

Frequently Asked Questions

General

1. **What are the next steps if the SamTrans Board of Directors approves the Dumbarton Transportation Corridor Study (DTCS)?**

The SamTrans Board of Directors will be asked to approve the DTCS (with one primary change) and authorize additional work. A potential bicycle/pedestrian multiuse path in the Dumbarton rail right-of-way from Redwood City to East Palo Alto, which was not previously recommended due to limited space in the 100-foot Dumbarton right-of-way, will not be eliminated at this phase of study. The DTCS verifies that 65 feet is needed for two rail tracks to ensure safe and efficient rail operations and maintenance. The DTCS also recognizes the benefit of bus lanes that are wide enough to allow for efficient maintenance and the passing of buses in the event of a breakdown. However, there may be some creative ways to accommodate a bicycle/pedestrian multiuse path in the right-of-way. Additional planning and conceptual design work in the form of a Technical Refinement will attempt to answer questions received throughout the DTCS outreach process, including, but not limited to:

- Is it possible to safely implement a shared bus and bicycle lane?
- How much would bus operations, ridership, and person throughput be impacted if only one bus lane was constructed, leaving room for the bicycle/pedestrian multiuse path?
- What are the operational, ridership and person throughput impacts of only constructing dedicated bus lanes in the right-of-way from the Highway Bridge to US 101 express lanes, leaving room for a bicycle/pedestrian multiuse path in the right-of-way from US 101 to Redwood City?
- Is it possible to obtain additional right-of-way in the Corridor without high costs and community impacts?

There will also be additional study of bicycle/pedestrian connections outside of the Dumbarton right-of-way that would further mobility objectives for the communities along the right-of-way, such as increasing connectivity to the Bay Trail. This Technical Refinement study will also include additional rail operations analysis and a deeper look at high-capacity, standard gauge rail technologies and operations.

2. **Would the various Dumbarton Transportation Corridor Study (DTCS) recommendations compete for funding as they serve similar travel markets?**

While various DTCS recommendations could potentially compete for the same funding, the recommended improvements are serving different travel markets. The enhanced Dumbarton Express bus services on the Highway Bridge (including two new routes

from Union City to Menlo Park/Redwood City and Mountain View/Sunnyvale) would serve trips from the Tri-Cities (Newark, Fremont and Union City) to the Peninsula with one-seat rides. Bus service is flexible and would be able to serve many major employers directly. However, the Dumbarton Rail Corridor presents an opportunity to serve more regional travel markets with commuter rail. With strategic connections and potentially streamlined operations with Altamont Commuter Express (ACE) as well as Capitol Corridor rail services, the travel market that could be served by rail service expands from the Peninsula to Stockton or potentially Sacramento. Regional travel demand modeling performed as part of the DTCS estimates approximately 4,000 transfers from ACE, signifying that the Central Valley to Peninsula market is underserved. Regional rail connections may become even more important over time as jobs and housing continue to grow in different parts of the Bay Area.

3. Do the proposed alternatives increase vehicle or person throughput?

All of the proposed alternatives increase the person throughput across the Highway Bridge, by about 10 percent to 20 percent depending on the alternative. Vehicle throughput does not vary much across the alternatives, except for the express lanes alternatives; the one express lane in each direction alternative (Alternative 5) decreases vehicle throughput by around 6 percent while the reversible express lanes alternative (Alternative 4) adds peak direction capacity and increases throughput by about 8 percent.

4. How would the recommended transit improvements improve current travel times for popular commutes?

The existing and projected travel times for some popular origin-destination pairs are provided below. The long-term enhanced bus routes, especially DB, DB1 and Menlo Park/Redwood City, would provide substantial travel time savings compared to existing conditions. A commuter rail service that would ultimately interline with Caltrain (operate on Caltrain mainline tracks) would provide more travel time savings from Union City to destinations such as San Francisco, San Jose, but especially from Stockton to Redwood City. Note that aside from travel time benefits, the proposed improvements would greatly improve reliability.

		Existing Transit in 2017	Recommendations		
Start	End	Travel Time (min)	Mode(s)	Long-Term Enhanced Bus	Commuter Rail - Double Track
Union City BART	Palo Alto - Stanford Oval	60	DBX Bus	43	46
Union City BART	Palo Alto - Page Mill Rd / ECR or Hanover	50	DB1 Bus	45	51
Union City BART	Mountain View – E Java and Crossman	62 - 77	BART+VTA bus	59	55
Union City BART	Redwood City - Caltrain	65 - 81	DB+Caltrain	34	35
Union City BART	San Francisco - 4th / King Station	60 - 69	BART+Muni	72 - 94	60
Union City BART	San Jose Diridon	67 -76	BART+VTA bus	67 - 72	65
Stockton ACE	Redwood City - Caltrain	180	ACE+Caltrain	148	117

Source: CDM Smith, 2016

5. Will the Dumbarton Transportation Corridor Study (DTCS) recommendations improve congestion in the future?

The recommendations would mitigate and reduce the impacts of continuing growth and economic activity which contribute to traffic congestion and limit mobility for all modes of transportation. Regional job and population forecasts predict that the Bay Area will continue to grow rapidly through 2040. While expanding roadways is a possible solution, construction of new highways or widening of existing ones carry tremendous monetary, social, and environmental costs that are not consistent with the DTCS’s purpose and need for sustainable transportation solutions. Increasing roadway capacity for general purposes vehicles has historically induced more demand and/or affected latent demand. Therefore, the DTCS takes a multi-modal approach in attempting to maximize person throughput by promoting public transit. Recommended improvements are designed to meet the challenges of growth by moving the most people across the Dumbarton Corridor as efficiently as possible. Improved bus service and a new transbay rail crossing will provide greater capacity for person throughput than private vehicles, and express lanes will provide travel time savings to bus service as well as incentivize carpooling. Together, the proposed recommendations will provide sustainable alternatives to driving in the future.

6. Would the Dumbarton Transportation Corridor Study (DTCS) recommendations result in higher tolls, fees, fares, or other costs for commuters?

Any potential express lanes on the Highway Bridge could introduce roadway pricing to the Dumbarton Corridor. Caltrans and the Bay Area Toll Authority (BATA) will examine the viability of congestion pricing. Fares for express bus or rail transit services proposed as part of the DTCS are assumed to be similar to Caltrain service. There are

independent initiatives that could also increase commuter costs. For example, Regional Measure 3 is scheduled to go to the ballot in 2018 and would increase tolls on all Bay Area Bridges for a variety of regional transportation projects, potentially including Dumbarton Corridor improvements.

7. Please provide visuals of proposed improvements, including detailed engineering diagrams of flyovers, grade separations, and at-grade railroad crossings.

Additional visuals of proposed improvements including detailed engineering diagrams will be provided at later phases of study. The Dumbarton Transportation Corridor Study is a high-level conceptual planning effort that will be used to guide additional planning, design, and environmental work that is necessary to move any proposed recommendations forward. Further public outreach will take place during these later phases of study.

8. Would the proposed transit alternatives be open to the public?

All proposed transit alternatives are open to the public.

9. What are the service hours assumed for the transit alternatives?

Transit services are generally proposed to operate between 6AM and 10PM. Note that the rail services are proposed to operate from 6AM to 7PM, with buses providing similar service between 7PM and 10PM. Additional details about transit operations are included in Chapter 7.

10. Was sea level rise considered in the selection of recommended alternatives?

Sea level rise was not a driving factor in this very broad feasibility study. However, sea level rise will be considered in the engineering and design of facilities and the accompanying environmental analysis. Indeed, adaptation strategies and design will be needed for any future infrastructure on or near the San Francisco Bay.

11. Please ensure that major capital improvements are built to withstand earthquake stress.

All capital improvements will be built to current seismic standards.

12. Could Transportation Demand Management (TDM) programs (e.g. similar to Stanford's program and Palo Alto's Downtown Transportation Management Association) affect mode share over the Highway Bridge and by how much?

Yes, it is possible that TDM programs could affect mode share over the Highway Bridge though the potential benefit is difficult to quantify. The regional travel demand model is not suited to estimate the potential impacts of TDM programs.

13. Consider other kinds of transit modes, such as hovercraft, gondolas, and ferries.

Gondolas and ferries were initially considered and evaluated in the Dumbarton Transportation Corridor Study (DTCs) but were not carried forward for further analysis based on screening criteria established in the (DTCS). Gondolas would not make use of the Dumbarton Rail Bridge and would require additional infrastructure to be constructed across the Bay. Additionally, gondolas have fairly low capacity with low operating speeds, making the mode less attractive for moving large numbers of people. Ferries scored the fourth highest in the initial screening of alternatives behind the commuter rail, bus and bicycle/pedestrian modes. Despite this high score, ferries were not studied further as they would operate beyond Dumbarton Corridor limits. However, ferry service, and potentially hovercraft, can be studied in more depth by a third party. Additional detail about the initial screening of alternatives is provided in Chapter 6.

14. Does emerging technology such as hyperloop or autonomous vehicles eliminate or reduce the value of proposed improvements?

Emerging technology will likely complement rather than replace or reduce the value of major transit systems and projects. Autonomous vehicles, for instance, could provide first and last mile services to rail systems, which will likely remain as one of the most efficient ways to move large numbers of people in dense urban environments. While hyperloop technology could potentially compete with rail systems, this technology is currently unproven.

15. What kind of marketing support will be provided for the transit recommendations?

Marketing strategies will be developed at a later phase of study and will be tailored to the type of service, stations served, frequency of service, and local station access options that will be available to the general public.

Existing Conditions

16. How many cars can travel across the Dumbarton Corridor during the peak period?

The peak-direction capacity of the Dumbarton Corridor for the scenarios which do not include express lanes is 24,000 vehicles in each direction (2,000 vehicles per lane per hour, over 3 lanes and 4 hours). The capacity in the express lanes scenarios is 16,000 vehicles in general-purpose lanes (same as above but only 2 lanes), plus either 4,800 vehicles in a single express lane or 12,800 vehicles in two express lanes. The remaining capacity of the express lanes is assumed to be used by buses.

17. What are the most common origins and destinations of Dumbarton Highway Bridge traffic?

Of the travel origins and destinations served by the Dumbarton Highway Bridge, those responsible for the highest percentages of Highway Bridge use are Palo Alto, Menlo

Park, Redwood City, Fremont, Union City and Newark. Each represents more than five percent of 2013 Highway Bridge use and is projected to continue to do so through 2040. More information is available in Chapter 4, Section 4.4.1.

18. Of the daily traffic that crosses the Highway Bridge what percent is coming from or going to the Tri-Valley (San Ramon, Dublin, Pleasanton, and Livermore)?

In 2013, 2.1 percent of Highway Bridge traffic was coming from or going to the Tri-Valley. This percentage is estimated to increase to 2.5 percent in 2040, assuming no transportation improvements are made.

19. Can we tackle the jobs/housing imbalance through land use policies that direct growth in the right places?

Land use policies enacted at a regional or sub-regional level, can be a key way to address the jobs/housing imbalance. Effective policies could direct employment to housing-rich areas and housing to job-rich areas and reverse recent trends in the Dumbarton Transportation Corridor Study area. However, employers generally want to locate near other major employers in an effort to attract talent. This is partially why employers are heavily concentrated in San Mateo and Santa Clara Counties but not as much in southern Alameda County. Also, the Peninsula cities have not been able to keep up with housing demand, partially due to geographic limitations.

Bicycle/Pedestrian Multiuse Path

20. Please do not exclude the bicycle/pedestrian multiuse path in the Dumbarton right-of-way from the final list of recommended improvements.

A bicycle/pedestrian multiuse path will be further evaluated as a potential facility that complements the Dumbarton Transportation Corridor Study's recommendations for robust rail and bus services. Creative solutions to accommodate a bicycle/pedestrian multiuse path in the 100-foot right-of-way will be examined in the next phase of study via additional planning and conceptual design. However, the more appropriate challenge is how to best advance bicycle/pedestrian use in the South Bay, which could include facilities outside of the right-of-way.

21. What is the technical justification for the Caltrain engineering standards that recommend 65-feet for two trail tracks?

Justification for the Caltrain engineering standards are based on applicable regulations as well as operational experience. In general, greater clearances allow for safe (in terms of both passengers and railroad workers) and efficient service with fewer delays.

The minimum distance between two track centerlines (14 feet) is mandated by the California Public Utilities Commission's (CPUC) General Order (GO) 26-D. Caltrain policy dictates 15 feet between two track centerlines.

Caltrain policy also dictates a minimum 23-foot clearance on each side of the tracks (starting at the track centerlines) though Caltrain favors using the AREMA-recommended 25-foot clearance. The AREMA standards factor in potential derailment considerations. Of the 23-foot buffer zone, 11 feet are devoted to OCS poles and wayside facilities and the other 12 feet is required for maintenance work, which typically requires space for an 8-foot wide vehicle to fit through. While it is possible to reduce the 12 feet needed for maintenance on one side and perform maintenance from the other side, this would require the shutdown of the closest track to do maintenance on the far track. This is not recommended as it is operationally inefficient and would negatively impact passenger services.

Additionally, it should be noted that equipment related to the Positive Train Control (PTC) system are not included in these width requirements, and could extend them further. This is another reason that AREMA standards for clearance are recommended.

As a result, the 65-foot width is recommended for two rail tracks, subject to engineering evaluations in the future technical studies. Of course, clearance requirements can vary depending on whether or not the tracks are next to a station or other facility, if they are elevated, or if there is nothing nearby.

It should also be noted that Union Pacific Railroad (UP) requires a larger envelope than 25 feet on each side of the tracks. Per Federal Railroad Administration Roadway Worker Protection and UP On-Track Safety, 27.4 feet is required on both sides of the tracks, which equates to about a 70-foot required width in total. This is worth considering as UP has trackage rights within the Dumbarton Corridor.

22. Caltrain engineering standards are overly conservative for the operating parameters of a commuter rail service. They should be reconsidered in order to accommodate a bicycle/pedestrian multiuse path in the Dumbarton right-of-way.

The Caltrain Engineering Standards are based on government regulation and industry best practices for Commuter/Class 1 railroads. The standards are crucial to providing reliable and efficient service that ensures the safety of passengers and railroad workers. Deviating from the standards has been deemed to be an unacceptable risk at this point in the study process. Further analysis of safety and operational concerns will be done in the design phase.

23. Several sections of Caltrain mainline are in violation of recommended 65 feet for two rail tracks as they are narrower than 65 feet. Why is there an exception for these non-compliant areas, and not for the Dumbarton right-of-way?

Sections of Caltrain mainline that are narrower than the 65-foot requirement have been grandfathered into the system as they were designed many years ago. Upgrading the entire mainline to standard would be an expensive capital undertaking. However, any improvements that occur along the Caltrain mainline are in accordance with current standards as such areas of exemption often contribute to higher maintenance costs. In these areas, maintenance crews need to develop and follow special procedures to

maintain the right-of-way safely. Additionally, some areas of narrower width are at stations, which have different requirements depending on configuration. An example is the recently constructed station at San Bruno, which is narrower as it is elevated and not adjacent to any other facilities.

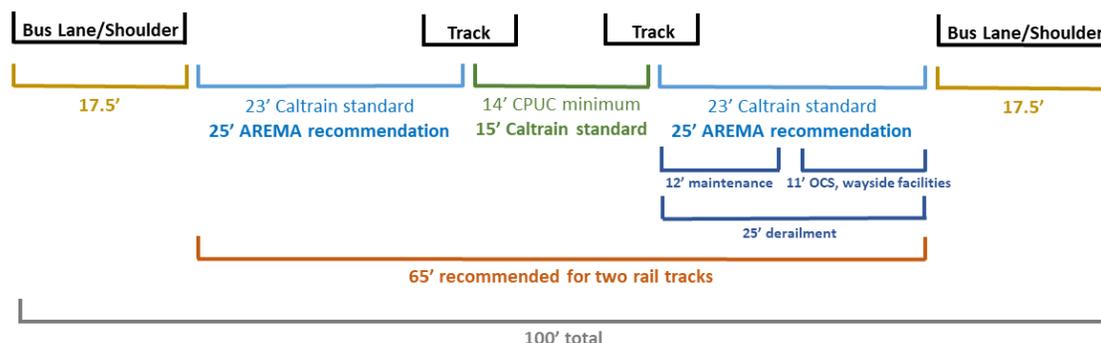
24. The schematic in Appendix F shows 40 feet for two rail tracks; 20 feet for each bus lane and 10 feet shoulders – is this correct?

Figure F-33 in Appendix F contained errors and is corrected in the final version of the Dumbarton Transportation Corridor Study. The two 10-foot shoulders shown in the figure account for wayside facilities such as drainage, signage, utilities, etc., which are included in the required 65-feet for two commuter rail tracks. However, even when this 20 feet is added to the specified rail track width of 40 feet, the total is only 60 feet, five feet short from the recommended 65-foot right-of-way width for two rail tracks. This approximate 60-foot width for two rail tracks incorrectly assumed the 23-foot Caltrain standard for clearance as opposed to the AREMA best practice of 25-feet, which is recommended.

Thus, the figure has been revised to show the following:

- 5-feet devoted to two rail tracks pursuant to Caltrain and AREMA engineering standards and best practices. More specifically, the width required for the two-track railroad should equal 65 feet, including 15 feet between the track centerlines, and 25 feet from the nearest track centerline to the outside edge of the right-of-way.
- Two 17.5-foot busways (including two 5.5-foot shoulders). According to busway implementation guidelines found in Transit Cooperative Research Program (TCRP) Report 90, a busway facility should provide enough space for passing in the event that a vehicle breaks down on the busway. Assuming that a bus is 8.5 feet wide, a passing bus would have approximately 9 feet of navigating room around a disabled bus. Assuming that the vehicles would pass at reduced speed, the 17.5-foot busway would be adequate.

A simplified version of the cross section is also provided below:



Source: SamTrans, 2017

25. Explain where the concept of running rail next to bus came from in the Dumbarton Transportation Corridor Study?

The ultimate recommendation of rail and busway on the Peninsula right-of-way is most similar to Alternative 10. However, a proposal that evolved from the design process includes all bus routes operating within the right-of-way from University Avenue, with a potential direct connection/flyover to planned express lanes on US 101 (for applicable bus routes).

26. Why were the bicycle/pedestrian multiuse path operating and maintenance costs presented during the August 2017 SamTrans Board of Directors meeting much greater than expected?

This was an error that was corrected in the Dumbarton Transportation Corridor Study Draft Report. As is included in Chapter 9, Section 9.1.4, estimated operating and maintenance costs associated with the bicycle/pedestrian multiuse path are approximately \$53,000 annually.

27. Why does the bicycle/pedestrian multiuse path require overpasses at several locations (Marsh Road, US 101, Willow Road, and University Avenue)?

The grade separated crossing of US 101 was mandated by Caltrans. The other three crossings could result in substantive impacts to vehicular traffic as well as potential safety issues for bicyclists and pedestrians. The Marsh Road crossing, for instance, is near the signalized intersection at Bohannon Drive, which could result in substantive impacts to all travelers if constructed at-grade. As a result, a preliminary (15 percent) design was developed for the interim trail within the Dumbarton right-of-way to include grade separated crossings at these four locations.

28. Why does the proposed bicycle/pedestrian multiuse path have to be a minimum of 12 feet? Southerly portions of the Bay Trail, such as in Mountain View, range from five or six feet wide to eight feet with no shoulders?

The width requirement is pursuant to design standards for a Class I Bikeway as specified in Chapter 1000 of the Caltrans Highway Design Manual. The Caltrans Highway Design Manual provides standards and regulations for the design of all roadway facilities in California, including bikeways.

29. Would it be possible to obtain a design exception from Caltrans to omit the Class 1 facility shoulders from final design of the bicycle/pedestrian multiuse path on the Dumbarton right-of-way from Redwood City to East Palo Alto?

A design exception could be pursued with Caltrans if SamTrans determines that inclusion of a bicycle/pedestrian multiuse path with the omission of roadway shoulders advances the purpose and need of the Dumbarton Transportation Corridor Study.

SamTrans could deviate from the guidelines in the Caltrans Highway Design Manual by using narrower than recommended widths for bike trails though SamTrans would need to comply with the procedure in HSC 891(b) in approving alternative design standards. Several steps are required: 1) the alternative criteria must be reviewed and approved by a qualified engineer; 2) the alternative criteria must be adopted by resolution at a public meeting; and 3) the alternative criteria must adhere to guidelines established by a national association of public agency transportation officials.

30. TCRP Report 90 guidance on busway design says that shoulders may be omitted in areas of constrained space. Would it be possible to omit the busway shoulders from final design in order to make space for the bicycle/pedestrian multiuse path in the Dumbarton right-of-way from Redwood City to East Palo Alto?

It is possible to omit the busway shoulders though this could greatly hamper bus operations. Bus lane shoulders allow for the passing of buses in case a bus were to break down. In addition, right-of-way is needed for bus stations that safely accommodate the boarding and alighting of riders. Safety for bus customers cannot be compromised.

31. Could the two bus lanes within the Dumbarton Peninsula right-of-way potentially be built right next to each other to save space? What are the operational impacts of doing this?

Constructing the two bus lanes next to each other would save some space, but would also create additional bus/train safety concerns. Buses would have to cross the railroad tracks at-grade to access the US 101 High Occupancy Vehicle (HOV) lanes in the median. The proposed bus lanes (reversible flow) separated by the tracks would eliminate this conflict by eliminating the need to make left turns at US 101 by reversing the traffic flow direction midday.

32. Would it be possible for buses and bicycles to share a travel lane within the Dumbarton right-of-way from Redwood City to East Palo Alto?

The next phase of study will examine the feasibility of creative solutions including, but not limited to, examining whether cyclists could safely utilize the shoulders of the bus lanes. Section 1003.3(3) of the Caltrans Highway Design Manual, which refers to Class 3 Bikeways states, "Transit lanes and bicycles are generally not compatible, and present risks to bicyclists. Therefore sharing exclusive use transit lanes for buses with bicycles is discouraged." However, it notes that lane sharing may be considered in special circumstances, such as where buses are operating at less than 25 miles per hour (mph) and the grade of the facility is 5 percent or less. It is probable that proposed bus operations would operate at speeds greater than 25 mph, though this will be reviewed more thoroughly in the next phase of study.

33. Can cyclists use the bus lanes within the Dumbarton right-of-way from Redwood City to East Palo Alto on the weekends?

The Caltrans Highway Design Manual does not contain any direct guidance on the use of bus lanes as bike lanes while buses are not operating. Accordingly, the safest approach would be to treat the lanes as shared bus/bike lanes for the purposes of design criteria. The shared bus/bike lane regulations are not directly applicable to the proposed plan to have bikes use bus lanes when the buses are not in service. However, if buses and bikes sharing a lane at the same time is permissible under the conditions stated in the Highway Design Manual, this would imply that bikes using bus lanes when buses are absent is also permissible in those same circumstances. Notably, the danger to bicyclists from buses, which is a significant concern in the Highway Design Manual for shared bus-bike lanes, is not present if buses are not running while the lanes are used as bike lanes.

34. Is it possible to use the Dumbarton right-of-way for bus lanes from the Highway Bridge to US 101, route buses on US 101, and then use the rest of the right-of-way for a bicycle/pedestrian facility instead of bus lanes?

The next phase of study will examine the feasibility of creative solutions including, but not limited to, examining if routing Redwood City-bound buses in dedicated bus lanes on the Dumbarton right-of-way from the Highway Bridge to US 101 planned express lanes would provide more or less benefit in terms of travel time, ridership and person throughput than routing buses on the right-of-way from US 101 to Redwood City.

35. Will SamTrans need to take private property along the right-of-way in order to achieve the width required to fit a bicycle/pedestrian multiuse path, a busway, and a railway in the Dumbarton right-of-way from Redwood City to East Palo Alto?

SamTrans has not considered the possibility of taking private property along the right-of-way in order to achieve the width required to fit three modes along with transit stations and other required operational facilities. Taking private property could be costly and adversely impact the community. In the next phase of study, SamTrans will continue to examine creative solutions in the 100-foot right-of-way. SamTrans may also attempt to identify areas where property could be purchased or used in a cost-effective manner without impacts to the community.

36. Can you fit three modes in the Dumbarton right-of-way where Facebook owns adjacent property?

The next phase of study will examine the feasibility of creative solutions including, but not limited to, examining if Facebook property adjacent to the right-of-way could potentially be used for a bicycle/pedestrian multiuse path. It is worth noting, however, that it is unclear how much of Facebook’s property may be available for use (if any) and Facebook does not own property along the entire length of the Dumbarton Rail

Corridor, so it may be a futile effort if other property adjacent to the Corridor is not available.

37. Please include maps showing alternative bike routes that will be proposed in lieu of a bicycle/pedestrian multiuse path within the Dumbarton right-of-way from Redwood City to East Palo Alto.

Maps that show alternate proposed bicycle/pedestrian improvements will be included in subsequent phases of study. This could include connections to the Menlo Park Caltrain station, which provides more direct bicycle access to the Menlo Park and East Palo Alto communities.

38. Are there any other concerns with including a bicycle/pedestrian multiuse path in the Dumbarton right-of-way?

Other concerns revolve around issues of public safety and security. However, these concerns can be addressed in a number of ways. For example, ample lighting along the path could provide a feeling of safety at night. Partnerships between police and community groups could help maintain a secure presence around the path could and provide a feeling of safety. Solutions such as these would need to be identified in the design and/or implementation phase.

39. If a bicycle/pedestrian multiuse path is recommended on the Dumbarton right-of-way from Redwood City to East Palo Alto, how will maintenance and public safety concerns be addressed?

If a bicycle/pedestrian multiuse path is recommended, a maintenance plan would need to be created as part of an implementation plan after design has been finalized. Such a plan would need to estimate the upkeep cost for pavement, landscaping, lighting, signage, and other path features. Public safety concerns can be addressed in a number of ways. For example, ample lighting along the path could provide a feeling of safety at night. Key partnerships between police and community groups could also help maintain a secure presence around the path could and provide a feeling of safety. Solutions such as these would need to be identified in the design and/or implementation phase.

40. Why can't the regional travel demand model estimate bicycle and pedestrian volumes?

The City/County Association of Governments of San Mateo County (C/CAG) – Santa Clara Valley Transportation Authority (VTA) regional travel demand model is a macro-scale model that that is not suited to predicting use of highly localized improvements related to modes not presently represented in transbay corridor activity.

41. The methodology presented in Appendix K to estimate bicycle volumes using a new facility greatly underestimates potential demand in the area.

The bicycle volume forecasting methodology presented in Appendix K documents the application of the bicycle demand estimating methodology developed in National

Highway Cooperative Research Program (NCHRP) Report 552: Guidelines for Analysis of Investments in Bicycle Facilities. This analysis was performed to provide a rough order of magnitude prediction of potential demand. Use of the bicycle/pedestrian multiuse path was not initially estimated because the City/County Association of Governments of San Mateo County (C/CAG) - Santa Clara Valley Transportation Authority (VTA) regional travel demand model is a macro-scale model that is not suited to predicting use of highly localized improvements related to modes not presently represented in transbay corridor activity. In response to comments, an alternative methodology was identified in NCHRP Report 552 and applied, though this methodology is relatively simplistic compared to the C/CAG-VTA regional travel demand model. Additionally, the methodology cannot necessarily predict use of the multiuse path, but rather identifies the potential number of users within a specified geographic area. It is for this reason that bicycle and pedestrian multiuse path demand estimates are provided in Appendix K, but not compared against the ridership estimates of the other project alternatives produced by the C/CAG-VTA model. Additional detail can be found in Appendix K.

42. Please consider installing a Class 1 bicycle/pedestrian multiuse path on the Dumbarton Rail Bridge.

Because a bicycle/pedestrian path exists on the Dumbarton Highway Bridge, a bicycle/pedestrian multiuse path was not proposed for the Rail Bridge. This option was eliminated in the initial screening of alternatives. An additional consideration was related to safety. The bicycle/pedestrian multiuse path would ideally be accompanied by a vehicle lane to respond to potential accidents on the multiuse path and it would be costly to expand the width of the Rail Bridge so that it could accommodate potential rail tracks, a vehicle lane and a bicycle/pedestrian multiuse path. As part of the DTCS, improvements have been suggested for the bicycle/pedestrian path on the Highway Bridge.

43. Does the Dumbarton Transportation Corridor Study (DTCS) propose a new use for the existing bicycle/pedestrian path on the Highway Bridge?

The DTCS proposes upgrades to the existing bicycle/pedestrian path on the Highway Bridge. The bicycle/pedestrian path is not a complete Class I facility across the entirety of the Bridge as it becomes a bike path (Class II) on Marshlands Road. Short-term recommended improvements include the upgrade of the facility to Class I in this area as well as pavement and striping improvements on the entire facility. The bicycle/pedestrian improvements on the Highway Bridge are first introduced and described in Chapter 5, Section 5.3.4 and are recommended to be carried forward in Chapter 12, Section 12.2.

44. Fremont is currently updating a Bicycle/Pedestrian Master Plan and many people would like to see better bike connections to Dumbarton Highway Bridge and the resurfacing of Marshlands Road.

The Dumbarton Transportation Corridor Study (DTCS) reviewed a variety of city and county bicycle plans to identify improvements that could enhance connectivity to the Dumbarton Highway Bridge. Additionally, the DTCS recommends upgrades to the existing bicycle/pedestrian path on the Highway Bridge. The bicycle/pedestrian path is not a complete Class I facility across the entirety of the Bridge as it becomes a bike path (Class II) on Marshlands Road. Short-term recommended improvements include the upgrade of the facility to Class I in this area as well as pavement and striping improvements on the entire facility. The bicycle/pedestrian improvements on the Highway Bridge are first introduced and described in Chapter 5, Section 5.3.4 and are recommended to be carried forward in Chapter 12, Section 12.2.

Highway Bridge and Express Lanes

45. What are the benefits of express lanes and why were they chosen for the Highway Bridge?

The main benefit of potential express lanes is to more effectively manage highway demand by charging a fee based on congestion levels (or by time of day). Buses utilizing these lanes would experience less congested conditions, reducing travel times and encouraging bus ridership. Revenue from express lane fees could also be used to fund transit services. The Dumbarton Transportation Corridor Study (DTCS) identified an express lanes network for regional trips traveling from I 880 in the East Bay to US 101 on the Peninsula. The express lanes on the Highway Bridge are one component of a potentially continuous express lanes network.

46. Consider demand responsive tolling to mitigate induced demand due to new capacity on the Highway Bridge.

It is possible that Caltrans and the Bay Area Toll Authority will examine the viability of congestion pricing, which could potentially be charged on top of base tolls. This could more effectively manage demand during peak periods. Note, however, that the recommended express lanes option on the Highway Bridge (one express lane in each direction) restricts general purpose travel as two lanes (one in each direction) are converted to express lanes. The express lanes option that was not recommended (reversible express lanes) would supply an additional lane of travel in the peak direction, increasing capacity.

47. What is the expected reduction in single-person vehicle traffic due to the proposed express lanes improvements?

Single Occupancy Vehicle (SOV) traffic across the Highway Bridge does not vary much across the alternatives, except for the express lanes alternatives; the one express lane in each direction alternative (Alternative 5) decreases SOV traffic by around 6 percent

while the reversible managed lanes alternative (Alternative 4) increases it by about 8 percent.

48. Why are the reversible express lanes (Alternative 4) preferable to one express lane in each direction (Alternative 5) given that Dumbarton Highway Bridge traffic is directional, with almost 80 percent of Highway Bridge traffic heading toward the Peninsula in the morning?

One express lane in each direction (Alternative 5) is preferred according to the Dumbarton Transportation Corridor Study (DTCS) goals and objectives and evaluation metrics. One express lane in each direction restricts general purpose travel and pushes more people to transit. Reversible express lanes (Alternative 4) provides more capacity for a very directional commute period so it eases congestion and fewer people are incentivized to utilize transit service. Another consideration includes whether or not the approaches on each side of the Bay can handle the additional capacity and increased flow of traffic provided by the reversible express lanes. Additional analysis of the express lanes alternatives is necessary prior to implementation.

49. Please consider connecting Dumbarton express lanes directly to planned US-101 express lanes extending throughout San Mateo and Santa Clara counties, and evaluate the impact of allowing taxis/Transportation Network Companies/other ride-share vehicles access.

The Dumbarton Transportation Corridor Study identified an express lanes network for regional trips traveling from I 880 in the East Bay to US 101 on the Peninsula. After eliminating the potential for express lanes on Willow Road due to the need for property acquisitions to connect to US 101, express lanes were identified for Bayfront Expressway with a connection to US 101 at Marsh Road. Express lanes would be available to toll-paying single occupancy vehicles, buses, vehicles with two or more people, etc.

50. Considering that the conversion of general purpose lanes to express lanes is not allowed under California law, what will be the implementation strategy?

It is possible that general purpose lanes could be converted to High Occupancy Vehicle (HOV) lanes prior to converting the HOV lanes to express lanes. This process of conversion is currently allowed under existing legislation. Another possibility is that new legislation is passed that would allow for the direct conversion from general purpose lanes to express lanes.

51. What kinds of equitable access policies will be implemented for express lane options in order to ensure there is not an unfair barrier to access for low-income people?

Toll lane operators in California and nationally have developed a number of approaches to address equity concerns related to high-occupancy toll lanes. Generally, programs fall into two categories - those that fund improved public transit service in the corridor and those that offset user costs with subsidies, credits, or tax rebates. In terms of the

Dumbarton Transportation Corridor Study recommendations, the identification of potential equitable access policies will need to be identified after specific express lane alternatives have been studied in more detail and selected.

Approaches

52. Are the Dumbarton Transportation Corridor Study (DTCS) approach alternatives proposing to widen any existing roadways?

The DTCS does not propose to widen any existing roadways. Dumbarton Highway Bridge and approach improvements were generally focused on improving transit services by adding amenities for buses (such as transit signal priority, queue jump lanes, bus-only lanes, etc.) and managing existing roadway facilities more effectively (such as through express lanes). The DTCS recommends a couple grade separations, however, as a way to separate and route local and regional traffic (including buses) more effectively.

53. Will the highway alternatives include High Occupancy Vehicle (HOV) lanes through the toll plaza?

The highway alternatives propose to maintain the HOV lanes through the toll plaza. Currently, there are seven toll lanes at the plaza. During peak traffic hours, the leftmost lane is designated a FasTrak-only HOV lane, allowing carpool vehicles carrying two or more people or motorcycles to pass for a toll of \$2.50. The next two leftmost lanes are FasTrak-only lanes for all vehicles, and all other lanes accept both cash and FasTrak. During non-peak hours the HOV lane is open to vehicles carrying only one person, but remains FasTrak-only. With the proposed removal of the cash toll booths, all lanes will serve FasTrak Flex users, including carpoolers/vanpoolers meeting the minimum occupancy requirement.

54. Does the Dumbarton Transportation Corridor Study recommend any changes to the High Occupancy Vehicle (HOV) lane length at the Dumbarton toll plaza?

The road configuration and geometry at the toll booths have not been examined in detail at this feasibility stage. An operational assessment and detailed engineering will be required to fully understand the geometric requirements and additional queue lengths that may be required.

55. Does the Dumbarton Transportation Corridor Study (DTCS) assume bus queue jump lanes on Decoto Road?

The DTCS recommends bus queue jump lanes and transit signal priority on Decoto Road from I 880 to the Union City Bay Area Rapid Transit (BART) station, though queue jump lanes will need to be investigated further. It is unclear if the queue jump lanes can fit within the existing cross section of the roadway without requiring property acquisitions.

56. Are any other improvements considered for Decoto Road?

Aside from bus queue jump lanes and transit signal priority, no other improvements are considered for Decoto Road in the DTCS. However, the Metropolitan Transportation Commission (MTC) recently started a Design Alternatives Assessment, which will focus on developing short-term improvements in the Dumbarton Corridor at a higher level of detail. It is possible that additional improvements on Decoto Road may be investigated.

57. Why doesn't the study consider local improvements such as the retiming of traffic signals along the Bayfront Expressway or Willow Road?

Low cost improvements such as traffic signal retiming are assumed as a given because they have the potential to improve mobility in the Corridor but were difficult to evaluate quantifiably. These improvements are first introduced and described as "Other Enhancements" in Chapter 5, Section 5.35 and are recommended to be carried forward in Chapter 12, Section 12.2.

58. Does the Dumbarton Transportation Corridor Study (DTCS) consider an overpass for through traffic near Facebook?

The DTCS considers a grade separation at Willow Road and Bayfront Expressway as a way to potentially separate local and regional traffic and make intersection operations more efficient.

59. What is the purpose of the proposed bus lane for Willow Road from Facebook to US 101?

Peak-period bus lanes on Willow Road could potentially speed bus operations on Willow Road, which is currently used by the Dumbarton Express. The bus lanes represent the best transit improvement that can be achieved on Willow Road after Willow Road express lanes were eliminated from further study due to the need for property acquisitions at Willow Road and US 101.

60. Many commenters expressed strong objection to replacing bicycle lanes on Willow Road with bus lanes.

The concept would be to have a shared bicycle/bus lanes (SBBL) during the peak periods. Additional analysis would be required to determine the preferred off-peak usage, which may include allowing on-street parking, bike-only usage, or opening the lane for general purpose vehicles.

61. Many commenters expressed strong objection to the Willow Road express lanes tunnel option.

Willow Road Express Lanes were initially studied in the 2020 Peninsula Gateway Corridor Study. In this Study, Willow Road express lanes were identified as being depressed instead of tunneled, but the DTCS engineers believed that the tunneled express lanes would be easier to construct and less expensive. With additional analysis, tunneled express lanes under Willow Road were still determined to be difficult to

construct and expensive. Further, it was determined that the express lanes connection to US 101 would require property acquisitions due to tight geometries, eliminating this design option from further consideration. This is when an alternative express lanes option was identified for Bayfront Expressway with a connection to US 101 at Marsh Road. More detail about these improvements is provided in Chapter 8, Sections 8.4.4 and 8.4.5.

62. What is the feasibility of widening Bayfront Expressway?

In an effort to promote public transit and not induce more vehicle traffic, the Dumbarton Transportation Corridor Study did not examine the feasibility of widening Bayfront Expressway. In fact, Bayfront Expressway has fairly wide shoulders so improvements can be made to Bayfront Expressway without widening the roadway. Recommended improvements to Bayfront Expressway include shoulder-operating bus-only lanes as well as express lanes operating in the median.

63. Would it be feasible to extend the Oregon Expressway/Embarcadero Road north to create a new approach to the Dumbarton Highway Bridge?

The 2000 San Francisco Bay Crossings Study included a two phase alternative (2.3.1 Construct East Palo Alto/University Avenue Bypass) that would connect SR 84 and US 101. Phase 1 would connect SR 84 to US 101 via a new road to Pulgas Avenue where vehicles could access the Embarcadero/US 101 Interchange. Phase 2 proposed a direct connector between SR 84 and the Embarcadero/US 101 Interchange that would run along the edge of the San Francisco Bay. As noted in the 2000 study, the proposed alternative would need to resolve a number of sensitive issues, including environmentally sensitive Baylands and existing structures in order to be pursued. Historically this alternative has been met with environmental and traffic concerns from surrounding communities and was therefore not considered a viable option in the Dumbarton Transportation Corridor Study.

64. Were any other corridors in the study area identified for possible improvements?

The Dumbarton Transportation Corridor Study (DTCS) primarily focused on the Dumbarton Corridor, but examined approaches to/from the Dumbarton Highway Bridge on both sides of the Bay including Bayfront Expressway, University Avenue, and Willow Road on the Peninsula and Decoto Road in the East Bay.

Bus Alternatives

65. What are the proposed stops and route alignments of Dumbarton Transportation Corridor Study Dumbarton Express bus service operating on the Highway Bridge?

Proposed route alignments and stops for each of the Dumbarton Express routes operating on the Highway Bridge (including two new routes from Union City to Menlo Park/Redwood City and Mountain View/Sunnyvale) are shown in Chapter 7, Sections 7.5, 7.7, 7.8 and 7.13. Additional operating information (including a list of all stops) is included in Appendix G.

66. Were any bus routes considered along Willow Road or Embarcadero Road?

Bus service was considered along Willow Road as the existing Dumbarton Express services operate on Willow Road. Embarcadero Road was outside of the immediate study area.

67. Are there any short-term improvements to existing transbay Dumbarton bus service that can be implemented immediately, such as reduced headways, improvements that reduce dwell times (such as off-board fare payment), or enhancements to Ardenwood Park-and-Ride?

The recommended short-term enhanced Dumbarton Express services could be implemented quickly, though not immediately. Additional buses would be required to provide the levels of service recommended in the Dumbarton Transportation Corridor Study - 15-minute peak frequencies across four Dumbarton Express routes (including two new routes from Union City to Menlo Park/Redwood City and Mountain View/Sunnyvale). It is likely that short-term improvements will not be implemented until the Metropolitan Transportation Commission (MTC) completes the Dumbarton Corridor Design Alternatives Assessment (DAA) in the spring of 2018.

68. What is the current Dumbarton Express ridership and how is that daily transbay ridership is projected to reach nearly 14,000 by 2020?

Dumbarton Express and Stanford's U Line and AE-F services generate a little over 2,000 riders per day. Ridership is projected to increase to 13,700 by 2020 because Dumbarton Express services would run more frequently (15-minute peak headways) and two new routes would be added from Union City to Menlo Park/Redwood City and Mountain View/Sunnyvale. Additionally, the 13,700 figure accounts for private shuttle ridership. In summary, the projected breakdown projected for 2020 is 7,500 public bus riders and 6,200 private shuttle riders.

69. Why run buses in the Dumbarton rail right-of-way?

The bus lanes comply with the Dumbarton Transportation Corridor Study's purpose and need. While buses can certainly be routed outside of the Peninsula Dumbarton right-of-way (potentially in express lanes), there are many benefits to running them within the right-of-way. For one, the right-of-way would be devoted to rail and bus service with no potential for interaction with other vehicles. This would likely make bus service faster and more reliable. Also, the potential connection from the right-of-way to planned US 101 express lanes is attractive as it is less expensive than the express lanes connections from Willow Road or Marsh Road (though the right-of-way to US 101 connection would only benefit bus modes). Also, bus operations on the rail right-of-way would not necessarily be restricted to public bus services, but employer shuttles could also use the facility to move relatively large numbers of people.

70. How would private vehicles be prevented from using the busway on the Dumbarton right-of-way?

Signage would be displayed at entry and exit points to make it clear that the busway is for public and private buses only. A monitoring and enforcement program may also be considered in future phases of study.

71. What is the purpose of proposing a bus route that runs parallel to a rail route?

One finding of the Dumbarton Transportation Corridor Study (DTCS) is that there are multiple travel markets to be served in the Dumbarton Corridor. The Dumbarton Express bus services (including two new routes from Union City to Menlo Park/Redwood City and Mountain View/Sunnyvale) would be very good at serving trips from the Tri-Cities (Newark, Fremont and Union City) to the Peninsula with one-seat rides. Bus service is very flexible and would be able to serve many major employers directly. However, the Dumbarton Rail Corridor presents an opportunity to serve more regional travel markets. With thoughtful connections and potentially streamlined operations with Altamont Commuter Express (ACE) as well as Capitol Corridor, the travel market that could be served by rail service expands from the Peninsula to Stockton or potentially Sacramento. Regional travel demand modeling performed as part of DTCS shows approximately 4,000 transfers from ACE services, signifying that the Central Valley to Peninsula market is underserved. Regional rail connections may become even more important over time as we continue to see jobs and housing grow in different parts of the Bay Area.

72. Why is the busway alternative (Alternative 6) only envisioned as a one lane facility across the Rail Bridge? Why not build larger capacity that can later be converted to rail?

Most transit alternatives proposed to operate on the Rail Bridge are proposed as single lanes or tracks because portions of the existing Rail Bridge go down to about 17 feet. Certainly, widening the Rail Bridge will bear additional costs and environmental impacts and mitigations. However, the Dumbarton Transportation Corridor Study (DTCS) examined one “high capacity” alternative – the Rail Commuter – Double Track (Alternative 9). As its name implies, the alternative includes a double-tracked Rail Bridge. Thus, the option that includes widening the Rail Bridge is only included in Alternative 9, but could be applied to other Rail Bridge alternatives as well, as has been recommended in the DTCS. The double-tracked Rail Bridge would provide operational flexibility into the future and the estimated incremental cost of widening the Rail Bridge is relatively small when considering the cost of the full project. SamTrans will continue to investigate the possibility of converting a busway to rail on the Rail Bridge, though this is a complicated proposal as Union Pacific Railroad (UP) has trackage rights on the Rail Bridge and Peninsula right-of-way. However, it is worth noting that it would likely be expensive to pave the right-of-way for bus service only to remove the pavement at some future point to put reinstall tracks.

73. Will the bus alternatives use electric buses?

For the purposes of the Dumbarton Transportation Corridor Study (DTCS), 40-foot standard buses were assumed for short-term bus service and long-term complementary bus service and double-decked buses were assumed for long-term express bus service. The DTCS did not specify if buses were electric or not. Certainly, electric buses can be investigated at further phases of study.

74. Could there be a “local” variant of the Dumbarton bus service to serve the midday and weekend travel market?

If proposed bus service is to be implemented, more detailed operating plans would be drafted, which could potentially include more local midday service as well as weekend service.

75. Do the bus alternatives include evening and weekend service?

Bus alternatives are assumed to operate until 10 PM in this conceptual feasibility analysis. No weekend service is currently proposed. If such service is to be implemented, more detailed operating plans would be drafted, which could potentially include weekend service.

76. What is the expected night and weekend ridership of the bus alternatives?

The alternatives and subsequent regional travel demand model runs as part of the Dumbarton Transportation Corridor Study included packages of transportation improvements. Thus, in this instance, the regional travel demand model cannot differentiate between peak, daytime and evening bus ridership. No weekend service is currently proposed. If such service is to be implemented, more detailed operating plans would be drafted, which could potentially include weekend service.

77. How is forecasted bus ridership distributed across each route?

The alternatives and subsequent travel demand model runs as part of the Dumbarton Transportation Corridor Study included packages of transportation improvements. Thus, in this instance, the regional travel demand model cannot estimate ridership for individual bus routes unless they were modeled separately.

78. Does the Dumbarton Transportation Corridor Study (DTCS) assume any improvements at existing SamTrans bus stops?

The DCTS as a high-level planning study does not examine improvements to SamTrans bus stops.

Rail Alternatives

79. How many railroad tracks exist on the entire Dumbarton Corridor now, and how many would exist under each rail transit alternative?

The Dumbarton Rail Corridor generally has two tracks its entire length, with the exception of a few locations that are just single-tracked. These locations include the Dumbarton Rail Bridge over the Bay, the Henderson Bridge over US 101, the connection from the Dumbarton right-of-way to the Union Pacific Centerville Line and the connection from the Centerville Line to the Oakland Subdivision. The Rail Shuttle (Alternative 7) and Rail Commuter – Single Track (Alternative 8) generally assume this same configuration. The Rail Commuter – Double-Track (Alternative 9) assumes double tracking on the Rail Bridge. The Rail Bridge is recommended to be double tracked to provide for future capacity.

80. Please consider acting on the \$250,000 buyout option of Union Pacific in order to preclude future freight service on the rail line.

This is an option for SamTrans. However, note the buyout option only exists on the Dumbarton Rail Bridge itself (and not the Dumbarton right-of-way on the Peninsula). SamTrans anticipates working closely with Union Pacific in subsequent phases of study as they have trackage rights in the SamTrans-owned Dumbarton Rail right-of-way and own freight lines necessary to operate passenger service in the East Bay.

81. Consider opening an initial operating segment of Dumbarton Rail between Redwood City and Facebook while rehabilitation of the Dumbarton Rail Bridge gets underway.

The phasing presented in the Dumbarton Transportation Corridor Study is just one way the project can be implemented. An initial operating segment between Redwood City Caltrain and the new Willow Road Station could be constructed prior to Dumbarton Rail Bridge rehabilitation, especially if the full funding for the Rail Bridge rehabilitation is not immediately available. These considerations would be made during the design phase of the study process.

82. Would the Chestnut Street grade crossing need to be closed under the Rail Shuttle (Alternative 7) elevated station option (Option 1)?

In Option 1 Chestnut Street would not be closed. The grade change would start at Chestnut and be completed by Main Street.

83. Have you considered an option to have the Rail Shuttle (Alternative 7) terminate on the unused (east) side of the existing northbound Caltrain platform rather than building new separate platforms?

The vacant area on to the east of the station platform is now fully developed and is the site of the BOX Software headquarters building.

84. What would be the trade-offs associated with additional stations (such as on Marsh Road) on the Dumbarton right-of-way?

Additional stations would provide additional access and connectivity while slowing travel times and increasing costs. It is possible, however, that operating scenarios could be such that not all trains stop at all stations. Operating scenarios for rail alternatives will continue to be defined in subsequent phases of study.

85. What are the considerations involved in the selection of a station at Union City rather than on Shinn Road in Fremont?

To the extent possible, the Dumbarton Transportation Corridor Study carried forward rail alternatives carefully analyzed in previous studies. These alternatives included a terminus at the planned Union City intermodal station. A station at Shinn was examined in previous planning efforts, but was not carried forward. Because some additional planning work is needed to confirm East Bay rail operations and connections, stations will be reexamined in the next phase of study.

86. What is the specific location for the layover yard and wye for turnaround in the City of Hayward? Why was the Shinn Yard not identified as a train storage facility as defined in early Dumbarton Rail studies?

The proposed layover yard is located just north of Whipple Road, on the west side of Union Pacific Railroad's main track. The Whipple Road location was identified as the preferred site for the layover yard in the Dumbarton Rail Corridor environmental analysis prepared in 2011/2012. The Shinn Yard site would require trains to turn back at the Union City Station verses continuing through. Reversing directions would require 15- to 20-minute dwell on the main line verses a 2-minute dwell for the run-through operation.

87. How many additional riders would be gained by connecting to the Altamont Commuter Express (ACE) service? Would there be additional capital requirements associated with and required for that connection?

Under Alternative 10 (Combination Bus and Rail), which is recommended in the Dumbarton Transportation Corridor Study, around 3,900 transfers would come from ACE services. Capital requirements related to these transfers are captured in the costs associated with the Fremont/Centerville Station, which is the transfer location. However, additional riders could potentially be gained assuming more streamlined operating scenarios, which will continue to be investigated in further phases of study.

88. Does the electrification of Caltrain damage potential for one-seat rides from Stockton?

While it is possible for the locomotives and coaches of the Altamont Commuter Express (ACE) (originating in Stockton) to operate on the Caltrain mainline once it is electrified, it will be a policy decision if they are allowed to do so. Operations considerations will factor into this decision as electrified vehicles can accelerate and decelerate more

quickly than diesel locomotives and coaches and the Caltrain mainline may have limited windows for other services given the potential for High Speed Rail operations on the Corridor. ACE could still serve Redwood City Caltrain, however, and passengers could transfer to Caltrain mainline service at this location. It should be noted that Dumbarton service is recommended to be electrified in the long-term while ACE also has long-term plans to electrify.

89. How do the Dumbarton Transportation Corridor Study (DTCS) rail alternatives interact with ACEForward rail alternatives?

ACEForward identifies near- and long-term improvement alternatives that fall within the DTCS area as well as a number of improvements outside the study parameters. The proposed ACEForward alternatives address variety of needs and include a number of improvements that could directly interact with the Dumbarton rail alternatives such as an ACE Centerville to Union City connection. As noted in the DTCS, transfers from ACE have a positive effect on Dumbarton transit ridership and therefore any alternatives pursued as part of ACEForward, whether located in the DTCS area or not, could potentially impact potential Dumbarton rail service in some way. Further analysis and discussion between ACE, SamTrans, and other stakeholders will be necessary to fully understand how these alternatives can work together.

For the purposes of the DTCS, rail alternatives are assumed to interact with existing ACE facilities. Because of the lack of certainty with potential future options in the ACEForward plan, the study does not assume connections with those potential stations.

90. What kinds of rolling stock are proposed for the Dumbarton rail alternatives?

The Dumbarton Transportation Corridor Study assumes that the first phase of commuter rail service (known as the Rail Shuttle or Alternative 7) would utilize clean Diesel Multiple Units (DMUs) given project financial constraints. However, as soon as Dumbarton service were to operate on the Caltrain mainline, any “Rail Commuter” service (Alternative 9) is assumed to be electrified. Electrified service assumes vehicles similar to Caltrain’s new Electric Multiple Units (EMUs). If funding was available to electrify Dumbarton service immediately, EMUs operating on an electrified system would be assumed.

91. Does the Dumbarton Transportation Corridor Study consider on-board bicycle capacity for rail alternatives?

It is assumed that any Dumbarton transit service (commuter rail or bus) would provide on-board bicycle capacity. Bicycle capacity on Dumbarton commuter rail services would likely be similar to the new Caltrain electric multiple units, though this would need to be investigated further in subsequent phases of study.

92. How were the capital costs calculated for the rail alternatives?

The study relied on conceptual cost estimates prepared for the Dumbarton Rail Corridor environmental analysis from 2011/2012. The cost were escalated using an inflation factor to 2017 dollars.

93. How would ridership forecasts change in reaction to reducing headways of rail alternatives in the model?

Generally, reducing headways of rail alternatives (operating service more frequently) increases estimated ridership. However, there are a number of other factors that contribute to regional travel demand model estimates including, but not limited to, surrounding land uses, number of stations, station placement, transfer opportunities, timed transfers, etc.

94. Did the Dumbarton Transportation Corridor Study consider a Bay Area Rapid Transit (BART) extension over the Dumbarton Rail Bridge?

The DTCS considered a BART extension over the Dumbarton Rail Bridge but this mode was eliminated from further study in the initial screening of alternatives. While BART technology can carry a large number of people, it requires a completely dedicated guideway, which is often elevated. Subsequently, BART technology tends to be expensive and poses some financial risk.

Local Impacts

95. Evaluation criteria should be sensitive to and reflective of community values.

One of the four goals of the Dumbarton Transportation Corridor Study (DTCS) was to ensure that local communities are protected from adverse impacts, including consideration of disproportionate burden (low-income populations) and disparate impacts (minority populations). During the public outreach process, local communities were consulted on this topic and provided input that was incorporated into the DTCS. In the initial screening of alternatives, the focus of this goal was to consider impacts of transportation improvements on these specific at-risk populations. For instance, if transit modes required elevated guideway in areas with low income or minority populations, the modes would not score as well as elevated guideways can have substantial community impacts. In the comparative analysis, the focus of this goal was access-related. All transit alternatives were considered to provide similar levels of access to the surrounding communities.

96. Many commenters expressed that the plan does not adequately consider the local impacts of transportation improvements designed to facilitate regional travel.

The focus of the Dumbarton Transportation Corridor Study (DTCS) is to improve mobility by recommending transportation improvements in the Dumbarton Corridor. While regional travelers would benefit from many of the DTCS recommendations, there is also a benefit for local communities. Local communities benefit from the mode shift

to transit, reducing traffic volumes and congestion, resulting in increased mobility, which will be valuable as population and employment in the study area continue to grow. Additionally, local communities would also benefit from improve bicycle and pedestrian connections suggested in the DTCS.

97. Please ensure that the potential environmental impacts of the proposed transportation improvements are identified with mitigations, including noise and air pollution, local access and circulation, protected species, and other requirements pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Protection Act (NEPA).

Most Dumbarton Transportation Corridor Study recommendations require further design and environmental clearance - a process that will identify required mitigation measures for all potential impacts related to the transportation improvements. This will take place during a subsequent phase of study after additional planning work is complete.

98. How would the proposed improvements affect access and circulation for local residents in the study area?

The proposed improvements are intended to encourage the use of public transit with the overriding goal of moving more people per vehicle verses providing capacity for more vehicles. The proposed improvements should maintain existing access to residential areas and local circulation patterns. A more detailed traffic study would be conducted during the environmental analysis phase to identify specific traffic impacts and identify mitigation measures if necessary.

99. How will future traffic congestion be mitigated for residents within the study area?

The Dumbarton Transportation Corridor Study (DTCS) concludes there are two key strategies to mitigate congestion for local residents. First, the focus on public transit across the Dumbarton Corridor is intended to reduce the number of vehicles that drive the sheer volume of traffic. Second, the DTCS promotes short-term operational improvements that can reduce bottlenecks. The combination would reduce congestion along Bayfront Expressway, Willow Road, University Avenue, and the East Bay approaches to the Highway Bridge.

100. Is it possible to utilize congestion pricing to mitigate traffic on surface streets?

It is possible to use congestion pricing to mitigate traffic on surface streets, however, an express lanes network with the appropriate equipment would need to be installed. Supportive policies would also be needed to guide the operations of the system. The Dumbarton Transportation Corridor Study (DTCS) only proposes express lanes where there would be a critical mass of traffic potentially willing to use (and pay for) the facilities. Potential express lanes on Bayfront Expressway with a connection to planned express lanes on US 101 at Marsh Road could provide enough time savings to

potentially divert more regional traffic away from other streets including Willow Road and University Avenue. Additional operational analysis is needed in this area.

101. Many commenters expressed strong objection to options including direct-connector “flyover” ramps due to concerns over negative environmental impacts.

Proposed flyover ramps are proposed in high traffic areas with limited residential housing such as Bayfront Expressway and University Avenue, Bayfront Expressway and Willow Road, Bayfront Expressway and US 101 at Marsh Road and the Dumbarton right-of-way at US 101. Nonetheless, all potential environmental impacts will be evaluated in subsequent phases of study. Flyover ramps would be developed at a greater level of design in an effort to identify all environmental impacts including, but not limited to, community, traffic, aesthetic, and noise impacts.

102. How would flyover ramp connections to US 101 impact existing traffic during construction, how long would construction take, and what would the configuration be?

The proposed ramps connecting the Dumbarton right-of-way to US 101 (for buses) and Bayfront Expressway express lanes to planned express lanes on US 101 via Marsh Road (for vehicles utilizing express lanes) require additional design and environmental clearance. The potential construction of such improvements would be considered in the environmental analysis, including the identification of mitigation measures to ease impacts related to construction.

103. How will the Dumbarton Transportation Corridor Study (DTCS) recommendations impact housing costs in the study area?

The DTCS’ recommendations would improve mobility in the area that would have a variety of potential indirect impacts on housing supply and costs in the study area. While constructing efficient transbay rail service could ease the demand for housing on the Peninsula, population and job growth could keep housing prices in this area high. Also, it is possible that housing prices on the Peninsula and in the East Bay could get a boost due to the proximity to new rail service.

104. To what extent were bicyclists and pedestrians considered in the evaluation of traffic in the project area, specifically on Willow Road and University Avenue?

The Dumbarton Transportation Corridor Study (DTCS) recognizes the importance of improved bicycle/pedestrian connections throughout the study area. In addition to examining the bicycle/pedestrian multiuse path on the Dumbarton right-of-way, the Bay Trail alternative (Bay Trail between Seaport Boulevard and University Avenue with on-street connections as required) and upgrades to the existing bicycle and pedestrian path on the Highway Bridge, the DTCS identifies bicycle improvements as part of county and city bicycle and pedestrian plans. For example, the San Mateo County Comprehensive Bicycle and Pedestrian Plan identifies a Class II bikeway on University Avenue at the US 101 overcrossing. These improvements are described in Chapter 5, Section 5.3.4.

105. Please improve the condition of existing bus shelters in the study area.

The Dumbarton Transportation Corridor Study (DTCS) is focused on proposing regional transportation improvements within the Dumbarton Corridor. While the DTCS recognizes the importance of localized improvements, it does not examine improvements to bus shelters in the study area.

Cost/Funding/Implementation

106. The regional travel demand model shows greater bus ridership with lower costs as compared to the rail alternatives. Are you considering the cost-to-benefit ratio of the bus alternatives versus the rail alternatives?

Alternative 6 (Busway on the Rail Bridge) produces higher ridership with a lower cost than the commuter rail alternatives (Alternatives 7 through 9). However, the recommended Alternative 10 (Combination Bus and Rail) produced the highest ridership overall and is the preferred alternative because different travel markets can be served by the enhanced bus on the Highway Bridge and the commuter rail service on the Rail Bridge. Enhanced bus service on the Highway Bridge is very good at serving Tri-Cities (Newark, Fremont and Union City) to Peninsula trips with a one-seat ride while the commuter rail on the Rail Bridge has the potential to serve a more regional travel market pending coordination and connections with other regional rail providers. If regional rail connections are achieved, ridership would potentially exceed the projections identified in the Dumbarton Transportation Corridor Study (DTCS). DTCS travel demand modeling was constrained by a study area that did not expand beyond the Tri-Valley. In the next phase of study, additional modeling will occur, which will consider better regional rail connections and potentially streamlined operations, drawing upon ridership from well beyond the DTCS study area - Stockton and Sacramento.

107. The previous iteration of Dumbarton study included environmental costs. Are those costs included in the overall capital costs of this study?

Environmental analysis and mitigations are included in capital cost estimates. Environmental analysis and review are estimated as a lump sum based on potential project impacts. Environmental mitigation costs are assumed to be six percent of construction costs. More information about capital cost estimates can be found in Chapter 9, Section 9.2.

108. Who will fund the implementation process? It seems as though there is no regional project champion.

SamTrans is identifying funding options for next steps - primarily additional planning work. Many entities will need to work together to implement the many recommendations of the Dumbarton Transportation Corridor Study.

109. What level of responsibility will cities in the study area have for funding improvements?

Many of the Dumbarton Transportation Corridor Study (DTCS) recommendations are regional in nature and capital intensive. Individual cities would not be held accountable for funding such improvements. However, some short- and mid-term recommendations that fall within city limits and are less expensive could potentially be funded by the cities through their capital improvement programs. Examples include bicycle/pedestrian improvements, signal coordination, etc.

110. How would the corridor be managed in the event that sufficient funding for both bus and rail cannot be secured? Which set of improvements would be built first?

Which Dumbarton Transportation Corridor Study (DTCS) recommendations would be prioritized given limited funding is unknown at this time. Decisions would probably be based factors such as cost effectiveness, implementation timeframe, the amount of available funding, community support, etc. All DTCS recommendations require additional study - particularly further design and environmental clearance.

111. Is it possible to recoup some of the Regional Measure 2 (RM2) money that was re-allocated to the Bay Area Rapid Transit (BART) for the Warm Springs extension?

The Dumbarton Transportation Corridor Study is a feasibility planning study that does not address historic regional funding decisions. The current proposed allocation for Dumbarton Corridor improvements in RM 3 is \$130 million.

112. How could funding provided by Senate Bill 1 (SB1) be incorporated in this project?

SB1, the Transportation Infrastructure and Economic Investment Act, enacted in April 2017, is a \$52.4 billion funding package to improve the State's roads and transportation infrastructure. SB 1 funding opportunities are detailed in Chapter 13, Section 13.7.

113. What is the conversation with Facebook regarding a public-private partnership (P3)?

Project partners and stakeholders (including Facebook) recognize the importance of investigating opportunities related to P3s. Many questions remain about how a potential P3 could take form. A more in-depth P3 analysis will need to take place after the conclusion of the Dumbarton Transportation Corridor Study.

114. Could private bus companies operate the Dumbarton Express services instead?

Private companies could operate the Dumbarton Express services, though there may not be a business case for private companies to do so. Bus service is generally publicly subsidized and a private company would have to greatly increase fares to turn a profit.

115. Tech companies that benefit from the improvements should help to partially finance ticket prices for low income communities and cease private shuttle operations.

Low-income fare programs will likely be implemented in a way that is similar to existing Caltrain and SamTrans programs. Private company shuttles are not controlled by SamTrans and would be evaluated in the future as circumstances change.

116. Explore value capture strategies with local businesses as a financing mechanism.

Value capture funding approaches, which aim to link the beneficiaries of a public infrastructure investment to the project by allowing them to pay for portions of the capital or operations and maintenance cost, are estimated to potentially generate between \$250 million and \$930 million. This estimate and methodology is described in detail in Appendix O. Value capture strategies will continue to be examined in subsequent phases of study.

Interagency Coordination

117. Is SamTrans coordinating with state and federal agencies?

SamTrans engaged Caltrans as a stakeholder at key study milestones throughout the Dumbarton Transportation Corridor Study (DTCS) process. SamTrans has also had preliminary conversations with the California State Transportation Agency (CalSTA) in terms of how the DTCS fits within the context of the State Rail Plan. Appropriate federal agencies will be engaged in subsequent phases of study, as appropriate.

118. How will the Dumbarton Transportation Corridor Study (DTCS) integrate with the State Rail Plan?

The State Rail Plan builds on a framework of short-term regional and corridor plans and proposals that support the 2040 Rail Vision and is intended to serve as guide for State-led service implementation planning in coordination with regional agencies, rail operators, and stakeholders. The State Rail Plan includes various short-, mid-, and long-term planning and improvement goals related to the DTCS including:

▪ **2020 Short-term Plan Regional Goals:**

• **Service Goals and Improvements:**

- *Initial Integrated Express Bus services connecting the Peninsula with East Bay across the Dumbarton Highway Bridge and regional and intercity rail stations, allowing connectivity to the statewide rail network.*

• **Planning, Analysis, and Project Development:**

- *Complete study of the Dumbarton alignment to connect the Peninsula and East Bay within a regional network, including alternatives for both Integrated Express Bus and Rail service.*

- **2027 Mid-term Plan Regional Goals**
 - **Service Goals and Improvements:**
 - *Half-hourly peak and hourly off-peak bus or rail service in the Dumbarton Corridor (based on the results of the 2022 study), with connections in the East Bay to Altamont Corridor, Oakland to San Jose rail, and Bay Area Rapid Transit (BART) services*
 - *Open an East Bay hub station near Newark, Hayward, or Fremont to allow connections between north-south service between Oakland and San Jose, and east-west services between the Stockton area and San Jose and a regional Dumbarton Bay Crossing. Location will be chosen consistent with results of the 2022 study.*
- **2040 Long-term Vision – Regional Goals**
 - **Service Goals and Improvements:**
 - *Half-hourly bus or rail service in the Dumbarton corridor (based on the results of the 2022 study), integrated with East Bay, BART, and Altamont services.*

119. What level of regional support has been received from the Metropolitan Transportation Commission (MTC)?

SamTrans engaged MTC as a stakeholder at key study milestones throughout the Dumbarton Transportation Corridor Study (DTCS) process. MTC recently started a Design Alternatives Assessment (DAA), which will focus on developing short-term improvements in the Dumbarton Corridor at a higher level of detail. MTC is also interested in further developing the express lanes options evaluated in the DTCS. More recently, several MTC Commissioners have come out in support of Dumbarton Corridor improvements and some funding (\$130 million) is currently set aside for Dumbarton Corridor improvements in Regional Measure 3 (RM3). RM3 is scheduled to go to the ballot in 2018.

120. What is the role of Facebook in the Dumbarton Transportation Corridor Study (DTCS)?

Facebook participated throughout the study process as a project partner along with the Alameda County Transportation Commission (ACTC) and Alameda-Contra Costa Transit District (AC Transit). Project partners were included on bi-weekly project calls, provided relevant data, helped review and provided feedback on project deliverables, etc. Facebook also contributed \$1.2 million toward the DTCS, which was managed independently by SamTrans.

Ridership and Operations Modeling

121. To what extent does transit frequency versus travel time influence estimated ridership? Does one have a stronger influence than another?

The City/County Association of Governments of San Mateo County (C/CAG) - Santa Clara Valley Transportation Authority (VTA) regional travel demand model includes both travel time and transit frequency as significant predictors of transit ridership. Frequency typically has a somewhat stronger influence on ridership than total travel time; the model treats each additional minute of waiting time as equivalent to between one and two-and-a-half minutes of travel time (more for commute trips, less for other types of trips).

122. Does the Dumbarton Transportation Corridor Study (DTCS) consider the impact of increased development in the study area on corridor traffic? Does it include the proposed campus expansion at Facebook?

The DTCS projects future conditions via the City/County Association of Governments of San Mateo County (C/CAG) - Santa Clara Valley Transportation Authority (VTA) regional travel demand model. The model produces forecasts using projected regional land use growth and transportation improvements consistent with the Association of Bay Area Governments (ABAG)/Metropolitan Transportation Commission (MTC) Plan Bay Area Sustainable Communities Strategy and the Regional Transportation Plan. However, adjustments were made to the model data so that it would better align with actual growth trends not envisioned when the ABAG/MTC projections were produced. The high-growth 2040 scenario (Alternative 11) applies a more ambitious projection of employment growth, and is based on recent sustained employment trends and approved development projects in the study area, including the Facebook campus expansion.

123. How are city general plans factored into the regional travel demand modeling?

The City/County Association of Governments of San Mateo County (C/CAG) - Santa Clara Valley Transportation Authority (VTA) regional travel demand model forecasts include the official long-range Plan Bay Area plans as included in the Regional Transportation Plan (RTP) and the Sustainable Communities Strategy (SCS) prepared by the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG). ABAG takes general plans into account in its estimates as well as State economic forecasts that indicate the amounts of population and employment growth to be accommodated in the region and its communities by the years 2020 and 2040.

124. What are the mode of access assumptions in the model (e.g. bicycle/pedestrian access to stations)?

The City/County Association of Governments of San Mateo County (C/CAG) - Santa Clara Valley Transportation Authority (VTA) regional travel demand model assumes that rail stations (including the new Willow Road station) and park-and-ride facilities can be accessed by walking, and includes an estimate of walking time (a simple calculation from distance) as part of the travel time.

125. How does the Dumbarton Transportation Corridor Study address induced demand for single-occupant vehicle travel as a result of the proposed improvements?

The City/County Association of Governments of San Mateo County (C/CAG) - Santa Clara Valley Transportation Authority (VTA) regional travel demand model considers both auto and transit accessibility when modeling auto ownership, which in turn influences the model estimates of total trips by all modes. Auto and transit accessibility play a much larger role in mode split, where (as one would expect) improvements in auto accessibility result in a higher percentage of auto trips and improvements in transit accessibility result in a higher percentage of transit trips.

126. Was variable congestion pricing assumed in ridership forecasting?

The City/County Association of Governments of San Mateo County (C/CAG) - Santa Clara Valley Transportation Authority (VTA) regional travel demand model is not able to simulate dynamic road pricing that does not produce predictable change to travel cost for individuals or the average driver.

127. To what extent is the proposed East-West Connector project in Fremont considered in the Dumbarton Transportation Corridor Study (DTCS)?

The East-West Connector is not considered in the modeling for DTCS.

128. Does the Dumbarton Transportation Corridor Study ridership forecasting consider the Stanford/AC Transit U shuttles that currently travel on the Dumbarton Highway Bridge?

The City/County Association of Governments of San Mateo County (C/CAG) - Santa Clara Valley Transportation Authority (VTA) regional travel demand modeling takes into account the Stanford/AC Transit U shuttle. Model forecasts for this line were included as part of total and transbay daily transit on the Dumbarton lines.

129. Does the 30,000 total daily riders include ACE transfers?

Alternative 10 (Combination Bus and Rail) is estimated to produce 32,900 total daily riders, of which almost 4,000 are transfers from the Altamont Commuter Express (ACE) service. More information about estimated ACE transfers are included in Chapter 10, Section 10.3.3.

130. How easy or difficult is it to model new transportation alternatives with the regional travel demand model? Would you consider a model run that includes the Altamont Commuter Express (ACE) coming across the Dumbarton Rail Bridge?

As part of the next phase of study, SamTrans would like to work with regional rail partners including the California State Transportation Agency (CalSTA), Union Pacific, Alameda County Transportation Commission (ACTC), ACE, Capitol Corridor, etc. to better define potential rail operations, connections and stations in the East Bay. It is possible that additional travel demand modeling will take place in an effort to quantify

the benefit of more streamlined regional rail operations. Because this modeling effort would cover a much larger study area, additional calibration/validation would need to take place to use the City/County Association of Governments of San Mateo County (C/CAG) - Santa Clara Valley Transportation Authority (VTA) regional travel demand model. It is also possible that another regional model could be used.

131. Could SamTrans model different transit service scenarios, such as shorter rail headways, or using rail service as a backbone with bus connections?

Because there are a substantial number of transit network and operational options to consider, the Dumbarton Transportation Corridor Study (DTCS) focused on the feasibility of fixed-guideway and bus transit combinations. Due to the high cost of regional travel demand model runs, SamTrans attempted to identify alternatives that represented a broad variety of operating scenarios. With additional budget, SamTrans could model additional operating scenarios and evaluate ridership results. However, without performing any additional modeling, it is generally understood that reducing transit headways (running service more frequently) produces higher ridership estimates. Note that the rail alternatives, as currently proposed, would already act as the transit system backbone with complimentary bus services proposed to provide first/last mile connectivity.

132. Are the recommended improvements expected to increase vehicle traffic by 25 percent or how much? What is the likely effect of increased vehicle capacity on demand (e.g. induced demand) which would further increase vehicle trips? How would increased average daily trips on the Highway Bridge impact local roadways such as University Avenue and Willow Road?

The No Project scenario in the VISSIM operations analysis shows that the existing configuration of the roadway system is only able to serve about 75 percent of the forecasted peak hour demand. This suggests that capacity improvements (barring any mode shift associated with transit improvements) would be required just to handle the base demand for the roadway system. The improvements tested in the model are focused on portions of the Willow Road and Bayfront Expressway corridors that are subject to upstream bottlenecks (for example, US 101 and I-880). Induced demand could occur with these improvements, but the demand would likely be metered into the heart of the Dumbarton (Highway Bridge) Corridor due to these upstream bottlenecks. Transit improvements and express lane improvements in the Dumbarton Corridor may induce mode shifting, which would reduce single occupancy vehicle demand to counteract induced demand.