

To: Board of Directors

Date: 5/8/2025

From: Pranjal Dixit, Manager of Planning

Reviewed by: AMS

SUBJECT: IDEA Transit Signal Priority (TSP) Update

Background:

County Connection has been working in partnership with the Contra Costa Transportation Authority (CCTA), the Cities of Concord and Walnut Creek, and the Metropolitan Transportation Commission (MTC) on various projects to deploy a centralized conditional Transit Signal Priority (TSP) system on certain County Connection buses along corridors within the partner cities, with hopes of eventually expanding systemwide in the future. The TSP system will provide real-time changes to traffic signal timing in response to automated requests from buses by either extending a green phase or shortening a red phase.

IDEA TSP Project:

MTC developed the IDEA Grant Program to fund advanced technology deployments on arterial roadways, aiming to enhance mobility, sustainability, and safety across all transportation modes. The program's core goals include improving travel time and reliability for vehicles and transit, enhancing safety, reducing emissions, and increasing proficiency in advanced arterial operations. Through this initiative, Concord and Walnut Creek were each awarded nearly \$800,000 in 2018 to implement transit TSP systems along designated corridors.

This pilot project, a collaboration between County Connection, CCTA, and the Cities of Walnut Creek and Concord, targets bus priority on Walnut Creek Routes 4 and 5, and Concord Routes 15 and 20. TSP systems have been installed at 66 signalized intersections as shown in Figure 1. Currently, 31 County Connection buses are equipped with this technology, with plans to equip an additional 28 buses, bringing the total to 59. Notably, several other County Connection routes (1, 9, 10, 11, 14, 16, 17, 19, 20, 21, 28, 91X, 92X, 93X, 95X, 96X, 301, 310, 311, 314, 315, 320, and 321) also intersect with these corridors and stand to benefit from the TSP system once more buses are so equipped.

To assess the impact of the TSP system, CCTA contracted Advanced Mobility Group (AMG) to conduct a before-and-after study. AMG collected data on on-time performance, bus travel times, and signal delay both before and after this pilot phase of TSP implementation. The study comprised two analysis periods: "After" (with the TSP system turned on) from September 16th to October 6th, 2024, and "Before" (with the TSP system turned off) from October 7th to October 28th, 2024. The "After" study began first to

allow for necessary fine-tuning and verification of the TSP system and signals before conducting data collection for the evaluation.

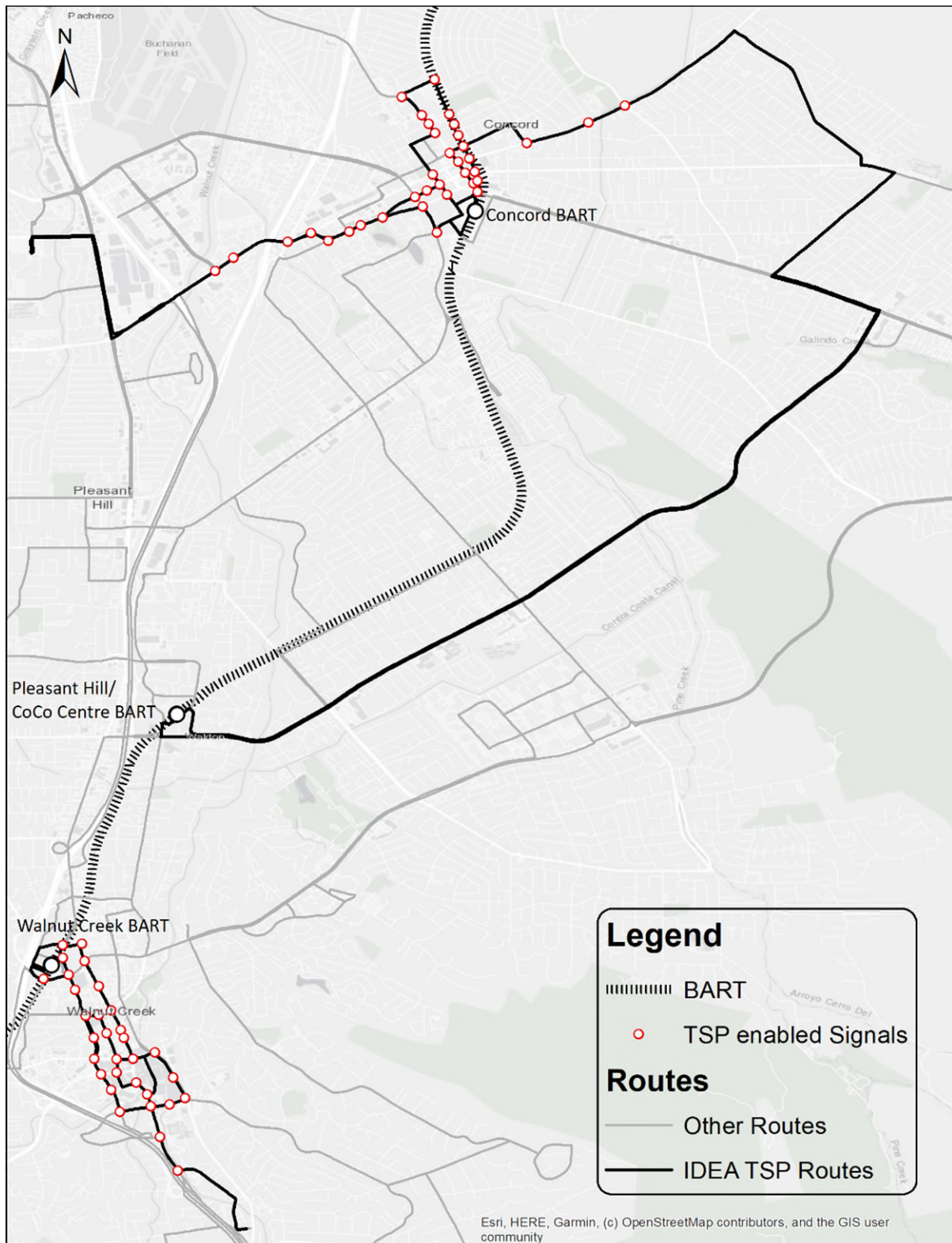


Figure 1: IDEA TSP Signals

The preliminary analysis showed the following improvements on all routes:

- 17% reduction in signal delay time for buses (i.e. the time a bus spends waiting at a red light).
- 6% reduction in overall bus travel times
- 1.9% greater on-time performance, 3.1% fewer late departures
- Improved bus progression through multiple successive signals with fewer stops at signals
- Estimated decrease in bus fuel consumption by approximately 309 gallons per year, resulting in an annual reduction of nearly 6,314 pounds of greenhouse gas (GHG) emissions.

During the evaluation, Routes 4 and 5, which are typically served by electric buses equipped with TSP, experienced fleet availability issues due to charging equipment problems. Consequently, TSP-equipped buses were in service only 35-50% of the time on average. Despite this limited deployment, the TSP system still yielded significant reductions in signal delays.

By leveraging County Connection's existing real-time tracking systems, the implementation of a TSP is projected to yield \$3.95 million in benefits over a decade, stemming from travel time savings, fuel consumption reduction, and GHG emission reductions.

Financial Implications:

None. For information only.

Recommendation:

None, for information only.

Action Requested:

None, for information only.

Attachments:

None