PHASE I REPORT

Submitted to Valley Metro / Regional Public Transportation Authority

Efficiency and Effectiveness Study

Project No. 064008S

Booz | Allen | Hamilton

In association with

Texas Transportation Institute (TTI)

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EXECUTIVE SUMMARY

This report documents results and recommendations from Phase I of the Valley Metro/Regional Public Transportation Authority Efficiency and Effectiveness Study. The study's purpose was to develop a performance reporting framework in support of Proposition 400.

The Arizona statutes concerning the Proposition 400 law call for performance audits starting in 2010. While the framework can (and should) be applied to all transit routes in the region, the audits only concern those routes funded by Proposition 400.

The framework developed addresses four "modes" (Fixed Route Systemwide, Fixed Route, Route level, Paratransit, and Rail). Bus service categories include Local, Supergrid, Express/BRT, Rural, Paratransit, and Circulators. The framework assumes that the measurement first occurs at the contractor level, then is rolled up to higher levels of aggregration.

Framework

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Exhibit ES 1
Fixed Route, Systemwide Measures

Cost Efficiency/Effectiveness
Farebox Recovery Ratio
Operating Cost per Boarding
Subsidy (Net Opg Cost) per Boarding
Cost per Revenue Mile
Average Fare
Service Effectiveness
Total Boardings
Boardings Avg. Weekday, Sat., Sun.
Boardings per Revenue Mile
Safety Incidents per 100,000 Vehicle Miles
Security Incidents per "x" Boardings
Complaints per "x" Boardings
On-time Performance
Miles between Mechanical Failures
Customer Satisfaction

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Exhibit ES 2
Fixed Route, Route Level Measures

Cost Efficiency/Effectiveness
Farebox Recovery Ratio
Operating Cost per Boarding
Subsidy (Net Opg Cost) per Boarding
Cost per Revenue Mile
Service Effectiveness
Total Boardings
Boardings Avg. Weekday, Sat., Sun.
Boardings per Revenue Mile
Boardings per Revenue Hours (Express Bus)
On-time Performance
Miles between Mechanical Failures

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Exhibit ES 3 Paratransit Measures	Exhibit ES 4 Rail Measures
Cost Efficiency/Effectiveness	**Cost Efficiency/Effectiveness**
Farebox Recovery Ratio	Farebox Recovery Ratio
Operating Cost per Boarding	Operating Cost per Boarding
Subsidy (Net Opg Cost) per Boarding	Subsidy (Net Opg Cost) per Boarding
Operating Cost per Revenue Hour	Cost per Revenue Mile
Average Fare	Average Fare
Service Effectiveness	**Service Effectiveness**
Total Boardings	Total Boardings
Boardings Avg. Weekday, Sat., Sun.	Boardings Avg. Weekday, Sat., Sun.
Boardings per Revenue Hour	Boardings per Revenue Mile
Percent No Shows	Safety Incidents per 100,000 Vehicle Miles
On-time Performance	Security Incidents per "x" Boardings
Miles between Mechanical Failures	On-time Performance
Customer Satisfaction	Miles between Failures
	Customer Satisfaction

With exception of the rail system, which is not yet open to revenue service and which therefore has no historical data, all bus and paratransit measures above have been tested by the RPTA and member cities. Valley Metro/RPTA is also in the process of developing specific performance goals across each indicator.

Targets

Significantly, the framework also proposes draft performance targets, which establish a baseline of performance expectation for Fixed Route bus (systemwide); Fixed Route bus at the route level; Paratransit; and Rail. Establishing a baseline, high level performance level for transit is also an important part of fully regionalizing transit in the Valley to ensure that every citizen, no matter where he or she lives, has the same high level service.

Proposed performance targets are presented on the next page.

Exhibit ES 5
Fixed Route, Systemwide Targets[1]

FIXED ROUTE BUS, SYSTEMWIDE	TARGET
Cost Efficiency/Effectiveness	
Farebox Recovery Ratio	25%
Operating Cost per Boarding	$2.32
Subsidy (Net Opg Cost) per Boarding	$1.75
Cost per Revenue Mile	$4.96
Average Fare	$0.67
Service Effectiveness	
Total Boardings	3%*
Boardings Avg. Weekday, Sat., Sun.	3%*
Boardings per Revenue Mile	2.1
Safety Incidents per 100,000 Vehicle Miles	1.2
Security Incidents per "x" Boardings	0
Complaints per "x" Boardings	28
On-time Performance	90%
Miles between Mechanical Failures	23,400
Customer Satisfaction	89%

Exhibit ES 6
Fixed Route, Route Level Targets

FIXED ROUTE BUS, ROUTE LEVEL	TARGET
Cost Efficiency/Effectiveness	
Farebox Recovery Ratio	25%
Operating Cost per Boarding	$2.32
Subsidy (Net Opg Cost) per Boarding	$1.75
Cost per Revenue Mile	$4.96
Service Effectiveness	
Total Boardings	3%*
Boardings Avg. Weekday, Sat., Sun.	3%*
Boardings per Revenue Mile	2.1
Boardings per Revenue Hour (Express Bus)	TBD
On-time Performance	90%
Miles between Mechanical Failures	23,400

Exhibit ES 7
Paratransit Targets

PARATRANSIT	TARGET
Cost Efficiency/Effectiveness	
Farebox Recovery Ratio	5%
Operating Cost per Boarding	$28.55
Subsidy (Net Opg Cost) per Boarding	$27.16
Operating Cost per Revenue Hour	$50.30
Average Fare	TBD
Service Effectiveness	
Total Boardings	3%*
Boardings Avg. Weekday, Sat., Sun.	3%*
Boardings per Revenue Hour	1.76
Percent No Shows	5%
On-time Performance	90%
Miles between Mechanical Failures	TBD
Customer Satisfaction	90%

Exhibit ES 8
Rail Targets

RAIL	TARGET
Cost Efficiency/Effectiveness	
Farebox Recovery Ratio	25%
Operating Cost per Boarding	$2.64
Subsidy (Net Opg Cost) per Boarding	$1.98
Cost per Revenue Mile	$26.26
Average Fare	$0.67
Service Effectiveness	
Total Boardings	10,655,000
Boardings Avg. Weekday	26,090
Boardings Avg. Sat.	N/A
Boardings Avg. Weekday Sun./Holiday	N/A
Boardings per Vehicle Revenue Mile	3.94
Boardings per Revenue Mile	8.04
Safety Incidents per 100,000 Vehicle Miles	N/A
Security Incidents per "x" Boardings	N/A
On-time Performance	95%
Miles between Failures	25,000
Customer Satisfaction	89%

Note that targets for Rail are preliminary. There is very little data available on which to base the targets until the system has gone through some testing and begins revenue service. Assumptions include the 2010 Financial Plan and operating assumptions

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[1] * *Items: Financial Plan assumptions; subject to service level increases.*

reflected in the New Starts criteria. Proposition 400 audit requirements do not supersede nor replace the New Starts planning process.

Action Summary and Timeframe

This Phase I report provides a roadmap for Valley Metro/RPTA and member agencies including detailed recommendations for:

- Definitions by mode
- New Route implementation guidelines
- Route maturation guidelines
- Data tool implementation
- Reporting timeframe
- Reporting procedures (e.g., reporting by audience)
- Roles and responsibilities (e.g., data collection, quality control).

Implementation of the new performance measurement framework will require hard work and commitment on the part of RPTA staff and member agencies. To fully realize the potential of the initiative, changes to operating practices are needed. Examples include full accounting in the calculation of operating costs and changes in contractor reporting practices (e.g., route level costs).

A summary of the major recommendations is provided in ES 9 below.

Exhibit ES 9
Summary Implementation Plan

CATEGORY	RECOMMENDATION	ACTION OWNER	TIMEFRAME
Framework Adoption	Adopt performance measures framework	RPTA and VMR Boards	April-June 2007
Target Setting and Adoption	Discuss target goals for each performance measure	TMC, VMOCC	April-July 2007
	Discuss target goals for each performance measure	RPTA and VMR Boards	February-June 2007
	Adopt draft targets for framework	RPTA and VMR Boards	June-August 2007
Guidelines Adoption	Discuss route implementation and maturation guidelines	TMC, VMOCC	April-June 2007
	Discuss route implementation and maturation guidelines	RPTA Planning Dept and Board	April-June 2007
	Identify "lifeline" network	RPTA Planning Dept, Members	April-Sept 2007
	Adopt route maturation guidelines	RPTA Planning Dept and Board	June-July 2007
Information	Issue performance guidelines to all reporting agencies	RPTA Planning Dept	April-May 2007
Implement Data Tool	Develop final reporting format	RPTA Planning Dept	April-Sept 2007
	Complete transition from PMAS	RPTA Planning Dept	April-Sept 2007
	Develop reporting platform	RPTA Planning Dept	April-Dec 2007
	Work with individual members to facilitate process	RPTA Planning Dept	April-Dec 2007
Contract Negotiations	Include all measures in reporting requirement (system wide and route level)	Tempe, Phoenix, Glendale RPTA Operations	April 2007 - Dec 2008
Preparation for New Routes	Conduct density scale analysis for new route implementation	RPTA Planning Dept	Ongoing
New Route Monitoring	Monitor new routes according to route maturation guidelines	RPTA Planning Dept	Ongoing
Reporting	Begin monthly reporting with new system	RPTA Planning Dept	July 2007
	Begin quarterly, etc briefing to Audiences - Bus/DAR	RPTA Operations Mgr	Oct 2007 (for July 1 - Sept 30)
	Begin quarterly, etc briefing to Audiences - Rail	VMR Operations Mgr	First quarter after startup

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1.   PROJECT SCOPE

1.1   Proposition 400 Context

In November 2004, Maricopa County voters approved Proposition 400. Largely focused on executing the road and transit elements of the 20-Year Regional Transportation Plan (RTP), Proposition 400 effectively boosts regional investment in transportation infrastructure and services in the County through continuation of the 1985 1/2 cent sales tax through 2025. Proposition 400 also expanded the share of the ½ cent sales tax revenue dedicated to transit. RPTA's mission of developing and delivering an integrated regional transit system reaffirms the 1985 core mandate for the agency and its responsibilities for the transit elements of the RTP.

The regional public transit projects in the RTP include:
- Regional funding support for existing transit services
- Improvements to service levels for local transit routes that operate on the arterial street grid system and serve a regional function including 32 new routes
- Improvements to service levels for regional express and bus rapid transit (BRT) services including 33 new routes
- Rural transit service
- Regional funding for complementary paratransit service to meet requirements of the Americans with Disabilities Act (ADA)
- Expanded vanpool program
- Purchase of almost 4,900 buses and vanpools, including 1,135 vehicles for expansion and more than 3,750 vehicles for replacement
- Vehicle management systems (VMS) for transit vehicles
- 13 park-and-ride facilities
- 10 new transit centers and improvements to three existing transit centers
- Regional funding for passenger amenities for bus stops
- Eight new operations and maintenance facilities (including four facilities for fixed route bus, two facilities for paratransit, one for rural transit, and one for vanpool) and renovation of two existing facilities. Arterial improvements for BRT and right-of-way for dedicated BRT
- 27.7 miles of new light rail extensions

The Proposition 400 law – which is spelled out in several Arizona Revised Statutes (ARS) and which directly addresses the RTP itself - stipulates performance monitoring requirements, including performance audits by the auditor general on five-year cycles. The first of these performance audits will occur in 2010. While the performance criteria for light rail transit investments are specifically identified in ARS 28-6313, and under the Federal New Starts Program, criteria for the bus program were not defined to this degree.

Early in 2005, Valley Metro/RPTA conceived of an Efficiency and Effectiveness Study to develop quantifiable performance measures that could be used to assess the performance of new transit service as it is brought on line. This would serve two complementary purposes. First, it would serve the intent of the legislation and prepare the transit agencies for the upcoming audits. Second, the study would help integrate public transportation performance monitoring across the Valley. Integration of public transportation services is a key objective of Valley Metro/RPTA; this is one of the agency wide goals recently developed by the Board of Directors as part of the Valley Metro/RPTA Strategic Plan. Establishment of consistent performance targets across transit operations is an important element of moving to fully regionalize the provision of transit services valley-wide.

1.2   Efficiency / Effectiveness Study Scope

As Valley Metro/RPTA refined the scope of the Efficiency and Effectiveness Study, it invited input from its members, including through the Transit Management Committee (TMC) and the Intergovernmental/Transit Manager as well as its Board meetings.

New ideas added to the scope of services included elements relating to an industry review of the most applicable measures, analysis of legal requirements, comparison to peer systems, and testing the evolving framework. Given the concern that new routes do not always perform optimally when first introduced, members requested that recommendations regarding route maturation guidelines be included in the study.

The Service Efficiency / Effectiveness Study objective was finalized to develop quantifiable measures to evaluate bus and rail transit service performance, at both the route and system-wide levels. Such indicators can be used to evaluate route-level service efficiency and effectiveness, both relative to a standard and to rank routes relative to each other. The scope of work included the following tasks:

- Refine scope of services
- Develop public and agency involvement plan
- Review prior and ongoing studies
- Evaluate current performance monitoring and evaluation criteria utilized by RPTA and its member agencies
- Conduct peer city review
- Develop performance measure recommendations
- Develop implementation strategies and action plan
- Conduct 18-month evaluation.

The project includes two phases:

- Phase I – the baseline phase, included the first seven tasks identified above, from March 2006 to January 2007.
- Phase II – the 18-month evaluation task that serves as a status check on the performance monitoring effort.

This report summarizes Phase I - including approach, results and recommendations from setting up the performance measurement framework.

2.   WORK APPROACH

2.1   General Approach

The project team devised its own series of project tasks, closely following RPTA's original program. The tasks were parallel to the extent possible and leverage input from the Technical Advisory Committee (TAC) and stakeholder involvement. The resulting task flow is illustrated in Exhibit 1.

Exhibit 1
Efficiency and Effectiveness Study Task Flow
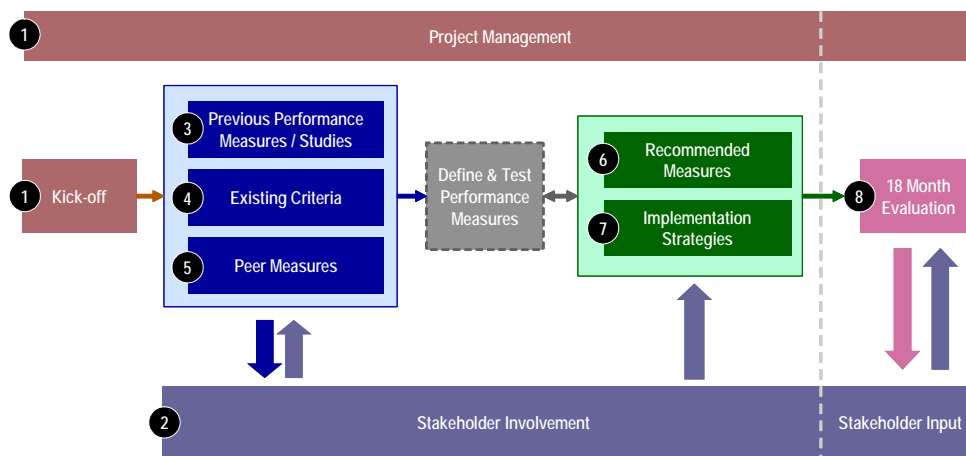
Following the project kick off, the consultant team engaged three tasks in parallel: review of previous performance measures and studies; review of existing criteria; and review of peer measurement systems.   The tasks were intended to build on the current RPTA Performance Measurement Analysis System (PMAS), while learning from best practices in place with peer systems. These three tasks took place over a three month period (March-July 2006), with three presentations to the TAC.

Testing the performance measures, although not identified in the Exhibit 1 diagram, is key to ascertain whether the measures can readily be calculated and what potential data collection challenges may exist. The Booz Allen team requested that RPTA test the measures, and requested volunteers from the membership. The cities of Glendale, Phoenix and Tempe participated.

The last Phase I steps consisted in presenting the draft list of recommended performance measures to a variety of stakeholders, and in developing implementation strategies. For example, Booz Allen staff members collected peer best practice information regarding route maturation guidelines, and facilitated a discussion with the TAC to determine a recommended strategy for Valley Metro/RPTA.

2.2 Legislative Summary

As identified earlier, Proposition 400 is the means by which voters approved and funded the Regional Transportation Plan (RTP). The RTP identifies specific transportation improvements and allocates funding from FY2005 through FY2026. In passing Proposition 400, the voters approved a ½ cent sales tax to create the Public Transportation Fund (PTF).

Proposition 400 performance monitoring requirements are rooted primarily in State Statutes – namely in Title 28 (Transportation) and Title 48 (Special Taxing Districts) of the Arizona Revised Statutes. The ARS provide the main legal basis for agency responsibilities, and also establish the audit requirements.

In addition, the project team examined other regional transportation processes, including Valley Metro/RPTA's Transit Life Cycle Program (TLCP), and Federal Transit Administration criteria with respect to light rail systems (i.e., New Starts criteria and United States Code).

RTP Implementation

Plan implementation is divided into four phases (FY2005-FY2010, FY2011-FY2015, FY2016-FY2020, FY2021-FY2026) taking into consideration:

- Traffic demand and congestion
- System continuity, connectivity and efficiency
- Revenue availability
- Bonding capacity and strategies
- Cost (and cash flow requirements)
- Project development process
- Project readiness
- Concurrent progress on multiple projects.

Phasing and bus transit projects and facilities costs are discussed in the *RTP-Transit Program Reference Manual*. Cost of service improvements by jurisdiction/phase and annual estimated regional funding are also provided in the *RTP-Transit Program Reference Manual*.

Most Applicable Arizona Revised Statutes
For the purposes of the Efficiency and Effectiveness study, the following statutes are identified as being the most relevant.

	Type of Performance	Oversight	Audit
Bus	ARS 28-505 ARS 28-6354	ARS 28-6356F (CTOC) ARS 48-5121 (Board)	ARS 28-6313 ARS 28-6356F
Rail	ARS 28-505 ARS 28-6313 ARS 28-6354	ARS 28-6356F (CTOC)	ARS 28-6313 USC 5309 (e)(1)(B) ARS 28-6356F

Performance Criteria in the Statutes

There are no specific performance measurement criteria identified in the legislation. However, ARS 28-505 identifies ten transportation system performance "factors" that need to be addressed through a Board presentation, as shown in Exhibit 2.

Exhibit 2
ARS 28-505 Transportation System Performance Factors

1. System preservation.
2. Congestion relief.
3. Accessibility.
4. Integration and connectivity with other modes.
5. Economic benefits.
6. Safety.
7. Air quality and other environmental impacts.
8. Cost-effectiveness of a project or service.
9. Operational efficiency.
10. Project readiness.

The performance factors apply to bus and light rail performance. ARS 28-6354 describes annual reporting requirements, including criteria to establish priority corridors and corridor segments.

For light rail performance, ARS 28-6313 further stipulates consideration of Federal Transit Administration sections 49 USC 5309(e)(1)(B). For light rail systems, ARS 28-6313 also stipulates that the audits will consider service levels, capital costs, operations and maintenance costs, transit ridership, and farebox revenues. These, in turn, become system performance elements that need to be monitored over time.

Oversight Responsibilities

With respect to the transportation system performance only (not funding), the most directly applicable statute is ARS 28-6356F. It address the oversight role of the Citizens Transportation Oversight Committee (CTOC).

According to statutes, the CTOC reviews and advises the board, the governor, the director, the governing body of the regional planning agency, and the board of directors

of the regional public transportation authority on matters relating to projects funded pursuant to section 42-6104 in the regional transportation plan. CTOC should also review and comment on the criteria developed by the regional planning agency.

Clearly, the Board provides continuing oversight responsibilities over all Valley Metro/RPTA activities, particularly the high visibility reporting requirements regarding Proposition 400. ARS 48-5121 summarizes this responsibility.

Audit Requirements

ARS 28-6313 specifies five-year audit requirements in detail:
A. Beginning in 2010 and every fifth year thereafter, the auditor general shall contract with a nationally recognized independent auditor with expertise in evaluating multimodal transportation systems and in regional transportation planning to conduct a performance audit, as defined in section 41-1278, of the regional transportation plan and projects scheduled for funding during the next five years.
B. With respect to light rail systems, the audit shall consider the criteria used by the federal transit administration pursuant to 49 United State Code section 5309(e)(1)(B) and the interrelationship among the criteria to provide federal funding for light rail systems. For light rail systems, the audit shall also consider:
   1. Service levels
   2. Capital costs
   3. Operation and maintenance costs
   4. Transit ridership
   5. Farebox revenues.
C. The audit shall:
   1. Examine the regional transportation plan and projects scheduled for funding within each transportation mode based on the performance factors established in section 28-505, subsection A, in the context of the transportation system.
   2. Review past expenditures of the regional transportation plan and examine the performance of the system in relieving congestion and improving mobility.
   3. Make recommendations regarding whether further implementation of a project or transportation system is warranted, warranted with modifications or not warranted.

The Efficiency and Effectiveness Study provides a good opportunity to prepare the agency for the upcoming audits by ensuring that the transportation system performance factors and criteria are addressed in RPTA's performance monitoring framework.

2.3 Outreach

It is important to note that the outreach for the Efficiency and Effectiveness Study began long before the project even started. The scope development and RFP development process involved all member agencies at the Transit Management, Intergovernmental, and Board levels. Consultant selection was determined by a large cross agency selection panel representing diverse interests and levels within the agencies.

This depth of outreach continued into the Efficiency and Effectiveness Study itself, initially through the project Technical Advisory Committee (TAC) and by working one-on-one with individual member agencies. Due to the project's highly technical nature, the TAC was comprised of transit planners and data analysts from each member agency. Membership included technical staff with monthly and annual transit performance reporting experience, in-depth knowledge of transit operations, transit data sources, awareness of potential data issues (e.g., weaknesses in contractor reporting statistics) and experience analyzing key performance indicators.

RPTA planning staff worked with each member agency to identify the appropriate candidate staff, who could attend regular TAC meetings and would be active in helping the RPTA develop a regional measurement framework. RPTA decided to augment the committee by inviting the Arizona Department of Transportation, Maricopa Association of Governments, and Valley Metro Rail to join the TAC.

About five months after the project started and initial results became available, RPTA enlarged the outreach to include regular presentations to the TMC, the Intergovs/Planning Managers, Citizens Transportation Oversight Committee (CTOC) – identified in the Statutes, and the Valley Metro Board. The project team continued this outreach through the end of Phase I.

3. FRAMEWORK DESCRIPTION

A set of performance measures provide the basis for evaluating system efficiency and effectiveness for each transit mode and service category. The TAC agreed upon the definition of each performance measure to ensure consistency and accuracy in data collection and reporting by all providers. The framework for performance evaluation also includes guidelines for new service implementation.

The TAC agreed to use definitions of terms consistent with the National Transit Database (NTD) whenever appropriate. In some cases, this decision caused the revision of definitions previously adopted for PMAS reporting. In a few cases, the PMAS definition of a term or performance measure was adopted as the most appropriate for Valley Metro providers.

3.1 Modes and Service Categories

The performance evaluation framework addresses three Valley Metro transit modes: fixed route bus, paratransit bus, and light rail.

<u>Fixed Route Bus</u>

The fixed route bus mode is defined according to NTD as transit services provided on a repetitive, fixed schedule basis along a specific route with vehicles stopping to pickup and deliver passengers to specific locations. Each fixed route trip serves the same origins and destinations. Valley Metro fixed route bus performance is evaluated at the route level using five service categories and at the system level for all fixed routes. The five fixed route bus service categories are defined by Valley Metro according to route design as follows:

- *Bus Category 1* – Local routes meet the local travel needs of transit riders in each city in the Valley Metro service area. Local routes may operate on either arterial or local collector streets. Funds to operate local routes generally come from fares and local government revenues. A local route is not limited to only one city. Many Valley Metro local routes serve two or more jurisdictions; however, the route design is intended to serve localized trip patterns within those cities.

- *Bus Category 2* – Supergrid routes are arterial grid routes that provide a regional connection function. Regional funding of this service ensures consistent (and in some cases higher) service levels across jurisdictions that would not be possible if the routes had to depend on varying local funding levels from the jurisdictions served.

- *Bus Category 3* – Express/Bus Rapid Transit (BRT) routes operate as overlays on corridors served by local fixed route service, but provide higher speed services by operating with limited stops and with other enhancements, such as bus-only lanes, queue-jumpers or signal priority systems. Express/BRT routes may operate on major arterials or along regional freeways. Arterial express/BRT routes may operate during peak and off-peak periods. Freeway express/BRT routes are often designed to use high occupancy vehicle (HOV) facilities to connect remote park-and- ride lots with major activity centers, including core downtown areas. These routes can also provide suburb-to-suburb connections using the regional freeway system and intermediate stops. Freeway express/BRT route are typically peak period only. Existing express/BRT routes may be locally funded. For example, RAPID routes are funded by the City of Phoenix. However, most existing express/BRT routes will transition to regional funding and new express/BRT routes will be implemented with resources from the PTF regional fund.

- *Bus Category 4* – Circulator routes are local fixed routes that operate in a limited service area and often using smaller vehicles. Neighborhood circulator routes operate in less dense residential areas to provide service to communities that otherwise may be difficult to serve with local routes. Activity center circulators operate in dense, high activity areas such as a downtown core. Circulator routes are designed for short trips and operate with frequent stops to provide internal circulation for an activity center. Ridership per revenue mile operated on neighborhood circulators is typically lower than local routes, while ridership per revenue mile operated on activity center circulators may be higher than local routes.

- *Bus Category 5* – Rural routes address the need to provide connections between the urban and rural communities of Maricopa County. The urban area is that portion of the metropolitan area served by local fixed routes. Rural routes provide connections between remote communities and urban transit nodes and address a range of trip needs for rural area residents.

Paratransit Bus

The definition for the paratransit bus mode is found in Valley Metro PMAS. Paratransit service is defined as specialized transportation by car, van, or bus completing trips as the result of passenger requests of specific origin and destination, either with advanced reservations or through same day call requests. Paratransit includes all complementary paratransit services to meet the ADA requirements for persons with disabilities. Valley Metro paratransit also includes specialized transportation for seniors and, in some jurisdictions, the general public. User side subsidy programs (e.g., taxi vouchers) are

included in paratransit services. Seven percent of the PTF fund for the bus transit program is dedicated to funding regional ADA paratransit.

<u>Light Rail</u>

The fourth Valley Metro transit mode is light rail. The system is now under construction and currently scheduled for opening in late 2008. As defined by NTD, light rail transit is an electric railway that is characterized by passenger rail cars operating singly or in short, usually two car, trains on fixed rails in shared or exclusive right-of-way. Valley Metro light rail vehicles will draw power from an overhead electric line via a pantograph.

3.2   Performance Measures by Mode

The set of performance measures are defined for each of the three Valley Metro transit modes: fixed route bus, paratransit bus, and light rail. Performance measures for fixed route are established for route level reporting as well as for systemwide reporting. Performance measures are selected to report cost efficiency, cost effectiveness, and service effectiveness. Cost efficiency measures evaluate the amount of money spent to produce a unit of service (e.g., cost per mile). Cost effectiveness measures are used to evaluate what is achieved for the amount of money spent (e.g., cost per passenger boarding). Service effectiveness measures evaluate what is achieved for the unit of service delivered. An example of a service effectiveness measure is passenger boardings per revenue mile.

There are numerous performance measures that can be used to evaluate efficiency and effectiveness. At the same time, selecting too many measures to report on is overly burdensome for preparers. In selecting the most appropriate performance measures, the Booz-Allen team and TAC members considered several factors:

- Compliance with the appropriate legislation (as discussed in Section 2)
- Performance measures already used in practice by Valley Metro member jurisdictions, in particular through the existing PMAS
- Peer transit system performance measures for similar modes and service categories
- Statistics already reported for NTD
- Performance expectations
- Ability of the member agencies to efficiently collect the data required for different performance measures at the desired level of detail and frequency (monthly, quarterly, annually)
- Ability to ensure accuracy and consistency of the data collected.

The final set of recommended performance measures is provided in Exhibit 3. Several performance measures are applicable for more than one mode. Exhibit 3 provides a cross reference for each performance measure by mode and for each reporting level for fixed route bus.

Exhibit 3
Performance Measure Framework

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Cost Efficiency/Effectiveness				
Farebox recovery ratio	●	●	●	●
Operating cost per boarding	●	●	●	●
Subsidy (net operating cost) per boarding	●	●	●	●
Cost per revenue mile	●	●		●
Cost per revenue hour		●	●	
Average fare	●		●	●
Service Effectiveness				
Total boardings	●	●	●	●
Boardings avg. weekday, Saturday, Sunday	●	●	●	●
Boardings per revenue mile	●	●		●
Boardings per revenue hour		●[2]	●	
Safety Incidents per 100,000 Vehicle Miles	●			●
Security incidents per "x" boardings	●			●
Complaints per "x" boardings	●			
On-time performance	●	●	●	●
Percent no shows			●	
Miles between mechanical failure[3]	●		●	●
Customer satisfaction	●		●	●

3.3   Definitions by Mode

The TAC discussed and agreed upon definitions of each performance measure by mode. The following section documents the definitions of performance measures and formula for calculation, if applicable. First, the modes applicable to the performance measure are identified in a small table. The definitions of terms for data required to calculate performance measures are also presented, as well as the source for the definition. For example, farebox recovery ratio is defined as are the definitions of passenger fares and operating expenses and the data required to calculate the farebox recovery ratio.

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[2] *For bus, recommended for Express Bus/BRT only*

[3] *The Rail mode reports Miles between Failures.*

Measures of Cost Efficiency/Effectiveness

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Farebox recovery ratio	●	●	●	●

Farebox recovery ratio

Percent of operating expenses that is recovered from passenger fares. Formula: Passenger fares / Operating expenses

Passenger fares

The revenue earned from carrying passengers on regularly scheduled and demand response services, including base fares, zone/distance premiums, express service premiums, extra cost transfers, quantity purchase discounts applicable to a passenger's ride, and special transit fares. Passenger fares do not include advertising revenue or other operating revenue types.

Source: NTD

Operating expenses

Total costs associated with the operation of revenue vehicles, including maintenance costs.

Direct operating costs include costs incurred to provide the service, including administrative and overhead costs associated with the direct operation of the service.

For cities that operate Paratransit services directly (i.e., do not subcontract the operation to a private provider), direct costs include agency costs for activities such as dispatch, reservations, scheduling, service supervisors, and other direct costs of providing the service.

For contracted service, operating expenses include all of the contractor's costs of providing service, including operations, maintenance, and

administrative cost. Operating expenses also include the documented administrative costs of the agency administering the contracted service. Operating expenses include the time of individuals responsible for the management and supervision of the contracted service plus any related direct expenses. Where costs are tracked by cost center, costs include those reported for the transit cost center (i.e., direct expenditures plus indirect expenditures). Where costs are not tracked by cost center, these are indirect costs that need to be documented and allocated to the transit program. [4]

Source: PMAS, modified by the TAC

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Operating cost per boarding	●	●	●	●

Operating cost per boarding   Operating expenses / Unlinked passengers trips

Operating expenses   Defined above.

Unlinked passenger trips   The number of passengers who board public transportation vehicles. Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination.

Source: NTD

Also referenced as "passenger boardings" or simply "boardings".

Source: TAC

For Paratransit, data should be tracked and reported by program type (e.g. ADA paratransit,

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[4] *Administrative costs are expected to be documented in reports to NTD. For agencies that are not required to report to NTD, a form and instructions for documenting agency administrative costs are included in Appendix B. The consultant team developed this template for agencies to use in preparation of the required performance reports.*

non-ADA paratransit, taxi voucher, or mileage reimbursement).

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Subsidy (net operating cost) per boarding	●	●	●	●

Subsidy per boarding
Also referenced to as
Net operating cost per boarding

Subsidy / Unlinked passenger trip

(Operating expenses less passenger fares) / Unlinked passenger trips

Subsidy

Financial assistance from any federal, state or local government source.

Source: NTD

Operating expenses

Defined above.

Passenger fares

Defined above.

Unlinked passenger trips

Defined above.

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Cost per revenue mile	●	●		●

Cost per revenue mile

Operating expenses / Revenue miles

Operating expenses

Defined above.

Revenue miles

The miles operated when a vehicle is available to the general public and there is an expectation of carrying passengers who pay fares, are subsidized by public policy, or provide payment through a contractual arrangement. Revenue service excludes deadhead, vehicle maintenance testing, school bus service, and charter service

Source: NTD

Revenue miles for Paratransit

The miles that vehicles are in revenue service, from the first passenger pick-up to the last drop-

off, excluding any travel during scheduled breaks.

Source: NTD and TAC Discussion

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Cost per revenue hour		●	●	

Cost per revenue hour   Operating expenses / Revenue hours

Operating expenses   Defined above.

Revenue hours   The time when a vehicle is available to the general public and there is an expectation of carrying passengers. Vehicles operated in fare free service are considered in revenue service. Revenue service includes layover and recovery time. Revenue service excludes deadhead, vehicle maintenance testing, school bus service, and charter service. This measure should only be applied to Express Bus/BRT.

Source: NTD

Revenue hours for Paratransit   The hours that vehicles are in revenue service, from the first passenger pick-up to last drop-off, excluding schedule breaks.

Source: NTD

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Average fare	●		●	●

Average fare   Passenger fares / Unlinked passenger trips

Passenger fares   Defined above.

Unlinked passenger trips   Defined above.

Measures of Service Effectiveness

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Total boardings	●	●	●	●

Total boardings   Unlinked passenger trips

Source: TAC discussion

Unlinked passenger trips   Defined above.

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Boardings avg. weekday, Saturday, Sunday	●	●	●	●

Boardings average weekday   The number of passengers who board public transportation vehicles on an average weekday.

Source: NTD

Average weekday   A typical representative weekday in the operation of the transit system.

Average Saturday   A typical representative Saturday in the operation of the transit system.

Average Sunday   A typical representative Sunday in the operation of the transit system.

Source: NTD

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Boardings per revenue mile	●	●		●

Boardings per revenue mile   Unlinked passenger trips / Revenue miles

Unlinked passengers trips   Defined above.

Revenue miles   Defined above.

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Boardings per revenue hour		●	●	

Boardings per revenue hour   Unlinked passenger trips / Revenue hours. This measure should only be reported for Express Bus/BRT (Category 3 Bus service).

Unlinked passengers trips   Defined above.

Revenue hours   Defined above.

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Safety incidents per 100,000 vehicle miles	●			●

Safety incidents per
100,000 vehicle miles   Safety incidents / Total vehicle miles / 100,000

Safety incidents   Safety incidents involve a transit vehicle or occur on transit-controlled property and meet one or more of the conditions described below. Safety incidents include only "major" safety incidents.

Major Safety Incidents include one or more of the following conditions:
- A fatality other than a suicide
- Injuries requiring immediate medical attention away from the scene for two or more persons
- Property damage equal to or exceeding $25,000
- An evacuation due to life safety reasons,
- A collision at a grade crossing resulting in at least one injury requiring immediate medical attention away from the scene or property damage equal to or exceeding $7,500
- A mainline derailment [on rail]
- A collision with person(s) on a rail right-of-way resulting in injuries that require

immediate medical attention away from the scene for at least one person.

Source: NTD

Vehicle miles

The miles that a vehicle travels from the time it pulls out from its garage to go into revenue service to the time it pulls in from revenue service. Total vehicle miles include deadhead, vehicle maintenance testing, school bus service, and charter service.

Source: NTD and TAC Discussion

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Security incidents per "x" boardings	●			●

Security incidents per "x" boardings

Security incidents / Unlinked passenger trips The "x" should be determined based on the magnitude of the boardings (generally such as the measure

 be in the single digits).

Security incidents

Security incidents are crimes such as injuries or deaths resulting from assaults, arson, or homicide and the consequences of security incidents. Security incidents should not be reported as safety incidents. Security incidents only include "major" security incidents.

Major security incidents (i.e., crimes) produce the threshold values for major incident reporting (a fatality, two or more injuries, property damage over $25,000). Security incident types include aggravated assault, arson, bombing, bomb threat, burglary, chemical or biological release, hijacking, homicide, larceny/theft, motor vehicle theft, robbery, sabotage, and vandalism.

Source: NTD

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Complaints per "x" boardings	●			

Complaints per "x" boardings

Complaints / Unlinked passenger trips / "x"
The "x" should be determined based on the magnitude of the boardings.

Complaints

Not defined. Valley Metro Customer Service issues reports on complaints. Customer Service is in the process of purchasing a new customer contact software program.

Source: TAC discussion

Unlinked passengers trips

Defined above.

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
On-time performance	●	●	●	●

On-time performance for fixed route

Percent of all fixed route trips that operate no more than 0.0 minutes early and 5.0 minutes late, compared to scheduled arrival/departure times at published time points. On-time performance is reported by the Valley Metro automated Vehicle Management System (VMS).

Source: PMAS

On-time performance for paratransit

For ADA service, on-time performance is the percent of all ADA trips that are picked up within the 30 minute ready window.

For non-ADA service, on-time performance is the percent of non-ADA trips that are picked up within the ready window.

This measure does not apply to user-side subsidy services.

Source: TAC discussion and Paratransit providers

On-time performance for light rail

Percent of all rail trips that operate no more than 0.0 minutes early and 5.0 minutes late, compared to scheduled arrival/departure times at each station.

Source: Question for VMR

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Percent no shows			●	

Percent no shows

No shows/ Total paratransit boardings

No shows

Paratransit patrons who do not call to cancel a reservation but do not appear to board ("no show") when the vehicle arrives within the ready window. No shows include paratransit patrons who cancel when the vehicle arrives at the curb.

Source: TAC discussion and Paratransit providers

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Miles between mechanical failure	●		●	●

Miles between mechanical failure

Vehicle miles / Mechanical system failure

Vehicle miles

Defined above.

Mechanical system failure

A major mechanical system failure is a failure of some mechanical element of the revenue vehicle that prevents the vehicle from completing a scheduled revenue trip or from starting the next scheduled revenue trip because actual movement is limited or because of safety concerns.

Other mechanical system failures are failures of some other mechanical element of the revenue vehicle that, because of local agency policy, prevents the vehicle from completing a schedule revenue trip or from starting the next

revenue trip even though the vehicle is physically able to continue in revenue service.

Source: NTD

Performance Measure	Fixed Route, Systemwide	Fixed Route, Route Level	Paratransit	Light Rail
Customer satisfaction	●		●	●

Customer satisfaction   Index representing customer satisfaction for a particular mode, measured through a survey.

Valley Metro and member agencies conduct periodic market surveys to evaluate customer satisfaction. Survey results are published and provide data for historical trend analysis for Fixed Route and Paratransit modes. Valley Metro Rail intends to conduct similar market surveys to measure customer satisfaction.

Source: TAC discussion

3.4 New Route Implementation Guidelines

Reasonable expectations need to be made in implementing new routes. In areas where population and employment density are significantly low or supporting passenger facilities are unavailable, the affected jurisdiction should consider a phased service approach.

A population and employment density approach to service phasing could be accomplished by establishing a baseline point system (i.e., a "Density Scale" analysis). A planned route would be credited or debited a point for each percentage point of difference between the population and employment density within 0.25 miles of the planned route and the regional system averages. The points would be generated by RPTA planning staff using adopted MAG population and employment projections. The results could serve as a reference for affected jurisdictions to determine if they would prefer to fully implement service on opening day or implement it in phases. Due to the region's rapid growth, it wouldn't be reasonable to create the Density Scale for all planned routes of the 20-year program at the same time. It is recommended that the Density Scale points be calculated no more than two years in advance of a route's implementation.

A phased implementation could include reduced headway, span of service, or geographic coverage. Phasing service implementation should not effect reduced funding for the affected community. Reduced service from planned levels should provide affected communities with proportional jurisdictional savings.

If for a given route, demand materializes faster than expected and more service is required, then the jurisdiction can reallocate dollars from other services within the limits of their jurisdictional allocation or local funds.

The methodology to potentially change service plans is driven by the Proposition 400 and the Transit Life Cycle Program. First, the approved proposition limits the transfer of funds between the three primary modes: freeways, streets and transit. However, funds within a mode can be moved from one project to another if a review and approval process is followed consistent with the jurisdictional equity process identified in the TLCP). Second, plan elements can be adjusted based upon periodic reviews of projected revenues and expenditures. Third, the voter approved plan is amendable, but consideration must be given to alternative projects in the same corridor by the same mode.

3.5 Route Maturation Guidelines

When new routes are implemented, passengers boardings will not be expected to achieve the same levels during the initial months of service as when the route matures. Typically route maturation guidelines exempt new routes from performance standards for two years, giving them time for a higher ridership base to develop, and for the route to become more productive and efficient.

The TAC endorsed several recommendations related to route maturation guidelines.

- The first recommendation is to use a two year period for the maturation period. The individual route performance would be calculated from time of inception, but its performance would not be included for two years.

- The second recommendation is to track subsidy per boarding (i.e., net operating cost per unlinked passenger trip) as primary measure of performance, with the intent of focusing possible corrective action for the routes requiring the highest subsidy per boarding in the first two years.

- The third recommendation is for RPTA staff, working with partner agencies, to identify a lifeline network. This network would be maintained over time to serve Title VI markets or other policy requirements even if its performance fell below the systemwide average. After the two year maturation period, all routes would be part of the performance measurement calculations.

4. ACTION PLAN

The action plan includes development of a reporting tool and guidelines for performance data reporting, plus agency roles and responsibilities involved in reporting performance data and measures.

RPTA staff will have primary responsibility for developing the reporting tool and guidelines, but it is recommended that they involve the members of the Effectiveness and Efficiency Study TAC in reviewing and commenting on draft documents and procedures.

Transparency and availability of regional transit performance information are key drivers to this Action Plan.

4.1 Setting Performance Targets

Performance targets, or benchmarks, are an important tool in gauging transit performance. During the final stages of the study, the consultant team worked with Valley Metro/RPTA and member agencies to develop targets. For the most part, these are conservative, based on known historical performance. In other words, the targets identified reflect known past historical performance, not an arbitrary "stretch" target. It is anticipated the Valley Metro/RPTA and VMR Boards will weigh in the targets over time as a matter of policy. The targets presented here are a starting point.

Exhibit 4 – Fixed Route Bus, Systemwide Targets

FIXED ROUTE BUS, SYSTEMWIDE	TARGET	ASSUMPTIONS
Cost Efficiency/Effectiveness		
Farebox Recovery Ratio	25%	Regional Fare Policy recommendation to Board
Operating Cost per Boarding	$2.32	Baseline from FY05-06 PMAS FR average
Subsidy (Net Opg Cost) per Boarding	$1.75	Baseline from FY05-06 PMAS FR average
Cost per Revenue Mile	$4.96	Baseline from FY05-06 PMAS FR average
Average Fare	$0.67	Five year timeframe starting in FY08
Service Effectiveness		
Total Boardings	3%*	Matches 3% CPI increase; Subject to service increases
Boardings Avg. Weekday, Sat., Sun.	3%*	Matches 3% CPI increase; Subject to service increases
Boardings per Revenue Mile	2.1	Baseline from FY05-06 PMAS FR average
Safety Incidents per 100,000 Vehicle Miles	1.2	Baseline from FY05-06 PMAS FR average
Security Incidents per "x" Boardings	0	Ultimate goal, 0 was achieved by RPTA Veolia for entire 2006
Complaints per "x" Boardings	28	Low end of current RPTA "C" range; meets Phoenix current complaints
On-time Performance	90%	Meets both RPTA and Phoenix current performance
Miles between Mechanical Failures	23,400	Baseline from CY06 RPTA data (weighted average across fleets). Phoenix OK with target. Need to move to Miles between Mechanical Failures over time with next contract negotiations. Number will go down some, bcs there are more Mech. Failures than Roadcalls.
Customer Satisfaction	89%	Customer satisfaction index based on March survey - Combination of "very satisfied" and "somewhat satisfied" with overall service

Exhibit 5 – Fixed Route Bus, Route Level Targets

FIXED ROUTE BUS, ROUTE LEVEL	TARGET	ASSUMPTIONS
Cost Efficiency/Effectiveness		
Farebox Recovery Ratio	25%	Regional Fare Policy recommendation to Board
Operating Cost per Boarding	$2.32	Baseline from FY05-06 PMAS FR average
Subsidy (Net Opg Cost) per Boarding	$1.75	Baseline from FY05-06 PMAS FR average
Cost per Revenue Mile	$4.96	Baseline from FY05-06 PMAS FR average
Service Effectiveness		
Total Boardings	3%*	Matches 3% CPI increase; Subject to service increases
Boardings Avg. Weekday, Sat., Sun.	3%*	Matches 3% CPI increase; Subject to service increases
Boardings per Revenue Mile	2.1	Baseline from FY05-06 PMAS FR average; peer average
Boardings per Revenue Hour (Express Bus)	TBD	Challenge: Phoenix does not currently break out this data.
On-time Performance	90%	Meets both RPTA and Phoenix current performance
Miles between Mechanical Failures	23,400	Baseline from CY06 RPTA data (weighted average across fleets). Need to move to Miles between Mechanical Failures over time with next contract negotiations. Number will go down some, bcs there are more Mech. Failures than Roadcalls.

Exhibit 6 – Paratransit Targets

PARATRANSIT	TARGET	ASSUMPTIONS
Cost Efficiency/Effectiveness		
Farebox Recovery Ratio	5%	Baseline from FY05-06 PMAS DAR system average
Operating Cost per Boarding	$28.55	Baseline from FY05-06 PMAS DAR system average
Subsidy (Net Opg Cost) per Boarding	$27.16	Baseline from FY05-06 PMAS DAR system average
Operating Cost per Revenue Hour	$50.30	Baseline from FY05-06 PMAS DAR system average
Average Fare	TBD	No goal currently. Set by each agency
Service Effectiveness		
Total Boardings	3%*	Matches 3% CPI increase; Subject to service increases
Boardings Avg. Weekday, Sat., Sun.	3%*	Matches 3% CPI increase; Subject to service increases
Boardings per Revenue Hour	1.76	Baseline from FY05-06 PMAS DAR system average; close to low of peers
Percent No Shows	5%	Phoenix does not have a target for "no shows", but has seen 5.3% from July-Dec 2006. Paratransit consultant/RPTA recommended 5%. The Glendale target is 10%.
On-time Performance	90%	Glendale target. Phoenix's performance standard is also 90% or above
Miles between Mechanical Failures	TBD	Set by each agency (Phoenix tracks miles per 100,000 service miles)
Customer Satisfaction	90%	Glendale and Phoenix (Satisfied and Very Satisfied; every 2-5 yrs).

Exhibit 7 – Rail Targets

RAIL	TARGET	ASSUMPTIONS
Cost Efficiency/Effectiveness		
Farebox Recovery Ratio	25%	Regional Fare Policy recommendation to Board
Operating Cost per Boarding	$2.64	Booz Allen estimate calculated for 2010. Close to the peer average of $2.18
Subsidy (Net Opg Cost) per Boarding	$1.98	Booz Allen estimate based on farebox recovery ratio and operating cost per boarding assumptions
Cost per Revenue Mile	$26.26	Booz Allen estimate based on $28M operating cost and 1,071,000 revenue car miles in Financial Plan. 2010 numbers.
Average Fare	$0.67	Assumption behind VMR fare revenue numbers (2010)
Service Effectiveness		
Total Boardings	10,655,000	VMR Estimate for 2010, first full year of operation
Boardings Avg. Weekday	26,090	Based on FFGA New Starts for Opening Year (Annual approx. 7.8M)
Boardings Avg. Sat.	N/A	Not available
Boardings Avg. Weekday Sun./Holiday	N/A	Not available
Boardings per Vehicle Revenue Mile	3.94	Rail. Based on 2,184,000 car miles in 2010 (Financial Plan).
Boardings per Revenue Mile	8.04	Rail. Based on 1,071,000 car miles in 2010 (Financial Plan).
Safety Incidents per 100,000 Vehicle Miles	N/A	To be provided in Spring, 2008 as part of VMR Budget process
Security Incidents per "x" Boardings	N/A	To be provided in Spring, 2008 as part of VMR Budget process
On-time Performance	95%	Rail (Peer data is 98%)
Miles between Failures	25,000	Rail (Peer data shows 35,000 with outliers excluded)
Customer Satisfaction	89%	Estimate index number based on bus targets

The rail targets are preliminary. Very little data is available on which to base targets until the system is in revenue service. Current assumptions include the Financial Plan and operating assumptions reflected in the New Starts criteria. Note that the Proposition 400 requirement does not supersede, nor replace, the New Starts process. New Starts project measures will continue to be tracked and reported to the FTA in conformance to the New Starts process.

4.2   Implement Data Tool

Using the performance indicators and data definitions detailed in Section 3, RPTA staff will develop a reporting format, software platform (e.g., Excel, Access) and guidelines to be used by the agencies responsible for reporting route and mode level performance data. It is recommended that the reporting format and platform minimize data re-entry by RPTA staff and facilitate data reporting, manipulation and accumulation. The reporting format could be customized for each reporting entity, to minimize the likelihood of incomplete reporting.

It is recommended that the reporting format include performance indicators as well as the performance data required to calculate them, plus the ability to review prior quarters' data, to facilitate consistency checks. A sample reporting format is provided in Exhibit 8.

Exhibit 8 – Sample Performance Reporting Format

| | FY 2008 | | | | | | | | | | | | | | | | | | | |
| | 1st Qtr (Jul-Sep) | | | | 2nd Qtr (Oct-Dec) | | | | 3rd Qtr (Jan-Mar) | | | | 4th Qtr (Apr-Jun) | | | | Year to Date | | | |
Performance Data	Rte 1	Rte 2	Rte 3	Total	Rte 1	Rte 2	Rte 3	Total	Rte 1	Rte 2	Rte 3	Total	Rte 1	Rte 2	Rte 3	Total	Rte 1	Rte 2	Rte 3	Total
Fare Revenue																				
Operating Costs																				
Boardings																				
Weekday																				
Saturday																				
Sunday/Holiday																				
Revenue Miles																				
Performance Indicators																				
Farebox Recovery																				
Operating Cost per Boarding																				
Operating Cost per Revenue Mile																				
Boardings per Revenue Mile																				

Performance guidelines should be issued to all reporting agencies and should include performance data definitions; identify data sources to promote consistency; stipulate reporting formats, platforms and timeframes; and provide directions for updating data.

RPTA staff should consider opportunities to facilitate the reporting process, both for the reporting agencies and for the RPTA staff who will be responsible for using and consolidating the data. Web-based reporting could provide such an opportunity.

4.3   Reporting Timeframe and Procedures

Frequency of reporting

Following the guidelines, reporting format and timelines provided by RPTA, reporting agencies (as defined in Section 4.3 Roles and Responsibilities) will be responsible for submitting quarterly and annual performance data. RPTA staff will compile the data, develop route level and modal performance indicators, and prepare reports for dissemination to the audiences identified below.   RPTA staff will be responsible for computational accuracy, and for defining report formats and establishing reporting timeframes.

Reports will be prepared on a quarterly basis and will cumulate in an annual report at the end of each fiscal year. The first quarter should be from July 1 through September 30. The last quarter should therefore be from April 1 through June 30. Reporting timelines will recognize the need at year-end to reconcile and update previously-reported data to report audited year-end data. RPTA staff should develop an annual reporting schedule and timeline, including a process for reminding reporting agencies when reports are due.

Reporting by audience

Throughout the performance measurement framework development, the study team recognized the need to include interests and reporting requirements of different audiences. Four key audiences were identified, as discussed below. Performance indicators identified for each audience are shown in Exhibit 9. The list is a starting point and can be modified or updated over time as appropriate. The important aspect is the need to officially report system performance to stakeholder groups on a quarterly basis.

- **Member Agency/RPTA Practitioners** – those individuals at member agencies (including Valley Metro Rail) who, given their responsibilities for monitoring performance and performance trends, are interested access to all performance measures, for all modes and at both the system-wide and route level. In many cases, the same individuals will be responsible for reporting the performance data to RPTA/Valley Metro.

- **CTOC, the Legislature, the State Auditor and the Performance Auditor(s)** who will be retained to conduct the five-year performance audits are expected to have an interest almost all of performance measures, by mode and at both the system-wide and route levels. It was generally agreed that they would want to see boardings at the mode, system-wide, and route level, but that boardings by day-of-week would be of limited interest to this audience.

- **Member Agency Councils**, who are responsible for funding the services operated by or for the member agencies, are likely to be interested in most, but not all of the performance measures. It was acknowledged that individual Councils had, in the past, requested information on specific performance indicators and that there would continue to be a need to report additional performance measures for these audiences on a City-specific basis.

- **RPTA Board members and the Public** are also likely to be interested in a portion of the performance measures identified to meet Proposition 400 needs. Like the Member Agency Councils, RPTA Board members are likely to be most interested in indicators that measure cost efficiency and the aspects of performance that are most likely to impact the public (e.g., safety, on-time performance, customer satisfaction). Performance reporting to the Board should occur no less than once per year.

Exhibit 9 – Performance Measure Audiences

FIXED ROUTE BUS, SYSTEMWIDE	Member Agency / RPTA Practitioners	CTOC / Auditor(s) / Legislature	Member Agency Councils	RPTA Board
Cost Efficiency/Effectiveness				
Farebox Recovery Ratio	✔	✔	✔	✔
Operating Cost per Boarding	✔	✔	✔	✔
Subsidy (Net Opg Cost) per Boarding	✔	✔	✔	✔
Cost per Revenue Mile	✔	✔	✔	✔
Service Effectiveness				
Total Boardings	✔	✔	✔	✔
Boardings Avg. Weekday, Sat., Sun.	✔			
Boardings per Revenue Mile	✔	✔		
Safety Incidents per 100,000 Vehicle Miles	✔	✔	✔	✔
Security Incidents per "x" Boardings	✔	✔		
Complaints per "x" Boardings	✔	✔		
On-time Performance	✔	✔	✔	✔
Miles between Mechanical Failures	✔	✔		
Customer Satisfaction	✔	✔	✔	✔
Others Measures, specific to individual cities			✔	

FIXED ROUTE BUS, ROUTE LEVEL	Member Agency / RPTA Practitioners	CTOC / Auditor(s) / Legislature	Member Agency Councils	RPTA Board
Cost Efficiency/Effectiveness				
Farebox Recovery Ratio	✔	✔		
Operating Cost per Boarding	✔	✔		
Subsidy (Net Opg Cost) per Boarding	✔	✔		
Cost per Revenue Mile	✔	✔		
Service Effectiveness				
Total Boardings	✔	✔		
Boardings Avg. Weekday, Sat., Sun.	✔			
Boardings per Revenue Mile	✔	✔		
On-time Performance	✔	✔		
Miles between Mechanical Failures	✔			
Others Measures, specific to individual cities			✔	

PARATRANSIT	Member Agency / RPTA Practitioners	CTOC / Auditor(s) / Legislature	Member Agency Councils	RPTA Board
Cost Efficiency/Effectiveness				
Farebox Recovery Ratio	✔	✔	✔	✔
Operating Cost per Boarding	✔	✔	✔	✔
Subsidy (Net Opg Cost) per Boarding	✔	✔	✔	✔
Operating Cost per Revenue Hour	✔	✔	✔	✔
Service Effectiveness				
Total Boardings	✔	✔	✔	✔
Boardings Avg. Weekday, Sat., Sun.	✔			
Boardings per Revenue Mile	✔	✔		
Boardings per Revenue Hour				
Percent No Shows				
On-time Performance	✔	✔	✔	✔
Miles between Mechanical Failures	✔			
Customer Satisfaction	✔	✔	✔	✔
Others Measures, specific to individual cities			✔	

RAIL	Member Agency / RPTA Practitioners	CTOC / Auditor(s) / Legislature	Member Agency Councils	RPTA Board
Cost Efficiency/Effectiveness				
Farebox Recovery Ratio	✔	✔	✔	✔
Subsidy (Net Opg Cost) per Boarding	✔	✔	✔	✔
Cost per Revenue Mile	✔	✔	✔	✔
Average Fare	✔	✔	✔	✔
Service Effectiveness				
Total Boardings	✔	✔	✔	✔
Boardings Avg. Weekday, Sat., Sun.	✔			
Boardings per Revenue Mile	✔	✔		
Safety Incidents per 100,000 Vehicle Miles	✔	✔	✔	✔
Security Incidents per "x" Boardings	✔	✔		
On-time Performance	✔	✔	✔	✔
Miles between Failures	✔	✔		
Customer Satisfaction	✔	✔		
Others Measures, specific to individual cities			✔	

4.4 Roles and Responsibilities

This section defines agency roles and responsibilities for collecting, compiling and reporting performance data, indicators and trends.

Data Collection

Those member agencies that directly operate or contract for transit services will be responsible for collecting and reporting data to RPTA staff, using the reporting formats and following reporting guidelines and timelines defined by RPTA staff.

Data will be collected and reported by mode and at the route level for fixed route bus services, consistent with the data definitions provided in Section 3.3 Definitions by Mode. Data will be collected from primary sources such as contractor invoices and reports, internal sources used to collect data for National Transit Database (NTD) reporting and other audited reports.

Member agencies and Valley Metro/RPTA are encouraged to scrutinize contractor data for accuracy and completion. Operating costs need to be captured as per the definitions in Section 3.3. In some cases, the current reporting of the contractor will have to be changed. For example, vehicle reliability is measured in miles between mechanical failures, not miles between road calls. It is important to measure road calls for the day to day management of road supervision, but the reporting of mechanical failures is required to calculate the vehicle reliability measure.

RPTA staff will be responsible for collecting data from reporting agencies and compiling them to provide the route level and mode level performance indicators defined in Section 3. If the agencies report directly on-line, than RPTA staff will be responsible for ensuring that the submittals are timely and complete. RPTA staff will also review data and performance indicators and trends for consistency and work with reporting agencies to review and resolve data issues.

Report Preparation

RPTA staff will be responsible for formatting, compiling, and reporting performance data, indicators and trends. Reports will be prepared on a quarterly basis for briefing to the TMC, Intergovs, and Board.

The reports will include year-to-date data, cumulating to an annual report at the end of a fiscal year.

<u>Quality Control</u>

One challenge with compiling data and reporting indicators from a variety of sources is ensuring quality control. Of particular concern is the need to maintain an up-to-date database, in part by requiring revisions to previously-reported data. As agencies audit data and prepare year-end reports, it will be necessary to ensure that data maintained in the RPTA performance database are updated to reflect final, year-end, audited numbers.

As noted in the section on Data Collection, RPTA staff should also be responsible for reviewing and validating the consistency of performance data and indicators. Rather than revising previously-issued reports, data should cumulate so that the most recent report includes the most current data. For this reason, RPTA staff may choose to report each quarter in each report and to cumulate the data to report year-to-date results.

4.5   Action Summary and Timeframe

Implementation of the new performance measurement framework will require hard work and commitment on the part of RPTA staff and its member agencies. To fully realize the potential of the initiative, changes to operating practices are needed. Examples include full accounting in the calculation of operating costs and slight changes in contractor reporting practices, such as route level costs.

A summary of the major recommendations is provided in Exhibit 10 below.

Exhibit 10
Summary Implementation Plan

CATEGORY	RECOMMENDATION	ACTION OWNER	TIMEFRAME
Framework Adoption	Adopt performance measures framework	RPTA and VMR Boards	April-June 2007
Target Setting and Adoption	Discuss target goals for each performance measure	TMC, VMOCC	April-July 2007
	Discuss target goals for each performance measure	RPTA and VMR Boards	February-June 2007
	Adopt draft targets for framework	RPTA and VMR Boards	June-August 2007
Guidelines Adoption	Discuss route implementation and maturation guidelines	TMC, VMOCC	April-June 2007
	Discuss route implementation and maturation guidelines	RPTA Planning Dept and Board	April-June 2007
	Identify "lifeline" network	RPTA Planning Dept, Members	April-Sept 2007
	Adopt route maturation guidelines	RPTA Planning Dept and Board	June-July 2007
Information	Issue performance guidelines to all reporting agencies	RPTA Planning Dept	April-May 2007
Implement Data Tool	Develop final reporting format	RPTA Planning Dept	April-Sept 2007
	Complete transition from PMAS	RPTA Planning Dept	April-Sept 2007
	Develop reporting platform	RPTA Planning Dept	April-Dec 2007
	Work with individual members to facilitate process	RPTA Planning Dept	April-Dec 2007
Contract Negotiations	Include all measures in reporting requirement (system wide and route level)	Tempe, Phoenix, Glendale RPTA Operations	April 2007 - Dec 2008
Preparation for New Routes	Conduct density scale analysis for new route implementation	RPTA Planning Dept	Ongoing
New Route Monitoring	Monitor new routes according to route maturation guidelines	RPTA Planning Dept	Ongoing
Reporting	Begin monthly reporting with new system	RPTA Planning Dept	July 2007
	Begin quarterly, etc briefing to Audiences - Bus/DAR	RPTA Operations Mgr	Oct 2007 (for July 1 - Sept 30)
	Begin quarterly, etc briefing to Audiences - Rail	VMR Operations Mgr	First quarter after startup

APPENDICES

Appendix A
Technical Advisors Committee – Service Effectiveness & Efficiency Study

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Technical Advisors Committee – Service Effectiveness & Efficiency Study (continued)

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Appendix B
Template for Calculating Total Operating Cost

This template provides a useful tool for a city/agency to step through what are typical expenses in support of Valley Metro that might be incurred but not typically reported.

Highlights
- Assumption is that the primary cost is Salaries and Wages for personnel.
- There are a number of categories to capture other Direct Costs.
- There is also a category to apply the city/agency's Administrative Cost Rate to capture city administration overhead.

Steps
The city/agency should fill in all of the bright yellow blanks for the template to calculate annual contribution. **There is one choice to enter percent of time (bright yellow) OR actual hours of time (light blue/green area).**
- Employee Name and Title. The city/agency can enter as many names and titles for staff that devotes time to transit as appropriate (if uncomfortable about the use of names, use title only).
- Pay rate per hour for each employee.
- Time as Percent of Effort OR Time as Hours Contributed. An agency can enter percent of time by person (bright yellow); the template will automatically calculate hours. Or the agency may chose to enter number of hours directly (light blue/green area).

Note: the template is intended to be a spreadsheet to assist a local entity to identify and document expenses in support of Valley Metro. When printed, the names of individuals will not appear on the printed document (only the position title or other reference in column C, rows 4-17 will appear in the printed document). Summary data can also be inserted directly into the master spreadsheet by line item. If the city/agency judges that stating employee pay data is too revealing, then average rates or mid-points of salary ranges can be substituted.
- City or Agency Reporting. This is self explanatory.
- Reporting Period and Contact Information. This is self explanatory.
- Direct Personnel Costs. These will calculate automatically.
- Fringe Benefits. Enter applicable payroll benefit rate. There is an option to have two different rates for different classification for personnel contributing. There is also the ability to separate health insurance costs per unit from payroll benefits that are a percent of salaries/wages.
- Travel and Per Diem. Include if there is a need to capture expenses including miles to/from meetings or travel to other cities/states on Valley Metro related business.
- Capital Equipment. The intent is to provide a place to report cash outlay for a capital expense in support of transit that is not reported elsewhere.

- Expendable Goods or Supplies. These should be limited to a purchase of any expendable supplies that can be directly linked to a meeting or project in support of a Valley Metro service or function.
- Professional Services. Intended to capture local efforts for planning or technical support for Valley Metro. Again, this would need to be work that is directly linked to a project in support of a Valley Metro service or function and not reported elsewhere.
- Direct Transit Services. Intended to capture local direct expenses to deliver transit or paratransit service. For example, the user-side subsidy for a taxi-cab voucher program.
- Other Operating Expenses directly linked to a meeting or project in support of a Valley Metro service or function.
- Other Operating Expense (Not included when applying Indirect Cost in next step). This category primarily recovers cost for computer services, etc. However, it might be used to capture utilities or rent, etc.
- Administrative (Indirect) Cost Rate. Should be limited to a city or agency rate that is established for other government funding services and is supported by an approved indirect cost rate for administrative expenses. If the administrative indirect cost rate does not apply, leave blank.

Appendix B

CITY or AGENCY Reporting
Agency Costs Contributing to Valley Metro Transit Services

Estimated Contribution for Period:
Name of Person Preparing Report
Email contact and phone number

Description	Est. Hours	Hourly Rates	Line Item Total	Category Subtotals	Total Est. Cost
PERSONNEL					
Direct Costs — Est. Staff					
Salaries and Wages - Regular Time — Mo.					
Manager — 0.20	416	$50.00	$ 20,800		
Planner — 0.30	624	$40.00	$ 24,960		
Planner — 0.00	0	$35.00	$ -		
Planner — 0.00	0	$24.00	$ -		
Planner — 0.00	0	$20.00	$ -		
Planner — 0.00	0	$45.00	$ -		
Analyst — 0.00	0	$15.00	$ -		
Analyst — 0.00	0	$14.00	$ -		
Clerical — 0.00	0	$20.00	$ -		
Clerical — 0.00	0	$18.00	$ -		
Total Salary and Wages — 0.50					$ 45,760
Fringe Benefits					
16.100% Payroll Benefit Rate (describe benefit)			$7,367		
16.100% Payroll Benefit Rate (describe benefit)			$0		
$459.00 Health Insurance per staff month			$230		
$459.00 Health Insurance per staff month			$0		
Total Fringe Benefits					$7,597
Travel and Per Diem	No.	Rate			
Miles	2150	$0.445	$957		
Rental Car	2	$50.00	$100		
Meals	8	$36.00	$288		
Lodging	8	$85.00	$680		
Airfare	2	$220.00	$440		
Total Travel and Per Diem					$2,465
Capital Equipment (Provide Explanation)			$0		
Total Capital Equipment					$0
Expendable Goods/Supplies					
Maps, Publications			$0		
Computer Supplies			$0		
Materials for Meetings			$0		
Total Expendable Goods/Supplies					$0
Professional Services					
Consultant - insert description of services performed.			$0		
Consultant - insert description of services performed.			$0		
Total Subcontract/Consultant					$0
Direct Transit Service Expenses					
Transit program - Insert description of operating expense			$0		
Example, Cab Connection User-Side Subsidy			$0		
Total Total Direct Transit Serivce Expenses					$0
Other Operating Expenses					
Telephone (Long Distance Charges)			$0		
Reproduction/Printing			$0		
Air Courier/Express Mail			$0		
Other (Specify)			$0		
Subtotal Other Operating Expenses				$0	
Other Operating Costs (NO INDIRECT will be charged)	Quantity	Rate			
Computer Operations	0.50	$225	$113		
	0	$0	$0		
	0	$0	$0		
	0	$0.00	$0		
Subtotal Other Operating Expenses (NO INDIRECT)				$113	
Total Other Operating Expenses					$113
TOTAL DIRECT COSTS					$ 55,935
Administrative Indirect Cost Rate* 18.0% Adjusted Total Direct Cost***			$ 55,822	$10,048	
TOTAL ADMINISTRATIVE INDIRECT COSTS					$10,048
TOTAL CONTRIBUTION TO VALLEY METRO TRANSIT					$ 65,983

* Clerical Staff are directly charged as the support required is significantly greater than the routine level of services
** Excludes Capital Equipment, Professional Services, Other Operating Costs that do not qualify for Indirect Cost Rate
*** Administrative Indirect Cost Rate represents city/agency overhead for administrative expenses such as legal, purchasing, and human resources that are available to all departments and allocated as a percent of labor and direct expenses

Appendix C
Technical Advisory Committee Presentations

This Appendix contains all seven Technical Advisory Committee presentations carried out during 2006. They are shown in chronological order as follows.

- TAC Presentation #1 (April 27, 2006)
- TAC Presentation #2 (May 24, 2006)
- TAC Presentation #3 (June 28, 2006)
- TAC Presentation #3 (August 23, 2006)
- TAC Presentation #3 (September 27, 2006)
- TAC Presentation #3 (October 24, 2006)
- TAC Presentation #3 (November 29, 2006)