



# LIFELINES COUNCIL

## Meeting 39: October 3, 2023

# Agenda

1. Call to Order	Douglas Legg, <i>Deputy City Administrator, City Administrator's Office</i> Chris Barkley, AECOM	5 minutes
2. Introductions and Agenda Review	Brian Strong, <i>Director, Office of Resilience and Capital Planning</i>	10 minutes
3. Lifelines Restoration Performance Report: Recommendations on Transportation	Laurel Mathews, <i>Analyst, Office of Resilience and Capital Planning</i>	5 minutes
4. Caltrans	Leah Budu, <i>Deputy District Director, Caltrans</i> Amjad Naseer, <i>District Division Chief, Caltrans</i>	20 minutes
5. Golden Gate Bridge Highway and Transportation District	Brandon Chapman, <i>Security and Emergency Management Specialist, Golden Gate Bridge Highway and Transportation District</i>	15 minutes
6. Water Emergency Transportation Authority	Lauren Gularte, <i>Government and Regulatory Affairs Manager, Water Emergency Transportation Authority</i>	15 minutes
7. Discussion		20 minutes

# Lifelines Restoration Performance Report: Recommendations on Transportation

Laurel Mathews, *Seismic Resilience Analyst,*  
*Office of Resilience and Capital Planning*

# Lifelines Restoration Performance Project

- ▷ How would we like lifelines to perform in an earthquake?
- ▷ How would lifelines perform if an earthquake happened today?
- ▷ What actions are needed to close the gap?

Report available at:  
[onesanfrancisco.org/lifelines-program](https://onesanfrancisco.org/lifelines-program)



B. Lifelines given in A are dependent on these lifelines

### A. Lifeline Centers

# Lifelines Restoration Performance Project Recommendations

- ▷ Lifeline operators should continue to invest in seismic improvements that speed system restoration.
- ▷ Lifeline operators that have not yet done so should perform a system wide risk analysis to assess needed retrofits and capital improvements to speed post-earthquake restoration.
- ▷ Develop a common and flexible identifier to help facilitate access on Bay crossings for those personnel who are not emergency responders but have critical post-disaster roles in performing damage assessment, inspections, and immediate repairs of critical assets within San Francisco.

# Caltrans

*Leah Budu, Deputy District Director, Caltrans*  
*Amjad Naseer, District Division Chief, Caltrans*



# Update to Lifelines Restoration Performance Report

## San Francisco Lifelines Council Meeting

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Presenter: S. Sean Nozzari, Deputy District Director – Operations

Caltrans Bay Area

September 20, 2023

# Purpose

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- Provide update to the 2018 report on:
  - ✓ A common vision for keeping all San Francisco lifelines operational, considering two major earthquake scenarios\*
  - ✓ Understanding how lifelines would perform if one of those two events were to occur today

\* M7.9 San Andreas Earthquake Scenario  
M7.0 Hayward Earthquake Scenario

# Focus of the Update

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- Progress on identified recommendations
- Challenges and barriers
- New priorities
- Other ongoing and planned work to increase resilience

# Caltrans Regional Transportation Infrastructure



# Caltrans Regional Transportation Infrastructure

## Lifelines and Critical Routes

ROUTE	LIMITS	
24	From I-680 in Walnut Creek to I-580 in Oakland	
80	From US 101 in San Francisco to I-580 in Oakland and from I-780 in Vallejo to the Sacramento Co. Line/District 3 boundary	
92	From US 101 to I-280 in San Mateo County to I-280	
101	From San Benito County line/District 5 boundary to I-280 in San Jose	<b>Other Critical Bay Area Routes</b>
101	From I-280 to I-80 in San Francisco	Route 17 – From Route 1 (Santa Cruz County Line) to 280/880 (San Jose)
101	From the Golden Gate Bridge in Marin County to Medocino County Line/District 1 boundary	Route 37 – From Route 101 (Novato) to 80 (Vallejo)
280	From US 101 in San Jose to US 101 in San Francisco	Route 80 – From Routes 580/880 I/C (Oakland) to 780 (Vallejo)
116/121/12/29	From US 101 in Petaluma through Napa to I-80 in Solano County	Route 92 – From Route (Half Moon Bay) to 280 (San Mateo)
238/580	From I-880 onto I-580 in Alameda County east to San Joaquin County Line/District 10 boundary and Route I-580 from I-80 to SR 24	Route 101 – Golden Gate Bridge and San Francisco approaches
680	From I-280 in San Jose to I-780 in Benicia	Route 580 – From Route 101 (San Rafael) to 80 (Albany)
780	From I-680 in Benicia to I-80 in Vallejo	Route 680 – From Route 780 (Benicia) to 80 (Cordelia Junction)
		Route 880 – From Routes 17/280 (San Jose) to 80/580 (Oakland)

## Critical Facilities

1. San Francisco-Oakland Bay Bridge and approach structures
2. Carquinez Bridges
3. Caldecott Tunnels
4. Presidio Viaduct (Golden Gate Bridge operate)
5. San Mateo-Hayward Bridge
6. Richmond-San Rafael Bridge
7. Martinez-Benicia Bridge
8. Dumbarton Bridge
9. Posey and Webster Tubes
10. Waldo Tunnels
11. Crystal Springs Bridge
12. MacArthur Tunnel
13. Highway 92/280 Tunnel
14. Interstate 280/680 and US 101 Distribution Structure
15. Interstate 80/580/880 - Distribution Structure
16. Interstate 580/980 and Route 24 - Distribution Structure
17. Interstate 680 and Route 24 - Distribution Structure
18. Antioch Bridge

# Caltrans Bridge Seismic Retrofit Program



- Phase 1:
  - ✓ Initiated after the 1987 Whittier Narrows Earthquake and expanded after the 1989 Loma Prieta Earthquake
  - ✓ 1,039 bridges identified for retrofit
- Phase 2
  - ✓ Initiated after the 1994 Northridge Earthquake
  - ✓ Additional 1,155 bridges identified for retrofit
- Post Phase 1 and 2
  - ✓ 353 bridges identified for retrofit
- To date, 2,350\* bridges have been retrofitted

\* Remaining 200 bridges were determined to be not needing any retrofit

# Caltrans Approach to Retrofit

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- Loma Prieta & Northridge Earthquakes inspired aggressive retrofit efforts for the following performance standards:
  - ✓ Non-Collapse Standard  
Bridge will not collapse in MCE\* event, but will require demolishing; and where Caltrans can quickly establish a detour around it. Overcrossings and interchanges are designed to this standard

\* Maximum Credible Earthquake

An event with 2% probability of being exceeded in 50 year, or 2,500-year return period

# Caltrans Approach to Retrofit

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- ✓ Serviceable Standard

Bridge will suffer damage in MCE event, but to an extent that it can be restored in relatively short period – about 6months (Antioch, Carquinez, Dumbarton, Richmond-San Rafael, and San Mateo-Hayward Bridges; and I-280/Doran Memorial Bridge)

- ✓ Lifeline Standard

Bridge will remain in use by emergency responders in MCE event, but will likely be closed to traffic; may suffer some damage, but easily repairable and immediately usable (Bay Bridge and Benicia Bridge)

# Caltrans Emergency Management

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- Caltrans emergency response utilizes SEMS/NIMS\*, including:
  - ✓ Use of Incident Command System (ICS)
  - ✓ Multi-Agency Coordination System (MACS)
  - ✓ Operational Area Concept/Operational Area Satellite Information System (OASIS)
  - ✓ Emergency Operations Center (EOC):  
Activate Caltrans/District EOC, and staff State/local emergency centers

\* Standardized Emergency Management System (available at <https://www.caloes.ca.gov/office-of-the-director/operations/planning-preparedness-prevention/planning-preparedness/standardized-emergency-management-system/>)

National Incident Management System (available at <https://www.fema.gov/emergency-managers/nims>)

# Caltrans Priorities After Major Events

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- ✓ **Traffic Control:**  
CHP/Caltrans establish road closures/detours for public safety. Circumstances may govern reopening to emergency vehicles, local traffic, commercial traffic, high occupancy vehicles/transit, or all traffic
- ✓ **Damage Assessment:**  
Caltrans conducts public safety/damage surveys; collects/analyzes nature/severity of damage; reports via established channels; and determines appropriate response
- ✓ **Route Recovery:**  
Caltrans undertakes necessary work for reopening of damaged facilities, prevention of additional damage, and eliminating travel restrictions using in-house resources of emergency contracts
- ✓ **Mutual Aid:**  
Request to provide mutual assistance to/from allied agencies, as warranted

# M7.0 Hayward Earthquake Scenario

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- Timeline of State routes up and running:
  - ✓ Bay Bridge and Benicia Bridge – 72 hours
  - ✓ Other State owned-operated toll bridges – 6 months or less
  - ✓ Overcrossings/interchanges – May require reconstruction
  - ✓ Other roadway damage: Roadway buckling/retaining wall collapse – 6 months

# M7.0 Hayward Earthquake Scenario

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- Access to repairs by workforce living outside San Francisco:
  - ✓ CHP Field Incident Commander grants access on State highways
  - ✓ County EOC grants access on local roads
  - ✓ CHP/Bridge District grant access across Golden Gate Bridge
  - ✓ May consider granting jurisdictional permission under an agreement and/or encroachment permit on key routes
  - ✓ Broader discussion on this collaborative effort is needed

# New Priorities

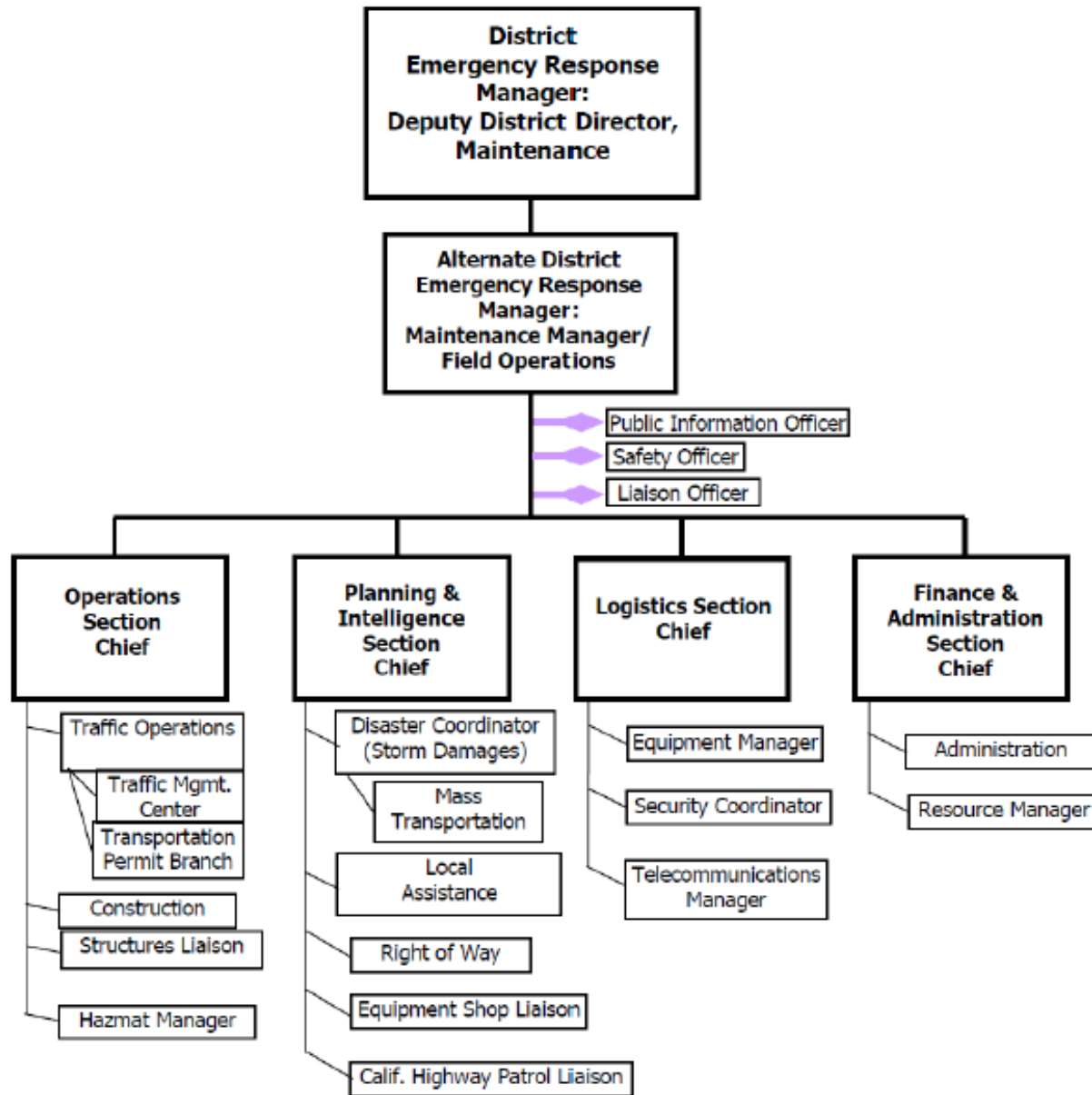
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- General approach has not changed; COVID opened new way to do business in virtual settings, and increased dependence on communications infrastructure
- State is building a 10,000-mile high-speed fiber optic network, especially for access by underserved communities. Caltrans is working with the California Department of Technology to design and construct a large portion of this network for completion by 2027

# Planned Work for Earthquake Resilience

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- Caltrans continues to identify additional bridge retrofit needs as codes improve based on new research
- Infrastructure Investment and Jobs Act (IIJA) of 2021 \$400M grant for the final phase of Golden Gate Bridge retrofit
- Bay Area Toll Authority (BATA) may seek IIJA grants through FHWA's Bridge Investment Program for toll bridges, which received \$12.5B in funding from IIJA



# Caltrans Emergency Response Structure

Questions/Comments?

Thank you!

# Golden Gate Bridge Highway and Transportation District

*Brandon Chapman, Security and Emergency Management Specialist,  
Golden Gate Bridge Highway and Transportation District*

# GOLDEN GATE BRIDGE, HIGHWAY, AND TRANSIT DISTRICT

Brandon Chapman

Security & Emergency  
Management Specialist

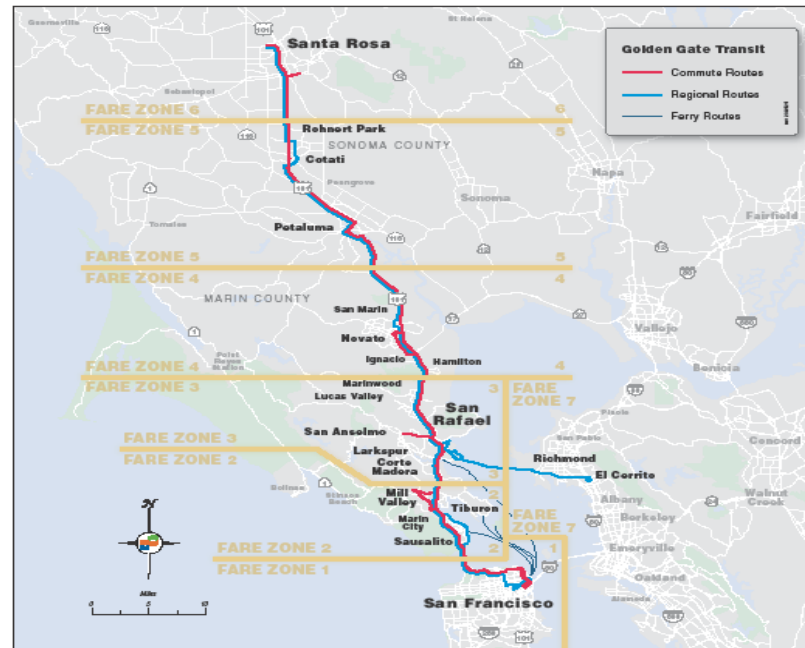




- Special District, Formed 1928
- 19 Board Members; 9 from SF, 4 Marin , 3 Sonoma, 1 from Napa, Mendocino, and Del Norte Counties
- 2 board members serve on SMART
- MTC Mutual Aid & WETA
- Bay Area Council member

# Bus Operations

- 1972 bus operations begin
- 147 busses
- 4 counties serve
- 4 zones or districts for routes and staff
- San Rafael Transit Center
- Marin Transit service level agreement
- MTC mutual aid





# Ferry operations



# Ferry Operations



- 1970 ferry ops under GGBHTD
- 7 vessels total
- 5 regular service lines, 2 special
- 6 ferry terminals, 4 in Marin
- Ferry crews are GGBHTD staff





Bay Ferry 6



10/2/2023

# Bay Bay Ferry 6Ferry

- 5 day week long active threat training in July with ferry crews
- August 23, table top exercise
- August 28-30 Active Threat on Ferries while underway
- September 18-21 active ferry based threat and response
- September 19 China Basin Ferry Terminal with GGF shore based exercise
- December 6<sup>th</sup> Port Security/Active Threat table top and workout for senior leaders



# Bridge



- Staff:
  - 36 Bridge Patrol personnel
  - 26 Roadway Services personnel
- Respond to all incidents on or around the Bridge, many involving suicide intervention
- Patrol the Bridge, other District facilities, monitor cameras, provide customer service, and work with partner agencies

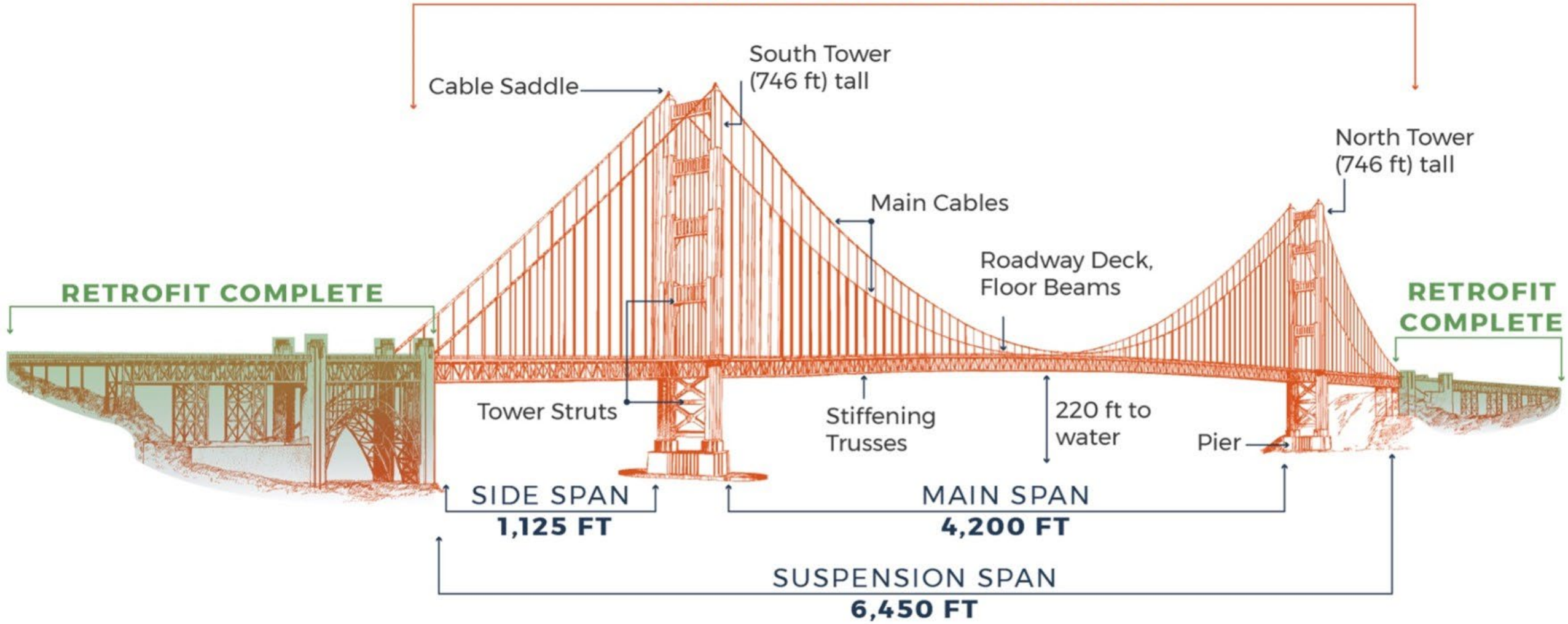
- 1.7 Miles Long, Six Lanes of Traffic
- Over 10 Million Visitors per year, 41 Million Vehicle crossings per year
- In operation since 1937
- Only Bridge in California not to be run or operated by CalTrans



# Seismic Retrofit

- **Loma Prieta-GGBHTD** engaged a team of consultants to conduct a vulnerability study
- 7.0 or greater earthquake with an epicenter near the Bridge, it would experience severe damage that could close this important transportation link for an extended period
- 8.0 or greater earthquake centered near the Bridge, there would be a substantial risk of impending collapse of the San Francisco and Marin Approach Viaducts and the Fort Point Arch, and extensive damage to the remaining Bridge structures, including the Main Suspension Bridge
- 1992 retrofitting the Bridge would be more cost-effective than replacing it

## SEISMIC RETROFIT PROJECT AREA



# Phase 1 1997-2001

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- \$71 million, which was funded using Golden Gate Bridge tolls
- Strengthening the existing foundations
- Total replacement of the four supporting steel towers and strengthening of Bent N11
- Replacement and addition of top and bottom lateral bracing and strengthening vertical truss members and truss connections
- The structural system has also been modified to minimize effects of ground motions on the structure by the following:
  - Connecting five, simply-supported truss spans into a continuous truss;
  - Installing seismic expansion joints at the north and south ends of the viaduct truss; and
  - Installing isolator bearings atop the new steel support towers at the Pylon N2 support and at Bent N11.



# Phase 2

## 2001-2008

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- \$189 million from federal, state, and regional funds
- Retrofit the San Francisco (south) Approach Viaduct
- San Francisco (south) Anchorage Housing
- Fort Point Arch
- Pylons S1 and S2



# Phase 3a 2008-2014

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- \$125 million from federal, state, and regional funds
- Retrofit of the North Anchorage House
- Pylon N1



# Phase 3b

## 2022-2029

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- \$879 million
- Devices to absorb quake energy
- Special joints will be added to allow for three-dimensional movement
- Strengthening foundations
- Installation of micropiles and rock bolts
- Construction of reinforced concrete shearwalls
- Replacement of the housing roof/roadway deck with a pre-cast concrete slab-on-steel stringer deck system



# SDS PROJECT OVERVIEW



- Contract awarded in 2016
- Construction began in 2017
- Estimated total project completion year - 2026
- 20 feet wide and 20 feet below sidewalk
- Innovative & community-approved design
- \$215m estimated total project cost A/O 2022
- Construction contractor Shimmick/Danny's Joint Venture (SDJV)



# BRIDGE PATROL:

From 2017-2022, when Bridge Patrol was able to engage in an intervention, there was about a 90% success rate at getting person back on the sidewalk



## 2023 Summary of GGBHTD incident reports A/0 7/25/23

- 6 - Confirmed Suicide(s)
- 88 - Successful Interventions
- 2 - Unconfirmed Suicides

## 2022 Summary of GGBHTD incident reports

- 22 - Confirmed Suicides
- 160 - Successful Interventions
- 0 - Unconfirmed Suicides

## 2021 Summary of GGBHTD incident reports

- 21 - Confirmed Suicides
- 198 - Successful Interventions
- 4 - Unconfirmed Suicides

Year	Activity	Bike Accident	MRVD	Vehicle Accident	Suicide Incidents	Total Incidents	% of Suicide Incidents
2023 - YTD	83	9	8	58	88	246	36%
2022	145	24	16	115	182	482	38%
2021	245	15	10	107	221	598	37%
2020	226	31	11	131	213	612	35%
2019	245	48	17	183	196	689	28%
2018	194	45	14	195	218	666	33%
2017	220	53	13	171	278	735	38%
	1358	225	89	960	1396	3782	

ACT - Activity Report - Any report not categorized by the other categories (i.e. medical calls, non-suicidal 5150, trespassing, etc.)

accidents on actual District property or where extensive medical aid was given.

Claims made that District property caused damage to a vehicle.

property or where outside agencies request assistance with tow.

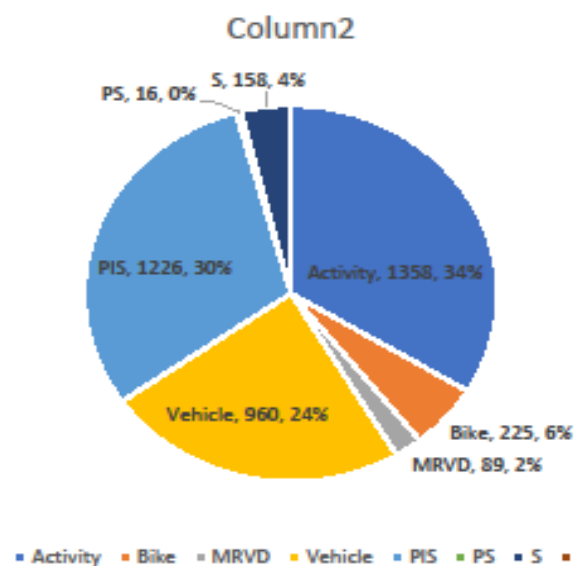
Bike Accident - Bike

MRVD - Motorist Report of Vehicle Damage -

Vehicle Accident - Vehicle accidents that occurred on actual District

Suicide Incidents - Possible Intent Suicide, Possible Suicide, Suicide incidents.

Column1	Column2
Activity	1358
Bike	225
MRVD	89
Vehicle	960
PIS	1226
PS	16
S	158



# Water Emergency Transportation Authority

*Lauren Gularte, Government and Regulatory Affairs Manager, Water  
Emergency Transportation Authority*

# San Francisco Bay Area Water Emergency Transportation Authority



**Lifelines Council**  
**October 3, 2023**

**Lauren Gularte**  
**Government & Regulatory Affairs Manager**

# Water Emergency Transportation Authority

- Created in 2007
- Three pronged mission:  
Expand, consolidate and provide  
emergency response
- Assumed city-run services in 2011, 2012
- Opened South SF in 2012, Richmond in  
2019, Seaplane Lagoon in 2021
- 19 Staff, 5-member Board

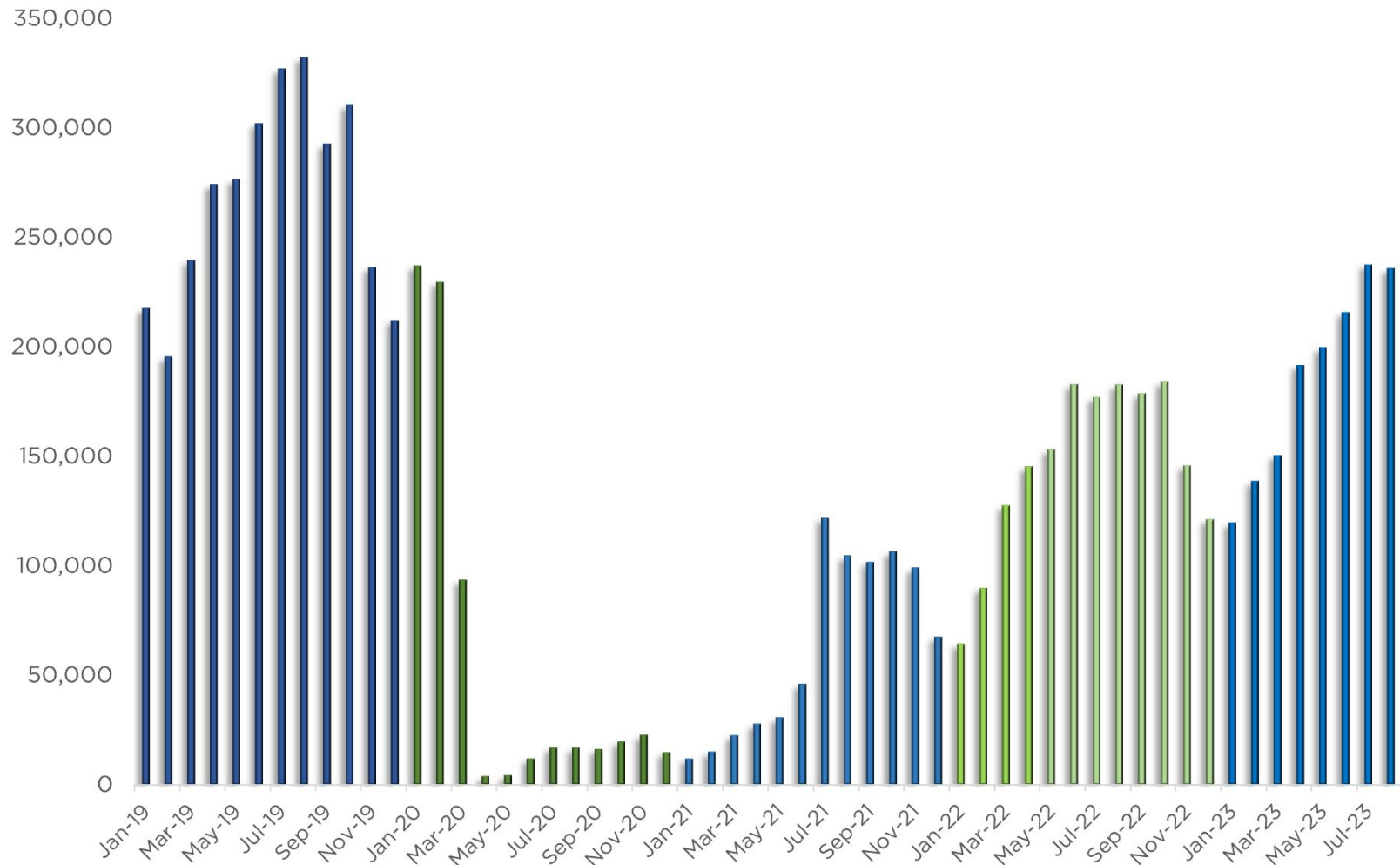




- 6 Routes
- 12 Terminals
- 16 High speed vessels
- Operations funded by bridge tolls and fare revenues
- Operating budget \$68M, Capital budget \$75M

# MONTHLY RIDERSHIP ON SAN FRANCISCO BAY FERRY

2019 to Present



- Summer 2020: Daily ridership dropped 92% due to pandemic
- 2023: 83% of pre-pandemic ridership
- Secured COVID Relief funding: CARES Act: \$18.8 million (CRRSAA): \$18.4 million, (ARPA): \$24.8 million

# Projects Supporting Emergency Response: New Maintenance Facilities

*North Bay Operations and Maintenance Facility  
Mare Island, CA*

*Central Bay Operations and Maintenance Facility  
Alameda, CA*

- 48,000 gallons of fuel
- Emergency Operations Center
- Built to essential standards



# Projects Supporting Emergency Response: Expanded SF Terminal

## *Downtown San Francisco Terminal*

- New hub for WETA system, expands capacity
- Allows for expanded service
- Important staging area for emergency response activities
- Completed in August 2020



# Projects Supporting Emergency Response: Richmond Terminal & Service

*Richmond, CA*

- Opened January 2019
- 35-minutes to SF
- Ridership was growing prior to pandemic



# Projects Supporting Emergency Response: 11 New Vessels



- Hydrus Class (400 pax)
  1. Hydrus
  2. Cetus
  3. Argo
  4. Carina
- Pyxis Class (445 Pax)
  1. Pyxis
  2. Vela
  3. Lyra
- Dorado Class (300 Pax)
  1. Dorado
  2. TBD (2023)
  3. TBD (2024)
  4. TBD (2025)

# WETA's Role in Emergencies

- Assess and monitor the status of water transit resources
- Manage and coordinate: own assets, mutual aid assets and contracted vessels
- Create and implement an emergency water transportation service plan based on the California Office of Emergency Services (Cal OES) requirements



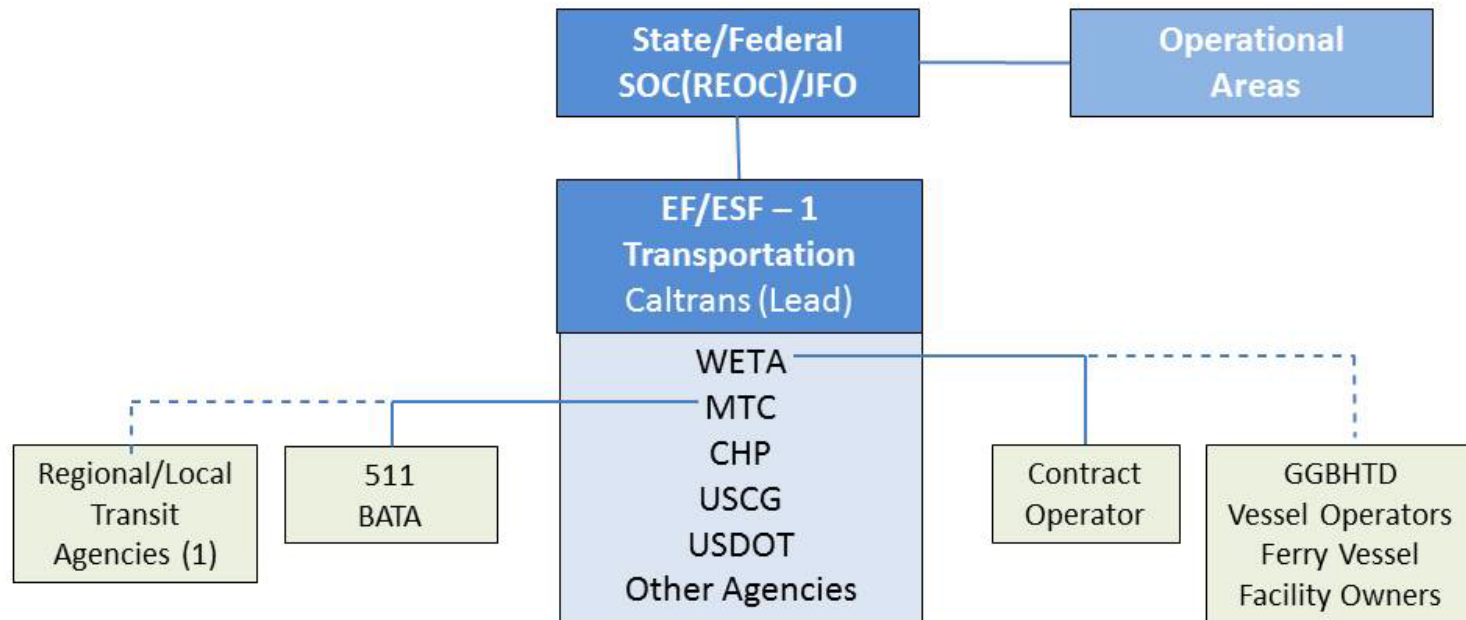
# Emergency Response Plan

Approved by the Board of Directors in March 2016. Describes:

- Activation triggers
- How WETA fits into the Regional Emergency Framework
- Operational principles and priorities, Courses of Action (COAs)
- WETA resource requirements
- Emergency water transportation planning
- Resource management, emergency funding
- Includes internal Emergency Operations Plan



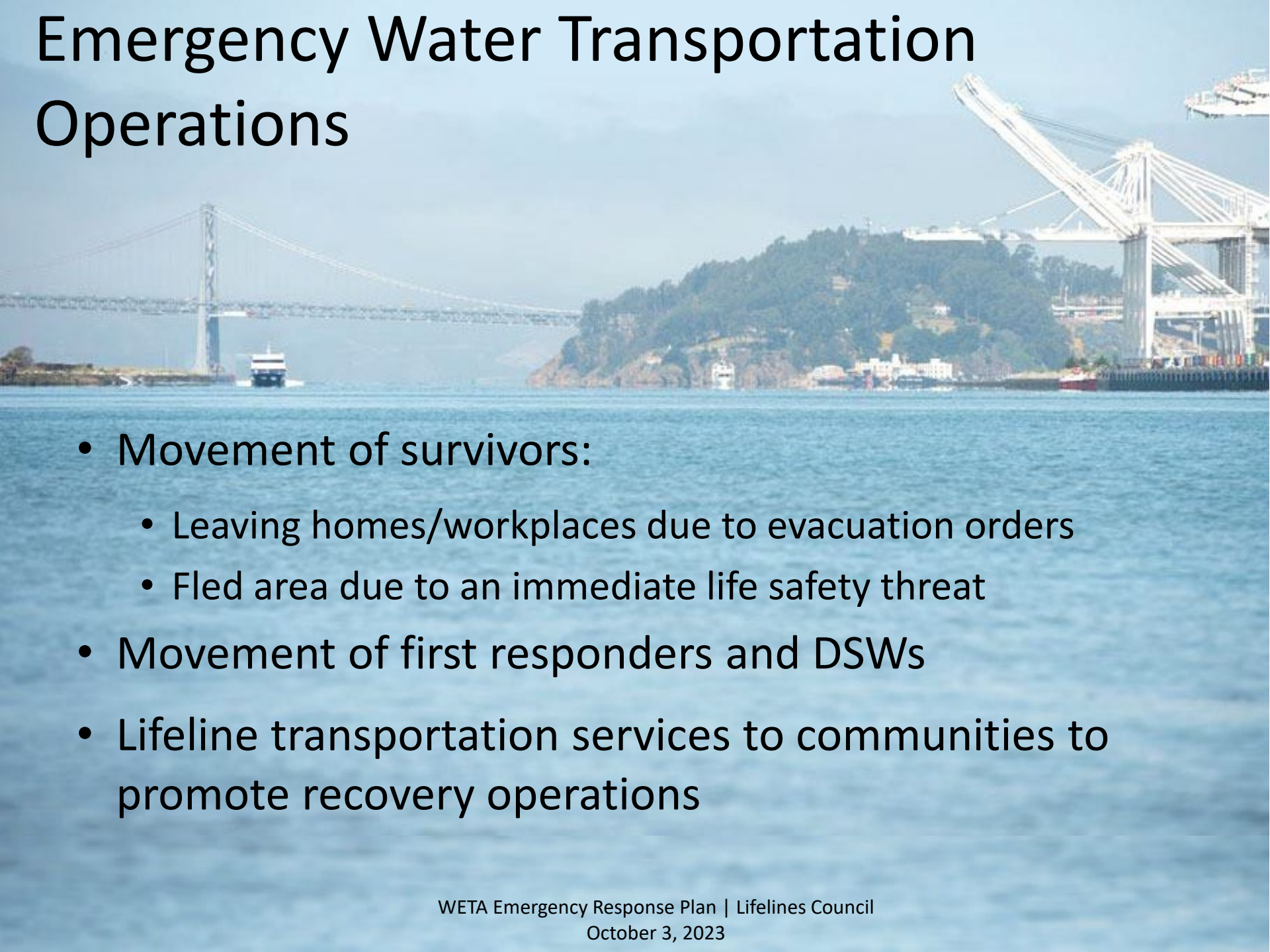
# How WETA fits into the Regional Emergency Framework



— Lines of Control  
- - - Lines of Coordination

(1) Local transit agencies may report to OAs

# Emergency Water Transportation Operations

The background image shows a large suspension bridge, likely the San Francisco-Oakland Bay Bridge, stretching across a body of water. In the distance, a forested hill is visible, and to the right, there are industrial structures, including a large crane or derrick. The sky is clear and blue.

- Movement of survivors:
  - Leaving homes/workplaces due to evacuation orders
  - Fled area due to an immediate life safety threat
- Movement of first responders and DSWs
- Lifeline transportation services to communities to promote recovery operations

# Emergency Water Transportation Planning

- Response priorities and Action Planning process
- Priority transportation routes
- Movement of survivors & first responders/DSWs
- Support to populations with:
  - Disabilities and other access and functional needs
  - Service and companion animals



# Emergency Operations: Vessels



## Operate:

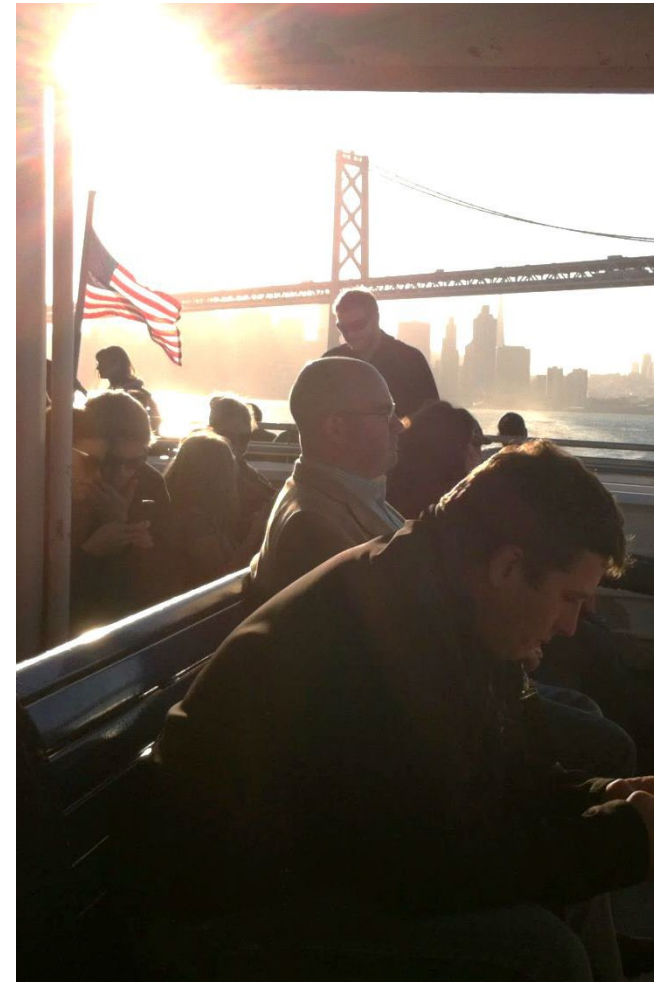
- WETA: 16 vessels – 5,390 pax
- Blue & Gold: 6 vessels - 2,826 pax

## Coordinate:

- Golden Gate Ferry: 7 vessels – 3,760 pax
- Private: 23 vessels – 9,483 pax
- Water taxis

# Emergency Operations Plan

- Confidential, maintained separately
- Supplements the ERP with SEMS/NIMS compliant guidance and procedures
- Contains EOC activation, staffing and operations processes, emphasizes:
  - EOC action planning, position checklists & staffing rosters
  - Info collection & management
  - Regional transportation incident & hazard specific checklists
  - Temporary terminal req's & layout
  - Communications & refueling operations

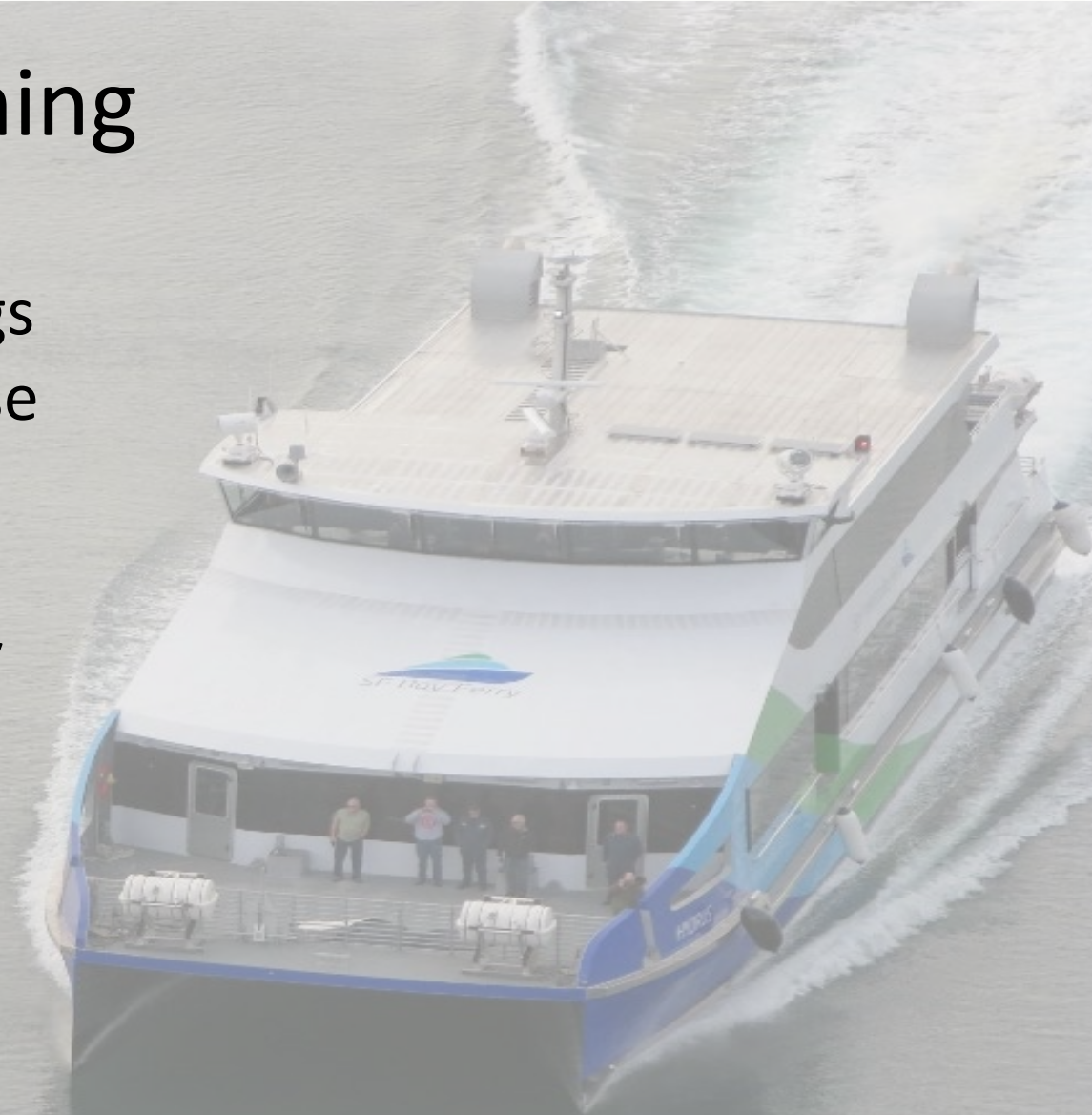


# WETA Resource Requirements

1. Early assist from Cal OES/FEMA for fuel
2. Emergency funding to pay for resources
3. Security, crowd control, survivor support services from local jurisdictions
4. Credentialing/terminal access assistance from LE agencies
5. Additional staffing for full activation of WETA EOC over multiple operational periods and staff support services
6. Supporting transit connectivity for follow-on movement of survivors
7. Assistance from state/regional/local partners to construct/retrofit terminals, including access to land
8. Prioritization for obtaining resources/services for additional/temporary ferry terminals and assistance to expedite construction

# Exercises & Training

- Internal staff trainings
- MTC's annual exercise
- Bay Ferry Exercises (Sept 2023)
- US Coast Guard ferry exercises
- Golden Eagle
- Bay Ex
- Host for first responder trainings



For more info download WETA's Emergency Response Plan:  
<https://sanfranciscobayferry.com/weta/publications>

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# Discussion

# Mark your calendar!

Next Lifelines Council Meeting:

Wednesday, December 13th

10:00am - 11:30am

# Adjourn