



# ACEforward

**ACEforward**  
**BART Connectivity Alternatives –**  
**Preliminary Forecasts and Costs**  
**Altamont Regional Rail Working Group**  
**July 13, 2016**



U.S. Department  
of Transportation  
**Federal Railroad  
Administration**

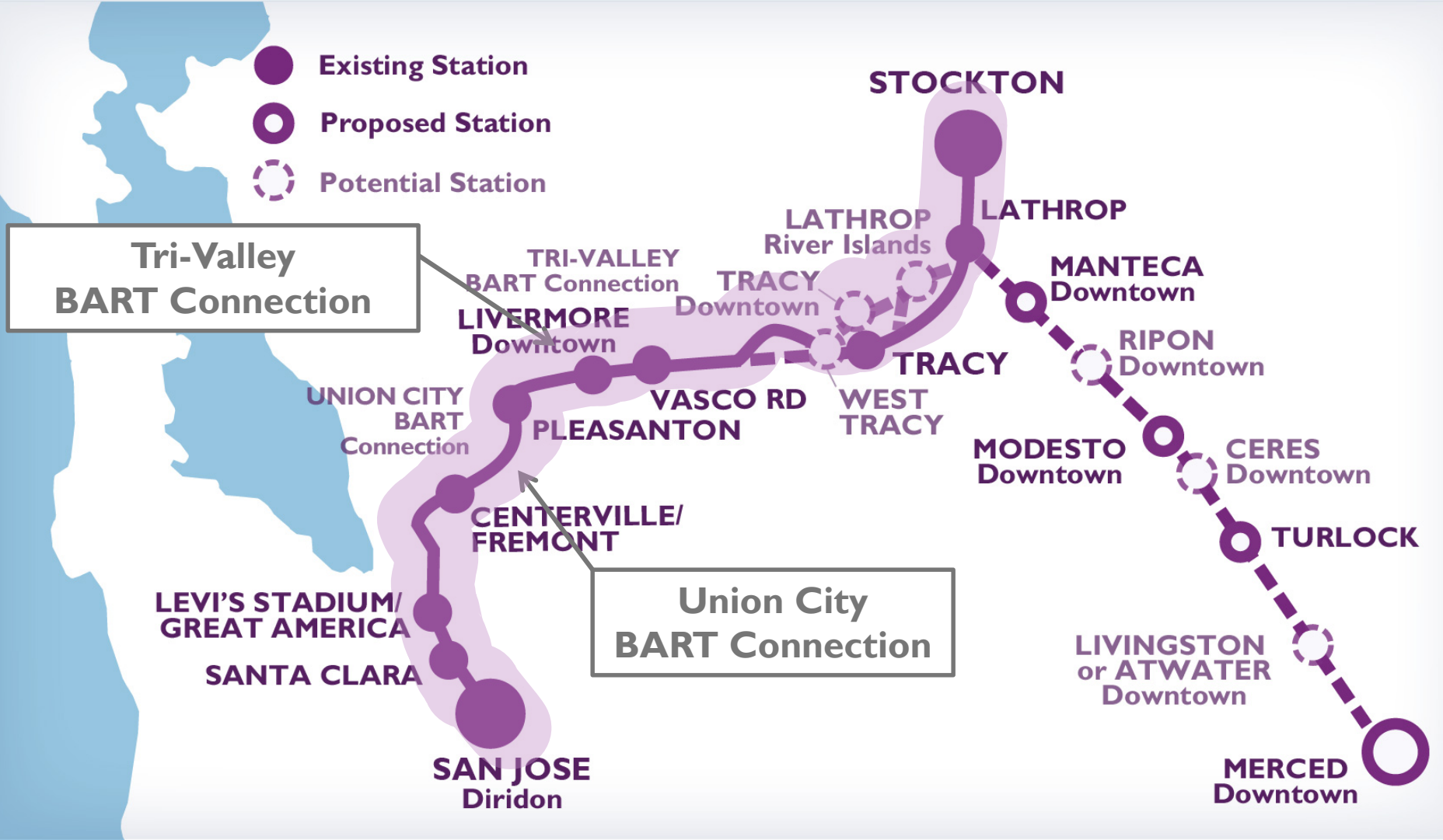


**SAN JOAQUIN  
REGIONAL  
RAIL COMMISSION**



# ACEforward Project Goals

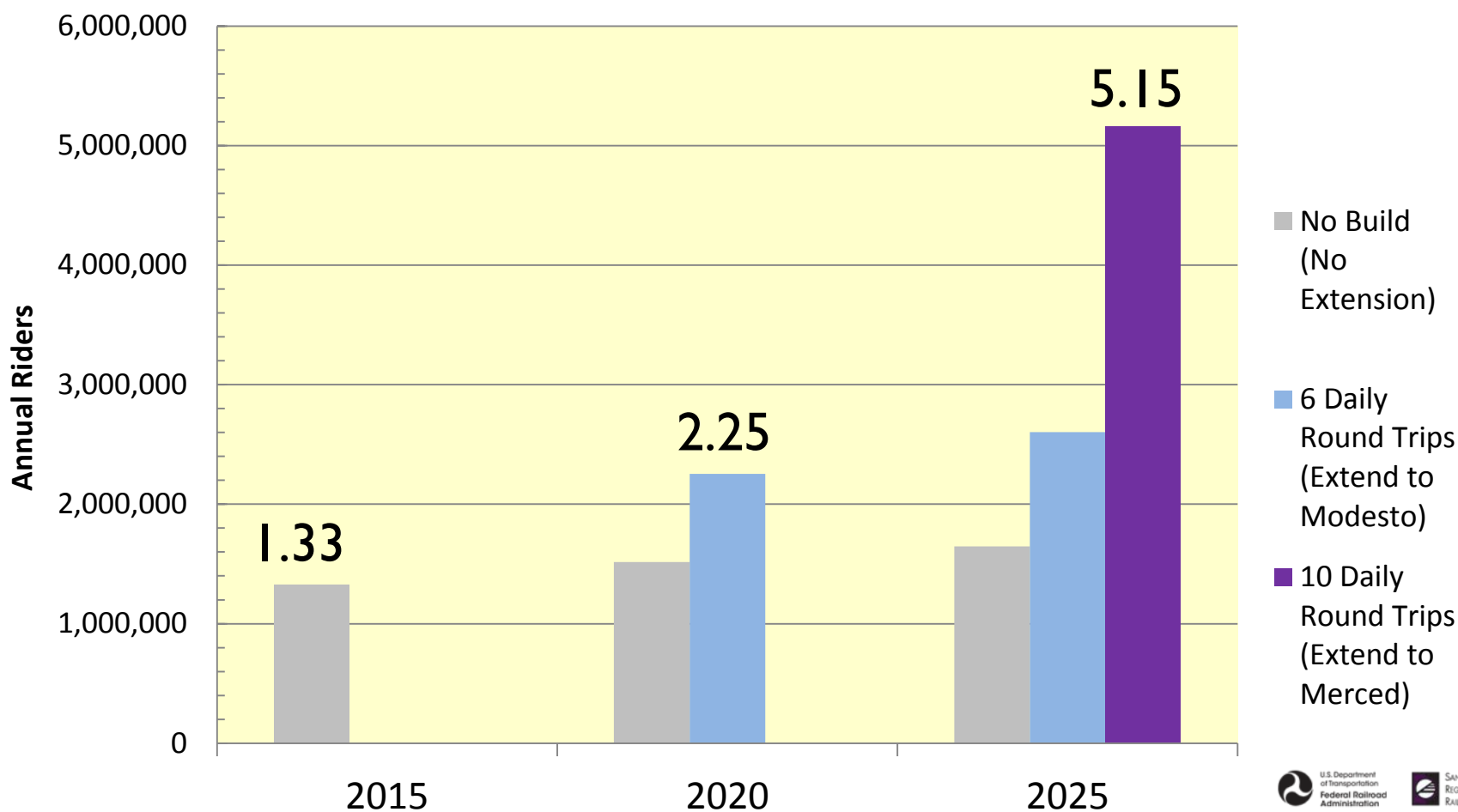
- Existing Station
- Proposed Station
- Potential Station





# ACEforward Ridership Forecast – Merced Extension July 2016

- No-build ridership forecast to increase by more than 25% by 2025
- The highest long-term annual ridership could **be up to 5.15 million riders**, an increase of more than 280% compared to today's usage





# Altamont Corridor Improvements

Section	Project Cost (\$-MM 2014)	# of miles	\$ / mile (\$-MM 2014)
<b>Extension to Modesto</b>			
• San Joaquin County <sup>(1)</sup>	\$102.8	9.7	\$10.6
• Stanislaus County	\$96.2	9.1	\$10.6
<b>5<sup>th</sup> &amp; 6<sup>th</sup> Train Capital Cost <sup>(2)</sup></b>	\$202.0	n/a	n/a
<b>5<sup>th</sup> &amp; 6<sup>th</sup> Train Equipment</b>	\$60.5	n/a	n/a
<b>Station Improvements to Support 5<sup>th</sup> &amp; 6<sup>th</sup> Train</b>			
• Parking	\$59.8	n/a	n/a
• Platform Extensions	\$14.4	n/a	n/a
<b>Extension to Merced</b>			
• Stanislaus County <sup>(3)</sup>	\$122.5	12.6	\$9.7
• Merced County	\$227.2	25.9	\$8.8
<b>7<sup>th</sup> – 10<sup>th</sup> Train Capital Cost <sup>(4)</sup></b>	\$200.0	n/a	n/a
<b>7<sup>th</sup> – 10<sup>th</sup> Train Equipment</b>	\$117.5	n/a	n/a
<b>TOTAL</b>	<b>\$1202.9</b>		

1 – Extension to Ripon

2 – Capacity and grade crossing improvements Stockton – San Jose section & maintenance facility expansion

3 – Extension to Turlock

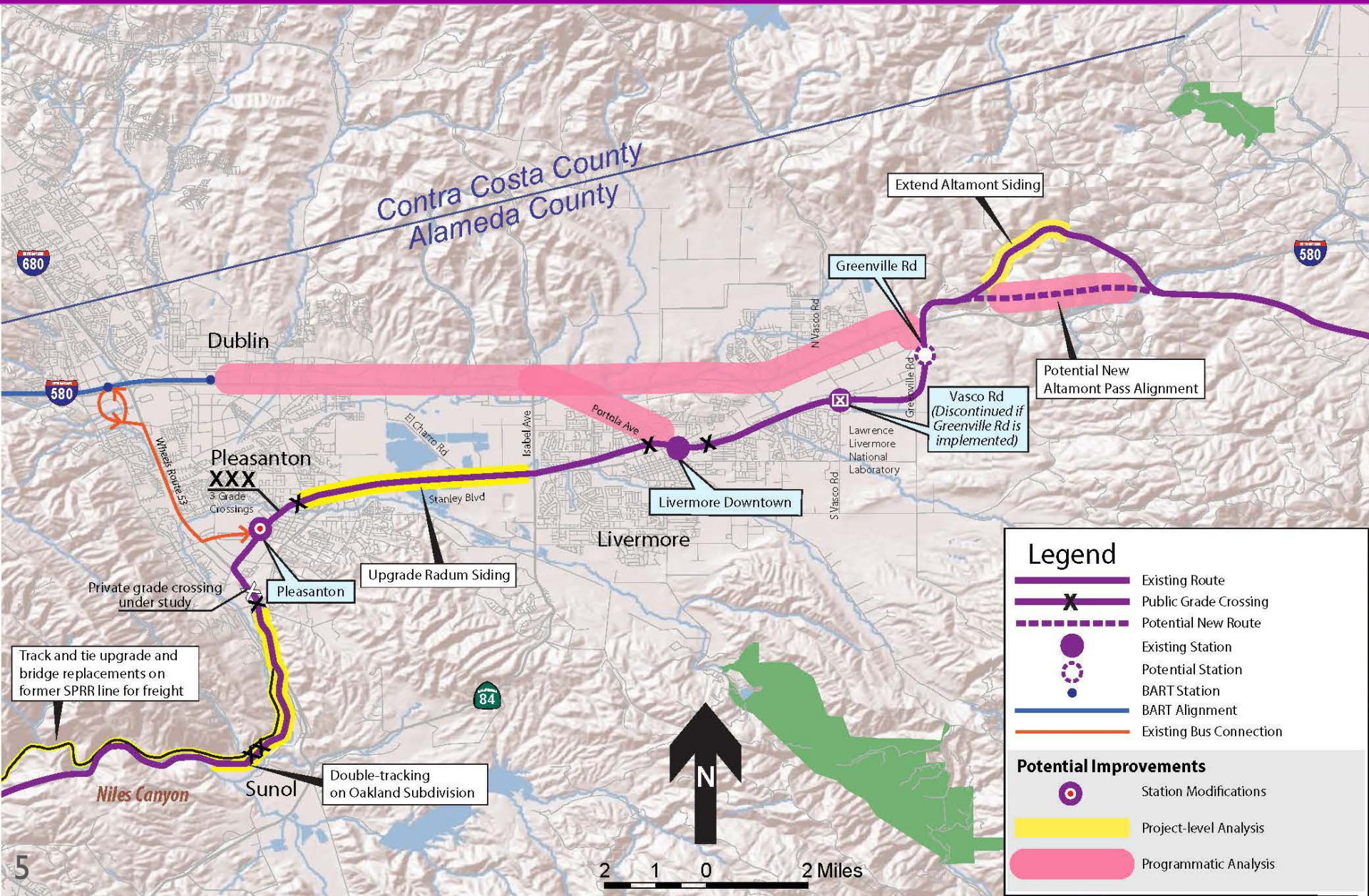
4 – Capacity improvements Stockton – San Jose section







# Tri Valley and BART Connectivity







# Existing Shuttle Connection

**Existing Shuttle Connections**

Contra Costa County  
Alameda County

**Ridership for 2025**  
4.56 million

**Capital Cost**  
ACE - \$1.20 billion

Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	2	1:45	10
Tracy-Great America	0	1:10	10

**Legend**

- Existing Route
- Public Grade Crossing
- Existing Station
- BART Connecting Station
- BART Alignment
- Existing Bus Connection







# 2. BART Connection at Greenville

## BART Extension to Greenville Rd

**Ridership for 2025**  
5.15 million

**Capital Cost**  
ACE - \$1.20 billion  
BART - \$3.27 billion (12.0 mi)

Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	1	1:30	10
Tracy-Great America	0	1:10	10

### Legend

- Existing Route
- Public Grade Crossing
- Existing Station
- BART Connecting Station
- BART Station
- BART Alignment
- BART Extension
- Existing Bus Connection







# 3. BART Connection at Vasco

## BART Extension to Vasco Rd via Downtown Livermore

### Ridership for 2025

5.07 million

### Capital Cost

ACE - \$1.20 billion

BART - \$4.05 – 4.28 billion (10.0 mi)

### Legend

- Existing Route
- Public Grade Crossing
- Existing Station
- BART Connecting Station
- BART Station
- BART Alignment
- BART Extension
- Existing Bus Connection

Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	1	1:33	10
Tracy-Great America	0	1:10	10





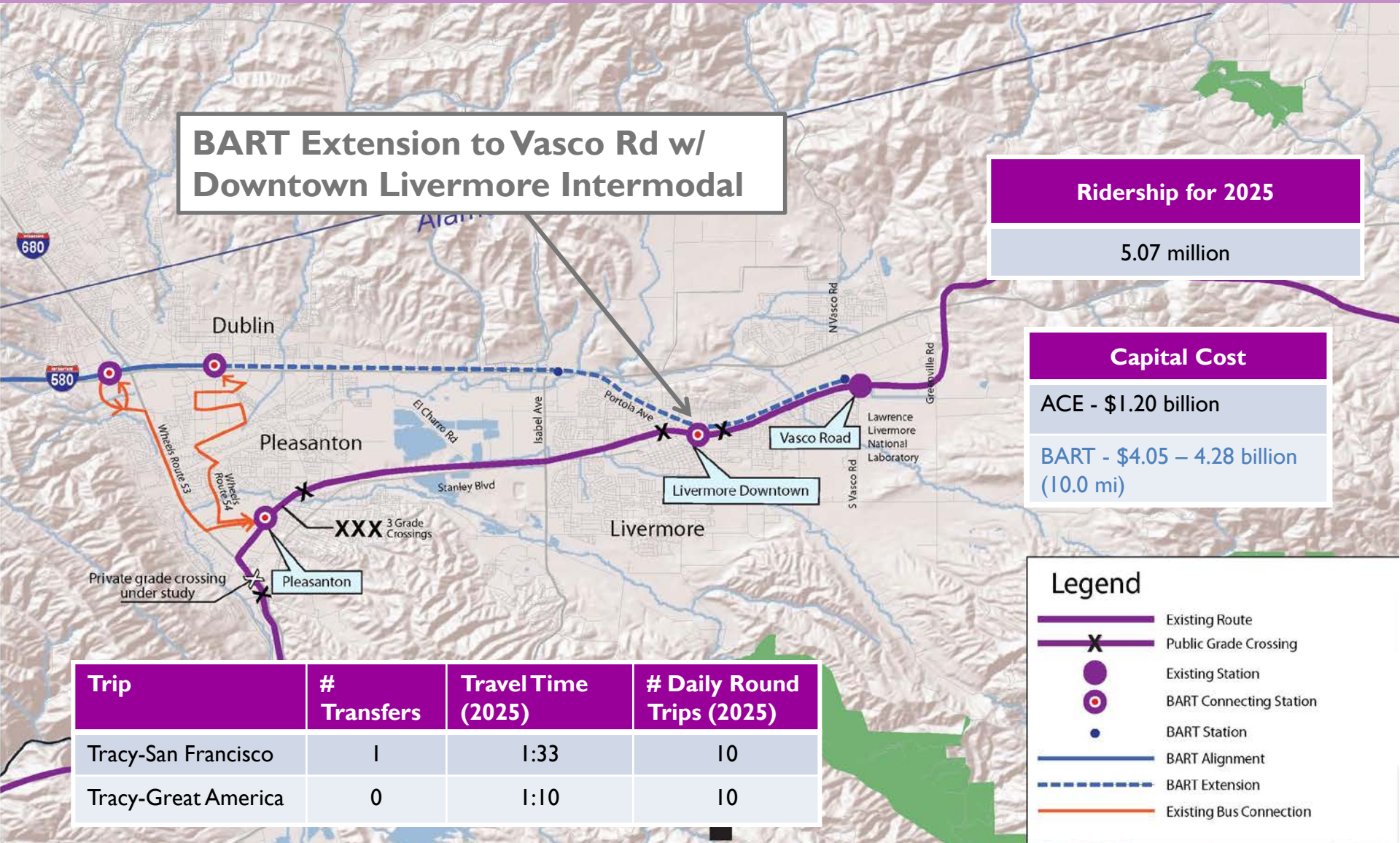


# 4. BART Connection at Downtown

**BART Extension to Vasco Rd w/  
Downtown Livermore Intermodal**

**Ridership for 2025**  
5.07 million

**Capital Cost**  
ACE - \$1.20 billion  
BART - \$4.05 – 4.28 billion (10.0 mi)



Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	1	1:33	10
Tracy-Great America	0	1:10	10

**Legend**

- Existing Route
- Public Grade Crossing
- Existing Station
- BART Connecting Station
- BART Station
- BART Alignment
- BART Extension
- Existing Bus Connection







# 5a. ACE Extension to BART at Isabel

## 6 trains between Merced and Isabel, 4 Stockton – San Jose

**BART Extension to Isabel / I-580**  
**ACE Extension to Isabel / I-580**

**Ridership for 2025**  
 3.59 million

	Capital Cost (without Isabel extension)	Additional Cost (with Isabel extension: aerial – at-grade)	Total
<b>ACE</b>	\$0.75 billion	\$0.71 – 1.23 billion	\$1.46 – 1.98
<b>BART</b>	\$1.25 billion (5.0 mi)		

Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	1	1:33	6
Tracy-Great America	0	1:10	4

**Legend**

- Existing Route
- Public Grade Crossing
- Potential New Route
- Existing Station
- BART Connecting Station
- BART Alignment
- BART Extension
- Existing Bus Connection







# 5b. ACE Extension to BART at Isabel

## 6 trains Merced – Isabel – San Jose, 4 Stockton – San Jose

**BART Extension to Isabel / I-580**  
**ACE Extension to Isabel / I-580**

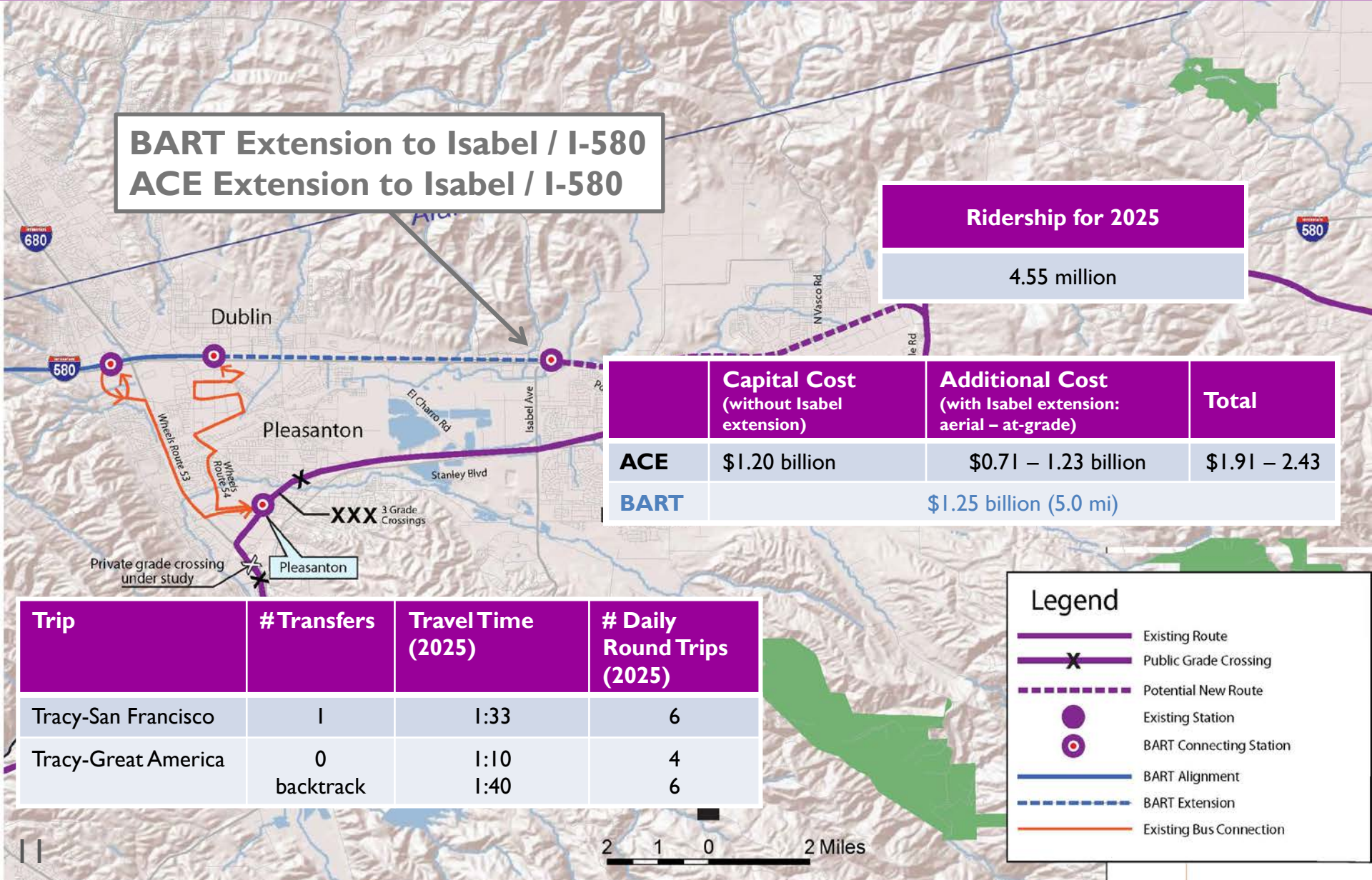
**Ridership for 2025**  
 4.55 million

	Capital Cost (without Isabel extension)	Additional Cost (with Isabel extension: aerial – at-grade)	Total
<b>ACE</b>	\$1.20 billion	\$0.71 – 1.23 billion	\$1.91 – 2.43
<b>BART</b>	\$1.25 billion (5.0 mi)		

Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	1	1:33	6
Tracy-Great America	0 backtrack	1:10 1:40	4 6

**Legend**

- Existing Route
- Public Grade Crossing
- Potential New Route
- Existing Station
- BART Connecting Station
- BART Alignment
- BART Extension
- Existing Bus Connection







# 6. BART Connection via DMU to Isabel

**BART Extension to Isabel / I-580**  
**DMU Shuttle between Greenville and Isabel / I-580**

**Ridership for 2025**

4.89 million

**Capital Cost**

<b>ACE</b>	\$1.20 billion
<b>DMU</b>	\$0.63 billion
<b>BART</b>	\$1.25 billion (5.0 mi)

**Legend**

- Existing Route
- Public Grade Crossing
- Potential DMU Shuttle
- Existing Station
- Potential DMU Transfer Station
- BART Connecting Station
- BART Alignment
- BART Extension
- Existing Bus Connection

Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	2	1:35	10
Tracy-Great America	0	1:10	10

2 1 0 2 Miles





# Capital Cost Breakdown - ACE Extension to Isabel / DMU (millions, 7.3 miles, single track)

	Aerial	At-Grade	DMU
Aerial Guideway	\$501	\$197	\$141
I-580 Overcrossings	\$0	\$206	\$0
I-580 Roadway	\$97	\$688	\$267
Track	\$37	\$37	\$36
Civil Work	\$0	\$0	\$0
Right-of-Way	\$0	\$24	\$23
Stations	\$78	\$78	\$94
Rolling Stock	\$0	\$0	\$72
<b>Total</b>	<b>\$713</b>	<b>\$1,230</b>	<b>\$632</b>
<b>Cost per mile</b>	<b>\$98</b>	<b>\$168</b>	<b>\$87</b>



# 7a.ACE Extension to BART at Dublin/Pleasanton

## 6 trains between Merced and Dublin/Pleasanton, 4 Stockton – San Jose

**ACE Extension to Dublin/Pleasanton BART**

**Ridership for 2025**  
3.36 million

	Capital Cost (without Dublin-Pleasanton extension)	Additional Cost (with Dublin/P. extension: aerial – at-grade)	Total
<b>ACE</b>	\$0.75 billion	\$1.14 – 2.38 billion	\$1.89 – 3.13
<b>BART</b>		n/a	

Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	1	1:31	6
Tracy-Great America	0	1:10	4

**Legend**

- Existing Route
- Public Grade Crossing
- Potential New Route
- Existing Station
- BART Connecting Station
- BART Alignment
- BART Extension
- Existing Bus Connection







# 7b. ACE Extension to BART at Dublin/Pleasanton

## 6 trains Merced – Dublin/Pleasanton – San Jose, 4 Stockton – San Jose

**ACE Extension to Dublin/Pleasanton BART**

**Ridership for 2025**  
4.10 million

	Capital Cost (without Dublin-Pleasanton extension)	Additional Cost (with Dublin/P. extension: aerial – at-grade)	Total
<b>ACE</b>	\$1.20 billion	\$1.14 – 2.38 billion	\$2.34 – 3.58
<b>BART</b>		n/a	

Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	1	1:31	6
Tracy-Great America	0 backtrack	1:10	4
		1:48	6

**Legend**

- Existing Route
- Public Grade Crossing
- Potential New Route
- Existing Station
- BART Connecting Station
- BART Alignment
- BART Extension
- Existing Bus Connection







# 8. BART Connection via DMU to Dublin/Pleasanton

**DMU Shuttle between Greenville and Dublin/Pleasanton BART**

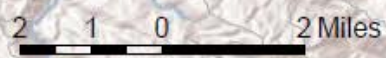
**Ridership for 2025**  
4.89 million

	Capital Cost
<b>ACE</b>	\$1.20 billion
<b>DMU</b>	\$1.08 billion
<b>BART</b>	n/a

Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	2	1:33	10
Tracy-Great America	0	1:10	10

**Legend**

- Existing Route
- Public Grade Crossing
- Potential New DMU Shuttle
- Existing Station
- Potential DMU Transfer Station
- BART Connecting Station
- BART Alignment
- BART Extension
- Existing Bus Connection







# Capital Cost Breakdown - ACE to Dublin/Pleasanton / DMU (millions, 12.8 miles, single track)

	Aerial	At-Grade	DMU
Aerial Guideway	\$914	\$169	\$116
I-580 Overcrossings	\$0	\$664	\$0
I-580 Roadway	\$133	\$1,405	\$540
Track	\$66	\$66	\$67
Civil Work	\$0	\$0	\$0
Right-of-Way	\$0	\$46	\$43
Stations	\$31	\$31	\$242
Rolling Stock	\$0	\$0	\$72
<b>Total</b>	<b>\$1,145</b>	<b>\$2,381</b>	<b>\$1,080</b>
<b>Cost per mile</b>	<b>\$89</b>	<b>\$186</b>	<b>\$84</b>

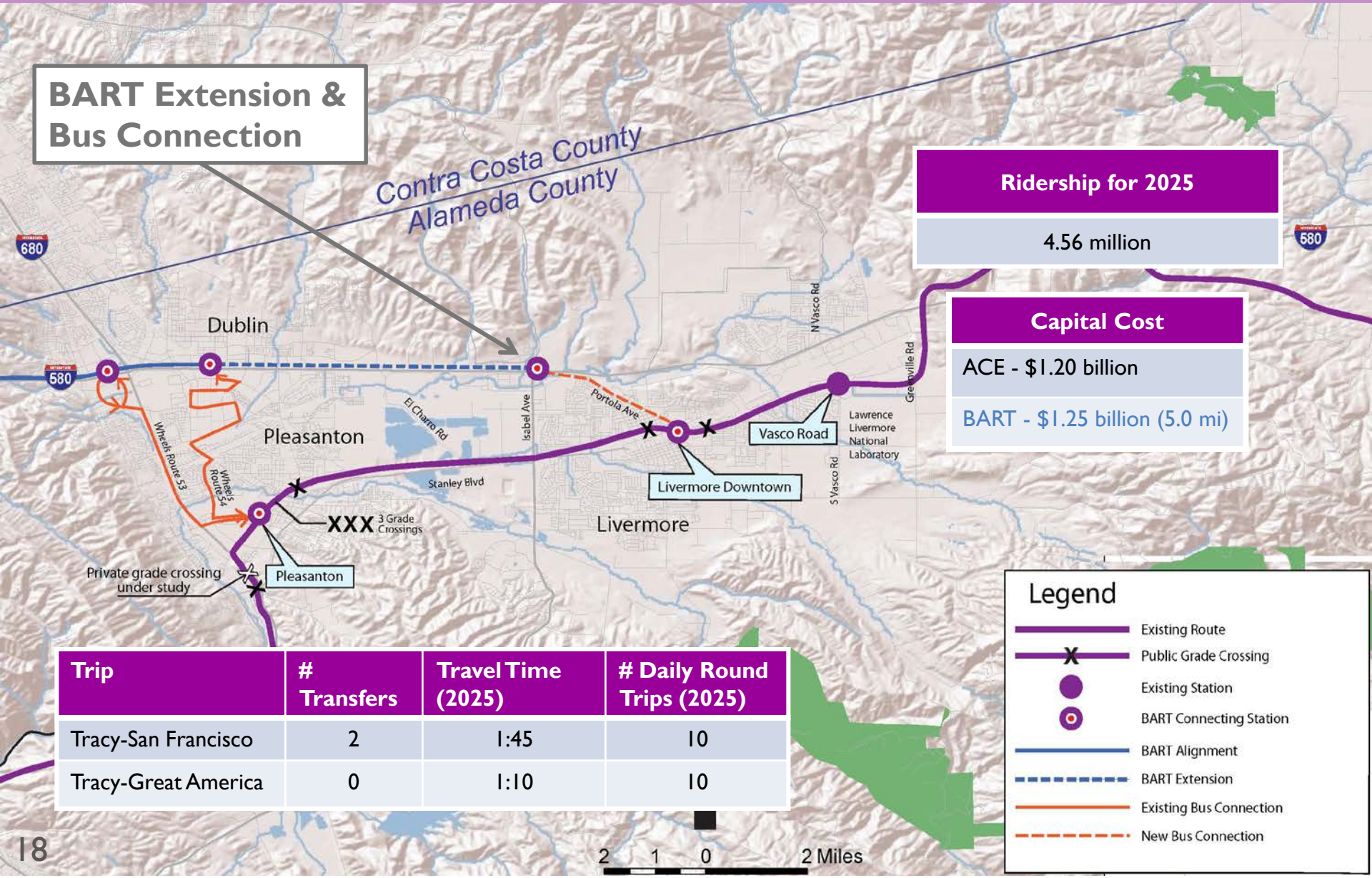


# 9. Shuttle Connection at Isabel BART

**BART Extension & Bus Connection**

**Ridership for 2025**  
4.56 million

**Capital Cost**  
ACE - \$1.20 billion  
BART - \$1.25 billion (5.0 mi)



Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	2	1:45	10
Tracy-Great America	0	1:10	10

**Legend**

- Existing Route
- Public Grade Crossing
- Existing Station
- BART Connecting Station
- BART Alignment
- BART Extension
- Existing Bus Connection
- New Bus Connection





# Summary of Tri-Valley ACE-BART Connection Options

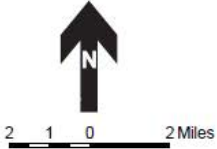
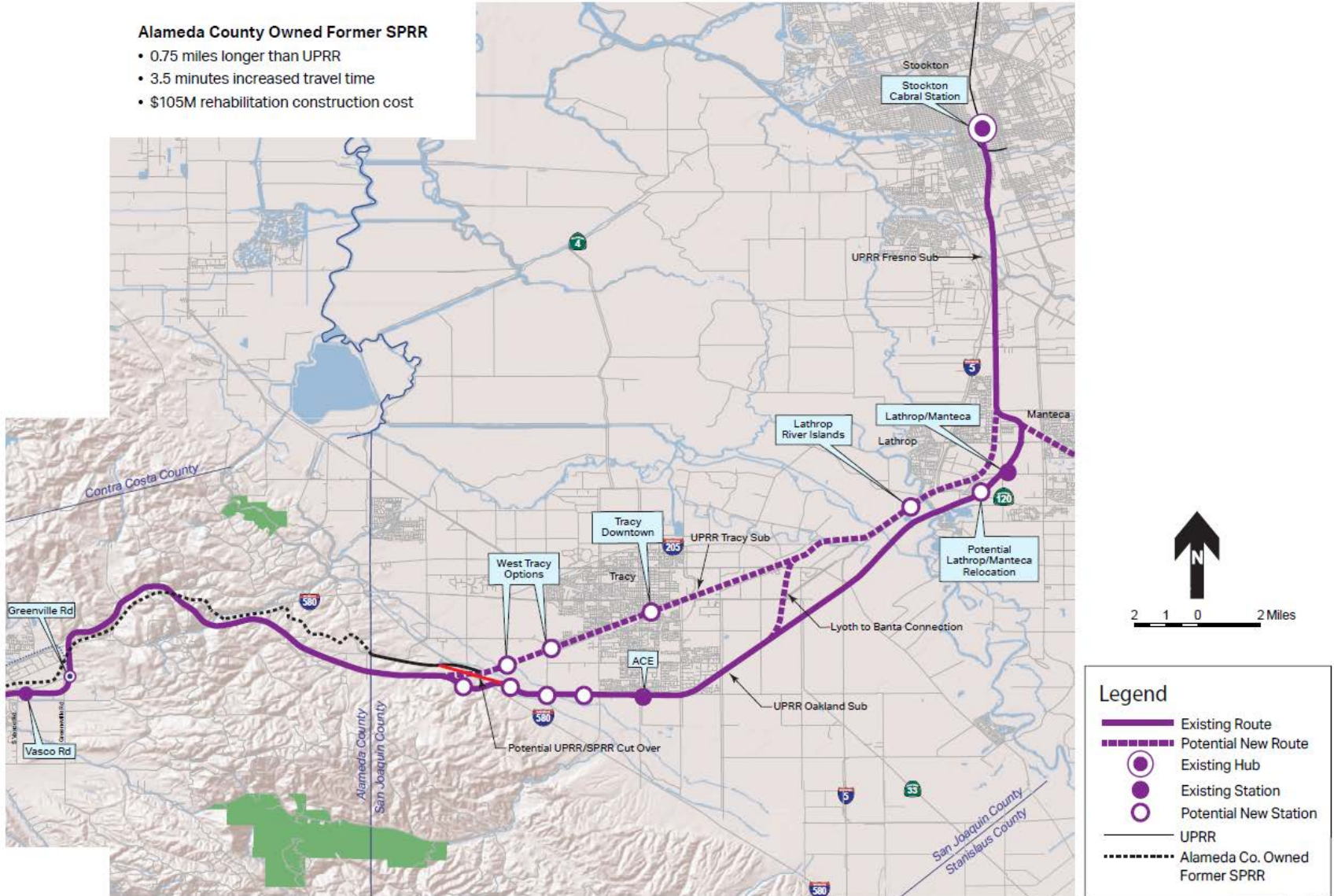
	ACE Ridership (millions)	ACE Cost (billions)	DMU Cost (billions)	BART Cost (billions)
Existing Shuttle Connection	4.56	\$1.20	n/a	n/a
BART Connection at Greenville	5.15	\$1.20	n/a	\$3.27
BART Connection at Vasco	5.07	\$1.20	n/a	\$4.05 – 4.28
BART Connection at Downtown	5.07	\$1.20	n/a	\$4.05 – 4.28
ACE Extension to Isabel BART				
- 6 trains Merced – Isabel, 4 Stockton – San Jose	3.59	\$1.46 - 1.98	n/a	\$1.25
- 6 Merced – Isabel – San Jose, 4 Stockton - SJ	4.55	\$1.91 - 2.43		
BART Connection via DMU to Isabel	4.89	\$1.20	\$0.63	\$1.25
ACE Extension to Dublin/Pleasanton BART				
- 6 trains Merced – Dublin/P., 4 Stockton – San Jose	3.36	\$1.89 - 3.13	n/a	n/a
- 6 trains Merced – D/P – San Jose, 4 Stockton - SJ	4.10	\$2.34 - 3.58		
BART Connection via DMU to Dublin/Pleasanton	4.89	\$1.20	\$1.08	n/a
Shuttle Connection at BART Isabel	4.56	\$1.20	n/a	\$1.25



# ACEforward Altamont Pass – Stockton Existing and Potential Alignments with Alameda County-Owned Former SPRR

## Alameda County Owned Former SPRR

- 0.75 miles longer than UPRR
- 3.5 minutes increased travel time
- \$105M rehabilitation construction cost



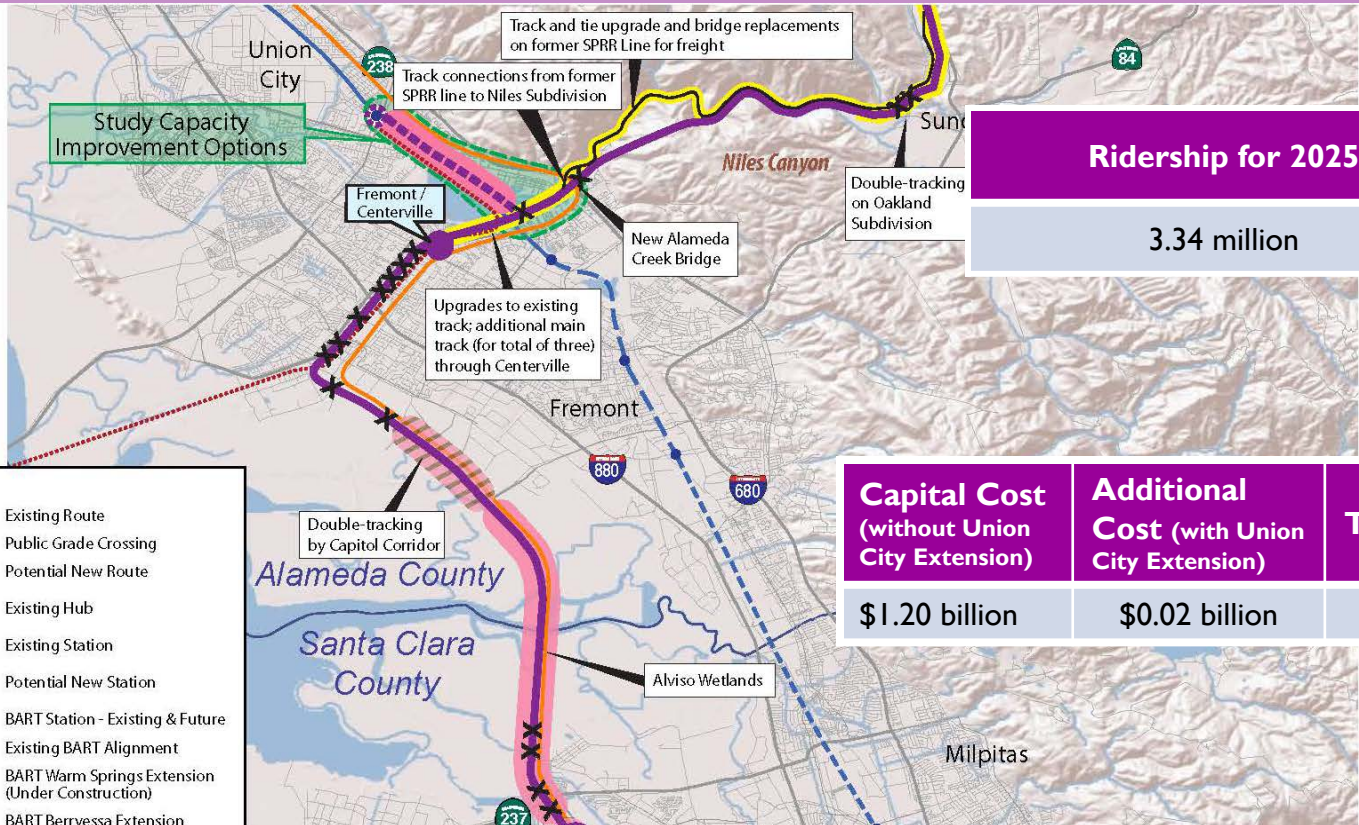
Legend	
	Existing Route
	Potential New Route
	Existing Hub
	Existing Station
	Potential New Station
	UPRR
	Alameda Co. Owned Former SPRR





# ACE Extension to BART at Union City

## 6 trains between Merced and Union City, 4 Stockton – San Jose



**Ridership for 2025**

3.34 million

**Legend**

- Existing Route
- Public Grade Crossing
- Potential New Route
- Existing Hub
- Existing Station
- Potential New Station
- BART Station - Existing & Future
- Existing BART Alignment
- BART Warm Springs Extension (Under Construction)
- BART Berryessa Extension (Under Construction)
- BART Silicon Valley Extension Future Phase
- Caltrain
- Potential Dumbarton Project (by Caltrain)
- Capitol Corridor

**Potential Improvements**

- Station Modifications
- Project-level Analysis
- Programmatic Analysis
- Programmatic Analysis and Project-Level Analysis by Others

Capital Cost (without Union City Extension)	Additional Cost (with Union City Extension)	Total
\$1.20 billion	\$0.02 billion	\$1.22

Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	1	1:53	6
Tracy-Great America	0	1:10	4

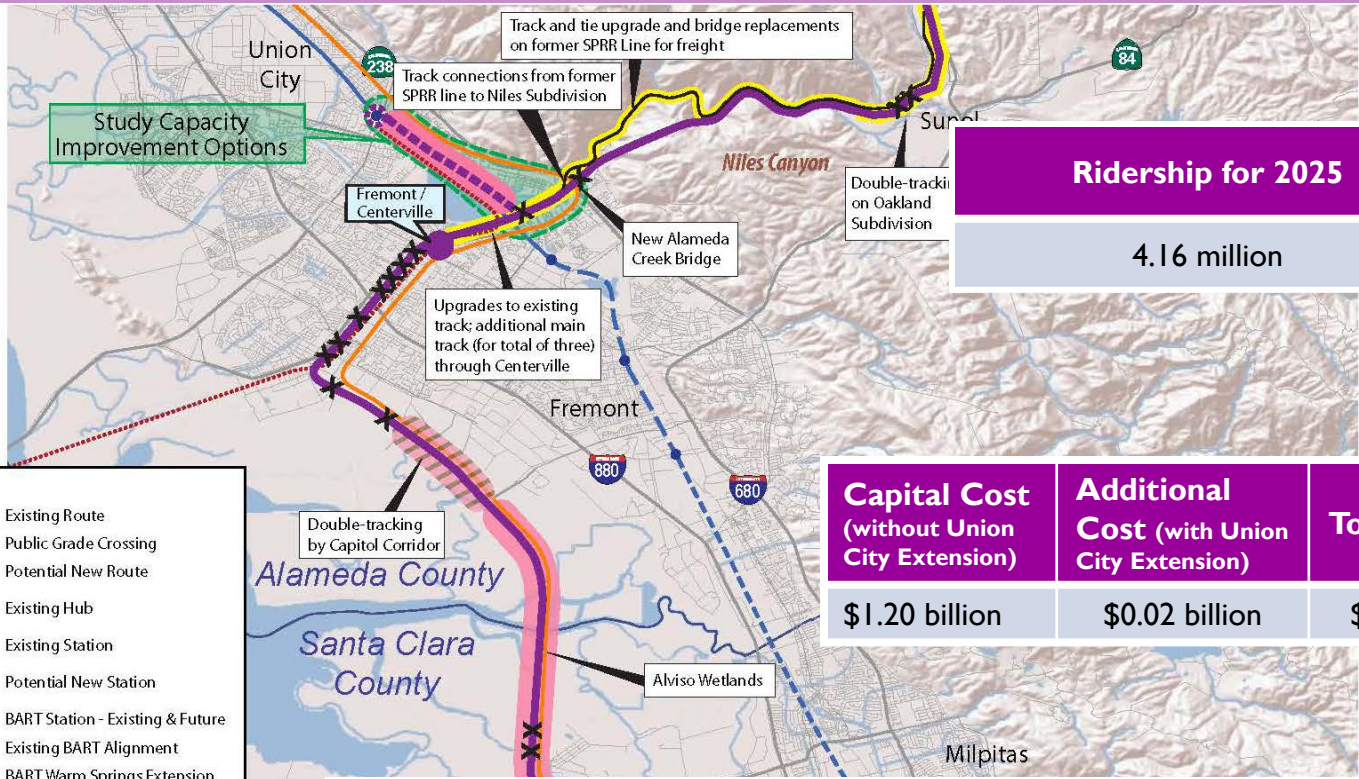






# ACE Extension to BART at Union City

## 6 trains Merced – Union City – San Jose, 4 Stockton – San Jose



**Ridership for 2025**

4.16 million

**Legend**

- Existing Route
- Public Grade Crossing
- Potential New Route
- Existing Hub
- Existing Station
- Potential New Station
- BART Station - Existing & Future
- Existing BART Alignment
- BART Warm Springs Extension (Under Construction)
- BART Berryessa Extension (Under Construction)
- BART Silicon Valley Extension Future Phase
- Caltrain
- Potential Dumbarton Project (by Caltrain)
- Capitol Corridor

**Potential Improvements**

- Station Modifications
- Project-level Analysis
- Programmatic Analysis
- Programmatic Analysis and Project-Level Analysis by Others

Capital Cost (without Union City Extension)	Additional Cost (with Union City Extension)	Total
\$1.20 billion	\$0.02 billion	\$1.22

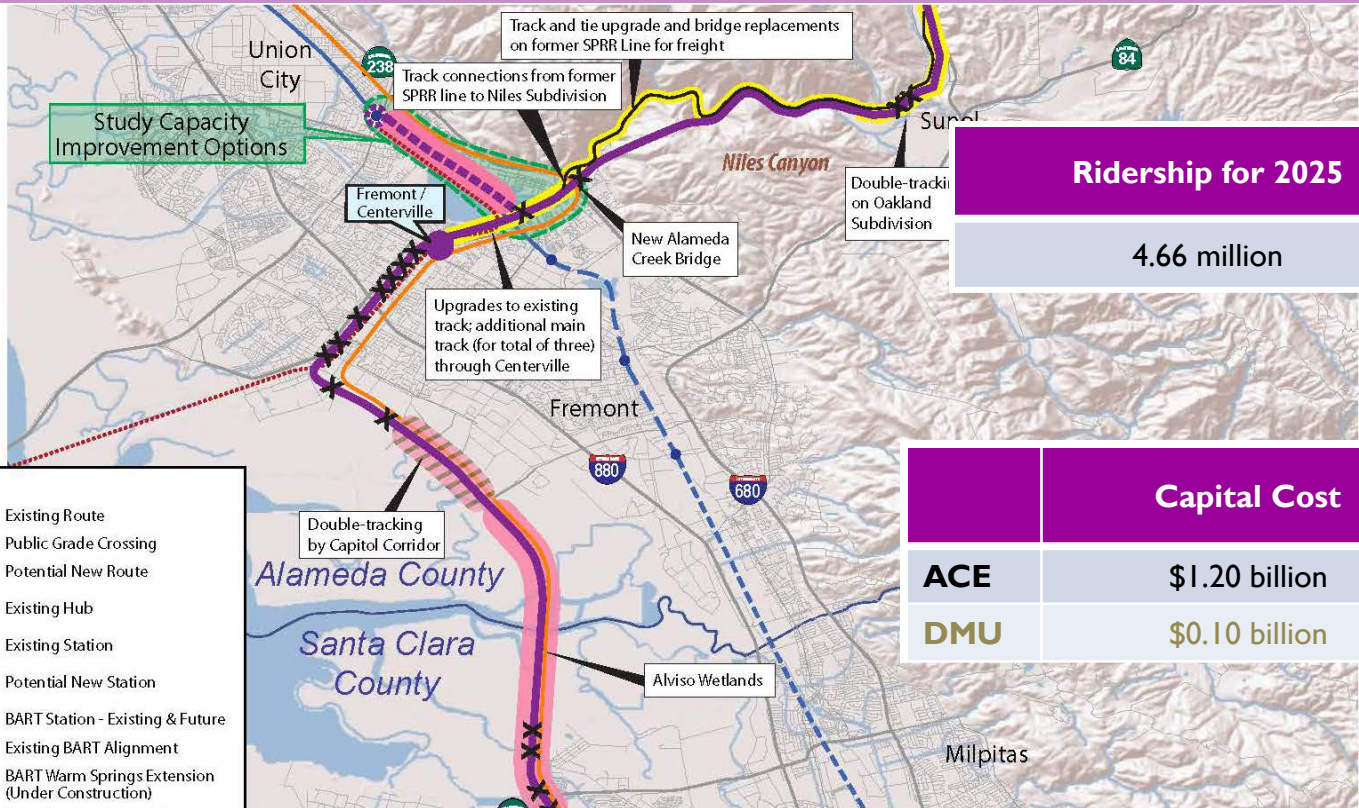
Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	1	1:53	6
Tracy-Great America	0 backtrack	1:10 1:32	4 6







# BART Connection via DMU to Union City



**Ridership for 2025**  
4.66 million

	Capital Cost
<b>ACE</b>	\$1.20 billion
<b>DMU</b>	\$0.10 billion

**Legend**

- Existing Route
- Public Grade Crossing
- Potential New Route
- Existing Hub
- Existing Station
- Potential New Station
- BART Station - Existing & Future
- Existing BART Alignment
- BART Warm Springs Extension (Under Construction)
- BART Berryessa Extension (Under Construction)
- BART Silicon Valley Extension Future Phase
- Caltrain
- Potential Dumbarton Project (by Caltrain)
- Capitol Corridor

**Potential Improvements**

- Station Modifications
- Project-level Analysis
- Programmatic Analysis
- Programmatic Analysis and Project-Level Analysis by Others

Trip	# Transfers	Travel Time (2025)	# Daily Round Trips (2025)
Tracy-San Francisco	2	2:02	10
Tracy-Great America	0	1:10	10





# Summary of Tri-Valley and Union City ACE-BART Connection Options

	ACE Ridership (millions)	ACE Cost (billions)	DMU Cost (billions)	BART Cost (billions)
Existing Shuttle Connection Shuttle Connection at Isabel BART*	4.56	\$1.20	n/a	\$1.25*
BART Connection at Greenville	5.15	\$1.20	n/a	\$3.27
BART Connection at Vasco or Downtown	5.07	\$1.20	n/a	\$4.05 – 4.28
ACE Extension to Isabel BART				
- 6 trains Merced – Isabel, 4 Stockton – San Jose	3.59	\$1.46 - 1.98	n/a	\$1.25
- 6 Merced – Isabel – San Jose, 4 Stockton - SJ	4.55	\$1.91 - 2.43		
BART Connection via DMU to Isabel	4.89	\$1.20	\$0.63	\$1.25
ACE Extension to Dublin/Pleasanton BART				
- 6 trains Merced – Dublin/P., 4 Stockton – San Jose	3.36	\$1.89 - 3.13	n/a	n/a
- 6 trains Merced – D/P – San Jose, 4 Stockton - SJ	4.10	\$2.34 - 3.58		
BART Connection via DMU to Dublin/Pleasanton	4.89	\$1.20	\$1.08	n/a
ACE Extension to Union City BART				
- 6 trains Merced – Union City, 4 Stockton – SJ	3.34	\$1.22	n/a	n/a
- 6 trains Merced – Union City – SJ, 4 Stockton - SJ	4.16	\$1.22		
BART Connection via DMU to Union City	4.66	\$1.20	\$0.10	n/a