



REGULAR BOARD MEETING
JULY 26, 2007

PROJECT: UNIVERSAL FARE SYSTEM – TRANSIT ACCESS PASS

**ACTION: CREATE A NEW LIFE OF PROJECT BUDGET FOR METRO RAIL
GATING STUDY AND AMEND BOOZ ALLEN CONTRACT**

RECOMMENDATION

- A. Establish a life of project (LOP) budget for the UFS / TAP barrier gate analysis in the amount of \$999,663 and include the project in the FY08 capital program budget;
- B. Amend the FY08 budget to add in \$999,663 expenditures and \$999,663 Prop A35% revenues for the gating project;
- C. Authorize the Chief Executive Officer to execute Contract Modification No.9 to Booz Allen Hamilton, Contract PS-4610-1026, to complete the Metro Gating Study in an amount not to exceed \$400,000, increasing the total contract value from \$9,025,250 to \$9,425,250; and
- D. Monitor progress of pending Proposition 1B funding.

BACKGROUND

At the April 2007 EMAC and Operations Committees, Directors Burke & Fasana directed staff with the following:

- 1. Direct the existing UFS/TAP fare technology expert to complete a finalized scope of work for gating the Metro Rail System and deploying new distance based fare initiatives that will enable the full implementation of the policy direction given by the Board for transit security improvements based on Metro's risk-based Security and Emergency Preparedness Plan (SEPP) and the Regional Transit Security Strategy (RTSS) for a cost not to exceed \$400,000 and,
- 2. Instruct the CEO to return to the Board in May 2007 at the Executive Management and Operations Committees (respectively) with:
 - A funding plan for the procurement of the barrier gates, bus validators, and the technical oversight consultant to oversee the implementation.

- Provide a complete procurement strategy and schedule that includes the design, build, test, and implementation of barrier gates to improve security and safety of patrons traveling on all Metro Rail lines with options for implementing distance based fares on Metro bus and rail systems.

RATIONALE

To achieve the directives from the aforementioned Board motion, staff has completed the final scope of work, as described in Attachment A, in an amount not to exceed \$400,000 by fare collection expert Booz Allen Hamilton.

The study will aid in identifying methods to achieve multiple objectives and benefits that can be obtained as a result of gating including: implementation of distance-based fares; increased security protection and assured fare collection; more reliable and accurate information as to ridership (both in gross trip counts and point to point ridership information, including time of day information); integration with parking revenue collection and other retail aspects of Metro's transportation oriented development (TOD) program and; the attendant revenue opportunities that are presented by utilization of TAP technology with credit cards and card-issuer financial institutions.

Also included is a draft Procurement Strategy and Schedule, Attachment B.

Staff has also recently met with Metro Transit Security to explore opportunities to secure Proposition 1B funding. Through our discussions, it is our mutual recommendation to monitor the pending legislation with Government Relations on how this legislation progresses over the next several months, and fully ascertain if Los Angeles is successful in obtaining additional transit security funding with provisions to integrate added functionalities into Metro fare collection equipment, including fare gates. The status of the legislation will be considered before the final Gating Study is completed to allow security features to be included into the Fare Gating Technical Specification as appropriate.

In addition, through contacts with our hardware and software providers and other suppliers with significant contracts and involvement with the defense and transportation industries, we are exploring further opportunities for federal funding to help defray gating costs.

FINANCIAL IMPACT

Funding for this capital project will be included in the FY08 proposed budget in Cost Center 3020 and CP #210094 the capital program. This project will be funded with Proposition A35% funds that have been reserved for rail rehabilitation. As an alternative, depending upon the outcome of pending Proposition 1B, this can also become a potential eligible funding source that can ultimately include future acquisition and installation of the capital equipment.

Use of Funds	FY08
1.1 System Configuration	\$251,196
1.2 Develop Cost estimate	\$ 94,017
1.3 Write Technical Spec	\$ 54,450
1.4 Labor	\$500,000
1.5 Contingency	\$100,000
Total Project Cost	\$999,663
Source of Funds:	
Prop A35%	\$999,663

ALTERNATIVES CONSIDERED

An alternative is to engage in a competitive solicitation for a fare collection expert; however, this would result in a protracted procurement process, and potentially result in the same outcome of Booz Allen being the selected consultant.

Also, through the UFS and TAP implementation process, the Board has directed a single point of accountability assigned to the consultant responsible for the UFS technical specification. Other alternatives would be inconsistent with this directive.

This alternative would add both cost and schedule slip. Minimally, 8 to 12 months will be added to the current process if this scope of work is competitively bid, and will cause concurrent delays with existing UFS and TAP contractors.

NEXT STEPS

Staff will return to the Board with the completed analysis in October 2007 at which time alternatives for installation of and funding for barrier gates on all Metro Rail systems, including Light Rail and Metro Orange can be presented. It will also include alternatives for potential implementation of distance based fares on bus and rail systems.

Also forthcoming in future months will be a discussion of modifications to the Municipal Operators UFS and TAP configuration. With expanded fleet sizes, new services such as Foothill’s “Silver Streak”, and the recent interest expressed by Santa Monica’s Big Blue Bus to engage in becoming TAP compatible, new regional needs have presented additional opportunities which must be further scoped and discussed. A comprehensive “needs assessment” will be presented as part of the October Gating Analysis and alternatives for regional revenue recovery through parking revenue, retail TAP card integration and usage through partnering with Metro’s TOD program users as well as the commercial banking industry through potential usage of credit/debit cards will also be discussed.

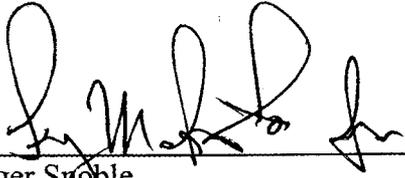
ATTACHMENT(S)

Attachment A: Booz Allen Detailed Scope of Work
Attachment B: Procurement Strategy & Schedule

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7/6/05

Roger Moliere
Chief, Real Property Management & Development



Roger Stoble
Chief Executive Officer

Attachment A

Scope of Services

STUDY OF INSTALLATION OF BARRIER GATES ON THE METRO RAIL

System Configuration

Survey Screening

The first task will be to quickly survey LACMTA rail lines to establish where fare lines and gates may be feasibly installed. This will build on and update work previously done by LACMTA (*Metro Rail Fare Gate Survey of Metro Red and Green Line Stations*, October, 2002).

Booz Allen will establish a set of criteria for placement of gates, such as:

- Infrastructure such as availability of communications and power.
- Adequate space for the gates themselves.
- Ability to provide barriers separating paid from non-paid areas.
- Multiple ground level entrances requiring additional fare lines and barriers.
- Sufficient space to avoid conflict or crowding at walkways, escalators, stairways and elevators.
- Logical space to locate optional customer service representative or passenger assistance telephone.
- Potential for miscreants to bypass the gates through the track right-of-way or other paths.
- Weather protection
- Safety and security issues such as availability of CCTV infrastructure to supervise the fare line.

With LACMTA representatives Booz Allen will revisit the stations identified in the 2002 study to confirm the observations made then are still accurate. We will also visit all other light rail stations so that LACMTA can document and develop a visual analysis similar to the 2002 work. Booz Allen will evaluate each station and provide a technical memo ranking the stations in their potential to safely and functionally support gates and a fare line.

Survey Screening Deliverables: Technical Memorandum ...

- Ranking stations on feasibility criteria
- Comments on LACMTA pictorial surveys of rail lines

Fare Gate Configuration

There are a variety of fare gates available in the market. This includes turnstiles, “flapper” gates (similar to those used at BART and WMATA) and high slide gates (similar to those used in London and Paris). Gates will also vary if distance-based fares

Attachment A

Scope of Services

are used, because passengers must have cards read on exit from the system. There is also the need to accommodate disabled patrons, children, and patron-operated devices such as wheelchairs, strollers, walkers, etc., as well as emergency egress and access for fire-life safety services.

If fare gates are not to be installed in the light rail stations, Booz Allen will consider (with MTA input) Relocation of the current Stand Alone Validators to more strategic locations for better patron accessibility and convenience. We will consider alternative physical guides that promote patron validation at stations with space and safety constraints. This will be based on the sample stations identified by LACMTA.

These fare gate alternatives have different impacts on fare evasion, operating cost, and capital cost. There may also be impacts on passenger security, as regards terrorism or other civil threats. There may also be issues of integrating with the rest of the system if gates are procured from a contractor other than Cubic.

Because of this, it is key to identify the preferred gate style early in the process. Therefore, Booz Allen will conduct a meeting with LACMTA stakeholders to select the type of fare gates to be the basis of the analysis. We will provide pictures of the gates and describe their availability and relative unit cost, and integration issues. The intent will be to have LACMTA select the type of gate on which the rest of the analysis will be based. (As discussed with LACMTA, Booz Allen's scope and pricing has assumed that, unless otherwise noted for specific tasks, LACMTA will procure the gates as a sole-source to the incumbent contractor. Other procurement approaches may have cost impacts on the consultancy.)

Fare gate configuration deliverables:

- Briefing paper to be used at the meeting
- Meeting with LACMTA stakeholders
- Technical memo summarizing the meeting and presenting the preferred gate configuration.

Impact on Fare Media and Tariff Options

Booz Allen will evaluate the impact of gates on fare media and tariff options. This will include means of accommodating cash-paying passengers and implementation of distance based fares.

Cash Paying Passengers

Cash paying customers must be accommodated at the gates. Booz Allen will present alternative approaches to address this issue, which may include (but not be limited to):

- Limited use smart cards
- Bank cards deploying smart card based credit/debit cards
- "Smart tokens"

Attachment A

Scope of Services

- Near Field Communication (NFC) technology using cell phones enabled with smart card chip
- Manually operated gates (with agent booth)
- Other electronic payment modalities to allow the occasional or non-TAP customer to gain entrance and exist with barrier system

Some of these alternatives may require additional equipment beyond the fare gates, for example modifications to LACMTA's TVMs or stand-alone vending devices for specialized fare media and/or add-value devices in the paid area of the station. Some (such as smart tokens) may also require capture of media in the fare gates for recycling. Fare policies (such as a single fare with no transfers, or allowing TAP cards to "go negative") may reduce the need for such equipment.

After discussion with LACMTA, Booz Allen will provide a brief technical memo evaluating and recommending the options most applicable to the Metro environment. With acceptance of this methodology, Booz Allen can proceed to evaluation of equipment quantities and operational impacts.

Distance Based Fares

LACMTA has expressed an interest in means of establishing distance based fares. It is possible that LACMTA will not gate all rail lines. There is also the question of whether bus lines should also be enabled for distance based fares as an alternative, rather than the current quasi-zone differentials for "express" service. Booz Allen will therefore provide a methodology for establishing distance-based fares in such a mixed environment. This will include consideration of tap-on-tap-off in a proof-of-payment and bus lines. (We will not look at specific fare policies, only the equipment and subsystems needed to be compatible with distance-based fares in a gated rail environment).

Fare Media and Tariff Deliverables:

- Issues paper outlining the approaches in both areas
- Meeting with LACMTA to discuss the issues paper and identify the preferred approaches
- Brief technical memorandum describing LACMTA's preferred means of supporting cash paying passengers and distance-based fares.

Impact on Station Throughput

Booz Allen will consider the impact that the selected fare gates are likely to have on station throughput. Based on the selected station configuration (gates, vending machines, add-value machines, etc.) we will utilize a queuing model to identify the number of equipments of each type needed for each station.

This model requires input from LACMTA in the form of passenger projections by station entrance, service levels, likely fare policies and acceptable queuing times. The same

Attachment A

Scope of Services

model has been utilized at LACMTA in the past and has proven effective in optimizing the equipment required. It will consider accommodation of surges (such as Metrolink passengers), cash paying customers (non-TAP), impacts to disabled patrons, and emergency access and egress.

The model will not consider whether the recommended equipment quantities are physically feasible for the environment, only the number required to attain the specified level of service.

Deliverable:

- Equipment quantities recommendation report

Qualitative impacts on passengers

Booz Allen will evaluate the impact of fare gates on the Metro customer population. We will analyze and report on the possible impact on customer education and public outreach due to the introduction of several major changes (distance based fares, fare gates, and new fare media) at the same time. The impact of fare gates to the ADA population will also be evaluated. Results of this evaluation will be included in the System Configuration Report.

Impact on fare evasion and inspection procedures

Impact to Fare Evasion

Booz Allen will consider the impact on fare evasion resulting from the selected gate configuration. Booz Allen will evaluate and estimate the impacts to fare evasion and fare revenue. We will review current fare evasion rates (as estimated by LACMTA) and estimates from other agencies with fare gates. Based on LACMTA's selected equipment configuration, we will discuss the ease of fare evasion and estimate likely evasion with the selected configuration.

We will also review the exposure to evasion by non-TAP patrons using different fare media, and the exposure (and solutions) to potential fraudulent fare media usage

Based on this analysis, we will estimate the cost of fare evasion as a part of the overall cost of operating the fare gate system in the Final Report.

Impact on Fare Inspection and In-Station Customer Support

Booz Allen will evaluate and estimate the impact fare gates may have on the cost of fare inspection and customer support in the stations. We will discuss with LACMTA stakeholders the need for customer service representatives in stations in the absence of fare inspectors. To the extent that such customer service support is needed and

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Scope of Services

warranted, it will be included as an operating cost (and capital cost if infrastructure such as booths are needed for customer service representatives).

Booz Allen will also consider fare inspection of Light Rail ungated Proof of Payment (POP) systems interfacing with fully gated Red Line stations.

The qualitative impact on fare inspection and customer support will be described in the System Configuration Report. Operating cost of fare inspection and customer support will be included in the operating costs in the Final Report.

Impact on Support Systems

Booz Allen will consider the impact on a number of support systems, such as maintenance, computer systems, and the TAP Service Center. These will be qualitatively described in the System Configuration Report. Costs will be included in the Final Report.

Maintenance

Booz Allen will research and analyze the impact that fare gates may have on Metro's current maintenance organization. Booz Allen will estimate staff resources required to maintain and operate fare gates and/or other additional equipment based on surveys of the industry previously done.

TAP – Metro CDCS

New gates will require interfacing with the existing TAP system both at the front end and the back end. Booz Allen will identify potential impacts of gating on the existing TAP System including the Metro CDCS. Booz Allen will review the Metro CDCS processes that may need to be modified to identify the potential impact.

LACMTA is separately investigating the effect on the CDCS back-end of

- Possible integration of bank contactless credit cards and NFC
- Potential to add parking or other non-transit applications on the CDCS.

The results of that work will be incorporated into Booz Allen's review and cost estimates.

The analysis will evaluate:

- Interfaces and integration of non-Cubic systems with Metro's Cubic CDCS.
- Upgrading and configuring Metro CDCS to enable two-tag transaction acquisition and processing
- Upgrading and configuring the Metro CDCS for the deployment of new business rules including new fare structure/tables.

Attachment A

Scope of Services

Regional CDCS

Booz Allen will consider the impacts on the Regional Central Data System as relates to implementation of gates and possible tariffs . We will investigate and analyze impacts of TAP transactions reaching the Regional CDCS from fare gates. We will explore scalability to sustain such growth on the TAP based system and impacts to Cubic's financial clearing and settlement system resident in the Regional Central Computer.

Booz Allen will incorporate into our report the results (costs and technical analysis) of other research being done by LACMTA to identify feasibility of other cards and card formats such as to bank cards (debit/credit), NFC and limited use paper smart cards, and Intellectual Property (IP) constraints which can potentially define what options are available for Metro and Muni participants to incorporate other sub-regional transit partners, and non-transit applications with banking institutions.

TAP Service Center

The study will research and analyze impacts that the implementation of fare gates has on the TAP Service Center. The contractor will have to accommodate additional volume of services from patrons interacting with a new UFS device. Booz Allen will analyze impacts to the incumbent contractor, ACS, to the TAP Customer Service Center and their processes to support additional fare gate devices and a distanced based fare system.

Procurement Approach

Although it is assumed in our budgeting that LACMTA will use a sole source procurement, Booz Allen will review alternative approaches, which may be competitive procurement, sole-source, or some combination where a portion of the work (such as the gate hardware) may be carved out for competition. This will consider the potential Intellectual Property (IP) issues involved in such a decision, though extensive legal analysis of IP will not be provided.

System Configuration Report

Based on the analysis conducted to this point, Booz Allen will issue a System Configuration Report. This will summarize at a high level all of the subtasks discussed above.

Cost Estimate

Booz Allen will estimate the capital and operating cost of a gated system that would include (at base) the Red Line, with an option to consider the light rail lines.

Attachment A

Scope of Services

Capital Cost -- Metro Red Line

Booz Allen will analyze and estimate the Rough Order Magnitude (ROM) costs for planning, designing, procuring, and implementing an automated fare gate system on the Metro Red Line that interfaces with existing Cubic systems.

This will include:

- Fare gate equipment, other support equipment such as vending machines, add-fare machines and agent booths, in the quantities previously estimated.
- Surveillance, communications and other systems needed for safety and to address Homeland Security issues.
- Installation and other program management costs
- Civil Engineering costs that consider retrofit of station infrastructures. This will be based on a survey of two sample stations (to be identified by LACMTA) and estimate for civil work. This will include barriers needed to establish paid/unpaid areas, attendants' booth if needed, etc. This estimate will be extrapolated to the entire Red Line on a per-gate basis.
- Metro CDCS and Regional CDCS design changes or modifications, based on the work being done by LACMTA on new card types and applications.
- "Start up" costs including marketing and patron education.
- Equipment and systems to accommodate occasional, or non-TAP carrying rider
- An estimate of capital costs for options that allow for competition from multiple suppliers vs sole source, or "lease" alternatives.

Capital Costs -- Metro Light Rail

Optionally, Booz Allen will analyze and estimate ROM costs for planning, designing, procuring, and implementing an automated fare gate system or an alternative to full barrier gates on the Metro Light Rail system that interfaces with existing Cubic equipment.

Given the substantial differences from the Red Line (and between each other), Booz Allen will consider each of the light rail lines separately. Also, a detailed engineering analysis of each line would require substantially more resources than are available for this project. Therefore, LACMTA will identify two stations that are characteristic of the light rail lines and Booz Allen will evaluate placement of fare gates within these environments. We will describe and develop estimates for needed civil work. This estimate will be extrapolated to the rest of that light rail line on a per-gate basis.

If fare gates are not to be installed in light rail stations, Booz Allen will consider the cost of relocating the current validators and providing fences or guides to improve patron convenience and promote patron validation.

Attachment A

Scope of Services

Operational Cost

Booz Allen will analyze and estimate the ROM costs for operating and maintaining the new fare gate infrastructure including:

- Maintenance personnel (hiring, training and maintaining)
- Spare parts acquisition and storage
- Station agent (hiring, training and maintaining) versus “un-manned” gates
- Additional costs incurred by the TAP Service Center
- Customer Service training
- Marketing impacts
- Other operational costs to which must be considered such as additional station infrastructure, CCTV and remote monitoring, etc.

Schedule

Booz Allen will develop a projected schedule for planning, designing, procuring, and implementing the new fare gate system

Final Report

Booz Allen will provide a final report deliverable to LACMTA that includes the following:

- A summary of the system configuration report
- Capital costs
- Operational costs
- Schedule

Specifications

Optionally, Booz Allen will provide a technical specification for the selected equipment configuration and quantities. This specification will be suitable for inclusion in a Request for Proposals or a Change Notice to Cubic. It will include the equipment and services to be provided, supporting documentation, design submittals, etc.

This task will provide specifications only for hardware to be procured as a gated system. Because of unknowns at this time there are several issues that can't be budgeted for a specification-writing effort.

- It is assumed that the specification will be written for a sole-source procurement and will not be competitively bid, nor divided
- Infrastructure, civil work and station redesign, to the extent these may be needed
- Implementation of emergent but not fully defined technologies (in the transit context) such as bank smart cards or near field communication.

Attachment A

Scope of Services

Booz Allen is available to discuss the cost impact of such work, or other tasks such as support of the source selection process, negotiation with proposers or the finalist, design oversight, or testing.

DRAFT Metro Rail Gating Analysis - Procurement and Implementation Schedule

RFI and RFP Solicitation Schedule					
Start July 01, 2007	90 days from start	150 days from start	6 months from start	9 months from start	1 Year from start
Issue NTP to Booz Allen to begin Analysis					
	July 1 – September 30, 2007				
	Booz Analysis Period See details of Scope of Work				
		October 1 – October 30, 2007			
		DRAFT Analysis presented to Metro Executive Management			
		Board Staff Briefing and Potential Workshop			
		Get Board direction on proposed approach			
		Preparation of Board Report			
		Board Action at October 2007 Committees & Board Meeting			
			November 1 – December 30, 2007		
			Write Technical Spec to meet Board direction		
				January 1, 2008 – March 30, 2008	
				Receive Proposal on Technical Spec	
				Clarification Meetings with proposer	
					April 1 – June 30, 2008
					Source Selection
					Award contract (June Board cycle)

