San Mateo County
TRANSIT DISTRICT

Prepared by Facebook for the San Mateo County Transit District

Public Meeting

Dumbarton Rail Corridor Update

March 15, 2021

Virtual Meeting Guidelines

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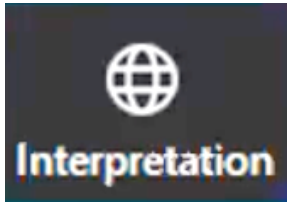
Simultaneous interpretation is available in Spanish, Mandarin, Vietnamese, Tagalog, Tongan, and Samoan. Click the Interpretation button at the bottom of your screen and select your preferred language.



Please save your questions until after the presentation.

- To ask a question:
  - Click on the Q&A Icon
  - Type into the text box
  - People who called in should press *9 to raise their hand
- All perspectives are welcome
- One person speaks at a time
- This meeting is being recorded
- Any inappropriate comments or questions will be deleted and the person who produced them will be muted
- Continual disruption will warrant removal from the meeting
- All will have a chance to participate

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Agenda

- Introductions
- Welcome
- Overview of Process to Date
- Proposed Alignments
- Ridership Forecast Results
- Cost Estimates
- Q&A
- Closing

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Overview of Process to Date

- Strategic Planning Process
  - Identify Project
  - Define Purpose and Need
  - ***Develop Conceptual Alternatives***
  - Environmental Clearance
  - Permitting

Work to Date

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- Draft Purpose and Need
- Collaborated with Resource Agencies
- Engaged with Stakeholders
- Held Community Meetings
- Documented Existing Conditions
- Developed Range of Alternatives
- Built Ridership Forecast Tool
- Conducted Ridership Forecast Analysis

Current Phase of Work

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- Document Existing Conditions
- Conduct Ridership Forecasting Analysis
- Stakeholder Engagement
  - Gov't and Public Sector; 6 municipalities
  - Community: residents, advocates, community-based organizations, businesses
- Community Meetings
- Conduct Evaluation of Alternatives
- Write Alternatives Analysis Report

Recommended Next Phase of Work

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- Select Preferred Alternative (District Action)
- Environmental Clearance – EIR/EIS
  - Engineering Refinements
  - Environmental Technical Studies
  - Travel Demand Forecast/Ridership Projections
- Continued Inter-agency Coordination
- Continued Outreach/Stakeholder Engagement
- Permitting

Modes

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Commuter Rail Transit (CRT)

- 204 Seats
- 598 Total Riders
- Battery/Electric Hybrid
- Dedicated Guideway

Light Rail Transit (LRT)

- 136 Seats
- 428 Total Riders
- Electric
- Dedicated Guideway

Bus Rapid Transit (BRT)

- 110 Seats
- 244 Total Riders
- Battery
- Dedicated Guideway

Autonomous Vehicle Transit (AVT)

- 8 Seats
- 22 Total Riders
- Battery
- Dedicated Guideway
- Flex-Service

Considerations: AVT Option

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- This is a new and emerging technology/mode with limited examples of deployment
  - Global examples: Netherlands, Heathrow, UAE
  - North America: Pilot deployments nationwide
  - Note: There is no application of AVT at this mass transport scale
- Further analysis needed to obtain US Gov't approval to prove:
  - System reliability
  - Ability to scale
  - Technology readiness
  - Security
- Evolving Federal policy related to AV transit

Considerations: BRT option

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- Bus Rapid Transit (BRT): mode of public transportation that combines quality of rail transit with flexibility of buses.
- Occupies a space between conventional bus service and Light Rail Transit (LRT)
- "**Rubber-tired" LRT:** High level of service, quality amenities, and superior ride quality
- Zero emission technology needs further R&D to show reliability
  - Technology changing quickly
  - Agencies testing both technologies
  - Challenges:
    - Scalability
    - Battery technology
      - Range
      - Charging time
      - Battery life

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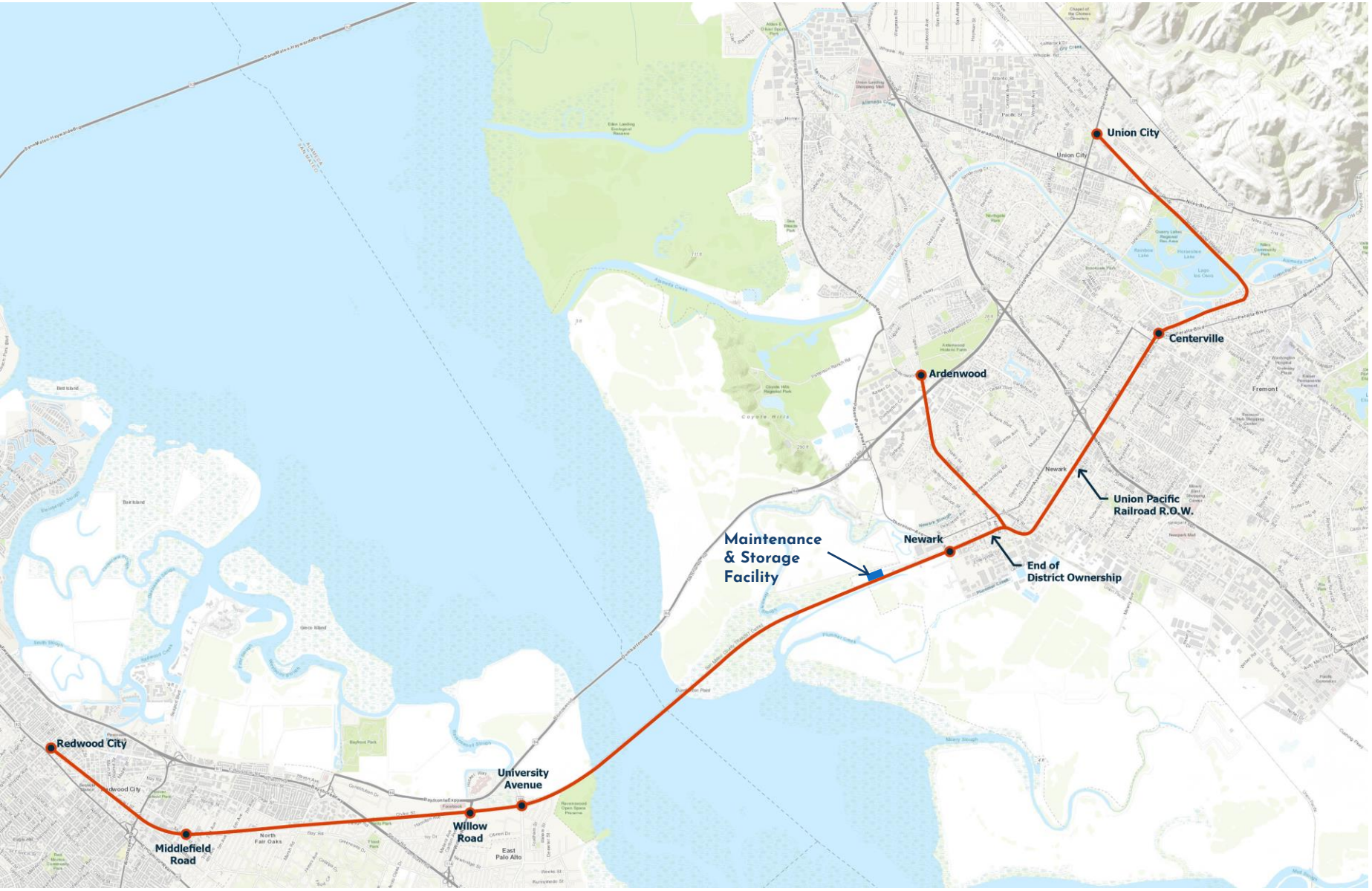

CRT Alignment

Note: Alignments and stations are being studied for technical feasibility in regards to engineering, operations, land use, city and agency coordination

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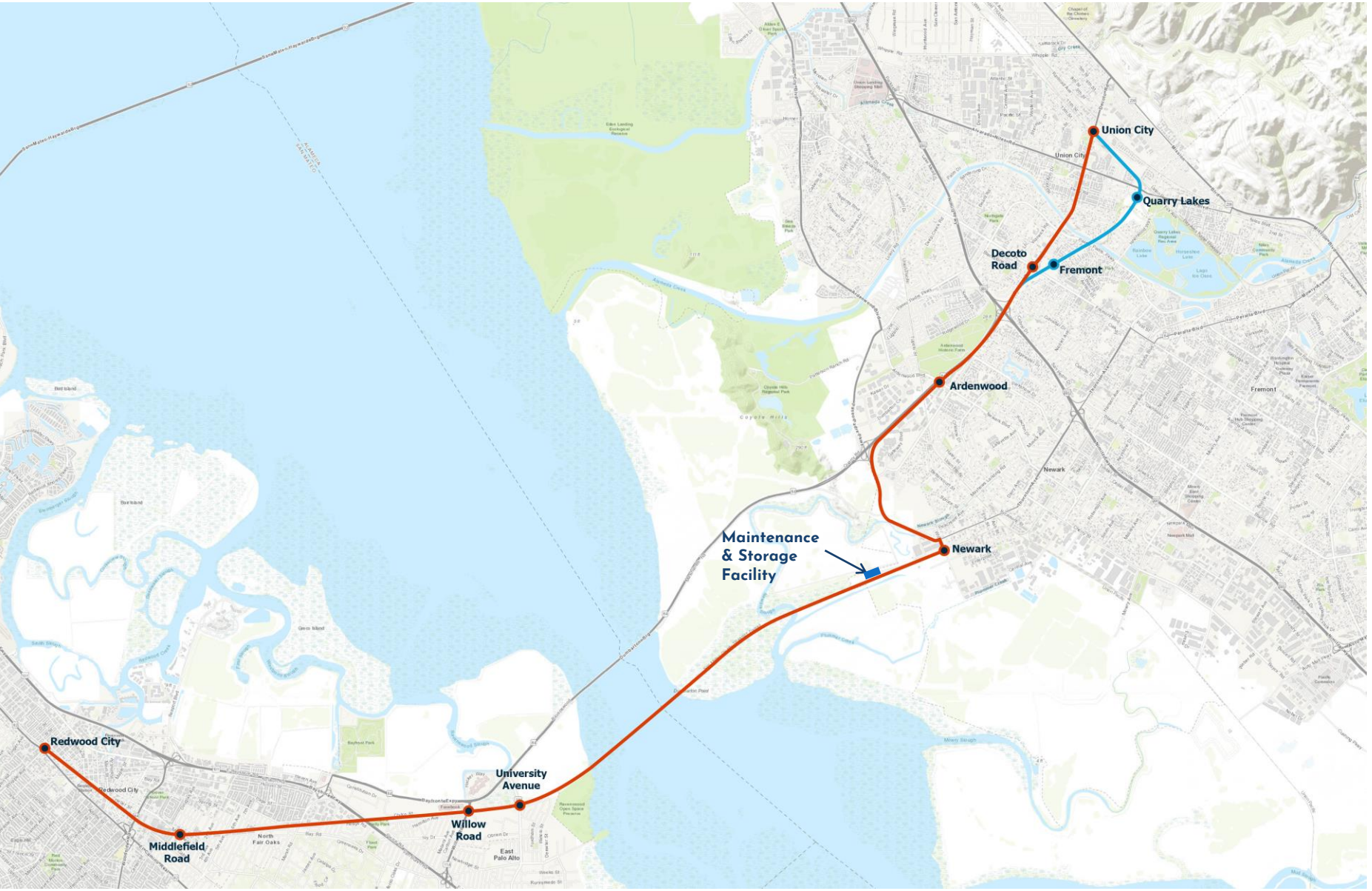
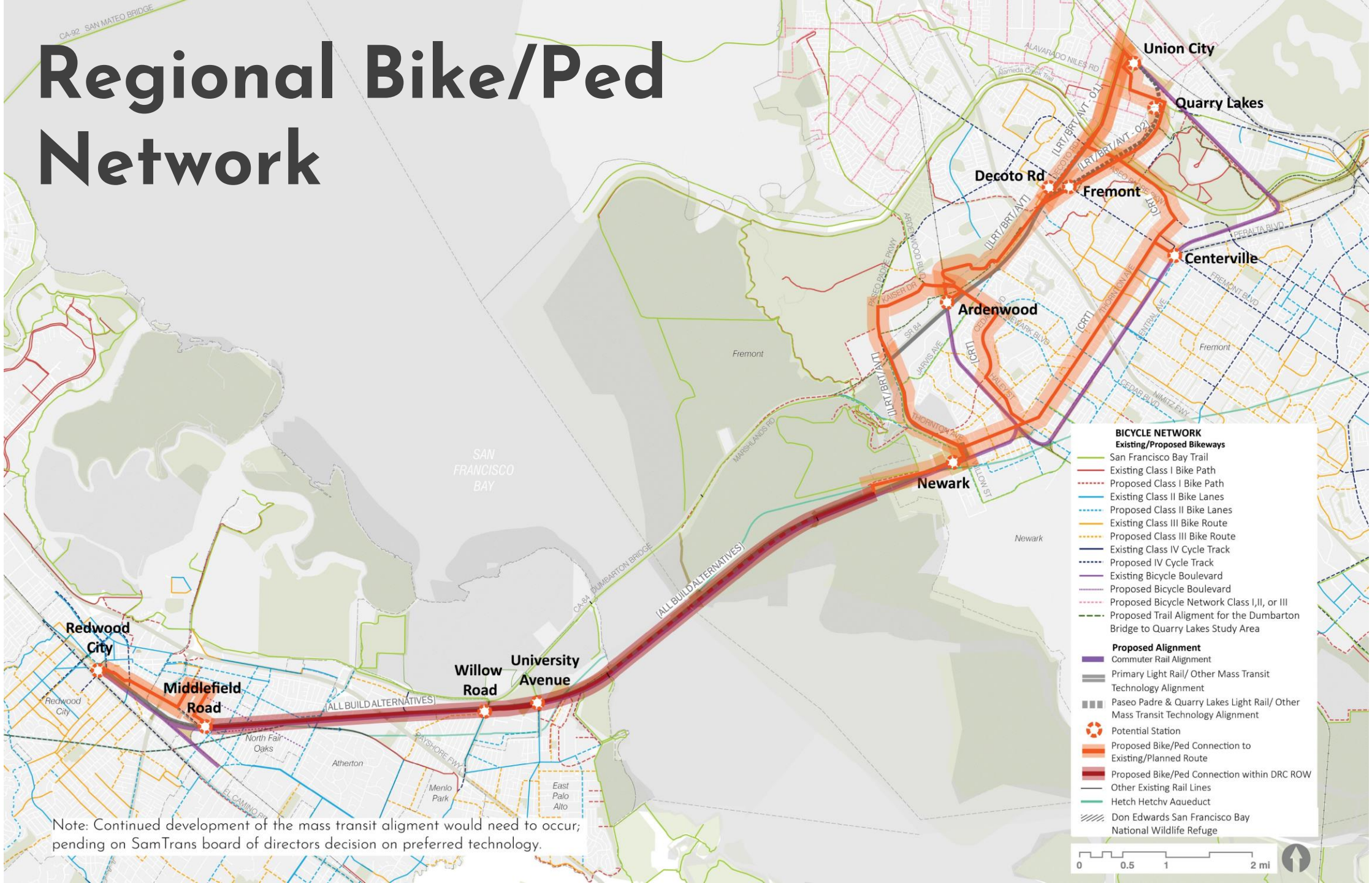


LRT, BRT, & AVT Alignment

Note: Alignments and stations are being studied for technical feasibility in regards to engineering, operations, land use, city and agency coordination

Regional Bike/Ped Network



Note: Continued development of the mass transit aligment would need to occur; pending on SamTrans board of directors decision on preferred technology.

Modeling Types

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Ridership/Travel Demand Model

Tells us how many people are traveling through the corridor and when.

Simulation Model

Tells us how vehicles operate and how travelers will experience the services.

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Ridership Forecast

Method & Assumptions

- Ridership forecasts were developed using a travel demand model which conforms to industry standards and is used by most MPO's.
- Model encompasses the 9-County Region
- Major inputs to the model include:
  - Transit and Highway network data
  - Region's population, employment, and socio-economic data
  - Projected congestion levels
  - Transit Level of Service on the proposed project
  - Transit Oriented Development

Ridership Projections

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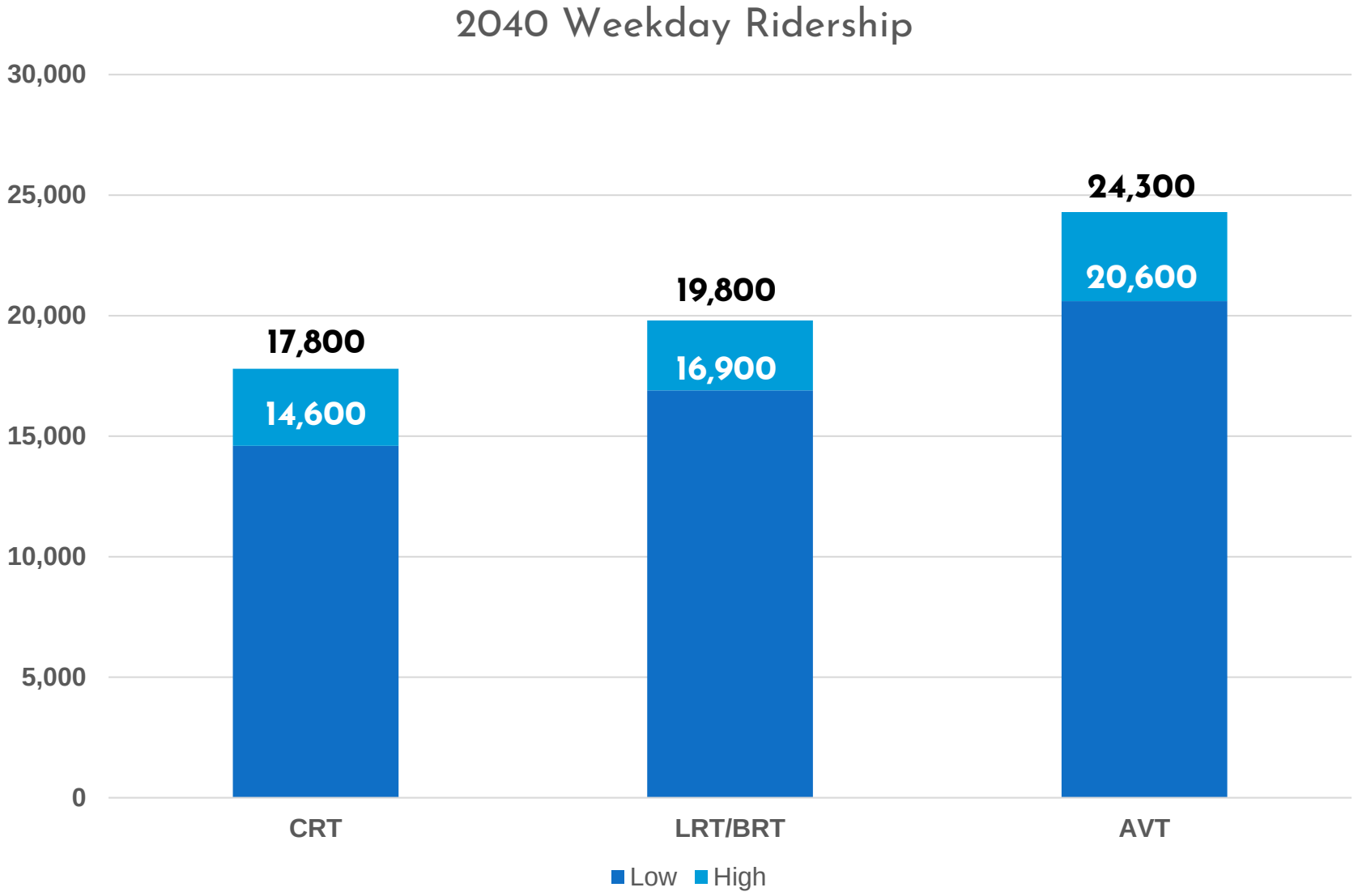

Data Source: HDR 2021 Ridership Report

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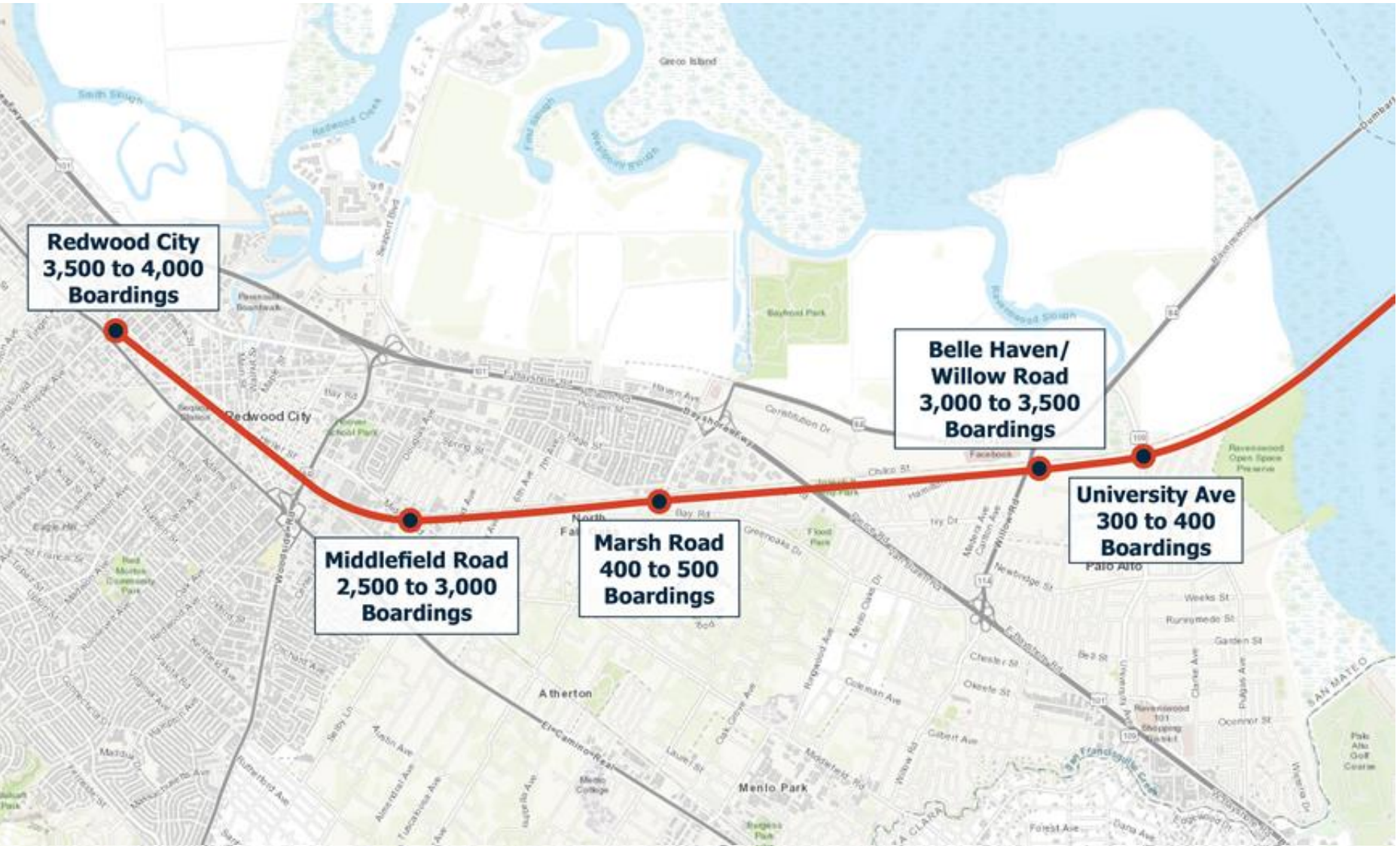

Phase I Peninsula Boardings

- First round of analysis

Methodology

- Preliminary Phase I forecast to understand the potential ridership for each station
- Ridership estimate is not mode-specific.

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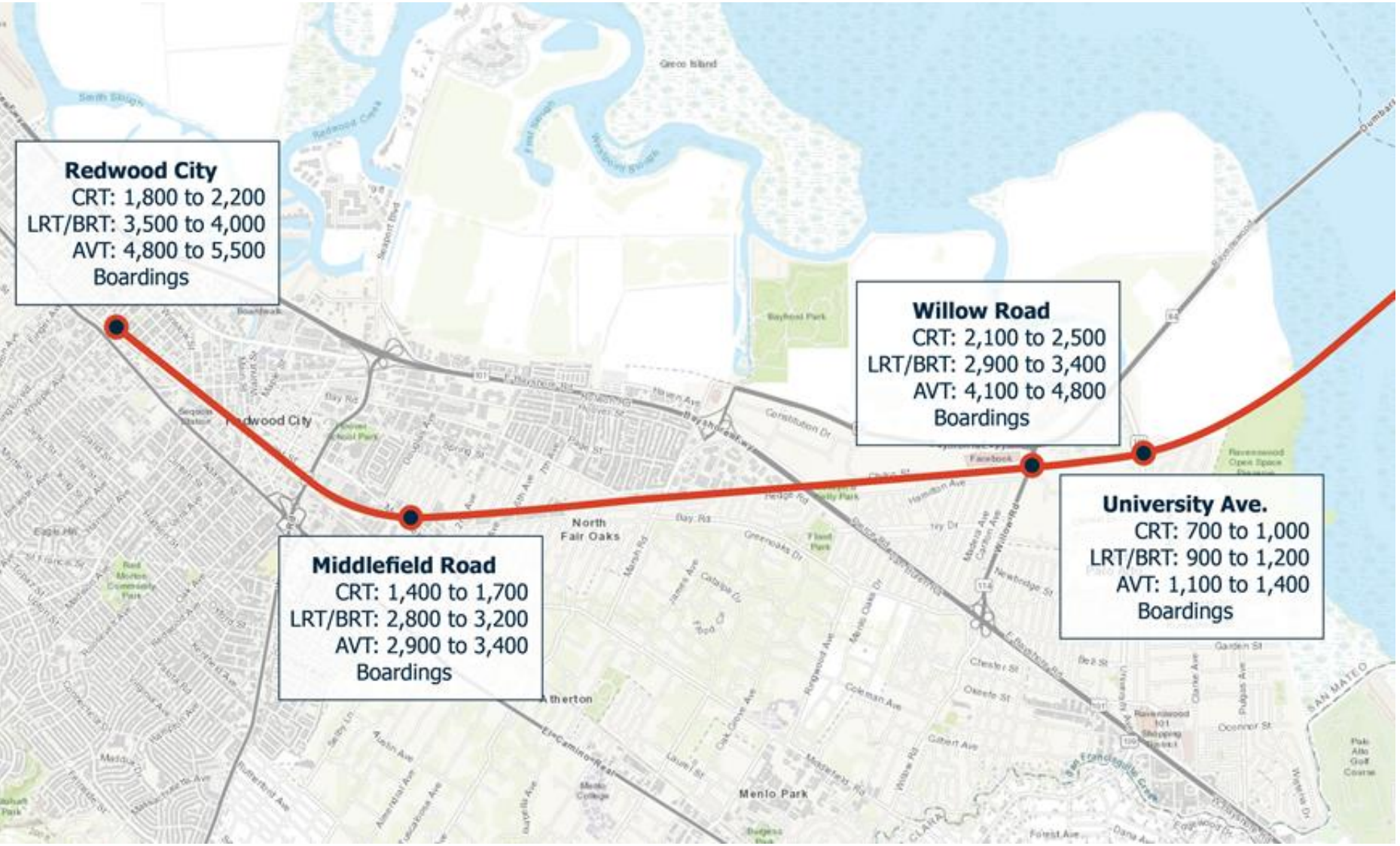

Phase II Peninsula Boardings

- Second round of analysis
- Ridership estimate is mode-specific

Adjusted Methodology

- Ridership forecast adjusted to include land uses within a one-mile radius for the University Avenue Station, including an additional 5-million s/f of office space. This adjustment is seen on the updated Phase II 2040 weekday boardings.

Ridership Projections

2040 Weekday Ridership Station Boardings

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Stations	CRT UPRR Alignment in East Bay	LRT and BRT CA-84 Alignment in East Bay	AVT CA-84 Alignment in East Bay
Redwood City	1,800 to 2,200	3,500 to 4,000	4,800 to 5,500
Middlefield Road	1,400 to 1,700	2,800 to 3,200	2,900 to 3,400
Willow Road	2,100 to 2,500	2,900 to 3,400	4,100 to 4,800
University (*adjusted*)	700 to 1,000	900 to 1,200	1,100 to 1,400
Newark	500 to 700	1,000 to 1,200	800 to 1,000
Ardenwood	500 to 600	1,100 to 1,300	1,400 to 1,700
Fremont	4,500 to 5,400	1,500 to 1,800	2,100 to 2,500
Union City	3,100 to 3,700	2,100 to 2,400	1,900 to 2,200
Quarry Lakes		1,100 to 1,300	1,500 to 1,800
	14,600 to 17,800	**16,900 to 19,800**	**20,600 to 24,300**

Data Source: HDR 2021 Ridership Report

Operation Diagrams

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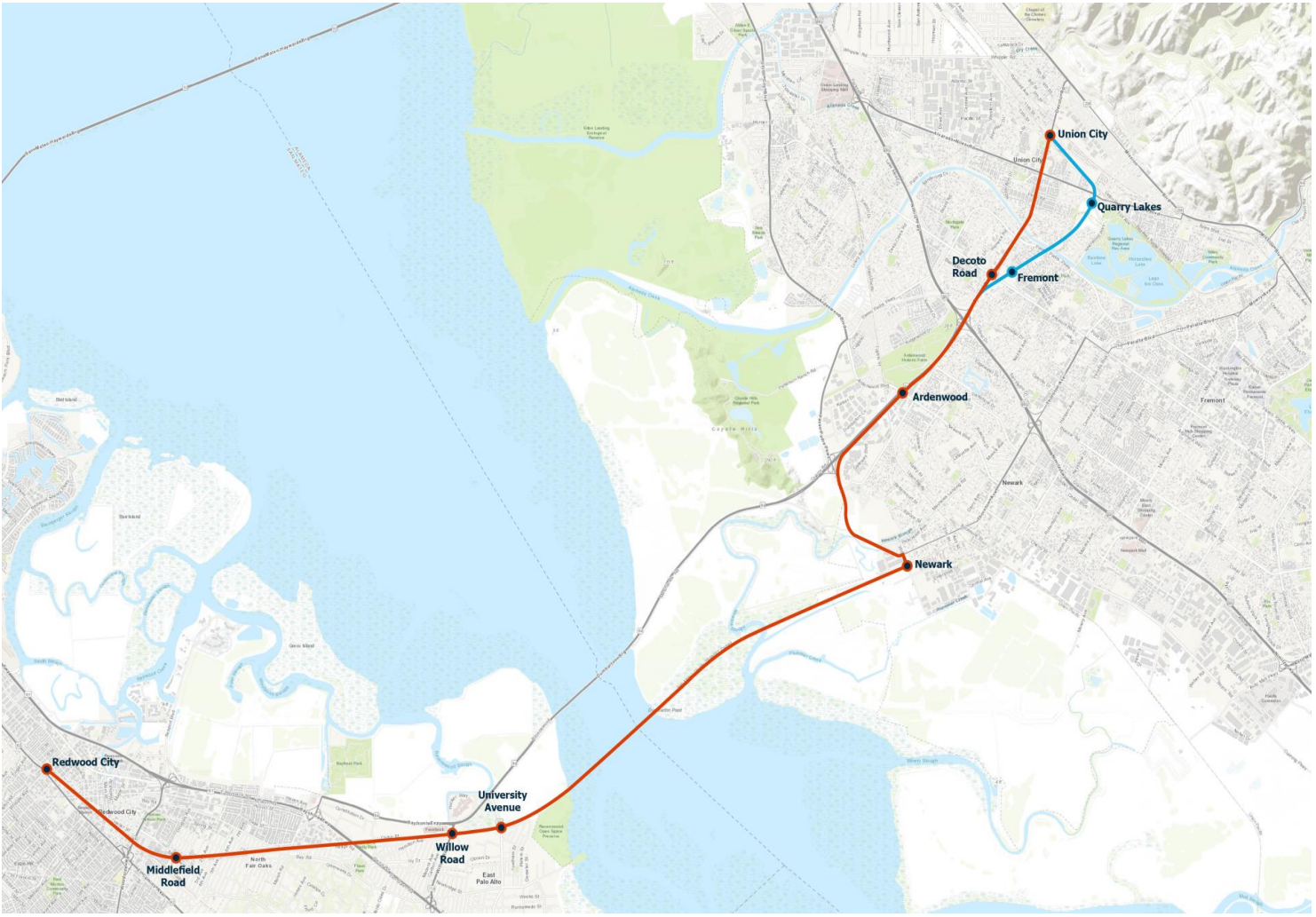
CRT

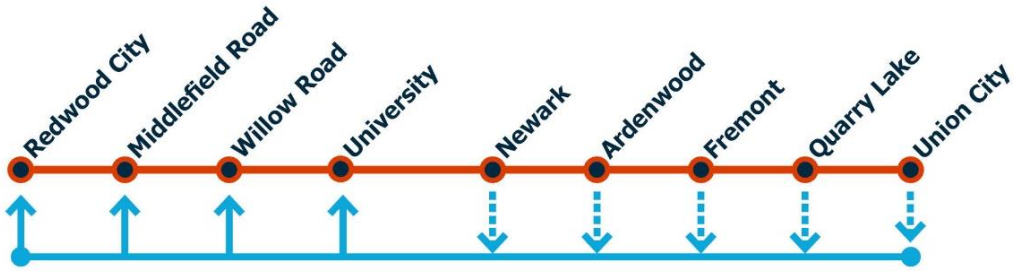
Local Service
Vehicle stops at every station to board and alight passengers. Passengers board and alight at each stop. All service includes shuttle between Newark and Ardenwood. East of Newark would be on UPRR ROW.

LRT/ BRT

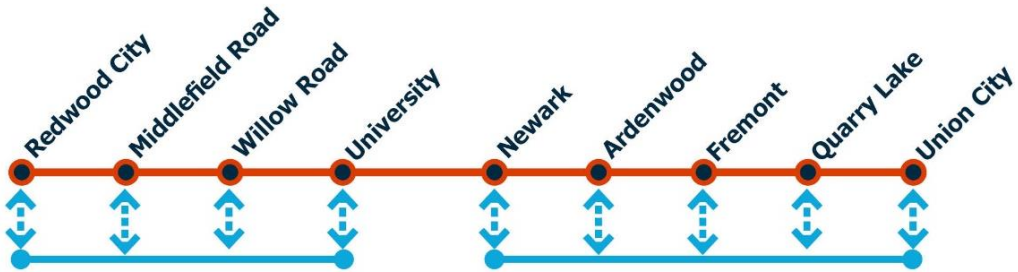
Local Service
Vehicle stops at every station to board and alight passengers. This service model is used for both BRT and LRT. Passengers board and alight at each stop.

AVT Operations





Long-Local Service
Vehicle makes every stop along the route.
Passengers will either board or alight at each stop.



Short-Local Service
Vehicle serves only one side of the bay and makes every stop.
Passengers board and alight at each stop.

Express Service
Vehicle serves stops with the highest passenger demand, based on the Travel Demand Model.
Passengers will either board or alight at a given stop.

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Simulation Findings

- All four modes offered comparable travel times; +/- 30 minutes end to end.
  (CRT is estimated at +/- 25 minutes, but follows a different route)
- Estimated Passenger wait times:
  CRT were longest (+/- 10 minutes),
  BRT and LRT were moderate (+/- 5 minutes)
  AVT was lowest (+/- 2 to 4 minutes)

Basis of Concept Cost Estimates

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- Assumes Design-Build Contract Delivery
- FTA Standard Cost Categories
- 2021 Dollars with No Escalation
- Based on Recent Executed Contracts in Region / Direct Vendor Outreach and FTA Capital Cost Data
- Includes
  - Infrastructure Construction Costs
  - Vehicles per HDR Fleet Size (February 2021)
  - Soft Costs (PM, CM, Third Party, Insurance, Commissioning)
  - 30% Contingency
- Excludes
  - All Real Estate costs
  - Parking Structures

Key Components by Mode

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All Costs in 2021 Dollars ($, Millions)				
Key Component	**CRT**	**LRT**	**BRT**	**AVT**
Stations	8 EA | $197 M	8 EA | $109 M	8 EA | $109 M	8 EA | $128 M
Systems	$290 M	$257 M	$60 M	$80 M
Grade Crossings	25 EA | $29 M	8 EA | $9 M	8 EA | $9 M	0 EA | $0
Maintenance & Storage Facility	$103 M	$103 M	$74 M	$86 M
Operations Center	$41 M	$33 M	$33 M	$22 M
Bay Crossing Structure	$334 M	$297 M	$297 M	$226 M
Bike Lane on Bay Crossing Structure	$35 M	$35 M	$35 M	$35 M
Bike/Pedestrian Lanes	$17 M	$17 M	$17 M	$17 M

- All LRT, BRT, and AVT costs above consider the Decoto Road alignment
- Source: HNTB, February 2021

Key Components by Mode

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- Stations – platform, vertical circulation, and bike storage
- Systems – overhead catenary system, battery charging, traction power stations, wayside controls
- Grade Crossings – vehicle/ped gates, safety improvements
- Maintenance & Storage Facility – daily vehicle inspections and basic maintenance, overnight vehicle storage
- Operations Center – control center for vehicle dispatch and operations
- Bay Crossing Structure – high-rise, fixed span section, costs higher for heavier vehicles and flatter grades
- Bike Lane on Bay Crossing Structure – 2-way bike/ped lane
- Bike/Pedestrian Lanes – 2-way bike/ped dedicated path

Key Components by Mode, $, Million

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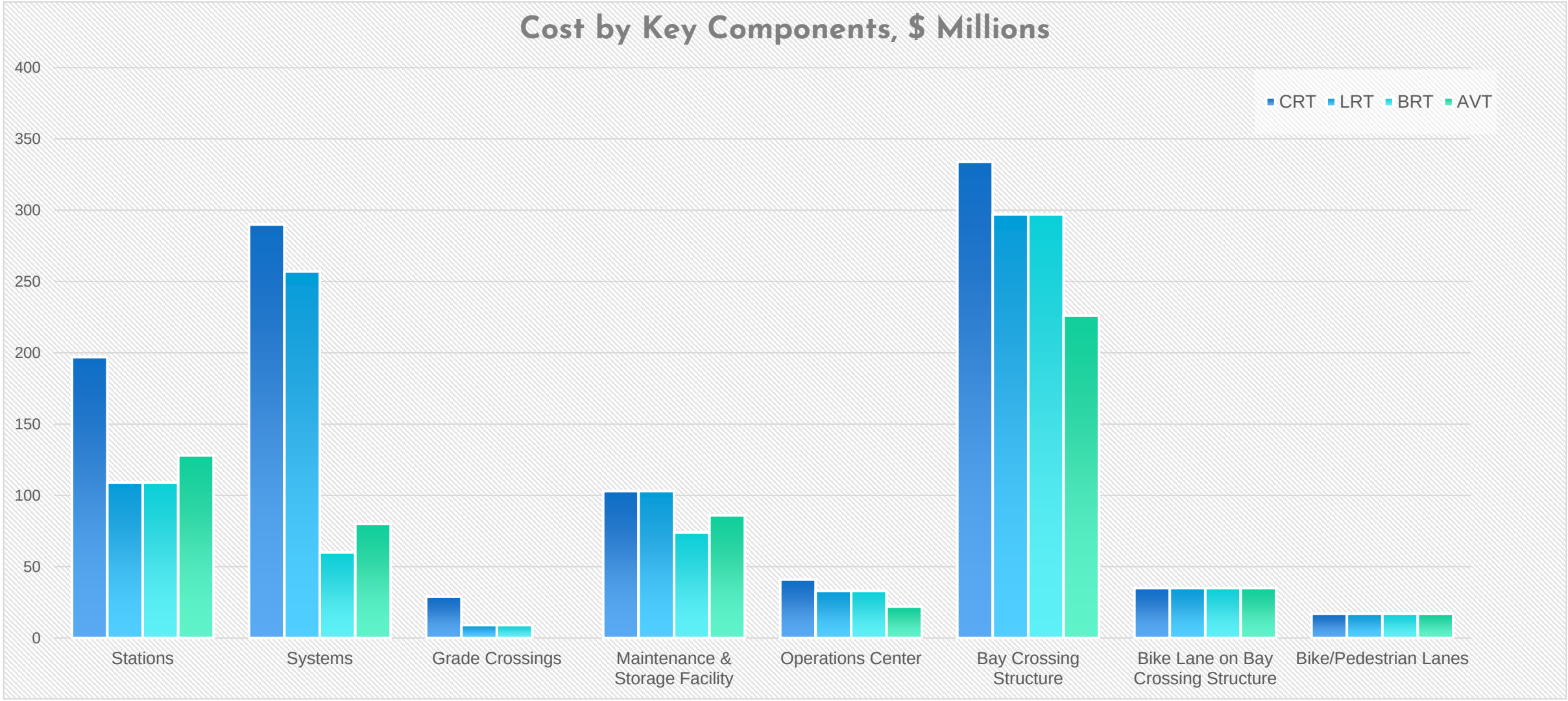

Estimated Project Costs by Mode

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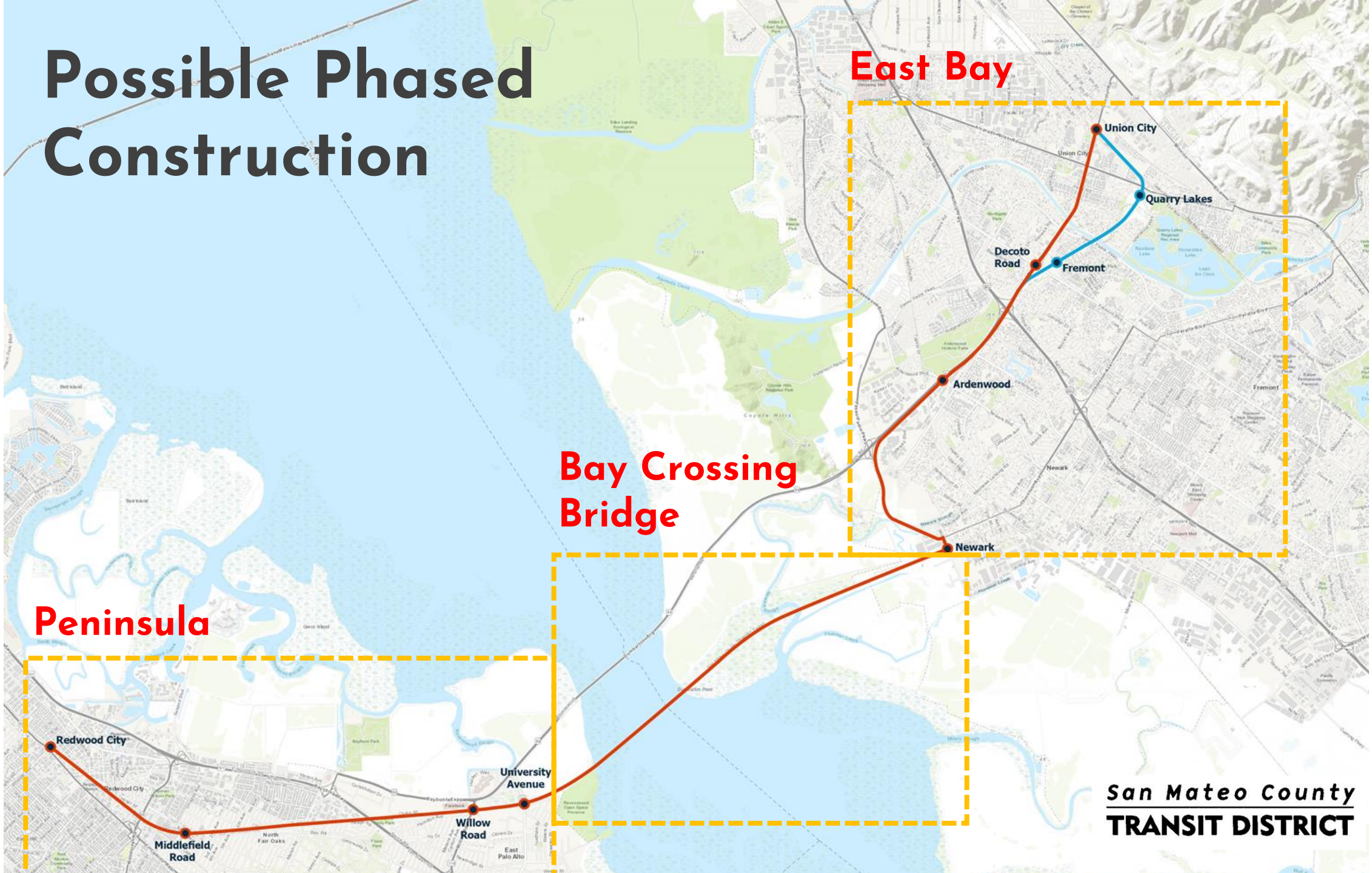
All Costs in 2021 Dollars ($, Billions)

	CRT / Decoto Road Alignment				Quarry Lakes Alignment			
Mode	**Infrastructure**	**Vehicles**	**Soft Costs**	**Total**	**Infrastructure**	**Vehicles**	**Soft Costs**	**Total**
CRT	$2.43 B	$0.14 B	$0.75 B	**$3.32 B**	N/A			
LRT	$2.39 B	$0.10 B	$0.74 B	**$3.22 B**	$2.36 B	$0.10 B	$0.73 B	**$3.18 B**
BRT	$1.84 B	$0.03 B	$0.57 B	**$2.43 B**	$1.82 B	$0.03 B	$0.56 B	**$2.42 B**
AVT	$1.82 B	$0.11 B	$0.56 B	**$2.49 B**	$1.86 B	$0.12 B	$0.57 B	**$2.55 B**

Notes:

- CRT Project costs exclude UPRR Trackage Rights Fees
- BRT Project costs assume similar infrastructure requirements as LRT Project
- Source: HNTB, February 2021

Possible Phased Construction



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Estimated Construction Costs by Phase

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All Costs in 2021 Dollars ($, Billions)

	Peninsula		Bay Crossing		East Bay			Total
Mode	Infrastructure	Soft Costs	Infrastructure	Soft Costs	Alignment	Infrastructure	Soft Costs	
CRT	$0.56 B	$0.17 B	$1.34 B	$0.42 B	UPRR	$0.52 B	$0.16 B	$3.17 B
LRT	$0.45 B	$0.14 B	$1.17 B	$0.36 B	Decoto Rd	$0.77 B	$0.24 B	$3.13 B
					Quarry Lakes	$0.74 B	$0.23 B	$3.09 B
BRT	$0.32 B	$0.10 B	$0.96 B	$0.30 B	Decoto Rd	$0.55 B	$0.17 B	$2.40 B
					Quarry Lakes	$0.54 B	$0.17 B	$2.38 B
AVT	$0.41 B	$0.13 B	$0.85 B	$0.26 B	Decoto Rd	$0.57 B	$0.18 B	$2.40 B
					Quarry Lakes	$0.60 B	$0.19 B	$2.44 B

- Costs above are for proportionate estimate only to determine order-of-magnitude estimate for phases and do not include Vehicle Costs
- Source: HNTB, February 2021

Q&A Session

Contact Us

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If you have any additional questions or comments, email us at dumbartonrail@samtrans.com

For more information, go to www.samtrans.com/dumbarton

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Closing