ALAMEDA County Transportation Commission
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PRE-SOLICITATION PROJECT BRIEFING
Toll System Integration & Maintenance Services for Alameda CTC's I-680 Sunol Express Lanes

*** All information presented herein is subject to change. ***

BACKGROUND

Alameda CTC is the project sponsor and implementing agency for this project. Alameda CTC was created in 2012 as a Joint Powers Authority (JPA), combining the functions and responsibilities of the Alameda County Congestion Management Agency (ACCMA) and the Alameda County Transportation Improvement Authority (ACTIA). Alameda CTC is responsible for the planning, development, operations, and financing of transportation projects, including Alameda County Express Lanes.

The Sunol Smart Carpool Lane Joint Powers Authority (Sunol JPA) was created in 2006, pursuant to a Joint Exercise of Powers Agreement between ACCMA, ACTIA and the Santa Clara Valley Transportation Authority. The Sunol JPA was formed to plan, design and construct, and then administer the operation of a value pricing high occupancy vehicle (HOV) program on the Sunol Grade segment of Interstate 680 in Alameda and Santa Clara Counties. The Sunol JPA began project operations when the I-680 Southbound Express Lane was opened to traffic on September 20, 2010. The Sunol JPA will operate the I-680 Sunol Southbound and Northbound Express Lane when the facility is opened to the general public in the near future. Alameda CTC serves as the Managing Agency for the Sunol JPA.

PROJECT DESCRIPTION

The I-680 Sunol Express Lanes Project will consist of two phases; an I-680 Sunol South Phase and an I-680 Sunol North Phase, as follows:

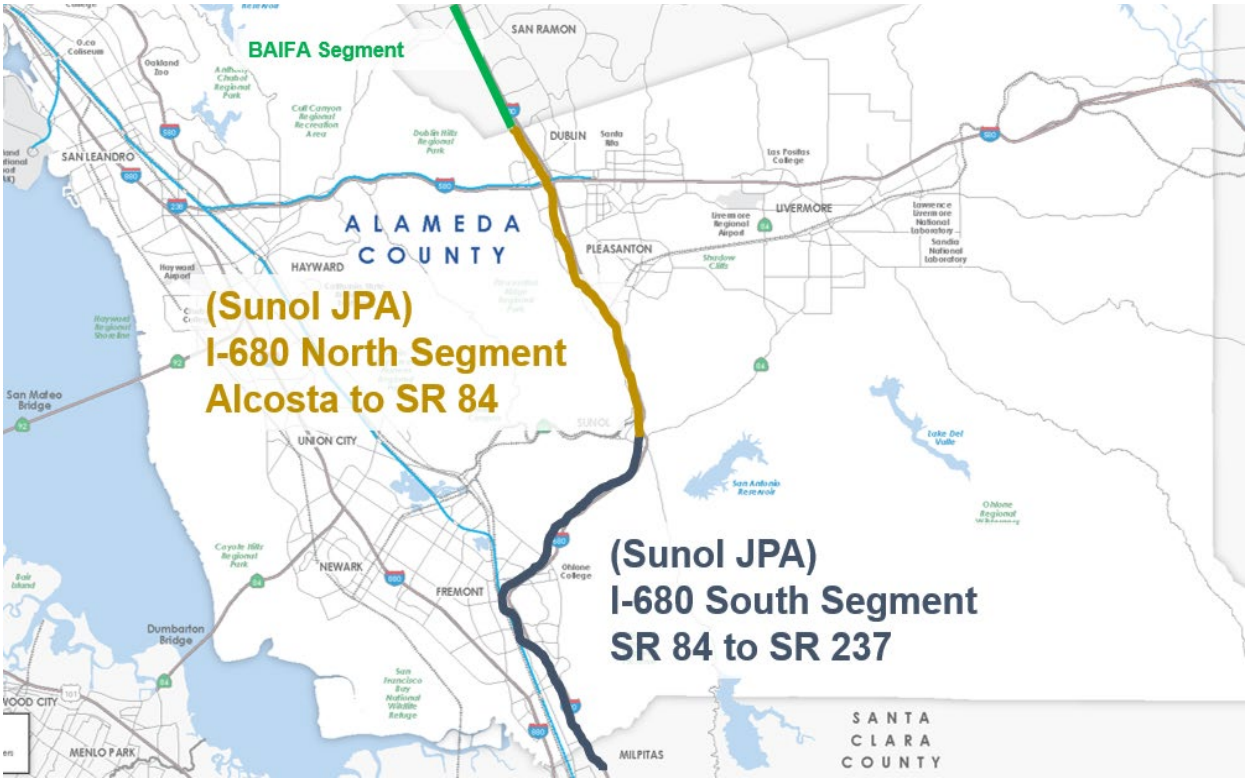
- I-680 South Phase – Southbound between SR-84 and SR-262, and northbound between South Grimmer Boulevard and SR-84.
- I-680 North Phase – Southbound between Alcosta Boulevard and SR-84, as well as toll system infrastructure to support a future northbound express lane.

On completion of the South Phase (the first phase of the project), Alameda CTC will operate near-continuous access Express Lanes in both directions through the South Segment of the corridor from South Grimmer Boulevard to SR-84. On completion of the North Phase (second phase following South Phase completion), Alameda CTC will have operating Express Lanes extending all the way to Alcosta Boulevard in the southbound direction only. There is provision

for toll system infrastructure to support a future phase of building out the northbound Express Lanes.

Figure 1 below illustrates the location of these improvements.

Figure 1 – Alameda County I-680 Express Lanes Map



This Project will result in a toll system covering both the South Segment and the North Segment:

- As above, the Southern Segment includes both north and southbound directions.
- The Northern Segment includes the southbound direction only, with provisions for the future northbound.
- The Southbound Express Lanes will contain 5 pricing zones – 2 in the North Segment, and 3 in the South Segment.
- The Northbound Express Lanes will have 2 pricing zones in the southern segment only.

TOLL SYSTEM INTEGRATOR (TSI) SCOPE OF WORK

The TSI selected to perform these services shall design, develop, furnish, fabricate, install, integrate, test, and maintain a fully functioning toll collection system in support of Alameda CTC's toll implementation and operations. Within the fully functioning toll system, the following areas are defined as critical areas of scope. These elements are the core functions of the

system; impact design and development efforts; are complex in nature; and will require thorough testing prior to deployment on the first corridor.

1. Key System Elements

Architecture

- Requirements and assumptions regarding location of all equipment including communications within a corridor
- Sample layout of equipment, communications, and power for type of equipment location
- Preliminary architecture for each type of Read Point
- System security and access control
- Data storage, access, and recovery
- Redundancy, backup, disaster recovery, and business continuity
- End to end data flows including both internal and external interfaces
- Sizing for capacity
- Express Lanes Regional Operations Center integration
- FasTrak® Regional Customer Service Center integration
- Automatic license plate recognition (ALPR)
- Lane operation modes
- Maintenance Online Management System (MOMS)
- Back-up Host and Operations location

Communications

- Communications network architecture
- Communication equipment functions and installations
- Network security, protection, and access
- Network configuration
- Internet protocol (IP) addressing scheme

Lane Level Systems

- Vehicle detection and separation
- Vehicle processing in exception cases
- Violation enforcement system (VES)
- Variable toll message signs (VTMS) operations and failure logic
- Traffic monitoring systems (TMS)
- Data collection and storage in local servers
- Messages between controllers and Host
- Functionalities during equipment failures
- Closed-circuit television (CCTV) system

Host Level

- Toll rate setting including dynamic pricing algorithm
- Trip transaction building
- Toll rate overrides and corrections
- Financial and audit applications
- Reporting and monitoring
- User and system interfaces
- Enforcement user interface for CHP
- Diagnostics

The TSI will not provide:

- Any civil or heavy construction work
- The regional backhaul communications network to the Host and beyond
- Roadway operations of the express lanes
- Transponders and transponder distribution
- Back-office services such as account management, call center operations, payment processing, etc.

2. Delivery

The system will be delivered in 2 basic phases – South Phase (in 2 parts) and then the North Phase. Delivery of the South Phase is expected to commence with Notice or Proceed, and the North Phase infrastructure may be ready for installation as early as September 2024.

South Phase

The civil infrastructure for the South Phase has been completed. The existing system integrator installed toll system equipment throughout the South Segment. During the South Phase of the Project, the existing system integrator will have the following equipment operating within the South Segment:

- Nine (9) Toll Sites;
- Nineteen (19) Enforcement Beacon sites where zone controllers and an AVI system are installed to provide control of Enforcement Beacons;
- Sixteen (16) CCTV cameras; and
- Fifteen (15) VTMSs.

Network communications will be accomplished using agency-owned fiber optic cable running the length of the corridor. Communications cabinets will be in place at each end of the fiber run that will house the equipment needed to access the leased communications connections to the Host.

The scope of work for South Phase Part 1 generally includes:

- Project initiation (kickoff, baseline Project Implementation Schedule, Project Management Plan, etc.)
- Design, development of a Host System
- Design, test, installation, and integration and set to work of a Roadside System, including 19 Toll Sites and 4 Enforcement Beacon sites, for the Southern Phase of the Project
- Documentation (Detailed Design Document (DDD), Test Plans, Transition Plan, Installation Plans and Drawings, etc.)
- Software development, demonstrations, additional documentation, and Factory Acceptance Test (FAT)
- Onsite First Installation Test (OFIT)
- Site Commissioning Testing (SCT)
- System Readiness Testing (SRT) and Go-Live of South Phase, Part 1

The scope of work for South Phase Part 2 generally includes:

- Installation and SCTs of five (5) Toll Sites
- Integration and progressive go- lives into the ETS
- Operational Performance Test for the complete South Phase
- Operations and Maintenance for the South Phase

North Phase

The tasks for North Phase Part 2 to extend the northbound I-680 EL from SR-84 to Alcosta Boulevard will be identical to North Phase Part 1. Details related to the associated Work, costs, and schedule for North Phase Part 2 will be negotiated as an amendment to the Agreement if Alameda CTC decides to act on this option.

North Phase Part 1 will consist of the following:

- Design and Documentation (including updates to previously submitted documents and development of documents specific to the North Phase)
- Software development or configuration changes that are required to support the integration of the North Segment into the ETS
- Procure all the cabinets and VTMS for North Segment for civil contractor to install
- FAT and OFIT if the North Phase Toll Sites have significant differences from the South Phase Toll Sites
- Installation and SCT for fifteen (15) Toll Sites, fourteen (14) CCTV Site, and thirteen (13) TDS Sites (with some sites being collocated)
- Readiness Testing of the complete North Phase Part 1
- Operational Performance Test after Go-live
- Start of Operations and Maintenance for North Phase Part 1

3. Key Operating Concepts

Alameda CTC Express Lanes include several key concepts which have been structured into a set of System Requirements, Key Performance Indicators and Business Rules. The sum of these elements underpins the system design, functionality, management, and operation of the Express Lanes with the fundamental concept being that the Express Lanes will operate in an Electronic Toll System (ETS) mode using both RFID tags and License Plate recognition technology.

Other key concepts that serve as a foundation for Alameda CTC operations and Business Rules include:

- Open Access – The express lanes will be configured for continuous open access, with restricted access only as needed for traffic safety or management purposes. In open access segments, there will be no barriers, solid striping, or buffers between the express lanes and the general-purpose lanes.
- Toll Points – Toll Points will be spaced approximately one per mile. ("Toll Points" denote the points along the Expressway at which the toll system detects vehicles, reads transponders, and captures images.)
- Zones – The Southbound direction of the Express Lanes will comprise 5 zones and Northbound direction 2 zones.
- Zone Pricing – Toll pricing will be zone-based with a single toll rate charged per zone.
- Dynamic Pricing – Toll rates will be determined and set dynamically, based on traffic speed and density. There may be pre-defined periods or circumstances when express lane tolls are not charged or are charged at a flat rate.
- Variable Toll Message Signs (VTMS) – VTMS will be used to display toll rates to drivers at multiple points along each facility. Signage will display tolls for the current roadway zone and segment
- Locked-In Rates – The toll rates displayed on a VTMS are locked in for drivers as they enter a zone/segment.
- Trip Building – Multiple, consecutive zone tolls will be combined into a single trip price for posting to customer accounts.
- Enforcement Beacons – Roadside beacons will be used to support HOV enforcement of switchable transponder setting.
- Traffic Management System (TMS) – The toll collection system includes technologies, which will collect traffic data for use by the dynamic pricing algorithm as well as other traffic management efforts.
- Closed-Circuit Television (CCTV) – The toll collection system includes a CCTV subsystem for use by Express Lanes operations staff.
- FasTrak® Transponders – Express Lane facilities will read switchable transponders to be procured by BATA, as well as standard FasTrak® transponders already in circulation. The

switchable transponders will have the functionality to declare occupancy (1, HOV 2+, or HOV 3+).

- HOV Operational Hours – Express Lane operational hours will coincide with HOV hours for each respective corridor.
- Regional Customer Service Center (RCSC) – Express Lane transactions will be sent to the existing FasTrak® RCSC for posting to customer accounts, revenue collection, and exchange with California Toll Operators Committee (CTOC) interoperable agencies.
- Regional Express Lane Agencies – The TSI will not be integrating into any existing toll systems operated by other agencies in the Bay Area. However, Alameda CTC intends to continue close coordination to ensure a consistent customer experience with neighboring express lanes in the region.
- Roadside Communications Network – The scope of this RFP includes the design, development, and maintenance of the roadside communications network necessary to support connectivity along the corridor. Alameda CTC shall provide the backhaul communications network to the Express Lanes Host System.