CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL

FROM: John Ristow

SUBJECT: **IDEA GRANT ACCEPTANCE - FOR AUTOMATED TRAFFIC SIGNAL PERFORMANCE MEASURES**

DATE: September 6, 2018

Approved Date 9-6-18

COUNCIL DISTRICTS: 1, 2, 3, 5, 6, 7, 8

REPLACEMENT

REASON FOR REPLACEMENT

The Evaluation and Follow-up and Cost Summary/Implications sections have been amended to provide more details on budget programming and project schedule.

RECOMMENDATION

Approve two Grant Funding Agreements between the City of San José and the Metropolitan Transportation Commission, in an amount not to exceed $1,872,556, to implement Automated Traffic Signal Performance Measures technology at 100 signalized intersections.

OUTCOME

The recommended action will provide grant funding to add real time traffic signal system performance monitoring capability and data analytics at 100 intersections along eight arterial roadways. Staff will be able to quickly identify signal timing and system deficiencies and take necessary corrective actions to enhance mobility and safety across all modes.

BACKGROUND

San Jose's Traffic Signal System

The Department of Transportation (DOT) operates and maintains 951 traffic signals. Eleven percent of these signals are operated on behalf of Caltrans, and adjacent local agencies. Over the

last decade, $30M has been invested on technology enhancements and communication infrastructure improvements to support real time traffic management capability and advanced traffic signal operations. Today, 99% of the City's traffic signals are networked and can be remotely managed from the City's traffic management center. While San Jose's advanced traffic signal controller and firmware assembly can perform complex signal timing and coordination strategies (transit signal priority, adaptive signal control, and network based emergency vehicle preemption service) to support safety and mobility goals, it lacks the capability to efficiently and effectively monitor system wide performance, and pin-point specific signal operations deficiencies to allow staff to quickly take corrective actions.

To improve system wide performance today, traffic signals must be manually reviewed and retimed. Staff use factors such as citizen complaints, surrounding land use changes, and travel demand or roadway characteristic changes to identify 100 to 125 signals to be retimed each year. The number of signals retimed each year is limited by the availability of funds and staff resources and involves a manual process for identifying signals in need of retiming, collecting traffic data at each intersection, and developing software modeling to simulate performance. Signal retiming currently occurs on a three-to-five year cycle, primarily due to the size of the citywide signal system, and associated retiming costs of approximately $4,500 per intersection.

Automated Traffic Signal Performance Measure Technology

The Federal Highway Administration has promoted the use of ATSPM technology as a means to provide ongoing performance measurement. ATSPMs consist of a high-resolution data-logging device that is installed at each signalized intersection, combined with data analytic software to create a system performance dashboard display. Having timely and precise system performance data (such as travel time delay, unused or insufficient green time, traffic sensor malfunction, traffic pattern irregularity or trend changes) will allow staff to proactively identify signal inefficiencies and take corrective actions, instead of reacting to customers' complaints.

In August 2017, MTC issued a call for innovative projects that would improve arterial roadway operations, improve safety of all roadway users, decrease motor vehicle emissions and fuel consumption, and advance the readiness of the Bay Area for connected and automated vehicle technologies. A total of $13 million in Innovative Deployments to Enhance Arterials (IDEA) grant funds were made available to Bay Area public agencies to deploy commercially available technologies. The grant required a 25% local match, with a minimum of 15% cash match and 10% in-kind match. A funding agreement with MTC is required to accept the grant funds.

ANALYSIS

DOT submitted an IDEA grant application to MTC in September 2017 for a $2,158,750 project to implement ATSPM technology at 100 intersections along eight major commute corridors. The project was proposed to be funded by $1,619,062 in grant funds and a local match of $539,688. On February 14, 2018, the MTC Commission approved San Jose's application,

however at a lower amount of $1,399,898 in grant funds, as MTC received additional applications from eligible agencies.

Application rating criteria was based on traffic signal system technology readiness, cost effectiveness, emission reduction and regional significance. To achieve the maximum score possible for emission reduction and regional significance, staff selected arterial roadways where transit and bicycle travel have been prioritized, and where optimization of signal operations is critical to minimizing congestion and travel delays for all modes of travel. To maximize project cost effectiveness, intersections selected were those best equipped for ATSPM integration, including technology ready (or near ready) signal controller cabinets, and updated video detection systems.

The eight corridors in San Jose that will be enhanced with ATSPM technology as part of this grant include: Alum Rock Ave; Coleman Ave; Cottle Rd; Hedding St; San Fernando St; Santa Teresa Blvd; Saratoga Ave; Stevens Creek Blvd; Tully Rd; and Winchester Blvd (see Attachment 1).

The scope of work in the funding agreement will include implementing ATSPM's at 100 intersections along the corridors identified above to enhance signal operations through the application of high-resolution signal performance data, detection failure reports, and data analytics. The scope also includes procurement of all necessary software licenses to implement ATSPM, upgrade of traffic signal control cabinets to TS-2 capability and installation of additional video detection equipment where required (vendor dependent), integration with 3rd party travel time detection devices, and securing services for data validation and signal retiming. ATSPM technology will enable DOT staff to review signal system performance for travel reliability through more consistent and timely signal timing adjustments, support aggressive multi-modal goals by better supporting pedestrian, bicycle, and transit travel through more efficient allocation of available green time, and support technology/maintenance investment decisions.

The total amount of the grant funding is $1,872,556, which consists of $1,399,898 in reimbursable grant funds and a local match of $472,658. For efficiency and cost effectiveness, MTC will perform high level system engineering and project evaluation work on behalf of agencies receiving the IDEA grant. MTC has estimated that San Jose's portion work will cost $82,300. To cover this cost, MTC will retain $57,210 of the grant funds, and will invoice the City in an amount not to exceed $25,096 (match agreement). The remaining balance of grant funds totaling $1,342,688 will be used to reimburse San Jose led work (reimbursement agreement). Two separate agreements have been established accordingly.

The project will be initiated in 2019 and be completed in approximately three years. Included in this timeframe is a Request for Proposal process to procure the ATSPM system.

EVALUATION AND FOLLOW-UP

Award of contract to provide services related to the grant is targeted to bring forward to the City Council in June 2019, and if that timeframe cannot be reached, then in August 2019.

PUBLIC OUTREACH

This memorandum will be posted on the City's website for the September 11, 2018 City Council meeting.

COORDINATION

This memorandum has been coordinated with the City Attorney's Office and the City Manager's Budget Office.

COMMISSION RECOMMENDATION/INPUT

No commission recommendation or input is associated with this action.

FISCAL/POLICY ALIGNMENT

The recommended action aligns with the Transportation and Aviation Services CSA Outcome related to providing safe and secure transportation.

COST SUMMARY/IMPLICATIONS

The 2019-2023 Adopted Capital Improvement Program reflects programmed funding through FY2019-20 for the IDEA grant award ($1,399,898), required local match ($472,658) and additional City funds ($67,444). The grant funds and required local match will support the procurement and deployment of ATSPM technology at 100 signalized intersections in San José. Of the $1,940,000 programmed for the project in the Building and Structure Construction Tax Fund, $1,000,000 is anticipated to be encumbered/expended in FY2018-19. An additional $219,000 from the Safety-Traffic Signal Modifications/Construction appropriation in the Building and Structure Construction Tax Fund will be used to augment the grant to fund the required software licensing ($286,194) that was not covered by the final grant award, bringing total funding for the project to $2,158,750.

BUDGET REFERENCE

The table below identifies the fund and appropriations to implement the IDEA grant.

Fund #	Appn #	Appn Name	Total Appn	Rec. Budget Action	Amt. for Grant Project	2018-2019 Proposed Capital Budget Page	Last Budget Action (Date, Ord. No.)
429	R110	Revenue from the Federal Government	$4,883,000	N/A	$1,400,000[1]		6/19/2018 78671
429	410K	Automated Traffic Signal Performance Measures	$1,000,000	N/A	$1,940,000[2]	V-728	6/19/2018 30124
429	7434	Safety-Traffic Signal Modifications/ Construction	$3,010,000	N/A	$218,750	V-771	6/19/2018 30124

1 $400,000 is budgeted in 2018-2019, reflecting project timing, anticipated invoicing, and reimbursement. The remainder of the grant award ($1,000,000) is programmed in 2019-2020.
2 $1,000,000 is budgeted in 2018-2019, reflecting advance project funding and reimbursement. The remaining $940,000 is programmed in 2019-2020.

CEQA

Exempt, File No. PP14-017. 15301(c) Existing highways and streets

/s/
JOHN RISTOW
Acting Director of Transportation

For questions, please contact Ho Nguyen, Senior Transportation Specialist in the Department of Transportation, at (408) 975-3279.

Attachment 1

ATSPM Corridors