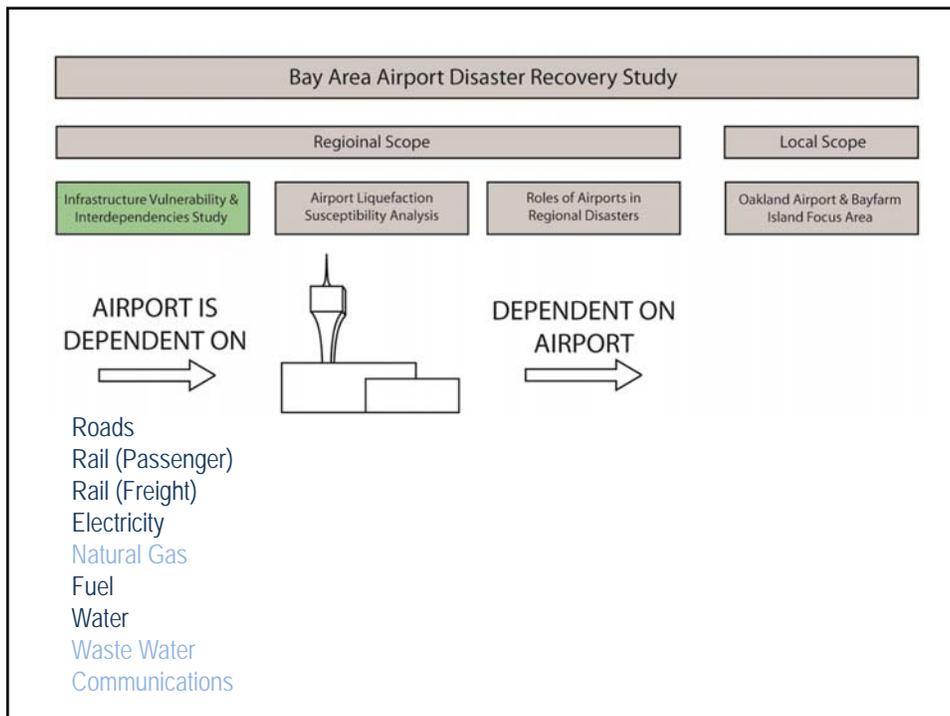


# INFRASTRUCTURE VULNERABILITY STUDY



earthquake and hazards program  
Association of Bay Area Governments

Michael Germeraad  
ABAG Resilience Intern



# TRANSPORTATION

ROAD

PASSENGER RAIL

FREIGHT RAIL

## REGIONAL ROAD SYSTEM

State Highways – Vehicle Trips



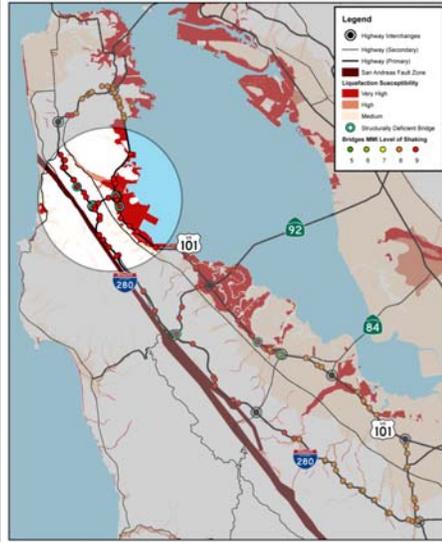
State Highways – Truck Trips



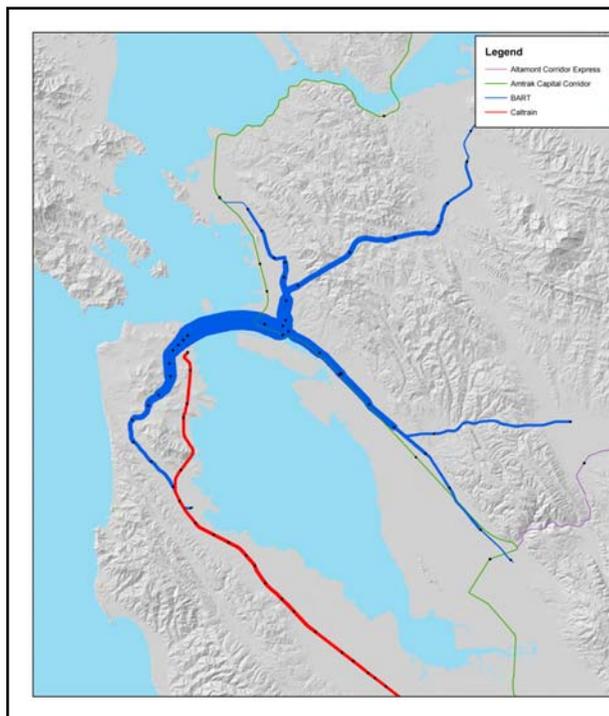
MTC (2004)

# ROAD NETWORK VULNERABILITIES

Peninsula – San Andreas Event

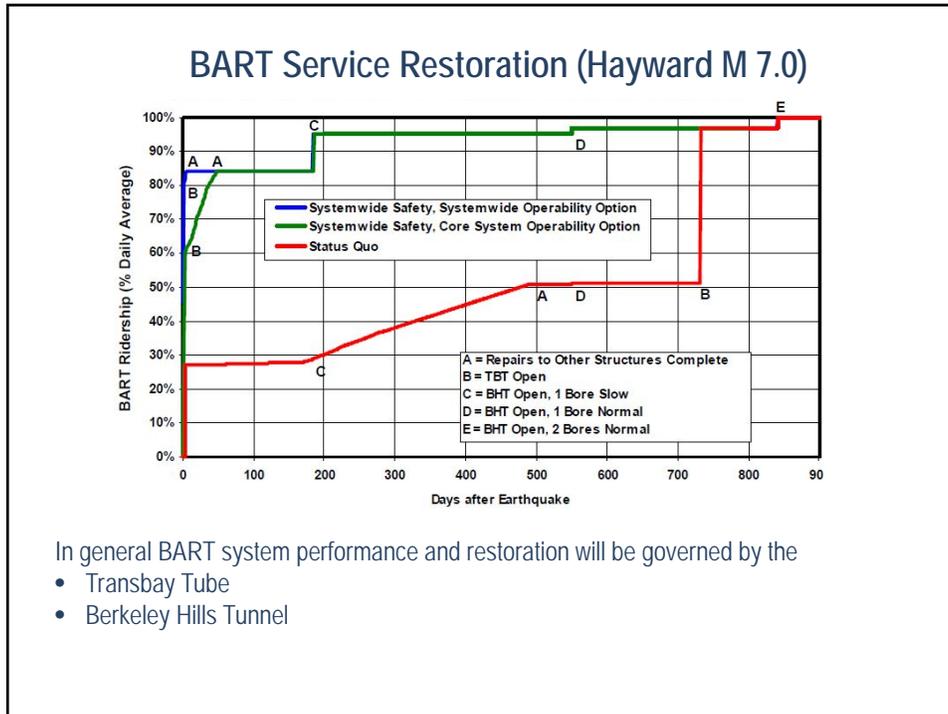


East Bay – Hayward Event

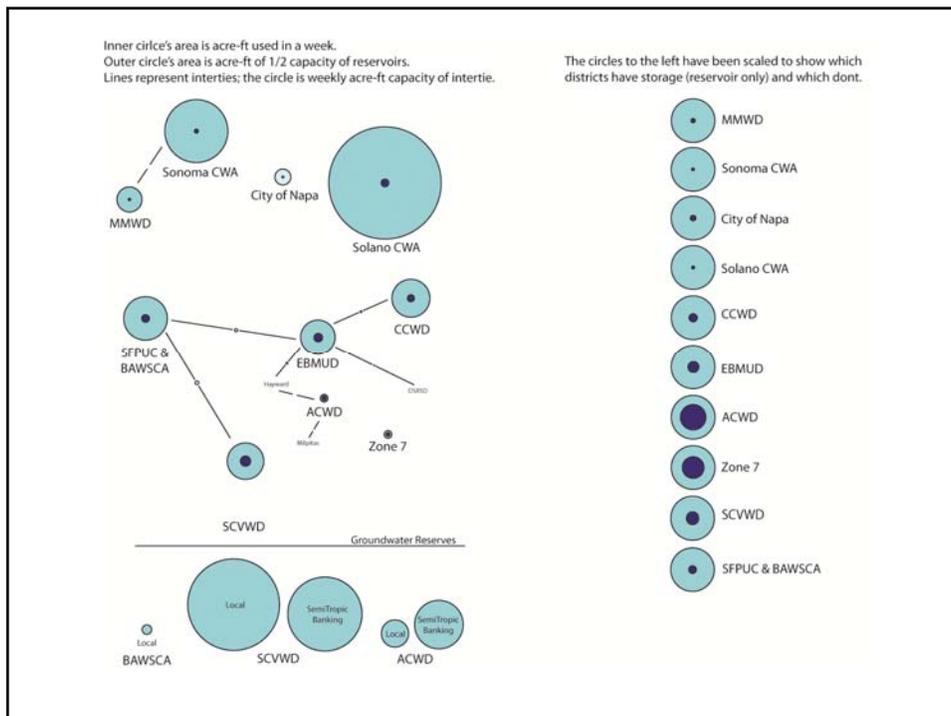
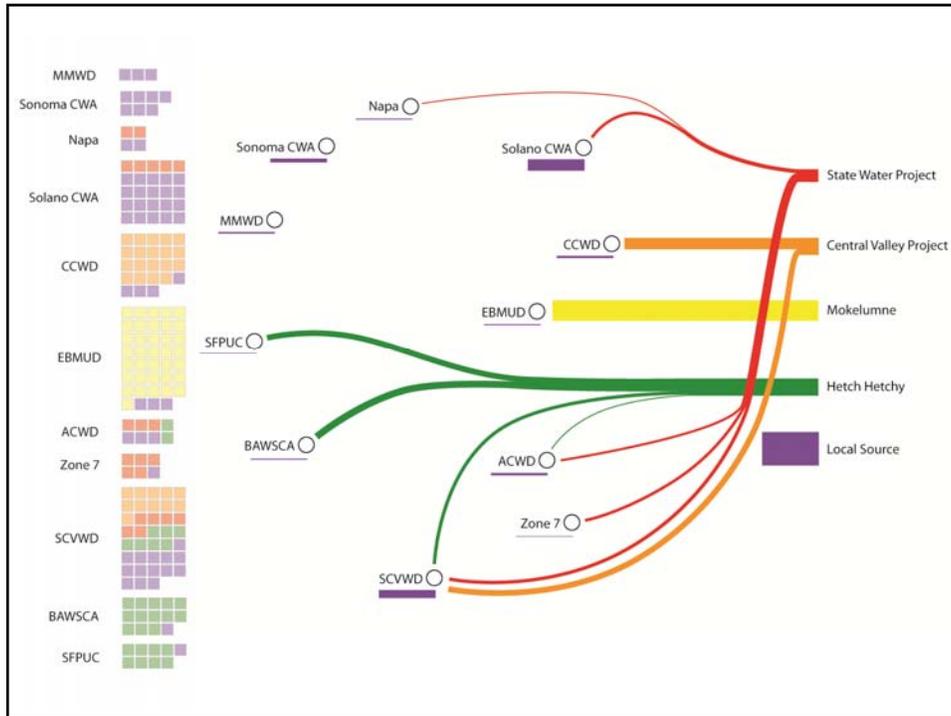


## Rail System

- Altamont
- Amtrak
- BART
- CalTrain

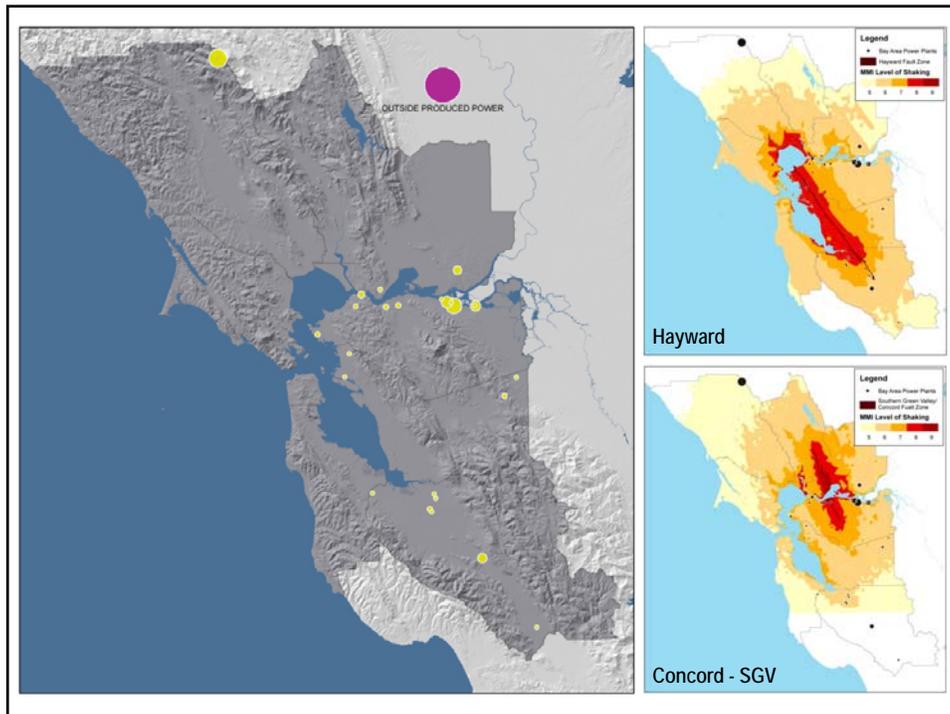


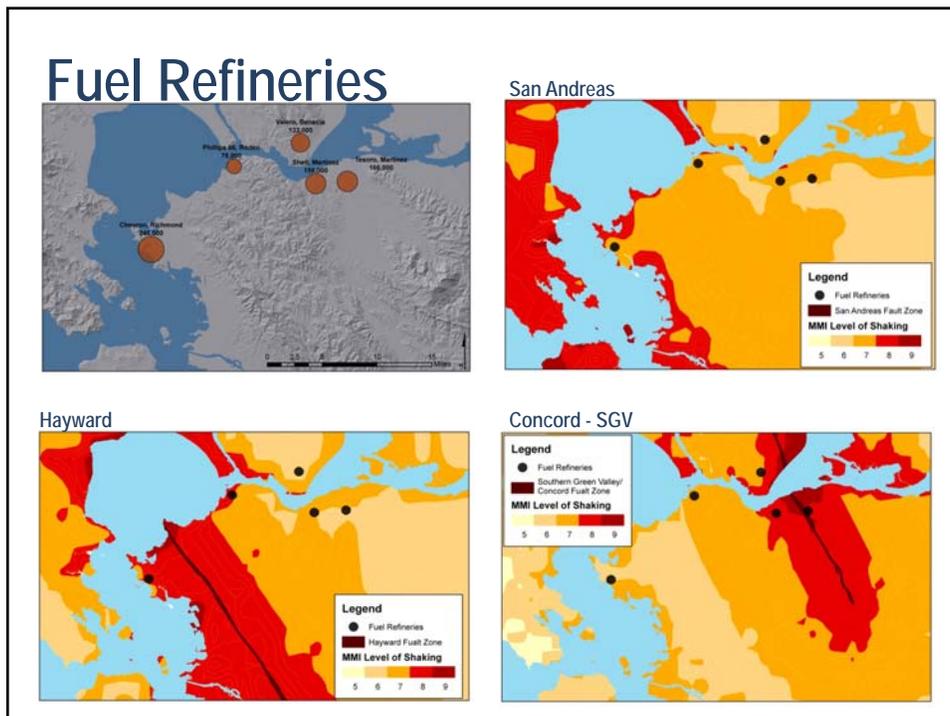
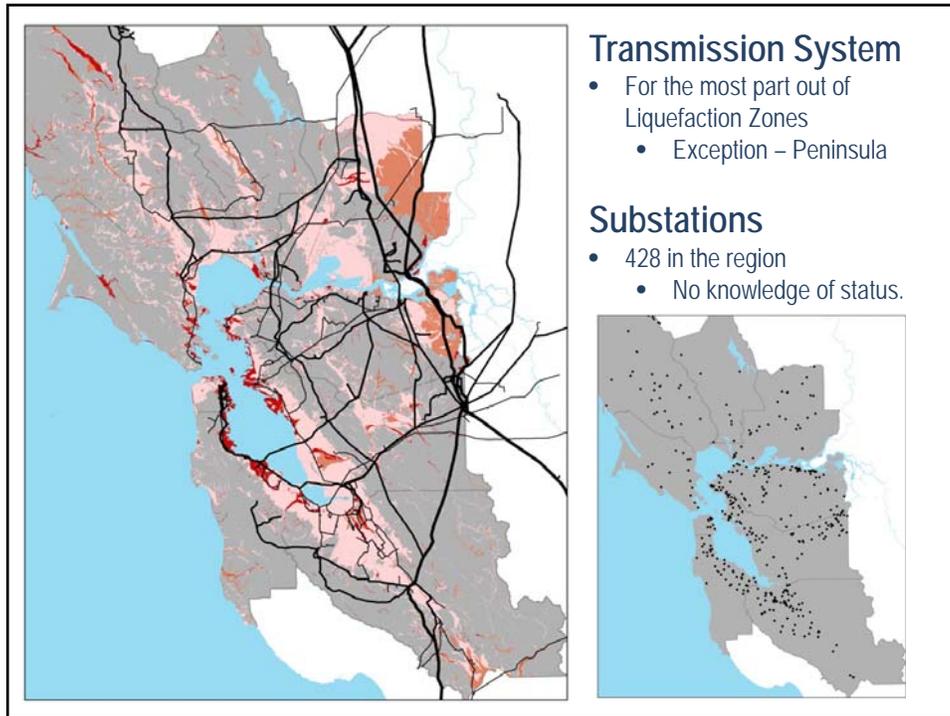
# WATER

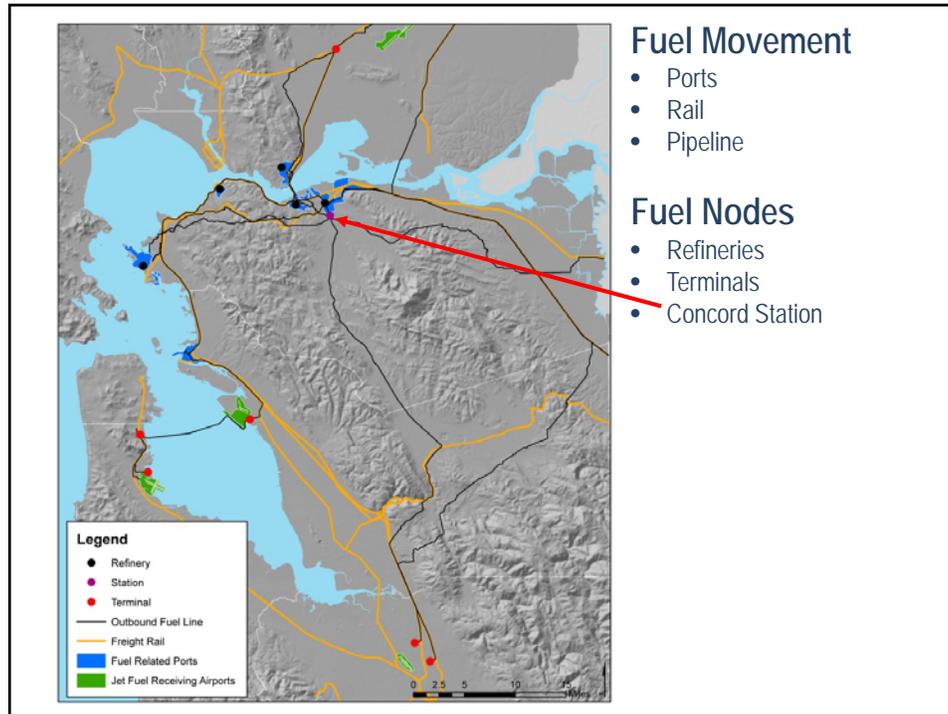


# ENERGY

ELECTRICITY  
NATURAL GAS  
FUEL







## Big pictures are emerging...

- Fuel is a HUGE issue.
  - Vulnerable system, impacted by multiple events.
  - Isolated system.
  - Many other systems are reliant on electricity and have mitigated with generators, but have limited supply (hours and days).
- Life line road routes are vulnerable.
  - Structurally deficient bridges.
  - SF & OAK airports and ports are disconnected from life line routes.
- Interdependencies are everywhere.
  - Asphalt to repair roadway, requires refineries and natural gas.

# NEXT STEPS

- Technical Review & Academic/Professional Review
- Meetings with Utilities
- Asphalt Study
- Build Out Electricity & Natural Gas Analysis
- Bay Farm Island Water Distribution & Wastewater Study
- Interdependencies Interviews

# QUESTIONS