

**THIS STAFF REPORT COVERS CALENDAR ITEM NO.: 11
FOR THE MEETING OF:** October 8, 2009

TRANSBAY JOINT POWERS AUTHORITY

BRIEF DESCRIPTION:

Authorize the Executive Director to enter into an Intergovernmental Agreement with the Alameda-Contra Costa Transit District (AC Transit) to perform Federal Transit Administration (FTA) Urban Partnership Agreement Bay Bridge Corridor studies.

SUMMARY:

AC Transit has received \$350,000 in FTA Urban Partnership Agreement funds, which the AC Transit Board of Directors recently authorized for the study of Bay Bridge Corridor future traffic conditions ("Bay Bridge Contra-Flow Lane Study"). The end result of this work would forecast 2030-35 peak period traffic conditions on the Bay Bridge and propose improvements to ensure adequate and effective transit operations on the Bridge into the new Transbay Transit Center (TTC).

The TJPA has several interests in this work:

1. The new TTC is designed to accommodate increased bus ridership into downtown San Francisco. Good transit access on the Bridge is in the interest of the TJPA.
2. The TJPA has already developed and participated in several ridership studies in the corridor, and is the logical entity to continue this work.
3. Pelli-Clarke-Pelli Architects has initiated design of the new Bus Ramps into the TTC, and the findings of this study could impact the design of the Bus Ramps.

Accordingly, AC Transit staff has proposed that TJPA contract for and manage the scope of work included in the federal grant, and that AC Transit would reimburse the TJPA from proceeds of the federal grant. The intergovernmental agreement is attached.

The work would be performed under existing TJPA contracts, including the URS Program Management/Program Controls agreement and the Pelli Clarke Pelli Architects design contract, and would continue the travel demand work already performed to ensure consistency with the results and that the results will inform the design of the TTC. A draft Scope of Services is attached.

A multi-agency technical advisory committee (TAC) would oversee the study results. This TAC will include representatives from MTC, Caltrans, TJPA, SFMTA, AC Transit, and the SFCTA.

The work is expected to be completed by June 30, 2010, although initial results will be developed early in 2010.

RECOMMENDATION:

Staff recommends that the Board of Directors authorize the Executive Director to execute an Intergovernmental Agreement with AC Transit for the purposes of conducting and funding the Bay Bridge Contra-Flow Lane Study.

ENCLOSURES:

Resolution
Draft Scope of Services
Intergovernmental Agreement

**TRANSBAY JOINT POWERS AUTHORITY
BOARD OF DIRECTORS**

Resolution No.: _____

WHEREAS, The Alameda-Contra Costa Transit District (AC Transit) is the recipient of a \$350,000 grant from the Federal Transit Administration's (FTA) Urban Partnership program to study future traffic conditions on the Bay Bridge Corridor; and

WHEREAS, The AC Transit Board of Directors has authorized the use of the Urban Partnership grant funds for the Bay Bridge Contra-Flow Lane Study; and

WHEREAS, This study will identify potential delays to buses bound to the new Transbay Transit Center; and

WHEREAS, This study will identify improvements that could mitigate these future year traffic delays, allowing the roadway network to deliver buses efficiently into the Transit Center; and

WHEREAS, This study could influence the design of the Transbay Transit Center bus ramps, which are currently in design; and

WHEREAS, The Transbay Joint Powers Authority has managed several earlier Bay Bridge Corridor traffic and ridership studies and is willing and able to manage the studies proposed in the FTA Urban Partnership grant; and

WHEREAS, AC Transit has indicated that its preference is to have the TJPA manage and contract for the services funded by the grant, and that AC Transit would reimburse the TJPA for all costs associated with such services from grant funds; now, therefore, be it

RESOLVED, That the TJPA Board of Directors authorizes the Executive Director to execute an Intergovernmental Agreement with the Alameda-Contra Costa Transit District to procure and deliver the Bay Bridge Corridor Study Contra-Flow Lane Analysis with funding provided by the Alameda-Contra Costa Transit District from its FTA Urban Partnership Agreement in the amount of \$350,000.

I hereby certify that the foregoing resolution was adopted by the Transbay Joint Powers Authority Board of Directors at its meeting of October 8, 2009.

Secretary, Transbay Joint Powers Authority

Bay Bridge Corridor Congestion Study

Proposal for Traffic Forecasting Services, Operational Analysis and Engineering Studies

INTRODUCTION

Forecasts from several sources indicate that Bay Area traffic will increase significantly in the next 30 years, and that traffic conditions in the Bay Bridge Corridor and at the Bay Bridge Toll Plaza could degrade. If this degradation is significant, then the Toll Plaza's transit and High-Occupancy Vehicles (HOV) queue jumps may no longer provide effective incentives for transit vehicles and HOVs. If the degradation is more extreme, then the Toll Plaza queues may extend into the distribution structure or, alternatively, onto the bridge itself. If the degradation occurs on the West Approach (as it does in the afternoon currently), then traffic could queue across the Bay Bridge in the morning.

The Association of Bay Area Governments (ABAG) forecasts that employment in San Francisco will increase by about 10,000 jobs annually, or by 300,000 jobs over the next 30 years. About 40 percent of those jobs are projected to be filled by East Bay commuters. In addition, San Francisco residents have increasingly commuted out-of-county for the last 30 years, resulting in additional AM southbound commuting on the Central Freeway and Highway 101. As commute demand grows, traffic demand will also increase and the need to preserve the Bay Bridge Corridor's transit capacity becomes critical. AC Transit plays a significant role in delivering employees to San Francisco's expanding employment base. Congestion on the Bay Bridge through the Toll Plaza and within the MacArthur Maze will compromise commuter bus service including AC Transit's Transbay Express service. Protecting transbay bus service efficiency is especially vital to handling job growth in San Francisco since BART is projected to reach its Transbay peak hour capacity by about 2035.

The ABAG forecasts are reflected in the various models developed for the MTC, Alameda County CMA, and the San Francisco County TA (SFCTA). In addition, the Transbay Joint Powers Authority (TJPA) has developed enhanced peak hour models using the MTC model outputs and these reports have been reviewed by MTC staff. The SFCTA CHAMP model indicates that traffic volumes on the Bay Bridge are likely to increase by about nine percent in the AM peak westbound and eight percent in the PM peak eastbound by 2015, and by up to an additional 25 percent in each direction by 2035. This would amount to volumes well over the corridor capacity – more than 35,000 vehicles per direction in the AM and PM peak periods. The TJPA work, based on MTC's model, indicates that by 2030 auto demand could increase by about 20 percent.

Current Caltrans counts for the average peak hour indicate about 15,800 vehicles in the queue at the Bay Bridge Toll Plaza. The capacity of the bridge is about 10,000 vehicles, indicating that 50 percent of the vehicles are queued for some period (or almost 6,000 vehicles). If the travel models are correct, and even assuming the lowest projected increase, the total vehicles would still increase to almost 19,000, and the total queue would increase by 50% to almost 9,000 vehicles. A key question is whether the East Bay freeway system can actually deliver that many vehicles to the Toll Plaza in a peak hour.

Toll Plaza Operations and Metering

During the morning commute period Caltrans uses the metering lights just west of the toll plaza to control traffic congestion on the bridge, tolerating backups east of the toll plaza in lieu of excessive congestion on the bridge spans. When the metering lights are in normal peak commute period operation, backups typically form and can extend through the toll plaza while the traffic on the bridge generally flows at 40-50 mph (50 mph is the posted speed limit). Westbound carpool and bus traffic avoids much of the chronic morning congestion at the toll plaza by utilizing carpool bypass lanes.

However, slowing of traffic at the metering lights creates back ups that extend into the weaving portions of the Maze and impact traffic flow on the multiple freeways connecting in the Maze. For transit and HOVs, these queues already impact operations on the worst days. The West Grand connection for transit/HOVs is especially impacted on these days. In the future, these queues may increase making access to the queue jumps increasingly difficult, resulting in much slower transit.

Transbay Terminal Transit Center

The Transbay Joint Powers Agency (TJPA) has engaged Pelli Clarke Pelli Architects (PCPA) to design the new Transbay Transit Center (TTC). Design is proceeding, with the Bus Storage Facility and Bus Ramps now in design development. These designs include the construction of new ramps and associated bridges to and from the transit center and adjacent city streets that will replace existing ramps and provide direct bus access to and from the transit center. The current program provides capacity for more than 300 buses per hour both on the ramps and in the TTC. These buses could deliver about 20,000 passengers across the bay in the peak hour.

The purpose of this study is to identify anticipated operational problems on the bridge and in the Toll Plaza that would affect the downstream function of the new terminal, and develop solutions that could be incorporated into the TTC design.

Congestion charging and tolling

Charging tolls for access to existing facilities at periods of peak demand has been shown to have a positive impact on reducing traffic and pollution, while providing a needed funding source for transportation infrastructure. MTC's Regional Transportation Plan (RTP) places a high priority on a region-wide system of High Occupancy Toll (HOT) lanes, replacing the existing HOV system and generating surplus revenues after bond payments. These revenues could in turn, support transit services within those corridors.

Should the analysis identify congestion problems in the Toll Plaza and on the bridge, congestion pricing (in various forms) could be a considered alternative to mitigate the anticipated traffic problems.

SCOPE OF SERVICES

The proposed study will focus initially on the anticipated operation of the Bay Bridge, and the analysis will include the bridge, the Toll Plaza, the distribution structure and the freeways leading into the Bay Bridge, and the Bridge itself to the connection with the Central Freeway (westbound analysis only). The result will be a traffic model, using the VISSIM software tool, that simulates the operation of the facility using the previously completed and accepted model tool, adapted to the larger corridor and testing traffic in the 2020 and the 2030-2035 period. The traffic inputs would be developed from current 2020 and 2030-35 projections.

Should unacceptable congestion be identified, the study will identify a range of alternative solutions to consider for further analysis.

Stakeholders for this study would include Caltrans, MTC/Bay Area Toll Authority (BATA), San Francisco County Transportation Authority (TA), Alameda County CMA, AC Transit, Westcat, San Francisco MTA, the TJPA and the Treasure Island Development Authority and Treasure Island Community Development LLC.

Work Tasks

Task 1 Objectives – This task will establish the operational objectives that represent the minimum performance criteria for bridge users and transit passengers. Criteria will include maximum delay for automobile users, maximum delay for transit users, maximum throughput for transit, reliability measures, effect on through traffic on the East Bay roadway system, etc. These criteria will be reviewed and endorsed by the Stakeholders and result in a set of study objectives.

Deliverable: *Operational Objectives, Operational Criteria*

Task 2 Data Collection/Previous Operational Studies – The consultant will review and summarize current traffic counts and incident data for the current bridge operation. The consultant will review Caltrans Bay Bridge operating protocol, including Toll Plaza metering, upstream ramp metering. We understand that BATA has developed substantial data to identify these issues in developing alternative designs for the Toll Plaza. In addition, a review of previous HOV studies that considered HOV access on the Bay Bridge will be performed. We will summarize these studies and measure the effectiveness of how well previous simulations predicted changes in conditions at the Toll Plaza.

Deliverable: *Memorandum on current counts, traffic conditions, history of operation practices and previous simulation results.*

Task 3 Future Year Projections – The consultant team would summarize travel projections for 2020 and 2030/35 for the Bay Bridge corridor based on the most recent modeling efforts. These efforts include MTC's Travel Forecasts for the 2009 RTP, Cambridge Systematics' estimates of Bay Bridge Corridor traffic contained in the *Caltrain Downtown Extension and Transbay Ridership Analysis* (Nov 2008), the Alameda County CMA and San Francisco County Transportation Authority (CHAMP) model findings, as well as information from the San Francisco TA's Congestion Pricing Study. Based on these models, the consultant team would develop a consensus AM peak hour and AM peak period travel demand for the Bay Bridge corridor and an AM peak hour and AM peak period vehicle demand (by type such as SOV, HOV and truck) for the corridor that will be incorporated into the Operational Analysis. This information will be in the form of vehicle origins and destinations and will include:

- East Bay Origins into the Corridor – Based on traffic generation from logical East Bay bottlenecks and including all westbound/southbound traffic from the I-80/I-580 junction in Albany, westbound/northbound traffic from the I-580/SR-24 junction in Oakland, and westbound/northbound traffic from the I-880/I-980 junction in Oakland near Jackson Street.
- Treasure Island Origins into the Corridor – Based on the scenarios for new development on Treasure Island westbound into the corridor, and
- San Francisco Origins onto the West Approach and SB U.S. 101 – Based on southbound traffic generation and traffic assignments onto the West Approach and Central Freeway leading to U.S. 101 south.

These trips would be identified with destinations on the westbound Bay Bridge Corridor to downtown San Francisco and to U.S. 101, as well as the distributed trips from East Bay to East Bay locations that are active within the study area.

In addition, the consultant team would take a further step in model application by reviewing model performance within San Francisco County. This is to evaluate the adequacy of the model to perform dynamic traffic assignment. To obtain lessons learned and to ensure consistency in model results, the consultant team would focus this subtask on the PM peak demand, especially in downtown San Francisco. This will allow the team to assess the viability of this approach and will also develop information on factors that contribute and will contribute to traffic conditions on downtown streets. This work would require that the base year travel model be validated well for peak period and peak hour conditions for countywide and through traffic. The previous study was limited to validating the model in the Bay Bridge and Peninsula corridors. The consultant team will review the performance of the model within San Francisco County and make necessary modifications to mode choice and assignment models to meet validation criteria. If necessary, additional detail in network and zonal structure will be added. Base year highway volumes will be compared to traffic counts to ensure accuracy of the model. The final report will document the findings of this exercise and propose future tasks that might help improve the model to perform dynamic traffic assignment.

Deliverable: *Memorandum on consensus 2020 and 2030/35 Bay Bridge Corridor demand and Bay Bridge peak hour traffic demand. Development of downtown PM traffic forecasts incorporating dynamic traffic assignment.*

Task 4 Future Year Operations Analysis – The consultant team would use VISSIM to simulate the anticipated operation of the Bay Bridge in 2030/35 using the forecasts developed in Task 3. We anticipate using the model developed for BATA in previous work and updating it as necessary. The model will be calibrated with existing conditions prior to developing future year simulations. The analysis will focus on the AM westbound commute and will include the East Bay freeways leading into the Bay Bridge from agreed upon bottlenecks (such as I-80/I-580, I-580-24, and I-880) to the distribution structure, the Toll Plaza, the Bridge (including the new Treasure Island ramps), and the West Approach to south of the junction with the Central Freeway. We would work with the Stakeholders to develop realistic assignments of traffic into the system. The consultants would develop simulations for the year 2020 and 2030/35 and the VISSIM outputs will include estimates of travel time, delay for various modes, person delay, queue lengths, impact on other freeways, and measurements against the criteria developed in Task 1.

Deliverable: *VISSIM simulations for 2020 and 2030/35 Bay Bridge, including Measurements of Effectiveness.*

Task 5 Future Year Operations Analysis Operations Alternative – Based on the simulations output of Task 4, the consultant team will make modifications to the Toll Plaza in the VISSIM model to determine sensitivity to low-cost changes and impacts of more significant improvements. The range of improvements will be based on the findings in Task 4 and discussions with the Stakeholders. The number of additional simulations will be limited to the budget, however we anticipate providing four additional simulations based on differences in geometry, lane configuration, and traffic volumes.

Deliverable: *Three additional VISSIM simulations for Bay Bridge (forecast year TBD), as modified.*

Task 6 Initial Findings – Working with the Stakeholders, the consultant team would summarize the results of the VISSIM simulations, discuss options for mitigating identified concerns, and suggest options for further study. Included in the Initial Findings will be impacts on:

- Toll Rates (Congestion Pricing)
- Operations
- Lane Configuration
- Highway Geometry
- Highway Technology
- Transit Routings

Deliverable: *Report: Draft Findings and Recommendations, Bay Bridge Corridor Traffic*

Task 7 Final Report – The consultant will summarize all of the information, incorporate Stakeholder comments, and make changes from the draft report as appropriate. The final report will be presented to the Stakeholders to facilitate consensus on a detailed and final scope for additional corridor study work.

In addition, the Final Report will serve as a useful example of good practice in corridor planning. The intent is a well-written document that the Federal Transit Administration can share with other agencies and the local stakeholders can use successfully. The Final Report will include and document the data collection performed, model development, validation/testing, application and results, lessons learned, and identification of future work activities.

Deliverable: Final Report

SCHEDULE

The following schedule is proposed to meet the design development period for the Transbay Transit Center.

Task	Scope	Duration
Task 1	Objectives	1 Month
Task 2	Data Collection/Previous Operational Studies	Concurrent with T1
Task 3	Future Year Projections	Concurrent with T1 + 2 Months
Task 4	Future Year Operational Analysis (VISSIM)	1 Month
Task 5	VISSIM Scenario Alternatives	1 Month
Task 6	Initial Findings	1 Month
Task 7	Final Report	2 Months
TOTAL		8 Months

ESTIMATED FEES

The above scope and schedule is estimated to require the following funding levels:

Task	Scope	Estimated Fee
Task 1	Objectives	\$ 10,000
Task 2	Data Collection/Previous Operational Studies	\$ 30,000
Task 3	Future Year Projections	\$150,000
Task 4	Future Year Operational Analysis (VISSIM)	\$ 70,000
Task 5	VISSIM Scenario Alternatives	\$ 30,000
Task 6	Initial Findings	\$ 40,000
Task 7	Final Report	\$ 20,000
TOTAL		\$350,000

**MEMORANDUM OF UNDERSTANDING
BETWEEN THE TRANSBAY JOINT POWERS AUTHORITY
AND
THE ALAMEDA CONTRA COSTA TRANSIT DISTRICT
FOR THE PERFORMANCE OF A BAY BRIDGE CORRIDOR CONGESTION STUDY**

This Memorandum of Understanding (MOU) is entered into this ___ day of ___ 2009, by and between the Transbay Joint Powers Authority (hereafter "TJPA") and the Alameda Contra Costa Transit District (hereafter "AC Transit" and/or "District").

RECITALS

WHEREAS, TJPA has entered into a professional services contract with Pelli Clarke Pelli Architects for final design of the Transbay Terminal and associated bus ramps; and

WHEREAS, the Pelli Clarke Pelli Architects contract was procured and awarded in accordance with Federal Transit Administration (FTA) Third Party Contracting Requirements; and

WHEREAS, TJPA has determined that it will benefit from updated analysis of congestion on the Bay Bridge Corridor, allowing it to investigate flexible designs to mitigate future year bridge congestion; and

WHEREAS, TJPA is willing to add work to the existing scope of its contract with Pelli Clarke Pelli Architects in order to obtain an analysis of congestion of the Bay Bridge Corridor as set out in the attached work scope which is incorporated herein and made a part of this MOU; and

WHEREAS, District has received \$350,000 in FTA grant funds and has received FTA approval to pass through these funds to TJPA for the performance of the Bay Bridge Corridor Congestion Study under the Pelli Clarke Pelli Architects contract.

NOW THEREFORE, in consideration of the terms and conditions set forth herein and for other good and valuable consideration, the Parties hereto agree as follows:

1. District agrees to pass through \$350,000 in FTA section 5339 funds to TJPA to fund the Bay Bridge Corridor Congestion Study to be performed by Pelli Clarke Pelli Architects, through an expansion of the scope of its existing contract with TJPA.
2. TJPA shall submit invoices to District for reimbursement of eligible project costs in a form acceptable to District. Invoices should include time period for the invoice; itemized staff charges to the project; itemized payments to the consultant; and total funds being requested for the invoice period. Each invoice should include documentation of claimed expenditures as a condition of cost reimbursement.
3. District will process invoices submitted by TJPA within 45 days of receipt of invoice if submitted in the proper format and accompanied by acceptable supporting documentation of expenses.
4. The performance of work for the Bay Bridge Corridor Congestion Study will commence on _____ and be completed no later than _____

_____. TJPA shall submit quarterly activity reports to District detailing project activities and costs for the preceding quarter. These quarterly activity reports will form the basis of quarterly reporting by District to FTA on the expenditure of the pass-through funding.

5. Neither party shall assign, transfer or otherwise substitute its interest in this MOU, nor its obligations, without the other party's prior written consent.
6. Neither District, nor any director, officer, agent or employee thereof shall be responsible for any damage or liability occurring by reason of anything done or omitted to be done by TJPA under or in connection with any work, authority or jurisdiction delegated to TJPA under this MOU. It is understood and agreed that TJPA shall fully defend, indemnify and hold harmless District, its directors, officers, agents and employees from all claims, suits, or actions of every nature, kind and description brought for or on account of injury or damage occurring by reason of anything done or omitted to be done by TJPA under or in connection with any work, authority, or jurisdiction delegated to TJPA under this MOU.
7. Neither TJPA nor any director, officer, agent or employee thereof shall be responsible for any damage or liability occurring by reason of anything done or omitted to be done by District under or in connection with any work, authority or jurisdiction delegated to District under this MOU. It is understood and agreed that District shall fully defend, indemnify and hold harmless TJPA, its directors, officers, agents and employees from all claims, suits, or actions of every nature, kind and description brought for or on account of injury or damage occurring by reason of anything done or omitted to be done by District under or in connection with any work, authority, or jurisdiction delegated to District under this MOU.
8. This MOU may be terminated by 60 days prior written notice to the other Party.
9. This MOU may only be modified by written agreement of the Parties.
10. This MOU is entered into in the State of California and shall be interpreted in accordance with the laws of the State of California.

WHEREFORE, the Parties have entered into this MOU as of the day first written above.

**For the
Alameda-Contra Costa Transit District**

**For the
Transbay Joint Powers Authority**

Rick Fernandez, General Manager

Maria Ayerdi-Kaplan, Executive Director

Approved as to form

Approved as to Form:

Kenneth C. Scheidig, General Counsel

TJPA Legal Counsel