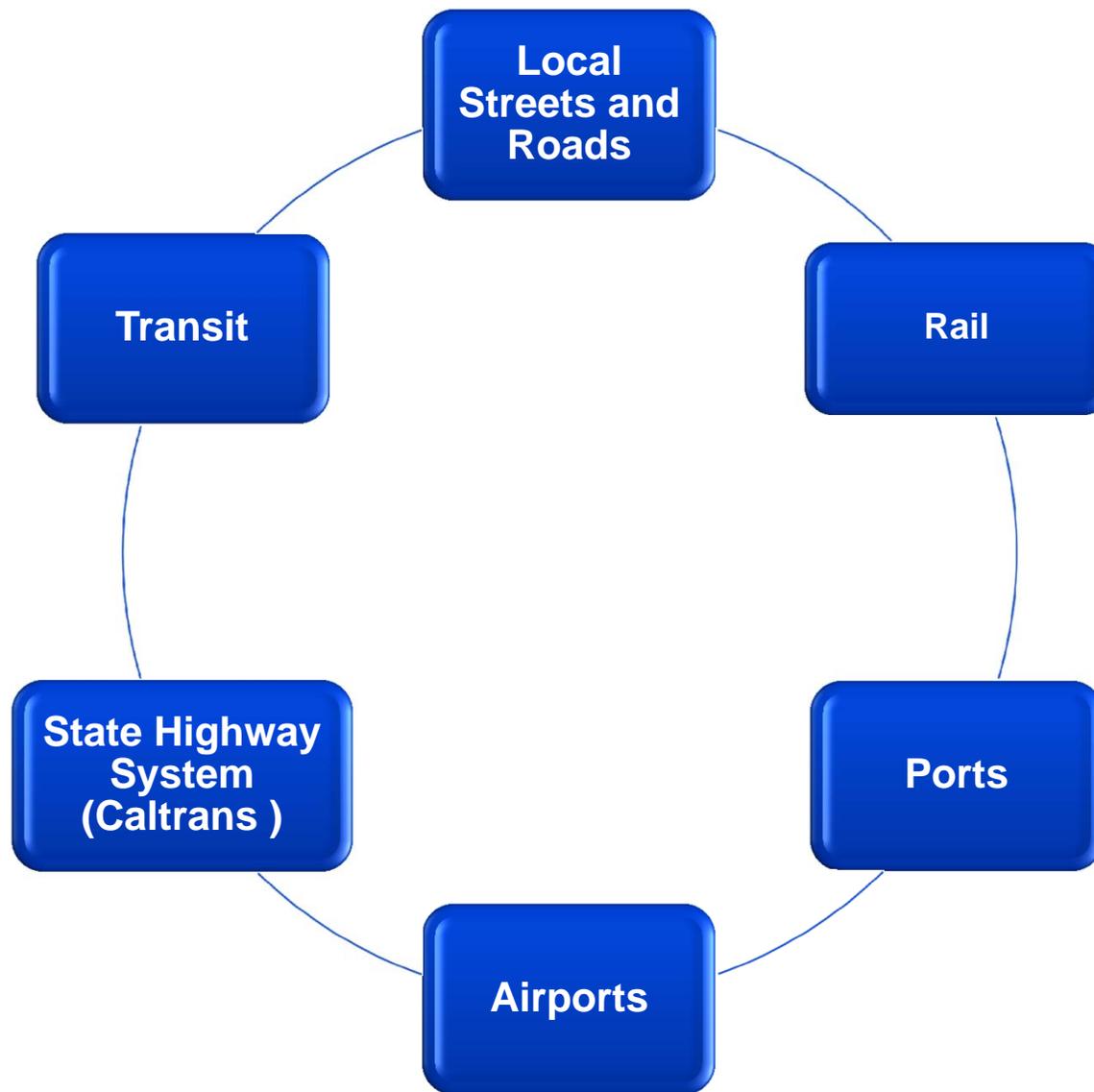


# Impacts of Sea Level Rise on Delta Transportation Infrastructure

Garth Hopkins,  
Chief, Office of Regional and Interagency  
Planning  
Caltrans



# California's Transportation System

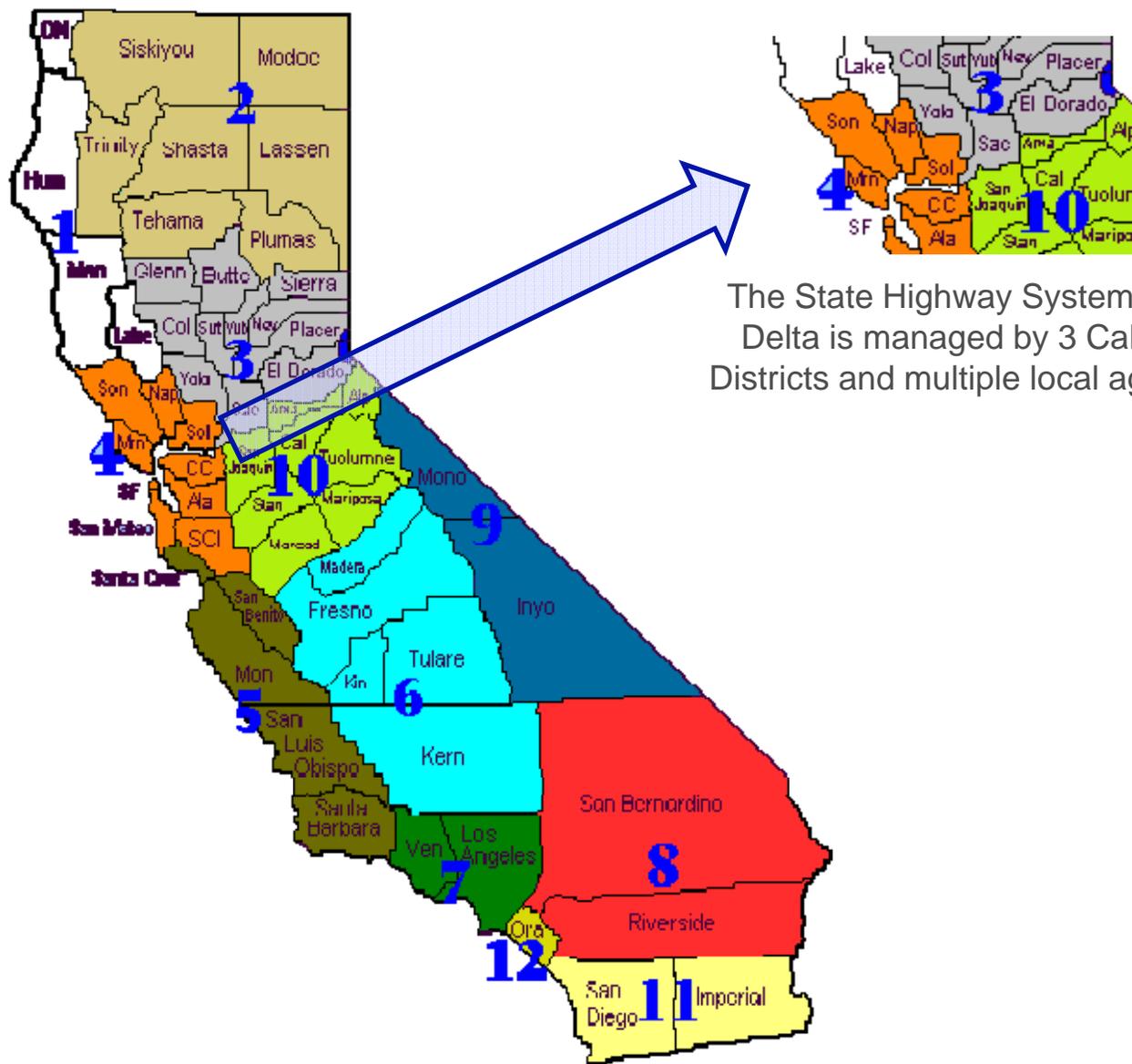


# Caltrans Overview

- Owner and operator of the State Highway System (SHS)
- Manage over 50,000 lane miles of the SHS on 265 State Highways
- Responsible for transportation planning, design, programming, construction, and maintenance of the SHS
- Coordinate with other transportation agencies and other stakeholders to ensure a safe and robust transportation system



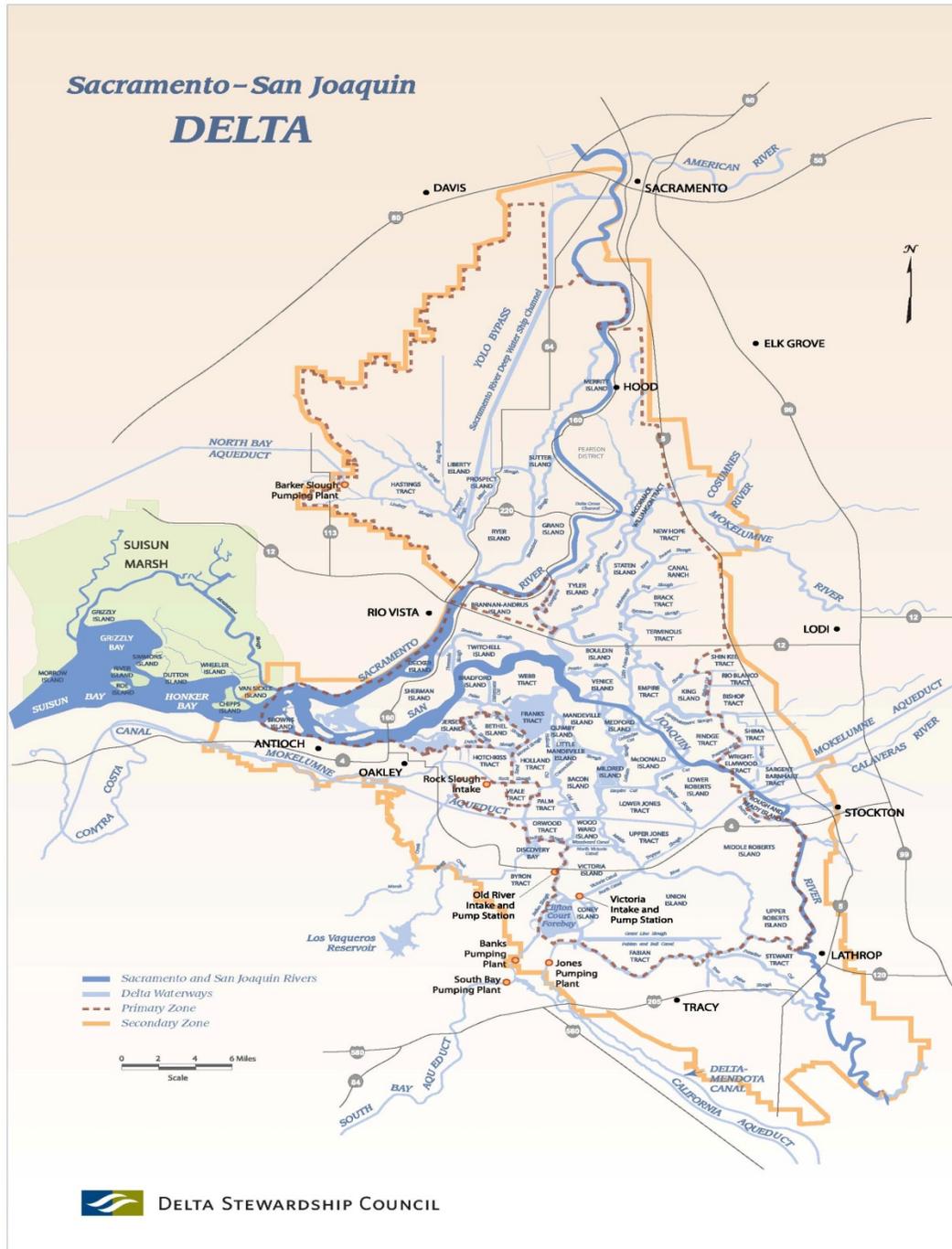
## Caltrans 12 Districts



The State Highway System in the Delta is managed by 3 Caltrans Districts and multiple local agencies



## State Highways in the Delta Region



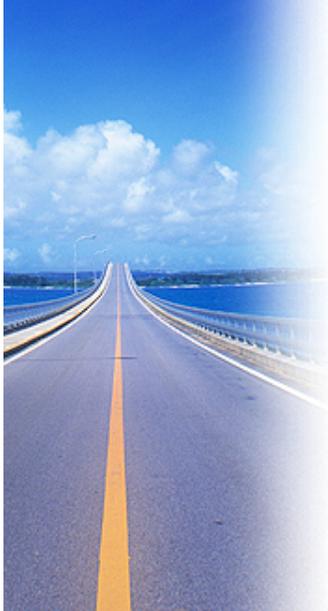
- I-5\*
- I-80\*
- I-205\*
- I-580
- I-680

- SR 4
- SR 12
- SR 99\*
- SR 160

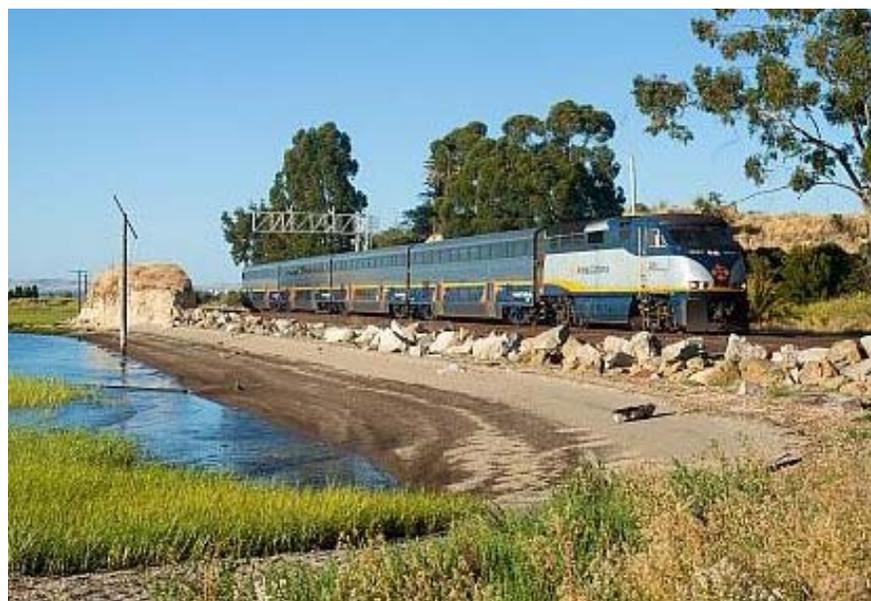
\* Major Trucking Routes



# Transportation in the Delta



# Transportation in the Delta



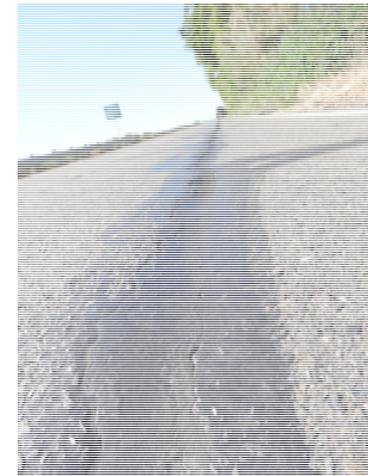
# Changes in the Delta

- Sea Levels are rising

County	Centerline Miles Affected	
	16 Inch Rise (2050)	55 Inch Rise (2100)
Solano	1.86	3.56
Sacramento	5.74	5.74
San Joaquin	10.01	10.01
Total Affected Length	17.61	19.31

Source: PBS&J, 2010; USGS Department of Water Resources

- Land is subsiding
- Earlier and higher peak flows



Land subsidence causes roadway "crowning"



# Impacts of SLR and Extreme Weather Events to Transportation Infrastructure

- Roadway washout
- Flooding of roadways
- Bridge Scour
- Railway flooding
- Damage to roadway substructure
- Route closure
- Travel Delays
- Increased need for emergency response services



Bridge Scour



Levee Break, Roadway Washout



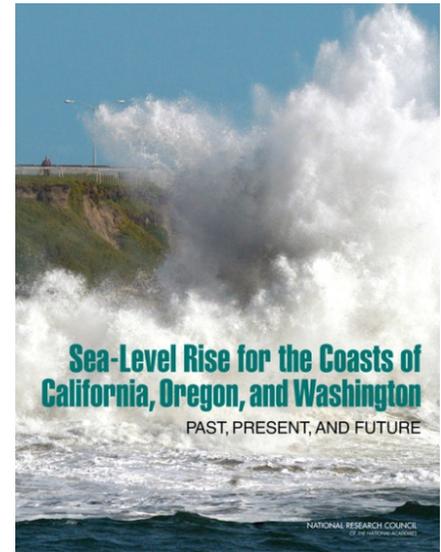
## Caltrans Efforts to Address Climate Change Impacts District Vulnerability Assessments

- Identify segments of the state highway system vulnerable to:
  - Sea Level Rise
  - Increased Temperatures, and Extreme Heat Events
  - Changing Precipitation Patterns

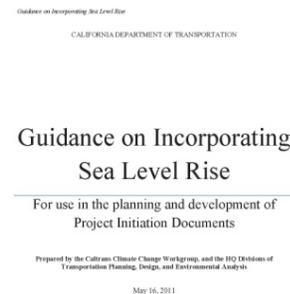


# Caltrans Efforts to Address Climate Change Impacts

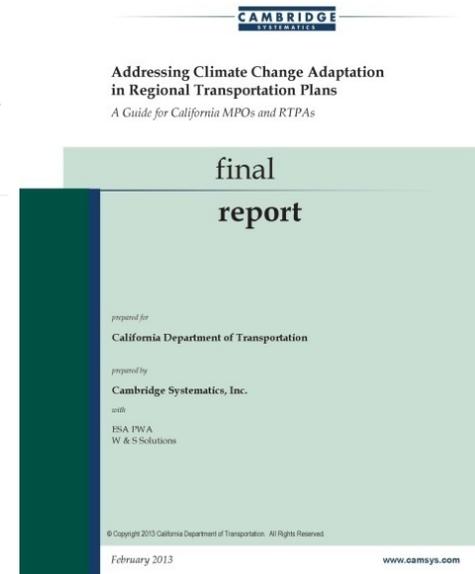
- National Academies of Sciences “Sea Level Rise for the Coasts of California, Oregon, and Washington”



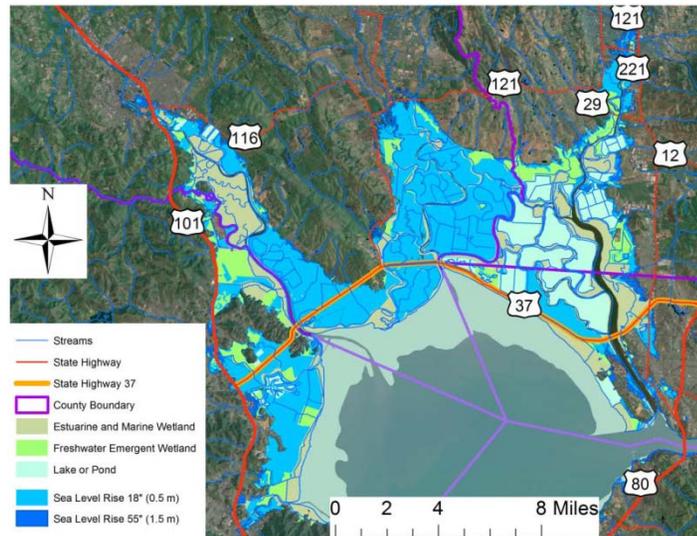
- Caltrans “Guidance On Incorporating SLR”



- Caltrans “Addressing Climate Change Adaptation in Regional Transportation Plans”



# Caltrans Efforts to Address SLR State Route 37 Study



- Route is highly vulnerable to SLR
- Caltrans and regional partners are currently studying alternatives to relocate or raise the route
- New alignment will ensure route is not vulnerable to SLR while protecting neighboring natural environment and species
- Should be used as a case study for all vulnerable routes in the Delta



# Thank You!

