

S T A F F R E P O R T

SUBJECT: Traffic Signal Priority Upgrade
FROM: Christy Wegener, Director of Planning and Operations
DATE: March 27, 2017

Action Requested

None – Information Only

Background

This is a briefing of a project to upgrade the Transit Signal Priority to GPS-enabled technology.

Discussion

As a part of the 2011 Rapid plan and deployment, Transit Signal Priority (TSP) was introduced into the Wheels bus network along the Rapid corridor in Livermore, Pleasanton, and Dublin. The TSP technology implemented as a part of the Rapid deployment utilized infrared (IR) optical technology from Global Traffic Technology (GTT) Opticom, which interfaced with the Emergency Vehicle Priority (EVP) sensors/emitters utilized by the Tri-Valley cities for emergency vehicles. TSP software was also installed by the Tri-Valley city traffic engineers.

The TSP implemented for the Rapid deployment allowed buses to extend green lights or shorten red lights when approaching the signals. A buffer of 8-10 minutes was put in place to prevent bus-bunching. Because of the near-side placement of certain bus stops, a provision was implemented to cancel the TSP “call” to the signal when the bus door is open, preventing unnecessary signal timing changes when passengers are boarding or alighting the vehicle. Included in the TSP plan were two queue jump lanes for the Rapid line, one located at westbound Stanley and Murrieta, and one located at westbound Dublin and Dougherty. Queue jump signals allow the bus to receive a special bus-only signal and travel through the intersection ahead of the queue of cars.

Reports from the TSP software indicate that the system appears to be working as calls are made and granted; however, no reports are available to indicate whether the bus actually makes it through the intersection when extended greens or shortened reds are granted. Accordingly, it is hard to determine what impact TSP has on the overall travel time of the buses.

Since the Rapid project was implemented in 2011, the TSP technology commercially available has improved both with accuracy of bus-to-intersection controller signals, but also reports. The newest TSP products are embedded with GPS-technology that offers improved functionality; additionally, the newest models have improved software that only turns the GPS “on” when the buses run late, but keep the TSP “off” when the buses are on-time or bunching. The new technology is installed in parallel to the optical IR technology utilized for EVP. The newest technology removes the need for buffer in-between TSP calls, can more accurately measure the travel time improvement of the buses, and provides more accurate queue jump signals. Transit properties that have implemented the GPS-based technology typically see an improvement in operations immediately. Both San Francisco Muni and AC Transit have recently upgraded their TSP systems.

When the Rapid line (Route 30R) was realigned in August 2016, and when the old Route 10 became “Rapidized,” an opportunity arose to revisit the TSP plan. The new 10R has TSP throughout Livermore, but there is no TSP along Santa Rita Road, which is a key corridor that has been identified for increased ridership. Staff has reached out to the City of Pleasanton staff to discuss implementing TSP on Santa Rita Road, and staff was amenable to piloting the technology at three intersections on Santa Rita Road (Mohr, Valley, and Stoneridge).

Staff is proposing to upgrade the entire TSP network in the Tri-Valley to a GPS-based system, and staff has identified a local funding source that would fund the system-wide upgrade.

Budget Considerations

The Strategic Expenditure Plan (SEP) for the Tri-Valley Transportation Council (TVTC) includes a project (Project A-11, Attachment 1) to implement, enhance, and expand “Rapid” BRT service throughout the Tri-Valley. Project A-11 describes enhancements such as upgraded bus shelters, turn-outs/bulb-outs, off-vehicle fare collection, as well as enhanced TSP as elements eligible for funding. Total available funding is \$1.1 million. Funding a TSP upgrade would be well within the scope of the project.

Next Steps

Staff has reached out to Kimley-Horn, LAVTA’s on-call engineering firm, to discuss the project. Staff expects to request funding from TVTC in early FY2018 to fund the upgrade. Staff will return to the Committee in early 2018 with a recommendation for a contract award.

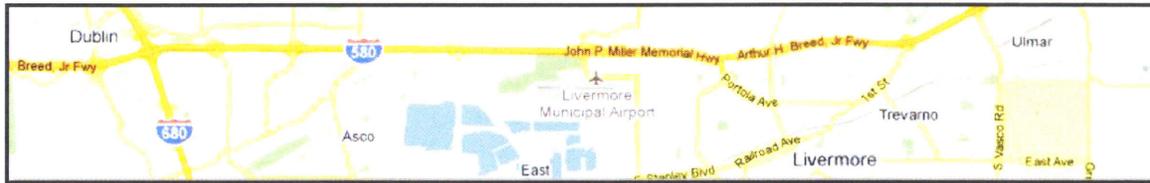
Recommendation

None – Information only

Attachments

1 – TVTC SEP Project A-11

A-11. EXPRESS BUS/BUS RAPID TRANSIT (BRT) – PHASE 2



TVTC PROJECT SPONSOR

City of Dublin

LEAD AGENCY

Livermore Amador Valley Transit Authority (LAVTA)

OTHER INVOLVED PARTIES

City of Livermore, City of Pleasanton

PROJECT DESCRIPTION *(UPDATED FALL 2015)*

Project A-11 is Phase 2 of the Express Bus/BRT, which consists of two phases. The express bus route associated with Phase 1 of the project has been operating since January 2011.

Phase 2 includes upgrades to and expansion of the initial Rapid Project, as well as some project refinements, updates, and maintenance/replacement of original project elements and equipment based on evaluation of the existing components and conditions at the time of funding. The transit system priorities include the following elements:

- A technologically advanced transit system
- A multi-modal transportation system that supports the local economy
- Prioritized regional transfers and connections
- Reliability and efficiency that maximizes value to taxpayers and the community

Phase 2 will consist of five key potential elements (based upon conditions at time of funding):

1. **Advanced Technology** – Design and installation of advanced technologies and road features allowing rapid transit to operate quickly and efficiently, and help to mitigate delay in dwell times, boardings, and travel times. Some of the advanced technologies and road features that LAVTA is considering for Phase 2 are: transit signal priority, enhanced stations, queue jumps, environmentally friendly coaches and advanced onboard technology, advanced fare collection systems, level boarding, dedicated travel lanes, and better integrated park and ride facilities and transit centers. Element 1 is currently budgeted at \$2 Million.
2. **North/South Express Bus/Rapid Service** – In keeping with the Alameda Countywide Transit Plan, and in order to provide a strong foundation for LAVTA's System, I-680 service expansion, North/South Express Bus/BRT service, and other Express/Rapid service options, will be explored and considered. Element 2 is currently budgeted at \$6.5 Million.
3. **Dublin Extension** – Continued study and planning will be done on how best to integrate the planned extension of Dublin Boulevard and the planned Livermore BART Extension into LAVTA's Express Bus/BRT service. Element 3 is currently budgeted at \$6.5 Million.

4. **Pleasanton Alignment** – Complete “Rapidization,” of the Livermore to Pleasanton alignment will be evaluated, with advanced technology and improved service elements planned for the south side of I-580, and possible connection to the existing Rapid service. Element 4 is currently budgeted at \$1.5 Million.
5. **Park and Ride Lots** – In working with local cities and Alameda County, LAVTA will consider improved park and ride elements to support bus, biking, and walking access in the Tri-Valley, and to improve the accessibility of transportation alternatives that would ease congestion on I-580. These options might include: construction of new lots, smart signage, improved bicycle storage, increased pedestrian accessibility and safety, enhanced multi-modal elements on coaches, and increased or revised bus service to rail stations and regional transit connections. Element 5 is currently budgeted at \$2 Million.

STATUS

Phase 1 is fully completed and operational, as of January 2011.

Phase 2 is in the research, design, and planning stage. In August 2016, LAVTA realigned the Express Bus/BRT Route (Route 30R) to serve Las Positas College, and transformed existing Route 10 into an Express Bus/BRT (Route 10R) operating through Pleasanton to BART. The transformation of Route 10 into Route 10R was the first step in implementation of the Phase 2 Pleasanton Alignment. LAVTA intends to implement additional items from Phase 2 (Advanced Technology) to both Routes 10R and 30R in 2017, which includes upgrading the traffic signal priority onboard the buses and at key intersections along both Rapid routes.

PHASING AND SCHEDULE

Costs for Phase 2 have been updated to reflect current pricing for the project elements listed above. Phase 2 Scope of work, schedule, and full funding parameters are not known at this time.

COST ESTIMATE AND FUNDING SOURCES

Phase 2:

Cost (Millions, 2015)	\$18.50
Funding (Millions, 2015)	
TVTDF	\$1.14
Total Funding (Millions, 2015)	\$1.14
Total Funding Shortfall (Millions, 2015)	\$17.36