Metropolitan Transit System

1255 Imperial Avenue, #1000
San Diego, CA 92101-7490
619.231.1466 FAX 619.234.3407

Agenda

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
EXECUTIVE COMMITTEE

December 1, 2016

Executive Conference Room
9:00 a.m.

		ACTION RECOMMENDED
A.	ROLL CALL	
B.	APPROVAL OF MINUTES - November 3, 2016	Approve
C.	COMMITTEE DISCUSSION ITEMS	
1.	Fare Collection Update and Whitepaper (Sharon Cooney) Action would receive a report and provide direction.	Possible Action
2.	Transit Optimization Plan (TOP) Update (Denis Desmond)	Information
3.	CLOSED SESSION - CONFERENCE WITH REAL PROPERTY NEGOTIATORS Pursuant to California Government Code Section 54956.8 Property: Assessor's Parcel Number (APN) 384-311-38; 8606 Cuyamaca Street, Santee, California Agency Negotiators: Paul Jablonski, Chief Executive Officer; Karen Landers, General Counsel; and Tim Allison, Manager of Real Estate Assets Negotiating Parties: Graphic Business Solutions Under Negotiation: Price and Terms of Payment	Possible Action
D.	REVIEW OF DRAFT December 8, 2016 BOARD AGENDA	
E.	REVIEW OF SANDAG TRANSPORTATION COMMITTEE AGENDA Review of SANDAG Transportation Committee Agenda and discussion regarding any items pertaining to MTS, San Diego Transit Corporation, or San Diego Trolley, Inc. Relevant excerpts will be provided during the meeting.	Possible Action
F.	COMMITTEE MEMBER COMMUNICATIONS AND OTHER BUSINESS	

G. PUBLIC COMMENTS

H. NEXT MEETING DATE: January 12, 2016

I. ADJOURNMENT

DRAFT

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
EXECUTIVE COMMITTEE
1255 Imperial Avenue, Suite 1000
San Diego, CA 92101

November 3, 2016

MINUTES

A. ROLL CALL

Chairman Mathis called the Executive Committee meeting to order at 9:56 a.m. A roll call sheet listing Executive Committee member attendance is attached.

B. APPROVAL OF MINUTES

Ms. Bragg moved for approval of the minutes of the September 8, 2016, MTS Executive Committee meeting. Mr. Gloria seconded the motion, and the vote was 5 to 0 in favor.

C. COMMITTEE DISCUSSION ITEMS

1. Stored Value Update (Paul Jablonski)

Sharon Cooney, Chief of Staff, provided an update on stored value. She noted that the effort to implement stored value began in April 2016. Unfortunately, the process of implementation has had challenges due to the compass card system, which is beyond its useful life. She stated that the current product is not up to the standard of modern technology and requires upgrades. Ms. Cooney said that staff has continued the effort to implement stored value and has conducted extensive tests, training, pilots and review of new reconciliation reports. Ms. Cooney discussed the results of the stored value pilot and noted that there were issues with some of the station platform validators not reading stored value cards. Staff is currently working with Cubic to resolve this issue which will likely require software updates on the validators. Due to this issue, the original deployment date for stored value has been delayed.

Staff also discussed ongoing issues with Cubic, Webtix and other software.

Action Taken

Informational only. No action taken.

D. REVIEW OF DRAFT November 10, 2016 BOARD AGENDA

Recommended Consent Items

6. San Diego and Arizona Eastern (SD&AE) Railway Company Quarterly Reports and Ratification of Actions Taken by the SD&AE Board of Directors at its Meeting on October 11, 2016
Action would: (1) receive the San Diego and Imperial Valley Railroad (SD&IV), Pacific Southwest Railway Museum Association (Museum), and Pacific Imperial Railroad, Inc. (PIR) quarterly reports for information; and (2) ratify actions taken by the SD&AE Board at its quarterly meeting on October 11, 2016.

7. Investment Report – September 2016

8. Light Rail Vehicle (LRV) Remote Diagnostic System and Public Address System Integration with Variable Message Sign System – Contract Award
Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G1966.0-17, a Sole Source agreement, with Davra Networks (Davra), for the integration of the remote diagnostics and telematics information and the public address (PA) system, with the variable message sign (VMS) system located at each of the trolley stations.

9. Authorization to Increase Legal Service Contract with Tyson & Mendes, LLP to Pay Projected Expenses
Action would authorize the Chief Executive Officer (CEO) to approve increasing the Tyson & Mendes, LLP contract by $200,000 to cover anticipated legal expenses.

10. Work Order Contract Approval for Beech and Middletown Trackwork and Signaling Preliminary Engineering
Action would authorize the Chief Executive Officer (CEO) to execute Work Order 13.05 to MTS Doc. No. G1494.0-13 with Pacific Railway Enterprises, Inc. to perform Design Engineering Services for the Beech and Middletown Double Crossover project.

11. HASTUS Timekeeping Implementation for Non Driving Employees
Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G1883.1-16 with GIRO, Inc., for the purchase of additional licensing for Roster and Daily Crew with SignIn/SignOut and FMLA; and the options to exercise Employee Performance Management (EPM) and SelfService modules for non-driving employees.

12. Janitorial Services for San Diego Trolley, Inc. (SDTI) & San Diego Transit Corporation (SDTC) Buildings and Light Rail Vehicle (LRV) Fleet – Contract Award
Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G1931.0-16 with NMS Management, Inc. (NMS), a Disadvantaged Business Enterprise (DBE), for the provision of janitorial services for SDTI & SDTC buildings and the LRV fleet for three (3) base years with three (3) 1-year options, exercisable at MTS's sole discretion.

13. Centralized Train Control System Maintenance Services
Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G0930.17-04.29.2 with San Diego Association of Governments (SANDAG), for the provision of preventative maintenance services on software and equipment for the Centralized Train Control (CTC) System.

14. Additional Funding for the Catenary Improvements to the Orange Line from 12th & Imperial to Main Street El Cajon, Broadway Wye
Action would authorize the Chief Executive Officer (CEO) to approve additional funding of $2,950,000 for the installation of catch cable for Orange Line and Broadway Wye.

15. Proposed Revisions to MTS Board Policy No. 59, "Natural Gas and Energy Commodity Hedge Policy"
Action would approve the proposed revisions to MTS Board Policy No. 59, "Natural Gas and Energy Commodity Hedge Policy"

16. Trust Fund Administration Position
Action would authorize the Chief Executive Officer (CEO) to add one (1) Trust Fund Administrator position to the FY17 budget, increasing the total Full Time Equivalent (FTE) position from 0 to 1.

17. SD8 Procurement Project – Funding Transfer
Action would approve the transfer of $4,550,000 from the SD100 Light Rail Vehicle (LRV) Replacement project (MTS CIP No. 20020027) to the SD8 Procurement project (MTS CIP No. 20021029).

18. Proposed Revisions to MTS Board Policy No. 22
Action would approve the proposed revisions to MTS Board Policy No. 22, "Rules of Procedure for the San Diego Metropolitan Transit System (MTS) Board of Directors".

19. Construction Support Services for Roadway Worker Protection Safety Training
Action would ratify previous actions and authorize the Chief Executive Officer (CEO) to execute Work Order No. 11.04.03 to MTS Doc. No. G1386.0-11 with PGH Wong Engineering, Inc.

E. REVIEW OF SANDAG TRANSPORTATION COMMITTEE AGENDA

Ms. Cooney stated that there will be a budget amendment for the airport connection project, which will improve the connection to and from the Middletown Trolley Station and the new airport shuttle stop. The Amendment will ask for an increase from $1,000,000 to $1,300,000 for the project. She said the other item on the agenda is the approval of the transfer of MTS capital money to SANDAG for catenary overhead wire protection.

F. COMMITTEE MEMBER COMMUNICATIONS AND OTHER BUSINESS

There was no Committee Member Communications and Other Business discussion.

G. PUBLIC COMMENTS

Margot Tanguay – Ms. Tanguay commented that the San Diego International Airport is rated number three in the nation on a recent poll she heard on the radio.

H. NEXT MEETING DATE

The next Executive Committee meeting is scheduled for December 1, 2016, at 9:00 a.m. in the Executive Committee Conference Room.

I. ADJOURNMENT

Chairman Mathis adjourned the meeting at 10:28 a.m.

_____
Chairman

Attachment: A. Roll Call Sheet

EXECUTIVE COMMITTEE
SAN DIEGO METROPOLITAN TRANSIT SYSTEM

ROLL CALL

MEETING OF (DATE) November 3, 2016 CALL TO ORDER (TIME) 9:56 a.m.

RECESS _____ RECONVENE _____

CLOSED SESSION _____ RECONVENE _____

ADJOURN 10:28 a.m.

BOARD MEMBER		(Alternate)		PRESENT (TIME ARRIVED)	ABSENT (TIME LEFT)
BRAGG	☒	(Rios)	☐	9:56 a.m.	10:28 a.m.
MCCLELLAN	☒	(McWhirter)	☐	9:56 a.m.	10:28 a.m.
GLORIA	☒	(Cole)	☐	9:56 a.m.	10:28 a.m.
MATHIS	☒			9:56 a.m.	10:28 a.m.
ROBERTS	☒	(Cox)	☐	9:56 a.m.	10:28 a.m.
Transportation Committee Rep Slot (Mathis)					

SIGNED BY THE CLERK OF THE BOARD: Julia Tuer

CONFIRMED BY THE GENERAL COUNSEL: Karen Cerda

Metropolitan Transit System

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Agenda Item No. C1

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
EXECUTIVE COMMITTEE

December 1, 2016

SUBJECT:

FARE COLLECTION UPDATE AND WHITEPAPER (SHARON COONEY)

RECOMMENDATION:

That the Executive Committee receive a report and provide direction.

Budget Impact

None.

DISCUSSION:

The San Diego Association of Governments (SANDAG), MTS, and the North County Transit District transitioned from paper fare products to the Compass Card electronic fare collection system in 2009. MTS assumed responsibility for management of Compass Card from SANDAG in 2014. MTS staff immediately began to review the current system's status and to begin the process for modernization and replacement of components of the system that was originally procured in 2003.

Agency staff at multiple levels have been reviewing the latest industry technology, attending vendor demonstrations and industry conferences and tradeshows, and engaging in discussions with peers regarding best practices and vendor experiences. Meanwhile, MTS's current vendor, Cubic, was asked to provide alternatives for upgrading the existing system.

A fare collection working group was established in 2016 to spearhead the creation of a set of preliminary requirements for the future electronic fare collection system. The working group hired a consultant to assist in its work, held a peer agency workshop, reviewed numerous documents produced by other agencies, and attended an international workshop. A whitepaper (Attachment A) details the results of the working group's efforts.

Staff will present a report on the Compass Card system and the whitepaper, and engage in a dialogue regarding the whitepaper's recommendations and potential next steps.

Paul C. Jablonski
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. Fare Collection System Design Whitepaper

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Metropolitan Transit System (MTS) Fare Collection Whitepaper

November 2016

Introduction

MTS assumed responsibility for the regional electronic fare collection system, Compass Card, from the San Diego Association of Governments (SANDAG) in 2014. The agency immediately began to review the current system's status and to begin the process for modernization and replacement of components of the system that was originally procured in 2003.

Agency staff at multiple levels have been reviewing the latest industry technology, attending vendor demonstrations and industry conferences and tradeshows, and engaging in discussions with peers regarding best practices and vendor experiences. MTS's current vendor was asked to provide alternatives for upgrading the existing system.

A Fare Collection Working Group was established in 2016 to spearhead the creation of a set of preliminary requirements for the future electronic fare collection system. The Working Group hired a consultant to assist in its work, held a peer agency workshop, reviewed numerous documents produced by other agencies, and attended an international workshop. This whitepaper details the results of the Working Group's efforts.

Whitepaper Purpose and Scope

The purpose of this whitepaper is to provide MTS decision makers with a framework for discussions regarding expectations for the next version of the San Diego regional electronic fare collection system. The current system has reached its useful life, and system hardware and software components must be upgraded or replaced. There are three general alternatives available at this point:

1. Upgrade the current Cubic system to the latest version of NextFare software, maintaining the same general functionalities as available today while modernizing the equipment and improving security features. New options such as Stored Value and mobile ticketing may become available in coming months.

2. Seek greater functionality and modernization through the initiation of a full procurement for a next generation electronic fare collection system. This option could result in significant improvements, but also highest cost and potential implementation risk.

3. Perform a strategic upgrade analysis on the existing system, identifying incremental upgrades and integration opportunities that can transition to a new system with minimal impact to customers. Consider multiple procurements between "best of breed" vendors to maximize flexibility and control costs.

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This whitepaper provides high level requirements and cost estimates associated with the full system replacement described in the second option. In Chapter 1, the whitepaper relates the results of a workshop that was held with eight peer agencies around the U.S. and Canada in various stages of their own fare collection system upgrades. Chapter 2 details ideal system requirements for the next generation fare collection system. Chapter 3 provides Rough Order of Magnitude (ROM) estimates for the full system replacement. Finally, Chapter 4 provides the high level recommendation described in option three, and a scan of vendors to show level of ability to fulfill the recommended next-generation system attributes.

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Fare System Goals

Prior to the initiation of this whitepaper, MTS developed a number of objectives to help guide the concept and early requirements for the next-generation fare system. An early critical step for project success is to identify the highest priority goals. Establishing the most important end goals will help to determine what success will look like when the project is complete.

The best resources for identifying these goals are the fare system stakeholders, project advocates, and eventual end users of the system. As an action to generate a list of system goals and determine the best order of priority, the fare system goals and priorities were discussed with the following key stakeholders within MTS:

- Executive
- Finance
- Rail Operations
- Bus Operations
- Marketing
- Customer Service
- Planning
- Information Technology

The results of those discussions gave the following ranked priorities for the future fare system:

1. Open architecture
2. Expandable
3. Simple
4. Manageable operation
5. Secure
6. Stable
7. Cost-effective
8. Meets customer market needs
9. Proven, leading technology
10. Operational efficiency
11. Low-risk
12. Delivered quickly

These priorities will help to form the project scope for the next generation fare system procurement and request for proposals, as well as provide basic metrics for the future system to be measured against. The project goal can be summarized as follows:

MTS's next-generation fare system shall: be a non-proprietary open architecture system; have an expandable and flexible design that is able to evolve as needs and technology change; be simple for both customers to use and MTS to manage; be stable and compliant with security standards; and use leading, yet proven, technology for fare payment that maximizes media already held by customers.

Metropolitan Transit System

Fare Collection Steering Committee Members

Metropolitan Transit System (MTS)

Denis Desmond	Planning Manager
Israel Maldonado	Revenue and Compass Card Manager
Julia Tuer	Executive Assistant to the CEO
Katie McCanna	Digital Design and Content Specialist
Kristine Villa	Regional Revenue Administrator
Larry Marinesi	Chief Financial Officer
Marcus Smith	Compass Card Supervisor
Michele Giovinazzo	Reports Development Analyst
Rob Schupp	Director of Marketing and Communication
Robert Borowski	Enterprise Business Solutions Manager
Scott Donnell	Revenue Manager, Rail
Sharon Cooney	Chief of Staff

North County Transit District (NCTD)

Mary Aykroid	Deputy Chief Accounting and Finance Officer

San Diego Association of Governments (SANDAG)

Brian Lane	Senior Transit Planner

Phase 1 Project Lead	Sharon Cooney, Chief of Staff, MTS
Phase 1 Consultant	Alan Cheng, Principal Consultant, CH2M HILL

Metropolitan Transit System

Attendees for the San Diego Metropolitan Transit System Fare Collection Workshop

July 25-27, 2016

Facilitator: Alan Cheng (CH2M)

Peer Agencies

TriMet (Portland)	Chris Tucker, Fare System Project Manager; and Rhyan Van Horn
DART (Dallas)	Tina Morch-Pierre, Sr. Manager, Revenue Administration
Sound Transit (Seattle)	Brittany Esdaile, Regional Program Manager, Next Generation ORCA
CTA (Chicago)	Michael Gwinn, Director, Revenue and Fare Systems
SEPTA (Philadelphia)	Kevin O'Brien, Fare Collection Project Manager
Metro (Minneapolis)	Nick Eull, Senior Manager – Revenue Collection
TTC (Toronto)	Arthur Borkwood, Head of Customer Development, Strategy & Customer Experience
WMATA (Washington, DC)	Jim Bongiorno, Treasury Technical Manager

Regional Partners

NCTD	Mary Aykroid, Deputy Chief Accounting and Finance Officer
SANDAG	Brian Lane, Senior Transit Planner

MTS Fare Collection Whitepaper
Chapter 1
Peer Agency Workshop Summary

Prepared for

Metropolitan Transit System

August 2016

ch2m:

Peer Agency Summary

As part of its next generation fare collection project, the San Diego Metropolitan Transit System (MTS) invited several peer agencies to MTS headquarters to discuss next generation fare collection topics. At the outset of this peer workshop, the participating agencies each gave a presentation on their existing system and next generation fare collection plans. Each agency was at a different phase of next-generation planning or implementation. Here are summaries of their respective fare systems.

Dallas Area Rapid Transit (DART) – Dallas, TX

Agency Information

Dallas Area Rapid Transit (DART) provides bus, light rail, commuter rail, streetcar, vanpool, and paratransit services. Features of the current system include:

- 69 Million Annual Riders
- $70 Million in Annual Fare Revenue
- 700 Square Mile Service Area
- 661 Fixed Route Buses
- 62 Light Rail Stations
- 10 Commuter Rail Stations
- 184 TVMs
- 13 Participating Cities
- 15.6% Farebox Recovery Ratio
- 900 Retail Locations

Fare Collection System

DART is in development of an account-based open payments fare collection system. In 2011, DART began the initial planning for the new fare collection system and plans for system rollout in mid to late 2017. DART is currently in the final design review phase of the project. VIX was selected as the primary fare collection system vendor and Unwire was selected as the mobile ticketing vendor. Unwire worked with PayNearMe to facilitate cash payments for mobile ticketing. The combined fare collection vendor and mobile ticketing contracts are valued at $31 Million.

Validators will accept fare payment from NFC mobile wallets and agency issued/third party cards. Customers will be able to load value and purchase fare products from the website, mobile app, and retail locations. PayNearMe allows customers to select the option to pay with cash while making mobile ticketing purchases. For those mobile cash payments, PayNearMe provides cash paying customers with a barcode and a list of nearby participating retail locations. Retailers scan the mobile barcode and customers pay with cash to complete the transaction at PayNearMe's retail network of 900 locations.

DART designed the fare collection system to reduce TVMs and farebox payments. TVMs will be converted to only sell two hour passes. Additionally, Dart is purchasing simplified fareboxes which only accept cash and will not print fare media. DART currently offers 63 fare products for adult and reduced fare riders. The agency is planning to simplify the fare structure and focus on daily and monthly fare capping. DART captured their system design in a Concept of Operations prior to vendor award.

Chicago Transit Authority (CTA) – Chicago, IL

Agency Information

The Chicago Transit Authority (CTA) provides bus, heavy-rail, and paratransit for Chicago and 35 surrounding suburbs. CTA's regional partners include Pace Suburban Bus and Metra Commuter Rail. The current system includes:

- 516 Million Annual Riders
- 1.5 Million Weekday Riders
- $587 Million in Annual Fare Revenue
- 1,900 Fixed Route Buses
- 145 Rail Stations
- 420 TVMs
- 1,300 Retail locations

Fare Collection System

In 2013, CTA replaced all their legacy fare systems with a new open payments and closed loop Ventra fare collection system. Cubic was selected as the primary fare collection system vendor. Key subcontractors include moovel, First Data Corporation (FDC), and Vantiv. The 12 year contract is valued at approximately $520 million. Ventra was developed on a very rapid timeline; the contract was awarded to Cubic in November 2011 and the full system rollout occurred in September 2013. The aggressive timeline was the result of strict payment milestones and a public launch schedule. While the rapid timeline prevented long and costly delays, it also shortened the testing and piloting phases.

CTA did not provide any upfront capital costs for the new Ventra system. Instead, CTA pays a monthly base fee and a variable tap fee to Cubic. This payment model was attractive to the agency due to obsolescence of the prior system and limited availability of capital funding.

The Ventra Card is the primary fare media with 2 separate accounts; a branded MasterCard which allows for debit and transit transactions, in addition to closed loop Ventra transit account. Customers are initially charged $5 for the purchase of Ventra Cards, but they can recoup the $5 cost as transit stored value when the card is registered. Customers can also utilize the MasterCard pre-paid debit account to ride transit and make purchases wherever MasterCard is accepted. In October 2014, CTA introduced the Ventra mobile app. The app allows customers to manage accounts and purchase fare media. The app also provides visually validated mobile ticketing for Metra Commuter Rail.

Over 6 million user accounts have been created since the introduction of Ventra. There are approximately 2 million accounts which have been actively used in the past 90 days. Open payments have accounted for a very small fraction of total transactions. During the past 90 days, open payments accounted for less than one tenth of a percent of total transactions. Cash payments account for approximately 9% of bus payments. The introduction of Ventra did not significantly decrease the percentage of cash payments and the agency believes that it is unlikely that cash will ever be fully removed from the system in the near term.

Washington Metropolitan Area Transit Authority (WMATA) – Washington, DC

Agency Information

The Washington Metropolitan Area Transit Authority (WMATA) provides bus, heavy-rail, and paratransit services in the District of Columbia and in four surrounding counties. The current system includes:

- 337 Million Annual Riders
- $900 Million in Fare Revenue
- 1,500 Square Mile Service Area
- 91 Rail Stations
- 1,500 Fixed Route Buses
- 670 TVMs

Fare Collection System

WMATA has recently been in the extended process of procuring and implementing a next generation fare collection system. After a protracted procurement process, the agency issued a contract to Accenture for an account-based, open payments fare collection system in January 2014. In total, the contract was valued at over $400 million. However after implementation challenges and cost concerns, the contract with Accenture was canceled in April 2016. The agency is now exploring alternative system designs and procurement approaches to upgrade their existing fare system.

WMATA currently utilizes the SmartTrip card-based fare collection system. TVMs have been upgraded to utilize SmartTrip cards and no longer sell paper tickets. Bus riders paying with cash currently account for 15% of bus ridership. The majority of TVM sales are from credit/debit cards. Cash payments account for approximately 15% of all TMV transactions. Government prepaid benefit programs account for 40% of system ridership.

WMATA charges distance and time of day based fares for rail service. Bus fares are flat and do not vary by distance or time of day. A higher fare is charged for Express Bus service. WMATA is piloting a price point based pass program, where customers select a trip price point from $2.50 to $6.00 as their base fare and get unlimited travel for all trips of equal or lower value. When making trips above the price point, the difference is withdrawn from stored value.

Metro Transit – Minneapolis, MN

Agency Information

Metro Transit operates bus, light rail, commuter rail, BRT, and paratransit services in the seven county Minneapolis-Saint Paul Region. The current system includes:

- 86 Million Annual Riders
- 907 Square Mile Service Area
- 7 Commuter Rail Stations
- 37 Light Rail Stations
- 900 Fixed Route Buses
- 140 TVMs
- 120 Retail locations

Fare Collection System

Metro Transit currently operates a card-based closed loop fare collection system from Cubic. Metro Transit introduced the Go-To Card in 2006. The Go-To Card utilizes the MiFare Classic 1K media standard, and Metro Transit upgraded fare validators utilize NFC technology in 2016. The Go-To Card currently accounts for 54% of system ridership. The Cubic system has been incrementally upgraded over time in order to maximize investment in the current system. These upgrades include updated Cubic TriReaders, TVM upgrades to Windows 7, and procurement of new mobile validators. Furthermore, Metro Transit purchased low-cost BRT TVMs from Parkeon, and developed in-house website and customer relationship tools. The original fare collection system contract was valued at $15 million, however numerous additional contracts have been executed to upgrade the system.

Customers can purchase and/or reload Go-To Cards at TVMs, 120 retail locations, Metro Transit Service centers, and through the website. The website allows customers to order new cards, add value or passes, and sign up for autoload. In addition to the Go-To card, customers can make cash payments at bus fareboxes, purchase single use magstripe tickets at rail TVMs, and purchase flash passes at BRT TVMs. Cash payments currently account for 20% of bus fare payments, and credit cards account for 60% of TVM purchases.

The current base fare includes a two and a half hour transfer. Metro Transit charges a $0.50 upcharge for peak period travel. The same fare is charge for cash and Go-To Card stored value, however a 10% bonus is provided for stored value loads Time and trip based passes are only offered on the Go-To Card.

Metro Transit offers several institutional passes including; Metropass (corporate program), Student Pass (high school program), College Pass (college program), and U-Pass (University of Minnesota program), Jobseeker Program, and various homeless relief programs.

TriMet – Portland, OR

Agency Information

TriMet operates bus, light rail, and commuter rail in the Portland Region. Regional partners include C-TRAN suburban bus service and the Portland Streetcar. The current system includes:

- 100 Million Annual Riders
- $115 Million in annual Fare Revenue
- 650 Fixed Route Buses
- 100+ Rail Platforms
- 6 Commuter Rail Cars
- 17 Street Cars
- 130 Retail Stores

Fare Collection System

TriMet currently operates a paper ticket Proof of Payment (POP) system. Starting in 2012, they designed and developed an account-based, open payment, closed loop, and open architecture fare collection system. The full system rollout is planned for 2017. With a strong internal steering committee and technical consultant, TriMet developed a Concept of Operations (ConOps) prior to system procurement and ultimately selected Init as the primary fare system integrator. TriMet is utilizing the open architecture requirement by employing several sub-contractors to implement system elements and integrating with the primary Init back office. Major sub-contractors include: Scheidt & Bachmann (TVMs), moovel (mobile apps), The Brigade (websites), Enghouse (IVR), and Ready Credit (retail network). Init provided the Application Programming Interfaces (APIs) that the sub-contractors are interfacing with. The combined fare collection system contracts are valued at around $30 million.

TriMet is issuing an agency branded Hop Fastpass Card as the primary form of media, but will also accept open payment bankcards and mobile wallets. Customers will be able to purchase and load Hop Cards from retail locations. Unlike many current cased-based retail networks, the Hop Fastpass will be available for purchase alongside standard gift cards. Reducing reliance on TVMs is a major goal of the agency. The current TVMs will be upgraded to issue limited use (LU) cards for a limited number of fare products.

The Hop mobile app will allow customers to manage their account, add value, and purchase passes. The current version of the mobile app is currently a visual mobile ticket, since the existing paper system is visually validated. The current app will also be adding with Lyft, Car-2-Go and BIKETOWN bikeshare program prior to the launch of the future Hop mobile app.

The current base fare is $2.50 for two and a half hours of unlimited travel on all modes. As part of the Hop Fastpass launch TriMet will eliminate all public pass products and introduce fare capping. Fare capping will allow customers to earn day and monthly passes as rides are taken, offering the value of a pass without requiring the upfront pass cost. This allows customers to receive "best fares" as they ride, and greatly simplifies the public fare purchasing experience since there will be no products to purchase.

Sound Transit – Seattle, WA

Agency Information

The Puget Sound Region around Seattle is home to 7 transit agencies which operate bus, BRT, commuter rail, light rail, streetcar. The current regional system includes:

- 190 Million Annual Riders
- $350 Million Fare Revenue ($220 Million on ORCA)
- 2400 Fixed Route Buses
- 60 Rail Stations (All Modes)
- 100 TVMs
- 123 Participating Retailers

Fare Collection System

The Seattle Puget Sound Region is currently in the process of designing an account-based, open architecture fare collection system. The next generation ORCA fare collection system is planned for delivery in 2021. The new fare collection is being planned in tandem with significant service expansions. The planned future system will specify open APIs in order to facilitate future upgrades. There is currently a dedicated team of 5 staff members planning for the next generation fare collection system.

As part of the next-generation ORCA system, a regional program team was formed to lead the system design and technical requirements along with technical and management consultants. The planning process is currently underway with participation from all regional transit agencies and a technical consultant team.

The seven regional agencies currently use the ORCA card-based fare collection system. ORCA currently accounts for approximately 62% of transit trips and has over one million active cards in use. Institutional business programs currently account for 50% of ORCA system revenue.

Regional agencies offer a wide range of fare structures and fare products. Many agencies offer a combination of flat, time of day, and zonal fares. The regional PugetPass includes over 21 unique pass products. Regionally, four fare policy options are being considered for the new fare collection system. These options include eliminating zone based fares, eliminating time of day fares, creating a fully regional policy, and introducing fare capping.

Southeastern Pennsylvania Transportation Authority (SEPTA) – Philadelphia, PA

Agency Information

The Southeastern Pennsylvania Transportation Authority (SEPTA) provides bus, trolley, NHSL (Norristown High Speed Line), trackless-trolley, heavy rail, commuter rail, and paratransit service in the City of Philadelphia and in 4 regional counties. The current system includes:

- 330 Million Annual Trips
- 1.3 Million Weekday Riders
- $476 Million in Annual Revenue
- 2,200 Square Mile Service Area
- 55 Subway Stations
- 8 Trolley Lines
- 2 Trackless-Trolley Lines
- 150 Commuter Rail Stations
- 1500 Retail Locations

Fare System

SEPTA is currently in the testing and pilot stage of an account-based, open payment fare collection system. Xerox is the primary fare collection system vendor. SEPTA developed clear goals for the new fare collection system at the beginning of the design process. The new system was designed to provide more flexible payment options, reduce the reliance on cash, and provide greater control of data management and reporting. In late 2011, SEPTA awarded a $130M contract to Xerox for the open payment fare system. The anticipated system rollout for all modes is planned for 2017.

The new open payment fare media will be branded the Key Card. Key Card will be a branded contactless debit card which will combine fare and retail payment into one card. Use of the debit card is optional, and card fees apply for debit card transactions. The new fare collection system will allow customers to pay with SEPTA Key Cards, bank issued contactless cards, NFC phones, third party cards, pre-paid cards, and institutional cards. The open payment system will allow riders to more easily pre-fund travel, provide greater options for unbanked customers, eliminate fees for transit purchase, and allow for efficient revenue sharing.

SEPTA currently accepts cash, magnetic stripe passes, paper tickets, tokens, and paper transfers. Riders using pass products account for 44% of total ridership, adult customers paying with cash account for 13% of ridership, and customers using token payments account for 23% of ridership. As part of the Key Card program, fare simplification is anticipated including the phasing out of legacy fare media.

Toronto Transit Commission (TTC) – Toronto, ON

Agency Information

The Toronto Transit Commission (TTC) operates in and around Toronto, Canada. The current system includes:

- 535 Million Annual Riders
- $1.2 Billion Annual Revenue
- 69 Subway Stations on 4 Subway Lines
- 12 streetcar lines
- 1800 Fixed Route Buses
- 120 TVMs at Rail Stations

Fare Collection System

The TTC is currently in the process of a large scale fare collection system modernization campaign. This campaign began in 2013. TTC is in the process of integrating the regional PRESTO Card, the regional smartcard system that was initially introduced in 2009. The PRESTO Card is administered by the Metrolinx regional transportation planning authority and is currently available on 11 regional transit agencies. TTC pays Metrolinx 5.25% of fares paid via PRESTO. Due to the wide availability of contactless credit cards in Canada, open payments are a major component of the new fare collection system.

PRESTO is being rolled out incrementally and in parallel with existing fare equipment. Bus validators will become operational as they are installed, and will be available on all buses by the end of 2016. PRESTO is currently available at roughly 30 rail stations and will be introduced in a phased approach throughout the rail system. Open payments abilities are scheduled to be available in early 2017.

Customers can pay fares using cash, magnetic stripe tickets, PRESTO Card (at available stations), tokens, streetcar proof of payment, and mobile ticketing (for select passes). Mobile ticketing is available for customers using day passes, family passes, and special event passes. A flat fare is charged across all modes. PRESTO Card, tickets, and tokens are slightly discounted relative to cash payments. PRESTO will allow customers to load stored value and purchase fare products.

Table 1: Next Generation Fare Collection System Timelines and Costs

Agency	Annual System Ridership	Initial Planning Start	Planned Completion	Fare System Cost	Staffing Notes
DART	69 Million	2011	2017	$31 Million	Manager with supporting team including consultants. Will maintain fare collection team after launch for future integrations.
CTA	516 Million	2010	2013	$520 Million	Dedicated internal and fare consulting staff during rapid implementation schedule. Retained staff after problematic launch.
WMATA	337 Million	2009	2017 *	$400 Million*	Dedicated staff to manage procurement and pilot phases. * In 2016 canceled contract awarded to Accenture due to cost concerns. Pursuing alternative account-based system.
Metro Transit	86 Million	2002	2006	$15 Million (Excludes Upgrades)	Dedicated fare manager and staff since introduction of card-based system in 2006. Staff have made incremental upgrades to expand system life and functionality.
TriMet	100 Million	2012	2017	$30 Million	Dedicated fare staff and consultant team that fluctuates depending on project phase. Currently three additional part time staff.
Sound Transit	190 Million (Regional)	2014	2021	TBD	Dedicated regional project fare collection team. Currently discussing hiring additional specialists for specific areas.
SEPTA	330 Million	2008	2017	$130 Million	Full time internal and consulting staff. Had considerable delays in design phase, now implementing an incremental rollout.
TTC	535 Million	2013	2017	TBD	Limited internal staff. Currently implementing an incremental rollout of existing PRESTO regional fare collection system.

Topic Based Discussions

Following peer agency introductory presentations, the workshop focused on a series of topic-based open discussions. The topics were related to the design, procurement, implementation, and operation of next-generation fare systems. In addition, specific technical subjects were discussed where any peers could ask or answer questions. This format encouraged informative discussion and clarification by all agencies no matter where they were in their planning process.

Project Phase: Planning

Concept of Operations

- TriMet devoted several months to developing a Concept of Operations (ConOps) with a fare consultant prior to drafting technical specifications to share with the industry and internal stakeholders.
- Sound Transit also developed a ConOps which included various user scenarios to inform the system requirements.
- DART made fundamental changes to the Concept of Operations, even after vendor selection. This included changing the strategy from purchasing some new equipment to refurbishing.
- DART recommended having each department sign off on the ConOps to prevent disagreements or protests in the implementation and operations phase.
- Several peers noted that the Concept of Operations needed to be a living document which would be updated throughout the design process.
- Several peers noted that a ConOps allowed the agency to advance a consistent message to the board, to the regional partners, and to general public. This was a very important element of the project approach.

Internal Staffing

- SEPTA noted that the size of internal fare collection team determined the degree of outsourcing of responsibilities to vendors. The size and capability of internal staff was a limiting factor for how much could be operated internally.
- Sound Transit and SEPTA mentioned that it is critical to determine which departments will take particular responsibilities of the system when fully operational.
- TriMet currently has a dedicated staff of 5 employees in addition to a consultant team working on the fare collection system team. Some staff performed other responsibilities, depending on which phase of the project was underway.
- CTA recommended maintaining the fare collection team after implementation in order to address troubleshooting and unforeseen issues.
- Sound Transit formed a Regional Project Team (RPT) comprised of leads across several disciplines, and coordinated participation and review by all 7 regional agencies.
- All agencies stressed the need for dedicated fare collection staff that did not have significant other day-to-day fare responsibilities. The necessity and type of staff will likely change over the course of the project, but dedicated staff was highly recommended by all agencies.

Regional Partners

- CTA developed a phased strategy for engaging regional partners. The agency noted the importance of presenting options, providing opportunities for limited participation, and fostering advocates from regional agencies.
- Many agencies noted that having advocates at regional partners greatly facilitated the process. Involving regional champions early and often encourages regional success.

Transition Plan

- SEPTA highlighted the importance of developing a plan to transition responsibilities once the system becomes operational.
- Sound Transit developed a transition plan and procurement plan in parallel. It was also determined early that the region did not want to run parallel systems. This influenced the initial design requirements and required a more comprehensive transition plan.
- CTA was in the position where aging legacy fare systems needed to be transitioned to the new Ventra system very quickly. They accomplished the transition in a timely manner, but saw several public issues that may have been mitigated with more extensive testing.

Project Phase: Procurement

Request for Information (RFI)

- Sound Transit and TriMet both issued a Request for Information (RFI) to the fare industry and select peers to provide feedback and comments on their fare collection strategy and ConOps.
- DART issued a Request for Qualifications (RFQ) as opposed to an RFI. This allowed DART to interview technical staff from vendors and pre-select qualified vendors. The RFQ was part of the official procurement process, and vendors had to prove their technical approach prior to selection.

Request for Proposal (RFP)

- Several agencies recommended developing both technical and functional requirements for the RFP specification. Functional requirements are useful to give vendors some flexibility since fare collection technology is changing so rapidly.
- WMATA had its fare collection system vendor provide a number of validator vendors in order to demonstrate the open architecture requirement.
- Sound Transit will specify which elements the vendor will contract to a third party, such as website and Customer Relationship Management (CRM) tool.
- Several agencies commented that traditional fare collection vendors do not have strong offerings in areas such as websites, mobile apps, CRM tools, reporting, and data analytics.
- SEPTA specified both performance and technical elements in the RFP and mentioned the need to draft technical requirements when elements needed to comply with agency design requirements.
- Metro Transit developed a functionally driven RFP which was used as a starting point for negotiations. The agency noted that over-specifying technical requirements can lead to sub-par systems.

Best and Final Offer (BAFO) Negotiation

- TriMet felt that it would have been more efficient to have had external legal counsel manage terms of the vendor contract.
- DART recommended taking extra time to ensure that the master service agreement is thorough and comprehensive.
- TriMet intentionally over-specified functional requirements in the RFP in order to facilitate negotiations with vendors. Some vendors offered credit or other features in exchange for requirements they couldn't meet that weren't high priority for TriMet.

Project Phase: Implementation

Design Reviews

- SEPTA recommended preventing delays during the final design review phase as much as possible. The agency's final design review phase was scheduled to take 4 months but ended up taking 1.5 years.
- DART recommended performing a secondary design review if the first review was unsatisfactory.

Testing/Pilot

- There was consensus that it was better to incur delays from additional testing than rolling out a system with technical bugs and unproven processes.
- All agencies noted that field testing was extremely important as many environmental factors cannot be replicated in lab testing.
- CTA stressed that a pilot was one of the most important parts of the process and was the only way to find bugs in day-to-day operation.
- WMATA stressed the importance of developing a clear pilot with clear success metrics and consideration for operational factors.

Installation

- Several agencies mentioned that there was a trade-off between an incremental installation over a long period and "overnight" installation of validators and TVMs.
- TTC is in the process of parallel installation of PRESTO equipment alongside existing equipment in rail stations. There are challenges communicating to the public which equipment can be used with what media.
- CTA replaced legacy equipment with new Ventra equipment rapidly, and stopped accepting legacy fare media over a short time period. While there were many complaints and negative publicity, the new Ventra system was installed quickly and is operating well today.
- Agencies with gated rail stations mentioned having issues with integrating new validators on existing fare gate hardware.
- Sound Transit had concerns integrating new fare validators with the various types of CAD/AVL system onboard regional partners. Various bus types complicate onboard integration projects.
- TriMet hired a third party to audit TVM installations in order to reduce complications at launch.

Project Phase: Transition

Executive Outreach

- TriMet engaged with executives and the board several years before anticipated project launch. They mentioned that having a Concept of Operations was key to maintaining a consistent plan during a multi-year project.
- DART had their Chief Marketing Officer as a major advocate. This greatly facilitated communications with the board of directors.
- Sound Transit recommended engaging executives from regional agencies early in the process. The executives buy-in ensured participation from their staff on the project.

Public Outreach

- TriMet began public outreach one year into the initial design process, 3 years prior to the anticipated system launch. This allowed for meaningful engagement from low-income, unbanked, and reduced fare customers. It also allowed for clear messaging of fare policy changes.
- WMATA recommended frequently engaging groups and clearly explaining why a change needs to be made, what is being taken away, and what is going to be provided instead.
- Sound Transit engaged the public early on, in order to develop high level system requirements. In addition, frequent engagement during a long procurement can mitigate dissatisfaction from additional delays.

Parallel Systems

- SEPTA and TTC are incrementally rolling out new fare collection systems. New validators become active upon installation. As a result, the new fare collection system is not available on all buses or at all rail stations, and will be phased in over time. This has led to some customer confusion and installation challenges.
- Sound Transit plans on requiring new validators to also read legacy ORCA fare media. This will require parallel coordination between the back ends of new and old system. The region does not want operate the old and new systems in parallel, but the technical details of parallel operation still need to be determined.
- WMATA recommended keeping the same data warehouse during the transition in order to reduce the need reconcile multiple reports.
- DART discovered during design reviews that some legacy equipment could be repurposed instead of purchasing new equipment. In addition, they originally planned on using their existing bus fareboxes but discovered it was more cost effective to purchase new simplified fareboxes.

Project Risks

Design Risk

- Many agencies agreed that over-specifying technical requirements can prevent agencies from adopting innovative and/or upcoming technologies. Functional requirements allow vendors to propose new technologies as long as they meet the intended function of the requirement.

- Several open payment systems anticipated higher adoption of open payment bank cards in the US. The actual adoption has been negligible, although mobile wallets such as Apple Pay and Android Pay may become more popular over time.
- TriMet mentioned that the open payment design process was extremely complex and new for the vendor. As a relatively new feature in transit fare collection, they have been working through the technical details since the start of the design process.

Procurement Risk

- Several agencies noted that a long procurement process increases the risk of technical obsolescence due to rapid technological changes in the fare collection industry.
- Many agencies mentioned that having a comprehensive Concept of Operations, executive level advocates, and well defined vendor schedules reduced the risk of having to cancel vendor contracts.
- WMATA and SEPTA both experienced procurement processes that were significantly longer than anticipated due to technical requirement clarifications, vendor changes, funding constraints, and internal staffing changes.

Implementation Risk

- Many agencies stated that vendor staffing, technical capabilities, and scheduling as major potential risks.
- DART worked with vendors to create a detailed and reasonable schedule at the outset and have dedicated agency staff manage vendor schedules and progress.
- SEPTA recommended including comprehensive contract resolutions measures in place from the start of the project.
- A combination of cost, schedule, and technical issues caused two agencies to cancel their fare vendor contracts.

Operations Risk

- Most agencies recommended having the ability to write limited transaction data to account-based cards. This would preserve some transaction data in the event of real-time communication failures. Communications on bus can be unreliable due to inconsistent cellular coverage.
- CTA noted that it was much more difficult to change customer behavior and fare media usage patterns than expected.

Risk Management

- TriMet performed an external audit of potential risks at the beginning of the process. Mitigation strategies were developed for each potential risk.
- WMATA recommended creating a risk register at the beginning of the process and reviewing the register at each stage of the process.
- SEPTA noted cyber security as a major source of risk. The agency recommended clearly defining legal liabilities in the event of a cyber breach.
- All agencies stressed the importance of PCI and PII security. Increasing PCI and/or PII scope by storing bankcard or personal information on agency system was highly discouraged. Hiring one

or more Qualified Security Assessor (QSA) to constantly evaluate potential PCI issues was recommended.

Mobile Ticketing

Vendor Experience

- All agencies with mobile app vendors under contract noted some staffing and scheduling issues. Some agencies noted that particular mobile vendors were undergoing significant internal change and restructuring.
- DART originally selected moovel as their mobile ticketing vendor, but had to cancel the agreement due to scheduling and staffing constraints. They contracted with their original mobile ticketing vendor, Unwire.
- TriMet felt that moovel (formerly GlobeSherpa) had good engineering and was able to customize many features of the app initially. TriMet was GlobeSherpa's first client, and one of the first bus mobile ticketing projects in transit.
- DART has been relatively happy with Unwire. Unwire was able to integrate with ride sharing and other innovative services. They are currently integrating with PayNearMe, which allows customers to pay their mobile tickets with cash at a network of retailers.

Validation Technology

- Most agencies stated that it was costly and difficult to directly integrate mobile validators into existing fare systems. It was more cost effective to separately implement mobile validators that were installed beside legacy fare equipment.
- Some agencies required that the primary fare collection vendor provide a list of potential mobile validator sub-contractors in order to pilot mobile ticketing.

Shared Ride Services

- Integration with ride sharing apps was listed as a goal of most agencies, however many details, such as revenue sharing, require considerable negotiation and technical challenges.
- TriMet launched a new version of their moovel mobile ticketing app this year that integrated Lyft, Car-2-Go, and their local bike share service.

Smartcard Integration

- Many agencies currently utilize mobile ticketing either on limited modes, limited fare products, or using visual validation. Those with card-based smartcard systems generally operate in parallel with mobile ticketing.
- CTA, TriMet, and DART are planning or operating account-based smartcard systems and focus on account management and mobile purchase functionality.

Fare Policy

Fare Simplification

- Most peer agencies plan to use the enhanced functionality of account-based systems in order to simplify fare structures or introduce new products and/or policies.

- Many agencies stated that the fare policies and structure should be in line with the greater fare collection systems goals.
- Several agencies noted that customers are more strategic with purchasing products and loading value under an account-based system. This can lead to a potential decrease in revenue as customers are less likely to purchase higher cost passes if more flexible products are available.
- CTA replicated the current fare structure and fare policies to allow customers to become more accustomed to the Ventra system.
- SEPTA noted having challenges integrating the complex regional fare structure, which includes zones, transfers, and multiple users into the new Key Card system.

Innovative Strategies

- Several agencies are exploring or planning for fare capping, or best fares. This allows customers to ride with stored value, and get "capped" at preset daily and/or monthly amounts. This effectively allows riders to get day and month pass discounts without having to purchase the passes up front. This is much more simple and equitable for customers, but could potentially reduce revenue since customers will only pay for what they ride.
- Several agencies have incentivized their smartcards and other forms of electronic media over cash payments. This includes providing free transfers on smartcards, or charging more for cash payments or more expensive LU media.
- CTA charges a $0.50 fee for purchase 1-way Limited Use (LU) tickets from TVMs.
- While several agencies charged higher fare for cash, Metro Transit is providing a 10% loading bonus for stored value on smartcard.

Fare Policy Timing

- Most peer agencies advised against raising fares while implementing a new fare collection system. This could lead to the perception that the new fare system is the cause of higher fares.
- SEPTA made minor changes to fare policy when KEY was introduced, but delayed fare increase due to customer concerns.
- TriMet is introducing fare capping during the launch of the new HOP fare system. This is being marketed as a major benefit and potential fare decrease for most riders.

Title VI

- TriMet performed a Title VI assessment of changes and used GIS graphical analysis to assess the impact of changing their retail network.
- DART saw daily and monthly caps as Title VI improvements for low-income groups who cannot pay upfront cost of day or monthly passes.
- DART found that PayNearMe would be sufficient for providing mobile benefits to unbanked customers since it would allow them to pay with cash.

Partnerships

Vendor Experience

- All agencies noted various concerns with their traditional fare collection system vendors. Concerns included technical capabilities, staffing shortages, unforeseen costs, inflexibility, lack of transparency, and general inability to manage complex projects.
- Some newer vendors seemed to have solid technical capabilities and transparent access to engineers, but were constrained due to their relatively small size.
- All agencies wanted more control over their fare systems and wanted to reduce reliance on a single vendor for system upgrades and changes. In order to accomplish this, an open architecture requirement was required by several peer agencies for their next generation systems.

Institutional Programs

- Account-based systems can allow institutions to self-administer their fare programs. Sound Transit mentioned that the University of Washington was interested in moving from pre-selling passes to post pay system with a cap. This may have revenue impacts as institutional customers would only pay for rides taken.
- Several agencies are considering loading institutional passes onto non-agency media, such as university IDs, in order to reduce card production and distribution costs. However the integration and security costs for sharing media and encryption keys had to be explored.
- CTA mentioned having issues with using account-based cards with social service programs as many of those programs serve transient or limited time customers.
- Several agencies are considering providing limited-use (LU) tickets to social service agencies as opposed to extended-use (EU) media. While LU media is costly compared with paper media, they may offer flexibility and increased functionality in an account-based system.

Eligibility Process

- Most agencies noted that account-based fare collection systems provide greater more robust control reduced fare eligibility enforcement. Smartcards and mobile apps can be configured to limit the sale of reduced fare only to registered reduced fare accounts.

Data and Reporting

- All agencies agreed that it was very important to specify that the agency owns and has unlimited access and query rights to all system data.
- There was a consensus that all vendors had limited data warehousing or analytics capabilities, and that most often agencies exported data into their internal data warehouse for reporting.
- CTA noted that it is very difficult to get custom queries and reports from their vendor. This hinders their ability to research/analyze usage data.
- TriMet is having the vendor re-create the data warehouse and provide the data dictionary in order allow the agency to write custom queries in house.

Real-Time Communications

- Network response time was listed as a primary area of focus for account-based systems. Rail platforms are generally not a concern since they are hard wired, but bus communications rely on comprehensive cellular coverage and reliable network performance.
- CTA launched their Ventra account-base system with 3G cellular since 4G was unavailable at the time. Their coverage is sufficient but will explore if upgrade to 4G will improve performance.
- Several agencies piloted mobile routers from several vendors in order to test cellular coverage and real-time communication capabilities.

Central Computer Systems

Customer Relationship Management (CRM)

- Most agencies felt that vendors had issues implementing CRM systems and recommended sub-contracting CRM systems to third parties.
- Metro Transit specified having access to the necessary Cubic APIs to integrate with their internally developed CRM system.
- Since CRM systems store PII information, agencies generally hosted their CRM databases separate from the fare system transaction database.

Financial Clearing and Settlement

- Several peers mentioned that vendors are not always familiar with accounting principles, and recommended involving accounting staff early in the design process.
- The interface to standard General Ledger (GL) systems are not sufficient with most standard fare system vendor systems.
- Regional peers mentioned that clearing and settlement is especially important since the participating agencies need access and transparency to the settlement process.

PCI/EMV Certification

- Each agency had a different PCI certification status, but all agreed that the process to get certified is complex and costly.
- Several agencies retained multiple Qualified Security Assessor (QSA) to evaluate and monitor Payment Card Industry Data Security Standard (PCI DSS) compliance. Some agencies commented that different QSA's often have different opinions about PCI rules.
- Several agencies emphasized the importance of having experienced payment processors and Merchant banks to process payments and provide reasonable rates.
- Strong encryption of PCI and PII data was recommend by several agencies, in addition to supplementary security techniques like tokenization.
- All agencies strongly recommended designing separate fare transaction and payment information databases.

Hosting

- All agencies stated that there was a definite trade-off between traditional hosting at local data centers, compared with cloud-based or outsourced hosting services.
- Most agencies noted that cloud based hosting was more expensive than local hosting, but offered benefits such as scalability and performance.
- TriMet noted that moovel uses the Amazon Web Services (AWS) for mobile data hosting. TriMet felt that the cloud based hosting was able to quickly scale during surge events.
- Most agencies specified instant server transition during failover events. However, one agency noted that actual transition time took up to three hours.
- Many agencies recommended specifying the functional hosting requirements and letting vendors propose the option for cloud hosting to evaluate the cost/benefit.

MTS Fare Collection Whitepaper
Chapter 2
Preliminary Requirements

Prepared for

Metropolitan Transit System

September 2016

ch2m:

Preliminary Requirements

As part of its next generation fare collection project, the San Diego Metropolitan Transit System (MTS) developed this list of preliminary system requirements of a model future fare system. These preliminary requirements were built upon staff needs in addition to discussions from the peer agency workshop.

While these requirements represent high level requirements for a future system, the decision to replace the entire system, or upgrade elements the existing system has not occurred. Additional efforts including a transition plan, procurement approach, operations model, fare structure analysis, and more detailed requirements capture will be needed prior to a final decision.

Account-Based System with Real Time Communications

The next generation fare payment system will utilize an account-based architecture for the processing and validation of fare payments. All fare products and value loaded by customers will be stored in the account-based backend and all validation and sales devices deployed within the system will be equipped with a real-time communications. This will allow centralized processing of business rules and simplify field validation devices. It will also enable more comprehensive integration with third party systems.

- Account-based architecture centralizes all fare processing in the back office
- Enables the use of simplified and low cost validation devices
- Reduces the need for complex device configuration and software updates
- Eliminates the 24-48 hour "autoload" delay associated with card-based systems
- Requires reliable real-time communications on bus and rail platforms
- Cellular coverage, cost, and network throughput and latency should be analyzed in advance
- Risks associated with offline devices must be considered

Open Architecture

One of the most important requirements of the next generation MTS fare collection system is an open architecture, or providing full access to system Application Programming Interfaces (APIs) and data formats. This allows the flexibility to procure software and hardware outside the primary fare system vendor, and facilitates easier third party integration. While all vendor hardware will have some proprietary design, access to system APIs will allow the agency to purchase from third party vendors. As an example, a simplified TVM could be procured from a larger pool of TVM vendors, which can interface with the central back office through provided APIs. Integration with the legacy Cubic system will still require cooperation/cost from Cubic.

- Reduces reliance on single fare system vendor
- Enables use of non-proprietary hardware and software
- Free access to Application Programming Interfaces (APIs)
- Ability to modify or adjust graphical user interfaces for devices (TVMs and validators), or back office tools (CRM, maintenance and monitoring tool, etc.)
- Allows usage of commercial off-the-shelf (COTS) validators and smart devices

- Accommodates easier integration with legacy hardware
- Allows option for a lower cost "TVM lite"
- Provides fare media independence and integration with third party devices
- Detailed hardware requirements including durability, power, compatibility, and usability will be specified to match the unique MTS environment

Closed-Loop Foundation

A key component of the next generation fare system will be a closed-loop back office. Every next-generation fare system is built upon a closed-loop back office, which enables transit-specific business rules including reduced fares, transfers, and pass products. While the current card-based fare collection system also has a closed-loop back office, an account-based closed-loop back office will allow for increased functionality including instant autoloads, centralized fare processing, and greater third party integration. A closed-loop back office is also essential for processing open payments.

- A closed-loop back office is a necessary requirement, due to transit-specific business rules such as reduced fares, pass products, transfers, etc.
- Account-based closed-loop systems offer significant advantages over card-based systems such as instant autoloads, centralized fare processing, and improved third party integration
- All open payment systems are built around a closed-loop back office
- Closed-loop transactions are not subject to fixed and variable transaction fees that come with open payment transactions
- Closed-loop foundation allow for flexible implementation and risk mitigation strategies and unrestricted access to fare media memory

Open Payments Ready

Open payments will give customers the ability to pay fares with open-loop contactless bank cards and mobile wallets, such as Apple Pay and Android Pay. While this requirement gives customers more options, open payments are currently not widely adopted in the transit industry. Open payments currently account for less than 0.1% of total transactions in the largest open payments system. This is due in large part to the lack of issuance of contactless bank cards in the U.S. Mobile wallet usage rates are also currently low, but may increase in the future. Open payment acceptance will increase PCI/EMV scope and includes fixed and variable banking fees for every transaction. Given this uncertainty regarding the future of open payments and the additional cost, the next generation fare collection system should be open payments "ready", but will not accept open payments at launch.

- Open-loop contactless bank cards are not currently issued at scale in the US
- Existing open payment systems have less than 0.1% of open payment transactions
- Accepting open payments increases PCI/EMV scope and includes bank fees for every transaction
- Mobile wallets such as Apple Pay and Android Pay are developing and may see increased adoption in the future
- Validator hardware will be certified to read and process open payments, but the entire back office system will not accept open payments at launch

- Proposing vendors will identify how much further work/cost will be necessary to accept open payments, if adoption of open payment adoption increases in the future.

Flexible and Expandable Fare Policy

The account-based architecture will support a wider range of fare policies compared to card-based systems. In addition to supporting pass products, stored value, and zone-based fares, account-based systems can also support tap-on/tap-off distance fares and fare capping. Fare capping involves using stored value with a set maximum amount or "cap" per day/week/month. This ensures that customers are always receiving the most equitable or "best fare". Specifying that a wide range of fare policies be supported will provide MTS with greater flexibility to adopt innovative fare policies over the life of the system. The account-based system will also allow retailers to sell fare media in the same manner as gift cards, where customers can purchase a MTS fare card alongside an Amazon or Starbucks gift card. This allows retailers to sell media using existing Point of Sale registers and prevents the need for special fare system sales equipment.

- Will include standard fare passes and stored value
- Ability to implement tap-on/tap-off or distance based fares
- Ability for zone-based fare structure
- Ability for MTS to control and adjust fare catalog in a flexible manner
- Capable of stored value with a set maximum per day/week/month AKA best fares or capping
- Ability to sell media like gift cards at third party outlets, with no custom fare system equipment required at the outlets

Mobile Ticketing Integration

Mobile ticketing will provide customers the ability to purchase fares using their smartphones. Validating mobile tickets can be done via visual inspection of the smartphone screen without specialized hardware. However, integrating optical barcode and/or NFC contactless readers into validators can provide for more robust fare inspection and the collection of important ridership data. MTS awarded a mobile ticketing contract to moovel in 2016. In order to ensure full integration between mobile ticketing and smartcard systems, MTS must coordinate the existing moovel contract with the larger fare collection system. Integrating mobile ticketing with the next generation fare collection system poses several challenges. Mobile wallets such as Apple Pay and Android Pay utilizing NFC are currently unavailable to closed-loop applications. As a result, transit agencies cannot control the mobile wallet user interface or the NFC hardware interface. Given these challenges, specifying that validators include both an optical barcode validator and NFC hardware interface will allow for a more robust and future proof mobile ticketing solution. Customers may face difficulties purchasing/validating fares due to dead cellphone batteries and/or damaged screens. Additionally, a portion of MTS riders do not have bank accounts or smartphones. This may lead to Title VI concerns as these customers may not have full access to the benefits of mobile ticketing. MTS needs to develop a plan to mitigate potential Title VI impacts for mobile ticketing.

- Enables purchasing tickets for transit on smart phones
- Can be validated both visually and through interface with an onboard reader (barcode or NFC contactless)

- Coordinate existing contract with moovel with larger fare collection system
- Mobile wallet applications and NFC/secure element are still inaccessible to closed-loop transit applications
- Mobile wallets are currently limited to provisioning bank cards, and agencies do not control the user interface or experience
- Transit agency applications currently cannot easily utilize the NFC interface (depends on the OS and platform)
- Customer experience impacted if phone battery dies or screen is damaged
- Not all customers are banked, or have the required bank cards that are currently accepted by mobile wallets
- Cash payments in mobile ticketing may be incorporated in the future, which would require integration with a payment processor that partners with retailers that accept cash
- Specify validator that includes both an optical barcode validators and NFC hardware interface, and continue to monitor NFC development environment on iOS and Android in transit industry

Robust Back Office Hosting and Data Reporting

MTS staff consider improving the back office hosting and data reporting processes as a major goal for the next generation fare system. The current system has an overabundance of convoluted data reports and requires that custom reports/queries be performed by the current fare system vendor. Specifying full ownership and access to all data will allow MTS to freely produce custom reports and queries. This data ownership will improve internal data analysis efforts. Account-based fare collection systems depend on real-time communication. As a result, MTS should specify a back office which ensures availability, redundancy, and rapid response time. In order to achieve these goals, MTS should specify a highly available and redundant back office that can utilize at least one instance in the cloud or at a third party location to maximize uptime and scalability. The current back office includes a full set of enterprise applications, including Customer Relationship Management (CRM), financial clearing and settlement, revenue management, monitoring tools, etc. MTS should determine which existing applications can be integrated into the new back office and which applications should be purchased new.

- All data is the property of MTS to use freely without restriction with ability to warehouse and query all data
- Availability, response time, and redundancy of back office is critical for account-based system
- Reporting should be intuitive and data can be directly queried by MTS for custom reports
- Central Computer Systems and Applications will be provided or integrated:
    - Customer Relationship Management (CRM)
    - SAP interface/integration
    - Financial clearing/settling
    - Inventory management
    - Revenue Management Tools
    - Device Monitoring and Management

- Determine which existing central system applications require integration, and which ones should be purchased new
- Integration with existing financial, ERP, and CRM systems (such as the current SAP system) is important but each integration adds cost and complexity

Payment Card and Personally Identifiable Information Security

Physical and logical security is one of the top priorities of any payment system. The open payment ready requirement in an account-based fare collection system requires that all system components, including TVMs, validators, and networks be Payment Card Industry (PCI) compliant and protect Personally Identifiable Information (PII). As a result, MTS needs to specify system architecture and database design in order to limit PCI scope and protect PCI data. Designing two distinct databases to house fare transaction and payment information will improve PCI compliance. In addition to encrypting PCI and PII data, MTS should also apply supplementary security techniques, such as using tokenization to transmit sensitive data.

- Strong encryption of PCI and PII data, in addition to supplementary security techniques like tokenization
- Strictly limit the number of system components within PCI scope or that have PII by carefully specifying system architecture and database design
- Designing separate fare transaction and payment information databases
- Contract with experienced payment processors or merchant banks to process payments and provide reasonable rates

Future Expandability

The open architecture specification will allow for greater system expandability. An open architecture will lay the foundation for potential integration with trip planning, ride sharing, and other services. Open architecture will also allow for the ability to share technology, applications, and payment media across regional transportation agencies. While an open architecture does allow for greater third party integration, MTS can only control their half of the integration process. 3rd party integrators such as rideshare services, onboard equipment, and software developers may require additional funding or agreements before agreeing to integrate. As a result, MTS needs to carefully structure and manage agreements/MOUs in order foster beneficial program participation.

- Ability to share applications, technologies, and payment media across multiple transportation providers
- Ability to control and modify user interfaces such as TVM and DCU screen flows and graphics
- Opportunities to move technology across multiple transit agencies
- Requires open architecture, and cooperation/license from third party provider
- MTS can only control their half of the integration, agreements/MOUs need to be carefully structured to establish and manage beneficial program participation

Legacy System Transition

Developing a robust transition plan will not only ensure a smooth transition for staff and customers, it will also help guide the procurement process and implementation plan. The degree to which MTS chooses to maintain, upgrade, or replace existing system elements will determine the scope of new system procurement. While a full system replacement can provide more advanced features, it can cost a significant amount in cost and time. Leveraging legacy systems can extend the life of existing investments, and still provide core improvements and upgrades. MTS should develop a comprehensive transition plan prior to the development of a technical specification.

- Transition plan is key to develop prior to procurement of new system
- Determining which legacy hardware/software to keep may dramatically impact the new system's cost and operation
- Determine what existing fare collection equipment could be leveraged or repurposed
- Determine ownership of card format/encryption keys

MTS Fare Collection Whitepaper
Chapter 3
Preliminary Cost Estimate

Prepared for

September 2016

ch2m.

Preliminary Cost Estimate

Based on the list of preliminary system requirements of a model future fare system established in Chapter 2, a preliminary capital cost estimate was developed in this chapter. Since a detailed requirements capture process was not undertaken, key assumptions had to be made in order to complete the cost estimate.

Next-generation fare systems are incredibly complex systems that integration dozens of hardware and software components of varying size. In order to provide a reasonable range of costs, a low estimate and high estimate were provided, which are described below.

Low Estimate

The low cost estimate was developed as meeting the minimum functionality of the preliminary requirements established in Chapter 2, and assuming "best case" price scenarios. For example, the low estimate assumed express/compact Ticket Vending Machines (TVMs), as opposed to the full featured TVMs assumed in the high estimate. Furthermore, installation costs were assumed to be primarily undertaken by MTS, as opposed to the fare system vendor. More detailed assumptions are included in each line item of the cost estimate itself.

High Estimate

The high cost estimate was developed as meeting the full functionality of the preliminary requirements established in Chapter 2, and assuming "worse case" price scenarios. For example, the high estimate assumed full featured Ticket Vending Machines (TVMs), as opposed to the express/compact TVMs assumed in the low estimate. Furthermore, installation costs were assumed to be primarily undertaken by the fare systems vendor, as opposed to MTS. More detailed assumptions are included in each line item of the cost estimate itself.

Fare System Replacement Capital Cost Estimate

	Low Estimate	High Estimate	Assumptions
Equipment			
Integrated Farebox Readers	$814,000	$1,668,700	Embedded reader in current farebox
Driver Consoles	$683,760	$2,181,520	Separate driver control unit
Mobile Data Routers	$1,261,700	$2,726,900	Low: separate router procurement
Offboard Validators	$643,500	$1,600,500	Mounted on pole & rugged case
Ticket Vending Machines	$8,551,950	$17,508,600	Low: limited function TVM, High: full service
Agency Customer Service Devices	$107,700	$227,700	
Retail Sales Devices	$80,250	$159,750	Compact reload device
Inspection Devices	$112,000	$240,000	Low: purchase COTS smartphones
Back Office Hardware	$525,000	$1,750,000	Including test HW and software licenses
Initial Card Supply	$375,000	$750,000	Assume 500K cards
Spares/Test Equipment	$1,134,200	$2,393,600	10% spares ratio
Equipment Sub-total	***$14,289,060***	***$31,207,270***	
Installation			
Bus Equipment Installation	$738,440	$1,128,000	Integrate with farebox power/comms
Offboard Validator Installation	$114,875	$517,800	Utilizing existing station power/comms
TVM Installation	$161,970	$526,680	Utilizing existing station power/comms
Customer Service Device Installation	$19,160	$34,260	
Retail Sales Device Installation	$27,430	$54,860	
Back Office Installation	$121,200	$244,560	
Installation Sub-total	***$1,183,075***	***$2,506,160***	
Non-Recurring Engineering			
Back Office System Development	$1,155,000	$2,775,000	Account based processor
Website Development (Customer & Institutional)	$175,000	$550,000	May be 3rd party developer
Reader/Validator Software	$100,000	$250,000	
Driver Console Software	$50,000	$100,000	
TVM Software	$150,000	$350,000	Low: limited function, High: full service
Customer Service Device Software	$100,000	$175,000	
Retail Device Software	$75,000	$150,000	
Inspection Device Software	$100,000	$150,000	Mobile smartphone inspection app
Farebox Integration	$250,000	$500,000	Integrate reader into existing farebox
CAD/AVL Integration	$250,000	$500,000	
Mobile Ticketing Development/Integration	$200,000	$400,000	Integrate with existing mobile vendor
Parking Integration	$150,000	$350,000	
Oracle/SAP Integration	$100,000	$350,000	Utilize existing SAP ERP software suite
NRE Sub-total	***$2,855,000***	***$6,600,000***	
Launch Activities			
System Testing	$428,250	$990,000	15% of NRE
Agency Training and Manuals	$142,750	$330,000	5% of NRE
Launch Services (e.g. Pilot and Marketing/Outreach)	$142,750	$330,000	5% of NRE
Launch Sub-total	***$713,750***	***$1,650,000***	
Project Management			
Project Management	$1,904,089	$4,196,343	10% of subtotal
PM Sub-total	***$1,904,089***	***$4,196,343***	
Unadjusted-total	***$20,944,974***	***$46,159,773***	
Warranty	$1,047,249	$2,307,989	5% of unadjusted total
Performance Bond	$209,450	$461,598	1% of unadjusted total
Contingency	$3,141,746	$6,923,966	15% of unadjusted total
Grand-total SI Costs	**$25,343,418**	**$55,853,325**	

MTS Fare Collection Whitepaper
Chapter 4
Preliminary Recommendation

Prepared for

November 2016

ch2m:

Recommended Next Steps

This fare collection study began by discussing next-generation fare systems with key peer agencies across the country. From those lessons learned and MTS staff discussion, preliminary system requirements for a future fare system were developed. Those preliminary system requirements were used as the basis for a preliminary cost estimate range for a full system procurement.

While the preliminary requirements and cost estimates represent the vision for a future system, the decision to replace or maintain parts of the existing system has not been fully determined. MTS could perform strategic upgrades to the existing system, replacing obsolete or underperforming components and transitioning to a new system with minimal impact to customers. Furthermore, integration between "best of breed" vendors in mobile ticketing, website design, reporting, and various hardware suppliers could be explored to maximize benefit and control costs.

Lessons learned from several peer agencies show that additional efforts to determine critical design decisions and transition plan are highly recommended prior to initiating a system procurement. These critical design discussions usually occur over a matter of months, and are typically described in a Concept of Operations, or ConOps.

MTS may choose to maintain their existing Compass program or proceed with a full system replacement without engaging in further analysis. However, not performing some of the additional efforts described in this section carries potential risks, as evidenced by several next-generation fare collection projects. The benefits, drawbacks, and costs of the three immediate options are enumerated below.

	Maintain Existing Compass System	Proceed with Full System Replacement	Engage in Strategic Upgrade Analysis
Benefits	▪ Maximizes current investment ▪ Customer satisfaction high ▪ Card based system is proven ▪ Change orders and mobile ticketing may provide incremental improvements ▪ Issues with existing system are understood	▪ Benefit from latest fare technology ▪ Brand new hardware and software ▪ Can define new technical and functional requirements ▪ Latest security and payment acceptance ▪ Can require open architecture to enable future flexibility and integration partners	▪ Explores strategic upgrades of system components while leveraging existing investments ▪ Can be developed with regional stakeholders and vendor community ▪ Considered best practice from several peer agencies ▪ Can procure "best of breed" products and services from specialized vendors ▪ Enables multiple procurements to minimize costs and increase flexibility ▪ Evaluate innovative operational and procurement approaches
Drawbacks	▪ Agency	▪ Highest cost option	▪ Extends the system

	dissatisfaction with legacy vendor ▪ Ongoing operational and software issues ▪ Frequent change orders required ▪ Upgrades are expensive ▪ Data extraction is problematic ▪ Customization is challenging ▪ Reporting is insufficient ▪ Manual process and procedures required ▪ Lack of transparency and trust with vendor	▪ Does not leverage existing investment ▪ Benefits may be limited depending on design requirements ▪ New technology doesn't always provide user or agency benefits ▪ New vendor may have similar issues as existing vendor ▪ Procurement and implementation schedule are extensive ▪ Risks associated with account-based systems are relatively new ▪ Vendors with account-based implementation experience are limited	design and requirements phase ▪ Requires regional participation for meaningful benefit ▪ Multiple procurements will increase agency oversight responsibilities ▪ Integration of new and legacy vendors can have risk ▪ Legacy equipment and components may not have significant useful life remaining ▪ May still result in a full system replacement if current system cannot be maintained
Potential Cost	Low	High	Low – Medium
Potential Gains	Low	Medium – High	Medium – High
Potential Risk	Low – Medium	Medium – High	Low – Medium
Recommended	Not Recommended	Not Recommended	Recommended

Given the significant investment devoted to the existing system, and the high cost and potential risk associated with a full system replacement, CH2M recommends performing a strategic upgrade analysis and detailing the results in a Concept of Operations (ConOps).

ConOps have been developed and recommended as a best practice by several peer agencies and industry vendors. It can be used as a living document that describes several critical aspects of MTS fare collection technology, procurement, and operations. By understanding and discussing each of these aspects prior to procurement, MTS can minimize the risks that have befallen several other fare collection projects. The development of a ConOps is recommended to include the following tasks.

Needs Assessment

The critical first step in the development of a ConOps is the completion of a Needs Assessment. The primary purpose of the Needs Assessment is to determine and define the high level goals for the new fare collection system. This process can include either comprehensively defining new goals or refining / updating previously defined fare collection system goals. These goals will serve as the guiding principles for the numerous design decisions for the fare collection system. Peer agencies have noted that a lack of clearly defined goals can lead to increased debate / delay surrounding key system design elements.

Current System Analysis

The Current System Analysis will allow MTS to summarize current fare collection system components as well as evaluate the overall strengths and weaknesses of system components. The Current System

Analysis first includes summarizing the current system's technical components, features, policies, and existing contract terms for services including maintenance, software support services, and other vendor contracts. Next, the analysis must include examination of key strengths and weaknesses of the current fare collection system. The strengths and weaknesses may include fare collection system components such as technical capabilities, MTS / vendor interface, or customer perception. The analysis should then estimate the remaining useful life of current components including TVMs, fareboxes, validators, back office equipment, software licenses, in addition to other items. The Current System Analysis should also include an evaluation of existing fare collection proposals from Cubic as well as an exploration of costs required to retain ownership of card format / encryption keys. This will provide a rough cost estimate for maintaining the current system which will be compared against proposed new fare collection systems. The final results of the Current System Analysis will help to inform the Detailed System Requirements Capture and the Legacy Transition Plan. Foregoing analysis of the current fare collection system may lead to over-procuring a fare collection system or procurement of a system which does not address current system weaknesses.

Detailed System Requirements Capture

The Detailed System Requirements Capture provides the basis for the technical specifications included in the fare collection system RFPs. The Detailed System Requirements Capture does not set specific requirements, however it does define the types of technologies which must be supported in the fare collection system. As a result, the Detailed Systems Requirements Capture includes a review of all key design decisions regarding equipment, back office modules, and sales channels. The equipment review will consider design decisions regarding validation devices, sales devices, inspection devices, communications, and fare media. The back office review will consider the Account-Based Transaction Processor, Customer Relationship Management (CRM) System, Reporting System, Device Monitoring System, Maintenance Management System, Enterprise Finance and Settlement System, as well as others. The sales channel review will consider the retail network, ticket vending machines, websites, institutional programs, and third party distributors in addition to others. The Detailed System Requirements capture is extremely important for maintain a clear and consistent plan for the new system. A lack of well-defined system requirements can lead to continual debate over design decisions as well as procurement of a system which does not meet MTS's fare system goals.

Mobile Ticketing Integration

MTS is currently in development of a mobile ticketing solution. Staff has indicated the desire for the mobile ticketing system to integrate with the new fare collection system. The Mobile Ticketing Integration plan is critical to ensure seamless agency and customer experience across all fare collection methods. The Mobile Ticketing Integration Plan should first review all existing mobile ticketing contract terms, project timeline, and project scope. The Mobile Ticketing Integration plan must also explore how mobile ticketing validation will occur as well as how back office processes will be integrated. Exploring the open architecture requirement can allow MTS and the fare collection system vendor to access APIs. Accessing the mobile ticketing APIs will allow for more efficient integration with the fare collection system. Review of these elements will determine the level of effort required to integrate mobile ticketing with the new fare collection system as well as designate responsibilities for mobile ticketing vendors and fare collection system integrators. The lack of an integrated mobile ticketing solution can lead poor customer experience and difficulties reconciling back office processes.

Legacy Transition Plan

The Legacy Transition Plan will help determine the extent to which existing fare collection system elements can be leveraged in the new fare collection system. The first step in the Legacy Transition Plan

is to determine which system components have remaining useful life. Next, the Legacy Transition Plan will determine which system components can be replaced or strategically upgraded. System Components which cannot be leveraged or upgraded will become functionally obsolete. These system components will either need to be fully replaced or outsourced. The Legacy Transition Plan will also help determine the transition of fare media. Implementing a phased versus rapid media transition can greatly impact project budget and project schedule. A robust Legacy Transition Plan reduces the likelihood of over procuring hardware / services and facilitates a smooth fare system transition for MTS and its customers.

Operations Approach

The Operations Approach helps determine which fare collection services will be performed in house and which will be contracted. The Operations Approach document will first summarize fare collection operations that are currently performed in house, and those that are outsourced. Potential operations to review include hosting, system configuration, monitoring, maintenance, revenue service, customer service, retail network, marketing, card fulfillment, special program management. The result of this analysis will help determine if a new operations approach is applicable for certain practices. Peer agencies have mentioned that the degree to which operations are outsourced directly impacts internal fare collection staffing requirements. Outsourcing services may reduce MTS's control over fare collection operations, however performing too much internally may place considerable strain on MTS staff. It is therefore very important that MTS determine an appropriate Operations Approach.

Procurement Approach

The results of the Operations Approach will provide MTS with which fare collection services need to be procured. The Procurement Approach will then determine the specific procurement strategy for those products and services. The Procurement Approach will also explore the benefits and drawbacks of a single system integrator versus multiple procurements. Selecting a single system integrators requires less vendor management, but will cost since the vendor is serving as a system integrator. Choosing multiple procurements can lead to cost savings, but will require MTS to serve as the system integrator. The Procurement Approach will also explore innovative funding vehicles for the new fare collection system. Finally, the Procurement Approach will determine which parties will manage the procurement(s) before and after the vendor award and Notice to Proceed (NTP).

Cost Estimate Update

The key decisions made in the development of the ConOps will impact the overall cost of the fare collection system. The development of the Detailed System Requirements Capture will determine whether to procure full featured or express featured hardware. These hardware features may have a significant impact on total system cost. In addition to considering the costs of a single system integrator, additional cost scenarios should be developed for a strategic upgrade option as well as a split procurements approach. Updating the capital cost estimate is a key component of the ConOps.

Fare Structure Analysis

The purpose of the Fare Structure Analysis is to determine which fare policies and structures should be supported in the new fare collection system. This is not meant to substitute or replace a Fare Policy Study, which recommends specific fare rates and fare policies to be adopted in the near future. By supporting a wide range of fare structures, including distance based fares and fare capping, MTS will be able to more easily adopt innovative fare structures over the life of fare collection system. Choosing to

adopt a fare structure not supported in the technical specifications would require additional costs and schedule delays.

Fare Collection Vendor Matrix

Fare collection systems are extremely complex and unique integration projects that impact every department of a transit agency. Not surprisingly, many large fare collection projects encounter issues throughout design, procurement, and implementation. The efforts described earlier in this Chapter are specifically designed to avoid some of the challenges that other peer agencies have faced. Ultimately, developing a clear design and defining unambiguous requirements can help mitigate some procurement and implementation risks. However, selecting a fare system vendor that can deliver the specified system is equally as important.

While all fare system vendors have strengths and weaknesses, the relatively low number of implemented account-based fare systems makes vendor experience especially important. This is a summary of prominent fare system vendors based on staff experience, peer agency feedback, and publicly available information.

	Notable Projects	Account-Based Experience	Key Strengths / Challenges
Accenture	• Toronto PRESTO • Washington NEPP	• NEPP was account-based / open payment (canceled in 2016 after extended pilot)	– No fully deployed account-based systems – Washington project canceled by WMATA following pilot
Cubic	• Chicago Ventra • Vancouver Compass • London Oyster	• Chicago is largest account-based, open-payment system deployed in U.S. • Vancouver is card-/account-based hybrid (still in deployment)	+ Strong experience implementing fare systems (including account-based) – Significant operational challenges during launch of Chicago system – Client responsiveness can vary depending on local resources
INIT	• Portland Hop Fastpass • Sacramento Connect Card • Honolulu HART	• Portland is account-based / open payment (still in development) • Honolulu is account-based closed loop (still in development)	+ 2 account-based systems in development + Highly technical staff – Sacramento card-based system significantly delayed
Scheidt & Bachmann	• Boston Charlie Card • Budapest (BKK) • Phoenix Valley Metro	• Budapest is account-based (still in development)	– No fully deployed account-based systems – Technical resources based in Europe, limited U.S. staff
Vix (ERG)	• Utah FAREPAY • Seattle ORCA	• Utah was 1st account-based, open payment system deployed in U.S.	+ Has a deployed account-based, open payment system – Limited U.S. engagements
Xerox (ACS)	• Philadelphia Key Card	• Philadelphia is account-based / open payment	– No fully deployed account-based systems

	• Denver RTD	(still in development)	– Launch of Philadelphia system significantly delayed (based on original schedule) – Technical resources based in Europe

Metropolitan Transit System

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Agenda Item No. C2

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
EXECUTIVE COMMITTEE

December 1, 2016

SUBJECT:

TRANSIT OPTIMIZATION PLAN (TOP) UPDATE (DENIS DESMOND)

INFORMATIONAL ITEM

Budget Impact

None.

DISCUSSION:

In summer 2016, MTS began the Transit Optimization Plan (TOP), a ten-year update to the Comprehensive Operational Analysis that evaluated services and reallocated resources according to a strategy that emphasized sustainability and productivity. The project kicked off with a robust public outreach effort and the procurement of a contract with Transportation Management and Design, Inc. for TOP consulting services.

With much of the market and service evaluation complete, staff will present an update of the TOP project and work to date, an overview of some of the key findings, and a schedule of next steps.

Paul C. Jablonski
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Metropolitan Transit System

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DRAFT

Agenda

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 8, 2016

9:00 a.m.

James R. Mills Building
Board Meeting Room, 10th Floor
1255 Imperial Avenue, San Diego

This information will be made available in alternative formats upon request. To request an agenda in an alternative format, please call the Clerk of the Board at least two working days prior to the meeting to ensure availability. Assistive Listening Devices (ALDs) are available from the Clerk of the Board/Assistant Clerk of the Board prior to the meeting and are to be returned at the end of the meeting.

ACTION RECOMMENDED

1. Roll Call

2. Approval of Minutes - November 10, 2016 — Approve

3. Public Comments - Limited to five speakers with three minutes per speaker. Others will be heard after Board Discussion items. If you have a report to present, please give your copies to the Clerk of the Board.

Please SILENCE electronics during the meeting

CONSENT ITEMS

6. On-Call Tree Trimming and Removal Services for the San Diego Trolley - Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL199.0-16 with Singh Group, Inc., a Disadvantaged Business Enterprise (DBE), for on-call tree trimming and removal services for a three (3) year period.

7. Proposed Revisions to San Diego Metropolitan Transit System (MTS) Board Policy No. 41, "Signature Authority", and Repeal of MTS Board Policy No. 4, "Construction Contract Change Orders" — Approve

Action would: (1) Approve the proposed revisions to MTS Board Policy No. 41, "Signature Authority"; and (2) Repeal MTS Board Policy No. 4, "Construction Contract Change Orders".

8. MTS Sale of 2007 45' Bluebird Express Commuter Bus to Transdev Services, Inc. — Approve

Action would authorize the negotiated sale of MTS Vehicle No. 8511 (2007 45' Bluebird Express, VIN # 1BAGRBFA07W100519) to Transdev Services, Inc.

9. Approval of Route 950 Major Service Changes — Approve

Action would approve making permanent the pilot major expansion of Route 950 service that began in January 2016.

10. Architectural and Engineering (A&E) On-Call Services - Master Agreements Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS A&E On-Call master agreements with HDR Engineering, HNTB, Kimley Horn & Associates, Jacobs Engineering, Hatch Mott MacDonald, Dokken Engineering, Pacific Railway Enterprises, Nasland, and Global Signals Group following successful negotiations with each firm for the provision of On-Call A&E services for a five-year agreement.

11. Disadvantaged Business Enterprise (DBE) and Labor Compliance Consulting Services - Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute the following contracts for DBE and Labor Compliance Consulting Services for a five (5) year period: (1) MTS Doc. No. G1964.0-17 with GCAP Services, Inc. (certified DBE firm) for the DBE Consulting Services; and (2) MTS Doc. No. G1965.0-17 with Gafcon, Inc. for the Labor Compliance Consulting Services.

12. Investment Report - October 2016 — Information

13. S70 and SD100 Printed Circuit Boards - Sole Source Purchase Order — Approve

Action would authorize the Chief Executive Officer (CEO) to issue a purchase order to Siemens Transportation Systems Corporation (Siemens), on a sole source basis, for the purchase of printed circuit boards and related items.

14. Transit Smart Cards - Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G1926.0-16 with Paragon Magnadata, Inc. for the provision of Transit Smart Cards for three (3) base years with two (2) 1-year options, exercisable at MTS's sole discretion.

CLOSED SESSION

24. a. CLOSED SESSION - CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION Pursuant to California Government Code Section 54956.9(d)(1) Paul Roberts v. San Diego Metropolitan Transit System San Diego Superior Court Case No. 37-2016-00007000-CU-PA-CTL — Possible Action

Oral Report of Final Actions Taken in Closed Session

NOTICED PUBLIC HEARINGS

25. None.

DISCUSSION ITEMS

30. Fare Collection Update and Whitepaper (Sharon Cooney) — Possible Action

31.

32.

33.

34.

REPORT ITEMS

45.

46.

47.

48.

49.

60. Chairman's Report — Information

61. Chief Executive Officer's Report — Information

62. Board Member Communications

63. Additional Public Comments Not on the Agenda

If the limit of 5 speakers is exceeded under No. 3 (Public Comments) on this agenda, additional speakers will be taken at this time. If you have a report to present, please furnish a copy to the Clerk of the Board. Subjects of previous hearings or agenda items may not again be addressed under Public Comments.

64. Next Meeting Date: January 19, 2016

65. Adjournment

Metropolitan Transit System

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Agenda Item No. 6

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 8, 2016

Draft for Executive Committee Review Date: 12/1/16

SUBJECT:

ON-CALL TREE TRIMMING AND REMOVAL SERVICES FOR THE SAN DIEGO TROLLEY - CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL199.0-16 (in substantially the same format as Attachment A) with Singh Group Inc., a Disadvantaged Business Enterprise (DBE), for on-call tree trimming and removal services for a three (3) year period.

Budget Impact

The value of this agreement will not exceed $144,000.00. The project will be funded through operating budget accounts 380016-571140 and 370016-571140.

DISCUSSION:

Annual services for tree trimming, maintenance, removal and replacement are required to provide the best possible tree care at MTS Stations and along the MTS right-of-way (ROW). Proper tree maintenance enhances the aesthetics of MTS properties and provides a safer environment for Rail Operations as utility line clearance is performed in conjunction with routine or non-routine trimming activities.

MTS Policy No. 52, "Procurement of Goods and Services", requires a formal competitive process for procurements of goods and services exceeding $100,000.

On August 31, 2016, MTS issued an Invitation for Bids (IFB) for on-call tree trimming and removal services. Five bids were received by the due date of September 26, 2016.

One bid, Anton's Service, was deemed non-responsive for failing to submit a completed bid package. The Bidders and their respective bids are as follows:

BIDDER NAME	TOTAL AMOUNT
A Plus Tree, Inc.	$439,350.00
Anton's Service, Inc. **Non-responsive**	$278,400.00
Atlas Environmental Services, Inc.	$164,400.00
Singh Group, Inc.	***$144,000.00***
West Coast Arborists, Inc.	$153,600.00

After conducting price reasonableness analyses and reviewing all bids received for responsiveness and responsibility, staff determined that Singh Group, Inc. presented the lowest responsive and responsible bid. The contract is not to exceed $144,000 over a three-year period.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. No. PWL199.0-16 (in substantially the same format as Attachment A) with Singh Group Inc., a Disadvantaged Business Enterprise (DBE), for a three (3) year period for on-call tree trimming and removal services.

Paul C. Jablonski
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. Draft MTS Doc. No. PWL199.0-16

STANDARD SERVICES AGREEMENT

DRAFT

PWL199.0-16
CONTRACT NUMBER
OPS 960.2
FILE NUMBER(S)

THIS AGREEMENT is entered into this _____ day of _____ 2016, in the state of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following contractor, hereinafter referred to as "Contractor":

Name: Singh Group, Inc.

Address: 1308 Descanso Avenue
San Marcos, CA 92069

Form of Business: Corporation
(Corporation, partnership, sole proprietor, etc.)

Telephone: 760-213-5462

Authorized person to sign contracts: Adolph Singh (Name) President (Title)

The attached Standard Conditions are part of this agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Provide on-call tree trimming and removal services for San Diego Trolley Stations and right-of-way provided , as specified in the Scope of Work (attached as Exhibit A), the Bid (attached as Exhibit B), and in accordance with the Standard Conditions Services Agreement, including the Standard Conditions Services (attached as Exhibit C), and the Federal Requirements (attached as Exhibits D).

The contract term is for three (3) years. The total contract cost shall not exceed $144,000.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	CONTRACTOR AUTHORIZATION
By: _____ Chief Executive Officer	Firm: _____
Approved as to form:	By: _____ Signature
By: _____ Office of General Counsel	Title: _____

AMOUNT ENCUMBERED	BUDGET ITEM	FISCAL YEAR
$144,000.00	380016/370016	17-22

By: _____
Chief Financial Officer — Date

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 7

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 8, 2016

Draft for
Executive Committee
Review Date: 12/1/16

SUBJECT:

PROPOSED REVISIONS TO SAN DIEGO METROPOLITAN TRANSIT SYSTEM (MTS) BOARD POLICY NO. 41, "SIGNATURE AUTHORITY", AND REPEAL OF MTS BOARD POLICY NO. 4, "CONSTRUCTION CONTRACT CHANGE ORDERS"

RECOMMENDATION:

That the Board of Directors:

1) Approve the proposed revisions to MTS Board Policy No. 41, "Signature Authority" (Attachment A); and

2) Repeal MTS Board Policy No. 4, "Construction Contract Change Orders" (Attachment B).

Budget Impact

None.

DISCUSSION:

MTS Board Policy No. 41 establishes the authority of certain MTS staff and the Board of Directors to approve and execute expense procurements, revenue contracts, grants, memorandums of understanding, cost recovery agreements and real property transfer documents.

In October 2015, MTS made revisions to this Policy in preparation of SAP. As of January 2016, SAP has been fully implemented. The following proposed revisions reflect MTS's current processes within SAP.

1. Removing the Term Procurement Initiation Forms: Prior to SAP, MTS used both Purchase Requisition Forms and Purchase Initiation Forms to initiate procurements of goods and/or services, with minor differences between each. These forms have been combined and formatted electronically within SAP. It is now only referred to as a Purchase Requisition;

2. Sales/Use Tax and Freight: The proposed revisions would state that the signature authority for the approval and payment of freight/shipping and sales/other taxes is described within MTS Board Policy No. 63, Payments for Freight/Shipping or Sales/Other Taxes Policy;

3. Purchase Requisitions for Inventory Items: The proposed revisions would state that the signature authority to approve Purchase Requisitions for inventory items is described within MTS Board Policy No. 64, Inventory Controls and Signature Authority;

4. Micro Purchase Threshold: The Federal Transit Administration has increased the micro-purchase threshold from $3,000 to $3,500. On June 9, 2016, MTS updated Board Policy No. 52, Procurement of Goods and Services, to comply with this new threshold. To ensure consistency within this Policy, the proposed revisions will increase the Manager/Supervisor signature authority from $3,000 to $3,500 for Purchase Requisitions (Section 41.2), Expense Contracts (Section 41.4.1) and Payment of Invoices not associated with Contracts (Section 41.6.1).

5. Punch-Out Catalog Transactions: A Punch-Out Catalog is a mechanism within SAP that communicates directly with a supplier's online catalog. Instead of having to manually enter an item's description into a Purchase Requisition, the Punch-Out Catalog electronically enters this information into a Purchase Requisition, straight from a supplier's online catalog. The Materials Manager will use the Punch-Out Catalog to purchase needed materials, components and spare parts that are not available in MTS Storerooms and not provided for within MTS's Inventory List. The Materials Manager will have the authority to approve these Purchase Requisitions and execute the associated stand-alone purchase orders for these goods so long as valued at $3,500 or below;

6. Signature Authority for Stand-Alone Purchase Orders: Once a Purchase Requisition for the procurement of goods and/or service is approved per Section 41.2 of MTS Board Policy No. 41, the Procurement Manager or his/her designee will have the authority to execute stand-alone purchase orders so long as the value of the stand-alone purchase order does not exceed the value of the approved Purchase Requisition. The Chief Executive Officer will implement internal policies and protocols to identify which procurements for goods and/or services are appropriate for the use of a purchase order process as opposed to requiring a formal contract subject to heightened review and approval;

7. Purchase Card Transactions: Authorized signatures for Purchase Card transactions are Directors, Chief Operating Officer – Bus/Rail, Chief Financial Officer and Chief Executive Officer. All approval levels must be contained within and be consistent with MTS's internal Purchase Card Policy;

8. Change Orders: Currently, MTS Board Policy No. 4 "Construction Contract Change Orders" establishes the approval authority of change orders. This is

an outdated Policy, as it requires various approvals by San Diego Association of Governments (SANDAG) Engineers for MTS construction change orders. Staff recommends that MTS Board Policy No. 4 be repealed and the approval authority for change orders be moved to MTS Board Policy No. 41 "Signature Authority". Change orders costing $100,000 or less may be approved by the Chief Executive Officer. Change orders costing more than $100,000 may be approved by the Board of Directors. Any change order costing more than $100,000 that requires immediate approval due to: an emergency involving public safety; liability to MTS; unacceptable delay to the project; or substantial cost increase, shall receive immediate concurrence from the Chief Executive Officer and report such action to the Board of Directors at its next meeting;

9. Payment of Invoices – Prior to SAP, MTS used Requests for Payments or Payment Voucher Forms to start the approval process for the payment of invoices. With the implementation of SAP, MTS will have separate approval processes for the payment of invoices that are associated with a contract (e.g. formal contracts, stand-alone purchase orders) than those for the payment of invoices that are not associated with a contract (e.g. employee reimbursements, payroll deductions and claim payments). The Chief Executive Officer will implement internal policies and protocols to process the payment of invoices associated with a contract. For payment of invoices not associated with a contract, the approval process will require various signatures depending on the dollar value, as listed in Section 41.6.1 of MTS Board Policy No. 41; and

10. Electronic Signature: Currently the Chief Executive Officer has the authority to provide the electronic approval for the Board of Directors within SAP. The proposed revisions would also allow the Chief Executive Officer's designee to perform this function.

Paul C. Jablonski
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. Proposed Revisions to Policy No. 41 (red-line version)
B. Repealed MTS Board Policy No. 4

Metropolitan Transit System

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Policies and Procedures No. 41

Board Approval:

~~10/29/2015~~12/8/2016

SUBJECT:

SIGNATURE AUTHORITY

PURPOSE:

The purpose of this policy is to establish the authority granted by the Board of Directors to the Chief Executive Officer, and to provide the Chief Executive Officer with the authority to delegate functions under his or her control to MTS staff. It also establishes guidelines and procedures for authorized signatories relating to check processing (including wire transfers) and San Diego Metropolitan Transit System (MTS) documents (purchase requisitions, contracts, agreements, payment vouchers, deeds, grants, etc.). The policies below relate to MTS, San Diego Transit Corporation (SDTC), and San Diego Trolley, Inc. (SDTI). Throughout this policy, the agencies are collectively referred to as MTS.

BACKGROUND:

From time to time, various third parties and agencies seek to verify that individual MTS staff members have the authority to execute documents on behalf of MTS.

MTS maintains a number of checking accounts in various approved financial institutions. To ensure adequate internal controls, signing of checks and execution of wire transfers are restricted to authorized personnel only. This policy establishes guidelines and procedures for obtaining appropriate approval.

In addition, this policy establishes guidelines and procedures for delegating authority to execute MTS documents, including contracts and agreements, on behalf of the Chief Executive Officer in his or her absence.

POLICY:

41.1 Authorized Signatories for Disbursements

A disbursement is the final authorization to pay a third party through either a check, warrant, wire transfer/Electronic Funds Transfer (EFT), Automated

Clearing House (ACH) or other similar payment mechanism. Authorized signatures for disbursements are: the Finance Manager, Controller, Director of Financial Planning and Analysis, Chief Operating Officer – Bus/Rail, Chief Financial Officer, Chief of Staff, General Counsel, and Chief Executive Officer.

One signature is required for disbursements under $2,000. This signature can be a facsimile signature. Two signatures are required for all disbursements over $2,000. One of these can be a facsimile signature. A listing of all facsimile checks must be reviewed and approved by an authorized signer. For disbursements over $10,000, the second signature SHALL NOT BE the Finance Manager, Controller, or Director of Financial Planning and Analysis. Disbursements over $25,000 require that one of the signatures be that of the Chief of Staff, General Counsel, Chief Financial Officer, or Chief Executive Officer.

The listing below summarizes the above as to effective levels of signing authority:

Finance Manager	To	$ 10,000
Controller	To	$ 10,000
Director of Financial Planning & Analysis	To	$ 10,000
Chief Operating Officer – Bus/Rail	To	$ 25,000
Chief Financial Officer	Over	$ 25,000
Chief of Staff	Over	$ 25,000
General Counsel	Over	$ 25,000
Chief Executive Officer	Over	$ 25,000

41.2 Purchase Requisitions ~~and Procurement Initiation Forms~~

Purchase Requisitions ~~and Procurement Initiation Forms~~ initiate the potential procurement of goods and/or services. Purchase Requisitions ~~and Procurement Initiation Forms~~ define the need for goods and/or services; budget for the goods and/or services; and assign staff time and resources to initiate the procurement of such goods and/or services. Purchase Requisitions ~~and Procurement Initiation Forms~~ do not constitute a commitment or contractual relationship with a Vendor.

Authorized signatures for Purchase Requisitions ~~and Procurement Initiation Forms~~ are Supervisors, Managers, Directors, Chief Operating Officer – Bus/Rail, Chief Financial Officer, Chief of Staff, General Counsel, and Chief Executive Officer.

Manager/Supervisor	To	$ 3,~~000~~500
Directors	To	$ 5,000
Chief Operating Officer – Bus/Rail	To	$ 50,000
Chief Financial Officer	To	$ 50,000
Chief of Staff	To	$ 50,000
General Counsel	To	$ 50,000
Chief Executive Officer	Over	$ 50,000

~~Upon implementation of the SAP system, the Purchase Requisition and Procurement Initiation Form will be combined and formatted electronically within SAP. The above approval levels (Section 41.2) will continue to be applicable.~~

41.2.1 Purchase Requisitions for Inventory Items. The signature authority to approve Purchase Requisitions for inventory items is described within MTS Board Policy No. 64, Inventory Controls and Signature Authority.

41.3 Purchase Orders under Existing Contract

Upon completion of the procurement process (i.e. Board of Directors or staff approval of a formal contract pursuant to Section 41.4 of this Policy), the Procurement Manager may execute and transmit –Purchase Orders to the vendor to properly manage the funding of multiple year contracts.

41.4 Authorized Signatories on Contracts and Documents

Authorized signatures for Contracts and Documents are Supervisors, Managers, Directors, Chief Operating Officer – Bus/Rail, Chief Financial Officer, Chief of Staff, General Counsel, and Chief Executive Officer.

41.4.1 Expense Contracts. Expense contracts are contracts that require MTS to expend funds in return for goods or services. Expense contracts can be issued using various procurement forms, including but not limited to: a formal contract; ~~stand-alone~~ punch-out catalog purchase orders~~;~~ and ~~a~~ Vendor Agreement Form~~; and purchases by payment card.~~ All approval levels must be contained within and be consistent with overall Board of Directors approval levels. The approval levels are as follows:

Materials Manager~~/Supervisor~~ (Punch-Out Catalog~~Payment Cards Only~~) Purchase Orders Only)	To	$ 3,~~000~~500
Procurement Manager, Senior Procurement Specialist or Principal Contracts Administrator	To	$ 3,~~000~~500
Directors	To	$ 5,000
Chief Operating Officer – Bus/Rail	To	$ 50,000
Chief Financial Officer	To	$ 50,000
Chief of Staff	To	$ 50,000
General Counsel	To	$ 50,000
Chief Executive Officer	Up To	$ 100,000
Board of Directors	Over	$ 100,000

41.4.~~1.1~~2 Stand-Alone Purchase Orders. ~~Upon implementation of the SAP system, the above approval levels (Section 41.4.1) will continue to be applicable. Execution of stand-alone purchase orders will be streamlined and processed electronically within SAP.~~ Once a Purchase Requisition for the procurement of goods and/or service is approved per Section 41.2 of this Policy or through Board of Directors action, the Procurement Manager or his/her designee will have the authority to execute stand-alone purchase orders so long as the value of the stand-alone purchase order does not exceed the value of the approved Purchase Requisition.

The Chief Executive Officer will implement internal policies and protocols to identify which procurements for goods and/or services are appropriate for the use of a stand-alone purchase order process as opposed to requiring a formal ~~written~~ contract subject to heightened review and approval.

41.4.3 Purchase Card. Authorized signatures for Purchase Card transactions are Directors, Chief Operating Officer – Bus/Rail, Chief Financial Officer and Chief Executive Officer. All approvals of Purchase Card transactions must be consistent with MTS's internal Purchase Card Policy.

41.4.4 Change Orders. A contract change order is a change within the original scope of the contract. Contract change orders costing $100,000 or less may be approved by the Chief Executive Officer. Contract change orders costing more than $100,000 may be approved by the Board of Directors. Any change order costing more than $100,000 that requires immediate approval due to: an emergency involving public safety; liability to MTS; unacceptable delay to the project; or substantial cost increase, shall receive immediate concurrence from the Chief Executive Officer and report such action to the Board of Directors at its next meeting.

41.4.5~~2~~ Revenue Contracts. Revenue contracts are contracts that result in payments to MTS for goods, services or real property interests. Examples include group/employer sales contracts (monthly passes/fare revenue), advertising, special event licenses, property leases, right of entry permits or licenses, easements and grant deeds. All revenue contracts may be approved by the Chief Executive Officer. Long-term concession contracts (e.g. bus shelter advertising, naming rights, trolley station concessions) and the sale of real property rights (e.g. easement or fee simple interest) valued over $100,000 shall be approved by the Board of Directors.

41.4.6~~3~~ Grants and Memorandums of Understanding. Grants and related documents necessary to obtain local, state and federal funding may be approved by the Chief Executive Officer, Chief Financial Officer, Chief of Staff or General Counsel. Memorandums of Understanding or other agreements documenting an agreed process or program, but not requiring a specific expenditure of MTS funds, may be approved by the Chief Executive Officer. Memorandums of Understanding or other agreements that materially alter the risk or liability MTS has agreed to/is legally obligated to bear, shall be approved by the Board of Directors.

41.4.7~~4~~ Cost Recovery Agreements. Agreements to undertake certain activities, but which are fully funded by another entity, may be approved by the Chief Executive Officer. Examples include agreements with ~~SANDAG~~ San Diego Association of Governments establishing the cost-recovery process for *TransNet*-funded transit programs or agreements with North County Transit District to pay its fair share of Regional Fare System (Compass Card) costs.

41.4.8~~5~~ Real Property Transfer Documents. Subject to the approval limits set forth in this Policy, the Chief Executive Officer is authorized to sign all real property transfer documents, including but not limited to, permits, rights of entry,

licenses, leases, deeds, easements, escrow instructions, and certificates of acceptance.

41.4.~~6~~9 Capital Asset Transfer Documents. Capital Assets may include but are not limited to: revenue vehicles; non-revenue vehicles; equipment; information technology; and furniture. Transfer documentation for Capital Assets may be signed by staff as authorized within MTS Board Policy No. 33, Capital Asset Disposal.

41.5 Changes in Terms and Conditions

Any requested revision to MTS's Terms and Conditions or to accept a Vendor's Terms and Conditions must be approved by the General Counsel.

41.6 Authorized Signatories ~~of Request for~~ Payment of Invoices~~/Payment Vouchers~~

41.6.1 Payment of Invoices not associated with Contracts. Payment of invoices not associated with contracts includes, but is not limited to, employee reimbursements, payroll deductions, utility payments, insurance payments, purchase card transactions and claim payments. Authorized signatures for ~~Request for p~~Payment of these invoices ~~/Payment Vouchers~~ are Supervisors, Managers, Directors, Chief Operating Officer – Bus/Rail, Chief Financial Officer, Chief of Staff, General Counsel, and Chief Executive Officer.

All approval levels must be contained within and be consistent with overall Board of Directors approval levels. The approval levels are as follows:

Manager/Supervisor	To	$ 3,~~000~~500
Directors	To	$ 5,000
Chief Operating Officer – Bus/Rail	To	$ 50,000
Chief Financial Officer	To	$ 50,000
Chief of Staff	To	$ 50,000
General Counsel	To	$ 50,000
Chief Executive Officer	Over	$ 50,000

41.6.2 Payment of Invoices associated with Contracts. Payment of invoices associated with contracts, includes, but is not limited to, formal contracts, stand-alone purchase orders and punch-out catalog purchase orders. ~~Upon implementation of the SAP system, the Request for Payment/Payment Vouchers process will no longer be applicable for certain payments.~~ The Chief Executive Officer will implement internal policies and protocols to ensure that upon receiving an invoice, ~~staff determines whether~~ the proper rate, price and quantity is being charged before payment is processed ~~within SAP~~. Once payment is processed, the disbursement must then be approved as required by Section 41.1 of this Policy.

41.7 Authorized Signatories for Freight/Shipping and Sales/Other Taxes

The signature authority for the approval and payment of freight/shipping and sales/other taxes is described within MTS Board Policy No. 63, Payments for Freight/Shipping or Sales/Other Taxes Policy.

41.~~7~~8 Authorized Signatories for Absences

In the Chief Executive Officer's absence, General Counsel, Chief of Staff, Chief Financial Officer or the Chief Executive Officer's designee is authorized to execute all checks, purchase requisitions, contracts, and documents as necessary, subject to any limits set or instructions given by the Chief Executive Officer.

In the Procurement Manager's absence, the Chief Financial Officer, the General Counsel, the Director of Financial Planning and Analysis, or the Controller is authorized to execute Expense Contracts falling within the Procurement Manager's signature authority.

In the Clerk of the Board's absence, the Assistant Clerk of the Board is authorized to execute documents as may be required to certify actions of the Board of Directors.

41.~~8~~9 Electronic Signature

Any signature authorized within this Policy may be provided electronically through an automated system (e.g. SAP system).

Upon receipt of approval from the Board of Directors for any Expense Contract over $100,000, the Chief Executive Officer or his or her designee shall have the authority to provide the electronic approval within an automated system for the Board of Directors when applicable.

This original Policy was adopted on 2/13/1992.
Policy revised on 8/11/1994.
Policy revised on 1/29/2004.
Policy revised on 2/23/2006.
Policy revised on 11/18/2010.
Policy revised on 11/14/2013.
Policy revised on 03/20/2014.
Policy revised on 10/29/2015
Policy revised on 12/8/2016.

Metropolitan Transit System

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Policies and Procedures No. 4

SUBJECT:

Board Approval: 1/29/04

CONSTRUCTION CONTRACT CHANGE ORDERS

PURPOSE:

The purpose of this policy is to establish the parameters and conditions for change orders on construction contracts.

BACKGROUND:

Recognizing that circumstances or needs may vary from time to time as warranted by unforeseen field conditions, design refinements, or Board direction, it is anticipated that changes to contracts may be required. All changes shall be reduced to writing and shall clearly define the reason for the change and its probable impact on the contract. Changes may be requested by either the contractor or MTS.

POLICY:

4.1 It is the policy of MTS that all construction contracts may be amended by a suitable change order. The contract change orders shall be processed in accordance with the flow chart (attached).

4.2 In general, contract change orders (CCOs) costing $100,000 or less may be approved by the Chief Executive Officer (CEO). CCOs costing $25,000 or less may be approved by the San Diego Association of Governments (SANDAG) Director of Engineering and Construction. CCOs costing $10,000 or less may be approved by the SANDAG Construction Engineer, and CCOs costing $5,000 or less may be approved by the SANDAG Resident Engineer within the terms listed in 4.3, below. The Board may approve CCOs costing more than $100,000 after review of a detailed report by staff that describes the cost and time implications as well as other pertinent information relating to the change.

4.3 The CEO, the Director of Engineering and Construction, the Construction Engineer, and the Resident Engineer are delegated the following authority:

4.3.1 Chief Executive Officer. To approve any change order resulting in a net increase of $100,000 or less that is required to complete the work as intended, except that no change order is to be approved if, in view of other known obligations, the Board-adopted light rail transit (LRT) project funding limits could be exceeded.

4.3.2 Director of Engineering and Construction. To approve any change order resulting in a net increase of $25,000 or less that is required to complete the work as intended, except that no change order is to be approved if, in view of other known obligations, the Board-adopted LRT project funding limits could be exceeded.

4.3.3 Construction Engineer. To approve any change order resulting in a net increase of $10,000 or less that is required to complete the work as intended, except that no change order is to be approved if, in view of other known obligations, the Board-adopted LRT project funding limits could be exceeded.

4.3.4 Resident Engineer. To approve any change order resulting in a net increase of $5,000 or less that is required to complete the work as intended, except that no change order is to be approved if, in view of other known obligations, the Board-adopted LRT project funding limits could be exceeded.

4.3.5 To refer to the Board of Directors any proposed changes to work on an ongoing construction contract costing more than $100,000. The actual contract change order will be attached to the agenda item requesting approval.

4.3.6 To approve any added work on an ongoing construction contract that requires immediate approval because of an emergency involving safety to the public or liability to MTS and costs more than $100,000, after receiving immediate concurrence of the Chairperson of the Board, or Vice Chairperson in the absence of the Chairperson, and to report such action to the full Board at the next Board meeting.

4.3.7 A report with all authorized CCOs will be submitted to the MTS Board on a monthly basis.

4.3.8 For changes in excess of $1 million, the Executive Committee would determine whether a change review panel should be formed to evaluate the desirability of the change. The panel, if deemed necessary, will be comprised of one construction industry representative, key SANDAG design and construction staff, outside-agency staff (if needed), and/or members of the Executive Committee.

4.4 The term "emergency" shall be deemed to refer to a sudden or unforeseen event which creates or could result in a dangerous condition necessitating immediate expenditure of public funds to protect life, health, or property.

4.5 Except in an emergency, or in the case of a justifiable sole source procurement, a change order shall not be awarded without competitive bidding where the amount of such change order exceeds 25 percent of the price of the original or altered contract or the change order is out of the original contract scope.

4.6 That the Executive Committee of the Board or, if not practical, the Chairperson of the Board or the Vice Chairperson in the absence of the Chairperson, be authorized to approve contract change orders exceeding $100,000 when waiting for Board approval could potentially delay the project or increase the cost of the change. In such an instance, the CEO shall notify the Board of the Executive Committee's action or Chairperson/Vice Chairperson as appropriate.

4.7 All change orders that impact or potentially impact Board-adopted policies shall be brought before the Board for decision.

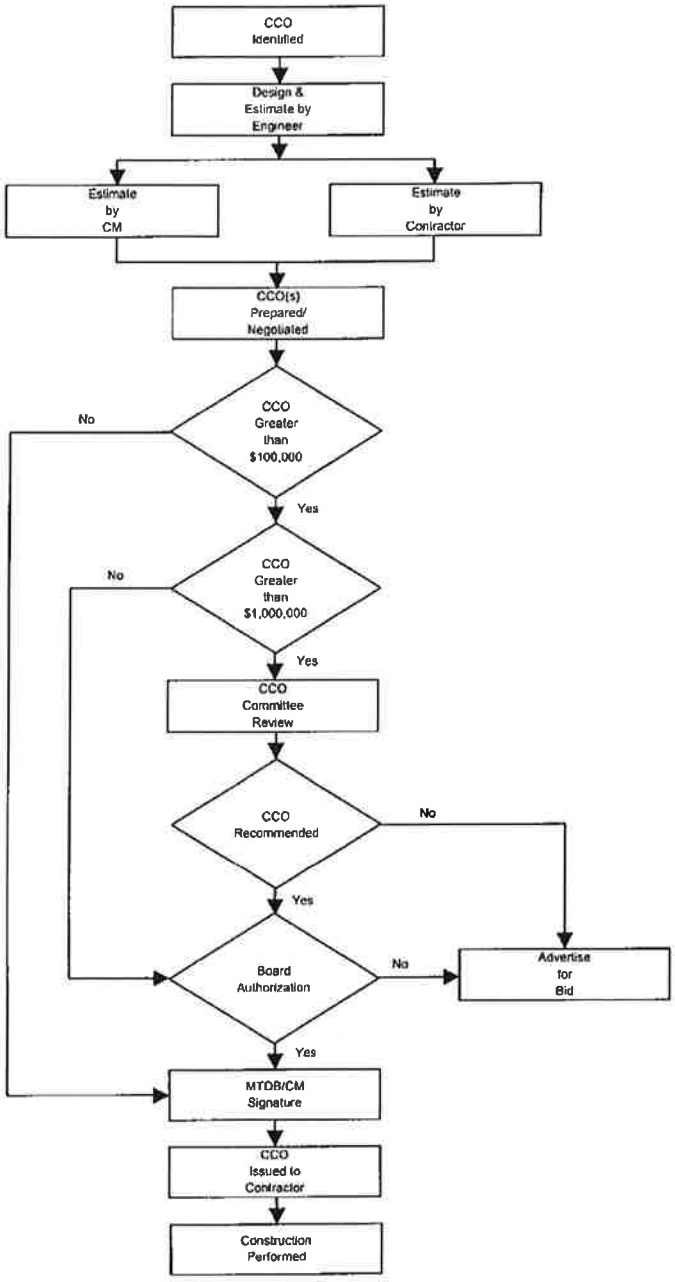
4.8 All change orders which utilize federal funds shall conform to the Code of Federal Regulations, Volume 49, Part 18, and Federal Transit Administration Circular 4220.1 and any successors thereof.

Sgreen/SChamp/JGarde
POLICY.4.CCOs
7/10/06

Attachment: Generalized Process for Acting on CCOs

Original Policy approved on 9/11/78.
Policy revised on 10/29/79.
Policy revised on 7/28/80.
Policy revised on 5/18/81.
Policy revised on 2/7/84.
Policy revised on 10/13/88.
Policy revised on 11/9/89.
Policy revised on 7/26/90.
Policy revised on 6/10/93.
Policy revised on 6/9/94.
Policy revised on 12/8/94.
Policy revised on 4/13/94.
Policy revised on 3/14/96.
Policy revised/renumbered on 1/29/04.
Policy repealed on 12/8/16.

Generalized Process for Acting On Contract Change Orders (CCO's)



Metropolitan Transit System

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Agenda Item No. 8

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 8, 2016

Draft for
Executive Committee
Review Date: 12/1/16

SUBJECT:

MTS SALE OF 2007 45' BLUEBIRD EXPRESS COMMUTER BUS TO TRANSDEV SERVICES, INC.

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the negotiated sale of MTS Vehicle No. 8511 (2007 45' Bluebird Express, VIN # 1BAGRBFA07W100519) to Transdev Services, Inc.

Budget Impact

Proceeds from the sale of the MTS vehicle will be recorded to the MTS revenue account 901010-440200.

DISCUSSION:

On September 7, 2016, Bus No. 8511 caught fire on the SR163 highway. MTS staff determined that the vehicle was totaled and would not be cost effective to repair. The bus, owned by MTS, is operated by Transdev Services, Inc, (Transdev) as part of MTS's fixed-route bus services contract. Under the Transdev contract, Transdev is responsible for maintaining and operating the vehicles. Transdev is responsible for repairing any MTS vehicles damaged during Transdev's operations.

Transdev obtained an appraisal of the Fair Market Value (FMV) of the vehicle in its condition prior to being destroyed by the fire. The appraisal was performed by Bus Appraisal Solutions who estimated the FMV at $25,400.

Board Policy No. 33 states that "capital assets with an individual value in excess of $10,000 or an aggregate value in excess of $25,000 may be disposed of on a negotiated sale basis provided a finding by the MTS Board of Directors by a two-thirds vote that special circumstances exist that make it in the best interest of the Board." In accordance with Board Policy No. 33, alternatives to the proposed negotiated sale would include a competitive sale or internet auction. Given the current state of the vehicle, the highest

return would be realized by a negotiated sale price based on the value of the vehicle prior to the fire damage. A sale of the vehicle to Transdev would make MTS whole for the loss of this vehicle from the fixed route fleet, resolving the outstanding property damage claim with Transdev.

Therefore, MTS staff recommends that the MTS Board of Directors authorize the negotiated sale of MTS Vehicle No. 8511 (2007 45' Bluebird Express, VIN # 1BAGRBFA07W100519) to Transdev Services, Inc.

Paul C. Jablonski
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. Vehicle Appraisal

Transmittal **Letter**

Desktop **Appraisal**

Bus Appraisal Solutions

900 Ranch Rd. Copper Canyon, TX 76226 ♦ Phone 503-883-6300 ♦ Fax 503-883-7100

October 26, 2016

Eric Lunda
Corporate Risk Management Department
Transdev - Illinios
720 East Butterfield Road Suite #300
Lombard, IL 60148

RE: Desktop Appraisal of One (1) 2007 BlueBird XCEL 102 VIN# 1BAGRBFA07W100519. Claim number VI-898779.

Dear Mr. Lunda;

In accordance with your request, we have completed a desktop appraisal of the above referenced vehicles. The purpose of this report is to estimate the adjusted Retail, Fair Market Value of the subject unit. We understand that this appraisal will be used for financial, and lender negotiations, as well as insurance purposes in your ongoing fleet management.

The attached report is a ***Complete Appraisal*** presented in a ***Self-Contained Report*** format. It is intended to comply with the requirements of the *Uniform Standards of Professional Appraisal Practice (USPAP)*, specifically **Standards Rule 8-2**, as adopted by the Appraisal Foundation. The appraisal contains all of the recognized appraisal methods and the techniques that contribute to a proper valuation of the subject property.

This report is subject to specific assumptions and limiting conditions, as noted throughout the report attached hereto. The use and interpretation of this report, without a thorough appreciation and understanding of these assumptions and limiting conditions, would likely lead to erroneous conclusions.

This transmittal letter and the accompanying text, and any schedules and attachments, constitute Bus Appraisal Solutions (BAS) entire report, and should be read in their entirety.

Possession of this report does not imply right of publication, nor use for any purpose by any other than the person to whom it is addressed, without the written consent of the authors.

Transmittal **Letter**

Desktop **Appraisal**

No third parties may rely upon this appraisal for any purpose whatsoever, including the provision of financing for the acquisition of the subject property. This appraisal was prepared specifically for our client, to whom this appraisal was addressed.

Bus Appraisal Solutions (BAS) its officers, and its employees have no interest or contemplated future interest in the items appraised. The fee for this report is not contingent upon the values expressed, nor is any guarantee or liability to be assumed or implied.

Bus Appraisal Solutions has made no investigation of and assumes no responsibility for title to the items appraised.

Please feel free to call us at 503-883-7010 should you have any questions.

Respectfully Submitted,

Dave Mendenhall
President
Bus Appraisal Solutions
503-883-7010
davem@bussolutions.com

Executive **Summary**

Appraisal Details	
Company Name	Transdev Services, Inc.
Effective Date	September 31, 2016
Date of Loss	September 07, 2016
VIN#	1BAGRBFA07W100519
Property Appraised	Fee Simple

Value Summary	Value
Retail Value	**$37,000**
Adjusted Retail Value	**$32,900**
Fair Market Value/ True Cash Value	**$25,400**

Sales Timeframe	FMV	OLV
Orderly Liquidation Sale	N/A	N/A

Key Contacts	
Name	Contact
Dave Mendenhall President	(503) 883-7010 davem@bussolutions.com
Richard Hill Director of Asset Management	(503) 883-7008 rhill@bussolutions.com

Key Factors:

- **Appraisal Methodologies** – At the request of the client, Bus Appraisal Solutions (BAS) utilized three appraisal methodologies in our fleet modeling process: Retail (RV), Adjusted Retail (ARV), Fair Market/True Cash Value (FMV/TCV).

- **Inspection Basics** – BAS performed a thorough inspection of all documentation provided in reguards to the above unit. BAS employees reviewed the submitted maintenance records, mechanical condition, and age of the unit (where applicable), and then include the findings in our condition reports and valuation models.

Appraisal assignment – BAS was hired to establish the value of the subject unit one day prior to the loss on September 07, 2016.

We were not hired to evaluate if the unit should be totaled or repaired but rather to establish the value of the unit as defined by the ~~policy~~ at the time of loss.

No other opinions have been rendered in this appraisal.

Table of **Contents**

Scope of **Report**

The scope of this appraisal assignment includes the necessary research and analysis to prepare a report in accordance with the intended use and the *Uniform Standards of Professional Appraisal Practice* of the Appraisal Foundation. For this report, this involved the following steps:

1. The subject unit has not been inspected. However information was provided to determine the units current condition including invoices for the original build and interior updates if avalible, photos of the interior and exterior of the unit and componets.

2. The value models have been developed by (BAS) and are based on values found in the March 2016 edition of **The Official Bus Blue Book**™, which is the official "Blue Book" for the bus and coach industry and was the most current edition as of the date of loss for the unit in this appraisal.

3. Mileage was provided by the operator.

4. In developing the values in this report, industry sources such as brokers, dealers, manufacturers, operators and owners were consulted along with our own data files about the bus industry and the subject units.

5. After assembling and analyzing the data defined in the scope of the appraisal, a final estimate of market value was made.

Identification of the Property
The subject property consists of One (1) 2007 Blue Bird XCEL 102 VIN: 1BAGRBFA07W100519.

While the unit is a Blue Bird, the vin does not decode a specific model. BAS assumes no responsibility for the accuracy of the information provide. This appraisal reflects values for a standard configured 2007 Blue Bird XCEL 102.

Purpose of the Appraisal
The purpose of this appraisal is to estimate the Retail, Fair Market/True Cash Value, of the subject property on an "as is" basis one day prior to the date of loss above.

Function of the Appraisal
The function and intended use of this appraisal is to provide a clear and concise valuation of the property, in order to aid in ongoing portfolio management.

Prohibitive Influences
This appraisal assignment was not based on a requested minimum valuation or a specific valuation, and the employment of (BAS) is not conditioned on producing a specific value or a value within a given range.

Value Definitions

Definition of Fair Market Value/True Cash Value
This appraisal has been based on the following definition of Fair Market Value/True Cash Value as approved by the American Society of Appraisers:

> *Fair Market Value/True Cash Value is the amount expressed, in terms of money that may reasonably be expected for property in exchange between a willing buyer and a willing seller with equality to both, neither under a compulsion to buy or sell and both fully aware of all relevant facts.*

Competency Disclosure
The appraisers completing this report have substantial experience in the valuation of this property type or have taken the appropriate steps to familiarize themselves with the valuation issues and techniques relevant to this appraisal problem; therefore, we are competent to complete this appraisal assignment.

Property Rights Appraised
The subject property is being appraised as a fee simple estate.

Fleet list

Fleet Number	Make	Model	Year	VIN	PAX	Engine	TCM	Transmission
8511	BlueBird	XCEL 102	102	1BAGRBFA07W100519	57	Cummins ISX	300,661	Allison 2400

The following appraisal models were developed and prepared by the staff of Bus Appraisal Solutions and represent findings from the physical inspection of this fleet, information provided by the client and/or operator, and information from a number of like transactions. This report is as accurate as possible based on our inspection and the information provided. Assumptions are outlined in the body of the appraisal.

It should be noted that no person involved in the appraisal has any current interest in the equipment that is the subject of this appraisal, nor anticipates any future interest in terms or purchasing or acquiring said equipment. The appraisal models are based on values published in the March 2016 edition of **The Official Bus Blue Book™**.

Appraisal methodology employs three approaches for determining value: the Income Approach, the Cost Approach and the Market Approach (also known as the Sales Comparison Approach). The applicability of each approach varies depending upon the nature of the particular appraisal problem. All three approaches were considered in forming an opinion of the value of the subject property.

Income Approach

In its simplest form, the Income Approach is the present worth of the future benefits (income) of ownership. It is not usually applied to individual items of equipment since it is difficult, if not impossible, to identify individual income streams. However, it is possible to value the aggregation of assets which generate income for the business. This collection of assets is commonly known as the business enterprise and consists of all assets of the business – working capital and fixed and intangible assets. In this appraisal approach, the business enterprise is valued on the basis of its future income potential.

Cost Approach

The Cost Approach is based on the principle that a prudent purchaser would not pay more for a property than the cost of reproducing a similar property. The Cost Approach measures value by determining the current cost of an asset and deducting for the various elements of depreciation, physical deterioration and functional and economic obsolescence.

Market Approach

The Market Approach (also known as the Sales Comparison Approach) is based on the premise that a prudent buyer would pay no more for a property than the price of obtaining a substitute property of equal utility. The Market Approach is that approach to value where recent sales and offering prices of similar property are analyzed to arrive at an indication of the most probable selling price of the property being appraised.

Approach(es) Applied in this Appraisal

The Income Approach is not applicable to this particular appraisal. The Market Approach was utilized.

The Cost Approach is particularly useful for newer asset properties and special-purpose properties

The unit in this appraisal is valued utilizing the Market (or Sales Comparison) Approach. This is easily the most useful appraisal approach for vehicles such as automobiles, trucks and buses. **The Official Bus Blue Book**, is compiled based on data from actual recordable sales transactions, occurring within a reasonably recent time frame, of like make/model/year units. Therefore, the values in this publication are reflective of actual market value.

Explination **of Terms**

The following explanation details the factors that are taken into consideration as Bus Appraisal Solutions develops its appraisal models:

RETAIL VALUE

The low and high retail values in **The Official Bus Blue Book**™ reflect a range of values based on actual recordable sales during the previous six-month period. The high retail values typically represent Dealer to Operator transactions with units in sale ready condition. Generally this means that all components are in good working order, including the exterior and interior body of the bus. The glass is free of cracks and fog, and the interior is clean. There are good seat covers and sidewalls. The flooring is in good condition. The bus is prepped with white paint and black trim, ready to put on the new buyer's paint schemes and letterings.

ADJUSTED RETAIL VALUE

The Adjusted Retail Value is determined by adding to or subtracting from the Retail Value for optional equipment and component mileage.

SALE READY COST

To determine the Sale Ready Cost, we use the totals from other transactions and then determine the average cost to put the average unit in sale-ready condition. These items include the cost of paint, the cost of purchasing the lease tires (if applicable) and the cost of any general repair. In addition, we consider the findings of last physical inspection.

FAIR MARKET VALUE/TRUE CASH VALUE

After the Sale Ready Cost has been deducted from the Adjusted Retail Value, we reach what we consider to be a Fair Market Value/True Cash Value (FMV/TCV). This is the amount that may reasonably be expected for property in exchange between a willing buyer and a willing seller with equality to both, neither under a compulsion to buy or sell and both fully aware of all relevant facts. This is the value for a single unit in "as-is, where-is" condition.

Appraisal **Model**

Desktop Appraisal

Fleet Number	Make	Model	Year	VIN	PAX	Engine	TCM	Transmission	Retail Value	Adjusted Retail Value	Fair Market Value/ True Cash Value
8511	BlueBird	XCEL 102	102	1BAGRBFA07W100519	57	Cummins ISX	300,661	Allison 2400	$37,000	$32,900	$25,400
									$37,000	$32,900	$25,400

This appraisal report is subject to the following *general assumptions and limiting conditions:*

The valuation estimate and market or feasibility conclusions apply only to the property specifically identified and described in this report.

It is assumed that all information known to the client and relative to the valuation has been accurately furnished. Any undisclosed or inaccurate information could significantly affect this valuation.

No responsibility, beyond reason, is assumed for matters of a legal nature, whether existing or pending.

Information identified as being furnished or prepared by others is believed to be reliable, but no responsibility for its accuracy is assumed.

The appraisers, by reason of this appraisal, are not required to give testimony as an expert witness in any legal hearing or before any court of law unless justly and fairly compensated for such services.

Neither all nor part of the contents of this report (especially any conclusions as to value, the identity of the appraisers, or the firm with which they are connected) will be reproduced for dissemination to the public through any means of communication without the prior consent and written approval of Bus Appraisal Solutions (BAS).

This appraisal is based on the condition of local and national economies, purchasing power of money, and financing rates prevailing at the effective date of value.

Possession of this report does not imply right of publication, nor use for any purpose by any other than the person to whom it is addressed, without the written consent of the authors.

No third parties may rely upon this appraisal for any purpose whatsoever, including the provision of financing for the acquisition of the subject property. This appraisal was prepared specifically for our client, to whom this appraisal was addressed.

Following are the *special assumptions* which pertain to this specific appraisal:

1. This appraisal assumes that the information provided by the client and/or owner/operator of the subject vehicles is accurate, and any inaccuracies may result in a change in value.

2. (BAS) has relied on third party information as to the existence, location and condition of the subject vehicle. Therefore, we issue no warranty or other form of assurance regarding its accuracy.

3. The valuation assumes that the subject vehicle was in good working condition and possessed all components for safe and legal operation. It also assumes that the vehicle has not been significantly altered from the original configuration at the time of delivery.

4. Information was provided regarding optional equipment on the units. Where known, options are considered in our valuation. Additional options could result in a change in value.

5. Information was provided regarding engine and transmission configurations and mileages on these components. Should actual component mileage be significantly higher or lower than that provided, this could result in a change in value.

6. It is our understanding that the tires on the unit in this apprasial are owned and not leased. This has been taken into consideration when estimating Sale Ready Costs for the unit in the appraisal.

7. The values for the unit in this appraisal are based on the values published in the March 2016 edition of **The Official Bus Blue Book™**, which is the official "Blue Book" of the bus and coach industry and was the most current edition as of the date of loss.

8. The information in this report is the result of analysis and evaluation of numerous sources of industry information including, but not limited to, industry associations, government data, manufacturers' data, personal contacts and relationships, and trade publications. Every effort has been made to ensure that the information and data are as accurate as possible. Opinions expressed in this report are the opinion of (BAS) and are based upon our knowledge and experience in the industry.

9. (BAS)'s liability on any claim for damages arising out of this agreement or the appraisal shall be limited to direct damages and shall not exceed the amounts paid by client to (BAS) for the appraisal under this agreement. In no event shall (BAS) be liable for indirect, exemplary, incidental or consequential damages arising from this agreement, even if (BAS) has been advised of the possibility or likelihood of such damages.

Certification

We certify that to the best of our knowledge and belief:

- The statements of fact contained in this report are true and correct.
- The reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions, and is our personal, impartial and unbiased professional analyses, opinions and conclusions.
- We have no present or prospective interest in the property that is the subject of this report, and we have no personal interest with respect to the parties involved.
- We have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
- Our engagement in this assignment was not contingent upon developing or reporting predetermined results.
- Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of a value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event.
- This appraisal assignment was not based on a requested minimum valuation, a specific valuation, or the approval of a loan and the employment of Bus Appraisal Solutions, LLC are not conditioned upon the appraiser producing a specific value or a value within a given range.
- The reported analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the *Uniform Standards of Professional Appraisal Practice* as stated by the Appraisal Foundation.

Prepared by

Dave Mendenhall
President
Bus Appraisal Solutions, LLC
503-883-7010
davem@bussolutions.com

ADDENDUMS

PROFESSIONAL BIO of

DAVE W MENDENHALL

900 Ranch RD
Copper Canyon, TX 76226
503-883-7000

PROFILE

Over 30 years of experience in the bus transportation industry, including 2 years with ABC Companies, 2 years with Bus Brokers, 15 years with Bus Book Publishing, Inc. I am currently with Bus Solutions, LLC, Bus Appraisal Solutions, and Solutions Management Group. Experience in a wide variety of business areas including the following:

- *Sales of new and used buses*
- *Sales management*
- *Marketing*
- *Appraisals*
- *Financing*
- *Leasing*
- *Corporation development*
- *Publications development*
- *P&L responsibilities*
- *Consulting to various industry vendors and suppliers*
- *Maintenance*
- *Driving*
- *Keynote speaker to American Society of Appraisers regarding valuation techniques for bus and coach equipment, United Bus Association, Buscon, Trailways annual meetings*
- *Maintaining external business relationships*
- *Reporting of consolidated results to Board of Directors*

SUMMARY OF PROFESSIONAL EXPERIENCE

Bus Appraisal Solutions – **Copper Canyon, TX – 2010 - Present**
President

- *Provide historical and residual value analysis*
- *Largest independent bus appraisal company in North America*
- *Developed industry specific appraisal models*
- *Leading valuation consulting company providing a number of consulting services to industry organizations such as CitiCorp, Bank of Montreal, Boeing Financial, GE Capital, BankAmerica, US Bancorp, Fleet Capital, Motor Coach Industries, ABC Companies, Prevost Car, Carrier Transicold and many others.*
- *Expert witness*

Bus Solutions, LLC – **Copper Canyon, TX – 2002 - Present**
President

- *Publisher of four industry publications:*
  - *Bus Weekly – "classified ads" for the bus industry, distributed weekly*
  - *Bus Direct Pages – buyer's guide for bus and coach industry*
  - *The Official Bus Blue Book – valuation guide for used bus equipment*
  - *The Official School Bus Blue Book – valuation guide for used school bus equipment*

Solutions Management Group- **Copper Canyon, TX - 2010 – Present**
President

- *Think tank of retired C.E.O.'s and professionals from all aspects of the Bus Industry.*
- *Solutions Management Group, LLC provides quality consulting to manufacturers, financial management firms, insurance companies, and a variety of vendors and suppliers, serving a variety of industry specific needs.*
- *Provides quality marketing referrals to key industry vendors.*

Bus Book Publishing, Inc. – **McMinnville, OR – 1986-2002**
Founder, President and CEO - *Published six critical industry publications; bus appraisal and consulting division providing many key consulting and appraisal services.*

ABC Bus, Inc. – **Faribault, MN – 1984-1985**
National Bus Sales and Service Representative - Sales involving purchases of leased, new and used coaches, procured customer financing and leasing packages, and Coach Appraisals.

Corporate Office (Dallas / Ft. Worth - Metroplex)
900 Ranch Road, Copper Canyon, TX 76226 ♦ Phone 503-883-7000 ♦ Fax 503-883-7100

Corporate Background

For the past 30 years, Bus Solutions, LLC, Solutions Management Group, LLC, Bus Appraisal Solutions, LLC and their predecessor company, Bus Book Publishing, Inc. has been a leader and innovator in the transportation industry, specializing in all four segments of the bus industry.

Recognizing the need for a single reliable valuation source for used buses, David Mendenhall founded Bus Book Publishing in 1987. The first issue of The Official Bus Book Market Report™ was published that first year. This book was the first and is currently the only valuation source in the bus and coach industry for used bus pricing. The Official Bus Book Market Report™ is a semiannual publication that is a compilation of national average sales prices reflecting actual sales transactions throughout North America during the previous six-month period. Considered to be the "Blue Book" for the bus and coach industry, it is accepted by every major lender and insurance company in the industry and covers the intercity, shuttle and transit market segments.

In 1995, we introduced The Official School Bus Resale Guide™. Published annually, this "school bus blue book" provides the industry with wholesale and retail values for nearly all bodies and chassis of used school buses produced in the United States and Canada over the last fifteen years. This valuation guide has also become an invaluable resource for school bus lenders, insurers, dealers and operators throughout North America.

Bus Solutions, LLC and its affiliated companies has been nationally recognized as the industry leader in the field of bus valuations, appraisals and damage reporting. We are the only independent appraisal company that specializes in bus and coach valuations. We are also an industry leader in transportation market studies, with special emphasis on the bus industry.

Over the years Bus Solutions, LLC has provided many industry professionals with targeted industry research and market data and research to guide them through market launchers and other endeavors.

We are not in the business of selling, leasing or buying bus equipment; we provide impartial assessments to our clients with the same trust as a fiduciary, without any conflict of interest or self-dealing. To further protect our clients, we prepare our appraisals with the same criteria and standards as those established by the American Society of Appraisers. Bus Solutions, LLC valuation models are accepted and used by financing and appraisal companies throughout North America, including members of the American Society of Appraisers. Bus Solutions has set the trends and developed the techniques that have become the industry standards for equipment valuations.

Our customers extend throughout the United States, Canada, Mexico and Europe. Some of our clientele are listed below:

Corporate **Background**

Advantage Funding
AIG
Amegy Bank
American Equipment Leasing
ATEL Equipment
Banc One Leasing
Bank North Leasing
Bank Of America San Francisco
Bank of Montreal (BMO)
BankAmerica Leasing
Boeing Capital Corporation
BTMU Capital
Cargill Leasing
Carrier Transport AC
Catalyst Capital
Center Capital
Charabanc
Chase – Bank One
Chesapeake Leasing
CitiCapital
CitiCorp, ITT Capital Finance
Cole Taylor Bank
Comerica Bank
Crossroads Equipment Leasing
Dallas Central Appraisal District
Debis Financial Services
Edson Financial
Equilease Financial
Fenway Partners
First International Bank
First National Capital
Fleet Capital
GATX Leasing
GE Commercial Finance – Atlanta
GE Corporate Finance
GE Structured Finance
GL Simpson Insurance
Greenwich Capital
Huntington National Bank
ICON Capital
Internal Revenue Service
IStar Financial
JP Morgan
Lakeside Capital
LaSalle National Equipment
Lincolnshire
M&T Bank
Madison Capital
Manufacturers Lease Plan, Inc.
Marquette Equipment Finance
Midland Loan Service
Money Financial Group
National Interstate Insurance
Newcourt Credit
Orix Credit Alliance
PNC
Randolph Bank
Royal Bank of Scotland
RVI Insurance
Sallie Mae
Siemens Financial
Signature Financial
SouthTrust Bank
SunTrust
TD Bank
Tennessee Commerce Bank
Textron Financial
The CIT Group
U.S. Bancorp Leasing
U.S. Bank Corporation Banking Division
VERITAS Financial Partners
Volvo Commercial Finance
Wachovia
Welder Health and Fitness
Wells Fargo Equipment Finance
Wichita Commercial Bank
Numerous Law firms - Expert Witness

We have also provided value information to the Internal Revenue Service and the Federal Transit Administration. In addition, we served as the consulting firm on a majority of the Greyhound lease returns entering the secondary market from 1991-1995.

The following is a detailed list of publications that Dave Mendenhall and the staff of Bus Solutions, LLC have published over the years.

The Official Bus Blue Book™

The Official Bus Blue Book™ is a complete used bus valuation guide. The book gives you benchmark pricing on thousands of used coaches throughout North America and Canada. In addition, the publication has great historical value providing information regarding both manufacturing dates and specifications. **The Official Bus Blue Book™** is geared towards companies and individuals directly related to the Bus and Coach Industry.

Dealers, insurance companies, lending institutions, operators and anyone needing to determine exposure and evaluate or appraise coaches have all found that **The Official Bus Blue Book™** is a powerful source of used bus information.

The writers and gatherers of the data that go into **The Official Bus Blue Book™** publication have over 60 years combined experience in the bus and coach industry with 30 years of experience directly relating to this type of publication.

Bus Solutions, LLC is continuing the tradition started back in 1987, by providing professionals like you with accurate used bus pricing information.

This Official School Bus Blue Book™

This Official School Bus Blue Book™ is a complete used school bus valuation guide. Bus Solutions, LLC has been providing professionals with accurate used school bus pricing information for more than twenty years. The book gives you benchmark pricing on thousands of used school buses throughout North America and Canada. In addition, the publication has great historical value providing information regarding both manufacturing dates and specifications.

Bus Weekly™

Bus Weekly™ Email is a classifieds publication listing used equipment, products, services and specials to industry decision makers via email throughout North America and Canada. Bus Weekly™ Email is delivered - FREE OF CHARGE - to thousands of in-boxes every Tuesday morning.

Buyers will find Bus Weekly™ Email an indispensable information source for industry related purchasing. The weekly email publication gives users one-click-access to both the downloadable publication and our extensive archive of past editions.

Sellers can advertise in both the web based version and the email based version by purchasing banner space. Call our sales reps for more information.

Dave's Hot Tips™

Dave's Hot Tips™ is a periodic blog post regarding variety of topics such as bus values, bus appraisals, and management tips. It also includes such topics as bus equipment, the market place, preserving the value of your assets and various other important and bits of helpful information.

Publications

Bus Industry Annual Report

Bus Industry Annual Report, a complete market analysis of all four segments of the North American Bus and Coach Market. This publication is no longer in print.

The Bus Pages

The Bus Pages is considered to be the official buyers guide and directory for the bus, coach and limousine industries. This publication ceased publishing in 2004.

Bus Direct Pages – Online

Bus Direct Pages – Online was considered to be the industry's largest on-line buyer's guide and search engine. This publication is no longer available.

Rapidsell

Rapidsell, was the predecessor to Bus Weekly. The Rapidsell fax publication was the first industry publication ever to be delivered weekly. As many as 7,500 fax machines received Rapidesell which was chalked full of equipment for sale weekly and equipment wanted ads. This publication was replaced in 2002 by Bus Weekly.

Metropolitan Transit System

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Agenda Item No. 9

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 8, 2016

Draft for
Executive Committee
Review Date: 12/1/16

SUBJECT:

APPROVAL OF ROUTE 950 MAJOR SERVICE CHANGES

RECOMMENDATION:

That the Board of Directors approve making permanent the pilot major expansion of Route 950 service that began in January 2016.

Budget Impact

This change requires an increase of approximately $101,000 in annual operating subsidy, which is already budgeted in the Fiscal Year 2017 operating budget.

DISCUSSION:

A trial major expansion of Express Route 950 was implemented in January 2016, adding nonstop trips between the Otay Mesa Port of Entry and the Iris Avenue Transit Center throughout the weekday, plus new all-day weekend service. Response to this new service had been overwhelmingly positive, with ridership now over a thousand passengers on an average weekday. Route 950 performance is the highest among all express routes, at 62 passengers per revenue hour. Staff is recommending making these trial changes permanent.

MTS Board Policy 42 requires that new and significantly expanded services be implemented on a trial basis. In order to make these changes permanent, the Board must approve them following a major service change process that includes a public hearing and Title VI analysis. A noticed public hearing was held at the MTS Board of Directors meeting on November 10, 2016, at which time public testimony was received and the results of a Title VI analysis were presented. The Title VI analysis did not reveal any adverse impacts on low-income and/or minority communities.

Following the public hearing, the MTS Board of Directors voted unanimously to forward the staff recommendation for final approval at a later meeting without any changes. Approval of the recommendation today will make the current service levels permanent.

Paul C. Jablonski
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, sharon.cooney@sdmts.com

Metropolitan Transit System

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Agenda Item No. 10

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 8, 2016

Draft for
Executive Committee
Review Date: 12/1/16

SUBJECT:

ARCHITECTURAL AND ENGINEERING (A&E) ON-CALL SERVICES – MASTER AGREEMENTS AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS A&E On-Call master agreements with HDR Engineering, HNTB, Kimley Horn & Associates, Jacobs Engineering, Hatch Mott MacDonald, Dokken Engineering, Pacific Railway Enterprises, Nasland, and Global Signals Group (Attachment A and Attachment B) following successful negotiations with each firm for the provision of On-Call A&E services for a five-year agreement.

Budget Impact

The total aggregate value of the nine (9) Master Agreements will not exceed $15,000,000.00, without prior authorization from the Board. Funding and budget allocations shall be controlled and monitored per Work Order issued under the separate Master Agreements.

DISCUSSION:

MTS seeks multiple A&E On-Call Master Agreements in order to support various infrastructure projects for MTS Bus Operations, Rail Operations, planning, and real estate departments.

MTS Policy No. 52, "Procurement of Goods and Services", governs the procurement of Architectural, Landscape Architectural, Engineering, Environmental, Land Surveying Services and Construction Project Management Services and requires a formal competitive process for acquisitions exceeding $100,000. The policy requires MTS to award the contracts to the most highly rated offeror(s), in accordance with the Cal. Gov. Code §§ 4525 et seq. and the Brooks Act, if federally funded.

On January 12, 2016, SANDAG led and issued a joint procurement with MTS for On-Call A&E services by requesting Statements of Qualifications (RFSQ) from firms with expertise in a variety of A&E design and related consulting services. MTS took the opportunity to enter into a joint solicitation with SANDAG to more efficiently procure A&E related services as well as utilize the economies of scale with the intent to provide MTS with its own A&E related design service Master Agreements for future MTS projects.

An Independent Cost Estimate (ICE) was prepared by SANDAG and MTS (Agencies) resulting in an estimated expenditure amount of $315 million aggregate ($300 million for SANDAG and $15 million for MTS) over a five-year period. Factors that were considered when developing the estimate were staff's need for ongoing design related services for future projects, including the MTS Rail Yard Expansion, New Fare Collection System, and Traction Power Substations. Also, staff requires ongoing services for real estate and operational issues which require specialized expertise. MTS's estimate included historical usage of consulting services under previous A&E related agreements.

Fourteen (14) Statements of Qualifications were received on March 8, 2016 and were broken into three (3) different group sizes:

Large Firms	
1	CH2M
2	HDR Engineering
3	HNTB
4	Jacobs Engineering
5	Kimley Horn & Associates
6	Parsons Brinkerhoff
7	PGH Wong

Medium Firms	
1	Dokken Engineering
2	Hatch Mott MacDonald
3	Axiom Corporation

Small Firms	
1	Global Signals Group
2	Nasland
3	Pacific Railway Enterprises
4	Athalye

All firms were deemed responsive and responsible by SANDAG as the lead facilitator of the joint RFSQ procurement between the Agencies.

A selection committee, consisting of representatives from MTS Rail Operations, Bus Operations, and SANDAG, met for initial evaluations and scored the RFSQ's based on the below criteria, including evaluation of Firms Disadvantaged Business Enterprise (DBE) and SB Utilization Plans in accordance with Federal requirements outlined in the Code of Federal Regulations (C.F.R.) Title 49 Part 26 for DBE Goal Certification and Good Faith Efforts:

Project Team	25%
Education & Experience of the Project Manager / Other Key Personnel	15%
Project Experience	10%
Role of Key Personnel	10%
Project Approach & Controls	20%
Local Presence	10%
DBE and SB Utilization Plan	10%
	Total 100%

After the initial selection committee evaluation, ten (10) firms were deemed to be most qualified and highest ranked within their respective groups and four (4) firms were removed from the final evaluation process.

Parson Brinckerhoff, CH2M, PGH Wong in the Large Group, and Athalye in the Small Group did not proceed to the final evaluation process as a result of the selection committees' determination that the firms submitted qualifications that were not within the competitive range in regard to the other firms who submitted for the opportunity.

The remaining ten (10) firms, identified below, were asked to interview for a second and final evaluation.

	Large Firms
1	HDR Engineering
2	Kimley Horn & Associates
3	HNTB
4	Jacobs Engineering

	Medium Firms
1	Hatch Mott MacDonald
2	Dokken Engineering
3	Axiom Corporation

	Small Firms
1	Global Signals Group
2	Nasland
3	Pacific Railway Enterprises

The selection committee interviewed and ranked the ten (10) remaining firms on the following criteria:

Project Team	25%
Firms Capabilities	15%
Project Understanding and Approach	10%
Interview Questions	10%
References	20%
Local Presence	10%
DBE and SB Utilization Plan	10%
	Total 100%

Following SANDAG's facilitated final interviews, the selection committee deemed nine (9) firms to be most qualified and highest ranked within their respective groups and removed Axiom as a result of the selection committees' determination that the firm was not within the competitive range in regard to the other firms who submitted for the opportunity.

On June 16, 2016, following the completion of all interviews and final rankings, a recommendation to enter into negotiations with the nine (9) most qualified firms was provided by SANDAG and approved by MTS.

MTS entered into negotiations, pursuant to the Federal Brooks Act and the State of California Government code §§ 4525 et seq., which governs negotiations for A&E related services, with the highest ranked firm first in order to establish fair and reasonable indirect rates and profit for future Work Order Agreements under an MTS Master Agreement.

Additionally, MTS found it to be in the agency's best interest to create a single comprehensive List of Qualified Firms for use at MTS to ensure the agency maintains greater flexibility for work order assignments for ongoing and future operational and design needs at MTS. The final listing is as follows:

FINAL - LIST OF QUALIFIED FIRMS
HDR Engineering
HNTB
Kimley Horn & Associates
Jacobs Engineering
Hatch Mott MacDonald
Dokken Engineering
Pacific Railway Enterprises
Nasland
Global Signals Group

MTS Procurement staff is currently finalizing negotiations with each selected firm related to final contract rates and other items. Today's proposed action would authorize the CEO to complete the negotiations and execute a master on-call agreement with each of the nine (9) firms. In the event the final stages of negotiation resulted in an impasse, the CEO would also have the authority to decline to execute an agreement with one or more of the identified firms.

Following conclusion of successful negotiations with each of the nine (9) firms, MTS intends to enter into master agreements and, as direct work is identified per a specific service area (see Attachment A and Attachment B), issue work orders and/or individual project specific agreements to the firms on the resulting On-Call list. Work orders and/or individual project specific agreements will include such items as a statement of work, period of performance, pricing, deliverable(s), schedule, DBE considerations, and any other essential commitments and provisions that support MTS operations and future design needs. Individual work orders or other assignments to firms on the On-Call list will be processed according to the Signature Authority amounts included in Board Policy No. 41.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS A&E On-Call master agreements with HDR Engineering, HNTB, Kimley Horn & Associates, Jacobs Engineering, Hatch Mott MacDonald, Dokken Engineering, Pacific Railway Enterprises, Nasland, and Global Signals Group, following successful negotiations with each firm for the provision of On-Call A&E services.

Paul C. Jablonski
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. Proposed List of Qualified Prime Architectural & Engineering Firms
B. Subconsultant Legend

ATTACHMENT A - Request for Statement of Qualifications (RFSQ)
SANDAG Doc. No. 5007809
MTS Doc. No. G1945.0-16

PROPOSED LIST OF QUALIFIED PRIME ARCHITECTURAL & ENGINEERING FIRMS

	HDR ENGINEERING		
	Service Area	**Services provided by Prime**	**Services provided by Subconsultant**
1	Transit Guideway Design	X	X 1
2	Railroad Track Design	X	X 2
3	Transit and Railroad Station Design	X	X 1
4	Transit and Railroad System Engineering Design	X	X 2,3,4
5	Transit and Railroad Train Signaling Design		X 2,3,4
6	Transit and Railroad Traction Power Design	X	X 5
7	Transit & Railroad Maintenance & Operations Facilities Design	X	X 6
8	Transit and Railroad Vehicle Design	X	X 7
9	FTA New Starts & Other Transit Analysis	X	X 1
10	Highway Design	X	X 8
11	Local Street, Bikeway, Walkway Design	X	X 1, 8
12	Architecture/Building Design/ Interior Design	X	X 1
13	Design Support During Construction	X	
14	Environmental Documents		X 9, 10
15	Structures	X	X 1, 2
16	Right-of-Way Engineering		X 2, 8, 11, 12
	HDR ENGINEERING – Cont.		
17	Traffic Design	X	X 1, 8
18	Traffic Electrical	X	X 2, 8
19	Utilities	X	X 1, 8
20	Constructability Reviews & Plan Checking	X	X 1, 2

21	Biological Services	X	X 9, 10
22	Habitat Restoration Design and Maintenance	X	X 1, 10, 13
23	Geotechnical & Geology Studies	X	X 1, 14, 15
24	Community Impact Analysis, Land Use, & Growth Studies	X	X 9, 10
25	Cultural Resources	X	X 9
26	Archeology	X	X 16
27	Paleontology Studies		X 9, 16
28	Environmental Compliance	X	X 9, 10
29	Permits/Notices	X	X 10
30	Hydraulics and Hydrology	X	X 8
31	Landscape Architecture & Irrigation Design	X	X 1, 8
32	Air Quality Studies	X	X 1, 10
33	Visual/Aesthetics	X	X 10
34	Hazardous Waste Studies	X	X 1, 14
35	Noise and vibration Studies	X	X 1, 9
36	Section 4(f) Evaluations	X	X 9, 10
37	Wildlife Movement Studies	X	X 9, 10
38	Regional Monitoring and Management Studies	X	X 9
39	Greenhouse Gases Studies	X	X 10

	HNTB

	Service Area	Services provided by Prime	Services provided by Subconsultant
1	Transit Guideway Design	X	
2	Railroad Track Design	X	
3	Transit and Railroad Station Design	X	X 44
4	Transit and Railroad System Engineering Design	X	X 3
5	Transit and Railroad Train Signaling Design	X	X 3
6	Transit and Railroad Traction Power Design	X	
7	Transit & Railroad Maintenance & Operations Facilities Design	X	X 6, 33
8	Transit and Railroad Vehicle Design		X 45
9	FTA New Starts & Other Transit Analysis	X	X 46, 47
10	Highway Design		
11	Local Street, Bikeway, Walkway Design	X	X 48, 49
12	Architecture/Building Design/ Interior Design	X	X 6, 33
13	Design Support During Construction	X	
14	Environmental Documents		X 20
15	Structures	X	
16	Right-of-Way Engineering		X 19, 37, 50
17	Traffic Design	X	X 49, 47
18	Traffic Electrical	X	X 49, 47
19	Utilities	X	X 30
20	Constructability Reviews & Plan Checking	X	
21	Biological Services		
22	Habitat Restoration Design and Maintenance		X 20
23	Geotechnical & Geology Studies		X 15, 51
HNTB – Cont.			
24	Community Impact Analysis, Land Use, & Growth Studies		X 20
25	Cultural Resources		
26	Archeology		

27	Paleontology Studies		
28	Environmental Compliance		X 20
29	Permits/Notices		X 20
30	Hydraulics and Hydrology	X	X 52
31	Landscape Architecture & Irrigation Design		X 48
32	Air Quality Studies		X 20
33	Visual/Aesthetics		X 20
34	Hazardous Waste Studies		X 15
35	Noise and vibration Studies		X 20
36	Section 4(f) Evaluations		
37	Wildlife Movement Studies		
38	Regional Monitoring and Management Studies		
39	Greenhouse Gases Studies		

	KIMLEY HORN & ASSOCIATES		
	Service Area	**Services provided by Prime**	**Services provided by Subconsultant**
1	Transit Guideway Design	X	X 27
2	Railroad Track Design	X	X 27, 5
3	Transit and Railroad Station Design	X	X 27
4	Transit and Railroad System Engineering Design	X	X 5, 27
5	Transit and Railroad Train Signaling Design		X 3, 5, 27
6	Transit and Railroad Traction Power Design		X 5, 27
7	Transit & Railroad Maintenance & Operations Facilities Design	X	X 5, 27, 28
8	Transit and Railroad Vehicle Design		X 27
9	FTA New Starts & Other Transit Analysis	X	X 27
10	Highway Design	X	X 27
11	Local Street, Bikeway, Walkway Design	X	X 27
12	Architecture/Building Design/ Interior Design		X 28
13	Design Support During Construction	X	X 3, 5, 27, 29
14	Environmental Documents		X 20, 27
15	Structures		X 27, 29
16	Right-of-Way Engineering	X	X 12, 19
17	Traffic Design	X	
18	Traffic Electrical	X	
19	Utilities	X	X 30
20	Constructability Reviews & Plan Checking	X	X 3, 5, 27, 29
21	Biological Services		X 20
22	Habitat Restoration Design and Maintenance		X 20
23	Geotechnical & Geology Studies		X 14
24	Community Impact Analysis, Land Use, & Growth Studies	X	X 20
25	Cultural Resources	X	X 20
KIMLEY HORN & ASSOCIATES – Cont.			

26	Archeology		
27	Paleontology Studies		
28	Environmental Compliance	X	X 20
29	Permits/Notices	X	X 20
30	Hydraulics and Hydrology	X	X 27
31	Landscape Architecture & Irrigation Design	X	X 27
32	Air Quality Studies		X 20
33	Visual/Aesthetics	X	X 27
34	Hazardous Waste Studies		X 14
35	Noise and vibration Studies		X 20
36	Section 4(f) Evaluations		
37	Wildlife Movement Studies		
38	Regional Monitoring and Management Studies		
39	Greenhouse Gases Studies		X 20

	PACIFIC RAIL ENTERPRISES		
	Service Area	**Services provided by Prime**	**Services provided by Subconsultant**
1	Transit Guideway Design		X 38
2	Railroad Track Design		X 25, 38, 39
3	Transit and Railroad Station Design		X 25
4	Transit and Railroad System Engineering Design	X	
5	Transit and Railroad Train Signaling Design	X	
6	Transit and Railroad Traction Power Design		X 40
7	Transit & Railroad Maintenance & Operations Facilities Design		X 40
8	Transit and Railroad Vehicle Design	X	
9	FTA New Starts & Other Transit Analysis		
10	Highway Design		
11	Local Street, Bikeway, Walkway Design		
12	Architecture/Building Design/ Interior Design		X 25
13	Design Support During Construction	X	X 25, 38, 39 , 40, 41, 42, 43
14	Environmental Documents		X 42
15	Structures		
16	Right-of-Way Engineering		X 43
17	Traffic Design		X 41
18	Traffic Electrical		X 41
19	Utilities		X 25, 29
20	Constructability Reviews & Plan Checking		
21	Biological Services		
22	Habitat Restoration Design and Maintenance		
23	Geotechnical & Geology Studies		
24	Community Impact Analysis, Land Use, & Growth Studies		
25	Cultural Resources		
26	Archeology		

PACIFIC RAIL ENTERPRISES – Cont.			
27	Paleontology Studies		
28	Environmental Compliance		
29	Permits/Notices		
30	Hydraulics and Hydrology		
31	Landscape Architecture & Irrigation Design		
32	Air Quality Studies		
33	Visual/Aesthetics		
34	Hazardous Waste Studies		
35	Noise and vibration Studies		
36	Section 4(f) Evaluations		
37	Wildlife Movement Studies		
38	Regional Monitoring and Management Studies		
39	Greenhouse Gases Studies		

	DOKKEN		
	Service Area	**Services provided by Prime**	**Services provided by Subconsultant**
1	Transit Guideway Design	X	X 53, 54
2	Railroad Track Design		X 53, 55
3	Transit and Railroad Station Design	X	X 53, 54, 55, 23
4	Transit and Railroad System Engineering Design		X 53
5	Transit and Railroad Train Signaling Design		X 53
6	Transit and Railroad Traction Power Design		X 53, 56
7	Transit & Railroad Maintenance & Operations Facilities Design		X 53, 55, 56, 57
8	Transit and Railroad Vehicle Design		X 53
9	FTA New Starts & Other Transit Analysis		X 53, 55, 54
10	Highway Design	X	X 53, 58, 59
11	Local Street, Bikeway, Walkway Design	X	X 53, 60, 61, 58
12	Architecture/Building Design/ Interior Design		X 56, 57
13	Design Support During Construction	X	X 53, 23, 60, 57
14	Environmental Documents	X	X 23, 32, 59
15	Structures	X	X 53, 60, 62
16	Right-of-Way Engineering	X	X 19
17	Traffic Design	X	X 53, 54, 60, 61, 58, 59
18	Traffic Electrical	X	X 53, 54, 56, 61, 59
19	Utilities	X	X 53, 56, 58, 62, 30, 63
20	Constructability Reviews & Plan Checking	X	X 53, 58, 59
21	Biological Services	X	X 64
22	Habitat Restoration Design and Maintenance	X	X 23, 32, 59
23	Geotechnical & Geology Studies		X 62, 65, 51, 14
24	Community Impact Analysis, Land Use, & Growth Studies	X	X 23, 59
25	Cultural Resources	X	X 64
26	Archeology	X	
27	Paleontology Studies		X 16

DOKKEN – Cont.			
28	Environmental Compliance	X	
29	Permits/Notices	X	X 32
30	Hydraulics and Hydrology	X	X 53, 56, 58
31	Landscape Architecture & Irrigation Design		X 23, 56,
32	Air Quality Studies	X	X 66
33	Visual/Aesthetics	X	X 23
34	Hazardous Waste Studies	X	X 62, 67, 14
35	Noise and vibration Studies	X	X 66
36	Section 4(f) Evaluations	X	
37	Wildlife Movement Studies	X	X 64
38	Regional Monitoring and Management Studies	X	X 64
39	Greenhouse Gases Studies	X	X 66

	HATCH MOTT MACDONALD		
	Service Area	**Services provided by Prime**	**Services provided by Subconsultant**
1	Transit Guideway Design	X	X 17
2	Railroad Track Design	X	
3	Transit and Railroad Station Design	X	X 18
4	Transit and Railroad System Engineering Design	X	
5	Transit and Railroad Train Signaling Design	X	
6	Transit and Railroad Traction Power Design	X	
7	Transit & Railroad Maintenance & Operations Facilities Design	X	
8	Transit and Railroad Vehicle Design	X	
9	FTA New Starts & Other Transit Analysis	X	
10	Highway Design		X 17
11	Local Street, Bikeway, Walkway Design		X 17
12	Architecture/Building Design/ Interior Design		X 18
13	Design Support During Construction	X	X 14, 17, 18 ,19, 20, 21
14	Environmental Documents		X 20
15	Structures	X	X 17
16	Right-of-Way Engineering		X 12
17	Traffic Design		X 17
18	Traffic Electrical		X 17
19	Utilities	X	
20	Constructability Reviews & Plan Checking	X	X 17, 18
21	Biological Services		X 20
22	Habitat Restoration Design and Maintenance		X 20
23	Geotechnical & Geology Studies		X 14, 22
24	Community Impact Analysis, Land Use, & Growth Studies		X 20
25	Cultural Resources		X 20
26	Archeology		X 20
27	Paleontology Studies		X 21

HATCH MOTT MACDONALD – Cont.			
28	Environmental Compliance		X 20
29	Permits/Notices		X 20
30	Hydraulics and Hydrology		X 17
31	Landscape Architecture & Irrigation Design		X 23
32	Air Quality Studies		X 20
33	Visual/Aesthetics		X 18
34	Hazardous Waste Studies		X 14
35	Noise and vibration Studies		X 24
36	Section 4(f) Evaluations		X 20
37	Wildlife Movement Studies		X 20
38	Regional Monitoring and Management Studies		X 20
39	Greenhouse Gases Studies		X 19

	NASLAND		
	Service Area	**Services provided by Prime**	**Services provided by Subconsultant**
1	Transit Guideway Design		X 25
2	Railroad Track Design		X 25
3	Transit and Railroad Station Design		X 25
4	Transit and Railroad System Engineering Design		X 1
5	Transit and Railroad Train Signaling Design		X 1
6	Transit and Railroad Traction Power Design		X 1
7	Transit & Railroad Maintenance & Operations Facilities Design		X 25
8	Transit and Railroad Vehicle Design		X 1
9	FTA New Starts & Other Transit Analysis		
10	Highway Design		
11	Local Street, Bikeway, Walkway Design	X	
12	Architecture/Building Design/ Interior Design		X 26
13	Design Support During Construction		
14	Environmental Documents		
15	Structures		
16	Right-of-Way Engineering	X	
17	Traffic Design		
18	Traffic Electrical		
19	Utilities	X	
20	Constructability Reviews & Plan Checking		
21	Biological Services		
22	Habitat Restoration Design and Maintenance		
23	Geotechnical & Geology Studies		
24	Community Impact Analysis, Land Use, & Growth Studies		
25	Cultural Resources		

NASLAND – Cont.			
26	Archeology		
27	Paleontology Studies		
28	Environmental Compliance		
29	Permits/Notices		
30	Hydraulics and Hydrology	X	
31	Landscape Architecture & Irrigation Design		
32	Air Quality Studies		
33	Visual/Aesthetics		
34	Hazardous Waste Studies		
35	Noise and vibration Studies		
36	Section 4(f) Evaluations		
37	Wildlife Movement Studies		
38	Regional Monitoring and Management Studies		
39	Greenhouse Gases Studies		

	JACOBS		
	Service Area	**Services provided by Prime**	**Services provided by Subconsultant**
1	Transit Guideway Design	X	X 31
2	Railroad Track Design	X	X 31
3	Transit and Railroad Station Design	X	X 31
4	Transit and Railroad System Engineering Design		X 32
5	Transit and Railroad Train Signaling Design	X	X 3
6	Transit and Railroad Traction Power Design	X	X 3
7	Transit & Railroad Maintenance & Operations Facilities Design	X	X 32, 33
8	Transit and Railroad Vehicle Design	X	
9	FTA New Starts & Other Transit Analysis	X	X 32, 33
10	Highway Design	X	X 31, 34
11	Local Street, Bikeway, Walkway Design	X	X 31, 33, 34
12	Architecture/Building Design/ Interior Design	X	X 31, 33
13	Design Support During Construction	X	
14	Environmental Documents	X	
15	Structures	X	
16	Right-of-Way Engineering	X	
17	Traffic Design	X	X 33, 34
18	Traffic Electrical		X 34
19	Utilities	X	
20	Constructability Reviews & Plan Checking	X	
21	Biological Services	X	
22	Habitat Restoration Design and Maintenance	X	
23	Geotechnical & Geology Studies		X 35
24	Community Impact Analysis, Land Use, & Growth Studies		X 32, 33
25	Cultural Resources		X 36
26	Archeology		X 36

JACOBS – Cont.			
27	Paleontology Studies		X 36
28	Environmental Compliance	X	
29	Permits/Notices	X	
30	Hydraulics and Hydrology	X	
31	Landscape Architecture & Irrigation Design		X 37
32	Air Quality Studies	X	
33	Visual/Aesthetics		X 33
34	Hazardous Waste Studies	X	
35	Noise and vibration Studies	X	
36	Section 4(f) Evaluations	X	
37	Wildlife Movement Studies	X	
38	Regional Monitoring and Management Studies		X 32, 33
39	Greenhouse Gases Studies	X	X 32

	GLOBAL SIGNALS		
	Service Area	**Services provided by Prime**	**Services provided by Subconsultant**
1	Transit Guideway Design		X 25
2	Railroad Track Design		X 25
3	Transit and Railroad Station Design		X 25
4	Transit and Railroad System Engineering Design	X	
5	Transit and Railroad Train Signaling Design	X	
6	Transit and Railroad Traction Power Design		
7	Transit & Railroad Maintenance & Operations Facilities Design		X 25
8	Transit and Railroad Vehicle Design		
9	FTA New Starts & Other Transit Analysis		
10	Highway Design		
11	Local Street, Bikeway, Walkway Design		
12	Architecture/Building Design/ Interior Design		X 25
13	Design Support During Construction	X	X 25
14	Environmental Documents		X 25
15	Structures		
16	Right-of-Way Engineering		X 25
17	Traffic Design		X 25
18	Traffic Electrical		
19	Utilities		X 25
20	Constructability Reviews & Plan Checking	X	
21	Biological Services		
22	Habitat Restoration Design and Maintenance		
23	Geotechnical & Geology Studies		
24	Community Impact Analysis, Land Use, & Growth Studies		
25	Cultural Resources		
26	Archeology		
27	Paleontology Studies		

GLOBAL SIGNALS – Cont.			
28	Environmental Compliance		
29	Permits/Notices		
30	Hydraulics and Hydrology		
31	Landscape Architecture & Irrigation Design		
32	Air Quality Studies		
33	Visual/Aesthetics		
34	Hazardous Waste Studies		
35	Noise and vibration Studies		
36	Section 4(f) Evaluations		
37	Wildlife Movement Studies		
38	Regional Monitoring and Management Studies		
39	Greenhouse Gases Studies		

ATTACHMENT B - Request for Statement of Qualifications (RFSQ)
SANDAG Doc. No. 5007809 - MTS Doc. No. G1945.0-16

SUBCONSULTANT LEGEND - ARCHITECTURAL & ENGINEERING FIRMS

SUBCONSULTANT LEGEND *Identifies DBEs/SBEs*			
1	A&E Bench	34	VRPA Technologies*
2	Railpros, Inc.	35	SCST Inc.
3	Pacific Railway Enterprises, Inc*	36	Petra Resource Management
4	Global Signals Group Inc.	37	Project Design Consultants
5	Gannett Fleming Transit and Rail Systems	38	JMDiaz Inc. *
6	Maintenance Design Group, LLC	39	Rail Surveyors and Engineers*
7	SNC-Lavalin Rail & Transit	40	Burns Engineering Inc.
8	Rick Engineering Company	41	STC Traffic Inc.
9	LSA Associates Inc.	42	BRG Consulting Inc.
10	ESA Associates	43	Epic Land Solutions
11	Bender Rosenthal Inc.	44	Manuel Oncina Architects Inc. *
12	Wiggans Group Inc. *	45	TSR Engineering
13	Schaefer Ecological Solutions*	46	Resource Systems Group
14	Ninyo & Moore	47	CHS Consulting Group*
15	Leighton Consulting Inc.	48	KTU+A
16	Cogstone Resource Management Inc. *	49	FPL and Associates*
17	Dokken Engineering	50	Overland, Pacific & Cutler
18	McLean & Schultz	51	Earth Mechanics Inc. *
19	Aguirre & Associates*	52	West Consultants*
20	Helix Environmental Planning*	53	Hatch Mott MacDonald
21	Paleo Solutions*	54	Fehr & Peers
22	Allied Geotechnical Engineers Inc. *	55	TranSystems
23	Estrada Land Planning Inc. *	56	Lopez Engineering*
24	Acoustic Strategies Inc.	57	FMG Architects*
25	HDR Inc.	58	San Dieguito Engineering*
26	Safdie Rabines Architects	59	Chen Ryan Associates*
27	Parsons Brinckerhoff Inc.	60	Nasland
28	RNL Design	61	Linscott , Law, & Greenspan Engineers
29	Kleinfelder	62	Southern California Soil & Testing
30	PCG Utility Consultants*	63	Butsko Utility Design
31	CJ Roberts*	64	GPA Consulting*
32	AECOM	65	Geocon Inc.
33	IBI Group	66	Entech Consulting Group
		67	The Bodhi Group*

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 11

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 8, 2016

Draft for Executive Committee Review Date: 12/1/16

SUBJECT:

DISADVANTAGED BUSINESS ENTERPRISE (DBE) AND LABOR COMPLIANCE CONSULTING SERVICES – CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute the following contracts for DBE and Labor Compliance Consulting Services for a five (5) year period:

1) MTS Doc. No. G1964.0-17 (in substantially the same format as Attachment A) with GCAP Services, Inc. (certified DBE firm) for the DBE Consulting Services; and

2) MTS Doc. No. G1965.0-17 (in substantially the same format as Attachment B) with Gafcon, Inc. for the Labor Compliance Consulting Services.

Budget Impact

The total estimated cost of this agreement would not exceed $365,000 ($40,000 for DBE Consulting and $325,000 for Labor Compliance), which will be funded under the current operating budgets reflected below:

A. DBE CONSULTING		
Contract Term	Est. Annual Cost	Funding
Year 1: 1/1/17 to 12/31/17	$ 5,000	121010-571110 (Legal)
Year 2: 1/1/18 to 12/31/18	$12,500	
Year 3: 1/1/19 to 12/31/19	$ 5,000	
Year 4: 1/1/20 to 12/31/20	$ 5,000	
Year 5: 1/1/21 to 12/31/21	$12,500	
Total:	**$40,000**	

B. LABOR COMPLIANCE CONSULTING		
Contract Term	Est. Annual Cost	Funding
Year 1: 1/1/17 to 12/31/17	$65,000	641010-571250 (Procurement)
Year 2: 1/1/18 to 12/31/18	$65,000	
Year 3: 1/1/19 to 12/31/19	$65,000	
Year 4: 1/1/20 to 12/31/20	$65,000	
Year 5: 1/1/21 to 12/31/21	$65,000	
Total:	**$325,000**	

Grand Total:	**$365,000**

DISCUSSION:

In March 2016, the San Diego Association of Governments (SANDAG) conducted a joint procurement with MTS for DBE and Labor Compliance Consulting Services. The purpose of the joint procurement was to:

1. Support the Agencies' DBE and Small Business Programs – Since MTS is a recipient of FTA funds, MTS must comply with Department of Transportation (DOT) DBE Regulations. A DBE Consultant can support MTS in complying with DOT DBE Regulations in the following ways: setting overall three year DBE goals on its expense procurements, increasing DBE and small business participation on its federally funded contracts, assisting with semi-annual reporting requirements, determining when a DBE is providing a commercially useful function and other services as deemed necessary; and

2. Support the Agencies' Labor Compliance Programs - ensure that MTS consultants and contractors working on public works projects are in compliance with prevailing wage, certified payroll, monitoring of work sites and other services as deemed necessary.

A total of five (5) proposals were received in April 2016. An Evaluation Committee consisting of representatives from SANDAG and MTS evaluated, scored and ranked the proposals. Three (3) firms were deemed to be within the competitive range and were invited to enter into negotiations.

1. Armand Resource Group, Inc.
2. Gafcon, Inc.
3. GCAP Services, Inc.

Based on the final ranking, the Committee recommended award to GCAP Services, Inc. for DBE Consulting Services and Gafcon, Inc. for Labor Compliance Consulting Services, which was approved by the SANDAG Board of Directors in August 2016. The selected consultants will provide DBE and Labor Compliance consulting services on an as needed basis and in accordance to the published scope of work.

Therefore, MTS staff is requesting that the Board of Directors authorize the CEO to execute the following contracts for DBE and Labor Compliance Consulting Services for a five (5) year period:

1) MTS Doc. No. G1964.0-17 (in substantially the same format as Attachment A) with GCAP Services, Inc. (certified DBE firm) for the DBE Consulting Services; and

2) MTS Doc. No. G1965.0-17 (in substantially the same format as Attachment B) with Gafcon, Inc. for the Labor Compliance Consulting Services.

Paul C. Jablonski
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. MTS Doc. No. G1964.0-17 – GCAP
B. MTS. Doc. No. G1965.0-17 – Gafcon

STANDARD SERVICES AGREEMENT

DRAFT

G1964.0-17
CONTRACT NUMBER
LEGAL
FILE NUMBER(S)

THIS AGREEMENT is entered into this _____ day of _____ 2017, in the state of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following contractor, hereinafter referred to as "Contractor":

Name: GCAP Services, Inc.

Address: 3525 Hyland Avenue, Suite 260
Costa Mesa, CA 92626

Form of Business: Corporation
(Corporation, partnership, sole proprietor, etc.)

Telephone: 714.800.1795 ext. 12

Authorized person to sign contracts: Edward Salcedo, Jr. (Name) President (Title)

The attached Standard Conditions are part of this agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Provide Disadvantage Business Enterprise (DBE) Program Consulting Services as required by MTS (Ref: SANDAG RFP #5004680), GCAP's Proposal (attached as Exhibit A), in accordance with the Standard Services Agreement, including Standard Conditions Services (attached as Exhibit B).

The contract term is for five (5) year period effective January 1, 2016 through December 31, 2021. Payment terms shall be net 30 days from invoice date.

The total contract cost shall not exceed $40,000.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	CONTRACTOR AUTHORIZATION
By: _____ Chief Executive Officer	Firm: _____
Approved as to form:	By: _____ Signature
By: _____ Office of General Counsel	Title: _____

AMOUNT ENCUMBERED	BUDGET ITEM	FISCAL YEAR
$40,000	121010-571110	16-21

By: _____
Chief Financial Officer — Date

STANDARD SERVICES AGREEMENT

G1965.0-17
CONTRACT NUMBER

DRAFT

FILE NUMBER(S)

THIS AGREEMENT is entered into this _____ day of _____ 2017, in the state of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following contractor, hereinafter referred to as "Contractor":

Name: Gafcon, Inc.

Address: 5960 Cornerstone Court West, Ste. 100
San Diego, CA 92121

Form of Business: Corporation
(Corporation, partnership, sole proprietor, etc.)

Telephone: 858.875.0010

Authorized person to sign contracts: Robin Duveen (Name) Chief Operating Officer (Title)

The attached Standard Conditions are part of this agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Provide Labor Compliance Program Consulting Services as required by MTS (Ref: SANDAG RFP No. 5004680), Gafcon's Proposal (attached as Exhibit A), in accordance with the Standard Services Agreement, including Standard Conditions Services (attached as Exhibit B).

The contract term is for five (5) year period effective January 1, 2017, through December 31, 2021. Payment terms shall be net 30 days from invoice date.

The total contract cost shall not exceed $325,000.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	CONTRACTOR AUTHORIZATION
By: _____ Chief Executive Officer	Firm: _____
Approved as to form:	By: _____ Signature
By: _____ Office of General Counsel	Title: _____

AMOUNT ENCUMBERED	BUDGET ITEM	FISCAL YEAR
$325,000	641010-571250	16-21

By: _____
Chief Financial Officer — Date

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 12

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 8, 2016

Draft for
Executive Committee
Review Date: 12/1/16

SUBJECT:

INVESTMENT REPORT – OCTOBER 2016

INFORMATIONAL ONLY

Budget Impact

None.

DISCUSSION:

Attachment A comprises a report of the San Diego Metropolitan Transit System (MTS) investments as of October 31, 2016. The combined total of all investments has increased month to month from $121.1 million to $133.0 million. This $11.9 million increase is attributable to $10.7 million in Federal Transit Administration (FTA) funds, $7.2 million in State Transit Assistance (STA) funds, partially offset by $4.4 million in capital expenditures, as well as normal timing differences in other payments and receipts.

The first column provides details about investments restricted for capital improvement projects.

The second column, unrestricted investments, reports the working capital for MTS operations allowing payments for employee payroll and vendors' goods and services.

Paul C. Jablonski
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. Investment Report for October 2016

San Diego Metropolitan Transit System
Investment Report
October 31, 2016

	Restricted	Unrestricted	Total	Average rate of return
Cash and Cash Equivalents				
JP Morgan Chase - concentration account	-	36,107,310	36,107,310	0.00%
Total Cash and Cash Equivalents	-	36,107,310	36,107,310	
Cash - Restricted for Capital Support				
San Diego County Investment Pool Proposition 1B TSGP grant funds	7,162,544	-	7,162,544	
Total Cash - Restricted for Capital Support	7,162,544	-	7,162,544	
Investments - Working Capital				
Local Agency Investment Fund (LAIF)	13,588,808	76,126,602	89,715,410	0.654%
Total Investments - Working Capital	13,588,808	76,126,602	89,715,410	
Total cash and investments	**$ 20,751,352**	**$ 112,233,912**	**$ 132,985,264**	

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Agenda Item No. 13

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 8, 2016

Draft for
Executive Committee
Review Date: 12/1/16

SUBJECT:

S70 AND SD100 PRINTED CIRCUIT BOARDS - SOLE SOURCE PURCHASE ORDER

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to issue a purchase order to Siemens Transportation Systems Corporation (Siemens), on a sole source basis, for the purchase of printed circuit boards and related items.

Budget Impact

The total value of this agreement will not exceed $276,070.68, inclusive of freight charges and California sales tax. Funding will be from the Fiscal Year (FY) 2017 Light Rail Vehicle (LRV) Maintenance operating budget account 350016-545100.

DISCUSSION:

San Diego Trolley, Inc. (SDTI) requires the purchase of printed circuit boards (PCB) and related items for the S70 and SD100 vehicles. This critical electronic component decides the acceleration/de-acceleration rates and speed of the vehicle, and as such these components are considered safety critical. Substitutions increase risk of damage to equipment, injury to employees or passengers and potential loss of life. The commissioning and subsequent safety certification of the vehicles was performed with this equipment on board, and any deviation from the original design would require extensive and expensive re-testing and safety certification of the system and approval by California Public Utilities Commission.

Siemens Industry, Inc. is the sole-source representative for these components in North America. Siemens offers the UTEX program to support the need for replacement propulsion PCBs throughout the transit industry. This program has pricing for

repair/return, core exchange, and purchase outright. In order to ensure fair and equal pricing throughout the North American transit market, they have established standard pricing for these components. The aftermarket pricing provided to MTS for unit exchange and repair return are less than or equal to those quoted to all other transit agency or government entity end users.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to issue a purchase order to Siemens, on a sole source basis, for the purchase of PCBs and related items. Parts are used on an as-needed basis as repairs are completed and stock room inventory levels are depleted. This one time purchase is necessary to accommodate current, immediate repair needs.

Paul C. Jablonski
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. UTEX List

ATTACHMENT A

S70 AND SD100 PRINTED CIRCUIT BOARDS (PCB)
UTEX List

Item Description	Quantity Requested	Unit Price	Extended Price
BRAKE RESISTOR SD8	2	$ 7,029.00	$ 14,058.00
J000, FAN MODULE,BLOWR SUB,30TE,1HE,SD7	2	$ 2,052.00	$ 4,104.00
VOLTAGE TRANSDUCER QPSW,SD8	2	$ 625.00	$ 1,250.00
J000,FAN SUB-ASSEMBLY,SD8	2	$ 2,134.00	$ 4,268.00
PCB,C019, CENTRAL PROCESSOR,SD8	2	$ 11,788.00	$ 23,576.00
PCB G031, RS485,SD7	2	$ 11,503.00	$ 23,006.00
DC/DC,POWER SUPPLY.16.8-47V IN,24V,SD8	8	$ 962.00	$ 7,696.00
G047,PCS 24V-110V/5V/±15V 50W,SD8	2	$ 2,364.00	$ 4,728.00
PCB,C003,TCN GATEWAY,VCU,SD7/SD8	2	$ 8,539.00	$ 17,078.00
PCB,G047 5V±15V,VCU,SD7	4	$ 2,364.00	$ 9,456.00
PCB,C031,MVB32,VCU,SD7	4	$ 4,980.00	$ 19,920.00
PCB CNTRL SYSTEMS MONITOR,SD100	6	$ 4,980.00	$ 29,880.00
PCB G103,INPUT TEMP CONVERTER,SD100	2	$ 7,510.00	$ 15,020.00
PCB C157,POWER START-UP UNIT,SD100	1	$ 14,987.00	$ 14,987.00
PCB,C047, INPUT CONVRTR BINARY 24V, SD7	2	$ 3,270.00	$ 6,540.00
C039, EM1 CARRIER W ACAN,SD8	2	$ 6,845.00	$ 13,690.00
PCB,C055, MULTIFUNCTIONAL I/O,SD8	2	$ 5,887.00	$ 11,774.00
PCB,G063, ADAPTER CONVERTER,SD8	2	$ 1,029.00	$ 2,058.00
PCB,G039, BINARY OUTPUT 24-36V/2A,SD8	2	$ 3,141.00	$ 6,282.00
G031, INPUT CONVERTER BINARY 24V,SD8	2	$ 3,270.00	$ 6,540.00
PCB,C055, OUTPUT CONTACTOR DRIVE,SD7	2	$ 3,480.00	$ 6,960.00
PCB,G039, CONVERTER,SD7	2	$ 1,029.00	$ 2,058.00
PCB G087,INPUT/OUTPUT ANALOG,SD100	3	$ 3,564.00	$ 10,692.00
		SUBTOTAL	$ 255,621.00
		TAX (8%)	$ 20,449.68
		GRAND TOTAL	**$ 276,070.68**

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Agenda Item No. 14

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 8, 2016

Draft for Executive Committee Review Date: 12/1/16

SUBJECT:

TRANSIT SMART CARDS – CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G1926.0-16 (in substantially the same format as Attachment A) with Paragon Magnadata, Inc. for the provision of Transit Smart Cards for three (3) base years with two (2) 1-year options, exercisable at MTS's sole discretion.

Budget Impact

The total cost of this contract will not exceed $2,411,478.00, and is broken down as follows:

➢ Year 1 (1/1/17 – 12/31/17)	$482,295.60
➢ Year 2 (1/1/18 – 12/31/18)	$482,295.60
➢ Year 3 (1/1/189 – 12/31/19)	$482,295.60
➢ Year 4, (Option Yr. 1) (1/1/20 – 12/31/20)	$482,295.60
➢ Year 5, (Option Yr. 2) (1/1/21 – 12/31/21)	$482,295.60
Total:	**$2,411,478.00**

The annual costs are based on estimated usage quantities of transit cards. In addition, MTS received pricing on an approved equal chip that could represent savings of approximately $250,000 over the five year term. The project will be funded through the Compass Card Regional Budget (530010-575160 / 531010-575160).

DISCUSSION:

MTS's current fare collection system requires passes to be electronically loaded on a transit smart card. Traditional extended use smart cards are currently sold at MTS Ticket Vending Machines throughout the region, the MTS Transit Store, and third-party outlet

locations. In addition to the extended use card, MTS currently provides limited use smart cards that are pre-loaded with 1-day passes to local government, non-profit, and other social service agencies. The region currently uses 1.2 million transit smart cards annually across 14 different card graphics. MTS has been conducting individual procurements for reorders of each card graphic on an as needed basis. In order to streamline the reordering process, MTS is seeking a multi-year contract with a single card provider.

In addition, MTS initially requested proposals based on the Cubic approved NXP internal card chip. However, during the RFP process, MTS was made aware of an Infineon internal card chip, which is currently being used at other transit agencies operating on similar Cubic software platforms. Switching all transit smart cards to the Infineon chip could represent savings of approximately $250,000 over the five year term. At this time, the Infineon chip has not been tested on MTS' Cubic software platform, so while pricing for this chip is included in the contract, the contract award is based off of the NXP chip.

MTS Policy 52, "Procurement of Goods and Services", requires a formal competitive process for procurements and services exceeding $100,000.

On July 22, 2016, MTS issued a Request for Proposals for transit smart cards. Four proposals were received by the due date of September 7, 2016 from the following firms:

1. ASK-intTag, LLC
2. Electronic Data Magnetics, Inc.
3. Paragon Magnadata Inc.
4. SSS Hot Off the Press

All four proposals were deemed responsive and responsible and were evaluated by a committee comprised of representatives from the Finance and Revenue departments.

On September 20, 2016, the proposals were evaluated on the following:

1. Qualifications of the firm or individual		20%
2. Work Plan		40%
3. Cost and Price		40%
	Total	**100%**

The following table illustrates the initial scores and ranking of each:

PROPOSER NAME	TOTAL AVG. TECH. SCORE	COST SCORE	TOTAL AVG SCORE Total Possible:100	RANKING
ASK-intTag, LLC	44.00	34.52	78.52	1
Paragon Magnadata Inc.	48.00	30.45	78.45	2
Electronic Data Magnetics	37.33	40.00	77.33	3
SSS Hot off the Press	21.33	39.68	61.01	4

The top three scored firms were considered to be within the competitive range and advanced to the next step of the evaluation process which included interviews and

requests for revised proposals. The evaluation committee's scoring of the revised proposals and information gathered during the interviews was as follows:

PROPOSER NAME	TOTAL AVG. TECH. SCORE	AVG. COST SCORE	TOTAL AVG SCORE Total Possible:100	RANKING
Paragon Magnadata Inc.	48.00	37.23	85.23	1
ASK-intTag, LLC	44.00	35.73	79.73	2
Electronic Data Magnetics	34.67	39.37	74.04	3

After receipt and evaluation of the revised proposals, the three firms remained within the competitive range and the evaluation committee requested best and final offer proposals from all three firms.

The final scoring was as follows:

PROPOSER NAME	TOTAL AVG. TECH. SCORE	AVG. COST SCORE	TOTAL AVG SCORE Total Possible:100	RANKING
Paragon Magnadata Inc.	48.00	39.40	87.40	1
ASK-intTag, LLC	44.00	34.81	78.81	2
Electronic Data Magnetics	34.67	38.44	73.11	3

Based upon consideration of both technical and cost factors, the evaluation team determined that Paragon Magnadata presented the best overall value to MTS.

Therefore, staff recommends that Board of Directors authorize the CEO to execute MTS Doc. No. G1926.0-16 (in substantially the same format as Attachment A) with Paragon Magnadata Inc., for the provision of transit smart cards for three (3) base years with two (2) 1-year options, exercisable at MTS's sole discretion.

Paul C. Jablonski
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. Draft MTS Doc. No. G1926.0-16

DRAFT

G1926.0-16
CONTRACT NUMBER

FILE/PO NUMBER(S)

STANDARD SERVICES AGREEMENT
FOR
TRANSIT SMART CARDS

THIS AGREEMENT is entered into this 1st day of January 2017, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Paragon Magnadata Inc.

Address: 15 Pine Fork Drive
Toms River, NJ 08755

Form of Business: Corporation
(Corporation, partnership, sole proprietor, etc.)

Telephone: (732) 505-0401

Telephone: (732)505-0401

Email Address: joebmagusa@comcast.net

Authorized person to sign contracts: Joseph Bonano (Name) Vice President (Title)

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Provide transit cards as specified in the Scope of Work (attached as Exhibit A), the Proposal (attached as Exhibit B), and in accordance with the Standard Procurement Agreement, including the Standard Conditions Procurement (attached as Exhibit C).

The contract term is for up to a three (3)-year base period and two (2) 1-year option terms, exercisable at MTS's sole discretion, for a total of five years. Base period shall be effective January 1, 2017 through December 31, 2019, and option years shall be effective January 1, 2020 through December 31, 2021, if exercised by MTS.

Payment terms shall be net 30 days from invoice date. The total cost of this contract shall not exceed $ $1,446,886.80 for the base years and $ $964,591.20 for the option years, for a total not to exceed $2,411,478.00 without the express written consent of MTS.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	CONTRACTOR AUTHORIZATION
By: _____ Chief Executive Officer	Firm: _____
Approved as to form:	By: _____ Signature
By: _____ Office of General Counsel	Title: _____

AMOUNT ENCUMBERED	BUDGET ITEM	FISCAL YEAR
$1,446,886.80	530010-575160/531010-575160	FY 17-FY 20

By: _____
Chief Financial Officer — Date

(___ total pages, each bearing contract number)

SA-SERVICES

MTS Transit Cards Specs	NXP CHIP						
	Price Break per Transit Cards via Quantities						
Type	1-4,999	5,000- 9,999	10,000 - 19,999	20,000 - 49,999	50,000 - 99,999	100,000 - 149,999	150,000+
Paper (14 mil)	$ 1.2300	$ 0.8100	$ 0.5600	$ 0.4100	$ 0.3700	$ 0.3100	$ 0.3100
Limited Use (22 mil)	$ 0.5700	$ 0.5200	$ 0.47	$ 0.4550	$ 0.4480	$ 0.4400	$ 0.4280
Traditional (30 mil)	$ 0.5700	$ 0.5200	$ 0.4700	$ 0.4550	$ 0.4480	$ 0.4400	$ 0.4280

NXP CHIP												
Type	Quantity Ordered											
	1-4,999			5,000- 9,999			10,000 - 19,999			20,000 - 49,999		
	Unit Price	Est. Quantity	Total	Unit Price	Est. Quantity	Total	Unit Price	Est. Quantity	Total	Unit Price	Est. Quantity	Total
Paper (14 mil)	$ 1.2300		$ -	$ 0.8100	40,000	$ 32,400.00	$ 0.5600	40,000	$ 22,400.00	$ 0.4100	20,000	$ 8,200.00
Limited Use (22 mil)	$ 0.5700		$ -	$ 0.5200	95,000	$ 49,400.00	$ 0.4700	200,000	$ 94,000.00	$ 0.4550	40,000	$ 18,200.00
Traditional (30 mil)	$ 0.5700		$ -	$ 0.5200	85,000	$ 44,200.00	$ 0.4700	90,000	$ 42,300.00	$ 0.4550	490,000	$ 222,950.00
Totals			$ -			$ 126,000.00			$ 158,700.00			$ 249,350.00
Type	Quantity Ordered											
	50,000 - 99,999			100,000 - 149,999			150,000+					
	Unit Price	Est. Quantity	Total	Unit Price	Est. Quantity	Total	Unit Price	Est. Quantity	Total			
Paper (14 mil)	$ 0.3700		$ -	$ 0.3100	400,000	$ 124,000.00	$ 0.3100		$ -			
Limited Use (22 mil)	$ 0.4480		$ -	$ 0.4400	600,000	$ 264,000.00	$ 0.4280		$ -	Subtotal		$ 2,232,850.00
Traditional (30 mil)	$ 0.4480	150,000	$ 67,200.00	$ 0.4400	200,000	$ 88,000.00	$ 0.4280	2,700,000	$ 1,155,600.00	CA Sales Tax 8.00%		$ 178,628.00
Totals			$ 67,200.00			$ 476,000.00			$ 1,155,600.00	Total with Tax		$ 2,411,478.00

BAFO Proposal Submitted by: PARAGON MAGNADATA INC.
Date: 11/9/16