METROPOLITAN TRANSPORTATION COMMISSION

DESIGN ALTERNATIVES ASSESSMENT AND SUPPORT FOR

STATE ROUTE 37 (SR 37) ULTIMATE SEA LEVEL RISE RESILIENT CORRIDOR

(US 101 TO SR 121)

January 2022 | **POLICY COMMITTEE MEETING**

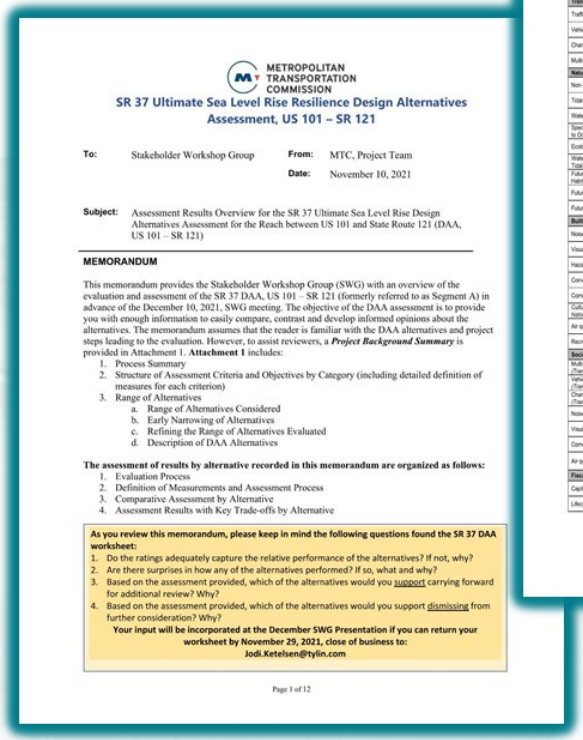
TY LIN INTERNATIONAL

AGENDA

01 Range of Alternatives Evaluated

02 Assessment Overview

03 Draft Assessment & SWG by Alternative



METROPOLITAN TRANSPORTATION COMMISSION

SR 37 Ultimate Sea Level Rise Resilience Design Alternatives Assessment, US 101 – SR 121

To: Stakeholder Workshop Group **From:** MTC, Project Team

Date: November 10, 2021

Subject: Assessment Results Overview for the SR 37 Ultimate Sea Level Rise Design Alternatives Assessment for the Reach between US 101 and State Route 121 (DAA, US 101 – SR 121)

MEMORANDUM

This memorandum provides the Stakeholder Workshop Group (SWG) with an overview of the evaluation and assessment of the SR 37 DAA, US 101 – SR 121 (formerly referred to as Segment A) in advance of the December 10, 2021, SWG meeting. The objective of the DAA assessment is to provide you with enough information to easily compare, contrast and develop informed opinions about the alternatives. The memorandum assumes that the reader is familiar with the DAA alternatives and project steps leading to the evaluation. However, to assist reviewers, a ***Project Background Summary*** is provided in Attachment 1. **Attachment 1** includes:

1. Process Summary
2. Structure of Assessment Criteria and Objectives by Category (including detailed definition of measures for each criterion)
3. Range of Alternatives
   a. Range of Alternatives Considered
   b. Early Narrowing of Alternatives
   c. Refining the Range of Alternatives Evaluated
   d. Description of DAA Alternatives

The assessment of results by alternative recorded in this memorandum are organized as follows:

1. Evaluation Process
2. Definition of Measurements and Assessment Process
3. Comparative Assessment by Alternative
4. Assessment Results with Key Trade-offs by Alternative

As you review this memorandum, please keep in mind the following questions found the SR 37 DAA worksheet:

1. Do the ratings adequately capture the relative performance of the alternatives? If not, why?
2. Are there surprises in how any of the alternatives performed? If so, what and why?
3. Based on the assessment provided, which of the alternatives would you support carrying forward for additional review? Why?
4. Based on the assessment provided, which of the alternatives would you support dismissing from further consideration? Why?

Your input will be incorporated at the December SWG Presentation if you can return your worksheet by November 29, 2021, close of business to: Jodi.Ketelsen@tylin.com

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Table 3: SR 37 Ultimate Sea Level Rise Design Alternatives, US 101 to SR 121 Assessment Summary Rating

The objective of the DAA assessment is to provide stakeholders enough information to easily compare, contrast and provide an informed opinion about the alternatives. The color code rating table allows one to scan many variables quickly.

Theme Category/ Criteria Subject	WEST REACH: US 101 to SR 121				
	Alternative A1A, On-SR 37 - Embankment	Alternative A1B, On-SR 37 - Causeway	Alternative A2, Over-Bay	Alternative A3, Bahia/ Atherton	Alternative A4, Burdell/ Hog Island
Transportation					
Traffic Operations					
Vehicle Miles Traveled					
Change of Access					
Multi-modal Opportunities					
Natural Resources					
Non-Tidal Wetlands					
Tidal Wetlands					
Waters (Critical Habitat)					
Sensitive-status Spec. w/Potential to Occur					
Ecological Connectivity					
Water Crossings Accom Future Tidal					
Future Tidal and Trans. Zone Habitat					
Future Bird Habitat					
Future Ecological Connectivity					
Built Environment					
Noise/Vibration					
Visual					
Hazardous Materials					
Conversion of Land Use					
Community Compatibility					
Cultural Resources (archaeo & historic)					
Air quality					
Recreational: Parks and Refuges					
Social Equity					
Multi-modal Opportunities (Transportation)					
Vehicle Miles Traveled (Transportation)					
Change of Access (Transportation)					
Noise/Vibration (Built)					
Visual (Built)					
Community Compatibility (Built)					
Air quality (Built)					
Fiscal					
Capital costs					
Lifecycle costs					

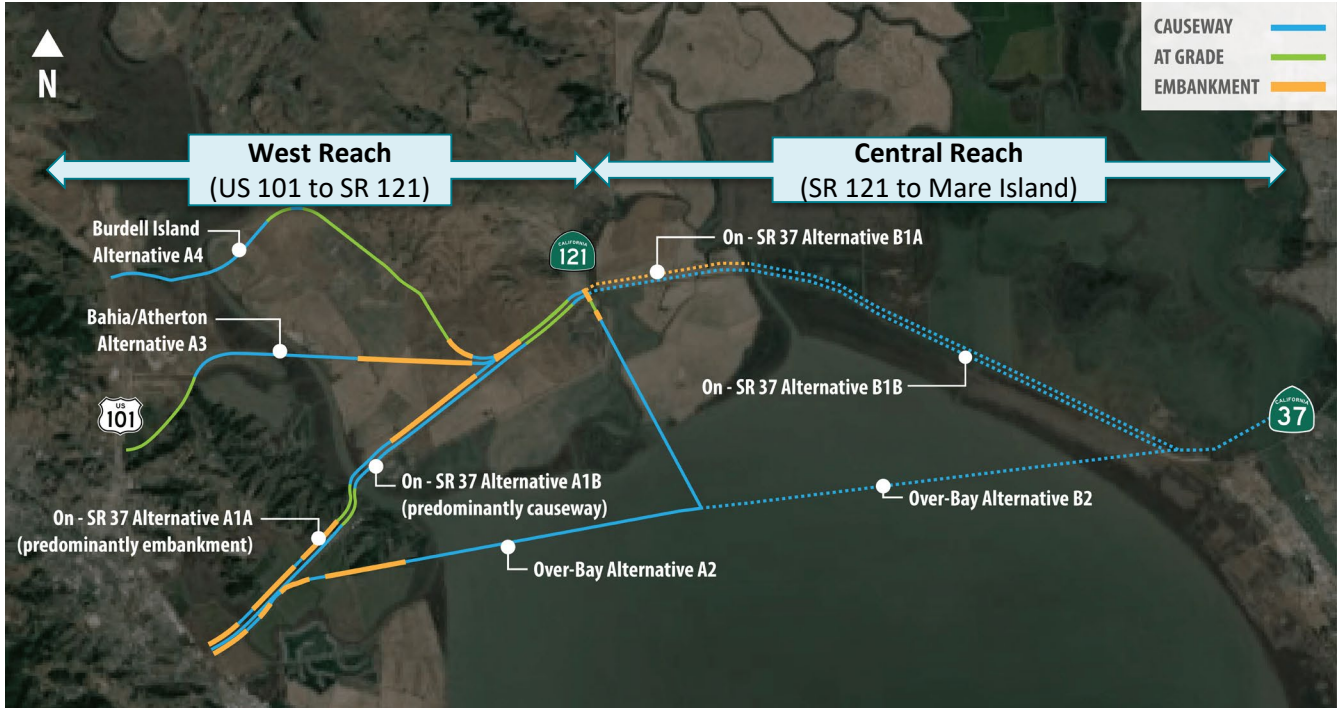
RANGE OF ALTERNATIVES FOR EVALUATION

West Reach US 101 to SR 121

- On – SR 37 **Alternative A1A** - *Hybrid*
- On – SR 37 **Alternative A1B** - *Causeway*
- Over-Bay **Alternative A2**
- Bahia/Atherton **Alternative A3**
- Burdell/Hog Island **Alternative A4**

Central Reach SR 121 to Mare Island

- On – SR 37 **Alternative B1A** - *Hybrid*
- On – SR 37 **Alternative B1B** - *Causeway*
- Over-Bay **Alternative B2**



RANGE OF ALTERNATIVES

Overview of Description Elements	West Reach: US 101 to SR 121 (West Reach)					SR 121 to Mare Island (Central Reach)		
	Alternative A1A On-SR 37 - Embankment	Alternative A1B On-SR 37 - Causeway	Alternative A2 Over-Bay	Alternative A3 Bahia/ Atherton	Alternative A4 Burdell/ Hog Island	Alternative B1A On-SR 37 - Embankment	Alternative B1B On-SR 37 - Causeway	Alternative B2 Over-Bay
Acres of new right-of-way needed	**23**	**9**	**161**	**198**	**263**	**54**	**33**	**68**
Total Length in miles (From US 101 to SR 121)	**7.4**	**7.4**	**10.5**	**7.5**	**8.2**	**9.5**	**9.5**	**7.4**
Length in miles of Causeway	1.9	5.9	7.7	3.1	3.3	7.5	9.5	7.4
Length in miles of Embankment	4.1	0.0	2.7	2.1	0.9	2.0	0.0	0.0
Length in miles of At-grade	1.5	1.5	0.2	2.4	4.1	0.0	0.0	0.0

Assumptions

- 1 General-Purpose lane and 1 HOV lane in either direction – approx. 100-foot cross section.
- Assume existing SR 37 infrastructure remains for some unspecified period, but old bridges are replaced if new alternative is using the right-of-way (A1A, A1B, etc.).
- Rail can be accommodated in all alternatives, may or may not be relocated

Short-term - Cannot Land-Lock Lands:

Property rights are protected through Common Law, state law, and the Constitution. State and federal laws protect the productive use of property – removing a roadway would render access to be restricted from continued use of the land. In other words, property cannot not be rendered idle due to lack of access.

Long-term – inundation may render adjacent land uses obsolete.

METHODOLOGY OVERVIEW – Example of Metric / Measurements

Theme Category/ Criteria Subject		US 101 to SR 121 (West Reach)					SR 121 to Mare Island (Center Reach)		
		Alternative A1A On-SR 37 - Embankment	Alternative A1B On-SR 37 - Causeway	Alternative A2 Over-Bay	Alternative A3 Bahia/ Atherton	Alternative A4 Burdell/ Hog Island	Alternative B1A On-SR 37 - Embankment	Alternative B1B On-SR 37 - Causeway	Alternative B2 Over-Bay
Built Environment									
Noise/Vibration (Built Environment)	**BE1**								
Number of Receptors within 500 feet of Alignment		Approx. 40	Approx. 40	0	Mobile Home Park + 30 MFR	7	1	1	1
Distance to closest sensitive receptor (feet)		100	100	1200	70	20	1000	1000	5500
Likely Extent of Pile Driving for causeway (miles)		1.5	3.1	7.5	2.1	2.5	7	9.2	10.5
Visual (Built Environment)	**BE2**								
Caltrans' Questionnaire to Determine level of Visual Impact Assessment		20	22	26	25	25	18	19	26
Hazardous Materials (Built Environment)	**BE3**								
Number of open sites within or immediately adjacent to the footprint		0	0	0	0	0	0	0	0
Conversion of Land use (Built Environment)	**BE4**								
Acres of Converted Land Use to Transportation Use		23	9	161	198	263	54	33	68
# of Parcels with a Portion Converted to Transportation Use		8	5	18	34	51	29	22	5
Community Compatibility (Built Environment)	**BE5**								
Number of Residential Parcels Affected		2	2	1	4	14	0	0	0

DRAFT ASSESSMENT RESULTS BY ALTERNATIVE (page 5 of Assessment memo)

This is not meant to be read in detail.

The color-coded ratings are intended to provide a transparent tool to identifying where alternatives perform similarly, and where there are trade-offs.

This is a planning level evaluation. Are there differentiators at-a-glance?

Is there enough information to narrow the range of alternative to carry forward?

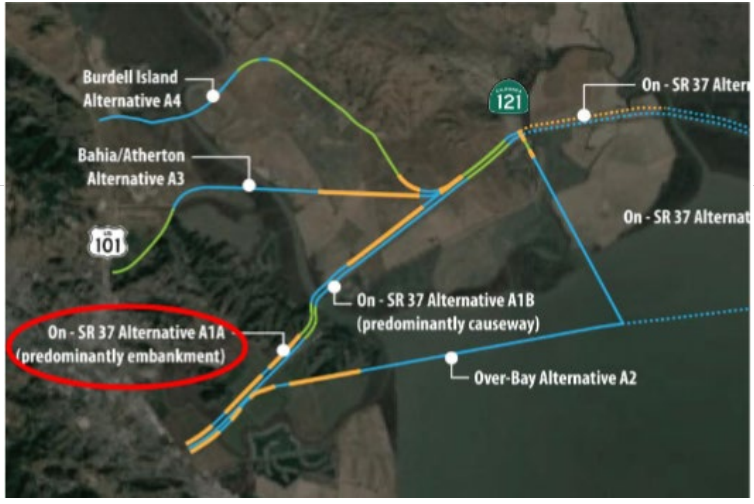
Table 3: SR 37 Ultimate Sea Level Rise Design Alternatives, US 101 to SR 121 Assessment Summary Rating

The objective of the DAA assessment is to provide stakeholders enough information to easily compare, contrast and provide an informed opinion about the alternatives. The color code rating table allows one to scan many variables quickly.

	WEST REACH: US 101 to SR 121				
Theme Category/ Criteria Subject	**Alternative A1A, On-SR 37 - Embankment**	**Alternative A1B, On-SR 37 - Causeway**	**Alternative A2, Over-Bay**	**Alternative A3, Bahia/ Atherton**	**Alternative A4, Burdell/ Hog Island**
Transportation					
Traffic Operations					
Vehicle Miles Traveled					
Change of Access					
Multi-modal Opportunities					
Natural Resources					
Non-Tidal Wetlands					
Tidal Wetlands					
Waters (Critical Habitat)					
Special-status Spec. w/Potential to Occur					
Ecological Connectivity					
Water Crossings Accom Future Tidal					
Future Tidal and Trans. Zone Habitat					
Future Bird Habitat					
Future Ecological Connectivity					
Built Environment					
Noise/Vibration					
Visual					
Hazardous Materials					
Conversion of Land Use					
Community Compatibility					
Cultural Resources (archaeo & historic)					
Air quality					
Recreational /Parks and Refuges					
Social Equity					
Multi-modal Opportunities *(Transportation)*					
Vehicle Miles Traveled *(Transportation)*					
Change of Access *(Transportation)*					
Noise/Vibration *(Built)*					
Visual *(Built)*					
Community Compatibility *(Built)*					
Air quality *(Built)*					
Fiscal					
Capital costs					
Lifecycle costs					

DRAFT ASSESSMENT - ON SR 37 – HYBRID ALTERNATIVE

Alternatives	Big Advantages	Substantial Disadvantages
ALTERNATIVE A1A (COMPARED WITH OTHER WEST REACH ALTS)		
On SR 37 - Alternative A1A - Hybrid	- Low acres of right-of-way needed (23 ac) - Performs relatively well for natural resources in the near term	- Performs poorly for most natural resources in the long term - Worst emissions during construction (DSCM) - potentially detrimental to cultural resources



SWG Input Received for A1A:

- Surprised by
  - Poor performance for most natural resources in the long term
  - Worst emissions during construction
- Likely to result in significant environmental impacts, high mitigation requirements, and constructability challenges
- Requires ***enormous amounts of clean fill*** to build
- Berms affect the migration of tidal wetlands northward across the SR-37 alignment
- Potential impacts of deep soil mixing on groundwater and sediment transport
- Costs associated with deep soil mixing anticipated to be high

** DSCM: Deep-soil cement mixing*

DRAFT ASSESSMENT - ON SR 37 – CAUSEWAY ALTERNATIVE

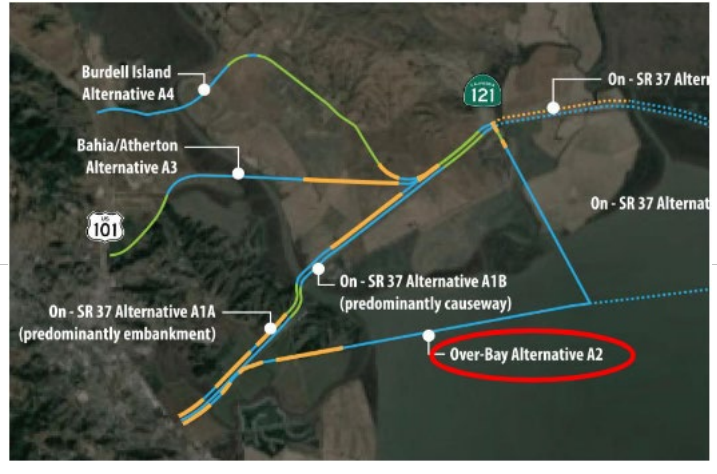
Alternatives	Big Advantages	Substantial Disadvantages
ALT. A1B COMPARED WITH OTHER WEST REACH ALTERNATIVES		
On – SR 37 Alternative A1B - Causeway	- **Lowest** acres of new right-of-way needed (9 ac) - Performs **best** on transportation-related (access) - Performs **best** for natural resources	- 30 Percent higher cost than least costly alternative

SWG Input Received for A1B:

- Surprised by
  - A1B ***performed so well*** across the board
  - High impacts for tidal wetlands and waters.
  - Relatively cost-effective compared to other alternatives
  - Relative costs of causeway compared to embankment differ from those previously presented
- Ratings captured the superior performance of the causeway
- Impacts of causeway on tidal wetlands are much less than stated if use Clean Water Act definition
- Most positive mentions to carry forward
- Most practicable and constructible alternatives, and most likely to minimize the near-term and long-term environmental impacts of an SR 37 facility
- No votes to dismiss from consideration

DRAFT ASSESSMENT - OVER-BAY ALTERNATIVES

Alternatives	Big Advantages	Substantial Disadvantages
ALT. A2 COMPARED WITH OTHER WEST REACH ALTERNATIVES		
Alternative A2, Over-Bay	- Performs **best** on VMT for some origin-destination pairs	- **3 times higher cost** than least costly alternative - **Worst** for tidal wetlands and waters/ critical habitat - **Worst** for ecological connectivity - New & raised transportation corridor = **worst** visual impacts and change of access - Affects both SPB National Refuge and SPB Wildlife Preserve



SWG Input Received for A2:

- Surprised by
  - high impacts for tidal wetlands - *Seems counter-intuitive that an alternative that primarily spans open water would have such a poor rating for impacts to tidal wetlands*
  - high impact associated with the ROW in park/recreation/refuge properties
  - large property acquisition needs
  - performs so poorly in many measurements
- Several dismissed this alternative from further consideration listing high costs and visual impacts
- Some would like to carry forward A2, but refine design to reduce direct impacts to waters of the State (including wetlands)

DRAFT ASSESSMENT - ALTERNATIVES WITH SHORTER FLOODPLAIN CROSSING

Alternatives	Big Advantages	Substantial Disadvantages
ALTS. A3 AND A4 COMPARED WITH OTHER WEST REACH ALTERNATIVES		
A4 – Burdell/ Hog Island	- Crosses the shortest distance over future floodplain (but near high-value resources, see disadvantages) - **Least costly alternative**	- Performs **worst** on natural resources - Performs **worst** on built environment criteria - **Most** new ROW needed (236 ac) - **Least** transportation benefits - Overall, relatively poor performance compared to other alternatives
A3 – Bahia/ Atherton	**Performs similarly to A4, but:** - No advantages greater than A4, but performs slightly less poorly on criteria ratings	

SWG Input Received for A3 and A4:

- ***Least supported*** for carrying forward because
  - permanent impacts to mature marsh,
  - require acquisition of considerable private and public lands,
  - result in significant ecological impacts and mitigation requirements
- A4 seems less desirable
  - greatest acres of new right-of-way needed
  - longer distance to access US 101
- A3 seems less desirable
  - serious wetland impacts
- A4 would seem to avoid the floodplain, but may not justify the greater distance over on-SR 37 Alts
- Both go through CDFW Petaluma Wildlife Area. A3 goes through Marin County Rush Creek Preserve. A4 is adjacent to SMART mitigation area.

SWG INPUT HIGHLIGHTS

Common Points:

- **Most supported Alternative A1B - On-SR 37 Causeway for the following reasons:**
  - Hydrologic and wildlife connectivity
  - Benefits associated with maintaining current alignment
  - Lowest lifecycle cost
  - Most likely to minimize the near-term and long-term environmental impacts

- **Most felt that it was premature to dismiss alternatives, however…**

- **Majority of Commenters do not support A3 and A4 for the following reasons:**
  - Higher ROW needs
  - Impacts to wetlands and marsh area
  - Least transportation benefits

QUESTIONS??

THANK YOU
VERY MUCH!
METROPOLITAN
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