritization



Credit: Pathways Climate Ins

# Prioritization Metrics

## Transportation-related



- Roadway Type  
(Functional Class)



- Bikeways  
(Access to bike path)



- Traffic demand  
(Average Daily Traffic)



- Evacuation route  
(Predesignated evacuation route)



- Bus routes  
(MST route)



- Nature-based opportunities  
(Feature types in project area)

# Prioritization Metrics

## Community-related



Proximity to disadvantaged communities  
(SB 535 Disadvantaged Communities)



Trail or recreational access  
(Access to trails)





- Access critical services or jobs  
(Critical services assets and community identified services)  
(Jobs information through community outreach - qualitative)



- Safe Routes to Schools  
(Priority identified areas)

# Prioritization Viewer

[About](#)
[How to Use](#)

ROAD VULNERABILITY PRIORITIZATION

North Monterey County · Coastal and Low-Lying Roads

**BASEMAP**

Street Aerial

**CLIMATE SCENARIO**

Historical

Intermediate Mid-Century Very High Mid-Century

Intermediate Late-Century Very High Late-Century

**HAZARD TYPES**

High Tide Flooding ✓ on

Coastal Flooding ✓ on

Groundwater Rise ✓ on

Riverine & Inland Flooding ✓ on

Subsidence ✓ on

**ROADWAY FUNCTIONAL CLASS**

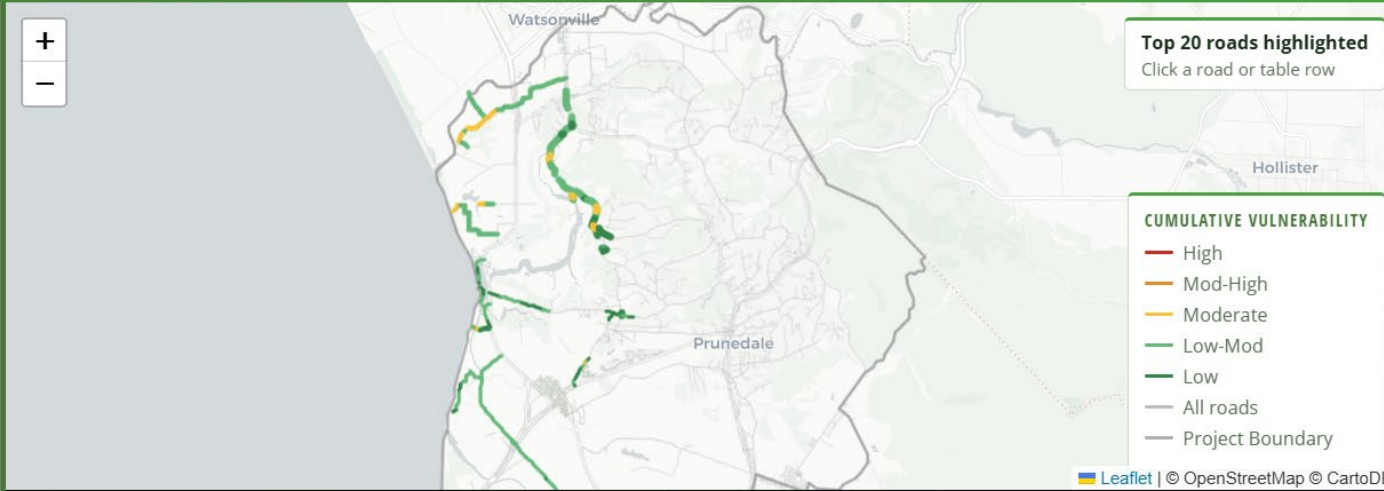
All Classes ▾

**PRIORITY METRICS**

Individual ⓘ Balanced ⓘ

**TRANSPORTATION**

Bikeways 28 ⓘ



**Top 20 roads highlighted**  
 Click a road or table row

**CUMULATIVE VULNERABILITY**  
— High  
— Mod-High  
— Moderate  
— Low-Mod  
— Low  
— All roads  
— Project Boundary

**TOP 20 PRIORITY ROADS** All roads HISTORICAL 
Top 20
Top 100

RANK	ROADWAY NAME	ROADWAY FUNCTIONAL CLASS	CUMULATIVE VULNERABILITY SCORE <span style="font-size: x-x-small;">TL</span>	VULNERABILITY BREAKDOWN	SELECTED PRIORITY METRIC
1	Elkhorn Road	Minor Collector	14	[Red][Orange][Yellow][Green]	—
2	Kirby Road	Local	14	[Red][Orange][Yellow][Green]	—
3	Strawberry Road	Local	13	[Red][Orange][Yellow][Green]	—
4	Giberson Road	Local	13	[Yellow][Red][Red]	—
5	Potrero Road	Local	12	[Red][Yellow][Green]	—
6	Tafton Road	Local	12	[Yellow][Red][Orange]	—

# Prioritization List

Table 6-2. Comparison of Vulnerable Roads Across **All** Prioritization Metrics

Rank	Transportation- and Community-related Metrics (Vulnerability Score / Number of Metrics Met)	Transportation-related Metrics (Vulnerability Score / Number of Metrics Met)	Community-related Metrics (Vulnerability Score / Number of Metrics Met)
1	Elkhorn Road (14/8)	Elkhorn Road (14/4)	Castroville Boulevard (11/5)
2	Castroville Boulevard (11/8)	Davis Road (11/4)	Salinas Road (7/5)
3	Salinas Road (7/8)	Blanco Road (10/4)	Matiasевич Lane (7/5)
4	San Juan Road (8/7)	San Juan Road (8/4)	Bishop Street (7/5)
5	Porter Drive (7/7)	San Miguel Canyon Road (6/4)	Preston Street (5/5)
6	Merritt Street (6/7)	Castroville Boulevard (11/3)	Elkhorn Road (11/4)
7	Davis Road (11/6)	Nashua Road (10/3)	Preston Road (8/4)
8	Blanco Road (10/6)	Salinas Road (7/3)	McFadden Road (8/4)
9	Hall Road (6/6)	Porter Drive (7/3)	Brooklyn Street (7/4)
10	Blackie Road (5/6)	Reservation Road (7/3)	Railroad Avenue (7/4)

# Final Discussion

- How might this information be useful to your organization?
- Any questions or feedback on project results, findings or finalization?

# Thank you!

Public Review: May 11-  
June 11, 2026

Final Draft: by June 30,  
2026



Credit: Pathways Climate Institute