

Memorandum

Date: February 12, 2021
To: Hillary Gitelman and Karl Heisler, ESA
From: Teresa Whinery and Franziska Church, Fehr & Peers
Subject: **Clarification on Caltrain Transit Demand Assessment for the Downtown West Mixed-Use Project**

SJ19-1951

Per the City of San Jose's request, this memorandum provides additional background regarding the assumptions and methods used to evaluate transit demand and crowding on Caltrain related to the Downtown West Mixed-Use project ("Project") under the existing, background (year 2022), and cumulative (year 2040) scenarios. The transit demand analysis was presented in Chapter 5 of the in the Local Transportation Assessment (LTA) included as Appendix J2 to the Project's Draft Environmental Impact Report. The transit demand analysis was evaluated for City development application purposes and not for CEQA impact determination.

General Approach

The analysis presented in LTA analyzes three horizon years, with varying no project and plus project scenario assumptions: existing, background (year 2022), and cumulative (year 2040). Due to uncertainties in the precise ridership patterns of Project residents and employees, the existing and background scenarios incorporate conservative assumptions regarding transit supply. The analysis assumes that the peak hour transit supply is at the low end of implementation horizons for the future transit enhancements (i.e. assumes transit supply enhancements will be available at later years of current plans), while the Project's forecasted transit demand is at the higher end, as it is based on demand resulting from the full scope of service changes in each scenario.

Due to the conservative approach to assess the Project contributions to Caltrain ridership, the analysis uses the 135% load factor presented in the Caltrain Business Plan rather than the 120% load factor used for assessing crowding on existing service. This is intended to reflect differences in comfort between future vehicles (which will provide a higher level of comfort for standing passengers) and existing vehicles (which require standing passengers to gather in aisles or at the doors of the train). In addition, ridership is not assessed separately for express, limited, and local

trains, as much of the growth in ridership is expected to be local or occur on segments that do not experience crowding.

Caltrain Supply

The seated capacity of Caltrain services during peak periods is based on the number of trains arriving/departing Diridon station during a peak hour. For Northbound services, this peak hour is from 7:15 a.m. to 8:15 a.m.; for Southbound services, the peak hour is 5 p.m. to 6 p.m. Caltrain capacity/supply under each scenario is summarized in **Table 1**.

Table 1: Transit Supply Assumptions by Analysis Scenario

Scenario		Caltrain Capacity Assumptions, AM Peak Hour	Caltrain Capacity Assumptions, PM Peak Hour	Notes
Existing Conditions (2019, Pre-COVID)	NB	3,690 Seated Capacity: 2 6-car Baby Bullets 1 5-car Limited 2 6-car Limited	3,580 Seated Capacity: 2 6-car Baby Bullet 2 5-car Limited 1 6-car Limited	Existing conditions reflect actual posted Caltrain schedules as of February 2020
	SB	3,470 Seated Capacity: 2 6-car Baby Bullets 1 5-car Limited 2 6-car Limited	2,820 Seated Capacity 2 6-car Baby Bullets 2 6-car Limited	
Background Conditions (2022)	NB	3,690 Seated Capacity: 2 6-car Baby Bullets 1 5-car Limited 2 6-car Limited	3,580 Seated Capacity: 2 6-car Baby Bullet 2 5-car Limited 1 6-car Limited	While demand for Caltrain ridership under Background conditions assumes electrification, we have kept the supply constant relative to existing service for simplicity.
	SB	3,470 Seated Capacity: 2 6-car Baby Bullets 1 5-car Limited 2 6-car Limited	2,820 Seated Capacity 2 6-car Baby Bullets 2 6-car Limited	
Cumulative Conditions (2050 Moderate Growth Scenario, without HSR)	NB	9,600 Seated Capacity 3 10-car Baby Bullet 4 10-car Limited 2 10-car Local	9,600 Seated Capacity 3 10-car Baby Bullet 4 10-car Limited 2 10-car Local	Assumes full conversion of fleet to EMU, 120 capacity per car, and nine trains per hour. Assumes peak hour of supply may shift slightly, and adjusts accordingly.
	SB	9,600 Seated Capacity 3 10-car Baby Bullet 4 10-car Limited 2 10-car Local	9,600 Seated Capacity 3 10-car Baby Bullet 4 10-car Limited 2 10-car Local	

Source: Fehr & Peers, November 2020.

Caltrain Ridership, No Project

Estimates of Caltrain ridership for each scenario under no project conditions were extrapolated from analysis used in the Caltrain Business Plan analysis process. The load factors and maximum load point by scenario are shown in **Table 2**.

Table 2: Caltrain Load Factors, No Project, by Scenario

Scenario		Load Factor at Maximum Load Point, AM Peak Hour	Load Factor at Maximum Load Point, PM Peak Hour	Notes
Existing Conditions (2019, Pre-COVID)	NB	1.06, Millbrae	0.86, Redwood City	Existing conditions reflect actual posted Caltrain schedules as of February 2020
	SB	0.81, Redwood City	1.03, San Mateo	
Background Conditions (2022, with Electrification)	NB	0.98, Burlingame	1.00, Redwood City	While we have provided analysis with Existing Service + Project Conditions, we also include a comparison to the load factors under the 2022 PCEP forecasts, though the Project Contribution is still based on percentage of existing capacity.
	SB	0.85, San Carlos	1.12, Palo Alto	
Cumulative Conditions (2050 Moderate Growth Scenario, without HSR)	NB	1.17, South San Francisco	0.95, San Carlos	Load factors reflect Caltrain services only, and do not include HSR.
	SB	0.76, Menlo Park	1.23, San Mateo	

Source: Fehr & Peers, November 2020.

Project-Related Caltrain Ridership

To estimate the number of Project trips expected to use Caltrain services, the following analysis steps were taken:

1. Total peak hour transit ridership for the project was estimated using the methods described in Chapter 4 of the LTA, for Project Phase 1, Project Buildout, and Project Buildout (Goal-Based).
2. Transit trips were assigned to services using outputs from the City of San Jose's travel demand model, as shown in Table 22, Table 23, and Table 28 of the LTA.

3. Project ridership was assumed to occur at the maximum load point, to express the Project’s maximum potential to affect crowding. In actuality, many project trips would occur fully upstream or downstream of the maximum load point in each direction.
4. The project’s percentage contribution to Caltrain ridership during each peak hour and direction was added to the load factors presented in **Table 2**.

Assumptions regarding project Caltrain ridership, including total transit mode share for the project and assumed available infrastructure, are shown in **Table 3**. This results in the findings presented in LTA Table 32, replicated and updated here as **Table 4**.¹ Note that **Table 4** shows the Project’s contribution to PM peak hour service in the southbound direction, despite the Project adding trips primarily in the southbound AM / northbound PM service pattern. Despite higher Project boardings in the counter-peak direction, forecasted capacity constraints in the peak hour / peak direction are more highly impacted by Project trips.

Table 3: Project Caltrain Demand Assumptions by Analysis Scenario

Scenario	Total Peak Hour Transit Mode Share	% of Peak Period Transit Trips Using Caltrain	Total Peak Hour Project Caltrain Ridership and Direction	Project Contribution to PM SB Service	Infrastructure / Other Notes
Project Phase 1	23%	23%	363 (NB PM)	199 (7%)	Assumes existing service levels, with robust TDM plan
Project Buildout (Background Conditions)	20%	29%	751 (SB AM)	486 (17%)	Assumes level of service consistent with electrification, with robust TDM plan
Project Buildout (Cumulative Conditions)	33%	23%	858 (NB PM)	526 (5%)	While total transit mode share increases, the percentage of trips on Caltrain decreases due to BART opening. Assumes Moderate Growth scenario, and goal-based mode split.

Source: Fehr & Peers, November 2020.

¹ Review of the LTA during the response to comments process revealed that the previous iteration of LTA Table 32 overstated impacts by comparing the peak project generated trips to the peak load on Caltrain.

Table 4: Comparison of Project Demand and Caltrain Capacity

	Existing	Buildout at Baseline, Existing Supply ^a	Buildout at Baseline, with Electrification ^a	Buildout, Cumulative
Project Demand, PM Peak Southbound (passengers)	199	486	486	526
Project Demand, PM Peak Southbound (% of supply)	9%	17%	17%	6%
Maximum Load Without Project	103%	103%	112%	123%
<i>Maximum Load Point</i>	<i>San Mateo</i>	<i>San Mateo</i>	<i>Palo Alto</i>	<i>San Mateo</i>
Maximum Load with Project	112%	120%	129%	129%
Exceeds comfortable crowding level?	No	No	No	No

a. To simplify analysis, the project's percentage of Caltrain supply/capacity is presented based on existing service levels. However, for the Buildout at Baseline, with Electrification, the electrification load factors are used, resulting in an inherently conservative analysis.

Source: Caltrain Business Plan Analysis, 2019; Fehr & Peers, 2020.