# Performance Audit of the Maricopa County Regional Transportation Plan



## December 21, 2011

## Submitted To:

Debbie Davenport, Auditor General
Office of the Auditor General
State of Arizona
2910 North 44th Street, Suite 410
Phoenix, Arizona 85018

## Submitted By:

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STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

DEBRA K. DAVENPORT, CPA
AUDITOR GENERAL

MELANIE M. CHESNEY
DEPUTY AUDITOR GENERAL

December 21, 2011

The Honorable Steve Pierce,
President-Elect
Arizona State Senate

The Honorable Andy Tobin, Speaker
Arizona House of Representatives

Members of the Arizona Legislature

The Honorable Janice K. Brewer,
Governor

Mr. Dennis Smith, Executive Director
Maricopa Association of Governments

Mr. John Halikowski, Director
Arizona Department of Transportation

Mr. Stephen Banta,
Chief Executive Officer
Valley Metro Rail, Inc.

Mr. David Boggs, Executive Director
Valley Metro Regional
Public Transportation Authority

Mr. Roc Arnett, Chairman
Citizen's Transportation Oversight Committee

Transmitted herewith is a report of the Auditor General, *A Performance Audit of the Maricopa County Regional Transportation Plan*. This performance audit was conducted by the consulting firm Sjoberg Evashenk Consulting under contract with the Auditor General and was in response to the requirements of Arizona Revised Statutes §28-6313.

Responses to the audit can be found at the end of the audit report. As outlined in these responses:

- The Maricopa Association of Governments agrees with all but one of the findings and plans to implement or implement in a different manner all but one of the recommendations directed to it.

- Valley Metro Regional Public Transportation Authority agrees with all of the findings and plans to implement or implement in a different manner all of the recommendations directed to it.

- Valley Metro Rail, Inc. agrees with all of the findings and plans to implement or implement in a different manner all of the recommendations directed to it.

- The Arizona Department of Transportation agrees with all of the findings and plans to implement or implement in a different manner all of the recommendations directed to it.

- The Citizen's Transportation Oversight Committee agrees with all of the findings and plans to implement all of the recommendations directed to it.

This report will be released to the public on December 22, 2011.

Sincerely,

Debbie Davenport
Auditor General

Attachment

cc: Mr. Ken Bennett, Secretary of State
Citizen's Transportation Oversight Committee Members
Maricopa Association of Governments Regional Council Members
Maricopa Association of Governments Transportation Policy Committee Members
Maricopa County Board of Supervisors
State Transportation Board Members
Valley Metro Regional Public Transportation Authority Board of Directors
Valley Metro Rail, Inc. Board of Directors

SJOBERG EVASHENK
CONSULTING, INC

December 16, 2011

Ms. Debra Davenport
Auditor General
Arizona Office of Auditor General
2910 N. 44th Street, Suite 410
Phoenix, Arizona 85018-7243

Dear Ms. Davenport:

Sjoberg Evashenk Consulting is pleased to submit our final report for the *Performance Audit of the Maricopa County Regional Transportation Plan* in response to Arizona Revised Statutes §28-6313 and Proposition 400 passed in November 2004. This report assesses the performance of the Regional Transportation Plan (RTP) as planned and implemented by the Maricopa Association of Governments, Arizona Department of Transportation, Regional Public Transportation Authority, and METRO Rail—known as the RTP Partners—and evaluates projects scheduled for funding as well as recommends ways to improve the efficiency and effectiveness of the plan. Within forty-five days after the release of the audit, the Regional Public Transportation Authority, the Citizens' Transportation Oversight Committee, State Transportation Board, and County Board of Supervisors, are responsible for holding a public hearing and submitting written recommendations to the transportation policy committee.

This report concludes that while a significant output of projects has been delivered, determining whether those projects and the future plans will achieve the goals of Proposition 400 to help the region meet its congestion, mobility, and quality of life needs cannot be fully measured at this point. When we reviewed planned activities against actual results, we found cost and schedule variances to be reasonably supported; however, underlying data is difficult to gather and assimilate. We also found the revenue and expenditure model provides a reliable foundation for planning, although the criteria for changes to the plan is broad and vague. Further, RTP Partners could provide more detail to Maricopa County Association of Governments (MAG) committee members on the rationale and impacts of proposed changes to the Regional Transportation Plan. Finally, because the organizational structure over implementing the Regional Transportation Plan is challenged with a multitude of agencies, stakeholder cities, and diverse local interests, we believe that improved coordination among the entities and additional consolidated efforts between transit agencies could enhance the overall accomplishments of the plan. Enhancing and strengthening the roles of the MAG Transportation Policy Committee and the Citizen's Transportation Oversight Committee could assist in this effort and improve accountability.

While the RTP Partners have made great strides in establishing and managing Maricopa County's complex transportation network over the first five years of the Proposition 400, we provide a series of recommendations to help the RTP Partners be more efficient and effective in their implementation of the plan as well as demonstrate stronger accountability for the performance goals of the plan. However, we did not find any substantial evidence to warrant drastic modification to the existing transportation system or specific projects.

We appreciate the opportunity to have been of service to the Office of the Auditor General and it has been our pleasure to work with you. We also appreciate the cooperation we received from all those who assisted us throughout the course of our review including the Maricopa Association of Governments, Arizona Department of Transportation, Regional Public Transportation Authority, METRO Rail, the Citizens' Transportation Oversight Committee, and your staff.

Respectfully Submitted,

Kurt R. Sjoberg
Chairman

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## Audit Highlights

With the passage of Proposition 400 in November 2004 extending a half-cent sales tax to generate funds for transportation projects, Maricopa County voters added a significant investment in rail projects, new and improved freeways, street improvement programs, and bus transit features. These projects were specified and incorporated into the Regional Transportation Plan (RTP) that serves as a long-range planning document capturing projects to address a region's transportation needs. Statutes enacted by the Proposition's passage included provisions for a performance audit of the RTP every five years focused on several areas, including project performance in relieving congestion and improving mobility, as well as federal criteria, efficiency of project changes, and effectiveness of organizational structure. This first audit related to the RTP and Proposition 400 revealed the following:

- **Some Performance Data Exists, But Determining Results of Proposition 400 Efforts Cannot be Fully Measured.** A meaningful transportation performance measurement system allows decision makers and stakeholders to assess the success of improvements made in terms of achieving regional congestion relief or mobility objectives. The Maricopa Association of Governments (MAG) and its RTP Partners have developed a solid performance measurement system foundation, yet specific targets needed to compare project performance against RTP goals have not been set—with the exception of bus transit and light rail. Thus, while a significant output of projects has been delivered, determining whether those projects and the future plans will achieve the goals of Proposition 400 to help the region meet its congestion, mobility, and quality of life needs cannot be fully measured at this point.

  However, based on the documentation available, we found no substantive evidence to warrant drastic modification to the transportation system or specific projects. While success in meeting performance targets for freeway and arterial projects or corridors could not be measured, we found that transit performance is strong under the current plan. For example, the light rail element has far surpassed performance expectations. Given these results, we believe the RTP Partners should continue to implement the current transportation system and strive to continually reassess system performance to make modifications as necessary.

- **Cost and Schedule Variance Appear Supported, Although Underlying Data is Difficult to Gather and Assimilate.** In our review of variance between planned project expenditures scheduled during Phase I of Proposition 400 and actual results, we found cost variances to be reasonably supported—however, we did not reassess related transportation engineer experts' design and cost estimates, nor have a baseline to determine whether the "right" design and scope decisions were made. Moreover, the dynamic nature and magnitude of the RTP, combined with ongoing changes and adjustments, make tracking budget history and funding evolution for the many RTP projects challenging. While certain documents exist to generally identify project changes, we could not weave together a full picture of plans, activities, and changes since the commencement of the Proposition 400 program for each individual project because data was inconsistent or incomplete between reports.

- **Criteria for Project Change is Vague and Documentation of Potential Impacts Provided to MAG Committees For Decision-Making Could be Improved.** With the billions of dollars involved with RTP projects, deliberations and discussions of options, risks, opportunities, impact, and rationale behind chosen courses are critical in implementing the regional transportation network. In Maricopa County, criteria and policies exist to guide each of the RTP Partners involved in making changes to the RTP, although such guidance is broad and vague. As such, the RTP Partners need to better memorialize deliberations and rationale behind proposed recommendations as well as provide more detail to MAG committee members on the impacts of proposed project changes on performance factors such as congestion, mobility, and safety. Moreover, although existing processes allow the public ample opportunity to provide input into the RTP, it can be difficult to navigate or to effectively insert oneself into the decision-making process—thus, improvements can be made.

- **Current Organizational Structure Provides Oversight, Although There are Opportunities to More Effectively Accomplish RTP Goals.** The RTP's underlying organizational structure challenges Maricopa County with the multitude of stakeholder cities and diverse local interests. This is particularly evident within the bus and rail transit modes where responsibilities and activities are split between two separate agencies—generally, the only single county region in the United States that operates with separate bus and traditional rail agencies. Although legislation and the RTP placed the three modes—freeways, arterial, and public transportation (bus and rail)—in individual agencies, improved coordination among the entities and more consolidated efforts between transit agencies could enhance effectiveness of operations. Better collaboration could be championed through enhancements to the function of the MAG Transportation Policy Committee. Additionally, strengthening the role of the Citizen's Transportation Oversight Committee related to the RTP could make monitoring the RTP more effective and improve accountability to taxpayers.

- **Revenue and Expenditure Model is a Reliable Tool for Planning.** As with most transportation and transit projects nationwide, performance and planning is highly dependent upon a solid financial foundation that encompasses estimation and projection of anticipated revenues and costs. While transportation financing is inherently complex and difficult to predict with great accuracy, the revenue and expenditure estimation model factors, assumptions, and process employed for Proposition 400 is reasonable and consistent with best practices.

- **Air Quality Violations Remain a Concern and can Jeopardize the Completion of RTP Projects.** Over the last two decades, the successful completion of Maricopa County RTP projects has been at risk due to a number of instances of air quality violations and air quality issues continue to be a concern for the region. Although there is currently no federal funding freeze in place for RTP projects related to air quality concerns, the threat of future air quality control sanctions remains as decisions relative to the approval of a new mitigation plan are still outstanding and future environmental conditions may cause additional violations.

## Key Recommendations

To add further accountability into the development and implementation of the RTP as well as increase efficiencies and effectiveness of the transportation projects, we highlight our key recommendations below:

- Take immediate action to establish baselines or targets for tracking performance of the RTP projects in achieving transportation mobility goals as well as communicate performance of projects completed to date through regular performance reporting;
- Continue to implement the current transportation system and strive to continually - reassess system performance to make modifications as necessary;
- Create a "report card" for each project that reconciles Proposition 400 promises through the incremental changes to current RTP project status;
- Memorialize deliberations on project changes including rationale and impacts, and provide this more detailed information to oversight committees to ensure governing bodies have full information for decision-making;
- Strengthen the role of the MAG Transportation Policy Committee to provide greater guidance and establish protocols formalizing how projects and activities within modes will be coordinated, changed, and implemented in the RTP to maximize regional benefits;
- Task the region's Citizen Transportation Oversight Committee with developing guiding principles for its operations and providing more deliberative actions and recommendations to oversight boards; and
- Continue to investigate cost efficiencies and service effectiveness that could result from combining bus transit and rail operations at a regional level.

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## Detailed Executive Summary

Similar to other taxpayers across the nation, Maricopa County voters extended an existing one-half-cent sales tax in November 2004, set initially to expire in 2005, for another 20 years with the passage of Proposition 400. While the previous proposition mainly concentrated the spending of increment tax funding on highway projects, Proposition 400 added a significant investment in rail projects, new and improved freeway and highways, ambitious street improvement programs, and bus transit features. These projects were specified and incorporated into the Regional Transportation Plan (RTP). An RTP is a long-range planning document that captures related projects with the intent of addressing the region's transportation needs, and the RTP is a required element under federal regulations to receive federal transportation dollars. Proposition 400, as well as the RTP, emphasizes several transportation-related modes including freeway, street, and bus and rail transit, creating a multi-dimensional, complex, and challenging program. Known as the RTP Partners, the primary entities involved in the region's transportation network are:

- Maricopa Association of Governments (MAG), responsible for transportation planning
- Arizona Department of Transportation (ADOT), tasked with freeway improvements
- Regional Public Transportation Authority (RPTA), responsible for bus transit operations
- Valley Metro Rail, Inc. (METRO), overseeing light rail development and operation

A description of the roles and responsibilities for each entity are provided in the report section titled "Understanding Maricopa County's Regional Transportation System."

In terms of performance of the regional transportation system, the RTP set forth a series of overarching or global performance goals and objectives that are aligned with statutory requirements. However, MAG cannot demonstrate whether projects completed to date successfully met the goals and objectives established for the RTP. With the exception of bus transit and rail projects, there are no project, corridor, or systemwide targets for freeway and arterial projects, or complete performance data captured to measure how the RTP's transportation improvement projects actually impact the goals relating to mobility, congestion, air quality, or quality of life—even though more than five years of the 20-year tax has already passed. Recently, MAG began developing a performance measurement system intended to provide the needed tools to gauge regional progress toward meeting performance goals. However, we believe it critical in this effort to establish performance targets immediately. Once completed, these performance driven tools will provide decision makers with tangible measures of Proposition 400 efforts and data to assess the value of one project over another. For transit modes within the RTP, the two transit agencies, RPTA and METRO, took steps in 2006 after the proposition's passage to develop and complete a performance measurement system for bus and light rail transit based on national best practices with established goals, targets, and performance data.

Based on that review of performance data and other available documentation, we found no substantial evidence to warrant drastic modifications to the transportation system or specific projects. While success in meeting performance targets for freeway and arterial projects or corridors could not be measured, we found that transit performance is strong under the current

plan—for instance, the light rail element of the plan has far surpassed performance expectations. As a result, we believe the RTP Partners should continue to implement the current transportation system and strive to continually reassess system performance to make modifications as needed.

Our review also evaluated the impact of project changes against budgets and schedules to actual expenditures and completion dates and found significant variances. Although we did not re-evaluate the appropriateness of transportation engineer experts' technical design and scope estimates, we found explanations for changes were reasonably supported and documented in project files. However, it is very difficult to track incremental changes made to a single project or large program of projects over their multi-year life cycles. Thus, we could not weave together a full picture of plans, activities, changes, and adjustments since the commencement of the Proposition 400 program for all individual projects. Further, we found data supporting project changes within reports inconsistent and incomplete between these reports. To ensure stronger accountability to the public and to assist its own project managers and oversight committees, MAG and its RTP Partners should employ a "report card," "dashboard," or some other reconciliation tool to match Proposition 400 promises to current RTP project status. Such a tool could also include a summary of significant project changes, budget to actual costs and schedule data, and project performance data.

The RTP covers a 20-year horizon and adjustments are continually triggered by events such as environmental circumstances, demand fluctuations, and available funding. The downturn in the American economy has impacted the region and has severely reduced sales taxes and highway user revenues in recent years; these funds finance RTP projects. We found that formal processes and policies exist to guide the transportation and transit entities responsible for making changes to the RTP; however, there was limited documentation available to demonstrate how projects were evaluated against the criteria for reprioritization or how performance data was used in making informed decisions about project and RTP adjustments. Additionally, we noted that certain policies created to provide funding equity in individual local jurisdictions somewhat counteract the benefit of using performance data as a basis for decision-making. As a result, these policies could be creating impediments towards achieving regional RTP goals.

The underlying deliberations and proposed recommendations on project changes and reprioritizations are discussed within staff working group meetings for transit and arterial projects as well as with transit oversight committees before reaching those MAG committees charged with overseeing changes and approving the RTP. However, only limited information about the rationale behind certain recommendations or impact of decisions on congestion, mobility, and safety related to RTP project changes for all modes is provided to the MAG oversight committees. Moreover, while we found the public has ample opportunities to provide input on the RTP as well as on changes proposed for this plan, the process can be difficult to understand and navigate.

The organizational and governance structure in place in Maricopa County over the RTP, with the exception of bus transit and rail, is similar to peers across the nation. Together the RTP Partners have a multitude of boards and committees to oversee the regional plan in addition to overseeing projects and providing vision for individual projects. While the partners have several memorandums of understanding to aid in their collaboration and communication, these processes

could be strengthened by establishing guidelines clarifying codes of conduct, conflict resolution, and specific communication protocols.

Further, we believe certain changes in committee responsibilities and reporting relationships would strengthen oversight and enhance accountability. For instance, the MAG Transportation Policy Committee, responsible for developing the RTP, should provide stronger guidance and establish protocols for coordinating projects, modes, and processes for how freeway, street, and transit project changes will be determined. Additionally, changes to the structure, practices, and function of the Citizens' Transportation Oversight Committee that advises and makes recommendations to the RTP Partners could improve its effectiveness and increase public accountability and input.

Our review also revealed that governance and oversight of regional transportation in Maricopa County faces somewhat unique challenges because of the multitude of regional entities and boards, as well as cities with diverse interests and local funding streams. These local jurisdictions retain the ability to make locally-focused decisions that may not necessarily benefit region-wide transportation needs or address regional RTP goals. We found these challenges surface not only in the street programs but are particularly evident in bus and rail transit where the RTP responsibilities and activities are split between two separate agencies—RPTA and METRO. However, these two entities have started evaluating whether possible operational efficiencies and programmatic outcomes could result from some type of combination. In fact, national studies suggest that potential cost savings and more effective service outcomes to transit riders could be achieved by consolidating RPTA and local jurisdictional activities.

As with most transportation and transit projects, planning and performance is highly dependent upon a solid financial foundation that encompasses reliable estimation and projection of anticipated revenues and costs. Although transportation financing is inherently complex and difficult to predict given the variables outside of an estimator's control such as market and environmental factors as well as project timelines that span many years, we found the RTP's revenue and expenditure estimation model factors, assumptions, and processes were reasonable and consistent with best practices. However, in addition to traditional revenue factors that impact the funding of RTP projects are the implications of several federal air quality violations that continue to be a concern for the region. As such, the threat of future revenue sanctions imposed by the federal Environmental Protection Agency remains a persistent pressure.

While the RTP Partners have made great strides in establishing and managing Maricopa County's complex transportation network over the first five years of the Proposition, this audit provides a series of recommendations to help the RTP Partners and their related activities be more efficient and effective in their implementation of the RTP as well as demonstrate stronger accountability for the performance goals of the plan. Below, we highlight several of the more significant recommendations:

- Establish and quantify what the MAG Regional Council, in collaboration with its partners, expects to achieve through implementation of the RTP—this includes setting targets, building baselines for performance, and formally analyzing and measuring all available performance data against the set baselines at the system, corridor, and project levels to insert more accountability into the process.

- Communicate project and system performance results in meeting goals and targets of the RTP to committees and the public on a quarterly basis, at a minimum.
- Continue to implement the current transportation system and strive to continually - reassess system performance to make modifications as necessary. -
- Create a "report card" feature to provide quick, 1-page project snapshots summarizing project budget and schedule project performance measures and progress toward targets, and highlights of project changes to scope, schedule, or cost.
- Memorialize rationale for recommendations and impact on congestion, mobility, and safety behind project reprioritization decisions and program changes to ensure documentation exists linking projects changes suggested with an assessment or ranking against the formal priority criteria established.
- Develop and use a performance based model as part of project change and reprioritization processes on a go forward basis to enhance both transparency of the process and accountability to legislative mandates and the public.
- Summarize and communicate data to MAG oversight committees on options available and alternatives considered, risk and opportunities for each alternative, impacts of each alternative related to congestion or performance such as mobility and safety, and rationale behind final recommendations.
- Continue efforts to develop a user-friendly guide book providing a public "road map" clarifying how the public can influence transportation projects, at what points input can be provided in the RTP development and update process, and where citizens can go to get information.
- Strengthen oversight by fully utilizing the MAG Transportation Policy Committee in a stronger and more proactive leadership role in setting the expectations for RTP-related activities. Additionally, reaffirm the role of the Citizens' Transportation Oversight Committee and increase its effectiveness through several suggested changes.
- Continue to investigate cost efficiencies that could result from combining RPTA and METRO operations, and implement measures as soon as practical to realize maximum value from such initiatives. Also, work towards realizing more benefits from regionalizing bus transit activities by strengthening the regional entity role and implementing regional activities that have potential for cost savings or better outcomes for riders such as route scheduling, fleet planning and purchasing, fare inspection and collection, coordinated automated tools, and regional service hearings.

We conducted this audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## Understanding Maricopa County's Regional Transportation System

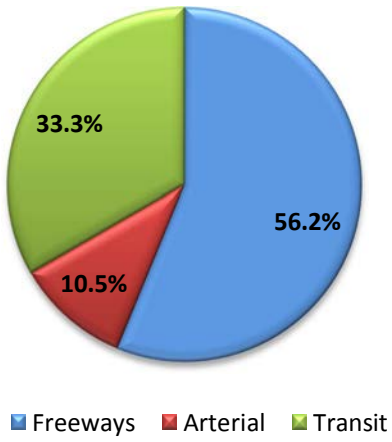
On November 2, 2004, Maricopa County voters passed Proposition 400 authorizing a 20-year continuation of a countywide, half-cent sales tax for regional transportation improvements. The 2003 Regional Transportation Plan (RTP) was developed by Maricopa Association of Governments (MAG) and served as the underlying basis for Proposition 400. At that time, it was expected that $9 billion (in 2002 dollars) would be generated between 2006 and 2026 from the sales tax increment representing nearly half of the $15.8 (in 2002 dollars) billion funding required for various projects included in the RTP.

To receive federal transportation funds, a Regional Transportation Plan must be developed to serve as a long-range planning document for addressing transportation needs, problems, and challenges within a particular region. Goals and objectives of an RTP would include matters such as increasing mobility and reducing congestion through a mix of specific freeways, high-capacity arterial roads and streets, and transit improvement projects. Since the ultimate blend of projects and activities considered necessary to meet the transportation needs for Maricopa County is a regional decision, the Maricopa Association of Governments developed the RTP through a cooperative effort with government, businesses, and local public interest representatives. Together with bicycle and pedestrian components, the freeway, arterial, and transit elements are considered the County's "regional transportation system." This audit focused on freeways, arterial, and transit.

### What are the Parameters of Proposition 400?

Similar to other metropolitan areas in the United States, Maricopa County's Regional Transportation Plan has numerous funding sources—although Proposition 400 sales tax increment is expected to provide nearly half of the funds for projects envisioned in the RTP. Under A.R.S. §42-6105, funds generated under Proposition 400 must be allocated as follows:

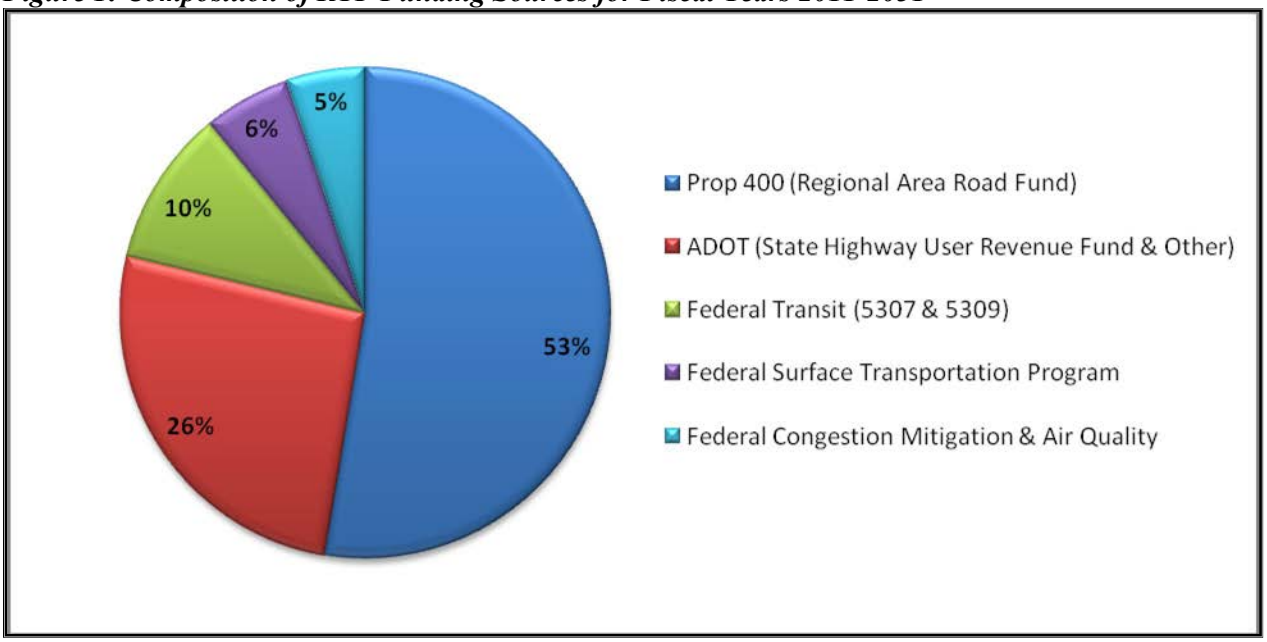
- ***Freeways***: 56.2 percent to the regional area road fund for freeways including capital expense and maintenance
- ***Arterial***: 10.5 percent to the regional area road fund for major arterial street and intersection improvements, including capital expense and implementation studies
- ***Transit***: 33.3 percent to the public transportation fund for capital construction, maintenance, and operation of public transportation and for capital and utility relocation costs associated with a light rail system




The legislation created three "firewalls" which prohibit the transfer of sales tax funds from one transportation mode to another—for example, freeway money cannot be transferred to transit projects nor can transit funds be spent on arterial projects. In addition to Proposition 400 funds,

the RTP is funded from a variety of other sources including federal highway funds, federal transit funds, and state highway funds as shown in Figure 1. Between 2006 and 2010, Maricopa County collected approximately $1.5 billion in sales tax revenues from Proposition 400, but the economic downturn has significantly reduced the amount of collections in recent years.

***Figure 1: Composition of RTP Funding Sources for Fiscal Years 2011-2031***




*Source: 2010 RTP Update Report, Table 7-4*

Local public funding sources also participate in the RTP—specifically, local governments provide matching funds for arterial roads and street capital projects, light rail capital projects and most operations costs, and certain bus transit route operations. For example, in the arterial street life cycle program, the RTP is premised upon a minimum 30 percent local funding match from cities and Maricopa County. Further, some RTP transit routes receive local city funding generated by local sales tax initiatives separate from Proposition 400 or contributed from other local jurisdictional revenues.

Proposition 400 also requires that revenues and expenditures are balanced by transportation and transit mode over the 20-year lifecycle of the program. In practice, three primary agencies are responsible for estimating revenues and expenditures to "balance" its program over project lifecycles as shown below. Through these "life cycle programs," the implementing agencies can better ensure adequate funding is available to meet projects and improvements programmed in the RTP. Responsible agencies for specific life cycle programs are:

- Arizona Department of Transportation: Freeway Life Cycle Program
- Maricopa Association of Governments: Arterial Life Cycle Program
- Regional Public Transportation Authority: Transit Life Cycle Program

## Who Are the Primary Players and What are their Roles?

Several organizations in Maricopa County cooperatively share responsibilities for planning, implementing, and monitoring RTP projects and programs funded through Proposition 400. The following four entities are considered the primary RTP Partners:

- Maricopa Association of Governments
- Arizona Department of Transportation
- Regional Public Transportation Authority
- Valley Metro Rail, Inc.

A brief description of each entity is provided below; roles and responsibilities are summarized in Table 1.

- **Maricopa Association of Governments**

  Formed in 1967, MAG is the federally designated metropolitan planning organization for Maricopa County. According to federal regulations, each urbanized area with 50,000 or more must establish a metropolitan planning organization to develop transportation plans for the area, among other duties. Its members include the region's 25 incorporated cities and towns, Maricopa County, three Indian communities, the Citizens Transportation Oversight Committee, and the Arizona Department of Transportation.

  As part of its responsibilities as a metropolitan planning organization, MAG is responsible for developing the RTP, programming the funding for the RTP projects, and aligning RTP project costs to balance with available revenues. In addition to its role to develop the RTP, MAG also manages the Arterial Life Cycle Program that consists of high capacity roads and street projects.

- **Arizona Department of Transportation**

  As a statewide entity, the primary role of ADOT is implementing a state highway system through the design, engineering, right-of-way acquisition, and construction of freeways—including maintenance after construction. Thus, the department is responsible for the design and construction of freeways in Maricopa County. Additionally, ADOT is also responsible for developing strategies that optimize investment to preserve and expand the transportation infrastructure in Arizona. ADOT assists the State Transportation Board with policies for a variety of programs as well as employs accelerated funding mechanisms such as revenue bonds and grant anticipation notes to finance highway projects.

- **Valley Metro Regional Public Transportation Authority**

  Established in 1985, the RPTA is a political subdivision of the State of Arizona overseen by a Board of Directors comprised of elected officials from 16 member jurisdictions. The agency is responsible for operating the regional bus transit system in Maricopa County.

❖ **Valley Metro Rail, Incorporated**

Formed in 2002, METRO is a non-profit, public corporation overseen by a Board of Directors generally composed of designated elected officials of the participating cities of Phoenix, Tempe, Mesa, Glendale, and Chandler. The agency is responsible for the design, construction, and operation of the light rail system in Maricopa County.

***Table 1: Roles and Responsibilities of Primary RTP Partners***

| | Regional RTP-Level | Individual Project-Level |
|---|---|---|
| **MAG** | ▪ Develops and approves RTP<br>▪ Sets priorities for implementing RTP projects | ▪ Provides administrative support for the Arterial Lifecycle Program |
| **ADOT** | ▪ Provides input and through State Transportation Board representation on the MAG Regional Council votes on RTP matters<br>▪ Maintains the arterial street fund and issues bonds on behalf of MAG | ▪ Builds, operates, and maintains the regional freeway and highway system |
| **RPTA** | ▪ Provides input and votes on RTP matters | ▪ Operates, builds, and maintains regional bus system |
| **METRO** | ▪ Provides input and votes on RTP matters | ▪ Builds, operates, and maintains the light rail system |

*Source: Auditor-generated based on information in the 2003 RTP, RTP updates, and annual Proposition 400 Reports*

## What is the Regional Transportation Plan?

Federal provisions require that the regional planning agency develop an RTP in order to receive federal funds. The RTP should cover all major modes of transportation from a regional perspective. As the regional planning agency for Maricopa County, MAG adopted an RTP on November 25, 2003 that served as a blueprint for future transportation investments over the following four phases for a 22-year period through Fiscal Year 2025-2026:

- ✓ Phase I = July 1, 2004 to June 30, 2010
- ✓ Phase II = July 1, 2010 to June 30, 2015
- ✓ Phase III = July 1, 2015 to June 30, 2020
- ✓ Phase IV = July 1, 2020 to June 30, 2026

In Maricopa County, the RTP calls for major investments in a variety of components of the regional transportation system including:

- ✓ New and improved freeways, including high occupancy lanes
- ✓ New and improved streets and high capacity arterial roads
- ✓ Intelligent Transportation Systems such as detectors and signal light synchronization
- ✓ Bus routes, park and rides, carpools/vanpools, and dial-a-ride services
- ✓ High capacity transit including bus rapid transit and rail modes
- ✓ Freeway management system and maintenance projects

Importantly, due to the long-term horizon of the RTP, the plan can be updated as needed to adjust to changing conditions. Implementation of the RTP requires that MAG develop a five-year Transportation Improvement Plan, to serve as the guide for capital improvement projects for the region and financial plan for funding capital, operating, and maintenance needs for the region's transportation system. In essence, the five-year Transportation Improvement Plan is a "short term" element of the RTP that outlines projects to be funded over the next five-year period and applies financial constraints to ensure conformity with federal requirements. This more short-term plan draws its projects directly from those indicated in the RTP.

## What Projects were Proposed to the Voters Under Proposition 400?

When voters agreed in 2004 to extend the County's half-cent sales tax increment for another 20-year period, Proposition 400's revenue stream was dedicated to projects approved and proposed as part of the RTP. While Table 2 compares more detailed improvements anticipated in Phase I of the Proposition 400 (starting on July 1, 2005—a year after the Phase I start of the RTP) to what the voters have received as of June 30, 2010, the RTP generally outlined the following:

- 344 total miles of new or improved freeways and highways,
- 275 miles of new or improved streets,
- 34 major intersections,
- 27.7 new miles of light rail, and
- 40 enhanced or new bus routes.

Since the improvements outlined in the Proposition can consist of several individual projects, segments, or routes—some of which were not specifically identified at that time—there is not a direct match between all proposed improvements and projects initiated or completed. While certain MAG reports contain lists of projects and descriptions of incremental changes, a comprehensive status of all improvements proposed is challenging to fully determine given the multitude and disparity of data available as well as the added complexity due to project and segment combinations, splits, and renaming. Thus, Table 2 illustrated on the following pages presents a high-level depiction of accomplishments thus far against what was proposed to the voters for the entire Proposition 400 program. At the end of Table 2 is a legend defining acronyms used in the table. Additionally, more detailed information comparing actual completed projects against expectations for the Proposition 400 Phase I July 1, 2005 to June 30, 2010 period can be found in Appendix C.

*Table 2: Projects Proposed under Proposition 400 and Progress as of June 30, 2010*

| Improvements proposed by Prop 400 in 2004[1] | Project Status as of June 30, 2010[2] |
|---|---|
| **Freeway & Highway Improvements** | |
| Construct 4 New Freeways:<br>• Estrella (Loop 303)<br>• I-10 Reliever (SR-801)<br>• South Mountain (Loop 202)<br>• Williams Gateway (SR-802) | All In-Progress except:<br>• 2 segments deferred beyond 2026<br>• Now SR-30—Entire corridor construction deferred beyond 2026<br>• Construction slated to start in 2017<br>• Now SR-24—1 segment deferred beyond 2026 |
| Protect Right-of-Way for 3 Future Extensions:<br>• SR-74 (Loop 303 to US 60)<br>• Loop 303 (South of I-10 Reliever to Riggs Road)<br>• I-10 Reliever (Loop 303 to SR-85) | Right-of-Way acquisitions deferred beyond 2026. |
| 4 Congestion Relief Projects:<br>• I-17 (in Phoenix)<br>• Loop 101 (Pima)/Loop 202 (Red Mountain) Interchange<br>• I-10 (Baseline Road to SR 51)<br>• Grand Avenue (South of Loop 303) | All In-Progress, except Loop 101 (Pima)/Loop 202 (Red Mountain) Interchange which was identified in the Proposition but, according to ADOT, these projects were done under the previous Proposition 300. |
| Add New Lanes to 9 Freeways/Highways:<br>• Loop 202 (Red Mountain)<br>• Loop 202 (Santan)<br>• I-17 (Black Canyon)<br>• US 60 (Superstition)<br>• US 60 (Grand Avenue)<br>• I-10 (Papago & Maricopa)<br>• SR-51 (Piestewa)<br>• SR-85 (I-10 to I-8)<br>• Loop 101 (Price, Agua Fria, Pima) | All In-Progress except:<br>• 2 GP/1 HOV completed, 2 segments deferred beyond 2026<br>• 1 HOV in progress; GP projects deferred beyond 2026<br>• 2 segment completed, 2 segments deferred beyond 2026<br>• 3 segments completed<br>• 1 segment deferred beyond 2026<br>• 2 segments completed, 1 segment deferred beyond 2026<br>• HOV lanes completed, GP lanes deferred beyond 2026<br>• 4 segments completed, 2 segments deferred beyond 2026<br>• Agua Fria Corridor GP deferred beyond 2026; Pima & Price Corridors HOV completed, except 1 Pima HOV in progress |
| Construct 6 Freeway-to-Freeway Ramps:<br>• I-10 (Maricopa)/Loop 202 (Santan)<br>• I-17 (Black Canyon)/Loop 101 (Agua Fria)<br>• I-10 (Papago)/Loop 101 (Agua Fria)<br>• Loop 101 (Pima)/SR 51 (Piestewa)<br>• Loop 101 (Price)/Loop 202 (Santan)<br>• Loop 202 (Red Mountain)/US 60 (Superstition) | All In-Progress except:<br>• Construction to start in 2010<br>• Entirely removed from the program<br>• Entirely removed from the program<br>• Completed<br>• Construction to start in 2010<br>• Deferred beyond 2026 |

| Improvements proposed by Prop 400 in 2004[1] | Project Status as of June 30, 2010[2] |
|---|---|
| Construct 12 New Interchanges:<br>• 64th Street/Loop 101<br>• Beardsley Road/Loop 101<br>• Bethany Home Road/Loop 101<br>• Bullard Road/I-10<br>• Dixileta Drive/I-17<br>• Dove Valley Road/I-17<br>• Jomax Road/I-17<br>• Lindsay Road/US 60<br>• Chandler Heights/I-10<br>• El Mirage Road/I-10<br>• Meridian Road/US 60<br>• Perryville Road/I-10<br>• Grand Avenue/67th, 51st, 35th, and 19th Avenue | • Completed<br>• Completed<br>• Completed<br>• Completed<br>• Completed<br>• Completed<br>• Completed<br>• Defered beyond 2026<br>• Construction to start in 2022<br>• Construction to start in 2023<br>• Construction to start in 2013<br>• Construction to start in 2013<br>• Construction for 51st, 35th and 19th Avenue deferred beyond 2026; 67th Avenue is part of Northern Avenue Arterial improvements |
| Other Freeway Improvements:<br>• Maintenance<br>• Freeway Management Systems<br>• Neighborhood Mitigation | On-going expenditures are made in these areas. |
| **Arterial Street Improvements** | |
| Construct or Improve 275 Miles of Arterial Streets | In-Progress except:<br>• 16 capacity improving projects and/or segments completed |
| Construct or Improve 34 Major Intersections | In-Progress except:<br>• 6 intersection improvement projects and/or segments completed |
| Protect 17 Miles of Right-of-Way along:<br>• Jomax Road (Loop 303 to Sun Valley Parkway) | Right-of-Way Acquisition to occur in 2018. |
| Construct 3 New Bridges over the Salt River at:<br>• Dobson Road<br>• Gilbert Road<br>• McKellips Road | • Construction to start in 2015.<br>• Construction to start in 2015.<br>• Construction to start in 2016. |
| Construct 1 Tunnel under the Scottsdale Airport | According to MAG, the tunnel was deleted from the RTP and replaced with a series of Airpark Capacity Improvement Projects. Construction to start in 2014 and estimated for completion in 2026. |
| Construct 1 Underpass at Miller Road/ Loop 101 | • Construction to start in 2020. |
| Other Arterial Improvements:<br>• Intelligent Transportation Systems (ITS) projects | On-going expenditures are made in these areas. |

| Improvements proposed by Prop 400 in 2004[1] | Project Status as of June 30, 2010[2] |
|---|---|
| **Regional Transit Improvements – Transit Capital Projects** | |
| Construct 26 New Passenger Facilities including:<br>• 13 Park-and-Ride Lots<br>• 13 Transit Centers | In-Progress except:<br>• 2 facilities completed, 2 facilities deferred beyond 2026<br>• 9 transit centers deferred beyond 2026 |
| Purchase:<br>• 2,100 Buses<br>• 1,000 Dial-A-Ride Vehicles | In-Progress except:<br>• RTP revised to 1,702 buses and 1,381 vanpool vans—373 buses and 356 vanpool vans purchased to date<br>• RTP revised to purchase 939 para-transit vans—214 para-transit vans purchased to date |
| Improve:<br>• 1,200 Bus Stops | In-Progress except:<br>• Reduced to 538 bus stops—376 bus stops completed |
| Upgrade and Construct Transit Maintenance and Operations Facilities | In-Progress except:<br>3 facilities completed, 5 facilities deferred beyond 2026 |
| Improve High Capacity Transit including:<br>• Construct 27.7 miles of high capacity transit/light rail extensions between:<br>○ Downtown Phoenix to 79th Avenue aka Phoenix West Corridor (11 miles)<br>○ Apache Boulevard to Southern Avenue aka Tempe Streetcar (2 miles)<br>○ Central Phoenix to Paradise Valley Mall aka Northeast Corridor (12 miles)<br>○ Sycamore to Mesa Drive aka Central Mesa Corridor (2.7 miles)<br>• Regional Support Infrastructure for light rail system (maintenance facilities, bridges, rail cars) | • Scheduled to be open 2021.<br>• Scheduled to be open 2016, now identified as a streetcar at 2.6 miles.<br>• Scheduled to be open 2031.<br>• Scheduled to be open 2016, now identified as a light rail extension at 3.1 miles<br>• On-going expenditures are made in these areas. |
| **Regional Transit Improvements - Transit Bus Operations** | |
| Provide New or Enhance Existing Regional Bus Service on:<br>• 12 New Routes<br>• 28 Existing Routes | In-Progress except:<br>• 15 BRT and 9 Supergrid routes deferred beyond 2026<br>• 11 BRT and 6 Supergrid routes implemented<br>• 4 implemented BRT routes will be eliminated in 2011 due to low ridership |
| Provide Rural Bus Routes to:<br>• Wickenburg<br>• Gila Bend | 2 Rural Bus Routes implemented |
| Other Transit Bus Operations Improvements:<br>• Triple Dial-A-Ride Para-transit Services for ADA riders<br>• Triple Vanpool Services<br>• Improve Transit Security | On-going expenditures are made in these areas. |

| Improvements proposed by Prop 400 in 2004[1] | Project Status as of June 30, 2010[2] |
|---|---|
| **Other Transportation Programs** | |
| Air Quality | On-going expenditures are made in these areas. |
| Bicycle and Pedestrian Travel | On-going expenditures are made in these areas. |
| Future Commuter Rail Options | On-going expenditures are made in these areas. |
| Safety and Transportation Planning | On-going expenditures are made in these areas. |

*Source: (1) Proposition 400 Public Ballot for November 2, 2004 Election; (2) 2010 Proposition 400 Update Report Appendices (3)"GLP" refers to general purpose lane; (4)"HOV" refers to high-occupancy vehicle; (5) "BRT" refers to bus rapid transit; (6) Supergrid routes are regional grid bus routes situated along major roads of the arterial grid network.*

## Who Has RTP Decision-Making Authority and Provides Oversight?

Mostly, decisions related to the RTP are focused with MAG and primarily discussed through certain policy-setting committees and technical committees, including the MAG Management Committee. Ultimately, the MAG Regional Council, which serves as MAG's governing and oversight body as shown in Figure 2, is responsible for the approval of the RTP.

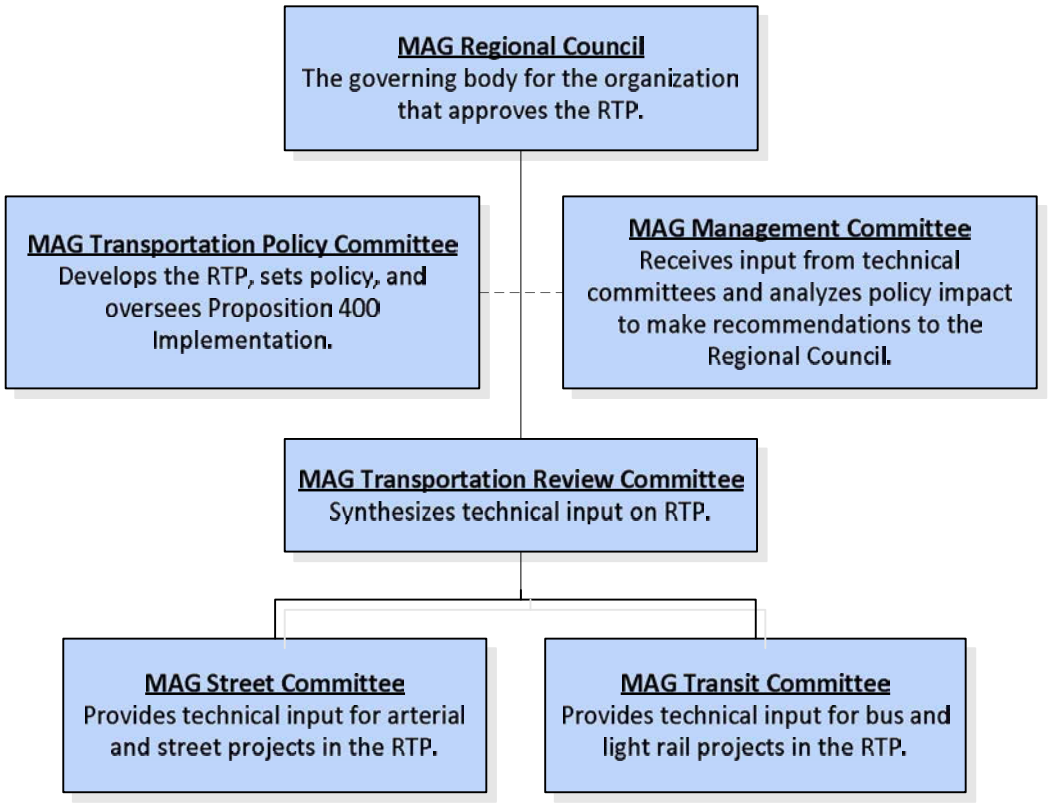
The MAG Regional Council is composed of elected officials from each local member city or community jurisdiction, while the committees providing technical advice regarding RTP projects use local governmental experts in the particular area such as streets or transit. Moreover, the MAG Transportation Policy Committee is tasked with the initial development of the RTP, based on cross-agency collaboration and input, which is given to the MAG Regional Council for final approval. Specifically:

- ***MAG Transportation Policy Committee***
  Established by MAG and subsequently codified in state law, the MAG Transportation Policy Committee is a committee within the MAG structure tasked with development of the RTP. Additional committee responsibilities include advising the MAG Regional Council on transportation issues in the RTP and related plans including modifications to the plans. With six permanent members consisting of mayors (or mayoral designees) from the six highest populated cities, the MAG Transportation Policy Committee is comprised of 23 members and is a public/private partnership with six members representing region-wide business interests.

  Government representation on the committee includes representatives from the Citizens Transportation Oversight Committee and the State Transportation Board and the following local jurisdictions including the region's seven largest cities:

  - Avondale
  - Buckeye
  - Chandler
  - Gilbert
  - Glendale
  - Goodyear
  - Maricopa County
  - Mesa
  - Peoria
  - Phoenix
  - Salt River Pima-Maricopa Indian Community
  - Scottsdale
  - Surprise
  - Tempe
  - Town of Cave Creek

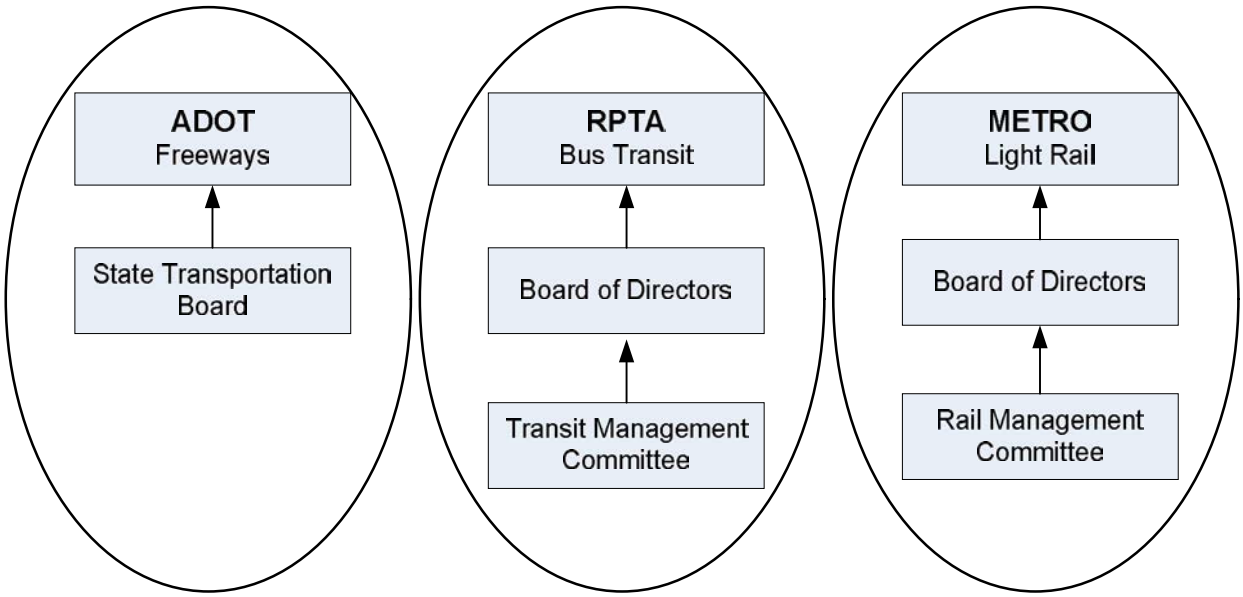
***Figure 2: Selected Maricopa Association of Government Governing Council and Transportation Committees Involved with the RTP Oversight***




Generally, specific topics or project changes are presented first to the MAG technical committees, then through the MAG Transportation Policy Committee, and ultimately to the MAG Regional Council for review and approval—although the MAG Management Committee and MAG Regional Council Executive Committee also receive information and provide their recommendations to the MAG Regional Council. For instance, all project change requests for arterial projects go through the MAG Management Committee before being considered by the MAG Transportation Planning Committee or MAG Regional Council. Moreover, there are other peripheral committees involved with transportation such as the MAG Air Quality Technical Advisory Committee and the MAG Safety Committee.

The other RTP Partners are also governed by their own boards and a variety of sub-committees that focus on their agency's discreet missions and mode of service; thus, adding a layer of complexity to the levels of oversight and decision-making processes related to regional transportation planning as shown in Figure 3. While staff from the RTP Partners do not sit on the MAG Regional Council, freeway transportation perspectives are represented through two State Transportation Board persons who are members of the MAG Regional Council. Further, management staff from RTP Partners are members of certain additional MAG committees.

*Figure 3: Basic Committee Structure of ADOT, RPTA, and METRO*




In addition, there are two other groups charged with oversight responsibilities of the RTP and its projects as follows:

- ***Citizens Transportation Oversight Committee (CTOC)***
  Initially formed in 1994, CTOC has many oversight responsibilities as it relates to the regional transportation process including reviewing and advising the RTP implementing entities on matters relating to the RTP and related projects. This includes making recommendations to MAG, ADOT, and RPTA on any major RTP amendments and criteria for establishing program priorities, as applicable.

- ***State Transportation Board***
  Consisting of seven members appointed by the Governor representing six geographical regions of the State, the State Transportation Board has statutory authority over the state highway system. Although MAG develops the freeway priorities and program for the region in cooperation with ADOT, the State Transportation Board approves the freeway life cycle program. While the State Transportation Board adopts policies that affect the MAG regional freeway program and issues bonds to accelerate the regional freeway program, it cannot approve projects within the MAG region that are not consistent with the MAG RTP.

## How Are Changes to the RTP Made and Decisions Vetted?

Due to the RTP's longer-term focus, adjustments triggered by events such as environmental circumstances, economic changes, demand fluctuations, and available funding are made through scheduled 5-year snapshots presented in the Transportation Improvement Program. Thus, regional planning is a dynamic process requiring continuous monitoring and periodic updating that involves the multitude of entities participating in the RTP.

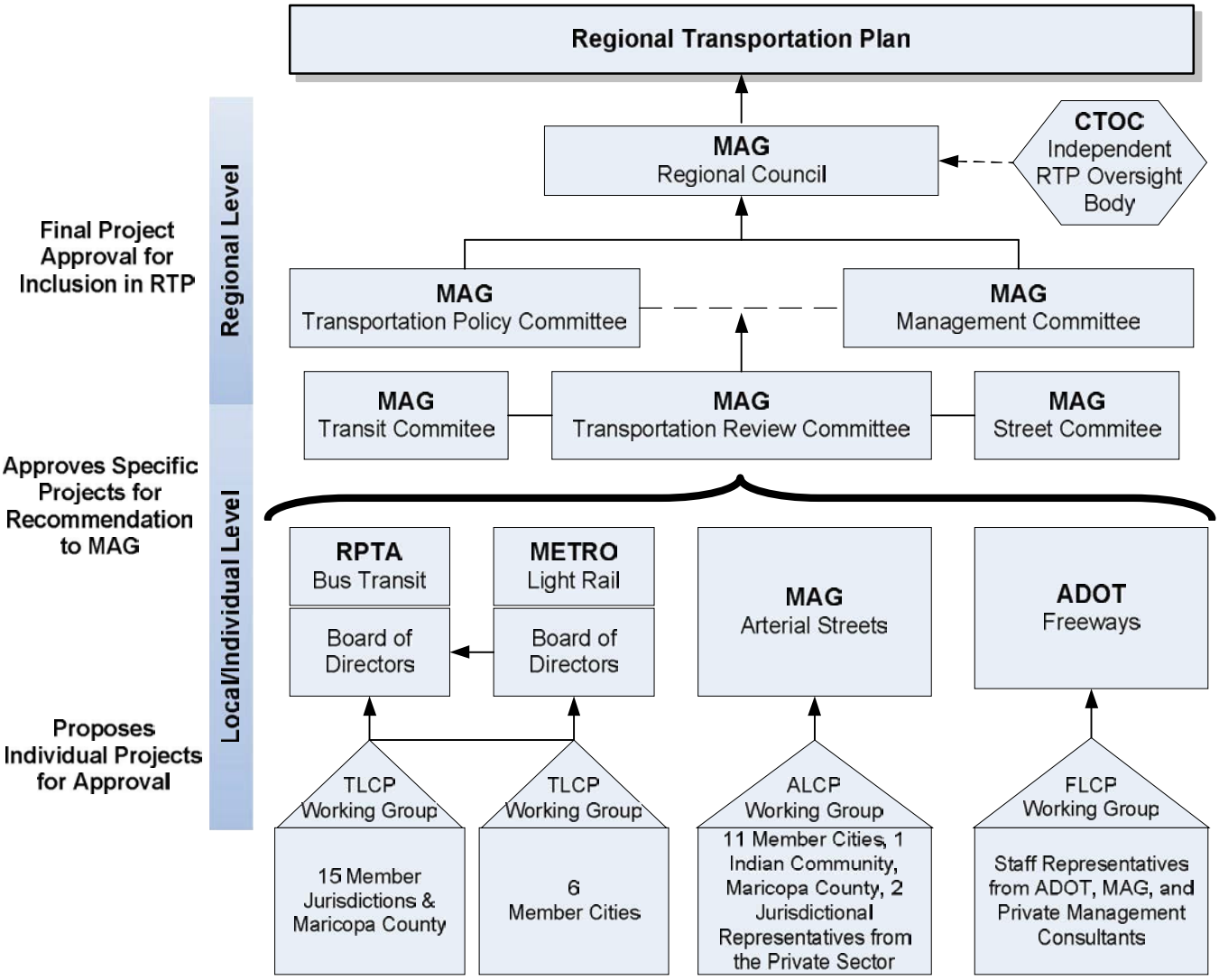
In Maricopa County, transportation decision-making is shared between MAG and ADOT, RPTA, and METRO. At the individual organizational level, statutes assign MAG the responsibility of establishing freeway corridor priorities within the Maricopa County region and ADOT the responsibility of implementing freeway construction projects programmed within RTP. Discussions related to changes to the freeway projects occur with MAG staff and MAG committee staff, in cooperation with ADOT. While the State Transportation Board has final authority in deciding which freeway projects will be constructed in the statewide five-year highway construction program, the MAG Regional Council possesses final authority for deciding which projects will be included in the regional transportation plan and funded with Proposition 400 monies. Thus, the statewide construction program and MAG regional transportation plan must be in agreement.

For bus transit, the RPTA Board of Directors and several supporting committees oversee RPTA's administration of the regional program and creation of the transit life cycle program balancing revenues and expenditures for projects such as bus operating routes, para-transit, and bus stop and maintenance facility improvements. Specific to rail, RPTA has designated METRO as the lead agency to administer the transit life cycle program for the rail element. Of particular importance is the RPTA Transit Management Committee comprised of transportation management staff designed to advise the RPTA Board of Directors on key transit issues and policy decisions as well as the RPTA Budget and Finance Subcommittee that provides oversight on all substantive financial issues including the annual transit life cycle program. Changes to bus transit projects begin with transit life cycle program working groups with recommendations vetted and approved up through the various RPTA committee and board process.

At the METRO rail agency, there is a Board of Directors and a Rail Management Committee charged with overseeing the design, construction, and operation of Maricopa County's light rail system. Representatives on the board and rail committee are from the five-member cities of Phoenix, Tempe, Mesa, Glendale, and Chandler. Like bus transit, light rail project changes are vetted through the METRO committee and board processes, as well as through the transit staff working group, before being incorporated into the transit life cycle program.

Ultimately, the MAG Regional Council is responsible for the approval of the RTP developed by the MAG Transportation Policy Committee. While the MAG Regional Council is the governing and policy-making body for the organization, transit project specific decisions are first presented and discussed in RPTA's and METRO's working groups and agency specific boards and committees before being brought forward to a broader regional forum at the MAG committee levels as shown in Figure 4.

*Figure 4: Primary Entities Involved in Making RTP-Related Decisions*




Note: The State Transportation Board, although not directly involved in the RTP decision-making process, is responsible for approving the state-wide State Transportation Improvement Program (STIP) after the MAG Regional Council, MAG Transportation Policy Committee, and MAG Management Committee approve their local Transportation Improvement Program (TIP), which is updated every two years to outline implementation priorities through projects programmed for the next five-year timeframe of the 20-year RTP horizon.

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# Chapter 1: Some Performance Data Exists, But Determining Results of Proposition 400 Efforts Cannot be Fully Measured

In 2003, under the premise of a successful passage of Proposition 400, the Maricopa County RTP set forth nearly $15.8 billion (in 2002 dollars) for various freeway, street, and transit development and improvement projects. With the building of a solid foundation for RTP planning and development activities, it is evident that the RTP Partners have made notable accomplishments in the first five years of the Maricopa County Proposition 400 initiative between July 1, 2005 and June 30, 2010. Our review finds a significant output of projects—completed and in process—but determining whether those projects individually or as a system as a whole have achieved the goals of Proposition 400 to help the region meet its congestion, mobility, and quality of life needs cannot be measured.

With the exception of transit, there are no project-specific targets for freeway or arterial projects or the entire transportation system described in the RTP that give taxpayers the ability to measure how these transportation improvements in the RTP will actually impact mobility, congestion, air quality, or quality of life in Maricopa County. For instance, the MAG Regional Council adopted an RTP designating specific freeway, arterial, and transit projects for completion over the 20-year time span covered by the RTP. While the plan sets forth a series of overarching or global performance goals and objectives that aligned with statutory requirements, MAG cannot demonstrate whether the projects collectively completed to date have successfully met the goals of the RTP.

Although somewhat delayed, MAG has been developing a performance measurement framework over the last four years to build the needed tools to gauge regional progress toward meeting performance goals. However, neither MAG nor ADOT have established critical targets for tracking freeway project specific performance for projects, corridors, or the transportation system even though targets are essential aspects of any performance measurement system. We also found that arterial project performance could not be measured, although MAG has begun to lay the foundation to measure progress through its Congestion Management Program. Once employed, the Congestion Management Program model should provide a valuable tool that would afford decision makers the ability to assess arterial project performance and assess the value of one project over another using quantitative and qualitative performance factors. With more than 25 percent of the Proposition 400 program time period elapsed, it is imperative that MAG and ADOT set targets and begin measuring project, corridor, and transportation system impact and performance against the RTP goals.

Measuring the success of a transportation improvement at a project level is possible and can be useful in understanding the impact of individual projects on the system as a whole. For example, a different metropolitan planning organization is developing an online performance reporting tool that captures the impact of new lanes or corridors opened for each project proposed to voters. Specifically, using two performance indicators—vehicle-hours of delay and vehicle-miles of travel—the tool graphically displays data before and after improvements are made. On one particular project, results showed vehicle hours of delay fluctuated between 15 minutes and 60 minutes prior to the opening of additional lanes—after the new lanes opened to traffic, vehicle hours of delay were reduced by at least 50 percent.

While the nature of measuring performance is different for freeway and arterial modes, we were able to analyze transit project performance with data collected by RPTA and METRO. Soon after the passage of Proposition 400, RPTA developed a performance measurement system for both bus transit and rail based on national best practices. This system of measures includes established goals and regular tracking and monitoring against targets. Although bus transit projects did not always meet its own internal performance targets, bus transit is operating at a lower cost for fixed routes systemwide than peers nationwide and is comparable in many other performance categories. Rail transit not only surpassed its targets, but also performs better, on average, than some national peers in several performance-related categories.

Based on our review of performance data and available documentation as well as results noted in other sections of this audit report, we found no substantial evidence to warrant drastic modifications to the transportation system or specific projects. Because success in meeting performance targets for freeway and arterial projects or corridors could not be measured, we cannot conclude whether other changes to the transportation system should be considered. However, using performance targets and results available for bus transit and light rail, we found that transit performance is strong and realizing successes from the current plan. As a result, we believe the RTP Partners should continue to implement the current transportation system and strive to continually reassess system performance to make modifications as necessary.

## RTP Goals and Performance Indicators Align with Related Statutes

As the blueprint for transportation investments spanning two decades, the RTP establishes a number of goals and objectives for its projects. MAG considers these goals to be a general statement of purpose towards long-term desired ends. Primary overarching goals of the 2003 RTP are as follows:

1. System Preservation and Safety
2. Access and Mobility
3. Sustaining the Environment
4. Accountability and Planning

While Proposition 400 did not identify specific performance goals or criteria, each RTP Partner has informally incorporated the performance considerations that are outlined in an existing Arizona Statute related to ADOT. Specifically, A.R.S. §28-505 requires ADOT's Transportation Division to develop "performance factors" and weights based on ten variables focused on system preservation, congestion relief, accessibility, connectivity, economic benefits, safety, air quality, cost effectiveness, operational efficiency, and project readiness as shown in Table 3. Although the state laws technically only apply to ADOT and Proposition 400 was enacted after the creation of the 2003 RTP, that plan and subsequent RTP updates contain goals that align with these A.R.S. §28-505 performance factors. Moreover, each of the entities involved in measuring freeway, arterial, and transit performance consider their project and program outcomes against these ten performance factors to some extent. Our analysis reveals the following similarities between the RTP and statutory goals:

*Table 3: Comparison of A.R.S. §28-505(A) to 2003 RTP Goals Shows Similarities*

| Goals and Criteria Outlined in 2003 RTP [1] | Performance Factors per §28-505(A) [2] |
|---|---|
| Goal 1 – System Preservation and Safety | 1. System Preservation<br>2. Safety |
| Goal 2 – Access and Mobility | 3. Congestion Relief<br>4. Accessibility<br>5. Integration & Connectivity with other Modes<br>6. Economic Benefits |
| Goal 3 – Sustaining the Environment | 7. Air Quality and Other Environmental Impacts |
| Goal 4 - Accountability and Planning | 8. Cost-effectiveness of a Project or Service<br>9. Project Readiness<br>10. Operational Efficiency |

*Source: (1)2003 RTP, Chapter 4 and Chapter 6; (2) A.R.S. §28-505(A)*

As will be discussed later in this chapter, from its overarching goals, the RTP further identifies 19 performance measures and 5 evaluation criteria to gauge progress in meeting goals (see Table 4 on page 24).

## MAG is Developing a Performance Monitoring Program and Working to Ensure Data Reliability

After MAG's Regional Council adopted the 2003 RTP, staff embarked on the mission to build a performance measurement framework and congestion management process into its planning process in response to federal requirements. Although staff was hired in April 2006 to oversee and develop a system to capture both project level and system level performance results, MAG did not develop the foundation for the measurement system until five years later in 2008 with the completion of its first Performance Measurement Framework Report. MAG's Performance Measurement Program is the results of an extensive process of investigation and study of best practices in the field.

Using a series of studies and reports, MAG performed an in-depth analysis on freeway corridors and arterial roadways using industry standard metrics such as vehicle throughput, crash and injury rates, speed, and lost productivity. Other performance data is currently captured as shown in Table 4 on the following page. Based on its analysis, MAG arrived at a base data set for roadways. MAG's data for transit performance derives from RPTA's well-developed transit measurement system described in a subsequent section in this Chapter. It is also important to note that any performance measurement system is always in a constant state of evolution and refinement as data and resources become available and is also reliant upon the accuracy, consistency, and completeness of all data sources available.

*Table 4: Comparison of Performance Measures in the 2003 RTP with 2010 Data Currently Captured*

| Goals, Performance Measures, and Evaluation Criteria Outlined in 2003 RTP[1] | Measures Captured in 2010[2][3] | | | |
|---|---|---|---|---|
| | Transit | Light Rail | Arterial | Freeway |
| ***Goal 1 - System Preservation and Safety (System Performance Measures)*** | | | | |
| 1. Percent of maintenance and preservation needs funded. | In-Progress[A] | ✓ | In-Progress[A] | |
| 2. Accident rate per million miles of passenger travel. | Limited[B] | | ✓ | ✓ |
| ***Goal 2 - Access and Mobility (System Performance Measures)*** | | | | |
| 3. Travel time between selected origins and destinations. | | ✓ | ✓ | ✓ |
| 4. Peak period delay by facility type and geographic location. | | N/A | ✓ | ✓ |
| 5. Peak hour speed by facility type and geographic location. | Limited[B] | | ✓ | ✓ |
| 6. Number of major intersections at level of service "E" or worse. (C) | N/A | | ✓ | N/A |
| 7. Miles of freeways with level of service "E" or worse during peak period.(C) | | | N/A | ✓ |
| 8. Percentage of persons within 30 minutes travel time of employment by mode. | Limited[B] | | In-Progress[A] | |
| 9. Average daily truck delay. | N/A | N/A | N/A | |
| 10. Jobs and housing within one-quarter mile distance of transit service. | Limited[B] | | | N/A |
| 11. Percentage of major arterial streets that have bike lanes. | N/A | N/A | In-Progress[A] | |
| 12. Percentage of regional connectors funded as part of the total Off-Street System Plan and the Regional Bicycle Plan. | | | N/A | |
| 13. Percentage of workforce that can reach their workplace by transit within one hour with no more than one transfer. | Limited[B] | ✓ | | |
| ***Goal 3 - Sustaining the Environment (System Performance Measures)*** | | | | |
| 14. Per Capita Vehicle Miles of Travel (VMT) by facility type and mode. | N/A | N/A | ✓ | ✓ |
| 15. Total transit ridership. | ✓ | ✓ | N/A | N/A |
| 16. Households within one-quarter mile of transit. | Limited[B] | ✓ | | |
| 17. Transit share of travel (by transit sub-mode). | ✓ | ✓ | | |
| 18. Households within five miles of park-and-ride lots or major transit centers. | ✓ | ✓ | | |
| 19. Amount of pollutant emissions by type-National Air Quality Standards (NAQS). | Limited[B] | | | |
| ***Goal 4 - Accountability and Planning (Plan Evaluation Criteria)*** | | | | |
| 1. Adopt performance measures that will result in a regional transportation system that is effective and efficient and meets the transportation goals and objectives of the region. | ✓ | ✓ | ✓ | ✓ |
| 2. Percent of state and federal transportation taxes collected in Maricopa County that are returned to the region. | N/A | | | |
| 3. Geographic distribution of transportation investment. | ✓ | ✓ | ✓ | ✓ |
| 4. Inclusion of committed corridors. | | | ✓ | ✓ |
| 5. Voter approval for a regional transportation revenue source. | ✓ | ✓ | ✓ | ✓ |

*Source: (1) 2003 RTP, Chapter 4; (2) 2010 Transit Performance Report (Version 2/2011); (3) 2009 MAG Phase II Performance Measurement Framework Study; (4) Discussions with MAG, ADOT, RPTA, and METRO.*

*Notes: (A) In-Progress: Agencies in process of collecting data and developing metrics for reporting. (B) Limited: Availability of data is limited and difficult to capture. (C) Level of service is a qualitative measure of capacity with "A" being the best and "F" being the worst. Level of service "E" represents operations at capacity where speeds are usually around 50 mph, but do not reach posted speed limits.*

*✓ = Measure is being captured. "Blank" = Measure is not being captured "N/A" = Measure does not apply to the particular transportation area.*

Our review confirmed the metrics captured by MAG are consistent with those collected by others in the industry as indicated by a best practice review conducted in 2008. We also found consistency with measures widely utilized and recognized by the National Transportation Operations Coalition (Coalition), a performance measures task force within the Federal Highway Administration's Office of Operations. Moreover, MAG expanded the Coalition's suggested metrics to include freight volume, lost productivity, per capita vehicle-miles of travel, and crash/injury/fatality rates. Most performance measures adopted correlate to the RTP goals as shown in Table 4. It is intended that these RTP-related measures can be applied at both the system level and project level, and be used to evaluate plan options as well as monitor plan performance.

Recorders on freeways and arterial roadways in the county capture raw performance data through ADOT's freeway management system. According to MAG, there are currently 286 loop detectors covering 120 of the 375 centerline miles of freeway and slightly more than 30 arterial detectors mostly covering the City of Phoenix area since only a few cities have traffic monitoring stations that gather data. Freeway sensors continuously capture traffic data stored and maintained by ADOT. According to MAG, local cities self-report the arterial detector counts and data is not always current. To supplement arterial detector data, MAG periodically conducts traffic volume studies with the most recent one covering Fiscal Year 2006-2007. MAG accesses and performs quality control procedures on the data for reasonability and consistency, although inherent data limitations exist due to the location of detectors in the system. Beginning in Fiscal Year 2011-2012, MAG is contracting with a private service provider to access available historical travel data gathered from vehicles equipped with devices acting as roving traffic detectors. In the meantime, MAG purchases traffic data surveys to compile the actual traffic counts on the major arterial streets covering 80 percent of all routes.

## RTP Partners are in Varying Stages of Measuring Performance

Not only does performance tracking and assessment enhance transparency and accountability to the public, but the results also assist decision-making and provide tangible information for strategy formation. By nature, it is a continual process requiring adjustments of goals, targets, and metrics depending on ongoing evaluation of actual performance results. However, to effectively assess performance, critical factors are essential including specified goals, clearly defined targets, performance measures, and actual performance data.

In Maricopa County, we found that each RTP Partner stands at a different evolutionary stage of performance measurement and not all the parties have successfully implemented complete measurement programs. For example, although MAG established goals that track with statute, it has not yet set any clear and measurable targets for freeway projects undertaken in coordination with ADOT or for arterial projects it administratively coordinates with local jurisdictions. In contrast, RPTA worked collaboratively with METRO and developed a comprehensive performance measurement system soon after Proposition 400 passed that establishes targets and tracks performance data for both bus transit and rail projects.

In accordance with Arizona Statutes, we were asked to review performance of projects between July 1, 2005 and June 30, 2010 (Phase I of Proposition 400) in relieving congestion and improving mobility for a sample of freeway, arterial, and transit projects including the 20-mile

METRO light rail project. A listing of projects sampled can be found in Appendix A: Audit Scope and Methodology. Since freeway and arterial performance targets were non-existent, we could not specifically measure individual project performance or systemwide performance. When we attempted to use available information to show changes in congestion and mobility since an individual project completion, we encountered several challenges related to no data captured for the specific project reviewed or data available was for periods prior to project completion as discussed later in this report chapter. However, bus transit and rail had a multitude of data available allowing us to assess project and system performance as discussed in the sections that follow. For systemwide results, MAG's performance report provided performance data for highway and arterial corridors related to the measures outlined in Table 4 on page 24, but there was no interpretation on what the data revealed in terms of the success of the collective projects to relieve congestion or improve mobility against a baseline target.

## Since MAG Did Not Set Targets for Freeway and Arterial Projects, Impacts on Mobility, Congestion, and Other Goals Cannot be Determined

While the Maricopa County RTP and MAG's performance measurement system establish goals and performance measures similar to those used by its peers, it does not identify targets or benchmarks for performance or align efforts with results to link what was envisioned in approving funding for freeway or arterial RTP transportation projects. Rather, the RTP and supporting documentation merely provides a listing of specific projects completed, not the impact resulting from the projects—although some data existed in 2003 that MAG could have used to set these expectations. Thus, while outputs in terms of completed projects or road miles can be determined, whether those collective projects and improvements actually contribute to or successfully accomplish the goals and objectives envisioned by Proposition 400 to relieve congestion and improve mobility cannot be determined. It is understandable that entities may be reluctant to set and measure targets as they create expectations as well as the potential for not meeting those marks. However, such tools are intended not only for accountability, but also to provide essential management information. Further, benchmarks and targets can be revisited and adjusted as conditions change.

For instance, in November 2003, MAG developed a Regional Concept of Transportation Operations that proposed coordinated transportation operations so that the many affiliated entities and the public could benefit from its system. Although this concept study's focus was on operating systems rather than project implementation and deployment, the document establishes a vision and goals for the region over a 3-year and 5-year horizon. The vision and goals in this document are specific and meaningful, and could be used to establish tangible and measurable targets. For instance, one proposed "goal" was to reduce traffic incident duration by 10 percent, while another "goal" proposed limiting the percent increase in average arterial travel time to less than the percent increase in traffic volume. In both examples, MAG could use this level of specificity as a basis for setting targets to measure against actual system performance.

Additionally, MAG has commissioned system studies and ADOT has conducted corridor specific studies that provide data that could be helpful in outlining regional performance expectations. Some of these studies outlined several options or strategies for improving travel, and provided data on how the system or strategy is expected to perform related to factors such as speed, travel time, and volume. For instance, in a MAG freeway bottleneck study from October

2002 reviewing 16 freeway segments and associated projects prior to the development of the 2003 RTP, the following results were projected:

- Constructing SR-51 northbound auxiliary lane from Van Buren Street to Northern Avenue would decrease evening peak hour travel time by nearly 2,500 passenger hours or 11 percent.
- Building an I-10 westbound collector-distributor road between Baseline Road and 40th Street would decrease morning peak travel time by approximately 10,500 passenger hours or 30 percent.

Similarly, a September 2003 MAG study on the Southeast Maricopa/Northern Pinal County Area provided a sizable list of baseline and projected outcomes specific to daily vehicle miles traveled, hours of delay, and average speed for three separate improvement options. Thus, MAG and ADOT can use these or other existing studies and data to outline what is expected to be achieved and set performance targets.

Combined with performance data that is now being captured, the agencies should set baselines for performance to provide more accountability into the process. Not only do these studies analyze traffic data and provide insight about performance factors such as speed, travel time, and vehicle miles traveled, but also MAG has captured nearly four years of roadway data between 2006 and 2009 that can be used to set targets. Some traffic data is available for certain freeway and arterial segments on MAG's website. However, as of June 2011, MAG has not yet determined when or at what level they will establish performance targets; rather, we are informed that the preference is to wait and gather sufficient historic data before setting targets. With more than 25 percent of the Proposition 400 time period elapsed, MAG and ADOT should immediately set baselines and targets that align efforts with results and provide essential information for managing and tracking success. Although MAG has begun the process of conducting system studies, such as the Central Phoenix Transportation Framework Study, to assess performance and make recommendations across all modes, it will be challenging to demonstrate success without having some baseline or target.

## For Freeways, Some Data Exists to Allow Limited Performance Analysis

While MAG has been working on the region's performance framework, ADOT has also recently worked collaboratively with metropolitan planning organizations and councils of governments across the state to begin developing goals, objectives, and performance measures for freeways as part of the next revision of its state-wide long-range transportation plan. ADOT's freeway long range plan is the 25-year planning document that programs freeway funds with Maricopa County projects being incorporated into MAG's RTP. Beginning in May 2010, ADOT held a series of meetings to discuss performance measures that would address the long-range plan's goals and objectives as well as align with the provisions of ARS §28-505(A). At a September 21, 2010 meeting of its Steering Committee, ADOT presented six goals and associated performance measures such as "percent of roadway miles or amount at 'tolerable' congestion levels" for measuring against its goal to "improve mobility and accessibility." According to ADOT, it expects to approve these goals, performance measures, and long-range plan in 2011.

With ADOT creating its own set of performance measures and MAG using a regional performance framework as well, it is imperative that the two agencies coordinate efforts to minimize duplication and/or contradiction and to ensure that the regional performance framework is consistent and fits into the state's performance measurement framework.

Because these efforts are not yet complete, no data was available for us to measure performance on the Phase I freeway projects completed between 2006 and 2010 that we selected for review. Thus, we used MAG performance data captured to assess program results to the extent possible. Since MAG's data only captures performance at a corridor level and not an individual project level, we attempted to correlate our projects selected with a specific MAG performance corridor where detectors were located to capture the data. However, given these parameters, our analysis is also challenged by the following other constraints:

- Data captured for entire segment, but sample project was only a portion of segment
- Sample project was completed after period of data collection
- No data was captured at location where sample project completed

Additionally, MAG informed us that it is difficult to quantify performance when project limits do not always correspond to RTP planning segments.

Despite these limitations, we linked the following MAG performance corridors with freeway projects now open to traffic and we offer some general observations. For instance, as shown in Table 5, results reveal that throughput volumes on the Loop 202 Red Mountain corridor generally decreased from 2006 to 2009. The data further shows that in 2006, on average 65,995 vehicles traveled in the general purpose lane at a speed of 61 mph during morning traffic hours between 6 a.m. and 9 a.m. Three years later, in 2009, 63,609 vehicles traversed the same stretch of freeway at a speed of 59 mph—or 2 mph less than in 2006. On the other hand, travel speeds increased during the evening commute. One reason for the varied travel speed given the reduced volume of vehicles could be construction-related as ADOT was building additional general purpose lanes during the data collection period. Yet, since MAG has only analyzed data through 2009 and the new lanes did not open to traffic until mid-2010, we cannot assess whether the addition of the general purpose lanes projects helped reduce congestion.

On a go-forward basis, MAG should be able to study this performance corridor and reach a conclusion on the effectiveness of these particular general purpose lane projects. For instance, if volume stays constant, then travel speeds should increase and travel times decrease along this route. Now that construction on the project is complete, MAG may have the data and information necessary to evaluate performance of the project. Yet, MAG faces certain challenges as we were informed by MAG that computer servers maintained by ADOT for capturing freeway performance data from road detectors went off-line in June 2010. While the data is still being collected, no new archived data has been available for nearly 16 months.

***Table 5: Example 1 - Loop 202 Red Mountain Corridor Performance as Correlated with Specific Phase I RTP Projects***

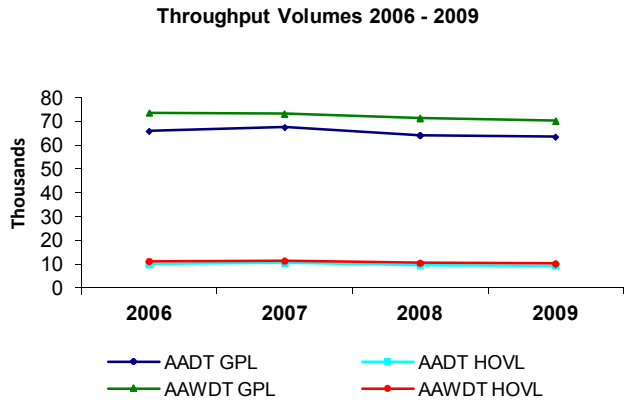
| MAG Performance Corridor | Direction | Relevant Projects |
|---|---|---|
| **Loop 202 Red Mountain** | EB: I-10/SR-51 to Loop 101<br>WB: Loop 101 to I-10/SR51 | -Segment 1: EB McClintock Dr to SR-101L Pima (GPL)<br>→*Opened to Traffic in April 2010*<br>-Segment 2: EB Center Pkwy to McClintock Dr (GPL)<br>→*Opened to Traffic in May 2010*<br>-Segment 3: EB I-10 to Center Pkwy (GPL)<br>→*Opened to Traffic in July 2010* |

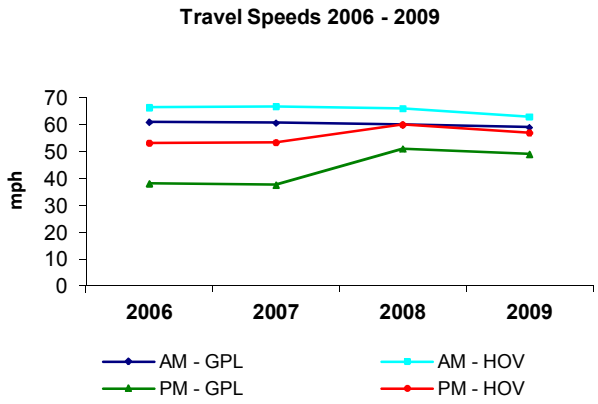
*Corridor "I" – East Bound I-10/SR-51 to Loop 101*

SR-51/I-10 Maricopa TI----------Center Parkway----------McClintock Drive----------SR-101 Price/SR101 Pima

Segment 3 Segment 2 Segment 1

| | Throughput | | | | Travel Time | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AADT # of vehicles | | AAWDT # of vehicles | | Average Speed AM mph | | Average Speed PM mph | | Average Travel Time AM minutes | | Average Travel Time PM minutes | |
| | GP | HOV | GP | HOV | GP | HOV | GP | HOV | GP | HOV | GP | HOV |
| 2009[1] | 63,609 | 9,441 | 70,234 | 10,342 | 59 | 63 | 49 | 57 | 9.77 | 9.08 | 11.87 | 10.51 |
| 2008[1] | 64,241 | 9,618 | 71,375 | 10,616 | 60 | 66 | 51 | 60 | 9.44 | 8.74 | 11.08 | 10.30 |
| 2007[2] | 67,603 | 10,688 | 73,210 | 11,518 | 60.7 | 66.8 | 37.6 | 53.4 | 9.4 | 8.5 | 15.2 | 10.7 |
| 2006[2] | 65,995 | 10,105 | 73,639 | 11,358 | 61.0 | 66.4 | 38.1 | 53.2 | 9.4 | 8.6 | 15.0 | 10.7 |




*Source: (1) Draft Performance Measurement Framework Update—Unpublished as of June 2011; (2) 2006 and 2007 Data from MAG Phase II Performance Measurement Framework*

*Notes: AADT is Annual Average Daily Travel; AAWDT is Annual Average Weekday Daily Travel; GPL is General Purpose Lane and HOV is High-Occupancy Vehicle Lane; EB is east-bound; WB is west-bound*

When we attempted to assess performance on other freeway projects, we were challenged to locate any projects that align with the MAG performance corridor at all. As shown in Table 6, one MAG performance corridor spanned from Glendale Avenue to Bell Road, while associated improvements were made between Shea Boulevard and SR-101/Pima. In fact, the only location where a performance corridor and a freeway project overlapped was between Shea Boulevard and Bell Road rendering it impractical to correlate the specific freeway improvement to the

performance of the corridor. Because the performance corridor and construction projects do not align and MAG did not analyze possible explanations for the resulting data trends in these segments, we cannot assess the project performance.

***Table 6: Example 2 - SR-51 Corridor Performance as Correlated with Specific Phase I RTP Projects***

| MAG Performance Corridor | Direction | Relevant Projects |
|---|---|---|
| **SR 51 Piestewa** | NB: Glendale Ave to Bell Rd<br>SB: Bell Rd to Glendale Ave | -Loop 101/Pima To Shea Blvd: adds 1 GPL and 1 HOVL in each direction:<br>→HOVL opened to Traffic in January 2009.<br>→ GPL construction planned for Phase IV. |
| *Corridor "H"— NB & SB Glendale Avenue to Bell Road*<br>"Performance Corridor Segment"<br>Glendale Ave----------Shea Blvd----------Greenway Rd----------Bell Rd----------Union Hills Dr. ----------SR-101/Pima<br>"2003 RTP Project" | | |

*Source: (1) Draft Performance Measurement Framework Update—Unpublished as of June 2011*
*(2) 2006 and 2007 Data from MAG Phase II Performance Measurement Framework*

*Notes: GPL refers to General Purpose Lane; HOVL is High-Occupancy Vehicle Lane; NB is north-bound; SB is south-bound*

## New Congestion Management Program Tool Will Assist in Measuring Arterial Project Performance

Similar to freeways, we were informed that the performance data related to arterial performance is based on the MAG Travel Time and Speed Study. As we found in studying highway projects, targets have not been set for arterial projects. Because of the high cost to conduct traffic studies and the lack of recorders to capture raw data, MAG uses performance data from its travel and traffic studies to ascertain elements such as vehicle volume, travel times, and crash rates.

In its Phase II Performance Measures Report, MAG provides current status of congestion for 19 arterial routes—but with only one year of data and no established performance targets, we cannot draw any meaningful conclusions. For example, the report summarizes results such as:

- ✓ Southbound Dysart Road experiences the greatest extent of congestion delay, with more than 60 percent of the corridor experiencing average travel speeds less than 75 percent of the posted speed.
- ✓ Primary north-south arterial roadway corridors between and around SR 51 and I-17, as well as along Scottsdale and Hayden Roads, report intersections with the highest crash severity scores.
- ✓ Shea Boulevard carries the highest traffic volumes of all the arterial study corridors, with daily traffic volumes averaging more than 22,000 vehicles per day.

However, MAG's development of an automated Congestion Management Program tool should provide needed information to measure performance and assist jurisdictions in evaluating

projects. The tool requires jurisdictions to input data such as current and projected average daily traffic volumes for peak morning as well as afternoon average daily traffic counts, posted speed, and average speed. MAG introduced this voluntary tool to member agencies in February 2011 and the use of the tool is optional at this stage. Objectives of the tool include items such as:

- Minimize Delay
- Improve Travel Time
- Reduce Travel Time Variability

Quantitative inputs included in the tool include crash rates, congestion/lost productivity, and volume/average daily traffic count, while qualitative factors ask project related questions such as "will the project help mitigate a specific safety problem" or "how will the project benefit the entire region." It is expected that once the estimated and actual performance data is captured, MAG will be able to track arterial performance by project. However, it can better use and enhance this information by setting benchmarks and targets to assess the overarching goals and objectives of the programs.

## RPTA and METRO Have a Performance Measurement System with Goals and Targets

Our review revealed that RPTA and METRO have established targets and collected performance data for several years, enabling us to assess transit performance at both the transit system level and individual route level. Specifically, soon after the passage of Proposition 400, RPTA began studying best practices relating to bus transit and rail performance measures, setting new targets, and establishing protocols to consistently track progress. Further, we found that RPTA's metrics are consistent with those used by the federal government in its National Transit Database—such as fare box recovery ratios, subsidy per revenue mile, cost per revenue hour, and cost per revenue mile—although RPTA's are more expansive. Currently, RPTA captures the following measures for bus transit and rail as shown in Table 7.

*Table 7: Performance Measures Captured by Transit Service Category*

| | Fixed Route | | Para-transit | Rail |
|---|---|---|---|---|
| | Systemwide | Route Level | | |
| **Cost Efficiency/Effectiveness** | | | | |
| Farebox Recovery Ratio | ✓ | ✓ | ✓ | ✓ |
| Operating Cost per Boarding | ✓ | ✓ | ✓ | ✓ |
| Subsidy (Net Op Cost) per Boarding | ✓ | ✓ | ✓ | ✓ |
| Cost per Revenue Mile | ✓ | ✓ | ✓ | ✓ |
| Average Fare | ✓ | ✓ | ✓ | ✓ |
| **Service Effectiveness** | | | | |
| Total Boardings | ✓ | ✓ | ✓ | ✓ |
| Boardings Avg. Weekday, Sat, Sun | ✓ | ✓ | ✓ | ✓ |
| Boardings per Revenue Mile | ✓ | ✓ | | ✓ |
| Boardings per Revenue Hour | | ✓ | ✓ | |
| Safety Incidents per 100,000 Vehicle Miles | ✓ | | | ✓ |
| Security Incidents per "x" Boardings | ✓ | | | ✓ |
| Complaints per "x" Boardings | ✓ | | | |
| On-time Performance | ✓ | ✓ | ✓ | ✓ |
| Miles between Mechanical Failures/Failures | ✓ | ✓ | ✓ | ✓ |
| Customer Satisfaction | ✓ | | ✓ | ✓ |
| Percent No Shows | | | ✓ | |

*Source: 2007 Service Efficiency and Effectiveness Study and Annual Transit Performance Report*

For each of the metrics presented in Table 7, the 2007 study establishes initial targets based on historical data as well as those used by peer cities. However, light rail based the targets on rail management estimates and assumptions reflected in federal funding agreements. Further, it appears that RPTA and METRO set these targets following a reasonable process involving each agency's board approval. On an annual basis, RPTA adjusts target variables related to operating costs and other financial components according to published consumer price inflation indicators—although non-financial aspects of the targets remain consistent. Adjusted targets are approved by the RPTA and METRO Boards of Directors.

To ensure consistency and accuracy in data collection and reporting by all local transit operators, RPTA established definitions of each performance measure and, where appropriate, used terminology consistent with the National Transit Database. Although definitions are standard, inconsistencies among routes can result depending on the data collection method. For instance, there are several different industry approved methodologies for collecting and calculating ridership and boarding data—specifically, data could be captured through physical ride-alongs, global positioning systems, or on-board electronic counters. Similarly, local agencies may use either a manual fare collection process or an automated fare collection system to capture and report fare revenue.

Currently, bus transit performance data such as fare revenue and operating costs are self-reported by the service operators using an Excel spreadsheet or through a web-based tool. Although RPTA does not perform data verification at the operator source level, staff conduct quality control procedures for reasonability and consistency. The majority of ridership and "on-time" data, however, comes directly from the City of Phoenix's scheduler, trip planning, and bus stop

management systems. The City of Phoenix captures this data for the region's cities and operators using a complex series of interfaces that link the multiple systems. Under the current arrangement, RPTA relies on the data collected and recorded through these systems to populate its annual Transit Performance Report—it has no control over the accuracy of the data or the reports. Thus, if reports generated from these systems are flawed or inaccurate, performance data will not reflect true results.

In addition to working toward issuing a quarterly performance report as well, RPTA captures data in its performance report for bus routes and demand services throughout the region regardless of whether they are funded by Proposition 400, or whether they are funded by a local city operator. The performance reporting structure provides system-wide information for the entire county as well as route specific information enabling us to assess transit performance at both the transit system level and individual route level.

***Maricopa County Bus Transit is not Always Achieving Internally Set Targets***

We found that although Maricopa County transit does not always meet internally set targets, its targets are reasonable and somewhat aggressive. While performance results of seven individual fixed routes are analyzed in Appendix D, we also reviewed internally set targets against actual systemwide performance for the following indicators.

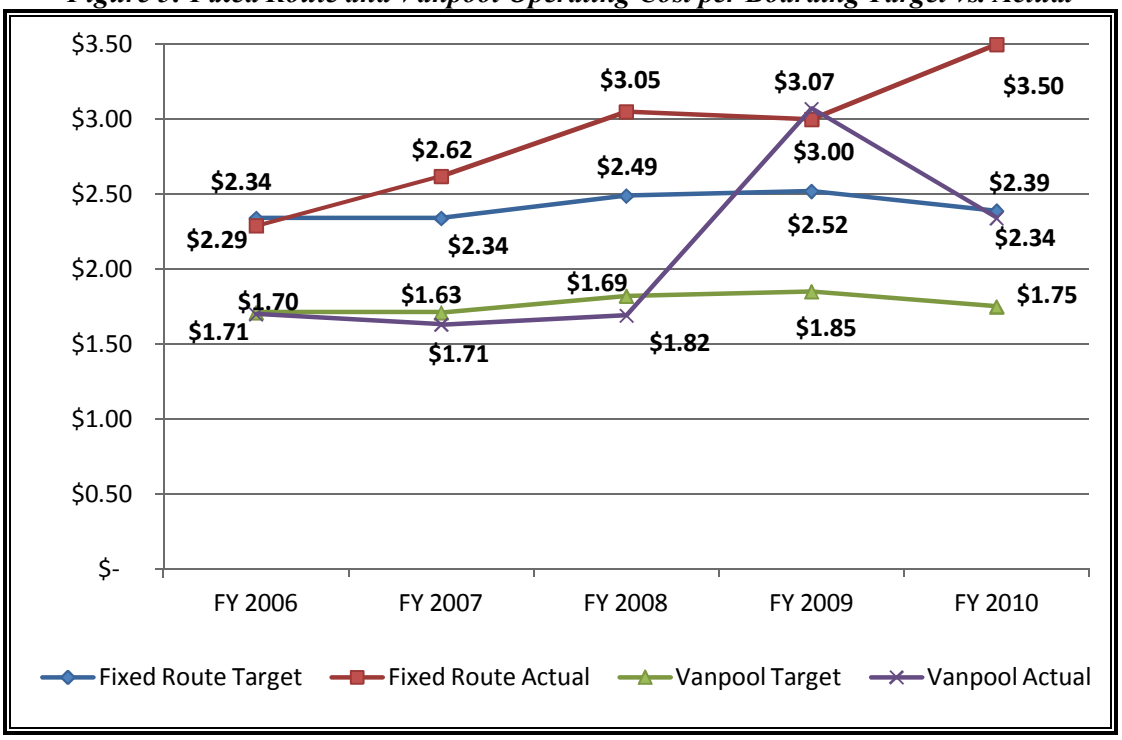
- Farebox Recovery Ratio
- On-time Performance
- Operating Cost per Boarding
- Subsidy (net operating cost) per Boarding
- Total Boardings
- Boardings per Revenue Hour

Maricopa County uses its targets to measure its progress to reach its goals, although many of the targets have not been achieved. For example, one measurement used to track performance is the amount of fare revenue collected that can be used to offset the operating costs, known as farebox recovery ratio. For the last five years, RPTA has set Maricopa County's target recovery ratio for fixed route at 25 percent, but actual systemwide fixed route recovery ratios have not achieved these goals ranging from 23.7 percent in 2006 to 24 percent in 2010. Para-transit service recovery targets were set at 5 percent where recovery ratios fell short ranging from 4.9 percent in 2006 to 4.1 percent in 2009, but exceeded the target in 2010 with a recovery ratio of 6.3 percent.

Another key performance indicator is the "subsidy per boarding" calculation. This measures the cost per boarding that is not covered by the fare revenue. Data revealed that actual subsidies were much higher than the targets set for this factor. For example, fixed route established a target subsidy of $1.90 per boarding in 2009 and $1.80 in 2010, but actual subsidies were higher at $2.33 in 2009 and $2.66 in 2010.

Total costs per boarding provide another financial measure of performance. As reflected on Figure 5, the actual cost per boarding in 2010 for fixed route was $3.50, nearly 50 percent higher than the target of $2.34. Recognizing the most recent performance results, RPTA is appropriately revisiting its baseline targets to determine the reasons for variance and consider whether a revision to its methodology used to establish targets is warranted.

*Figure 5: Fixed Route and Vanpool Operating Cost per Boarding Target vs. Actual*




*Source: Transit Performance Reports, Fiscal Years 2006 through 2010*

***Many of the Bus Transit Costs and Metrics Align with Peers Nationwide***

Although it is not always achieving its internally set performance targets, our comparison revealed that bus transit is operating at a lower cost for fixed routes systemwide than peers across the nation and is comparable in many other performance categories. Specifically, we compared Maricopa County fixed route performance as reported in the National Transit Database against nine identified peers. It is important to note, the data reported in the National Transit Database is self-reported by operators and is not the same data system that is maintained by the City of Phoenix and captured by RPTA. Thus, the self-reported data in the National Transit Database is not always in agreement with RPTA's database and may be skewed or inaccurate.

Table 8 provides a comparison of Maricopa County Fixed Route service to a group of 9 peers in terms of five key performance measures. These statistics reveal that Maricopa County appears to be operating efficiently and effectively in comparison. Specifically, considering cost efficiency measures, Maricopa County showed strong performance in operating cost per revenue mile, being lower than all but one of the 9 peers, and was measurably lower than its 9-peer average in terms of cost per boarding at $3.41 per boarding with six of its peers showing higher operating costs. Maricopa County also showed a lower than average subsidy per boarding, with five of its peers having higher costs. It shows weaker performance in farebox recovery when compared to its peers as well as ridership in terms of average boardings per revenue mile.

*Table 8: Comparison of Maricopa County's 2009 Fixed Route Performance with 9 National Peers*

| Transit System | Farebox Recovery Ratio | Operating Cost Per Boarding | Subsidy per Boarding | Operating Cost per Revenue Mile | Average Boardings Per Revenue Mile |
|---|---|---|---|---|---|
| **Maricopa County (Systemwide)** | **18.0%** | **$ 3.41** | **$ 2.80** | **$ 6.99** | **2.05** |
| Dallas (DART) | 12.5% | $ 5.45 | $ 4.77 | $ 8.41 | 1.54 |
| Denver (RTD) | 24.7% | $ 3.83 | $ 2.88 | $ 7.73 | 2.02 |
| Los Angeles (LACMTA) | 28.6% | $ 2.42 | $ 1.73 | $ 10.56 | 4.36 |
| Minneapolis (Metro) | 31.2% | $ 3.58 | $ 2.47 | $ 10.42 | 2.91 |
| Portland (TriMet) | 23.5% | $ 3.39 | $ 2.59 | $ 10.16 | 3.00 |
| Sacramento (RTD) | 20.7% | $ 4.48 | $ 3.55 | $ 10.98 | 2.45 |
| Salt Lake (UTA) | 16.6% | $ 5.29 | $ 4.41 | $ 6.51 | 1.23 |
| San Diego (MTS) | 43.0% | $ 2.53 | $ 1.44 | $ 7.15 | 2.82 |
| Santa Clara (VTA) | 14.0% | $ 5.68 | $ 4.88 | $ 12.35 | 2.18 |
| 9 Peer Average | 23.9% | $ 4.07 | $ 3.19 | $ 9.36 | 2.50 |

*Source: 2009 National Transit Database Report; 2009 MAG Regional Transit Framework Study*
*Notes: [4]Farebox Recovery Ratio = Fare Revenue/Operating Expenses*
*[2]Operating Cost Per Boarding = Operating Expenses/Total Boardings*
*[3]Subsidy per Boarding = (Operating Expenses net Fare Revenue)/ Total Boardings*
*[4] Operating Cost per Revenue Mile = Operating Expenses/Annual Revenue Miles*
*[5] Average Boardings per Revenue Mile = Total Boardings/Annual Revenue Miles*

### *Rail Surpasses Its Internal Targets and Performs Similar to its Peers*

While RPTA captures and tracks light rail performance through its Transit Performance Report process, METRO's light rail activities are also under the oversight of the Federal Transit Administration and the "new starts" criteria related to mobility improvements, land use, environmental benefits, cost effectiveness, and operating efficiencies. As part of its Full Funding Grant Agreement with the Federal Transit Administration and in accordance with ARS §28-6313, METRO was required to forecast performance (i.e. targets) for service levels, capital costs, operation and maintenance costs, transit ridership, and farebox revenues.

We found light rail activities performed well when measured against each of these indicators as discussed in the bullets that follow and in greater detail in Appendix E.

- Service Levels

  To ensure the initial 20-mile light rail segment provided a reliable alternative to automobile travel, METRO set a service target for on-time performance at 93 percent.

We found, in both Fiscal Years 2008-2009 and 2009-2010, METRO light rail exceeded on-time performance targets with actual on-time performance reported at 93.9 percent and 95.8 percent, respectively.

- Capital Costs

  METRO completed construction of the 20-mile segment on-time, within its capital expenditures budget, and within original project specifications. As of March 2011, METRO had spent nearly $1.398 billion of the of the $1.412 billion budget for the initial light rail segment—realizing a cost savings of approximately $14.859 million.

- Operations and Maintenance Costs

  METRO has performed within its operating budget since it began operations in December 2008 with slight cost overages related to vehicle maintenance labor and material costs categories. Overall, METRO was under budget by $84,000 (or nearly1 percent) and more than $768,000 (or 2 percent) for Fiscal Years 2008-2009 and 2009-2010, respectively. For the same timeframe, vehicle maintenance labor and material costs were nearly $117,000 (or 4 percent) and $283,000 (or 5 percent) over budget, respectively.

- Transit Ridership

  In areas where rail was offered (Mesa, Tempe, and Phoenix), transit ridership generally increased in comparison to prior years when light rail was not in operation. While total ridership in these regions increased at an average rate of more than 3 percent annually between Fiscal Year 2003-2004 and Fiscal Year 2007-2008, total ridership spiked by more than 9 percent from Fiscal Year 2007-2008 to Fiscal Year 2009-2010—the timeframe when METRO completed the first 20-mile operating segment of the light rail system. Moreover, since light rail began operations in December 2008, ridership exceeded boarding expectations of 3.9 million riders by approximately 44 percent realizing ridership of 5.6 million, and again exceeded Fiscal Year 2009-2010 expectations of 7.8 million riders by nearly 4.3 million riders (or more than 55 percent) when the system achieved more than 12.1 million in ridership.

Table 9, provides a comparison of METRO to a group of 9 national peers in terms of five key performance measures. We provide results for METRO's two operating years (2009 and 2010) and information from the 2009 National Transit Database for the peer entities. METRO's performance in many of the categories is in the middle of the group. Its strongest metric is operating cost per revenue mile at $11.51 in 2009 which is third among the 9 peers with San Diego Metropolitan Transit System showing the group low at $7.41 and Dallas DART reflecting the highest amount at $20.71. Further, comparing METRO's performance measures to the average of the 9-peers, its results are better than average in three of the five categories in 2009 and four of the five categories in 2010.

*Table 9: Comparison of METRO 2009 and 2010 Light Rail Performance with 9 National Peers*

| Agency | Miles of Track | Farebox Recovery Ratio[1] | Operating Cost Per Boarding[2] | Subsidy Per Boarding[3] | Operating Cost Per Revenue Mile[4] | Average Boardings Per Revenue Mile[5] |
|---|---|---|---|---|---|---|
| **Maricopa County (Metro Rail) 2010** | **20 mi** | **28.1%** | **$ 2.72** | **$ 1.96** | **$ 11.64** | **4.28** |
| **Maricopa County (Metro Rail) 2009** | **20 mi** | **21.5%** | **$ 2.81** | **$ 2.21** | **$ 11.51** | **4.10** |
| Dallas (DART) | 48 mi | 12.9% | $ 5.47 | $ 4.76 | $ 20.71 | 3.79 |
| Denver (RTD) | 35 mi | 44.5% | $ 2.58 | $ 1.43 | $ 6.42 | 2.49 |
| Los Angeles (LACMTA) | 79.1 mi | 20.7% | $ 3.26 | $ 2.59 | $ 16.58 | 5.09 |
| Minneapolis (Metro) | 12 mi | 39.5% | $ 2.53 | $ 1.53 | $ 12.79 | 5.04 |
| Portland (TriMet) | 52 mi | 35.0% | $ 2.46 | $ 1.60 | $ 13.22 | 5.37 |
| Sacramento (RT) | 37.4 mi | 31.9% | $ 2.91 | $ 1.98 | $ 11.97 | 4.11 |
| Salt Lake (UTA) | 20 mi | 33.3% | $ 2.17 | $ 1.45 | $ 8.74 | 4.03 |
| San Diego (MTS) | 53.5 mi | 47.6% | $ 1.59 | $ 0.83 | $ 7.41 | 4.68 |
| Santa Clara (VTA) | 42.2 mi | 14.8% | $ 5.40 | $ 4.60 | $ 17.50 | 3.24 |
| Peer Average | 43.1 | 31.1 | 3.15 | 2.31 | 12.82 | 4.20 |

Source: 2009 *National Transit Database* Report

*Notes:* [A] *Farebox Recovery Ratio = Fare Revenue/Operating Expenses*
[2] *Operating Cost Per Boarding = Operating Expenses/Total Boardings*
[3] *Subsidy per Boarding = (Operating Expenses net Fare Revenue)/ Total Boardings*
[4] *Operating Cost per Revenue Mile = Operating Expenses/Annual Revenue Miles*
[5] *Average Boardings per Revenue Mile = Total Boardings/Annual Revenue Miles*

## Reporting of Performance Data Can Be Improved and Made Available On MAG Website

With the amount of data and information available, the RTP agencies should review and discuss performance formally and often at all levels of the entities and at committee meetings. Currently, MAG provides annual reports containing some performance data and RPTA issues annual Transit Performance Reports that are approved by the RPTA Board and contain both bus transit and rail transit data. MAG also has a public "dashboard" for communicating performance measure data, but that feature provides limited information and essentially contains an upload of its Performance Measurement Report with travel time and speed data with no budget to actual cost or schedule information. Similarly, ADOT has an interactive map where a public user can highlight brief project status in a fact sheet type format. Neither of these features includes any RPTA or METRO project information.

However, we believe performance data stemming from MAG's Performance Measurement Report and RPTA's Transit Performance Report should be formally communicated to committees and the public on a more frequent basis such as on a quarterly basis. Such data should be essential to the many decision makers involved in the RTP arena. To facilitate project performance discussions, the RTP Partners could prepare a single page snapshot focusing solely on performance results and progress toward meeting stated goals. As an example, the Washington State Department of Transportation reports quarterly on transportation system performance through a single page "Performance Dashboard"—providing a concise view of how performance tracks against goals and targets as shown in Figure 6. Moreover, MAG could work more cooperatively with ADOT to track and report performance at the project level not just corridor level, in accordance with its Performance Measurement System objectives.

***Figure 6: Example of Washington State Department of Transportation Performance Dashboard***

# Performance Dashboard

✓ Goal has been met. ↑ Performance is trending in a favorable direction. ↔ Trend is holding. ↓ Performance is trending in a unfavorable direction.

| Policy goal/Performance measure | Previous reporting period | Current reporting period | Goal | Goal met | Progress | Comments |
|---|---|---|---|---|---|---|
| **Safety** | | | | | | |
| Rate of **traffic fatalities** per 100 million vehicle miles traveled (VMT) statewide (annual measure, calendar years: 2008 & 2009) | 0.94 | 0.87 | 1.00 | ✓ | ↑ | The rate of highway fatalities continues to decline (a lower rate is better) |
| Rate of **strains and sprains / hearing-loss injuries** per 100 WSDOT workers[1, 7] (calendar quarterly measure: Q4 2010 & Q1 2011) | 2.5/ 0.5 | 3.4/ 0.5 | 2.4/ 0.4 | – | ↓ | Both strains/sprains and hearing loss were well over their goals for the quarter and for the year |
| **Preservation** | | | | | | |
| Percentage of state **highway pavements** in fair or better condition (annual measure, calendar years: 2008 & 2009) | 94.7% | 93.0% | 90.0% | ✓ | ↔ | Recovery Act-funded projects helped with backlog, but does not address all long-term needs |
| Percentage of **state bridges** in fair or better condition (annual measure, fiscal years: 2009 & 2010) | 97.0% | 98.0% | 97.0% | ✓ | ↑ | Recovery Act funds contributed to increase in Good/Fair rating |
| **Mobility (Congestion Relief)** | | | | | | |
| **Highways**: annual weekday **hours of delay** statewide at **maximum throughput speeds**[2] (annual measure: calendar years 2007 & 2009) | 32 million | 25 million | N/A | N/A | ↑ | Reduction of 21% driven by both reduced demand due to the economy and increased capacity |
| **Highways**: Average clearance times for **major (90+ minute) incidents** on 9 key western Washington corridors[7] (quarterly: FY11 Q1, FY11 Q2) | 168 minutes | 159 minutes | 155 minutes | – | ↑ | Two extraordinary (6+ hour) incidents and seasonal weather affected the program's average clearance time this quarter |
| **Ferries**: Percentage of trips departing on time[3, 7] (quarterly, year to year: FY10 Q3, FY11 Q3) | 91.5% | 95% | 90% | ✓ | ↑ | Performance is lower than one year ago, higher than previous quarter |
| **Rail**: Percentage of Amtrak Cascades trips arriving on time[4, 7] (quarterly, year to year: FY10 Q2, FY11 Q2) | 59.1% | 53.7% | 80% | – | ↓ | WSDOT and Amtrak continue to evaluate projects and other means to improve on-time performance |
| **Environment** | | | | | | |
| Cumulative number of WSDOT **stormwater treatment facilities** constructed or retrofitted[5] (annual measure: calendar years 2008 & 2009) | Over 800 | Over 1,037 | N/A | N/A | ↑ | Stormwater facilities will now be constructed under a new permit, with new requirements |
| Cumulative number of WSDOT **fish passage barrier improvements** constructed since 1990 (annual measure: calendar years 2008 & 2009) | 226 | 236 | N/A | N/A | ↑ | Ten additional retrofits were completed in 2009 |
| **Stewardship** | | | | | | |
| Cumulative number of Nickel and TPA **projects completed**, and **percentage on time**[7] (quarterly: FY11 Q1, FY11 Q2) | 296/ 90% | 300/ 89% | 90% on time | | ↑ | Performance decreased slightly from previous quarter, did not meet goal[8] |
| Cumulative number of Nickel and TPA **projects completed** and **percentage on budget**[7] (quarterly: FY11 Q1, FY11 Q2) | 296/ 94% | 300/ 94% | 90% on budget | ✓ | ↔ | Competitive bidding and construction environment contribute to controlling costs[8] |
| Variance of total project costs compared to **budget expectations**[6, 7] (quarterly: FY11 Q1, FY11 Q2) | under budget by 1.0% | under budget by 1.0% | on budget | ✓ | ↔ | Total Nickel and TPA construction program costs are within 1% of budget[8] |

Data notes: N/A means not available; new reporting cycle data not available or goal has not been set. Dash (–) means goal was not met in the reporting period.

1 Sprains/strains and hearing loss are current high priority focus areas for WSDOT. Hearing loss rate based on preliminary data.
2 Compares actual travel time to travel time associated with "maximum throughput" speeds, where the greatest number of vehicles occupy the highway system at the same time (defined as 70%-85% of the posted speeds).
3 "On-time" departures for Washington State Ferries includes any trip recorded by the automated tracking system as leaving the terminal within 10 minutes or less of the scheduled time.
4 "On-time" arrivals for Amtrak Cascades are any trips that arrive at their destination within 10 minutes or less of the scheduled time.
5 Number of estimated facilities in permitted counties: Clark, King, Pierce, and Snohomish.
6 Budget expectations are defined in the last approved State Transportation Budget.
7 Washington's fiscal year (FY) begins on July 1 and ends on June 30. FY11 Q3 refers to the quarter ending March 31, 2011.
8 See page 58 for more information on the expanded view of capital projects in the current 2010 Legislative Transportation Budget for highway construction.

*Source: Washington State Department of Transportation Gray Notebook Edition 41 – March 31, 2011*

## Conclusion

Nearly 25 percent of the 20-year duration of Proposition 400 has elapsed and the RTP partners have developed and implemented a solid performance measurement system foundation. Yet, MAG must take action to set baselines and targets that align RTP activities with the overall goals and objectives for the Proposition 400 funding to measure whether the many projects contribute both individually and collectively to alleviating congestion and improving mobility in addition to other RTP goals. A meaningful performance measurement system focuses attention and funding on the goals the region is trying to achieve, defines the objectives and activities of how to reach those goals, ties performance to the goals and objectives through data and measurement, and demonstrates programs and results. This information can be analyzed, published, and realized into changes in the strategic planning and decision-making activities. Such information should be formalized and communicated on a regular basis and made available to the public. Adopting and using these measures will ensure that MAG can present a more comprehensive and valuable performance measurement program over the life of the RTP and Proposition 400 time horizons.

## Recommendations

To build upon the strong foundation and develop a robust and capable performance measurement system for the multi-modal RTP, MAG should:

1. - Formally identify and quantify what the MAG Regional Council, in collaboration with its partners, expects to achieve through implementation of the RTP.
2. - Work with ADOT to establish targets and baselines for freeway performance to insert more accountability into the process and ensure that that the regional performance framework aligns with state performance measures as well as work with local jurisdictions to set similar targets to track arterial performance.
3. - Once available, measure and analyze all available freeway and arterial performance data against set baselines, once established, at a system level and at a project level to better understand how individual projects impact overall system performance.
4. - Coordinate applicable RTP Partner's individual performance measurement activities with MAG's overall performance system for the RTP, especially with ADOT's evolving long-range transportation plan measures to minimize duplication or contradiction and maximize efforts and results.
5. - Publish certain summary performance data on a pre-determined regular basis on MAG's website showing targets and actual performance by corridor and by project as well as providing specific project level performance related to budget and schedule with links to the other RTP Partner websites. Consider providing data at a summary and mode level showing performance of individual projects or segments through a performance dashboard feature.
6. - Communicate results and analysis from MAG's Performance Measurement Framework and work with RPTA to communicate results of the Transit Performance Report to committees on a more frequently basis, such as quarterly.
7. - Continue to implement the current transportation system and strive to continually reassess system performance to make modifications as necessary.

## Chapter 2: Cost and Schedule Variances Appear Supported, Although Underlying Data is Difficult to Gather and Assimilate

One focus of this audit is to assess the results of Phase I RTP projects by comparing planned schedule and costs with actual results delivered during the first five years of the program. However, for a variety of reasons, we found this effort to be extremely difficult and unsatisfactory. The RTP environment is very dynamic by nature and projects are often reprioritized, adjusted, or moved. In adjusting and moving projects, some may be significantly deferred into time periods that exceed the long-term RTP horizon, while other projects might be accelerated into earlier phases. Moreover, as capital construction development projects progress and project scopes become more refined as detailed design plans are developed, timelines shift or project costs increase—impacting not only the project itself but others in the queue or included in the long term plans. Levels of funding also impact the RTP and are shifted among projects or within phases.

This ongoing movement and adjustment combined with the two-decade timeframe and great size and breadth of the Proposition 400 program makes following and tracking budget history and funding of the many RTP projects challenging with the best set of records. MAG does report project cost and schedule variances in RTP update reports, annual Proposition 400 reports, and other life cycle reports, with supporting data from its RTP Partners. Yet, we found data supporting project changes within these sources inconsistent or incomplete between reports. In fact, there is no comprehensive record tracking all RTP projects from cradle to grave or a single source of information of all the RTP projects planned, started, deferred and cancelled. Our efforts found it extremely difficult and cumbersome to identify and mine data from the variety of reports because information was often incomplete, in conflict, changed, or inconsistent from one report to the next—partly caused by reports prepared at different time periods. Thus, we could not weave together a full picture of plans, activities, changes, and adjustments since the commencement of and linking back to the Proposition 400 program for all individual projects. As such, a comprehensive system is needed to allow the tracking and reporting of RTP projects as proposed to voters from beginning to end and to improve reporting information related to costs, schedules, and performance and better explain changes over the life of a project.

Nonetheless, we reviewed budgets and schedules for a sample of Phase I projects in some depth. In reviewing the implications of project changes on meeting budgets and anticipated schedules, we found variances between initial expectations and actual results. Primarily, variances between the RTP estimates and actual costs and schedule mainly resulted from funding deficits caused by the recession as some projects were delayed into subsequent periods or other projects were accelerated for completion. We found that other explanations for changes were reasonably supported and documented in project files. However, we did not evaluate the appropriateness of individual project design concepts or reassess the precision of related project cost estimates prepared by expert transportation engineering firms, nor did we assess whether the right decisions were made based on the information since project scopes were presumably discussed and vetted through the MAG committee process. Moreover, as we investigated project changes through our review of fiscal records and project files, we noted some relatively minor inconsistencies and variances between the underlying support and the publically reported figures.

## Project Data Should be Collected Into a Comprehensive Tool

The sheer volume and complexity of data and documents related to the RTP makes assimilating and using such information challenging for the public as well as oversight bodies—a situation made more difficult by the continual changes, project splits, project combinations, and project renaming activities that occur over time. Our review revealed that, currently, project data are not synthesized into a format that allows reasonable tracking or evaluation of the cumulative changes that impact a project's budget or schedule or that would facilitate identifying possible trends or reoccurring problems. For instance, due to project segmentation, scope changes, and project substitutions, we found it a very time consuming and difficult process to track the current status of projects originally programmed in Phase I of Proposition 400—between July 1, 2005 and June 30, 2010 against what was initially proposed to voters under Proposition 400. While MAG and its RTP Partners track and report on changes incrementally through the RTP updates, annual Proposition 400 reports, and life cycle program reports, there is no single source that summarizes the evolution of a project from what was planned to what occurred. Data explaining reasons for the adjustments often exists in agency files, although the transportation agencies cannot easily show how projects originally planned compare to projects actually completed or how the completion of the projects impacts the transportation needs in the region. While MAG, with input from its RTP Partners, issues annual Proposition 400 status reports with costs by project and expected time frame for completion, these reports do not provide comprehensive budget to actual information tracking project history from the inception of Proposition 400 through to the reporting period.

Not only could MAG and its transportation partners benefit from a comprehensive tool where each of the Proposition 400 projects are tracked as adjustments are made to the RTP and to the projects themselves, a variety of reports could be generated from this tool to provide meaningful management information and public reporting. For example, a "report card" type report could provide a quick project snapshot that would concisely provide budget, schedule, proposed changes, and a history without requiring wading through and trying to compare numerous annual reports and RTP updates. A simple one-page, high-level summary could describe project budget and schedule by development phase, actual costs against the estimated budget and schedule, progress and status toward targets, financial assumptions, and highlights of project changes to scope, schedule, or cost. These report cards could feature a brief project description, project manager contacts, project risks, and percent of completion as well and provide a history of each project in the 2003 RTP proposed to the voters. For example, the Nevada Department of Transportation prepares a one-page summary for each project as shown in Figure 7.

The comprehensive tool can be updated on a regular basis to include the current changes, budget information, reprioritizations, or RTP amendments. Maintaining the comprehensive tool would allow report cards to also be updated on a defined basis, monthly or quarterly, and provided to the many decision makers and the public. Providing snapshot type updates to oversight bodies would not only help board and committee members assimilate the disparate details, but also provide easy period-to-period comparison. Additionally, linking the report card data to initial RTP promises which Proposition 400 was premised upon would provide an increased level of transparency to help inform both the public and committee members responsible for decision-making. Moreover, these individual project report cards could be accumulated into a more comprehensive view for comparison with the entire regional transportation network envisioned

when the proposition passed in 2004 as shown in our report section titled "Understanding the Maricopa County Regional Transportation System."

***Figure 7: Example of Nevada Department of Transportation "Project Report Card"***

**I 15 South - Las Vegas Boulevard**

**St. Rose Parkway to Sunset Road**

**Project Sponsor: Clark County**

**Project Manager: Jason S. Tyrrell, P.E.**

**(702) 671-8852**

**Project Description:**

- I-15 South from Sloan to Tropicana has been broken into nine (9) Project elements to address funding and constructability opportunities.
- This is one element of the I-15 South Project.
- Widening of Las Vegas Boulevard (parallel to I-15) from St. rose Parkway (SR 146) to Sunset Road from 2 to 3 lanes in each direction.
- Project Length: 7.2 miles
- This project will be constructed in two packages:
- Package 1: Las Vegas Boulevard from Silverado to Sunset
- Package 2: Las Vegas Boulevard from St. Rose to Silverado Ranch

**Schedule:**

**Planning:**
Complete

**Environmental Clearance:**
Complete

**Final Design:**
Package 1- Complete ,
Package 2- 70%

**Construction:**
Package 1 -August 2010 - Summer 2011, Package 2 TBD


**Project Cost Range:**
**(Environmental phase estimates):**

**Engineering:**
$4 - $4.5 million

**Right-of-Way:**
$0

**Construction:**
$31.5 - $33 million

**Total Project Cost:**
$35.5 - $37.5 million

**Project Benefits:**

- Increase capacity
- Improve safety
- Improve access
- Reduce trip times
- Reduce vehicle emissions
- Reduce idling
- Improve driver comfort

**What's Changed Since Last Update?**

- Scope - No Change
- Schedule - No Change
- Cost - No Change

**Project risks:**

- Complexity in maintaining traffic staging, relocating utilities and reducing impacts to traveling public.

**Financial Fine Points(Key Assumptions):**

- Total NDOT Funding Expended for LV Blvd.: $0
- Total funding expended for I-15 South Environmental studies (all phases): $3.5 million
- Inflation index distribution of 2% - 5% is to 2011 approximate midpoint of construction.
- Funding Source: STP Clark County ($8.3M)


**April 2011**

NEVADA DOT

*Source: Nevada Department of Transportation's Quarterly Report for Major Projects, For Quarter Ending March 31, 2011, p.15*

Additionally, another entity uses a similar, but slightly different, format to provide quarterly updates on its capital improvement projects as shown in Figure 8.

***Figure 8: Example of San Francisco Public Utilities Commission "Project Report Card"***

**WSIP Quarterly Report**

**6. PROJECTS NOT WITHIN BUDGET AND/OR SCHEDULE**

**CUW38401 - Tesla Treatment Facility**

**Project Description:** The project includes a new ultra-violet (UV) disinfection facility; chemical storage and feed facilities; office, laboratory, and control facilities; piping and valves; and emergency engine generators to provide treatment of Hetch Hetchy flow in response to the USEPA's Long-Term 2 Enhanced Surface Water Treatment Rule.

| Region: San Joaquin | Project Status: Construction | Environmental Status: Completed (EIR) |
|---|---|---|

| Project Cost: | | Project Schedule: | |
|---|---|---|---|
| Approved | $114.16 M | Approved Jul-02 | Mar-12 |
| Forecast* | $109.55 M | Forecast* Jul-02 | Sep-12 |
| Actual | $95.64 M | Project Percent Complete: 91.7% | |

Approved; Actual Cost; * Forecast Status: Meets Requirements; Needs Attention; Exceeds Limits

| Key Milestones: | Environmental Approval | Bid Advertisement | Construction NTP | Construction Final Completion |
|---|---|---|---|---|
| Current Forecast | 12/18/08✓ | 04/08/08✓ | 03/31/09✓ | 06/28/12 |

**Progress and Status:**

The construction of new treatment facilities is 97% complete and forecast to complete within contract time allowances. (Note that the contract date for final completion is after the target project completion hence, the forecast date is extended to provide additional time for commissioning activities to follow construction activities.) Work continued on the UV, Chemical and Operations Buildings piping and electrical work, finishes and equipment installation. Site work progressed with placement of landscape berms, installation of irrigation piping, subgrade preparation, curb and gutter placement, installation of new microwave tower. Installation of sample pumps and piping, rough electrical, valve actuator installation was performed in the new SJPL valves vault. Rough piping and electrical continued at the Chemical Injection Yard. Design of portal protection upgrades progressed to 98% completion.

**Issues and Challenges:**

The project team is focused on potential obstacles to timely substantial completion of construction of the new treatment facilities:

* Coordination with provisions for remote operating capability. Arrangements to provide operational oversight and control from the Sunol Valley Water Treatment Plant as part of another project is being expedited to be ready for testing and start-up along with new treatment facilities.

*UV Trains*

* Additional communications service is needed for new facilities testing in order that existing communications lines may be left in place to serve the existing facilities and operations in the interim. Temporary services are being procured from AT&T.
* Various plant flow rates are required for testing and start-up of the new treatment facilities. Plant flow rates depend upon system demand and operating conditions. The project team is determining what testing must be completed before facilities are put into day-to-day operation.

*Source: San Francisco Public Utilities' Commission Water System Improvement Program Quarterly Report (3rd Quarter Fiscal Year 2010-2011, Regional Projects, Section 5, p.9*

## Project Budget and Schedule Changes for Phase I Projects Reviewed Seem Reasonable

Although the information was difficult to gather, our review of a sample of Phase I projects shows that the many variances between planned and budgeted projects and actual costs and schedules were generally reasonable and supported. As previously stated, we believe that concerted efforts need to be taken to improve project tracking data and reporting so that the valuable information included in RTP updates and MAG annual Proposition 400 reports can serve to communicate status on projects initially envisioned in the 2003 RTP and reflect historical adjustments occurring during the 20-year evolutionary process.

Because of the lack of consistency and continuity of project information, we selected a sample of Phase I projects that included all transportation modes and a variety of types of projects. Refer to Appendix A: Audit Scope and Methodology for a listing of projects selected. We used the various RTP and MAG reports to weave together project histories and compared initial projects, costs, and timelines for completion as proposed to voters in Proposition 400 against actual projects performed, their costs, and their schedule status as of June 30, 2010. Where possible, we attempted to validate the reliability of actual cost and schedule data presented in these reports against fiscal records, construction schedules, and bus schedule books. Our review found many variances between planned and actual projects completed, costs, and timelines but determined that such variances are typical and expected within the transportation industry—particularly as funding, conditions, and needs are in a state of continual flux. For instance, the Phase I program as originally adopted included approximately 66 freeway projects, and project segments, fixed operating routes, and arterial projects scheduled for delivery between 2005 and 2010. Although only 29 of the 66 projects were delivered in Phase I, another 60 different projects, segments, and routes were delivered in the first phase of Proposition 400. Additionally, projects relating to transit for fleet acquisitions, para-transit services, and right-of-way purchases were also expedited. At the same time, a number of other projects were delayed and some pushed far into the future—into a fifth and sixth phase of the RTP—in essence removing them from the program unless funding is obtained.

For our sample of projects, we conducted additional research in project files to understand the specifics behind the variances and found that the variances seemed reasonable. Detailed results for the sampled projects are discussed in Appendix C. Even though different entities are responsible for capturing and providing actual cost and schedule data to MAG, we found that generally the cost data reported was accurate and materially supported by financial records for portions of the annual reports. However, we found instances of inconsistent methodologies, differing project information, and conflicting data reported between fiscal years in some of the reports as further discussed in the following sections.

### *Costs Mostly Supported By Underlying Fiscal Data*

To verify Phase I actual costs reported to date, we attempted to confirm the actual cost data included in various annual reports back to financial records. Because of the complex nature of project funding and fiscal system functionality for freeway projects and bus transit projects, we selected a sample of cost items to trace to fiscal data described as follows:

- Freeway Projects:
  We selected 12 projects and were able to confirm expenditures incurred to date reported in the 2010 Proposition 400 Annual report with fiscal records. However, we noted that the historical expenditure data included in the RTP update report did not agree with fiscal records for our sample items because the RTP update report used data that included both actual expenditures to date and projected costs. To increase reliability and consistency among public information released, the RTP report should align with underlying financial records or, at a minimum, explain that some report columns showing actual expenditures include projections.

- Arterial Projects:
  Generally, we found that the arterial costs reported agreed with the underlying project cost support generated by the local cities and county jurisdictions and related project cost reimbursement forms. However, we found one discrepancy where project reimbursements shown in the 2010 Proposition 400 Annual Report varied by $2 million from the underlying project reimbursement support documentation. This was caused by an inadvertent error.

- Bus Transit:
  In our sample of 7 bus operating route transit projects, actual amounts presented in annual reports generally agree with RPTA's fiscal system and underlying route spreadsheets.

  While we did not audit all the estimations and assumptions, we found the rationale and processes for calculating operating route level costs were reasonable. However, we found instances where capital costs reported in the 2010 RTP update were understated when compared with source documents. Specifically, according to RPTA, an inadvertent error resulted in a $4.3 million dollar variance related to a Phoenix bus maintenance facility and a $2.8 million variance on a similar Tempe facility. RPTA only reported the Proposition 400 funded portion of the project costs, resulting in a $4.7 million variance. In a second example, RPTA reported total Bus Stop budget allocations for Phase I instead of actual costs, resulting in a $2.6 million variance.

- METRO Light Rail:
  We reviewed the 20-mile operating segment, system-wide capital support costs, and route capital construction costs, and determined that amounts presented in annual reports agree with underlying fiscal records for these items. MAG requests fiscal information before the end of the fiscal year, thus, METRO provides actual costs incurred at the time of report preparation and applies estimates of future costs to report through the end of the fiscal year. Because of these estimations, we noted a significant variance between the amount reported for an advanced element of the Phoenix West project and actual costs. Specifically, METRO informed us it attempted to take advantage of a Federal Transit Administration discretionary grant to fund the advanced ramp element of the Phoenix West project and included that amount in its estimate of costs. When METRO did not receive the funding, the resulting actual costs incurred were $13.7 million less than reported in the 2010 RTP Update. According to METRO, it advised that the ramp project would only move forward if they received the grant.

***Schedule Data Reported is Generally Supported, but Some Terminology Can be Misleading***
Generally, we found that data reported in the RTP update reports and the annual Proposition 400 status reports showing project completion dates are supported although MAG does not verify all the schedules. For instance, MAG does not verify arterial project completion dates reported—rather, data is transferred from project close out reports submitted by local cities and communities. According to MAG, projects are considered complete when local jurisdictions submit a final project payment request; MAG does not verify when the project is actually completed and open to the public for use. For freeway and transit capital projects, schedule data related to anticipated completion dates derives directly from design concept reports or construction scheduling documentation. A sample of bus and light rail operating schedules were validated against bus transit books and other scheduling documents.

However, we found that the terminology "Programmed for Final Construction" used to provide schedule information for freeway projects in these annual reports is somewhat misleading as it actually represents the date construction starts—not the date that construction is final. As such, we would suggest that the reports either clarify the terminology as "Construction Start" or change the reporting to an alternative such as the "open to traffic" date that is likely more important to the public who want to know when they can drive on the improved freeway segment. This information should be relatively easy for ADOT to gather since its freeway life cycle program certifications already use the "open to traffic" dates for completed projects.

***Other Issues with Reported Data Result in A Lack of Consistency***
In the course of reviewing Phase I project costs and schedule reliability, we found the RTP updates and annual Proposition 400 reports to be somewhat confusing and difficult to navigate. Clearly there is a wealth of data and information reported, but the presentation of these reports requires a sophisticated user and assumes a certain level of conversancy in transportation matters to understand and use the information. Using the report data requires some compilation and connection of the various pieces in order to track projects, view the plan from period to period, or ascertain a complete picture of RTP implementation. Specifically, we noted the following issues relating to the reports:

- Timing of data and estimated amount in actual cost categories:
  For instance, we noted that data reported as "actual" costs as of June 30, 2010 included significant cost estimates. Depending on the timing of when MAG requires the expenditure information from the other entities, actual expenditure amounts may be based at points of time short of the reporting period and supplemented with cost estimates to report full costs for the quarter. While the annual Proposition 400 report and RTP updates are prepared in different cycles, historical expenditure data reported should be consistent—at a minimum, MAG should explain why historic actual cost data varies between the reports and which numbers are more accurate.

  Additionally, we found inconsistencies in how transit costs were captured and reported from year to year. For example, where costs initially reported in the 2003 RTP were net of fare revenue collected and reflected only the Proposition 400 funded portion of route costs, costs reported in the 2010 RTP update included all costs, including the Proposition 400 funded portion as well as amounts funded from local contributions—and were not reported as "net" amounts as fare revenue was not deducted.

- Inconsistent or incomplete data:
  Our review also noted that the reports may not be complete or consistent. Specifically, we determined that one arterial project completed early in the program was not included in the reported list of completed projects in any of the reports. Moreover, our review noted instances where project costs for the same project varied between consecutive reports. Generally, we found that this was caused by whether all project revenues and costs were included in the report or if only Proposition 400 revenues and costs were included. RTP update reports mostly include full project costs and revenues from all sources including sales tax, local contributions, fare revenue, and federal funds—except for certain bus transit capital projects that reflected only public transportation fund monies.
- Projects funded with Proposition 400 money only versus full cost reporting:
  We also found the Proposition 400 report had primarily included costs funded by sales tax revenues for transit, but reported full costs funded by sales tax, federal sources, and state sources for freeway projects. For consistency and clarity, MAG should specify the cost reporting requirements to the local jurisdictions so that reports included consistently determined revenues and costs in each report or footnote any variations or estimates. For clarity, MAG should include in its reports the source of data presented as well

## Conclusion

With the constant evolution of projects and system needs alongside the ever-changing dynamics involved with transportation funding, changes to the RTP and its projects will always occur in any region. To allow decision makers and the public a greater ability to follow and understand the incremental and multifaceted changes that occur over time, data needs to collected, summarized, and synthesized in a central repository that would afford cradle to grave reporting. Moreover, using the consolidated data, thumbnail reports such as an easy to understand "report card" could be produced for use by decision makers as well as the public. Additionally, the RTP Partners could improve the quality and uniformity of certain existing reports by agreeing to the determination and timing of revenue and cost data and ensuing consistency with underlying cost records and schedules.

## Recommendations

To enhance transparency and ensure project and plan changes are easy to understand and track, the RTP Partners should consider the following:

8. - Develop and use a "report card" type feature to provide, 1-page project snapshots summarizing project budget and schedule by development phase, actual costs against estimated budget and schedule, project performance measures and progress toward targets, financial assumptions and highlights of project changes to scope, schedule, or cost. Moreover, these report cards could feature a brief project description, project manager contacts, project risks, and percent completion as well as provide a history of each project from the 2003 RTP proposed to the voters.

9. - Ensure consistency in data reported and facilitate the tracking of totals and data between the annual Proposition 400 reports and RTP Updates in addition to the various life cycle program reports published, as well as adding footnotes to clarify data sources in the reports and reasons for amounts that vary between the reports. Additionally, consider:
    - Clarifying terms used in the reports or using the term "open to traffic" rather than "programmed for final construction" related to project schedule;
    - Providing explanation of timing of expenditure data and that some "actual" data is just estimated for the fourth quarter of the year being reported;
    - Consistently report projects and expenditure information from year to year, and fully explain whether revenues and costs are reflective of full RTP funding sources or only the Proposition 400 portion of project funds; and
    - Making necessary corrections, in future reports, to communicate past inaccuracies noted by the auditors in previous reports relating to typos and incomplete information from missing projects completed to ensure that future reports reflect the most accurate information.

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# Chapter 3: Criteria for Project Change is Vague and Documentation of Potential Impacts Provided to MAG Committees For Decision-Making Could be Improved

Transportation planning in any region is a complex endeavor that is continually revisited, fine-tuned, and adjusted based on studies, local preferences, and funding fluctuations. Because of the billions of dollars involved with RTP projects, deliberations and discussions of alternatives, options, risks, opportunities, impact, and rationale behind chosen courses are critical in implementing the regional transportation network. Currently, individual RTP Partners appear to capture, synthesize, and analyze a vast amount of detailed and competent information. However, although criteria and policies exist to guide each of the RTP Partners involved in making changes to the RTP, such guidance is broad and vague and the RTP Partners need to better memorialize deliberations, as well as provide more information on impact of proposed changes and rationale behind proposed recommendations to oversight committees.

In terms of economic times in the United States history, the recent period between 2007 and 2010 have arguably been some of the most difficult and resulted in lower than expected revenues from the half-cent sales tax generated from Proposition 400. Because sales tax monies and other revenue sources funding RTP projects have not fully materialized, MAG faced many unexpected project implications forcing change and reprioritization on projects in the Maricopa County RTP. For instance, over the last five years, approximately 74 projects totaling more than $6.02 billion have been removed, reduced in scope or service level, or delayed beyond Fiscal Year 2026 which was the horizon of the original 2003 RTP and the authorization for the Proposition 400 sales tax.

Our review revealed that a multitude of formal processes and policies exist to guide each of the RTP Partners involved in making changes to the RTP. These guidelines discuss overarching goals and provide high-level criteria for reprioritizing projects or making material changes to a project. However, we found limited documentation to demonstrate in practice how projects were evaluated against the criteria for reprioritization or how data related to potential impacts of proposed changes were provided to decision makers. Additionally, certain policies created to provide equitable funding to local areas hinder the application of performance data as a basis for decision-making and could create impediments towards achieving regional RTP goals.

Under existing processes, the underlying discussions and proposed decisions about project changes and reprioritizations are made by certain RTP Partner entities through their committee structures prior to reaching the MAG committees charged with ultimate decision-making for the RTP. This process may inhibit early intervention and participation by key participants—in particular the MAG Transportation Policy Committee established to advise the MAG Regional Council on the development of and modification to the RTP. Instead, discussions on project changes and proposed options occur with individual RTP Partners at the staff working group level for various modes; although specifics on freeway and arterial impact of decisions or rationale behind recommended actions are not always documented. Moreover, as is the case with arterial and transit projects, local city and county jurisdictions may identify and select the specific projects proposed to be eliminated, deferred, or added based on changing conditions potentially without the regional perspective.

Recommendations for actions related to the arterial and transit elements of the RTP are first vetted through the respective RTP Partner's committee process with staff providing some limited data on project alternatives and rationale for recommendations to oversight committees. As part of a major freeway program "rebalancing" to cut $6.6 billion from projects in 2008, early discussions were held with MAG committees to discuss project status and costs supported by volumes of data. While these processes may be somewhat similar in other states and regions, we believe there are opportunities for the RTP Partners to improve the type of essential detailed information related to rationale and impacts of proposed recommendations that is presented to MAG oversight committees. Specifically, additional summarized data on options and impacts is needed for those charged with overseeing changes to the RTP to be better informed. In addition, we noted that although the public is afforded many opportunities to provide input on the RTP as well as changes to the plan, the system can be difficult for outsiders to understand and navigate. Because it is important that the public can readily and effectively insert themselves into the process, some type of public road map or guide in this area is needed.

## Decreased Availability of Funding and Increased Project Cost Estimates Drive Many RTP Adjustments, Project Reprioritization, and Project Changes

Given that the RTP's outlook considers a two decade horizon, changing conditions will force necessary plan amendments to address factors such as shifting needs, refined studies, available funding, and other related circumstances. Changes, amendments, and updates to a RTP are typical and expected within the transportation industry and are an important aspect of the planning process. As such, MAG periodically updates its RTP and 5-year Transportation Improvement Program to respond to and reflect these changing conditions and resulting project adjustments.

In the first five-year phase under Proposition 400, the most significant factor compelling revisions to the RTP is the region's economic situation which affects the availability of funding and has significantly impacted the generation of sales tax revenues. A study produced by the National Conference of State Legislatures in 2011 emphasized that "transportation funding decisions are becoming increasingly critical as system needs continue to overwhelm available resources." Throughout the United States, studies indicate traditional public-sector funding sources for transportation projects are unable to meet the growing demand for new highway infrastructure and for maintaining an aging infrastructure. Motor fuel taxes—a primary source of transportation finance—have not kept pace with the demand for new and improved highways and transit features based on increased travel; these traditional revenues supporting capital investment are greatly reduced due to increased automobile fuel efficiency, the emergence of alternate technologies, and fixed taxation rates. The funding shortfall contributes to significant economic impacts on project construction, as well as related operations and maintenance.

In Maricopa County, approximately half of the RTP projects are expected to be funded with Proposition 400 sales tax funds. Yet, with sales tax revenues declining an average of 8.6 percent over the most recent three-year period between 2007 and 2010, the promise of the proposition has fallen short of initial expectations causing some projects to be deleted and many postponed into the distant future. Specifically, between July 1, 2005 and June 30, 2010, approximately 74 projects totaling more than $6.02 billion have been modified or delayed into a fifth phase—scheduled between Years 2026 and 2031—which is outside the Proposition 400 horizon.

Although delaying projects outside of a regional transportation plan horizon is not atypical in the governmental transportation industry, other Maricopa County RTP projects have been categorized as "illustrative projects" and have been moved out of the current RTP although they could potentially be included as additional funding becomes available.

While a joint Federal Highway Administration and Federal Transit Administration review in 2010 commended MAG staff for employing a series of actions to address funding deficits while still accomplishing the objectives of the RTP through management strategies, value engineering, and project deferrals, the RTP Partners found further cuts and delays to projects were still necessary to address funding shortfalls and projected cost increases. Specifically:

- Through MAG committee action, 25 freeway projects worth $4.5 billion were shifted to periods beyond Fiscal Year 2026 (the original horizon of the 2003 RTP) to achieve a balance between program costs and projected revenues for the remaining life of the 2010 RTP that now extends into Fiscal Year 2031. Of those 25 projects, three projects totaling $887.5 million were pushed past Fiscal Year 2031 to help further balance the program by removing project budgeted cost entirely. As of 2010, ADOT estimates the freeway program revenues at $8.4 billion with cost estimates for related projects calculated at $8.3 billion for the fifteen years remaining in the Proposition 400 and RTP timeline between Fiscal Years 2011 and 2026.
- Arterial postponed 8 projects worth $22.4 million beyond 2026 to achieve a balance between revenues and costs. The amount shifted represents 1.4 percent of the programmed reimbursements for Fiscal Year 2011 through 2026. As of 2010, MAG estimates arterial revenues at more than $1.6 billion with cost estimates for relating projects calculated at $1.5 billion for the remaining Proposition 400 timeline between Fiscal Years 2011 and 2026.
- Transit projects were affected as well with funding for operations reduced for 11 existing bus routes and postponement of 25 bus routes beyond 2026. In addition, RPTA postponed beyond the Proposition 400 horizon of 2026 the development and construction of 2 park-and-ride facilities, 9 transit centers, and 5 maintenance and operations facilities —resulting in deferrals of approximately $1.52 billion. RPTA also reduced the number of bus stop improvements from 1,200 sites to 538 sites for an additional costs saving of $20.9 million. More currently, reduced funding will likely impact poorly performing routes—for example, RPTA expects four of the existing bus rapid transit routes will be eliminated during Fiscal Year 2011 due to low ridership. More service reductions are under consideration and expected to take effect in Fiscal Year 2011-2012.
- Additionally, the high capacity transit projects also had to be postponed because of the reduction in sales tax revenues realized in the public transit fund and cutback in the level of member city contributions to METRO's light rail costs. For instance, the Northeast Phoenix light rail transit corridor project has been shifted beyond the Proposition 400 horizon year of Fiscal Year 2026 to accommodate the decreased revenues—construction is now expected to be complete in Fiscal Year 2031.

## Policies and Criteria Exist for Modifying RTP, but May Not be Used to Reprioritize Projects

To guide project selection and project change decisions, the RTP Partners established prioritization criteria and material change policies that are required to be followed. Such guidance provides a framework for the entities to deliberate individual projects, compare one over another, and consider the project impact on the program as a whole. Yet, through our review, we could not determine when or whether these criteria and policies are actually applied as evidence supporting decisions was limited. Further, we could not see that changes made in plans and project reprioritizations were actually linked to any of these priority criteria or to any available policies and procedures developed for the freeway, arterial, and transit modes. For instance, there was no documentation correlating prioritization factors and the reasons why particular projects were changed or reprioritized.

**Project Priority Criteria**

MAG RTP Criteria

- Public and Private Funding Participation
- Social and Community Impacts
- Establishment of a Complete Transportation System
- Projects to Serve Regional Needs
- Segments to Provide Connectivity
- Other Criteria such as geographical distribution and inclusion of committed corridors

RPTA Federal Criteria

- Services and improvement required by law including dial-a-ride fleet purchases for required ADA expansion
- Replacement equipment and maintenance facilities
- Expanded Service with fleet expansion and park-and-ride
- Passenger Enhancements: bus stops and transit centers
- Other Support Services for service expansion

As directed by statute, MAG developed criteria to establish the priority of corridors, segments, and other transportation projects to guide its change process as well as to establish a framework for discussing proposed changes in the life cycle programs. Similarly, RPTA created transit capital project prioritization guidelines in 1994 for programming federal funds with five predominant priorities, including services required by law, expansion of service, and passenger enhancements among other criteria as shown in the text box—although RPTA did not use the criteria for prioritizing the transit element of the RTP.

As a result, the available criteria is fairly broad in nature and lacks any weighted factors for measuring relative value of one project over another using the criteria. Additionally, we did not find evidence of applying the criteria or establishing any technical ranking of projects or explanations as to why specific projects were chosen or changes made. Qualitative factors are certainly critical in project selection or project changes, but these factors should be combined with quantitative factors when deliberating initial project selection decisions or discussing potential changes to projects. Although not formalized as a required policy, MAG recently created a Congestion Management Program tool for use in its arterial program that will allow decision makers to assess the relative value of one project over another. The tool uses analytic and numeric factors to quantify congestion. While MAG has not yet mandated local jurisdictions to use it and has not expanded the use of the tool into other modes as warranted,

MAG plans to integrate system needs and corridor performance measures to help identify congestion mitigation needs in the next-generation of the tool. Implementing and applying this tool should assist in linking priority and reprioritization criteria with projects selected.

Nonetheless, MAG does have a policy that any change materially impacting costs has to be approved by the MAG Regional Council and MAG Transportation Policy Committee. Generally, a major amendment is an addition or deletion of a freeway, route on the state highway system, or fixed guideway transit system as well as any portion of those systems that exceeds one mile in length or $40 million dollars. A major amendment would also be a modification of a transportation project in a manner that eliminates connections between freeways or fixed guideway facilities.

With a $40 million threshold, some of the rebalancing changes resulting from the life cycle process intended to address reduced funding may not meet the "material change" criteria, but are still significant changes or departures from Proposition 400 promises that should be vetted. As such, MAG programming guidelines require member agencies to complete a standard project change request form if a project modification concerns either a federally funded or regionally significant project listed in the current RTP, or if a project needs to be added. Examples of project changes include shifts in schedule affecting the current year, additions or deletions due to availability of funds, and project cost increases or decreases.

RPTA expands on the MAG policy and defines a material change for transit projects as:

- ✓ ***Cost increases*** for bus transit projects of more than 5 percent of the budget or greater than $500,000 of a project from design concept report, or an increase greater than $2.5 million, whichever is less; and for rail projects, more than 5 percent of the budget from a preliminary engineering report, or greater than $10 million, whichever is less.
- ✓ ***Scope changes*** in bus capital project location requiring an updated or new environmental assessment; in a bus operating project that affects more than 25 percent of the corridor or changes directional route miles by more than 25 percent; in a rail capital project location requiring a supplemental environmental impact statement; or a new bus or rail project not in the RTP.
- ✓ ***Schedule changes*** from a bus capital project design concept report delayed more than three months or beyond fiscal year shown in the transit life cycle program; in the approved bus transit implementation schedule advancing a route more than one year; or deferring a route more than three years; or that advances or defers completion of a rail capital project by one or more fiscal years from target.

For those specific changes falling under the MAG or RPTA material change policy, the agencies are providing individual project documentation in compliance with the policy. Yet, when larger dollar or project schedule changes are proposed together at one time to align revenues with expenditures for an entire suite of projects in a life cycle program, we were unable to find appropriate evidence indicating how these priority criteria were considered as part of project reprioritizations.

## Adjustments to the RTP are not Always Linked with Performance Data, Criteria, or Regional Considerations

Most, if not all, proposed project changes and options for RTP adjustments originate from discussions occurring in the life cycle program working groups that assist in implementing certain provisions of Proposition 400—with the exception of freeways. The proposition's language requires agencies implementing freeway, arterial, and transit programs to adopt a budget process ensuring estimated project costs do not exceed total revenues available for RTP projects. In practice, RTP Partners regularly update their revenue and expenditure projections for their respective working groups to address current conditions related to needs, availability of funds, and other project-related circumstances. Based on the resources available, each life cycle program working group seeks to rebalance its RTP project portfolios by proposing adjustments or changes as needed. Recommendations for transit changes are discussed with RPTA and METRO boards and committees, and proposed arterial changes are vetted through local city councils and the county board as warranted before ultimately being incorporated into RTP updates for the MAG Regional Council's final approval.

**Performance Measures Suggested by MAG that Can be Used to Evaluate Project Adjustments**

- Accident rate per million miles of passenger travel
- Travel time
- Peak hour speed
- Number of major intersections in need of repair
- Average daily traffic
- Households within one-quarter mile of transit
- Per capita vehicle miles of travel

However, based on our observation of LCP meetings, a review of available LCP meeting minutes, and examination of other available documentation, it does not appear that performance data is considered nor is a methodical, disciplined approach using a set criteria in place to guide project priority decisions and changes to projects. Proposed changes appear to be made by local cities and the county through local government committees for arterial and many transit projects based on local considerations and factors, rather than from a more regional perspective.

For instance, MAG's 2005 Proposition 400 report states that it used its priority criteria as guidance when making changes to projects—although neither the report, nor other available documentation explain how the criteria was employed. Similarly, the report explains that common measures of system performance and regional mobility can be used to evaluate potential adjustments to the priority of projects such as those shown in the accompanying text box. Although the RTP lists other factors that could be applied when considering program changes, such as traffic volume, level of service, project readiness, and cash flow, we did not find evidence that project reprioritizations or changes suggested used available criteria or measures to determine project changes as described in the following sections.

While there is no indication that the ultimate changes decided for the freeway, arterial, or transit projects were not in fact beneficial for the region, the RTP Partners should use and document a performance based model as part of their project change process on a go forward basis. Not only would this help enhance both transparency of the process and accountability to legislative

mandates and to the public, it would ensure RTP changes benefit the region overall as well as the local jurisdictions.

***Freeway Project Adjustments***

Some performance data relative to freeway projects are available from consultant preliminary engineering studies conducted on the RTP projects. ADOT and MAG access these consultant analyses with supporting data that assist in identifying possible project changes, considering design standards, assessing value engineering, evaluating possible strategies or options, and determining the best scenarios to recommend to MAG oversight committees. However, there are no minutes or records memorializing what data was used, whether alternatives were considered, or if criteria or decision-making guidelines were applied—thus, providing little insight into the rationale behind recommendations determined during the meetings between MAG and ADOT staff.

For the Phase I and Phase II freeway projects we reviewed, we found that data developed by consultants as related to the impact of proposed schedule, scope, and cost changes appeared well-developed and supported. In terms of project changes, we were informed that ultimate change recommendations resulted from discussions that are part of rebalancing strategy sessions held by agency partners and MAG committee processes. Because these meetings between MAG and ADOT are informal, allowing for open discussion to arrive at a "cost reduction strategy" as we were informed, there were no formal minutes or notes available to memorialize data considered and all options discussed, or to convey the rationale for the ultimate recommendations for program changes.

When the cost reduction strategies were discussed at the MAG oversight committee level, there was a multitude of data provided to the members. However, we believe there are opportunities to summarize performance data regarding impacts of proposed changes recommended to MAG oversight committees. Specifically, MAG could improve the information provided to board and committee members to delineate the risks and opportunities associated with each alternative, summarize the potential impacts of changes, and detail the rationale behind the final recommendation that is based upon the volume of data gathered in consultant reports and studies. MAG has begun gathering corridor performance data from roadway detectors that could assist in evaluating the impact of proposed changes on performance elements such as congestion, mobility, and safety. Specifically, as of June 2011, MAG staff have gathered freeway performance data from 2006 through 2009 related to elements such as throughput, volume, and vehicle miles traveled. While we were informed that the freeway reprioritization and rebalancing efforts consider actual volume, capacity, and projected delays to help guide decisions, this performance data should be summarized and provided to MAG committee members to help guide decisions as discussed later in this report.

***Arterial Project Adjustments***

The arterial street program operates somewhat differently from the freeway program in that MAG is not responsible for the development and construction of street improvement projects—rather, MAG functions in an administrative capacity processing requests for funding and reimbursements of local city and county public work department project costs. When cuts are needed in arterial projects, each local city or county decides which changes to propose within

their jurisdiction. It appears that these decisions are based on discussions with local constituents, rather than applying performance-based data or established criteria.

In the initial years following the passage of the proposition, limited arterial performance data was available since counter and detectors were not in place on these roadways to capture data. In 2010, however, MAG finalized an automated Congestion Management Program spreadsheet incorporating performance data and criteria and provided it to local jurisdictions in early 2011. The spreadsheet is intended to assist in evaluating the impacts of proposed changes and to weigh the relative value between projects using performance data. This tool is a robust series of spreadsheets that MAG should require the local entities to use; although, currently, use of the tool is purely voluntary.

While we selected a sample of Phase I and Phase II arterial projects to review factors used to make changes to the projects, we did not conduct an in-depth review because the MAG Transportation Director informed us that MAG did not adjust arterial project funding or schedule on the basis of performance. Although corridor-specific studies were used to develop the 2003 RTP and included specific roadway performance projections that could have been utilized in decision-making, there is no MAG requirement or policy that would require project changes and reprioritizations to be based on performance.

***Transit Project Adjustments***

Similar to the other modes, the Transit Life Cycle Program working group proposes project changes, phasing, and budget for transit projects. Specifically, RPTA staff inputs local change requests into the Transit Life Cycle Program model and a newly formed group, the Regional Transit Advisory Group, reviews the impact of proposed changes. Performance metrics from RPTA's annual Transit Performance Report are available to the advisory group as well as the Transit Life Cycle Program Working Group to assist in making decisions about routes, service frequencies, and capital project changes. RPTA provides the performance data for non-RPTA operated routes as well and individual jurisdictions may use the information to adjust routes if so inclined. In fact, we found instances where these discussions are memorialized in meeting minutes to demonstrate the consideration of performance data for the RPTA-funded routes.

However, current RPTA policy ensures project funding is provided through a sub-regional equity concept where local transit operators receive a specified percentage of funds based on an agreed-upon methodology. Thus, even though RPTA's performance-based model might suggest certain poorly performing routes should be eliminated; other more successful routes could be cut or changed under the sub-regional equity concept based on geographical location. In practice, each jurisdiction reprioritizes its own projects—working with adjoining jurisdictions when necessary—and provides the resulting changes and reprioritizations to the Transit Life Cycle Program Working Group and then to the Regional Transit Advisory Group. Although the jurisdictional calculation was used to proportionately distribute the required revenue reductions, the October 29, 2009 Transit Life Cycle Program meeting minutes revealed that many member agencies argued that cuts to existing services should be based on performance or other set criteria to best serve the needs of the region.

Our review of selected Phase II transit projects revealed 16 bus routes and one light rail extension have already been deferred to a later phase. However, there was little documented support illustrating discussions surrounding project specific alternatives considered or deliberating the impact of the deferrals system-wide. In addition, we could not identify why these specific 16 routes and the rail extension were deferred rather than other specific routes or extensions.

## Organizational Policies Based on Regional Equity May Impede Regional Goals

As mentioned in the previous section, both the arterial and bus transit modes have policies requiring project funding to be allocated on a sub-regional basis. Although not necessarily intentional, these policies effectively compel decisions to be biased toward promoting local interests, rather than basing decisions on performance data and best value for investment. Thus, while the RTP is required to be a regional plan, this funding allocation policy may function as an impediment to achieving a regional perspective.

For instance, although MAG is charged with administering the Arterial Life Cycle Program, local government agencies accomplish the actual construction of projects through a local funding match. These local jurisdictions are responsible for the scoping, design, right-of-way acquisition, and construction of the projects. According to MAG's Transportation Director, MAG-selected projects for inclusion in the RTP are based on sub-regional considerations and needs. For instance, in 2011 after funding projections were lowered due to the economic downturn, the MAG Transportation Policy Committee approved a policy to allocate reductions by percentage to jurisdictions—who in turn were asked to identify the specific projects to be cut, delayed, or changed within their local area. Thus, even though MAG is the regional entity responsible for administering and programming arterial street projects, the local jurisdictions in actuality propose which projects will be eliminated, deferred, or added based on changing conditions.

Similarly, RPTA's policies also include allocating funds on a sub-regional basis. Specifically, policies state that "jurisdictional equity" is the percent share of sales tax revenues allocated to each jurisdiction over the 20-year life of the RTP. Prior practice was to allocate funds on a city-by-city basis with each receiving a specified portion. Existing practice has moved to a jurisdictional equity model where funding is allocated on a sub-regional basis and then split among the cities in the region. However, policy requires that amounts allocated to each city under the sub-region concept cannot vary more than 2.5 percent from the city-by-city allocations provided in the first five-year period of the proposition. Further, policy provides that no individual jurisdiction may be under allocated more than $7.5 million without its consent. To comply, RPTA spreads the sales tax funds among the county's local jurisdictions by formula—thus, not focused on regionally-driven needs.

One consequence of this jurisdictional equity approach arises in maintaining the continuity of non-RPTA funded routes that cross multiple jurisdictions. For example, one city may be unable to fund or continue funding a particular route at a certain service level or frequency as an adjoining city—resulting in a fragmented regional network. Because route changes are typically made by each jurisdiction within their portion of a route, RPTA is unable to make recommendations to its Board and committees that address cross-jurisdictional needs if the

recommendation runs contrary to the sub-regional equity policy. Although RPTA can identify project changes deemed to be in the best interest of the region for RPTA-operated regional bus service, those changes may not be acted upon. Further, because each jurisdiction has control of how regional transit monies are spent within its boundaries, funding a regional route across boundaries becomes problematic and possibly unattainable if one of the jurisdictions does not agree. For example, in December 2010, a Scottsdale/Rural Alternatives Analysis Study concluded that the locally preferred alternative was for the bus rapid transit route to end at the Tempe Transit Center; however, when the City of Tempe proposed withdrawing their funding from the project because of local concerns, it impacted the operating funding assumptions and could put the entire locally preferred alternative at risk.

## Arterial and Transit Change Recommendations are Essentially Approved at Local Levels Before Reaching MAG Committees

On a daily basis, RTP Partners consider, discuss, and reach decisions concerning project scope, design, construction, and transit service through project delivery practices employed as part of implementing the freeway, arterial, and transit network. When more significant or material changes need to be made, the life cycle program working group process is the typical venue to gather technical data, discuss project options, alternatives, and rationale. The change recommendations are proposed to oversight committees for approval as described in report section "Understanding Maricopa County's Regional Transportation System."

Except for freeway project changes, members of these LCPs often take proposed options back to their local municipality to vet proposed actions through the established local government structure. Once proposed change options are approved at the local level, LCP working group staff summarizes the proposed "approved" project changes and reprioritizations for discussion and approval through the respective mode's board and committee processes. Subsequently, these change recommendations—approved locally and at the RPTA or METRO Board levels—are presented through the MAG committee process to approve changes to the RTP. Practically, by the time project changes are introduced at the MAG committee process, most decisions are already generally determined and approved by the other oversight bodies. For example:

- For the arterial program, MAG recently met with its 11 lead agencies to discuss a $232 million dollar funding reduction needed to balance the Fiscal Year 2010-2011 program and determine each agency's "share of the cut." Although MAG provided a new Congestion Management Program tool to assist the local agencies with evaluating options, it was the lead agencies that exposed and vetted proposed changes through their local city council or county supervisor process and presented ultimate decisions back to the Arterial Life Cycle Program Working Group. While discussions regarding multiple jurisdictions or regional considerations raised by MAG working group staff may have occurred, we found only one instance where discussions from Arterial Life Cycle Program meetings were memorialized in writing. However, that instance did not include discussions or deliberations on regional needs or objectives. MAG staff summarized the local decisions and presented them back to the MAG Street Committee.

- Similarly, the dollar amount of transit changes needed to rebalance the Transit Life Cycle Program are presented by RPTA to its local transit partners during the Transit Life Cycle Program Working Group meetings. Specific decisions on route service changes or frequency are made by the local jurisdictions, in addition to RPTA for routes it operates or regionalized services it manages. While potential changes are discussed and approved by the RPTA Board of Directors and related committees, MAG committees receive only a summarized listing of project changes that have mostly been "decided" at the local jurisdictional and RPTA levels.

Although the MAG Regional Council has ultimate authority to approve or deny all RTP change recommendations, it can be politically and publically sensitive to rule against an action or change approved by another RTP Partner's Board of Directors. This situation creates certain inherent struggles—for instance, a city official on a MAG committee would have difficulty voting against a proposed transit change if a different official representing the same city approved a specific transit project change as part of their membership on the RPTA Board of Directors.

## While MAG Committees Receive a Multitude of Data, Critical Information on Impacts of Proposed Changes Should be Provided to Assist with Informed Decisions

In order for oversight committees and boards to make informed recommendations, it is imperative these committees and boards receive a sufficient level of information and actively participate in meetings. Our review found that, although a myriad of information is made available to MAG decision makers through voluminous documents, staff reports, and verbal presentations during MAG committee and board meetings, certain data related to impacts of proposed changes or between various options related to performance indicators such as congestion, mobility, and safety should be summarized and provided to the MAG oversight committee members. Given the complicated nature of transportation planning and the fact that committee member have a wide range of responsibilities to other jurisdictions compacting the available time for MAG committee meetings, there are opportunities to improve the information provided when making important decisions surrounding the RTP.

Depending on the particular mode where changes are proposed to occur, the decision-making process can vary. Once proposed project changes are approved by the designated oversight bodies at the local city and county level, RPTA, METRO, and State Transportation Board, the changes are vetted through the MAG committee processes as described in our report section titled "Understanding Maricopa County's Regional Transportation System." Generally, items are first discussed at the technical committee level—MAG Transportation Review Committee for freeway projects, MAG Street Committee for arterial projects, and the MAG Transit Committee for bus and light rail projects. After review and recommendations from those committees, matters are usually heard by the MAG Transportation Policy Committee and the MAG Management Committee before being sent to the MAG Regional Council for final approval. All meeting discussions are memorialized in writing, with minutes summarizing committee member voting results for subsequent committee information.

While committees are provided a voluminous amount of information related to recommended changes to specific projects, corridors, or entire life cycle programs, the first level technical committees for transit and arterial do not consistently receive substantive or complete information related to risks, alternatives, and opportunities for each option, nor the rationale behind the recommended change for most projects. For instance, on two arterial projects sampled, we found evidence that MAG's technical committees were given detailed information about the changes and options proposed. However, as the changes progressed to the policy committees, they were aggregated into updates to the ALCP and the project related details concerning options, alternatives, and rationale for recommended course of action were removed from the staff reports and presentations.

Similarly, for transit, the MAG Transit Committee lacked specific transit data on alternatives and rationale behind recommendations to make more informed decisions. For instance, at a March 11, 2010 MAG Transit Committee meeting covering projects and changes proposed for the transit component of the draft 2011-2015 Transportation Improvement Program, the data provided for proposed project amendments was at a high summary level such as "change from 40-foot bus purchases to 30-foot bus" or "new project not in Transportation Improvement Program." There was no information related to rationale behind proposal, impact of recommended action on other projects, or other alternate actions considered. Additional changes suggested at a November 9, 2010 meeting related to deleting certain projects and adding different projects were also summarized with limited data presented to committee members. In another example noted in meeting minutes for the August 22, 2007 MAG Regional Council meeting, members inquired about a material change to purchase the Mesa Transit Operations and Maintenance Facility. Specifically, they questioned whether an analysis of options had been considered and if the cost of other sites had been considered in addition to other related questions. Although the MAG Transit Committee was not in existence at that time, we could not find documentation of any detailed information or discussions at the other technical committee in existence that would have been responsible for reviewing technical changes to the RTP.

For freeway project changes we selected for review, many of them were part of a larger MAG effort to help re-balance a $6.6 billion deficit in its freeway program. After a series of meetings over a one-year span, a "tentative scenario" containing four principal strategies, as shown in Figure 9, was proposed incorporating cost savings, value engineering, deferrals, and "stay- the-course" options into a repackaged, less costly freeway program. While we could not specifically link individual projects to the proposed segments and corridor options listed in the tentative scenario, there was a voluminous amount of information provided to the MAG oversight committees—especially, the MAG Transportation Policy Committee. We found that great detail is available in extensive consultant studies and reports that often accompany a meeting package conveying summary information on "what" changes are proposed for corridors and some alternatives or options related to other changes that could be made—other information provided to committee members included Power Point summary presentations, and verbal communications of key messages for members as evidenced by meeting minutes. Yet, our review of the discussions surrounding the "tentative scenario" revealed that additional data should be summarized for committee members related to proposed change impacts on congestion, mobility, and safety as discussed on the following page:

- Beginning with an October 2008 MAG Transportation Policy Committee meeting, MAG introduced its developing scenarios and continued with detailed discussions with the MAG Transportation Policy Committee and other committees over the next year until proposed changes were approved by the MAG Regional Council at its October 2009 meeting. In conjunction with the re-balancing effort, MAG and ADOT met with consultants and member jurisdictions, in addition to private sector organizations and "peer review" panels, to provide a forum for questions regarding the potential $6.6 billion of cuts to freeway projects. Information was provided throughout the committee meetings on these efforts, and various options were discussed and vetted.
- Between October 2008 and February 2009, there were many committee presentations and higher-level discussions about corridor cost estimates, potential strategies, scenarios, pros and cons, and alternatives. In February 2009, a small staff report provided options for all corridors in the RTP such as using interim facilities, constructing parkways instead of freeways, or delaying improvements.
- In May 2009, the tentative scenario draft was first presented to the MAG Transportation Committee consisting of different scenarios with specific proposed options within certain corridors. MAG staff provided information on important factors for committee members to consider related to cost estimates and additional details on the various options. However, there was little to no information on the how the various scenarios would impact congestion, mobility, or safety. In fact, one committee member inquired about the level of service and congestion for a specific area.
- When the second presentation of the tentative scenario was discussed with the MAG committees in June 2009, freeway segments within the various corridors were identified and linked with proposed actions such as move forward as planned, revise design, or defer. Verbal presentations documented in meeting minutes, outlined four main principles or strategies, as shown in Figure 9 (the strategies were later formalized in written format at a July 2009 meeting). While there were some verbal discussion on where traffic would increase if certain improvements were not made, the information presented to the committees still lacked data surrounding how the various options would impact corridor and system performance. When certain members asked for more information related to delay times and level of service, MAG was able to respond indicating that the "impact" and performance information is available—however, that critical data must be summarized and provided to the committees as part of the written presentation package.

***Figure 9: MAG Freeway Tentative Scenario Staff Report to MAG Transportation Policy Committee – July 15, 2009***

Table 1
COST REDUCTIONS ACHIEVED IN THE TENATIVE SCENARIO FOR THE REGIONAL FREEWAY AND HIGHWAY PROGRAM
(COSTS IN MILLIONS)
Regional Freeway and Highway Program

| | | Balance |
|---|---|---|
| 2009 Regional Freeway and Highway Program Cost Opinion: | | $15,952.4 |
| Management Strategy savings from lower construction and system-wide costs | -$758.5 | $15,193.9 |
| Value Engineering savings in the Loop 202/South Mountain and Loop 303 Freeway corridors | -$1,703.3 | $13,490.6 |
| Deferral savings to Phase V | -$4,125.2 | $9,365.4 |
| Stay the Course changes | +$30.0 | $9,395.4 |
| **New Regional Freeway Program Cost Opinion:** | | **$9,395.4** |

As provided to the MAG Transportation Policy Commitee, the table summarizes the strategies MAG and ADOT intend to employ to lower the program cost from $15.95 billion to $9.4 billion.

*Source: MAG Tentative Scenario for the MAG Regional Freeway and Highway Program, Transportation Policy Committee Meeting on July 15, 2009 - Staff Report Agenda Item #6.*

- Prior to final approval of the proposed changes to the freeway program in October 2009, a lengthy report on the tentative scenario was presented to the MAG Transportation Policy Committee that included narrative summaries of the proposed changes for each corridor and generalizations on options considered and rationale behind some of the recommendations. Additionally, the 30-page summary included impact information for certain corridors such as expected vehicle traffic demand related to capacity between parkway and full freeway options as well as a table showing level of service impacts for potential corridor deferrals. We believe that MAG could summarize the impact and rationale data for committee members and provide additional information on the Power Point presentations to help isolate risks for members when making such important decisions. Further, when one committee member asked about "overall system performance if every proposed change was made," MAG responded that they would look at performance once they found the tentative scenario worked. However, we did not find any documentation that expected impacts and performance was presented to the committee.

Given the billions of dollars surrounding the RTP projects, RTP Partner staff should ascertain the level of project and program-level detail optimal to allow oversight councils, boards, and committees sufficient information to review options, weigh alternatives, and make informed, responsible decisions relative to suggested recommendations. Moreover, committee presentation packets should summarize key discussions and impacts of proposed actions.

According to the MAG Executive Director, members ask questions and receive data outside the committee process to enhance their understanding of issues brought before their committees. Additionally, MAG staff informed us that issue specific meetings with committee members are often held to discuss RTP-related topics. While we do not know the specific nature of the committee member questions and informal interactions, it is reasonable to expect that policy makers might ask staff for explanation or clarification of technical issues to provide policy makers with the requisite information necessary to conduct meaningful public deliberations. As

such, we believe MAG should ensure that additional information concerning rationale, impact, or alternatives given during these meetings are shared with all members of the committee to ensure transparency and open deliberation of items.

***Transit Agencies Provide Critical Data to Keep their Oversight Committees Informed***

To assess the transit oversight committees' and board's level of involvement in meetings and determine whether information provided is sufficient to make informed decisions, we reviewed various transit-related meeting minutes dating back to 2005. Our review found that transit agency oversight committees and boards are mostly informed and actively involved in meetings. The type of information provided for alternatives considered and rationale behind options proposed as well as the level of transit agency committee questions and input appears more robust than with some of the other RTP Partner agencies. For example:

- In the January 2010 METRO Board of Director's meeting, the Board was provided several options for service adjustments to offset revenue shortfall. During the meeting, Board members requested additional information relating to the impact of service adjustments on riders, results from public outreach efforts, alternative transportation options available to riders, and impact of proposed service adjustments on revenue.
- During the November 2010 METRO Board of Director's meeting, METRO staff provided the Board with a detailed analysis of the alternatives considered for the Tempe Streetcar project. The alternative analysis included five alternatives, evaluation criteria, and a benefit/impact rating for each alternative based on the evaluation criteria. METRO staff also provided the Board with detail explaining the reason behind three of the five alternatives being eliminated.
- At the June 2011 RPTA Board of Director's meeting, the City of Tempe recommended service reductions to Route 40. The Board was provided information regarding results from a public survey that determined the impact on riders, performance data comparing Route 40 to the overall fixed route system performance, potential route alternatives considered for service reduction or elimination, and the fiscal impact that included data comparing the implication of eliminating Route 40 to other routes considered.
- In the April 2007 RPTA Board of Director's meeting, the minutes discussed the Transit Life Cycle Program review of the RTP. Specifically, several member cities expressed concerns over the operational details developed to implement the RTP. As a result, the Executive Director hired an external firm to review the Transit Life Cycle Program assumptions and model as well as the feasibility of funding the projects selected. The consultant's report outlined recommendations that were vetted through the various committees for review, modification, and approval.
- At the March 2008 RPTA Board of Director's meeting, the Board requested additional data supporting the Fiscal Year 2006-2007 Transit Performance Report. Board members wanted to know how costs targets were established, impacts of different contractor labor rates on cost per mile, and potential impact of Light Rail on bus and system ridership.
- In another example, when the RPTA Board of Directors was considering the region's para-transit needs and specific actions to address the needs identified in a regional study report issued in 2008, the RPTA Board of Directors requested and obtained additional

options to consider if it decided not to fully implement the contractor's recommendations in Phases I and II. The Board received several detailed alternative options that assisted to ensure an informed decision was made.

## While the Public has Opportunities for Participation in the Process, Navigating the System Can be Improved

While led by MAG, transportation planning is a collaborative process designed to foster involvement by all key stakeholders and interested parties including the business community, environmental organizations, community groups, and the general public through a proactive and extensive public participation process. In fact, as the designated metropolitan planning organization for Maricopa County, MAG must prepare a Public Participation Plan to provide "reasonable opportunity" for the public to comment on the RTP and any subsequent changes.

Our review revealed that the processes afford the public a number of opportunities to participate in the process or to provide input into the region's plans, as well as on an individual project basis. However, we noted that finding where and how to provide their perspective is a complicated endeavor for a member of the public. For instance, MAG's public involvement process has four distinct sections—an early phase, mid phase, final phase, and continuous involvement. During each of these phases, MAG works closely with its RTP Partners as well as the City of Phoenix to present, gather, and respond to public comment. Activities during these phases are as follows:

- ***Early phase***: Occurs prior to the draft RTP where MAG holds public forums across the county to get public ideas and preferences on the RTP and its projects. Findings are published in an Opportunity Report that is distributed to technical and policy committees.
- ***Mid-phase***: Occurs concurrently with the draft release of the RTP update where the public submits written comments that MAG formally responds to in writing. Another Opportunity Report is prepared and provided to the MAG policy committees along with written comments and meeting transcripts.
- ***Final Phase***: Includes the final public hearing to adopt the RTP update and additional opportunity for written comments summarized for the policy committees in another Opportunity Report.
- ***Continuous Improvement***: Finally, on a continual basis, RTP Partners are all involved with outreach at community events and multimedia outreach including visual maps and photography, depictions of alternative scenarios, and a video outreach program.

Public input occurs at several other stages during the planning and implementation of the RTP. For instance, numerous public meetings occur at the various committee meetings at the RTP Partner entities as well as other public informational meetings where entities seek approval to add, delete, adjust, or delay a particular project. The public can speak and provide input or submit written input regarding the subject matter of these meetings. Meetings are open to the public, with some held in the evenings to allow better attendance. Moreover, the public can provide feedback and input through customer surveys conducted by the RTP Partners. For instance, RPTA conducts annual rider satisfaction surveys, prepares periodic rider origin and destination surveys to elicit travel preference feedback, and operates a customer service line

where the public can voice concerns or perspectives. Finally, several representatives of the RTP Partners make presentations to community interest groups such as the East Valley Partnership, Western Maricopa Coalition, and Friends of Transit.

In another example, METRO has a multitude of opportunities for public input when a project moves into the "Alternatives Analysis" phase of study. Engaging the public on the development of a corridor is a primary effort to ensure there is community buy-in on the outcome of the study. That public involvement continues throughout the design and construction of a project where METRO often establishes citizen and stakeholder working groups to provide input. According to METRO, the general public along a corridor project is notified through a variety of methods including door hangers on all properties within a ¼ to ½ mile of the study areas. The other RTP Partner agencies conduct similar activities to seek public input.

In 2010, as a part of MAG's Federal Certification Review, Federal Highway Administration and Federal Transit Administration evaluated MAG's public participation efforts. The reviewers found that MAG has shown "strong efforts" to notify the public of transportation planning activities and provide opportunities for the public to comment on transportation policies, priorities, and projects—thus, complying with federal requirements. However, during the public hearing associated with the MAG Certification review, some comments were made related to the perception that the public's input has limited effectiveness in making changes to transportation plans and projects.

With the multitude of mechanisms for public input related to transportation and transit plans and projects, it can be difficult for a resident to navigate how and where to provide input and at what stage they could affect change. Therefore, any public perception of having only limited effectiveness to affect change in the process may be in part related to the difficulty in becoming involved in the complex processes. Thus, the region would benefit from a "road map" or "citizen's guide" for public participation in the network not just at the MAG committee level, but also with the other RTP Partner committee processes. Such a guide should identify specific decision or key points in the processes including when considerations of locally preferred alternatives and project advertisement and award take place so the public can ascertain when their input would be most appropriate or effective. Further, public guidance related to decision-making at the local council meetings would be valuable as entities seek approval to add, delete, adjust, or delay a project or change service rates or route frequencies at local fare or service change hearings.

After we discussed the road map concept with MAG, we were informed by the MAG Executive Director that a roadmap was already underway as part of its federal certification process and MAG had budgeted money in Fiscal Year 2011-2012 to develop a user friendly guide book for assisting the public in understanding how to engage in the RTP process. Moreover, results of the joint Federal Highway Administration and Federal Transit Administration federal review support our recommendation in that it encourages MAG to clarify how the public can influence transportation projects and resolve public confusion and frustration over the process. In June 2011, MAG's Executive Director informed us that the agency also plans to conduct more focus groups and surveys to get a better sense of the public's preferences as they relate to specific topics.

## Conclusion

While deliberations and discussions of options, alternatives, risks, opportunities, and rationale behind project changes are critical to the success of a regional transportation system, we found limited documentation supporting the project changes made during the Phase I period of Proposition 400. Although the RTP Partners appear to capture, synthesize, and analyze a vast amount of detailed and competent information related to alternatives and impacts of project change decisions, they need to better memorialize deliberations and provide additional information to oversight committees to enhance data available for decision-making. Although we did not find indications that change decisions were not in fact beneficial for the region, oversight bodies could benefit from full information on impacts of all options and alternatives considered as well as the rationale behind those options and final recommendations. Moreover, to ensure that the public has access and input into the very complex RTP processes, the RTP Partners should develop a road map to assist the public in navigating where they can have input in the transportation planning and implementation system.

## Recommendations

To ensure full documentation of project and plan changes and reprioritizations are available and considered by governing bodies as part of their due diligence, the RTP Partners should consider the following:

10. Clarify priority criteria to be more specific, use some type of weighted measure for ranking, and provide mechanics of specifically how criteria is to be applied in project change discussions. This recommendation should be led and developed by MAG, with input from the other RTP Partners.
11. Ensure documentation exists linking projects selected and changes suggested with the priority criteria, quantifying a technical ranking of corridors or projects by priority ranking[A], and discussing the rationale behind changes.
12. Have MAG require the use of the Congestion Management Program tool among local cities and counties to identify projects with regional benefits as well as expand use of the tool into other modes in the region, as warranted, for decision-making and project reprioritizations.
13. Use a performance based model as part of project change and reprioritization processes on a go forward basis to enhance both transparency of the process and accountability to legislative mandates and the public, and document efforts, deliberation, and decisions to show consideration of performance factors such as volume, capacity, and/or delays.
14. Ensure documentation is maintained describing basis, source, deliberations, outcome, and rationale for resulting actions and decisions related to project and RTP changes.
15. Summarize and communicate data to MAG oversight committees on options available and alternatives considered, risk and opportunities for each alternative, impacts of each alternative related to congestion or performance such as mobility and safety, and rationale behind final recommendations.

[A] Refer to page 181 for additional Auditor Comments

16. Ensure any additional information provided to individual committee members outside the formal open meeting process is distributed to all committee members as well as made available to the public to stay fully informed.
17. Continue efforts to develop a user-friendly guide book providing a public "road map" clarifying how the public can influence transportation projects, at what points input can be provided in the RTP development and update process, and where citizens can go to get information. MAG should lead this effort with input from the other RTP Partners.

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# Chapter 4: Current Organizational Structure Provides Oversight, Although There are Opportunities to More Effectively Accomplish RTP Goals

With the exception of transit bus and rail, the organizational and governance structure in place in Maricopa County for developing and implementing the RTP is similar to those used by peers across the nation. Through a combination of RTP Partner boards and committees to govern the regional plan in addition to overseeing projects for specific modal interests, the overarching structure in place in Maricopa County satisfies the requirements of the RTP and Proposition 400 establishing separate structures for freeways, arterials, and transit projects.

Although legislation established firewalls between freeway, arterial, and transit modes operated by individual agencies, our review found the various agencies have several avenues within their processes to communicate and coordinate on RTP activities. These processes could be further enhanced by strengthening existing memorandums of understanding between the agencies to better guide the working relationships and establish guidelines for codes of conduct, conflict resolution, and practice protocols. Additionally, we believe that the MAG Transportation Policy Committee—in its mandated role to develop regional transportation policy positions for the MAG Regional Council's consideration and provide oversight for the implementation of Proposition 400—could practice greater guidance and establish protocols formalizing how projects and activities will be coordinated and implemented in the RTP to maximize regional benefits.

However, the RTP's underlying organizational and governance structure presents a considerable challenge to Maricopa County with the multitude of stakeholder cities, diverse local interests, and weighted voting structures. The issue is particularly evident within the bus transit and rail modes where responsibilities and activities are split between two separate agencies. In fact, Maricopa County is the only single-county region in our research of approximately 30 peers in the United States that operates with separate bus and traditional rail agencies. Recently, the two Maricopa County entities—RPTA and METRO—have begun evaluating the value and benefit from some combination of the entities or their activities. Adding more complexity to the overall governance issue are the uniquely dedicated local sales tax revenues that drive jurisdictions to make locally focused decisions rather than those benefitting region-wide needs or RTP goals.

Further, our review of the overall organizational structure found that the Citizen's Transportation Oversight Committee mandated to oversee and advise on the RTP could improve its performance and effectiveness by incorporating a number of enhancements. Other peer taxpayer committees with similar responsibilities as CTOC are organized differently, have written guiding principles, and make more direct recommendations to governing boards—thus, we believe changes are needed to make the committee more effective in monitoring transportation and transit partners' accountability to taxpayers.

## Coordination and Collaboration Among the RTP Partners Exists, Although Enhancements Could Maximize Effectiveness

Collaboration and coordination among the many stakeholders are essential cornerstones to assure the success of the Regional Transportation Plan. To facilitate relationships, the RTP Partners

have established numerous written agreements called memorandums of understanding or memorandums of agreement. Moreover, because of the complexities and multitude of participants involved in RTP governance, close communication and delineation of roles and responsibilities is essential. We found that RTP Partner roles and responsibilities are documented in the written agreement, although certain clarifications could further enhance the agreements. Additionally, our audit interviews revealed some level of frustration among the RTP Partners regarding coordination, input, and agreement.

***Written Agreements Guide RTP Partner Responsibilities, Although Enhancements Could Benefit Regional Collaboration and Coordination***

While a multitude of agreements are in place and address roles and relationships to some extent, such agreements primarily relate to specific projects. The various RTP Partners have planning agreements to guide general responsibilities, but we believe that the agreements in place are missing certain components to guide the practical aspects of the working relationships and ~~that~~ define detailed responsibilities, establish reporting structures, and delineate processes for remediating disagreements—all essential aspects of collaboration and coordination particularly given the multitude of state, regional, and local entities involved with planning and implementing the RTP.

Existing agreements articulate specific roles and responsibilities relative to unique programs, projects, and activities; these are good practice to have in place to guide collaboration between the agencies. For instance, an Memorandum of Agreement executed in late October 2011 demonstrated multi-modal coordination between MAG, ADOT, METRO, and the City of Phoenix for the development of the specific Phoenix West/I-10 Corridor and has provisions such as specific data sharing and required documentation of discussions to govern activities. Yet, without protocols or guidelines at a reasonably detailed level in all written agreements or through some other mechanism, there may be a greater risk of working at cross purposes, misunderstanding, duplication, inefficiency, and resentment as well as reduced effectiveness in implementing the RTP. While no specific problems were identified, current practices could be further enhanced by written provisions that could better define the functional responsibilities of each RTP Partner to strengthen the process. Such provisions should include codes of conduct, methods of conflict resolution, and specific communication protocols. For instance, once a conflict is identified at the project level, the formal written agreements could require the first step as discussion among project staff; if unresolved, the next step should outline the escalation of issues to the next levels including executive management, the MAG Transportation Policy Committee, and ultimately the MAG Regional Council.

Our position is supported by the findings of the 2010 Federal Highway Administration and Federal Transit Administration review of MAG's planning process that recommended that MAG and its partner agencies clarify roles and responsibilities of the organizations participating in the RTP planning process. For example, that review specifically concluded that MAG should work cooperatively with ADOT to develop a new agreement that "formalized mutual roles and responsibilities" to improve accountability and transparency of the planning process. Currently, both agencies are negotiating a revised Memorandum of Understanding to ensure cooperation and coordination through the sharing of information. This draft agreement covers scope of work, sets forth a cursory summary responsibility matrix for timed events, and standard terms and

conditions—in substance standard contract language rather than functional guidance. One section of the draft Memorandum of Understanding incorporates a "conflict and dispute resolution process" requiring the parties to attempt early resolution of conflicts through direct discussions between the ADOT Multimodal Planning Division Director and the MAG Transportation Director and, if conflicts are unresolved, then the ADOT Director and MAG Executive Director are involved. The agreement could be improved by expanding it to clearly delineate roles and responsibilities, setting up communication protocols, and describing the steps executive management, managers, and key staff should follow when discussing issues as part of partnering sessions at the project, corridor, or intergovernmental levels prior to bringing matters to the public MAG Transportation Policy Committee. Further, the draft Memorandum of Understanding does not address codes of conduct in performing responsibilities and only covers planning activities involving federal funds. We believe the agreement should also incorporate aspects of Proposition 400—a significant funding source of RTP activities. According to MAG, the MAG/ADOT planning agreement has been completed and executed.

As an example, MAG and its partners could adopt elements of the San Diego Association of Governments' Memorandum of Understanding with the California Department of Transportation that dictates specific functional elements and responsibilities of the two entities. Specifically, the MOU assigns project delivery responsibilities to directors with the California Department of Transportation that include development of documentation to be provided to the San Diego Association of Governments through weekly project management meetings such as a baseline project scope, schedule, and budget as well as a report of deviations.

In relation to a different Memorandum of Understanding related area, we found that although the transit planning Memorandum of Understanding between MAG, RPTA, METRO, and the City of Phoenix was recently revised, other changes would improve these agreements. Efforts in 2009 and 2010 examined, clarified, and integrated regional transit programming and planning roles and responsibilities between MAG, RPTA, METRO, and the City of Phoenix to reduce duplication. Specifically, the four agencies discussions and recommendations centered on four primary activities—transit *system* planning, transit *project* planning, transit *support* planning, and transit *operation* and implementation. As a result of those efforts, included in the Memorandum of Understanding were four clarifying recommendations for coordination of transit planning.

- MAG is responsible for transit system planning for the region including some corridor, system, and sub-regional studies including the transit component of the RTP.
- MAG will determine the appropriate agency to conduct and manage the locally preferred analysis process when required for projects. The resulting locally preferred alternative will be reviewed and approved through the MAG committee process after review and adoption by local jurisdiction and review and acceptance by METRO and/or RPTA Boards. Design concept reports and other project scoping documents will be reviewed and approved through implementing agencies such as RPTA and METRO although MAG is a member of the project management team for project planning studies.
- Regional sustainability issues are coordinated at MAG, and project specific sustainability initiatives are coordinated by RPTA and METRO.

- Regional transit oriented development planning issues should be coordinated at MAG and project specific transit oriented development initiatives should be coordinated by RPTA and METRO.

These agreements outline certain roles and responsibilities, but there may still be some confusion in the actual implementation of the provisions. For instance, at a meeting held on February 14, 2011, both MAG staff and committee members seemed unclear on the interpretation of the agreed-upon transit planning activities in practice and sought additional clarity over agency roles and responsibilities. Thus, while progress is being made, additional clarity may be needed in this Transit Planning and Programming Memorandum of Understanding. For instance, the current agreement describes several activities, such as the RTP development, where parties to the Memorandum of Understanding agree to "work cooperatively with each other" in performing the activity. Yet, the mechanics and specificity of process behind the level of cooperation desired is missing in areas such as communication frequency, timing, and content as well as the level, timing, and weight of input into agency activities. According to the agencies involved with the transit MOU, the parties worked diligently to construct an agreement that clarified roles and responsibilities in general terms to allow needed nimbleness in executing those responsibilities. As such, the consensus is that the current planning agreement has not been in place long enough to fully evaluate its effectiveness—although the current agreement is viewed as adequate to address agency needs at this point. Should the current agreement prove unsuccessful, the parties seem open to strengthening the agreement at that time as needed. Moreover, we were informed "that the transit planning partners will be working on a set of guidelines for project changes regarding type of information, overall schedules, and agency responsibilities."

***Process Guiding RTP Partner Meetings Should be Formalized and Enhanced***

On a periodic basis, RTP Partners hold meetings to ensure overall coordination of planning and implementation activities. Goals of these meetings include uniform revenue forecasts, integrated approach to development of corridors and services, and provision of clear and concise information to the public. Through our interviews, staff informed us of a variety of meetings currently scheduled on a weekly, monthly, and quarterly basis. For instance:

- Monthly MAG Freeway meetings are conducted with transit to coordinate efforts and determine which agency will perform certain planning studies.
- Various transit meetings are held on a periodic basis such as Regional Transit Planning Team (MAG, RPTA, METRO, and City of Phoenix) meetings held monthly, Executive Director/General Manager meetings between RPTA and METRO held quarterly, and ADOT regional freeway meetings held monthly.
- A series of annual or semi-annual "life cycle program" working group meetings are conducted within the individual modes; however, in practice, there is little multi-modal representation within the life cycle program process.

While numerous opportunities exist to confer and coordinate, we noted that minutes of these meetings are not prepared so attendance cannot be confirmed. Without minutes or other information, we could not identify staff or entity representation at meetings or even the frequency that meetings occurred. Similarly, it appears that local transit operators participate in the Transit Life Cycle Program meetings and local public works departments attend Arterial Life

Cycle Program meetings, but we found little evidence to suggest other cross-modal participation in these events. While the working group meetings may be open to anyone who wants to attend and that similar cities are represented in the Arterial Life Cycle Working Groups and the Transit Life Cycle Working Groups, the specific individuals attending each group and their functional expertise are typically different—although a handful of individuals participate in both groups. Thus, even though important proposed project decision recommendations impacting budget, scope, or schedule are discussed in the mode-specific meetings, we could not assess the efforts of the RTP Partners in coordinating on projects impacting multiple modes, nor could we determine whether appropriate staff were included or inserted at the opportune time in the process. If integrated multi-modal viewpoints are not obtained or considered before project change decisions are recommended, full regional impacts of project change decisions may not be known.

Little documentation is available conveying discussions, issues, or decisions reached. For example, we found minutes of meetings at the freeway project development level, but little documentation that the issues were discussed at the RTP Partner coordination and planning level. Additionally, there are no minutes or a central repository of data showing items discussed, agreements reached, and action items.

The RTP Partners should ensure written records and documentation are developed and maintained to provide records of activities, assist in decision monitoring, allow better information sharing, and memorialize coordination efforts. Further, by consistently developing and sharing agendas in advance of all the meetings listed previously, the RTP Partners can better encourage partner participation.

## Stronger Leadership by TPC Could Enhance Regional Effectiveness

Established through statute, the Transportation Policy Committee consists of 23 voting members from a wide range of interests and entities. In addition to representatives from MAG's member agencies, other partner agencies are represented on the committee including Citizens Transportation Oversight Committee and the State Transportation Board, as well as six public members representing business, transit, freight, and construction interests. Yet, currently absent from the Transportation Policy Committee membership are representatives from RPTA and METRO. To achieve true multi-modal input and agreement in the planning and implementation of the RTP, we believe that transit representatives from RPTA and METRO should also be members of the Transportation Policy Committee. These entities would provide regional transit operator expertise similar to the freeway expertise provided by State Transportation Board's representation on the committee. Because Transportation Policy Committee membership is drawn predominantly from MAG Regional Council members and neither RPTA nor METRO are part of the regional council, those agencies are not represented on the MAG Transportation Policy Committee. While certain transit interests are represented on the MAG Transportation Policy Committee through private sector representatives, they do not necessary represent transit operator perspectives. Further, cities represented on RPTA and METRO's boards are also represented on the MAG Regional Council, but they speak for their individual city constituents when on the MAG Regional Council not the transit operator viewpoint. This arrangement is not consistent with a number of peer regions in California, Texas, Colorado, and Utah, where the transportation policy governing body membership includes transit operator agency representation.

With the Transportation Policy Committee's emphasis on the regional, multi-modal planning through the RTP, this committee holds an important and critical role in the region as noted in the text box on the following page. As such, the Transportation Policy Committee members could provide an essential central leadership role to foster and facilitate the close collaboration needed among all the agencies through an enhanced policy structure and defined protocols surrounding the development of the RTP and subsequent changes. Activities of this central committee could also be expanded to address other issues raised in our audit such as tracking and monitoring performance and setting the criteria or framework for project change considerations. For - instance, the Transportation Policy Committee could:

**The Transportation Policy Committee's Responsibilities include Developing the Following**:

- Regional Transportation Plan ;
- Transportation Improvement Program;
- Material Cost Change Policy for Regional Freeway; -
- Accelerations to the Regional Freeway Program
- Amendments to the Regional Transportation Plan

- ✓ Drive more prescriptive approaches to project selection and adjustments based on performance measures and consideration of what is best for the region as a whole by defining specific performance targets in specific corridors and requiring RTP projects or subsequent changes to demonstrate how those performance objectives were considered, among other factors such as economic, population density, and regional development, as a condition of receiving funds.
- ✓ Craft policy with defined procedures for making changes to the RTP requiring projects to demonstrate how they support regional goals and not just local preferences. Some procedures currently exist to guide arterial project change related to improving congestion and mobility in the region that could be used to craft policies for all modes.
- ✓ Work collaboratively with the other RTP Partners and related agencies to achieve consensus and agreement and set protocols on how life cycle processes will function and when proposed projects should be provided through the MAG committee process for early deliberation.
- ✓ Establish and require compliance with protocols for multi-modal involvement in LCPs and working group meetings to enhance collaboration and the sharing of modal expertise to better understand regional impacts.
- ✓ Encourage freeway and transit implementers and operators to leverage MAG staff as resources on initial project change discussions to assist in shaping the regional project decisions for acceptance through the RTP committee process and meeting the goals of the RTP as well as to better connect planners with implementers and operators.
- ✓ Clarify and define RTP Partners roles and responsibilities in planning and implementation, ensuring coordination and reducing duplication, and resolving conflict.
- ✓ Track system performance and determine success of the implementation of the RTP - through ongoing measurement and oversight. -

Redefining and reestablishing the TPC's role would be a sensitive, challenging, and important initiative involving changes to statutes. Success, therefore, would require developing more structured policies and practices following a collaborative, deliberative, and inclusive process gathering and inviting extensive input, perspective, involvement, expertise, and consensus among responsible parties.

## Given its Responsibilities under Proposition 400, CTOC can be more Effective

Separate from the primary agencies involved with the RTP and their respective governing boards and committees, Arizona statutes created the Citizens Transportation Oversight Committee related to the initial Proposition 300 sales-tax initiative primarily related to freeway transportation projects, passed in prior years. Established in 1994, CTOC is tasked with facilitating citizen involvement in the decision-making process for planning and construction of freeways, arterial streets, and transit improvements funded by one-half cent sales tax propositions. While initially focused solely on Proposition 300, CTOC's role has been expanded to oversee Proposition 400 projects as well. Composed of public members, CTOC is an independent body with authority and responsibility separate from MAG, ADOT, RPTA, and the State Transportation Board.

As modified by Proposition 400, Arizona statute grants CTOC broad authority and input on matters concerning the regional transportation plan and process. The CTOC Chairperson serves as a voting member of the MAG Regional Council and MAG Transportation Policy Committee, and CTOC members are tasked with many key responsibilities including the following:

- Review and advise the Governor, Legislature, State Transportation Board, Director of ADOT, MAG Regional Council, and the Board of Directors of the Regional Public Transportation Authority on matters related to projects funded by Proposition 400 and in the RTP;
- Review and make recommendations regarding any proposed major amendment of the RTP by the MAG Regional Council;
- Annually review and comment on the criteria developed by MAG to establish the priority of corridors, corridor segments, and other transportation projects; and
- Make recommendations to MAG, RPTA, and the State Transportation Board regarding transportation projects and public transportation systems funded in the RTP, the Transportation Improvement Program, the ADOT Five-Year Construction Program and the Life Cycle Management Programs.

Prior to its involvement with Proposition 400, CTOC filled a similar role under the 1985 Proposition 300, the original 20-year excise tax that primarily funded freeway construction. Proposition 400 expanded CTOC's role by increasing its oversight of all RTP projects including arterial and transit, and is promoted by MAG as providing one of the critical safeguards in place to enhance accountability of the plan. In fulfilling this role, CTOC facilitates citizen involvement by following the Open Meeting Law and allowing public comment at its meetings. Additionally, CTOC issues an Annual Report presenting status updates on freeway, arterial, and transit programs as well as budget updates, framework studies, and a financial compliance audit.

However, we found that the CTOC could operate more effectively given the breadth of its responsibilities. This issue was also mentioned by the Federal Highway Administration and Federal Transit Administration in its August 2010 report; specifically, the federal representatives noted that the public felt CTOC had not fulfilled its role as a formalized means for citizens to express ideas and concerns. Moreover, the federal review cites ADOT and MAG staff as admitting that CTOC is "not well-attended and does not necessarily function effectively."

Our review reveals a number of opportunities where CTOC can bolster its contributions to the process, better serve the public, enhance its internal operations, and transition into a more robust oversight committee addressing its multi-modal responsibilities. In particular, we noted the following:

- ✓ <u>CTOC should develop operating protocols or guiding principles</u>

  Statute broadly outlines CTOC's responsibilities, but provisions do not prescribe how CTOC should fulfill its obligations. For instance, the committee is responsible for making recommendations to MAG on RTP amendments, priority criteria, and any transportation and transit projects in the RTP. Yet, it has not adopted formal guidelines detailing how it will fulfill its duties. Our reviews of meeting minutes do not demonstrate such methods in practice nor could we find specific instances of how members carried out these duties.

  We identified, however, that other peer agencies developed formal documents to guide committee functions. In particular San Diego's "Statement of Understanding Regarding the Implementation of the Independent Taxpayer Oversight Committee for the *TransNet* Program" describes not only practices guiding how the committee fulfills its duties, but also its functional role as a partner to the regional planning agency. The established protocols delineate a number of responsibilities and duties such as to "review the major congestion relief projects identified in the Ordinance for performance in terms of cost control and schedule adherence on a quarterly basis."

  Another citizens' sales tax oversight committee from the City of Springfield, Missouri, spent its initial meetings after creation developing functions to fulfill its mandate, identifying information to request, defining how to interpret and evaluate data, and contemplating mechanisms for obtaining citizen input. Creating a similar set of protocols or practices for CTOC to employ in performing its duties would be beneficial in transferring knowledge between members rotating on or off the committee, establishing expectations for information and data needs from the RTP transportation agencies, and demonstrating accountability to the public.

✓ CTOC should require receipt of substantive data prior to RTP Partners reaching final decisions to adequately fulfill its duties

During CTOC bi-monthly meetings, representatives from MAG, ADOT, RPTA, and METRO provide important status updates by mode as well as issues affecting the region overall such as air quality. These updates include discussions of project costs, estimated future costs, project schedules, and changes made to projects. However, it does not appear that the RTP agencies provide the CTOC members with substantive information such as alternatives considered when rebalancing the life cycle program or deliberations when resetting priorities related to proposed project changes. In representing the public's interests in these issues, it is reasonable to expect data sufficient to assess the reasonability and deliberate processes surrounding the issues. Such substantive data should include options for making proposed changes, alternatives considered, risks and impact of various alternatives, underlying data behind changes, and rationale behind ultimate action recommended—in essence, the same presentation packets that should be provided to MAG oversight committees.

**CTOC Opportunities to Bolster its Contributions to the RTP Process Include:**

- ✓ Develop operating protocols
- ✓ Require more substantive data from RTP Partners
- ✓ Take formal deliberation and action
- ✓ Make recommendations directly to MAG Regional Council
- ✓ Change current structure to receive administrative support from MAG
- ✓ Modify membership to obtain additional specific expertise

Further, under existing practices, CTOC typically does not receive documents or presentation packets in advance of the meetings. As a result, members do not have sufficient time or opportunity to review information and develop questions before hearing detailed presentations at the actual meeting. Rather, CTOC members typically first hear and see presentations through overheads and handouts at the same time the public learns of these issues during the public meetings. In some circumstances, information may be provided advance of the meeting. However, without some opportunity for advance preparation and contemplation of the complex transportation and transit issues facing the county, CTOC members face additional challenges in fulfilling their roles to review transportation matters and make meaningful recommendations to the RTP Partners.

✓ RTP Partners should present items for formal deliberation and action

Further, our reviews of meeting minutes over the five-year period did not identify instances where CTOC was specifically asked by RTP agencies for input on changes made to the RTP or where the agencies gave the CTOC an item to vote on and make recommendations. Rather, the agencies provided status presentations and responded to member questions as needed, thus, appearing to simply expose matters in contrast to setting specific action items for CTOC recommendation. While MAG informed us that CTOC's responsibilities related

to commenting on the RTP and other matters are "permissive" rather than mandatory, we believe the process could be enhanced by more actively employing the citizen's oversight committee to obtain input and perspective.

Other peer citizen oversight committees appear to play more active roles in their regional transportation process through voting on options presented and formally approving or disapproving project actions taken; not that such votes would necessarily stop or change an RTP Partner's action. For instance, in San Diego, the RTP transportation and transit agencies take alternatives, options, and planned actions before its taxpayer oversight committee for comment and formal recommendations. However, the RTP agencies may still implement a program even if the oversight committee disapproves of the proposed project actions.

In Arizona, statutes task CTOC with similar responsibility to make recommendations to MAG, RPTA, and the State Transportation Board regarding transportation projects and public transportation systems funded in the RTP. Yet, we found very limited indications that such formal recommendations were made. Although any formal CTOC recommendations would be advisory in nature and not preclude MAG's Regional Council from taking action, MAG committee members should at least have an understanding of the opinion and perspective of CTOC when considering a vote. Thus, we believe that in addition to taking more formal actions as described in the preceding section, CTOC should make recommendations that are provided to the MAG Regional Council and the Transportation Policy Committee for their review and consideration through a formal mechanism.

While under Proposition 300, CTOC mainly provided oversight of the regional freeway system, in its current expanded roles under Proposition 400, it is also responsible for the arterial and transit components. Yet, as the federal review conducted jointly by Federal Highway Administration and Federal Transit Administration concluded, CTOC does not appear to provide oversight or feedback for MAG plans and projects outside of the freeway system. Thus, the CTOC members should also review and comment on non-freeway components of the RTP as well.

- ✓ <u>CTOC should be supported by MAG staff, rather than ADOT</u>

  Under current statutes, ADOT is responsible for providing administrative support to CTOC that includes activities such as meeting coordination, report distribution, and development and collection of information for the committee's review. This support by ADOT was logical under Proposition 300 where CTOC's focus was primarily related to freeway construction matters. But, given the multi-modal focus of Proposition 400 and CTOC's responsibilities for overseeing regional issues related to several modes of transportation—not just freeways—it is reasonable that MAG would be a more appropriate entity to provide administrative support given its role and authority over the multimodal RTP. However, implementing this recommendation would require a corresponding statutory change.

Our review of other similar citizen oversight committees found that it is typical to be supported by the metropolitan planning organization in the area. For example, both the Fresno Citizen Oversight Committee and the San Diego Independent Taxpayer Oversight Committee established to oversee local sales tax measures are supported by their regional planning organization. This same support structure is in place with local tax measures overseen by citizen groups with regional transportation planning agencies such as Orange County Transportation Authority and Los Angeles Metropolitan Transportation Authority.

Similarly, the joint Federal Highway Administration and Federal Transit Administration report issued in 2010 suggested establishing a new Citizens Advisory Committee housed within MAG that could report directly to MAG committees. While we support the idea of having a citizen's committee supported by MAG and reporting to MAG, we believe that the CTOC committee already in existence could fill this role.

✓ Some CTOC members may not have requisite experience as envisioned in statute

Comprised of seven citizen members, each volunteer CTOC member serves a term of three years and is appointed either by the Governor or the Maricopa County Board of Supervisors. If appointed by the county board, statutes stipulate that these members possess expertise in transportation systems or issues. However, our review of member biographies suggests that only two of the five members appointed by the County Board of Supervisors appear to offer such transportation-specific experience. While the inclusion of the general public on bodies like CTOC is common and valuable, the statute is clear on this requirement and appointing parties should ensure CTOC members selected possess the expertise envisioned to provide industry appropriate input and decision-making. Clearly, not all members need to bring the same type or level of expertise to the table to provide valuable insight and contributions.

We identified other independent oversight committees with membership requirements that could be valuable for CTOC members. For example,

- The San Diego Independent Transportation Oversight Committee requires one board member to be a "licensed architect or civil/traffic engineer with experience in transportation and/or urban design" and another board member to possess "experience in municipal or public finance and/or budgeting."
- A peer oversight committee in Marin County, California requires certain members to have expertise in planning, environment, and para-transit.
- In Sacramento, California, the Independent Taxpayer Oversight Committee for local Measure A requires members possessing credentials including licensed civil engineer, transportation planner, manager of large development or construction projects, and senior-level professional in municipal auditing, finance or budget.

Given the addition of transit modes under Proposition 400, CTOC membership may benefit from members with expertise in rail and bus transit. By ensuring that the CTOC includes a broad complement of skills and expertise, it is well-positioned to cover a broad spectrum of project and program issues, whether it is related to financial issues or project design and scoping issues and to best protect the public's interest.

## Current Structure and Statutes Present Challenges to Regional Transit Focus

While part of the organizational structure in place in Maricopa County is similar to peers, the current structure varies significantly in the transit area. Specifically, the region is the only one in the country that operates bus transit and light rail through two separate agencies. Compounding the situation is the number of local bus transit operators in addition to a regional transit entity (RPTA) located within the single Maricopa county area. Combined, the current structure and related practices present challenges to a regionally focus transit system.

To coordinate and envelop the needs of the more than a dozen transit-related stakeholder entities will likely require consolidation of activities into some form of a regionalized entity. Several national studies suggest many benefits can accrue in a unified, coordinated, regional transit system accomplished through some regionalized body. Arizona statutes established RPTA as a regional body. However, the City of Phoenix—the oldest and largest operator in the region—is a significant entity in the area with in-depth experience and the majority of bus routes in the region and is the Governor's appointed Federal Transit Administration's designated recipient for federal transit funds. Further, the City also manages supporting systems such as fare collection, bus stops, vehicle management, and scheduling data on behalf of all the local jurisdictions within Maricopa County.

Since its creation in 1986 when statutes established RPTA with the passage of the original sales tax proposition, RPTA was charged with developing a regional public transportation (transit) plan. Through Proposition 400, RPTA's level of accountability and fiscal responsibility increased to also being responsible for maintaining the transit life cycle program covering proposition funded transit bus operating, bus capital, and rail capital projects. As such, RPTA adopted a mission "to develop and deliver an integrated regional transit system with excellence in collaboration with member agencies and through public and private partnerships."

Currently, RPTA facilitates meetings to share and discuss local operator information, schedules, fare, and marketing with the goal of connectivity of information. However, a 2007 strategic review by Booz Allen Hamilton cited the current organizational structure as a challenge for RPTA to fulfill these responsibilities. Specifically, RPTA became the coordinator of services for the region although fulfilling this statutory role and establishing and operating a regional system would be difficult given that light rail and most bus routes are operated by local jurisdictions or other entities. Moreover, much of the regional operating data is captured by the City of Phoenix. For instance, even though RPTA operates a county-wide customer service call center and coordinates a number of other services for the area, it may not have access to all requisite information to assist riders since that data is maintained by the City of Phoenix. The 2007 study also concluded that funding is the key to overseeing a structure reliant on one regional entity with multiple transit agencies in a region. Specifically, the study suggests the oversight agency should have control over all or part of the funding of the individual transit agencies. In Maricopa County, RPTA is responsible for the Public Transportation Fund monies that are primarily generated through the Proposition 400 sales tax and federal programs.

***Consolidating and Coordinating Bus and Rail Entities Could Provide Efficiencies and Better Serve the Region***

While there are many different combinations for entities implementing a regional transportation system, our review of 29 peer regions across the country reveals that none of these regions operated bus transit and rail from two separate and distinct agencies like in Maricopa County. For instance, operators in Baltimore, Boston, Dallas, Denver, Houston, Los Angeles, Philadelphia, Portland, Seattle, and St. Louis all manage their bus and rail activities with a single entity—although the specific central agency charged with responsibility varies under the different models. In Portland, Oregon, the regional public transportation agency, TriMet, operates bus and rail activities. In contrast, a regional transportation planning organization (the Metropolitan Transportation Agency) operates bus and rail in other cities such as Los Angeles, California. These comparisons do not necessarily indicate a concern with Maricopa County's current structure, but some type of combination of RPTA and METRO seems to be the future direction.

**Potential Efficiencies From a Rail and Bus Transit Consolidation**

- ✓ Savings from reduced overhead, administrative, salaries, and operational costs
- ✓ Reduced staff time needed to coordinate and present to smaller number of boards and committees
- ✓ Streamlined process for vetting projects and making decisions with fewer committees

In 2007, the RPTA Board of Directors passed a strategic vision resolution directing RPTA to work towards consolidation with METRO. Recent activities within each agency are moving closer to making this "collaboration" a possible reality. Specifically, the METRO Board of Directors passed a resolution at its May 3, 2011 meeting to have a single chief executive officer oversee both METRO and RPTA operations; in a similar move, the RPTA Board of Directors gave its approval for one chief executive officer to serve both agencies retaining two distinct boards to separately oversee bus transit and rail. This move could reap financial benefits from reduced salaries with only one chief executive as well as other organizational operational efficiencies.

RPTA already provides several support services for METRO under a Memorandum of Understanding that includes human resources, financial services, lobbying, and other services as requested. Thus, in theory, a consolidation of RPTA and METRO may have the potential to create additional efficiencies and savings that could materialize from reduced overhead and administrative costs. Following board directives, both agencies have already taken action over the last few months to realize some of these potential savings. For instance, RPTA now leases space in the same building as METRO and is tasked with identifying efficiencies from being "co-located" such as sharing postage meters, copy machines, technology maintenance agreements, and graphic services.

Other theoretical efficiencies could result purely from operating with a fewer number of boards and committees reducing staff time involved with coordinating meetings and members, making fewer presentations, and producing less follow-up data. Operating with fewer boards and committees could also streamline the process of vetting projects and making decisions. Currently, RPTA and METRO have seven boards and committees between the two entities—in

addition to the member agencies' city council and local management structure—that are involved with considering, overseeing, and making decisions on RTP projects. Thus, if the RPTA and METRO boards and committees were ultimately consolidated into one board, it would inherently result in a more efficient structure. Although a single-board option has been identified, recent RPTA Board of Director guidance appeared to postpone investigating that option at this time. However, a combined bus transit and rail entity could possibly have a wider range of transit tools and options at its disposal to address needs and demand in the region.

In January 2011, the boards of RPTA and METRO convened an Administrative Efficiency Opportunity Team initially comprised of RPTA and METRO staff and subsequently enhanced with six additional members representing the central, east, and west areas of the county. This team was tasked to work collaboratively to "determine if efficiencies and costs savings could accrue to either organization based upon a shared services arrangement or through process improvements that could occur through a more integrated approach to transit management." While the Administrative Efficiency Opportunity Team explores options, the RPTA Budget and Finance Subcommittee expressed concerns that the Administrative Efficiency Opportunity Team's charge was not to combine the agencies or boards at this time. Moreover, the RPTA Budget and Finance Subcommittee voiced concerns that future cost efficiencies are dependent upon a future organizational structure that is not yet defined. As of May 2011, the RPTA Board of Directors planned to continue discussions on future organizational structures to be considered.

As such, specific ideas, initiatives, and costs have not yet been vetted, or approved by either the RPTA or METRO Boards. However, RPTA's rough draft estimates suggest that a possible $950,000 can be realized through position savings and an additional $500,000 in cost reductions may be possible. Individual items include shared graphic and design services, information technology maintenance, and copy centers. The specific one-time as well as on-going cost savings are only administrative in nature and will not significantly impact transit operating cost performance results since the majority of operating expenses result from service operator contracts with Veolia, ValuTrans, or First Transit.

While RPTA and METRO are working together to explore efficiencies and may work toward a potential combination at some point, there are certainly several hurdles that the agencies must address prior to any potential combinations. One obstacle is the local jurisdictional desire to protect their transit investments and maintain control of local decisions. Given that three cities have provided the primary funding of the initial 20-mile light rail segment through local sales tax initiatives, those cities may not agree to other jurisdictions voting on their investments should RPTA and METRO combine into one agency. Some entities exist with the concept of operating separate boards within a combined entity to deliberate and make decisions on light rail issues. Ultimately, the decision to consolidate or coordinate as well as the success of that decision if implemented will depend on the political will of the region and how elected officials believe an RTP can be most effectively implemented while balancing local preferences.

Another hurdle relates to several cities within Maricopa County that have local sales taxes to fund projects solely within their local area. While it is likely that such jurisdictions would want to leverage local funds with available Proposition 400 funds, these cities may seek to protect their respective local interests relating to ensuring city projects are funded over the goals of other

competing cities' projects or over what is best for the region. One previously unsuccessful option was to promote a more regional concept by introducing a comprehensive regional tax. Voters rejected this concept for the first time in 1989 when a countywide tax for a multi-modal rapid transit system was brought before the voters and failed by 61 percent. With the success of light rail and more transit measures passing in local jurisdictions since that time, the broader county electorate may be more open to passing a global transit tax across the county than before.

***Regional Bus Transit Could Also Benefit From Further Consolidation and with Local Operators Coordination***

Complicating the separate bus and rail issue is the multitude of bus service entities involved in the region. In addition, more than a dozen local municipalities operate their own transit departments in Maricopa County. This multitude of players and unique stakeholder interests contributes to difficulties with coordinating programs, initiatives, and routes and may contribute to regional disagreements as well as operational administrative inefficiencies.

In Maricopa County, the majority of bus service is operated by RPTA, the City of Phoenix, and the City of Tempe. These entities contract with private service providers to manage operations and deliver transit services. Other cities in the region purchase transit service from these three entities or provide transit services directly. Regardless of the model used to provide bus service, nearly a dozen local municipalities in the region operate their own transit department—each incurring administrative operational costs and, typically, capital construction expenses as well. This host of players, local interests, and stakeholders add additional complexity to transit issues and impact the coordination and efficiency of providing regional transit services. Our review reveals that most peer transit regions across the country operate with some type of regional transit entity or centrally coordinate and manage the local operators through a regional body such as RPTA in Arizona. However, unlike Maricopa County, the peer regional agencies either coordinate with fewer local transit jurisdictions and operators or manage a multiple-county area.

The 2007 Booz Allen Hamilton report benchmarked to the 50 largest urbanized areas in the county and found the predominant national pattern is a single, special purpose regional transit agency that provides all transit services to a region. Specifically, nearly 70 percent of benchmarked areas employ a single agency concept with the most common source of funding generated from a sales tax earmarked for transit. However, within these model areas, the study identifies both obstacles and opportunities. For instance, the Dallas Area Regional Transit Authority and Denver Regional Transportation District were challenged in their early years with "arguments about equity in connection with transit service and capital program decisions" between central cities and suburban cities—although the tensions subsequently subsided. Certainly, such significant changes cannot take place without difficulties. The Booz Allen Hamilton study points out that an important outcome resulting from a strong regional relationship is the "ability to plan for transit on a regional basis, without competition for local and federal funds"—mainly, because a single agency can apply for federal funds for the entire region rather than each individual transit agency applying in a piecemeal fashion. Thus, the study suggests a productive relationship established between the regional entity and the metropolitan planning organization is critical to success of planning activities.

However, the structure in place at the Metropolitan Transportation Commission in the Bay Area of California is certainly an exception to the peer group norm; that agency coordinates with 26 different Bay Area Transit operators with 228 board members, serving approximately 7,000 square miles in nine-county area. While its organization is somewhat similar to RPTA's in Arizona, the Metropolitan Transportation Commission span of responsibility covers nine counties versus RPTA's authority in one Maricopa County. Recent findings raise issues with the administrative costs associated with operating these 26 Bay Area transit agencies. The Metropolitan Transportation Committee's long-range review found that the region's financial viability is at risk under the current structure due to a variety of reasons stemming from the more than two dozen separate and independent administrative structures. Significant issues involved the high costs of labor (salaries, benefits, pension,) and retiree health care costs. To address these significant issues, in March 2011, Metropolitan Transportation Commission announced a $2.5 million study to evaluate consolidating Bay Area operators and perhaps move focus from local control to a regional umbrella to achieve economies of scale.

***Potential Efficiencies and Savings Could Result from Consolidating Activities***

Similar to the potential combination of RPTA and METRO, theoretical cost efficiencies could be realized with some level of combination of RPTA and local operator activities on a regional basis. Currently, individual local jurisdictions each perform the following operational functions—although some smaller jurisdictions may contract with RPTA or the City of Phoenix to provide services:

- Bus Route Operation
- Fare Collection and Counting—although this is largely managed by the City of Phoenix
- Fare Inspection
- Fleet Planning and Procurement of Transit Vehicles
- Facilities Maintenance
- Service Planning and Scheduling

In conducting these activities, these local jurisdictions procure, manage, and monitor a variety of contracts for route operation, para-transit services, bus purchase, and maintenance that contribute to potential inefficiencies that could be eliminated through a central or regional focus. For instance, at the request of a RPTA Board of Directors member, a national transportation expert (AECOM) was hired to study the feasibility and potential benefits of a regional bus procurement. With a calculated cost savings ranging from 3 to 5 percent per bus, or as much as $25,000 per vehicle, using the study's revised costs, projected total savings could amount to more than $19.6 million for more than 1,050 buses if purchased regionally to achieve anticipated economies of scale. RPTA and the City of Tempe have agreed to joint bus purchases, while RPTA and the City of Phoenix have not come to such an agreement. However, the full benefits of consolidated buying will not be realized until most if not all cities participate in the regional purchases plan. As the largest operator in the county, savings realized will be substantially lower without the City of Phoenix's participation

Additionally, potential other cost efficiencies exist that could provide benefits both regionally and specific to individual local jurisdictions. For example, most of these entities execute individual contracts for similar services such as para-transit or route operators with each likely

charged a differing rate. If contracts were combined or organized through a master service agreement type arrangement, the region's combined buying power could result in lower negotiated rates for services. For instance, a 2008 para-transit study commissioned by RPTA found that operating cost per boarding for para-transit services in the region ranged from a low of $12.08 to a high of $55.58. With private vendor contracts likely comprising a large percentage of expenses, the varying rates charged could be responsible for significant cost variances. Even if rates charged by private vendors remained constant with current rates, at a minimum, savings could be realized from reduced administrative responsibilities resulting from fewer contracts to be managed.

Another efficiency opportunity exists within the American with Disabilities Act service area. Specifically, we noted that not all the funds from Proposition 400 sales taxes allotted for these disabled services over the past 5 fiscal years have been spent. Current RPTA board policy requires this para-transit money to be allocated to each city based on jurisdictional equity and provides the authority to spend these funds in future years. We found that some jurisdictions spent all amounts allocated while some still have significant allotments unspent. As some jurisdictions experienced demand and costs relative to these services more than others, if the funds were allocated regionally rather than under the premise of jurisdictional equity, the remaining $7.5 million could be used to provide additional funds to those jurisdictions demanding more services.

***Service Improvements Could be Accomplished through Future Consolidation Efforts***

Over the last two decades, RPTA and the local operators have worked collaboratively to provide a more cohesive regional focus for the ridership to better integrate and consolidate transit services across the region. As such, several challenges to consolidation faced by other peer organizations have already been addressed such as common branding, consistent signage, combined customer service, uniform fare structure, and a regional transportation authority. In fact, in 1993, the entities in Maricopa County agreed to unify buses operating in the region with the same color and design scheme, trip planning software and location, and transit network name known as "Valley Metro." Although different entities operate the various buses, the entire network appears unified and seamless to the rider—with the exception of the City of Phoenix "Rapid" Express buses that operate under a different name and color scheme.

**Current Bus Transit Services Consolidated for the Region with RPTA**

- ✓ Customer Service
- ✓ ADA Certification
- ✓ Transit Book
- ✓ Fare Policy & Media
- ✓ Mobility Center
- ✓ Marketing
- ✓ Vanpool
- ✓ Rideshare
- ✓ On-line Trip Planner
- ✓ Valley Metro Brand Buses
- ✓ Web Site

Additionally, RPTA and the local operators have collaborated in other areas. For example, as part of the life cycle program meetings and other regular meetings, RPTA and the operators work together to maximize schedule coordination. Further, they issue one combined "transit book" showing all bus routes and schedules and have had a unified fare structure in place for more than 20 years allowing riders to pay the same rate whether on locally-operated routes or RPTA-operated routes throughout the county.

These efforts toward a single, regional outlook appears to successfully provide easier and more simplified travel for transit users. Results of a 2010 rider satisfaction survey corroborate this statement revealing that 70 percent of riders are highly satisfied with transit service in the Maricopa County region—importantly, there was a significant increase in riders indicating they are "very" satisfied—up 5 percent since 2008. While great strides have been made regionalizing many service aspects and increasing customer satisfaction, there are still other opportunities for enhancing effectiveness as discussed as follows.

- ✓ Schedule Coordination
  Because each local jurisdiction decides on the routes to be funded and the operating frequency, bus service may not always be optimized for the rider as bus routes may stop at local jurisdictional boundaries thus forcing passengers to transfer to another bus provider. These situations contribute to missed connections, schedule delays, and unsafe conditions depending on weather, negatively impacting particularly the region's most vulnerable groups. For instance, an October 2006 study of region's para-transit services reported that passengers encountered long wait times at transfer sites. These long wait times occurred when the passenger crossed city boundaries due to separate service provider servicing separate jurisdictions. Forty-six percent of riders that made transfers waited over 30 minutes for their connection and, in four instances, riders waited nearly 3 hours for a transfer. Moreover, national peers in major cities such as Dallas, Denver, San Diego, and Las Vegas all operate para-transit services regionally as compared to Maricopa County's fragmented system.
- ✓ Public Input Process for Service Changes
  With nearly a dozen operators in the county and portions of routes potentially funded by more than one jurisdiction, bus transit riders interested in providing input relative to transit services may have to attend public hearings in a number of cities and times to participate in the process—assuming they can identify which local jurisdiction funds the routes they ride and which particular public hearing they should attend. At the July 8, 2011 RPTA Board of Directors meeting, members agreed that RPTA would run a single regional and comprehensive public hearing process to vet all service changes and centralize the information for riders. However, the region's largest operator, the City of Phoenix, had not agreed to participate in the regional hearings as of June 2011.

Operating a network with too many disparate agencies contributes to difficulties such as uncoordinated schedules, long transfers, inconvenient trips, and dissatisfied riders who stop using the system. While much progress has been made regionalizing several core functions, more could be done to improve system effectiveness. However, unless staff and political overseers make regionalization their priority and take proactive steps towards that goal, then Maricopa County will not realize all it could from a regional system. Decision makers could consider a combination of some local operator functions into one regional entity to result in a more effective structure for the riders using transit services—or some other collaborative structure to reach the same goal.

***Barriers Exist to Full Regionalization***

However, there are substantial challenges associated with combining RPTA and the local transit jurisdiction functions. For instance, under the existing structure, each jurisdiction has control over its services and has some level of assurance transit services follow local residential preference and investment. Regionally, therefore, the challenge is to reach the delicate balance that meets the needs of local preference while achieving regional benefits. When RPTA hired Booz Allen Hamilton in 2006 to help establish its strategic plan, consultants noted that the "local competition for funds creates parochial attitudes that must be overcome" in Maricopa County. The consultant's review also surmised that local jurisdictions have financed and managed public transportation services for many years prior to the creation of RPTA and, as such, have taken on a leadership role in the area.

The Booz Allen Hamilton reports, as well as our audit results, note an appearance of the strong desire to retain control over funding and transit services within the jurisdictional boundaries; they may not see the benefit of turning over operations to a regional authority. Certainly, local transit entity staff have a vested interest in continuing in their roles; we were informed in an interview with the City of Phoenix that City staff believe they should serve and protect their local jurisdictional interests. Other regions have noted similar dynamics. In a December 2010 public transit regional coordination study done in North Dakota, the authors found both real and perceived barriers to transit coordination including territorialism, resistance to change, misperceptions and negative prior experiences, and operator personalities. While the area studied is much smaller than Maricopa County, our audit interviews revealed similar barriers. These attitudes and perceptions may result in decisions based on city lines and prevent the realization of a regional system based on travel needs.

In addition to controlling the funds, another barrier is the "protection" of local transit tax revenues. Since several cities passed their own local sales tax—some specific to transit—taking a regional approach to developing and planning transit may not be of interest or priority to those cities. Over the last decade, five cities in the Maricopa County region have passed local taxes for transportation, transit, and quality of life, as shown in Table 10.

***Table 10: Cities with Local Sale Tax Measures in Maricopa County***

| | Tax | Amount | Term | Uses |
|---|---|---|---|---|
| **Phoenix** | Proposition 2000 Transit 2000 Tax | 4/10 Cent Sales Tax Increase | 2000 - 2020 | • Increase service frequency<br>• New express Rapid Transit<br>• Shuttles<br>• Pullouts<br>• Shelters<br>• 24 miles of Light Rail Transit |
| **Tempe** | Transit Improvement Proposition 400 | ½ Cent Sales Tax Increase | Permanent Tax starting in 1996 | • Increase service frequency<br>• New pullouts<br>• Shelters<br>• Circulators<br>• Rapid express<br>• Light Rail Transit study |
| **Scottsdale** | Privilege (Sales) and Use Tax | 0.2% Sales Tax Increase | Permanent Tax starting in 1989 | • Transportation Capital Improvements |

| | Tax | Amount | Term | Uses |
|---|---|---|---|---|
| **Mesa** | Quality of Life Tax | ½ Percent Sales Tax Increase with Transportation Share of 15 Percent | Permanent Tax starting in 1998 | • ¼ of tax sunset in 2006<br>• New pullouts<br>• Shelters<br>• Dial-a-ride |
| **Glendale** | Proposition 402 Transportation Sales Tax | ½ Percent Transportation Sales Tax | Permanent Tax starting in 2001 | • $1 billion for connecting to Phoenix's Light Rail Transit<br>• Increase service frequency<br>• Light Rail Transit center<br>• Express bus |

*Source: City websites, Center for Transportation Excellence Website, and www.azrail.org*

However, economic circumstances may influence individual jurisdictions to consider regionalization and maximize the use of diminishing resources. Although many of the local taxes reflected in Table 10 are slated to continue for years, revenues generated from these provisions have dropped over the last few years. Further, the Arizona State Legislature has repealed funds that previously supported public transportation services through the Local Transportation Assistance Fund. Specifically, in March 2010, the Legislature repealed more than $22 million of these state funds annually from the Maricopa County region. According to an RPTA publication, this move joins Arizona with only four other states that do not fund transit at the state level. Given the reduced resources from both sales tax and state sources, the local entities may be more willing to consider efforts to leverage limited funding such as consolidation of certain services.

## Conclusion

Striking a balance between regional system needs and local components and preference is a challenge faced throughout the transportation and transit industry. The key to success often hinges on cohesive leadership and vision as well as collaboration among all transportation and transit partners. In Maricopa County, changes to working relationships and existing oversight entities will help strengthen leadership in the region. While there are some similarities in organizational structures between what has been instituted in Maricopa County and those employed at other peer regions, there are other practices employed by peers across the country that may benefit the Maricopa County region to be more effective in meeting RTP regional goals. Ultimately, successful regionalization requires people being willing to collaborate and able to work together. Toward this goal, there are several steps that can be employed.

## Recommendations

To enhance current collaboration and communication among the RTP Partners and strengthen transit agencies effectiveness and efficiency, the RTP Partners should:

18. Develop detailed provisions for the MOU agreements between the four RTP Partners, and possibly the City of Phoenix, guiding the practical aspects of the working relationships between the agencies where coordination and collaboration is needed for planning and expenditure of federal and Proposition 400 funds including specific codes of conduct, conflict resolution, and communication protocols.

19. Similarly, strengthen the existing transit planning MOU to describe the mechanics and specificity of process behind the level of cooperation required in terms of communication frequency, timing, and content as well as the level, timing, and weight of input into agency activities.
20. Memorialize and maintain key meeting discussions at RTP Partner meetings to document items discussed, agreements reached, action items, and responsible parties for future meetings as well as attendees of the meetings.
21. Through the MAG Transportation Policy Committee, or other committee, assume a stronger and more proactive leadership role in setting framework for RTP related activities rather than just facilitating discussions—although RTP Partners should retain authority to operate individually and implement shared vision. For instance:
    - Being more prescriptive in programming based on performance measures and what is best for the region by defining specific performance targets in specific corridors and requiring RTP projects or subsequent changes to demonstrate how those performance objectives were considered, among other factors such as economic, population density, and regional development, as a condition of receiving funds.
    - Crafting policy with defined procedures for making changes to the RTP requiring projects to demonstrate how they support regional goals and not just local preferences. Some procedures currently exist to guide arterial project change related to improving congestion and mobility in the region that could be used to craft policies for all modes.
    - Working collaboratively with the other agencies to reach agreement and set protocols on how the life cycle working group process will function and the timing of when proposed projects and alternatives should be provided through the MAG committee process for early deliberation.
    - Establishing protocols for multi-modal involvement in life cycle programs and working group meetings to enhance collaboration and the sharing of modal expertise to better understand regional impacts.
    - Encouraging freeway and transit implementers and operators to utilize MAG staff as a resource on initial project change discussions to help shape the type of regional project decisions that will be accepted by the RTP committee process to meet the goals of the RTP and better connect planners with implementers and operators.
    - Defining RTP Partners' roles and responsibilities in planning and implementation, ensuring coordination and reducing duplication, and resolving conflict.
    - Tracking system performance and success of the implementation of the RTP.
22. Adjust MAG Transportation Policy Committee membership requirements to include RPTA and METRO transit representatives to better convey transit operator perspective and achieve full multi-modal input, expertise, and support for regional vision and policy formation.

23. Reaffirm the role of CTOC and increase effectiveness by considering:
    - Developing operating protocols and guiding principles describing how CTOC will function.
    - Identifying the type of substantive information it needs from the RTP Partners, in addition to the current status updates, to fulfill duties.
    - Actively questioning and deliberating items at meetings.
    - Receiving meeting packets for review and analysis prior to meetings.
    - Providing formal recommendations or reports directly to the MAG Regional Council or MAG Transportation Policy Committee related to project and program delivery as well as overall performance.
    - Receiving support from MAG staff, rather than ADOT staff.
    - Ensuring all committee members have the requisite skills needed to oversee a multi-modal system and possibly requiring more specific types of expertise needed for committee members to possess, such as transit experience.
24. Continue investigating cost efficiencies that could result from a combination of RPTA and METRO and implement measures as soon as practical to realize maximum value from initiatives.
25. Work towards realizing more benefits from regionalizing bus transit activities by strengthening the regional entity role and implementing regional activities that have potential for cost savings or better outcomes for riders such as route scheduling, fleet planning and purchasing, fare inspection and collection, coordinated automated tools, and regional service hearings.

# Chapter 5: Revenue and Expenditure Model is a Reliable Tool for Planning

As with most transportation and transit projects, performance and planning is highly dependent upon a solid financial foundation that encompasses estimation and projection of anticipated revenues and expenditures. While transportation financing is inherently complex and difficult to predict with great accuracy given external environmental factors and project timelines spanning several years, the revenue and expenditure factors and process used in the estimation model for Proposition 400 and RTP funding is reasonable and consistent with best practices.

With the proposition's passage, the RTP Partners created and refined existing revenue and expenditure estimation models. As part of our review of high-level forecasts of revenues and expenses for the major transportation projects, we studied revenue and cost estimating methodologies, assumptions, processes, and results for the five-year period ending with Fiscal Year 2009-2010. However, our review did not evaluate detailed project level expenditures at a design level estimated by transportation engineering consulting firms; nor did we attempt to align these projections with estimations when the 2003 RTP was developed. Rather, we focused on the process employed for revenue and expenditure projections. Generally, we found that the revenue and expenditure model used was reasonable and projections were mostly aligned with actual revenues and expenditures—with the exception of the recessionary period.

In 2010, MAG produced its first comprehensive financial plan document to encompass all the funding streams associated with the RTP and assumptions and methodologies related to revenue and cost estimations. Although a comprehensive funding document should have been prepared when the RTP was first created, no such plan was developed that consolidated and documented the process implemented through the individual life cycle programs for how the region will fund the freeway, arterial, and transit RTP projects. MAG recently informed us that a working paper documented all of the revenue flows underlying the 2003 RTP was prepared and is available—although we do not know if that paper was available publically. Now that MAG has assimilated a functional plan that is available to the public, MAG should continue to publish this plan at least annually and enhance the narrative and data contained within the document to be more explanatory and regionally focused.

## Revenue Models are Reasonable, Although Minor Enhancements Could be Made

The primary focus of our revenue analysis targeted ADOT's projections of Regional Area Road Fund (RARF) and Highway User Revenue Fund (HURF) monies since these estimates comprised a significant portion of funding for the RTP. RARF is the fund used to capture Proposition 400 sales tax revenue, while HURF is used to account for revenues from statewide gasoline and use fuel taxes, vehicle license taxes, and registration fees also used to fund highway and street transportation projects.

In general, we found that the forecasting model assumptions, independent variables, and risks are evaluated on an annual basis by a panel of economists using methods that conform to best practices such as statistical modeling, traffic counts, and comparisons of forecasts with actual results to determine accuracy and effectiveness. On an annual basis, these revenue estimates are reviewed by a panel of industry experts in economics, real estate, and construction. The panel

provides input regarding the expected growth rates of the various independent variables used in the model.

***RARF and HURF Revenue Forecasting Model***

ADOT uses a comprehensive model to estimate RARF sales tax revenues and HURF revenues that is highly dependent on estimates of independent variables. While we found ADOT's forecasting approach to be robust and incorporates industry best practices, some improvements could be incorporated to enhance the model. In 1997, a consulting firm developed ADOT's forecasting model for RARF revenue estimates using a series of independent variables that are updated with data provided by ADOT and other state and federal agencies such as the Arizona Department of Commerce and the Bureau of Economic Analysis. These independent variables—as shown in the text box—are consistent with those used in industry and part of equations to calculate revenue estimates. Further, in accordance with best practices, the model equations are adjusted on an annual basis with the most recent variable data available.

**Variables Considered in RARF Forecast Model**

- ✓ Maricopa County real income growth per capita
- ✓ Maricopa County population growth
- ✓ Maricopa County construction employment growth
- ✓ Phoenix Consumer Price Index
- ✓ U.S. housing start growth
- ✓ Sky Harbor passenger traffic growth
- ✓ Maricopa County total non-farm employment growth
- ✓ Prime Interest Rate -

Enhancing this model is ADOT's "Risk Analysis Process" which relies on the independent evaluation of the model variables by a panel of up to 15 expert economists representing public, private, and academic sectors. The Risk Analysis Process produces a range of revenue forecasts based on statistical simulation of inputs for the independent variables provided by the expert panel.

Similarly, ADOT's estimates for HURF revenues in 2010 applied similar variables but with a state-wide focus including the following independent variables:

- ✓ Arizona real income growth per capita
- ✓ Arizona population
- ✓ Arizona non-farm employment
- ✓ Arizona real gross domestic product
- ✓ Arizona fleet fuel efficiency
- ✓ Arizona real gas price growth
- ✓ West Coast No. 2 real diesel price growth

Moreover, the model forecasts travel demand and incorporates detailed data reflecting travel choices that are updated using on-board surveys, Regional Household Travel Survey, and the National Household Travel Survey. The model incorporates a number of elements such as

transportation and land-use interactions; distribution of household size and auto ownership; multiple vehicle weight classes for trucks; and spreading trips related to Sky Harbor Airport.

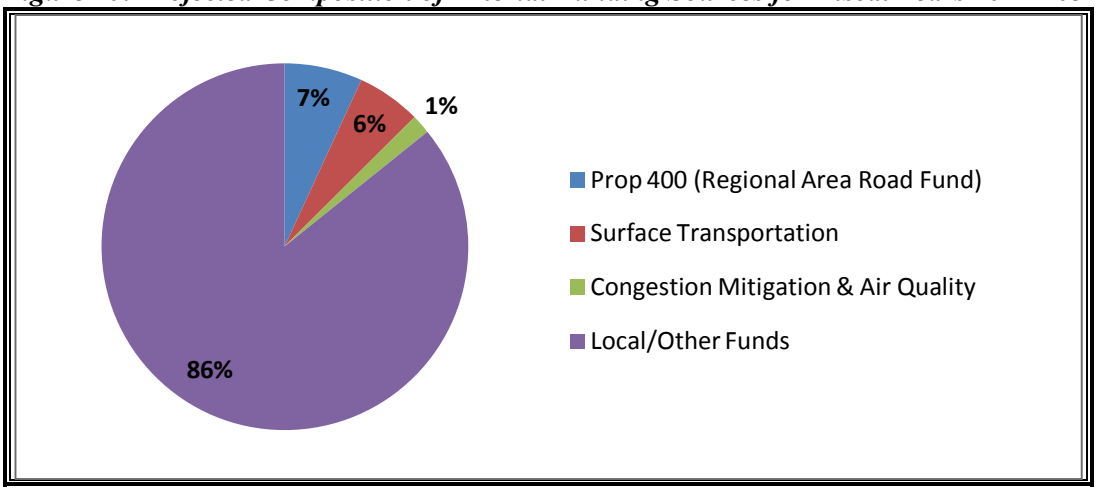
***Federal Highway Revenue Forecasting***

For RTP highway purposes, the Maricopa County region also relies on a variety of federal sources including funding for congestion mitigation/air quality activities and the surface transportation program. According to ADOT finance staff, the agency uses an annual inflation rate that is applied to all expected freeway revenue sources—such as RARF, HURF, and federal revenues—in total ranging from a low of 2 percent for Fiscal Year 2009-2010 to a high of 6 percent applied in Fiscal Years 2007-2008 and 2008-2009. Over the same three-year time period, the United States Department of Labor shows the inflation rate for the Phoenix area only fluctuated between 2 and 3 percent. While the higher rate used may be appropriate, we recommend that ADOT document the basis and rationale for its decisions relating to factors such as inflation rates especially when factors used vary from national indices.

***Arterial and Transit Revenue Forecasting***

Arterial and transit modes rely on ADOT's projections of sales tax revenue for a portion of their funding in addition to local and federal sources as well as shown in Figure 10. For the arterial streets revenue model, the program receives Proposition 400 sales tax revenue through RARF and relies upon ADOT's estimates. MAG adjusts estimated amounts from federal sources for the surface transportation program and congestion mitigation/air quality funding annually for inflation based on the "All Items United States Consumer Price Index, All Urban Consumers" issued by the U.S. Department of Labor, Bureau of Labor Statistics. Yet, the majority of arterial program revenue is provided by local jurisdictions.

***Figure 10: Projected Composition of Arterial Funding Sources for Fiscal Years 2011-2031***

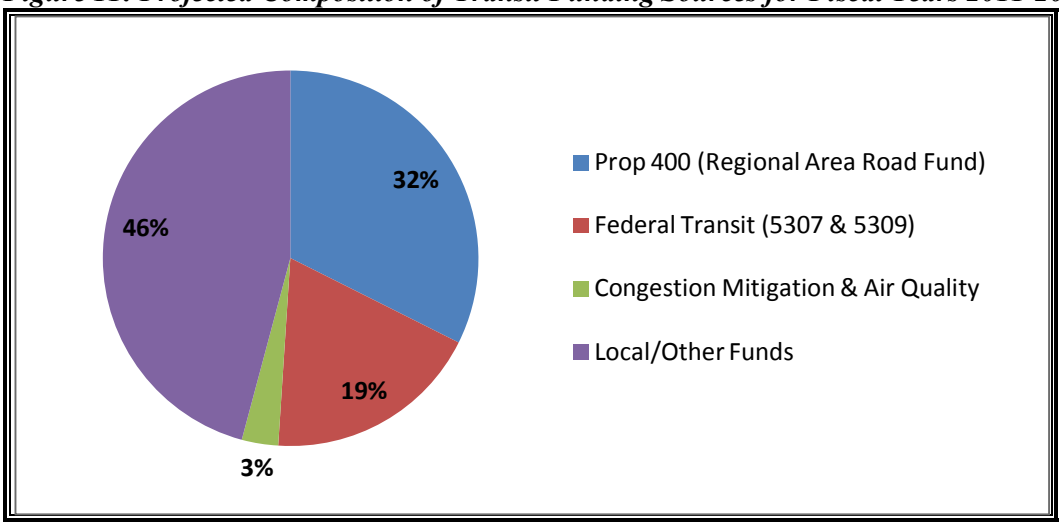



*Source: 2010 RTP Update Report, Table 9-2*

Similarly, RPTA's transit estimates are based on a variety of revenue sources. As reflected in Figure 11, the majority of the projected revenues derive from local municipalities' individual transit tax funds, general funds, and transit revenues projected based upon fare box revenues. A large portion of revenue is also related to the sales tax RARF monies. Projected federal funds are provided for congestion mitigation and air quality programs as well funding for transit

projects from the Federal Transit Administration for Section 5307 (Urbanized Areas) and 5309 (New Starts) programs.

***Figure 11: Projected Composition of Transit Funding Sources for Fiscal Years 2011-2031***




*Source: 2010 RTP Update Report, Table 10-1*

While the RPTA's revenue forecasting approach is reasonable, it can further enhance its model by continual review of underlying assumptions in the model and update of the revenue estimates on an annual or more frequent basis.

## Expenditure Estimation Techniques are Reasonable

As part of mandated "life cycle program" processes to balance revenues with expenditures for each mode, the RTP Partners separately estimate expenditures for the freeway, arterial, or transit mode for which they have primary responsibility. With freeway costs comprising nearly 50 percent of the RTP program, we focused our efforts on ADOT's cost estimates related to this mode. More specifically, we concentrated on assessing construction and right-of-way cost estimates since those cost components comprised the vast majority of freeway obligated costs over the last 5-year period.

***Freeway Construction Cost Estimates***

ADOT relies on external nationally recognized consultants to develop cost estimates and factors that focus on the two primary drivers of freeway costs—construction and right-of-way. Their consultants, HDR Decision Economics, include cost escalation factors and national cost indices relative to Arizona highway projects into a risk analysis framework.

The model used eight key highway construction elements for projections:

- Earthwork
- Concrete surfacing
- Asphalt surfacing
- Drainage
- Structures
- Traffic engineering
- Incidentals
- Landscaping

For the most part, ADOT follows a design-bid-build approach in its project delivery model for the RTP. We assessed this approach using a comparative study [B] of design-bid-build and design-build projects and found ADOT escalation factors used to be consistent with this study. We also noted that ADOT uses nationally recognized engineering consulting firms to review the freeway design and construction costs annually to evaluate contractor bids and construction unit cost trends for items such as concrete, asphalt, structures, and drainage. Costs are also reviewed by a panel of economists as part of the Risk Analysis Process.

***Freeway Right-of-Way Cost Estimates***

ADOT also tasked HDR Decision Economics to develop a right-of-way acquisition cost forecasting model to estimate real estate price and settlement value indices for adjusting the fair market value of property parcels to be acquired. The model considers standard variables and assumptions used in industry such as:

- Total employment
- Developed and undeveloped residential and employment areas
- Total resident population and residential household population
- Resident housing units and household income

County economic conditions such as unemployment rates, personal income, retail sales, population, and Standard & Poor's 500 Index were also included in the projection model. Further, the variables incorporated for budgeting and forecasting future parcel acquisitions take into account such factors as the amount of ADOT administrative settlement, sum of dollar amount of relocation payments for the parcel, sum of demolition cost payment for the parcel, and property characteristics such as type, location, and occupied or vacant.

***Arterial Cost Projections***

Cost projections for arterial projects included in the RTP are based on the ability of anticipated RARF monies to provide 70 percent of the project costs estimated by locals as well as the availability of local cities and county funds to providing the remaining 30 percent of project balances. Existing processes have local jurisdictions submitting project overviews to MAG that includes detailed budgets based on local estimates. Because MAG only provides a maximum 70 percent of project funding, any costs in excess of the original funding commitment are shouldered by the specific city or county as the total RARF monies provided remains constant.

***Transit Cost Estimates***

Our review found that RPTA model assumptions used for capital and operating transit expenditures appear reasonable. Bus operating costs are generated by the RPTA's financial model for each route type such as express, bus rapid transit, or rural. Generally, the operating cost portion of the model multiplies trips per day by the route length to determine annual revenue miles, and then multiplies the composite service cost per mile adjusted for inflation. A series of underlying calculations support various aspects of the model. The RPTA model also considers locally funded components of the model for bus routes. For instance, operators use fare revenue to offset operating costs; thus, RPTA estimates the local fare revenue collections based on

[B] Tom Warne and Associates, LLC in 2005 ("Design-Build Contracting for Highway Projects: A Performance Assessment")

historic fare recovery ratios per route. For capital infrastructure, RPTA's assumptions consider factors such as vehicle useful life, unit cost replacement and spare parts, replacement schedules, level of maintenance activity, design/build schedules, generalized locations, and service life.

In 2006, RPTA contracted for a joint review by HDR/S.R. Beard and the Texas Transportation Institute to assess the reasonableness and feasibility of its financial plan model and related assumptions. The consultants concluded that RPTA's plan provides detailed operating assumptions for routes, and suggested improvements to capital assumptions. According to RPTA management, they incorporated these suggested improvements into their model including:

- ✓ Costs will be adjusted using a variety of published forecasts; specifically, vehicle costs will use the Producer Price Index (Total Manufacturing Industries), capital costs will use the Engineering News Record Construction Cost Index, and other costs will be based on the All Goods United States Consumer Price Index.
- ✓ Models use a general inflation index of 3 percent per year compounded for both operating and capital costs—a rate that our review found is consistent with rates cited by the U.S. Department of Labor.
- ✓ Service costs are also adjusted for inflation and multiplied by an approximate 5 percent factor for safety and security.
- ✓ Capital cost estimates provide for a 5 percent contingency—well within a typical 5 to 15 percent contingency factor often used in industry.

## Revenue and Cost Forecasts Proved Higher than Actual Expenditures, but Within Reason

Our review of revenues and expenditures forecasting effectiveness also found that revenue and expenditures estimates were within reason when compared to actual results.

***Revenue Forecast Analysis***

Tables 11 and 12 demonstrate revenue estimating effectiveness by comparing RARF and HURF revenue projections with actual collections showing whether forecasts over- or underestimated actual revenue collections. As shown in Table 11, RARF revenue forecasts beginning in 2007 ranged from 1.2 percent to 13.7 percent greater than actual revenues, averaged an approximate 3.8 percent difference per year overall for the five year period shown in the table.

***Table 11: RARF Revenue Forecasts vs. Actual Revenue***

| Year | Revenue Forecast (Millions) | Actual Revenue (Millions) | Dollar Variance | Percent Variance |
|---|---|---|---|---|
| 2006 | $339.6 | $367.6 | $-28.0 | -8.2% |
| 2007 | $397.1 | $392.5 | $4.6 | 1.2% |
| 2008 | $408.7 | $380.1 | $28.6 | 7.0% |
| 2009 | $380.5 | $328.2 | $52.3 | 13.7% |
| 2010 | $315.3 | $299.0 | $16.3 | 5.2% |
| | | | | **3.78% Average** |

*Source: ADOT Finance Department (unaudited)*

*Table 12: HURF Revenue Forecasts vs. Actual Revenue*

| Year | Revenue Forecast (Millions) | Actual Revenue (Millions) | Dollar Variance | Percent Variance |
|---|---|---|---|---|
| 2006 | $1,306.3 | $1,331,6 | $-25.3 | -1.9% |
| 2007 | $1,398.8 | $1,382.5 | $16.3 | 1.2% |
| 2008 | $1,440.2 | $1,344.5 | $95.7 | 6.6% |
| 2009 | $1,387.0 | $1,248.6 | $138.4 | 10.0% |
| 2010 | $1,247.8 | $1,194.4 | $53.4 | 4.3% |
| | | | | **4.04% Average** |

*Source: ADOT Finance Department (unaudited)*

Similarly, Table 12 shows that, beginning in 2007, HURF revenue forecasts ranged from 1.2 percent to 10 percent greater than actual revenues, but averaged a reasonable 4 percent difference per year overall for the five-year period under review as shown in the table.

However, according to ADOT, the extreme impacts of the 2008 to 2010 recessionary period skewed results and performance of many economic forecasts in the nation, including the RARF and HURF revenue forecasts. We were informed that if the forecast to actual comparisons were viewed over the Fiscal Year 2001 through 2010 timeframe to smooth the effects of the recessionary impact, the RARF revenue forecast exhibited a ten-year average variance of 1.79 percent and the HURF revenue forecast realized a ten-year average variance of 1.60 percent.

### *Construction Cost Analysis*

Table 13 illustrates that actual construction costs have been less than or close to forecasted costs, except for 2007 where actual costs substantially exceeded forecast costs for the particular year shown. Reported construction forecast costs have varied substantially from actual costs, both under and over, but the overall average for the 5-year period under our review varies less than 2 percent per year.

*Table 13: Construction Cost Estimates vs. Actual Costs*

| Year | Cost Forecast (Millions) | Actual Cost (Millions) | Dollar Variance | Percent Variance |
|---|---|---|---|---|
| 2006 | $371.0 | $300.3 | $70.7 | 19.1% |
| 2007 | $239.7 | $377.2 | $-137.5 | -57.4% |
| 2008 | $540.6 | $425.6 | $115.0 | 21.3% |
| 2009 | $487.3 | $447.0 | $40.3 | 8.3% |
| 2010 | $449.1 | $449.4 | $-0.3 | -0.1% |
| | | | | **-1.76% Average** |

*Source: ADOT Regional Freeway System Group (unaudited)*

*Table 14: Right-of-way Cost Estimates vs. Actual Costs*

| Year | Cost Forecast (Millions) | Actual Cost (Millions) | Dollar Variance | Percent Variance |
|---|---|---|---|---|
| 2006 | $6.4 | $28.8 | $-22.4 | -350.0% |
| 2007 | $44.2 | $20.9 | $23.3 | 52.7% |
| 2008 | $260.4 | $107.0 | $153.4 | 58.9% |
| 2009 | $71.3 | $60.1 | $11.2 | 15.7% |
| 2010 | $273.1 | $90.8 | $182.3 | 66.8% |
| | | | | **-31.18% Average** |

*Source: ADOT Right-of-Way Division (unaudited)*

### *Right-of-way Cost Analysis*

Table 14 reveals that, except for 2006, actual costs were less than forecasted costs for the particular year shown. The reported ROW forecast costs have varied substantially from actual costs, both under and over, but mostly over-estimated. The overall 5-year average actual costs varied from projections by 31 percent per year.

## MAG's Recently Produced Financial Plan for the RTP Can Be Enhanced

As the Metropolitan Planning Organization in Maricopa County, MAG must follow federal financial provisions related to the 20-year RTP that requires system-level estimates of costs and revenues expected. Results reported in August 2010 from the November 2009 joint Federal Highway Administration and Federal Transit Administration certification review of MAG's planning process states that MAG undertakes a thorough financial analysis of the RTP including conservative funding predictions and considerations of risk. However, MAG's analysis is predicated on RTP Partners performing their own financial planning and estimation processes for each mode's projects. While these entities provide revenue and expenditure estimates for the RTP for their separate modes, there was not a formal financial plan distributed for the 2003 RTP upon which Proposition 400 was based. According to the certification review, MAG uses a series of internal documents to record the assumptions and risks it considers in the financial planning process. The Federal Highway Administration and Federal Transit Administration review recommended that "MAG show greater transparency in documenting the financial planning process in a single accessible reference source" to include assumptions across all modes, risks involved in revenue and expenditure estimates, and program implications.

In October 2010, MAG issued its first "financial plan documentation" that details financial factors that are considered in the development of the RTP. This plan provides appropriate data and context information such as inflation rates used, bonding and debt service details, and cost and revenue estimates. However, to increase transparency of the process, MAG should include additional information describing the assumptions supporting its projections and summarize the various estimation models into one plan of finance for the RTP. Moreover, now that MAG has developed this foundational report, it should review and update the plan on an annual or regular cycle as part of continual efforts to monitor and project cash flow needs, identify emerging funding gaps, and consider financing alternatives. Additionally, MAG and its transportation partners should provide regular status reports to MAG committees and the MAG Regional Council on the plan.

## Conclusion

Generally, the RTP revenue and cost projection models and processes are consistent with best practices for estimation. While minor clarifications will enhance the models and information communicated to governing bodies and the public, the models in place are reliable for the region's funding of its Regional Transportation Plan.

## Recommendations

To enhance revenue and cost models used by the RTP Partners, we suggest the following recommendations for consideration:

26. Expand project documentation to explain the methodology for estimating federal revenues and costs to improve process clarity.
27. Enhance overall RTP Financial Plan by including information summarizing revenue forecasts and cost estimate techniques for all modes showing projection assumptions.

# Chapter 6: Air Quality Violations Remain a Concern and can Jeopardize the Completion of RTP Projects

Over the past two decades, Maricopa County RTP projects have been at risk for completion due a number of air quality violations—issues that continue to be a concern for the region. The first significant violations in the region occurred in the 1990s and set in motion a series of complicated plans and processes to address environmental concerns and deploy mitigation activities and many of the efforts are still in play. More recently, in 2008, a significant air quality violation occurred due to a natural wind burst that resulted in the federal Environmental Protection Agency (EPA) threatening a "conformity freeze." The effective result of a federal freeze action would be that only those projects initiated in the first four years of a current RTP found to conform to air quality standards are allowed to proceed. Under a freeze action, other projects meeting certain criteria would also be exempted and allowed to continue. The threat of the federal government implementing the freeze provisions remain until 2012 when MAG must submit a new mitigation plan for approval by the EPA. While currently there is no freeze in place, the threat of future sanctions still remains; whether the region will be put under such sanctions hinge not only on the approval of a new mitigation plan, but also the natural environmental conditions occurring in the area that may register additional air quality violations.

## Air Quality Concerns Began in the 1990s

Throughout the Phoenix urban region, the Arizona Department of Environmental Quality operates a network of individual monitoring sites that collect ambient air quality data to determine air pollution sources, assess effects of pollution on public health, and measure against federal air quality standards. When an area fails to meet federally established criteria or violates a health-based standard, federal law requires that the area be designated as a non-attainment area for that pollutant. In1990, the Environmental Protection Agency designated a portion of Maricopa County as a "moderate non-attainment" area when the county did not meet federal air quality standards for specific particulate matter pollutants like dust, known as PM-10. After the designation as a moderate area for particulate pollutants, Arizona was required to develop a plan to establish a basic set of initiatives for controlling the air pollution problem.

However, the initiatives set forth by the State did not adequately reduce pollution and over the years Maricopa County continued to experience additional air quality violations. As a result, in 1996, the EPA reclassified the area as a "serious non-attainment" area requiring the State to develop a stricter plan with more comprehensive measures. To ensure action, the federal regulations impose a "sanction clock" that allows an 18 to 24 month period for non-attainment areas, like Maricopa County, to develop the mitigation activities needed to bring the area in conformity with federal air quality standards. Once the mitigation activities and measures are identified, MAG conducts a simulation to assess the effectiveness and impact of these measures using a sophisticated computer model that quantifies the possible reduction in air pollution levels. In conjunction with these efforts, the region is required to ensure that each related RTP and subsequent plan updates undergo a "conformity analysis" to demonstrate that transportation activities planned will not produce new air quality violations or worsen existing conditions before the RTP is finalized.

As a result of these issues, MAG's *Revised 1999 Serious Area Plan* included several measures expected to assist in air quality standards' attainment. Although federal rules gave the county a deadline of no later than December 2001 to meet the air quality standard, the EPA subsequently granted Arizona's request for an attainment data extension to December 31, 2006 once it approved MAG's 1999 plan in 2002. Nonetheless, Maricopa County failed to attain the stipulated "24-hour standard for PM-10" because of certain air quality violations. For serious non-attainment areas such as Maricopa County, the Clean Air Act Section 189(d) required the submittal of a *Five-Percent Plan For PM-10* by December 31, 2007 because the area had not met the PM-10 standard by the set attainment date of December 31, 2006. The Plan was to describe how PM-10 emission reductions of 5 percent per year would be achieved with the goal of meeting the standard within three years (by 2010). In 2007, Maricopa County submitted its *Five-Percent Plan for PM-10* to the EPA, and pending EPA approval, avoided possible sanctions and the loss of federal funding for construction projects at that time. Importantly, if any single monitor in the region exceeds the PM-10 standard more than three times over a three-year period, sanctions could be incurred.

## A 2008 Air Quality Violation Caused EPA to Threaten a "Conformity Freeze" on Projects

During 2008, the region registered 11 exceedances of the air quality standards at four monitoring sites on eight separate days. In reaction to these violations, MAG and the Arizona Department of Environmental Quality submitted to EPA scientific evidence to demonstrate that all but one of these exceedances were caused by a dust storm, or dust devil, resulting from high winds. According to MAG, federal rules allow regions to be excused from penalties in "exceptional events" such as high winds that cannot be controlled by measures in an air quality plan. However, the EPA did not notify the region about any disagreements with the issues related to these occurrences until May 2010 when the EPA informed MAG that it would not approve the State's request to treat the high wind occurrences in 2008 as exceptional events.

In September 2010, the EPA published a Federal Register notice of its plan of final action to partially approve and partially disapprove the 2007 MAG *Five-Percent Plan for PM-10*. EPA cited several issues with the MAG Plan including the deemed failure to demonstrate attainment of air quality standards due to exceedances that occurred in 2008 during the dust storms. The implication of EPA's decision is that the region cannot demonstrate "attainment" of the PM-10 standard as shown in the existing MAG Five Percent Plan. Typically, under the federal protocols, within 30 days from final action, EPA will invoke a conformity freeze and no amendments to the MAG TIP will be allowed. Under a freeze, only projects in the first four years of the TIP would be allowed to proceed and no new projects could be added until a new plan is submitted and approved. Additionally, the EPA can trigger highway sanctions up to 24 months after plan disapproval during which no new transportation project or plans can progress.

In response to the proposed ruling, MAG and the Arizona Department of Environmental Quality submitted comments to the EPA about it not allowing the "exceptional events" triggered by the dust storms and voiced concerns about EPA's administration of the exceptional events rule. At question seems to be two issues—first, the EPA believes that the 2005 inventory used by MAG to set 5 percent reduction targets for the 2008 to 2010 period is inaccurate. Secondly, the EPA does not believe the four dust storm violations qualify as exceptional events even though MAG

provided data related to why PM-10 concentrations are higher at monitor site and graphs showing high wind rate over those days. While MAG reports that the EPA Director for the Maricopa County Region admitted the rule is flawed, he also stated the EPA has to enforce the flawed rule.

These matters remained pending in January 2011; at this time, MAG and the Arizona Department of Environmental Quality decided to voluntarily withdraw the submitted dust control MAG *Five- Percent Plan for PM-10*—although the region continued to implement the proposed air quality measures. According to MAG, this move allows for the application of new paved road dust factors that were issued by the EPA in 2010 which MAG believes will effectively improve Maricopa County's plan compliance. Specifically, the EPA recognized that previous emission factors overestimated the amount of dust generated into the air on paved roads. The new dust factor applies different criteria to serious non-containment areas that should address concerns that previously prevented the EPA from approving the MAG plan. Under the new rules, MAG should be able to demonstrate that projects in the current RTP will conform to current federal interpretations of air quality standards.

## Maricopa County Must Submit a Revised Plan Before Possible Sanctions are Levied

Upon MAG's January 2011 withdrawal of its *Five Percent Plan for PM-10*, the EPA issued a "Failure to Submit a Plan" finding which activated two sanction clocks. The first sanction imposes tighter controls on major industries within the region should MAG's revised plan not be submitted within the allotted 18-months or by June 18, 2012. The second sanction impacts highway programs and could result in the loss of federal funding if MAG does not submit a revised plan within 24 months or by January 18, 2013. Additionally, the EPA could impose a federal implementation plan requirement on the county where the EPA would specify the plan to ensure attainment and enforce standards in accordance with the Clean Air Act. Moreover, if the EPA imposes highway sanctions, MAG speculates that it could trigger a conformity lapse and prevent approval of new highway and transit projects.

Once MAG submits a revised plan and if the EPA determines that plan is complete, the two sanction clocks stop. The withdrawal of the pending plan by MAG and the Arizona Department of Environmental Quality bought the region additional time to complete as many RTP projects as possible and to resubmit a new *Five-Percent Plan for PM-10* that should be more favorable to the region given the recent changes in EPA rules. However, if the EPA does not approve the revised plan or another air quality violation occurs, the County could face serious economic sanctions including the loss of significant federal highway transportation funding. Ultimately, as the Mayor of Litchfield Park commented, "if the issues with the rule are not resolved, (the Maricopa County) region will find itself in the same situation time and time again—there is no plan that can control high winds."

In August 2011, we were informed that the EPA informally indicated that 2009 will likely be determined as a "clean" year with no air quality violations for Maricopa County. Combined with no violations in 2010 and none, thus far, in 2011, the region is close to having the three years of clean data needed to attain the EPA air quality standard. If the EPA issues an "attainment" finding, a *Five-Percent Plan for PM-10* would no longer be necessary. In the meantime, MAG is continuing efforts to work on its plan.

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# Appendix A: Audit Scope and Methodology

As specified in A.R.S. §28-6313, beginning in 2010 and every fifth year thereafter, the Arizona 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 of the Regional Transportation Plan (RTP) and projects scheduled for funding during a five year period. In 2010, the Auditor General contracted with Sjoberg Evashenk Consulting, Inc. to fulfill this mandate.

Objectives of the audit were to (1) assess the efficiency, effectiveness, and performance of the MAG's RTP; (2) examine projects previously funded and their impact on relieving congestion and improving mobility; (3) examine projects scheduled for funding during the next 5 years; (4) review specific areas identified by the Auditor General through interviews with and input from various interested parties; (5) address statutorily mandated questions; and (6) recommend ways to improve the efficiency and effectiveness of the RTP. Further, statutes require the audit to:

- Examine the RTP and scheduled projects using the performance factors established for transportation projects including congestion relief, accessibility, integration and connectivity, economic benefits, and cost effectiveness;
- Review past expenditures of the RTP and examine the performance of the system in relieving congestion and improving mobility;
- Make recommendations regarding whether further implementation of a project or system is warranted, warranted with modifications or unwarranted;
- Consider the criteria used by the Federal Transit Administration and the interrelationship among the criteria to provide federal funding with respect to light rail; and
- Consider service levels, capital costs, operation and maintenance costs, transit ridership, and fare box revenues for the light rail system.

This is the first audit related to the Maricopa County transportation excise tax authorized under Proposition 400. Our audit encompassed the first five-year period under Proposition 400 from 2006 through 2010, although we considered planning activities conducted as far back as 2000 and current practices in place through June 30, 2011.

To gain an understanding of the environment, we reviewed federal and state laws and regulations concerning transportation planning, freeway implementation, performance measures, air quality, and regional public transportation. Additionally, we reviewed provisions pertaining to the Federal Transit Administration "New Starts" program related to mobility improvements, land use, environmental benefits, cost effectiveness, and operating efficiencies (pursuant to 49 USC 5309(e)(1)(b)). We assessed available data from each entity involved with the RTP such as regional transportation plans and updates between 2003 and 2010, annual transportation improvement plans over the same time period, annual short range transit plans, annual Proposition 400 reports issued between 2005 and 2010, customer satisfaction surveys, board and committee agendas and meeting minutes, board and committee presentations and staff reports, and a variety of publications, brochures, and fact sheets. Additionally, we interviewed officials, management, oversight members, stakeholders, and staff at a variety of levels from a variety of

organizations including MAG, ADOT, RPTA, METRO, and members of certain of the agencies' committees. We also garnered insight and perspective from the State Transportation Board, Citizens' Transportation Oversight Committee, the City of Phoenix Transit Division, and Friends of Transit.

As part of efforts to assess light rail compliance with federal criteria and evaluate performance, we compared applicable federal and state laws and regulations and Full Funding Grant Agreement requirements with actual performance records and federal project management oversight consultant reports. We reviewed federal subrecipient monitoring reviews of METRO as conducted by the City of Phoenix Transit Division and met with city staff to understand its oversight role. Moreover, we used National Transit Database information to compare METRO's 20-mile operating light rail system against peers nationwide for performance indicators, such as ridership, farebox recovery ratios, and operating costs per revenue mile. The peer agencies included systems from Sacramento, Salt Lake City, San Diego, Santa Clara, Portland, Dallas, Minneapolis, Denver, and Los Angeles. Additionally, we used performance targets and data from in the RPTA Transit Performance Report and METRO's federal Full Funding Grant Agreement for Fiscal Years 2008-2009 and 2009-2010; and reviewed fiscal records and project file documentation for costs for the initial 20-mile light rail segment for capital, operating, and maintenance costs.

To identify the universe of Phase I and Phase II projects and related expenditures, we compiled a list of all projects using the Proposition 400 ballot pamphlet schedules and the 2003 RTP upon which the proposition projects were premised. Because costs were not always allocated at the project level in those documents, we also relied on the annual RTP Updates for 2005, 2006, 2008, 2009, and 2010 to identify specific projects as well as understand project name changes, splits, consolidations, accelerations, and deferrals in addition to using annual Proposition 400 reports to identify project nuances and expected phase of delivery. Moreover, we had access to ADOT's internal data warehouse containing detailed freeway project level information. From our compiled master file, we selected a sample of projects for review from Proposition 400 Phase I (July 1, 2005 through June 30, 2010) and from Proposition 400 Phase II (July 1, 2010 through June 30, 2015).

Specifically, to assess performance of Phase I projects, we selected a sample of projects from each mode including six freeways, five arterial, seven operating bus transit routes, four bus transit capital improvements, and one light rail capital project. Our cross-representative sample was selected from a variety of geographical areas of the county (east, west, central) and types of project (e.g. widening, new freeway, intersection improvements, fixed route, capital facilities). Specifically, the following projects were selected:

*Table 15: Sample of Projects Selected for Testing as part of Performance Audit*

| | Phase I Projects | Phase II Projects |
|---|---|---|
| **Freeway Projects** | | |
| 1. | I-10 "Papago": I-17 "Black Canyon" to Loop 101 "Agua Fria" | I-10 "Papago": Loop 3030 to Dysart Road (redefined to Sarival Avenue to Dysart Road) and Dysart Road to Loop 101 |
| 2. | I-10 "Maricopa": 32nd Street to Loop 202 "Santan" | I-10 "Papago": Perryville Road Traffic Interchange |
| 3. | I-17 "Black Canyon": Loop 101 "Agua Fria" to SR 74 "Carefree" | I-10 "Maricopa": Loop 202 "Santan" to Riggs Road |
| 4. | Loop 202 "Red Mountain": Loop 101 "Pima" to Gilbert Road (HOV) | Loop 202 "Red Mountain": Rural Road to Loop 101 (redefined to I-10/SR51 to Loop 101) |
| 5. | Loop 202 "South Mountain": I-10 West to 51st Avenue | Loop 202 "Red Mountain": Loop 101 to Gilbert Road |
| 6. | SR-51 "Piestewa": Loop 101 "Pima" to Shea Boulevard (HOV) | Loop 101 "Agua Fria": Beardsley Road (half traffic interchange and reconstruct Union Hills traffic interchange) |
| **Arterial Projects** | | |
| 1. | Chandler Arizona Avenue at Ray Road Intersection Improvement | None Tested since projects have not yet been completed. Moreover, we used Phase II projects to identify whether performance criteria was used to select the projects. Since MAG informed us that it did not base changes on specific performance criteria, we did not test. |
| 2. | Chandler Arizona Avenue/Chandler Boulevard Intersection Improvement | |
| 3. | Gilbert: Val Vista, Warner | |
| 4. | Scottsdale: Shea at 90th/92nd/96th Street | |
| 5. | Maricopa County El Mirage Road: Deer Valley to Loop 303 | |
| **Bus Transit Operating Projects** | | |
| 1. | Route 61 – Southern Avenue | Most routes and capital projects for park and ride and transit centers planned to start in Phase II have been deferred to later stages. |
| 2. | Route 70 – Glendale Avenue | |
| 3. | Route 72 – Scottsdale/Rural Road | |
| 4. | Route 511 – East Loop 101 Connector | |
| 5. | Routes 535 – Red Mountain Express | |
| 6. | Routes 536 – Red Mountain Express | |
| 7. | Route I-17 – RAPID Deer Valley Express | |
| **Bus Transit Capital Projects** | | |
| 1. | Chandler Park and Ride Facility | Most routes and capital projects for park and ride and transit centers planned to start in Phase II have been deferred to later stages. |
| 2. | Country Club/US 60 Park and Ride Facility | |
| 3. | Tempe East Valley Maintenance and Operations Facility | |
| 4. | Mesa Maintenance and Operations Facility | |
| **Light Rail Transit Projects** | | |
| 1. | Initial 20-mile light rail segment | Tempe South Link: Main Street/Rural Road to Southern Avenue (identified for completion in 2016) |
| 2. | Only one project planned and completed in Phase I. | Central (previously West) Mesa Link: Main Street/Sycamore to Main Street/Mesa Drive (identified for completion in 2016) |

As part of our testing, we focused on project performance related to statutory elements, RTP goals, and outcomes rather than on daily project management of individual projects. While some limited review of project management documents, design reports, and project management practices was performed on the RTP Partner projects, we did not conduct any reviews at the local city or county transit department and public works department levels.

For our sample items, we identified initial performance goals, objectives and measures established and reviewed processes employed to establish system targets as well as track, calculate, and report performance data, evaluating the reliability and consistency of data gathered. Where possible, we compared project performance to system targets and goals on a project level. Additionally, we assessed the frequency of data distributed and completeness of information provided. As such, we evaluated MAG's Performance Measurement Framework Studies (Reports I and II) and MAG's Congestion Management Process as well as RPTA's Service Efficiencies and Effectiveness Study, annual Transit Performance Reports, annual Transit Customer Satisfaction Surveys, annual Ridership Reports, and 2007 and 2010 Origin and Destination Surveys. We reviewed "dashboard" data captured on MAG's website and ADOT's website. As part of our assessment of project and route performance, we compared data tracked and measured in Maricopa County to those tracked and measure by peers across the country, identifying industry best practices and areas where improvements could be made. We also tapped into federal National Transit Database information to compare transit activity in Maricopa County with other peer systems in Dallas, Denver, Los Angeles, Minneapolis, Portland, Sacramento, Salt Lake City, San Diego, and Santa Clara.

While some projects originally scheduled for completion in Phase II were accelerated into Phase I and were included in our universe from which we selected a sample to measure project performance, we could not assess performance for most of the Phase II projects scheduled for completion between July 1, 2010 and June 30, 2015 because they had not yet been completed. Thus, for these Phase II projects, we sought to understand the type of performance data used to initially select these projects for inclusion in the RTP as well as analyzed data considered when making changes to the Phase II projects to determine whether performance-based decisions were made considering project impact on congestion, mobility, and other RTP goals.

To assess the process in place to reconsider or revisit projects and their priority within the RTP, we reviewed studies conducted by MAG, ADOT, and transit agencies related to projects included in the initial 2003 RTP and subsequent updates to the RTP, including:

- 2003 MAG Regional Concept of Transportation Operations Report
- 2003 High Capacity Transit Study
- 2003 East-West Mobility Study
- 2003 Grand Avenue Northwest Corridor Study SR303 to SR101
- 2003 Regional Transit System Study
- 2008 Regional Para-transit Study
- 2008 Park and Ride Reprioritization Report
- 2009 MAG Regional Transit Framework Study: Peer Regions Evaluation

Additionally, we assessed RTP priority criteria and material change policies in place. Using our sample of projects selected from Phase I and II for each mode, we identified significant changes that occurred during Phase I or that were proposed to occur in Phase II. For the changes identified, we examined the documentation for the rationale behind the changes, performance data used to support change decisions, and methods or factors used to prioritize and select project changes as well as the public input allowed into the change process. Specifically, we reviewed and analyzed the following:

- Value engineering techniques, cost containment measures, design concept reports, locally preferred alternatives, results of modeling, and other project documentation;
- Bus transit operator data such as City of Phoenix scheduling information, transit bus books, and capital project file data;
- Life cycle program data for freeways, arterial, and transit and documentation including annual and semi-annual life cycle program reports for each mode between 2005 and 2010 as well as life cycle program meeting minutes where available;
- Board and committee agendas, meeting minutes, staff reports, presentation documents, and other documentation provided to decision makers of MAG, State Transportation Board, RPTA, METRO, and the Citizens' Transportation Oversight Committee for the time period surrounding the 2003 RTP development, periods when the RTP was significantly changed in 2007 and 2009, and periods surrounding changes to our Phase I sample items;
- Public input process documented in Public Participation Plans, Early Phase Opportunity Reports, Mid-Phase Opportunity Reports, and Final Phase Opportunity Reports as well as participation observed during board and committee meetings; and
- Annual Proposition 400 Reports and RTP Update Reports.

To review the effectiveness of the Regional Transportation System organizational structure in implementing the RTP, we obtained and considered regulations, statutes, and other enabling legislation surrounding each of the four central agencies—MAG, ADOT, RPTA, and METRO. We reviewed agency mission statements, goals, and objectives in addition to purpose, function, and membership of the four agencies' oversight committees and boards. We also evaluated the level of communication between each entity in reporting and sharing information, conflict resolution, and communicating and collaborating as documented through meeting minutes and auditor interviews. Additionally, we assessed available memorandums of understanding to assess processes employed to make changes to the RTP, areas of overlap or duplicative efforts, and agreements between agencies describing roles and responsibilities related to system planning, implementation, and specific projects.

In evaluating how these agencies operated and worked together to fulfill the RTP, we also met with key players and managers in Maricopa County's transportation network and attended 23 various board and committee meetings between each of the four key entities as well as the Citizens' Transportation Oversight Committee. Additionally, we garnered perspective and insight from a cross-section of relevant parties and interested persons including MAG, ADOT, RPTA, METRO, Citizens' Transportation Oversight Committee, and City of Phoenix. At these meetings attended, we assessed the level of detail discussed at meetings, information provided to

decision makers, and public input into the process as well as reviewed applicable meeting minutes available. Moreover, we compared the structure in place in Maricopa County with others across the nation to identify barriers for success, inefficiencies, ways to be more effective, best practices, and additional opportunities for improvement. Finally, we compared the purpose, function, and performance of Maricopa County's Citizens' Transportation Oversight Committee with other similar committees in the country.

As part of assessing the area's plan for financing freeway projects, we examined the overall process employed to project revenues and expenses for the four major transportation modes of the RTP (freeway, arterial streets, bus, and light rail) and identified if areas of improvement were needed. As part of this process, we assessed the reasonableness of financial assumptions and methodologies used to forecast revenues and project future expenditures including model inputs, use of historical data, frequency of model modifications, use of technical experts, and external reviewers. We reviewed the RTP Financial Plan Documentation, Regional Area Road Fund Forecast Process and Results Report, Highway Users Revenue Fund Forecast Process and Results Report, external risk analysis reports on both Regional Area Road Fund and Highway Users Revenue Fund expected revenues, external risk analysis reports on construction and right-of-way cost escalation factors, and an external evaluation conducted on the transit model. Additionally, we examined bond official statements and cash flow analysis as well as compared revenue and cost projections with actual results.

Using MAG's annual Proposition 400 status reports, the 2003 RTP, and periodic RTP updates, we compared budgeted costs and schedule as initially envisioned for Phase I projects with the actual costs and schedule as of June 30, 2010. While our focus was on Phase I budget to actual comparisons, we performed some limited research on the status of all projects in the RTP regardless of proposed phase for completion. To determine the reliability of data used, we traced a sample of freeway, arterial, and transit project expenditures to underlying fiscal records and project schedules to capital project files, bus transit books, and full funding grant agreement documentation. Using these same sources and other documentation provided as well as interviews with project managers, we conducted in-depth investigations to identify reasons for variances identified between project estimates and actual results and assessed whether changes appeared reasonably supported. However, we did not evaluate the appropriateness of individual project design concepts or second guess the precision of related project cost estimates prepared by expert transportation engineering firms, nor did we assess whether the right decisions were made based on the information since project scopes were presumably discussed and vetted through the MAG committee process.

We conducted this audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

For a summary on the results of our audit procedures, refer to Appendix B "Crosswalk Between Proposed Tasks and Audit Results."

# Appendix B: Crosswalk Between Proposal Tasks and Audit Results

As part of the Arizona Auditor General's Request for Proposal for this performance audit of Maricopa County's Regional Transportation Plan, the work statement Section C.3 included specific tasks for the audit to address. For each task, the following table provides a snapshot of the audit results and references to report sections for more detailed analysis and discussion.

| Request for Proposal Tasks | Audit Results |
|---|---|
| Task 3.a<br><br>As required by A.R.S. §28-6313(B), with respect to light rail systems, the audit shall consider the criteria used by the federal transit administration (mobility improvements, land use, environmental benefits, cost effectiveness, and operating efficiencies) pursuant to 49 United States Code §5309(e)(1)(b) and the interrelationship among the criteria to provide federal funding for light rail systems through the FTA "New Starts" Program. | Our review found that the light rail system is in compliance with the Federal Transit Administration (FTA) New Starts criteria and with its Full Funding Grant Agreement with the FTA. We found that light rail not only tracked required performance criteria, but surpassed its targets while performing better than peers.<br><br>Refer to Chapter 1 and Appendix E for detailed results. |
| Task 3.b<br><br>As required by A.R.S. §28-6313(B), for light rail systems, the audit shall also consider:<br>1. Service levels.<br>2. Capital costs.<br>3. Operation and maintenance costs.<br>4. Transit ridership.<br>5. Farebox revenues.<br><br>The RTP details the regional transit projects that will be funded over the 20-year life of the RTP, including light rail systems. METRO forecasted performance for each of the above five criteria prior to initiating light rail transit operations as required by the Federal Transit Administration as part of METRO's Full Funding Grant Agreement. In addition, the RPTA authorized a Service Effectiveness and Efficiency Study (SEES) to develop uniform standards for collecting data and measuring performance. Using the sources presented above and any industry benchmark standards:<br><br>i. Determine whether light rail achieved projected service levels and the reasons for any differences.<br><br>ii. Evaluate whether capital costs have been on target with projections, higher than projected, or lower than projected and the reasons for any differences.<br><br>iii. Identify whether operation and maintenance costs have been on target with original projections, higher than projected, or lower than projected and the reasons for any differences. | As described in Chapter 1 and Appendix E, the light rail system performed well with regard to the criteria as follows:<br><br>• Service Levels: Light rail has achieved projected services levels. Specifically, METRO's target service level for on-time performance was set at 93 percent, which it exceeded in the last two fiscal years with on-time performance of 93.9 and 95.8 percent.<br><br>• Capital Costs: Capital costs have been on target and were lower than projected. METRO built the initial 20-mile segment at a cost of $1.398 billion—realizing a cost savings of approximately $14.859 million from its original budget of $1.412 billion.<br><br>• Operation and Maintenance Costs: Mostly, these costs have been on target and generally lower than projected. Since METRO began light rail operations in December 2008, it has stayed within its operations budget—although vehicle maintenance costs slightly exceeded the budget by 4 to 5 percent in 2009 and 2010, respectively. |

| Request for Proposal Tasks | Audit Results |
|---|---|
| iv. Review and comment on how transit ridership was originally projected and determine whether ridership has been on target with projections, higher than projected, or lower than projected and the reasons for any differences. In addition, comment on whether or how light rail ridership may have impacted bus ridership.<br><br>v. Determine whether farebox revenues have met established goals and what percent of costs farebox revenues cover. | • Transit Ridership: Originally, light rail ridership was projected using MAG's regional travel forecasting model based on census household survey data and onboard survey data collected in 2001 and calibrated in 2003. Since 2008 when light rail began operations, ridership has not only been on target with its initial projections, but has more than tripled. Specifically, light rail exceeded 2008 projected ridership of approximately 3.9 million boardings by 8.2 million riders with total ridership figures reflecting more than 12.1 million passengers in 2010. Prior to light rail, bus transit ridership in the areas served by light rail increased on average 3 percent annually. Once the light rail segment opened, ridership in the area increased to nearly 11 percent.<br><br>• Farebox Revenues: Farebox revenues have met established goals. Specifically, light rail fares covered approximately 28 percent of operating expenses in Fiscal Year 2009-2010 which exceed the target of 25 percent. |
| Task 3.c<br><br>As required by A.R.S. §§28-6313(A) and 28-6313(C)(1), the performance audit shall examine the regional transportation plan and projects originally scheduled for funding during 2011 through 2015 (Phase II) based on the performance factors established in A.R.S. §28-505(A), the performance measures in the RTP dated November 25, 2003, and the FTA New Starts criteria, in the context of the transportation system. The Phase II projects examined shall be limited to a sample of three to five projects per major transportation mode; i.e., freeways, arterial streets, light rail, and buses. | While some projects originally scheduled for completion in Phase II were accelerated into Phase I and were included in our universe from which we selected a sample to measure project performance, we could not assess performance for the majority of Phase II projects scheduled for completion between July 1, 2010 and June 30, 2015 because they had not yet been completed. Thus, for these Phase II projects, we sought to understand the type of performance data used to initially select these projects for inclusion in the RTP as well as analyzed data considered when making changes to the Phase II projects to determine whether performance-based decisions were made considering A.R.S. §28-505(A) as well as project impacts on congestion, mobility, and other RTP goals. Generally, we found that criteria for decision-making is vague, documentation |

| Request for Proposal Tasks | Audit Results |
|---|---|
| | is limited, and decisions may not be sufficiently vetted through oversight committees.<br><br>Refer to Chapter 3 for more detailed results. |
| Task 3.d<br><br>As required by A.R.S. §28-6313(C)(2), the audit shall review RTP expenditures during the time period of 2006 through 2010 (Phase I) and examine the performance of the system in relieving congestion and improving mobility, review the criteria/factors currently used to measure congestion and mobility for each transportation mode, and identify any recommendations for improvement. The review shall be limited to a sample of three to five projects for all major modes except light rail; i.e., freeways, arterial streets, and buses. For light rail, the review shall evaluate the 20-mile METRO project currently in operation. | There have been many projects completed during the Phase I period. However, because there is limited performance data available on a project level for freeways and streets, we could not assess project performance and impact in relieving congestion and improving mobility. For transit and light rail, a variety of performance data existed for us to assess performance against targeted goals and objectives.<br><br>Refer to Chapter 1 for system and project performance results, Appendix D for bus transit, and Appendix E for light rail performance. |
| Task 3.e<br><br>As required by A.R.S. §28-6313(C)(3), the audit shall make recommendations regarding whether further implementation of a transportation system is warranted, warranted with modifications, or not warranted. | This task is addressed in the report through the activities and analyses performed on this audit, and summarized through recommendations made at the end of each report chapter . Based on documentation and data we reviewed, we found no substantial evidence to warrant drastic modifications to the transportation system or specific projects. Further, because some information was not available at all, such as freeway and arterial performance data, we could not conclude whether other changes to the transportation system should be considered. However, using performance targets and results available for bus transit and light rail, we found that transit performance is strong and realizing successes from the current plan. As a result, we believe the RTP Partners should continue to implement the current transportation system and strive to continually reassess system performance to make modifications as necessary. |

| Request for Proposal Tasks | Audit Results |
|---|---|
| Task 3.f<br><br>Determine whether there is an appropriate system in place to reconsider or revisit projects and their priority within the RTP to allow for changes in transportation needs in Maricopa County, and, if necessary, recommend areas for improvement. If, or when, changes are made to the RTP, what controls are in place to ensure that the changes are in the regional transportation system's best interest and to ensure that the public has an opportunity to provide input into the process? | As described in Chapter 3, criteria and policies are in place to govern changes to RTP projects—however, such criteria is vague and limited documentation exists to demonstrate how the criteria was applied to make project changes. Based on our audit results, modifications are needed to strengthen the system over project changes and reprioritizations:<br><br>• Limited documentation exists indicating that decisions are not based on performance data and may not be in the best interest of the region.<br><br>• More robust data related to options available, impacts of alternatives, and rationale behind recommendations should be communicated to decision-makers to enhance transparency of changes made and better inform final decisions made.<br><br>• While there are many practices in place that provide the public ample opportunity to participate in the process, the public could benefit from a "road map" guiding them through the various avenues for input because the system is difficult to navigate. |
| Task 3.g<br><br>Review and comment on the processes and procedures used to project revenues and expenses for the four major transportation modes of the regional transportation plan (freeways, arterial streets, light rail, and bus) and, if necessary, recommend areas for improvement. | Revenue and expenditure projection processes, techniques, and models employed for the RTP are consistent with best practices. Minor clarifications in reports can enhance the information provided to oversight bodies and the public. Refer to Chapter 5 for details. |
| Task 3.h<br><br>Compile a list of all projects in Phase I that were originally projected for Phase I in the RTP and their estimated costs and delivery dates, and compare them to all Phase I projects actually delivered (i.e., fall in the continuum between "bid and completed") as of June 30, 2010, and their costs and delivery dates. Explain any reasons for significant discrepancies identified relating to estimated/planned costs versus actual/bid costs and estimated delivery dates and actual delivery dates. | Our review of Phase I projects revealed that significant cost, schedule, and scope variances existed between planned and actually completed Phase I projects—however, for the most part, variances seemed reasonable. Refer to Chapter 2 and Appendix C for our comparisons between budgeted and actual costs and schedule. |

| Request for Proposal Tasks | Audit Results |
|---|---|
| Task 3.i<br><br>Review the effectiveness of the Regional Transportation System organizational structure in implementing the RTP and, if necessary, recommend areas for improvement. | Although the current organizational structure in place provides requisite oversight, several improvements could more effectively implement the RTP and accomplish RTP goals such as:<br><br>• Strengthening MAG's Transportation Policy Committee leadership.<br><br>• Refocusing the practices and function of the Citizens' Transportation Oversight Committee.<br><br>• Exploring consolidation of light rail, bus transit, and local transit administration and activities.<br><br>Refer to Chapter 4 for more details. |

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# Appendix C: Budget to Actual Analysis of Phase I Projects

As part of the RTP audit, we were asked to compile a list of Phase I freeway, arterial, and transit projects originally projected and compare their estimated costs and delivery dates with projects actually delivered as of June 30, 2010, as well as explain reasons for significant discrepancies. With the multitude of adjustments that occur over time such as project delays, accelerations, combinations, splits, and name changes, it is difficult to track and align projects that were initially envisioned for completion in completion in Phase I and those that were ultimately completed. Another layer of complexity is added since some projects were not specifically identified in the RTP or were not assigned specific budgets or completion dates.

Generally, MAG uses RTP updates and its annual Proposition 400 report to communicate cost and schedule status on projects initially envisioned in the 2003 RTP. To capture planned or budgeted data, we used the 2003 RTP and subsequent updates as well as annual Proposition 400 reports. We relied on these reports to summarize actual project expenditures and schedule information; and, where possible, we validated the reliability of actual cost and schedule data presented in these reports against fiscal records, construction schedules, and bus schedule books.

Based on our review, we found many variances between planned and actual projects completed, costs, and timelines—although variances are typical and expected in the transportation industry where funding, conditions, and needs are in a state of continual flux. To assess the reasons behind the variances, we selected a sample of projects for each mode to conduct additional research in project files and related documentation to understand the specifics behind the variances. For the most part, we found variances for the projects reviewed to be reasonably supported with scopes vetted through oversight committees. However, we did not evaluate the appropriateness of individual project design concepts or second guess the precision of related project cost estimates prepared by expert transportation engineering firms, nor did we assess whether the right decisions were made based on the information since project scopes were presumably discussed and vetted through the MAG committee process. Our results are shown in the sections that follow.

## Freeway Projects

In 2003, the RTP identified 22 freeway projects, for which "final construction" was to begin during the RTP Phase I period between July 1, 2004 and June 30, 2010. These 22 projects consisted of widening existing freeways by adding high occupancy vehicle (HOV) Lanes and general-purpose lanes (GPL), as well as adding new interchanges and HOV ramps on existing freeways. Combined, the Phase I improvements were estimated to cost $1.75 billion (in 2002 dollars) as shown in Table 16. At the end of Phase I in 2010, the 22 original Phase I projects were consolidated into 19 projects—13 open to traffic and 6 reprioritized to later phases.

Specifically, as shown in Table 16, the 13 completed projects cost approximately $901.5 million to complete, which is nearly $276 million more than estimated in 2003. However, while some of the initial projects identified in the original RTP were delayed past Phase I, an additional 35 improvements initially scheduled for later phases were completed during Phase I including general purpose lanes, and high occupancy vehicle lanes, arterial interchanges, and other landscape, drainage, traffic flow type projects at a cost of approximately $880 million.

***Table 16: Budget to Actual Comparison for Freeway Projects Initially Planned for Phase I, as of June 30, 2010 (amounts in Millions)***

| # | Corridor & Segment per 2003 RTP | Phase I Projects 2003 RTP Estimate | June 2010 Actual Expense | Variance |
|---|---|---|---|---|
| 1 | Loop 202 - Red Mountain: I-10/SR 51 to Rural Rd | $ 67.0 | $ 204.5[A] | $ 137.5 |
| 2 | Loop 202 - Red Mountain: Loop 101 to Gilbert Rd (HOV) | 32.0 | 23.9 | -8.1 |
| 3 | I-17 - Black Canyon: Carefree Hwy to Loop 101 | 169.0 | 295.3 | 126.3 |
| 4 | Loop 101 - Pima: Shea Blvd to Loop 202/Red Mountain (HOV) | 61.0 | 61.8 | -21.2 |
| | Loop 101 - Pima: Princess Dr to Loop 202 Red Mountain (HOV) | 22.0 | | |
| 5 | Loop 101 - Price: Loop 202/Red Mountain to Baseline Rd | 22.0 | 38.3 | -14.7 |
| | Loop 101 - Price: Baseline Road to Loop 202/Santan | 31.0 | | |
| 6 | Loop 101 - Agua Fria: Bethany Home Rd | 20.7 | 9.9 | -10.8 |
| 7 | SR-51: Loop 101/Pima to Shea Blvd (HOV only) | 32.0 | 51.4 | -1.0 |
| 8 | SR-51: Loop 101/Pima | 20.4 | | |
| 9 | US 60 - Superstition: I-10 to Loop 101 Price | 9.0 | 24.8 | 15.8 |
| 10 | US 60 - Superstition: Val Vista Dr to Power Rd - Now US 60 – Superstition: Gilbert Rd to Power Rd | 85.0 | 87.7 | 2.7 |
| 11 | SR-93: Wickenburg Bypass | 27.0 | 42.0 | 15.0 |
| 12 | I-10: Bullard Rd | 9.2 | 16.2 | 7.0 |
| 13 | I-17: Jomax Rd - combined with Dixileta Dr (2 Traffic Interchanges and 2 Bridges) | 18.4 | 45.7[B] | 27.3 |
| | **13 Projects Open to Traffic:** | **$ 625.7** | **$ 901.5** | **$ 275.8** |
| 1 | Loop 202 - South Mountain: I-10 (West) to 51st Ave | 300.0 | 0.3 | -299.7 |
| 2 | Loop 303: I-17 to US 60/Grand Ave | 250.0 | 162.0 | -88.0 |
| 3 | SR-85: I-10 to Hazan Rd | 50.0 | 65.6 | -24.4 |
| | SR-85: Hazan Rd to I-8 | 40.0 | | |
| 4 | US 60 - Grand Avenue: Loop 101 to Van Buren St (Includes grade separations at 51st, 35th, and 19th Ave) | 30.0 | 2.5 | -27.5 |
| 5 | I-10 - Papago: Loop 101 to I-17 | 79.0 | 0.0 | -79.0 |
| 6 | I-10 - Maricopa: 40th St to Baseline Rd (CD Roads) - Redefined to 32nd St to Loop 202/Santan | 380.0 | 13.5 | -366.5 |
| | **6 Projects Delayed:** | **$ 1,129.0** | **$ 243.9** | **-$ 885.1** |
| | ***Sub-Total of 19 Original Phase I RTP Projects:*** | ***$ 1,754.7*** | ***$ 1,145.4*** | ***-$ 609.3*** |
| | **35 Additional Projects Completed During Phase I :** | | **$ 880.7** | **$ 880.7** |
| | **Grand Total:** | **$ 1,754.7** | **$ 2026.1** | **$ 271.4** |

*Source: Initial Phase I estimated costs are from the 2003 RTP, while the June 2010 expenditures are from the 2010 Proposition 400 Report and ADOT financial records. For projects completed, the June 2010 actual amount represents total project expenses. For projects in progress/delayed, the June 2010 actual expenses only include expenditures to date as of June 30, 2010. The 35 additional projects/segments completed during Phase I were not originally scheduled during that timeframe, but were accelerated from later phases or combined with other Phase I projects.*

*Notes: (A) Actual expenses include Phase I project "Loop 202-Red Mountain: I-10/SR-51 to Rural Rd" and Phase II project "Loop 202-Red Mountain: Rural Rd to Loop 101 (eastbound and westbound) which were subsequently combined into one project and completed in Phase I. The Phase I project 2003 estimate was $67M and the Phase II project 2003 estimate was $29M for a combined $106M; thus, the $39M difference between the combined cost of $106M and the variance shown of $137.5 relates solely to estimated costs for the Phase I project "Loop 202-Red Mountain: I-10/SR-51 to Rural Road;"(B) Expense amount includes Phase I project "I-17 Jomax Rd Interchange" and Phase II project "Dixileta Drive half-interchange" which were combined into one project and completed during Phase I. The Phase I project 2003 estimate was $18.4M and the Phase II project 2003 estimate was $9.2M for a combined $27.6M; thus, the $9.2M difference between the combined cost of $27.6M and the variance shown of $27.3 relates solely to estimated costs for the Phase I Project "I-17 Jomax Rd Interchange.".*

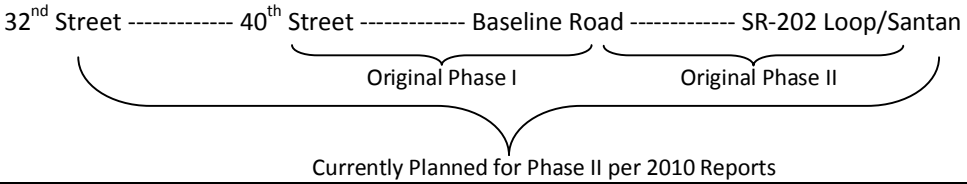
Overages are attributed to various factors including but not limited to the combination and realignment of projects that require additional concept studies and coordination with construction sequencing schedules as illustrated in Table 16 "Example 1." Other reasons for delays and cost increases could include expanded scope and construction cost fluctuations as well as differences in final right-of-way costs as detailed in Table 17 "Example 2." For the two projects reviewed, variances appeared to be reasonably supported with scopes vetted through MAG committees.

***Example 1: Explanation of Cost and Schedule Variance for Delayed Phase I Freeway Project***
As shown in the Table 17, the 2003 RTP included two projects: (1) 40th St to Baseline Road (CD Roads) and (2) Baseline Road to Loop 202/Santan. The first project was planned for Phase I, while the second project was planned for Phase II based on the initial Environmental Impact Study from 2003. However, in April 2009, ADOT informed MAG as part of its Fiscal Year 2010-2013 proposed program changes that the corridor will be "repackaged" due to "the latest cost estimates and construction sequencing." The two projects are now combined into one with new redefined limits between 32nd Street – SR-202 Santan. According to ADOT and its consultants, this stretch is one of the largest bottlenecks in the region, thus stopping the first project at 40th Street was determined not to be the most ideal solution to reduce congestion. The increased cost estimate is mainly due to the addition of the 32nd to 40th Street segment and advance right-of-way purchases. Per the initial Design Concept Report, issued in February 2011, the project cost was estimated at $710 million, slightly more than the $698.1 million estimated in the 2010 Proposition 400 Update Report.

***Table 17: Example 1: Explanation of Cost and Schedule Variance for a Delayed Phase I Freeway Project***

| **Corridor** | **Segment** | **Planned Phase (in 2003) (A)** | **Current Phase (as of 2010) (B)** |
|---|---|---|---|
| **I-10 "Maricopa"** | **32nd Street to Loop 202 "Santan"** | **I** | **II (2015)** |
| **2003 RTP Scope** | **2010 Scope** | **2003 Cost Estimate(C)** | **2010 Cost Estimate(D)** |
| *(1) 40th St to Baseline Road (Phase I)*<br>→ Add 1 GPL (CD Road) (each direction)<br>→ 6 miles<br>*(2) Baseline Road to Loop 202 (Phase II)*<br>→ Add 1 GPL (each direction)<br>→ 6 miles | The 2 projects are now combined and redefined from 32nd Street to Loop 202/Santan for 11 center-line miles. | Project 1: $380 M<br>Project 2: $53 M | $698.1 M |

*Chart: I-10 Maricopa 32nd Street to Loop 202 "Santan"*




*Source: (A) The "planned phase" column data is from the 2003 RTP and represents the date of "final construction" meaning when construction begins—not the date the facility will be open to traffic; (B) The "current phase" is from the 2010 Proposition 400 Report and represents the date the project is "programmed for final construction;" (C) 2003 RTP; (D) 2010 Cost estimate figure is according to the 2010 Proposition 400 Report and includes actual and estimated remaining costs for 2006-2031; (E) GPL refers to general purpose lane.*

***Example 2: Explanation of Cost and Schedule Variance for a Completed Phase I Freeway Project***

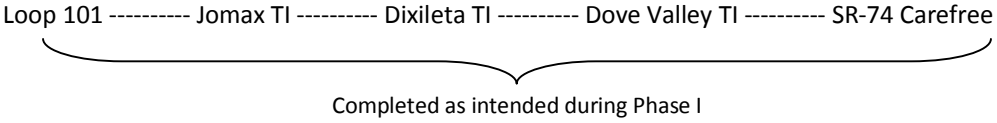
Initially slated at a cost of $169 million, the I-17 Black Canyon project anticipated adding both general purpose and high occupancy vehicle lanes as shown in Table 18. This project was completed as planned in Phase I and has been open to traffic since December 2009. In addition, 3 traffic interchanges (TI) on this segment were also completed in April 2010. Thus, the actual cost for the project rose to $295.3 million, of which $166 million was spent on construction, $116.5 million on right-of-way, and $12.8 million on design. Some of the reasons for the higher actual costs included:

- Initial cost estimate from 2003 did not include the cost for the interchange between I-17 and SR 303. In 2005, an early structure review added the interchange at an estimated cost of $30.7 million.
- Right-of-way expenditures were initially estimated at $7.8 million and revised $52.5 million—but the final cost was $116.5 million due to higher actual condemnation settlement expenses.

***Table 18: Example 2: Explanation of Cost and Schedule Variance for a Completed Phase I Freeway Project***

| **Corridor** | **Segment** | **Planned Phase (in 2003)** [(A)] | **Current Phase (as of 2010)** [(B)] |
|---|---|---|---|
| **I-17 "Black Canyon"** | **Loop 101 "Agua Fria" to SR-74 "Carefree"** | **I** | **I** (complete) |
| **2003 RTP Scope** | **2010 Scope** | **2003 Cost Estimate** [(C)] | **2010 Cost Estimate** [(D)] |
| → Add 2-3 GPL and 1 HOVL<br>→ 9 miles | No scope change. 1 GPL and 1 HOVL were added in each direction. | $169 M | $295.3 M (actual cost) |

*Chart: I-17 Black Canyon: Loop 101 Agua Fria to SR-74 Carefree*




*Source: (A) The "planned phase" column data is from the 2003 RTP and represents the date of "final construction" meaning when construction begins—not the date the facility will be open to traffic; (B) The "current phase" is from the 2010 Proposition 400 Report and represents the date the project is "programmed for final construction;" (C) 2003 RTP; (D) 2010 Cost estimate figure is according to the 2010 Proposition 400 Report and includes actual and estimated remaining costs for 2006-2031; (E) GPL refers to general purpose lane.*

## Arterial Projects

In the program as originally adopted, there were 25 arterial projects/project segments set to be completed during Phase I as shown in Table 19. Although only three of those projects were delivered during Phase I, an additional 19 other arterial projects were delivered in the first phase of Proposition 400 when these projects were accelerated for completion as shown in Table 19. Thus, a total of 22 projects and segments were delivered.

***Table 19: Budget to Actual Comparison of Arterial Projects Initially Planned for Completion in Phase I, as of June 30, 2010 (amounts in millions)***

| Projects | 2003 RTP Estimate | June 2010 Actual Cost | Variance |
|---|---|---|---|
| ***2 Intersection Improvement Projects Completed*** | | | |
| Arizona Ave/Ray Rd | $3.1 | $3.464 | $0.364 |
| Warner/Cooper | 3.1 | 3.700 | 0.600 |
| *Subtotal: Completed Intersection Projects* | *6.2* | *7.164* | *0.964* |
| ***1 Capacity Improvement Project Completed*** | | | |
| Beardsley Rd: Loop 101 to Lake Pleasant Parkway | $19.1 | $6.7[A] | (12.4) |
| *Subtotal: Completed Capacity Improvement Projects* | *19.1* | *6.7* | *(12.4)* |
| **3 Projects Open To Traffic:** | **$25.3** | **$13.864** | **($11.436)** |
| ***14 Capacity Improvement Projects Delayed*** | | | |
| Black Mountain Parkway: SR-51 to Black Mountain Parkway | $18.5 | $0 | (18.500) |
| Broadway Road: Dobson Rd to Country Club Dr | 6.1 | 0.081 | (6.019) |
| Dobson Road: Bridge over Salt River | 15.3 | 0 | (15.300) |
| Germann Road: Gilbert to Power Rd | 18.2 | 0 | (18.200) |
| Greenfield Road: University Rd to Baseline Rd | 8.9 | 2.367 | (6.533) |
| Loop 101 North Frontage Roads: Pima/Princess Dr to Scottsdale Rd | 19.1 | 3.745[B] | (15.355) |
| McKellips Road: Gilbert Rd to Power Rd | 17.9 | 0.163 | (17.737) |
| Mesa Drive: Broadway Rd to US 60 | 7.7 | 0.313 | (7.387) |
| Northern Avenue: Dysart Ave to SR 303L | 50.0 | 19.687 | (30.313) |
| Pecos Road: Ellsworth to Meridian Road | 10.4 | 0 | (10.400) |
| Shea Boulevard: Palisades Blvd to Saguaro Blvd | 5.0 | 0.368 | (4.632) |
| Southern Avenue: Country Club Dr to Recker Rd | 25.3 | 0.168 | (25.132) |
| Thomas Road: Gilbert Rd to Val Vista Dr | 4.6 | 0 | (4.600) |
| Pima Road: South City Limits to 90th Street – Now Pima Road: McKellips to Via Linda | 25.2 | 0 | (25.200) |
| *Subtotal: Delayed Capacity Improvement Projects* | *$232.2* | *$26.892* | *($205.308)* |
| ***7 Intersection Improvement Projects Delayed*** | | | |
| Chandler Boulevard/Alma School | $3.1 | $0.386 | (2.714) |
| Chandler Boulevard/Dobson | 3.1 | 2.073 | (1.027) |
| Dobson/Guadalupe | 2.3 | 0.707 | (1.593) |
| Elliot/Cooper | 3.1 | $0 | (3.100) |
| Guadalupe/Cooper | 3.1 | 0 | (3.100) |
| Guadalupe/Gilbert | 3.1 | 0 | (3.100) |
| Ray/Alma School | 3.1 | 2.217 | (0.883) |
| *Subtotal: Delayed Intersection Improvement Projects* | *$20.9* | *$5.383* | *($15.517)* |
| **21 Phase I Projects Delayed:** | **$253.1** | **$32.275** | **($220.825)** |

| | | | |
|---|---|---|---|
| ***1 Project Deleted from the Program*** | | | |
| Loop 101 South Frontage Roads: Hayden to Pima | 11.4 | 0 | (11.400) |
| **1 Phase I Projects Deleted:** | **$11.4** | **$0** | **($11.400)** |

*Source: 2003 RTP; 7/28/10 Arterial Life Cycle Program Report; and Arterial Project Files*

*Notes: (A) Project was subsequently separated into multiple segments with the "Beardsley Rd: Loop 101 to 83rd/Lake Pleasant Way" segment completed during Phase I. The actual cost represents the expenditure for this segment only. (B) Project was subsequently separated into two segments—"Pima Rd/Princess Dr to Hayden Rd" and "Hayden Rd to Scottsdale Rd". The "Hayden Rd to Scottsdale Rd" segment was completed in Phase I at a cost of $3.745M while the "Pima Rd/Princess Dr to Hayden Rd" segment is deferred to a later phase.*

***Table 20: Costs for Arterial Projects Advanced to Phase I, as of June 30, 2010 (amounts in millions)***

| Projects | June 2010 Actual Cost |
|---|---|
| ***1 Capacity Improvements Project Advanced to Phase I*** | |
| Val Vista: Warner Rd to Pecos Rd | $10.40 |
| *Subtotal: Advanced Capacity Improvement* | *$10.40* |
| ***14 Capacity Improvement Segments Advanced to Phase I*** | |
| Gilbert Road: 202L/Germann Rd to Queen Creek | $6.08 |
| Pima Rd: 101 to Thompson Peak Pkwy | 13.64 |
| Power Rd/Pecos Rd Intersection Improvements | 5.14 |
| Power Road: Baseline Rd to MC | 7.76 |
| El Mirage: Deer Valley to L303 | 5.54 |
| Lake Pleasant Pkwy: Union Hills to Dynamite Blvd | 27.13 |
| Shea Boulevard at 90th/92nd/96th | 4.06 |
| Shea Boulevard at Via Linda | 0.62 |
| Shea Boulevard at Mayo/134th St | 0.16 |
| Queen Creek Road: Arizona Avenue to McQueen Road | 5.67 |
| Shea Blvd: SR-101 to 96th St ITS | 0.381[A] |
| Happy Valley Rd: Lake Pleasant Pkwy to 67th Ave (not yet reimbursed) | 13.69 |
| Loop 101 at Beardsley Rd/Union Hills Drive | 10.85 |
| Happy Valley: I-17 to 35th Ave | 5.22 |
| *Subtotal: Advanced Capacity Improvement Segment* | *$105.94* |
| ***4 Intersection Improvement Projects Advanced*** | |
| Intersection: Arizona Ave/Chandler Boulevard | $3.58 |
| Intersection: Arizona Ave/Elliot Road | 3.21 |
| Intersection: Gilbert/University | 2.74 |
| Intersection: Arizona Ave/Ray Road | 3.47 |
| *Subtotal: Advanced Intersection Improvement Projects* | *$13.00* |
| **Total Phase I Costs: Completed Advanced Projects and Segments** | ***$129.34*** |
| Additionally, $14.4M costs incurred during Phase I for four segments moved to later phases. | |

*Source: 2003 RTP; 7/28/10 Arterial Life Cycle Program Report; and Arterial Project Files*

*Notes: (A) The 2010 Proposition 400 Update Report lists project as planned for final construction in fiscal year 2010 with no regional expenditures through June 30, 2010. However, according to MAG, the project was completed in 2010, thus we utilized the "Total Reimbursement FY06-26) column from the 2010 Proposition 400 Update report to reflect the project's expenditures in this table.*

## Transit Projects

In the program as originally adopted in 2003, 18 bus routes were scheduled to begin service in Phase I. As of June 30, 2010, 14 of the original 18 routes have been funded while 4 routes were deferred. Additionally, 3 other routes were advanced for funding to Phase I, as illustrated in Table 21 on the following page.

***Table 21. Budget to Actual Comparison of Bus Transit Routes Initially Planned for Phase I, as of June 30, 2010 (amounts in millions)***

| Project | 2003 Phase I Estimate (Budget) | 2010 Phase I Costs (Actual) | Variance | Notes |
|---|---|---|---|---|
| **Bus Route Operations** | | | | |
| Route I-10 West RAPID - Desert Sky Express | $ 0.80 | $ 1.50 | $ 0.70 | A |
| Route 511 - East Loop 101 Connector | 0.40 | 0.90 | 0.50 | A |
| Valley Metrolink Main Street | 1.40 | 2.90 | 1.50 | A |
| Route 573 - North Glendale Express (Northwest Valley) | 1.70 | 2.60 | 0.90 | A |
| Route 572 - North Loop 101 Connector | 1.00 | 2.80 | 1.80 | A |
| Route 562 - Papago Fwy Connector (Goodyear Express) | 0.60 | 0.30 | (0.30) | A |
| Route 535 - Red Mountain Express Route | 2.00 | 0.40 | (1.60) | A & C |
| Route 536 - Red Mountain Express | | 0.20 | 0.20 | A & C |
| Routes 575 - West Loop 101 Connector | 0.90 | 0.70 | (0.20) | A & C |
| Route 576 - West Loop 101 Connector | | 0.70 | 0.70 | A & C |
| Route 156 Chandler Blvd | 0.70 | 12.00 | 11.30 | A |
| Route 136 - Gilbert Rd | 2.30 | 1.10 | (1.20) | A |
| Route 70- Glendale Ave | 2.10 | 18.60 | 16.50 | A |
| Route 40 - Apache/Main St | 2.40 | 3.10 | 0.70 | A |
| Route 72- Scottsdale/Rural Rd | 20.70 | 25.20 | 4.50 | A |
| Route 77 - Baseline | 7.70 | - | (7.70) | A & C |
| Route 96 - Dobson Rd | | 4.70 | 4.70 | |
| Route 61 - Southern Ave | | 9.70 | 9.70 | |
| Route I-10 East Rapid - Ahwatukee Express | - | 3.50 | 3.50 | Advanced |
| Route I-17 RAPID - Deer Valley Express | - | 4.60 | 4.60 | Advanced |
| Route 3 – SR-51 Express | $ - | $ 2.80 | $ 2.80 | Advanced |
| Route 685 - Gila Bend Connector (Rural Service) | | 1.80 | 1.80 | B |
| Route 660 - Wickenburg Connector (Rural Service) | | 1.10 | 1.10 | B |
| Local Bus Service | | 24.10 | 24.10 | C |
| Express Bus Service | | 21.70 | 21.70 | C |
| Apache Junction Express | 0.30 | - | (0.30) | Deferred |
| Arizona Avenue Arterial BRT | 0.80 | - | (0.80) | Deferred |
| Buckeye Express | 0.10 | - | (0.10) | Deferred |
| Arizona Avenue/Country Club | 2.20 | - | (2.20) | Deferred |
| **Total Bus Route Operating Costs** | **$48.10** | **$147.0** | **$(98.90)** | |

*Source:* *2003 RTP; 2010 Proposition 400 annual reports*

*Notes:* *A: Costs variance due to inflation, different methodology for calculating costs, and because the 2003 RTP used estimated contract costs and farebox recovery ratios to project costs*

*B: Specific projects and phases were not included in the 2003 RTP for Rural Service*

*C: Local and Express Bus service costs were not included in the 2003 RTP*

In addition, the initial RTP called for other operating services, such as regional passenger support services for para-transit; however, costs attributed to providing these services were not linked to a specific phase. As of June 30, 2010, approximately $85.9 million costs have been incurred for other transit operating costs as shown in Table 22.

***Table 22. Costs for Other Transit Operating Costs in Phase I Not Specifically Identified in the Proposition (amounts in millions)***

| Project | 2010 Phase I Costs (in millions) |
|---|---|
| **Other Transit Operating Costs** | |
| SCAT | $0.40 |
| ADA Complimentary Service | 32.42 |
| Regional Customer Service | 32.60 |
| RPTA Planning & Administration | 18.07 |
| Safety & Security Programs | 1.36 |
| Operating Contingency | 1.00 |
| **Total Project Costs** | **$85.85** |

*Source: 2010 Proposition 400 Report*

### *Individual Bus Transit Route Comparisons*

We selected seven fixed routes implemented during Phase I to compare actual costs incurred with initial estimates, and understand reasons for differences. Our review of the seven routes found that variances between budget-to-actual are primarily because the initially budgeted amounts only include the Proposition 400 portion of costs and are reported at net costs—basically Proposition 400 funded operating costs less fare box revenue collected. In 2010, the methodology changed from reporting actual numbers reflecting gross costs for routes regardless of the funding source as well as including fare box recoveries as a revenue source, rather than netting the fare revenues against costs. Another reason for differences is because budgeted amounts are reflected in 2002 dollars, whereas the actual amounts are reflected in 2010 dollars.

### *Bus Transit Capital Projects*

The initial program adopted in 2003 called for transit capital projects which included 13 park and ride lots, upgrade and construction of bus maintenance and operations facilities, 13 transit centers, bus stop improvements at 1,200 sites, and the purchase of more than 4,578 vehicles. However, these projects were not linked to a specific phase and costs were reported in lump sum for the life of program. Costs for these projects are shown as of June 30, 2010 and no variance is reported, as illustrated in Table 23, since initial amounts were budgeted in gross for the entire 20-year region.

Similarly, the original program did not specify individual capital projects, phase for completion, or project specific cost estimates; rather, the initial program generally called for the construction of park and ride lots, transit center, bus maintenance and operations centers, bus stop improvements, and vehicles with total costs based on initial cost per unit estimates (e.g. the construction 3,500 parking spaces at a cost of $14,000 per space, and total cost of $49 million over the life of the program). Transit capital project expenses totaled nearly $322 million during

Phase I for completion of 1 park and ride, 3 bus maintenance and operations facilities, 376 bus stops, and purchase of 943 vehicles—373 Fixed Route Buses, 356 vanpool vehicles, and 214 para-transit vans.

Our review of capital projects completed during Phase I revealed that capital projects did not receive Proposition 400 funding above limits specified in the intergovernmental agreements between RPTA and member cities—any costs incurred above maximum regional reimbursements were the responsibility of the city. Thus, local entities would cover any cost variances through local general fund or local transit tax funding.

***Table 23. Bus Transit Capital Projects Costs in Phase I, as of June 30, 2010 (amounts in millions)***

| Capital Project | 2010 Phase I Costs (Actual) |
|---|---|
| Fleet Acquisition | |
| Fixed Route | $161.17 |
| Rural Routes | 1.41 |
| Para-transit | 11.87 |
| Van Pool | 8.14 |
| Vehicle Upgrades and Systems | 3.61 |
| Chandler Park and Ride | 9.27 |
| Country Club Park and Ride | - |
| Mesa Maintenance & Operations Facility Purchase | 12.24 |
| Phoenix West Maintenance & Operations Facility | 47.90 |
| Tempe Maintenance & Operations Facility | 46.40 |
| Bus Rapid Transit Right-of-way Improvements | 16.69 |
| Bus Stop Improvements | 3.21 |
| **Total Capital Costs** | **$321.91** |

*Source: Financial records provided by RPTA; capital costs for individual items were not specifically identified in the proposition*

We initially selected a sample of five capital projects completed in Phase I to review, including the Chandler Park and Ride Facility, Country Club Park and Ride Facility, Tempe East Valley Bus Maintenance and Operations Facility, Mesa Maintenance and Operations Facility, and Bus Stop Improvement Program. Although the Country Club Park and Ride was reported as complete in the 2010 RTP Update, the project was in fact incomplete, and was deferred to 2011. According to RPTA, the amount reported in the 2010 RTP Update for the project represented an allocation of federal funds for the project; however, the project is has not been completed.

For the remaining four capital projects, we identified variances between the actual amounts reported in the 2010 RTP Update and actual costs incurred based on financial records as shown in the following examples. Generally, variances were due to inadvertent errors, limited cost data provided to RPTA by local agencies, and varying methodologies in reporting costs between fiscal years as described in more depth in Chapter 2 of this report.

*Example 1: Bus Stop Capital Projects*

In the initial program, $26.4 million in total was budgeted for bus stop pullouts and improvements to be constructed over the four phases. Initial bus stop estimates were based on expected improvements to 1,200 sites at a cost of $22,000 per site; although the number of sites was reduced by 662 sites, or 55 percent, to 538 bus stop improvements due to the shortfall of Proposition 400 revenues. As a result, actual costs for bus stop improvements will be closer to $5.4 million—and average less than the initially estimated cost per site.

RPTA spent the first two years after Proposition 400 was passed developing a methodology to identify how to allocate the money to bus stop capital improvement projects. Unlike bus fixed routes, the distribution of Proposition 400 monies was not based on jurisdictional equity; rather, member cities created a ranking of projects based on need using a one to five ranking with one representing the highest need. Projects with a ranking of one and two were selected for funding; these projects are illustrated in Table 24 below.

***Table 24. Comparison of Bus Stop Improvement Projects Planned with Actual Completed, as of June 30, 2010***

| City | Projects Selected | Projects Completed | Projects Incomplete | Funds Awarded | Funds Reimbursed | Difference |
|---|---|---|---|---|---|---|
| Glendale | 16 | 16 | 0 | $248,516 | $248,516 | $0 |
| Chandler | 91 | 27 | 64 | 1,023,050 | 248,736 | 774,314 |
| Gilbert | 90 | 39 | 51 | 1,441,142 | 544,217 | 896,925 |
| Tolleson | 2 | 1 | 1 | 33,210 | 24,425 | 8,785 |
| Mesa | 198 | 198 | 0 | 764,566 | 764,566 | 0 |
| Tempe[(1)] | 46 | 0 | 46 | 598,801 | 0 | 598,801 |
| Phoenix | 87 | 87 | 0 | 1,220,929 | 1,220,900 | 29 |
| Scottsdale | 8 | 8 | 0 | 138,598 | 138,598 | 0 |
| **Total** | **538** | **376** | **162** | **$5,468,812** | **$3,189,958** | **$2,278,854** |

*Source: RPTA Intergovernmental Agreements and other documentation provided*
*Note: (1) According to RPTA, Tempe has completed a majority of projects; however, due to staffing limitations Tempe has not yet requested reimbursement for costs incurred.*

Although the 2010 RTP Update reported total Phase I costs as $5.8 million, actual costs as of June 30, 2010 were nearly $3.2 million. Specifically, although RPTA initially estimated that all 538 sites selected for improvement would be completed during Phase I, only 376 sites were actually completed and cities reimbursed. Thus, as of June 30, 2010, nearly $2.3 million of allocated funds for 162 sites remains outstanding.

*Example 2: Chandler Park and Ride Lot*

While Park and Ride site locations were identified during the Regional Transit System Study conducted in 2003, project cost estimates and implementation schedules were not incorporated until subsequent RTP updates. The Chandler Park and Ride lot was schedule for completion in Phase I and was put in service on December 29, 2008 at the corner of Germann Road and Hamilton Street with 460 parking spaces.

The 2003 RTP estimated park and rides would cost $14,000 per parking space; therefore, a lot with 460 spaces would cost slightly more than $6.4 million. Although the actual total project

costs were $9.3 million (including pre-design, design, land acquisition, and construction), the construction costs were close to $6.4 million—which aligned with initial estimates. The 2010 RTP Update only reported total project costs of $4.6 million, which was only the portion of costs reimbursed with Proposition 400 monies.

***Light Rail Initial Operating Segment***

As of June 30, 2010, METRO Rail has incurred slightly more than $377 million in expenses related to light rail projects, as illustrated in Table 24. Specifically, the initial program prepared in 2003 estimated $344 million in Phase I costs, for a difference of $33 million. The difference between estimated and actual costs is because the initial 2003 RTP only included capital costs for light rail and did not include costs for the original 20-mile light rail segment regional reimbursement, design standard and system planning, utility relocation or capital project development administration that were added in future RTP updates. In addition, several projects that were programmed for later phases incurred initial construction costs, while one project that was scheduled to be completed during Phase I was deferred to a later phase. Specifically, the Northwest Extension did not incur as much expenditures as anticipated in Phase I because the project was deferred to Phase IV due to limited funding. Conversely, several of the light rail extension projects that were not planned to for activity in Phase I, in fact incurred some preliminary construction costs—although the segments will not be completed until a later phase.

***Table 25: Budget-to-Actual Comparison of Light Rail Costs Incurred During Phase I, as of June 30, 2010 (amounts in millions)***

| | 2003 Phase I Estimate (Budget) | 2010 Phase I Costs (Actual) | Difference Over/(Under) | Notes |
|---|---|---|---|---|
| **Operating Costs** | | | | |
| Original 20-mile CP/EV segment | | $ 48.64 | $ 48.64 | Note 1 |
| **Capital Costs LRT Route Construction** | | | | |
| Northwest Extension (Phase I & II - Metro Center Link) | $ 150.00 | $ 81.89 | $ (68.11) | Note 2 |
| Central Mesa | | $ 4.02 | $ 4.02 | Note 3 |
| Tempe South | | $ 2.23 | $ 2.23 | Note 3 |
| Phoenix West | | $ 4.03 | $ 4.03 | Note 3 |
| **Capital Costs LRT Systemwide Support** | | | | |
| CP/EV Regional Reimbursements | | $ 155.08 | $ 155.08 | Note 1 |
| *-CP/EV Support Infrastructure*<br>*- Northwest Extension Support Infrastructure*<br>Total Support Infrastructure | *164.00*<br>*30.00*<br>$194.00 | | $ (194.00) | |
| Design Standards & System Planning | | $ 4.02 | $ 4.02 | Note 1 |
| Capital Project Development Administration | | $ 1.25 | $ 1.25 | Note 1 |
| Utility Reimbursements | | $ 75.87 | $ 75.87 | Note 1 |
| **Total Phase I Costs** | **$ 344.00** | **$ 377.03** | **$ 33.03** | |

*Source: METRO Financial Records*

*Notes: (1) Costs were not included in initial 2003 RTP, and rail operations were not shown by phase in Proposition 400; (2) Project was deferred to a later phase; (3) Initial project costs incurred during Phase I; however, projects programmed for completion in later phases. Also, according to METRO, another reason for variances is the Proposition 400 legislative mandate to fund non-prior rights for utility relocations.*

# Appendix D: Performance Analysis for Bus Transit Projects

As required by ARS §28-631(C)(2), the performance audit was mandated to examine project expenditures between July 1, 2005 and June 30, 2010 and examine the performance of the system in relieving congestions and improving mobility. In Chapter 1 of this Report, we discuss that MAG and ADOT did not set targets or capture data enabling us to assess freeway and arterial project performance. However, RPTA established specific targets and tracked performance for its transit system and individual routes. As such, we were able to assess performance for transit operating routes. While there are several types of bus transit services including vanpool and para-transit, we focused on bus fixed route service for our comparisons. Performance data for other transit categories is available in RPTA's Annual Transit Performance Reports.

## Individual Bus Fixed Route Transit Performance Results

Specifically, we selected seven fixed routes funded during Phase I for analysis based on geographic areas within the county, operating entity (RPTA or local jurisdiction), and type of route as shown in Tables 25 through 31. To assess the performance of each individual route selected, we compared performance captured in RPTA's annual Transit Performance Report against the systemwide fixed route targets listed in Table 26—actual route results not meeting targets are reflected in red in the tables below. However, some routes such as Routes 511, 535, and 536, did not begin operating until Fiscal Year 2008-2009; thus, no data is reported for earlier years.

***Table 26. Fixed Route Performance Targets for Fiscal Years 2006-2007 through 2009-2010***

| Route | Fiscal Year | Cost Efficiency/Effectiveness | | | | Service Effectiveness | |
|---|---|---|---|---|---|---|---|
| | | Farebox Recovery Ratio | Operating Cost per Boarding | Subsidy (Net Operating Cost) per Boarding | Operating Cost per Revenue Mile | Total Boardings | Boardings per Revenue Mile |
| Systemwide Fixed Route Target | FY 2007 | 25% | $ 2.34 | $ 1.76 | $ 5.00 | + 3% Annually | 2.10 |
| | FY 2008 | 25% | $ 2.49 | $ 1.88 | $ 5.32 | + 3% Annually | 2.10 |
| | FY 2009 | 25% | $ 2.52 | $ 1.90 | $ 5.39 | + 3% Annually | 2.10 |
| | FY 2010 | 25% | $ 2.39 | $ 1.80 | $ 5.10 | + 3% Annually | 2.10 |

*Source: Annual Transit Performance Reports issued by RPTA for Fiscal Years 2006-2007 through 2009-2010*

While none of the individual routes we reviewed met targets for boardings per revenue mile or operating cost per boarding in Fiscal Year 2009-2010, some of the routes met the 25 percent target for farebox recovery ratio and certain other performance indicators. For instance, as illustrated in Table 27, with the exception of Fiscal Year 2009-2010, Route 61 generally met or exceeded targeted farebox recovery ratios, operating costs per boarding, operating cost per revenue mile, and total boarding targets. Moreover, its farebox recovery ratio has been steadily increasing since Fiscal Year 2006-2007 with the exception of a dip in Fiscal Year 2008-2009.

*Table 27: Route 61 Performance for Fiscal Years 2006-2007 through 2009-2010*

| Route | Fiscal Year | Cost Efficiency/Effectiveness | | | | Service Effectiveness | |
|---|---|---|---|---|---|---|---|
| | | Farebox Recovery Ratio | Operating Cost per Boarding | Subsidy (Net Operating Cost) per Boarding | Operating Cost per Revenue Mile | Total Boardings | Boardings per Revenue Mile |
| Route 61 | FY 2007 | 27% | $ 2.13 | $ 1.56 | $ 4.13 | 1,504,263 | 1.94 |
| | FY 2008 | 29% | $ 2.27 | $ 1.61 | $ 4.76 | 1,668,770 | 2.10 |
| | FY 2009 | 24% | $ 2.52 | $ 1.92 | $ 5.27 | 1,913,447 | 2.10 |
| | FY 2010 | 32% | $ 2.79 | $ 1.90 | $ 5.13 | 1,680,333 | 1.40 |

*Source: Annual Transit Performance Reports issued by RPTA for Fiscal Years 2006-2007 through 2009-2010*

As illustrated in Table 28, Route 70 generally met farebox recovery ratios; however, beginning in Fiscal Year 2007-2008, Route 70 consistently did not meet operating cost per boarding targets and it did not meet operating cost per revenue mile targets. This indicates that the overall operating costs for this route are higher than systemwide targets.

*Table 28: Route 70 Performance for Fiscal Years 2006-2007 through 2009-2010*

| Route | Fiscal Year | Cost Efficiency/Effectiveness | | | | Service Effectiveness | |
|---|---|---|---|---|---|---|---|
| | | Farebox Recovery Ratio | Operating Cost per Boarding | Subsidy (Net Operating Cost) per Boarding | Operating Cost per Revenue Mile | Total Boardings | Boardings per Revenue Mile |
| Route 70 | FY 2007 | 16% | $ 1.91 | $ 1.60 | $ 4.13 | 1,130,021 | 1.31 |
| | FY 2008 | 27% | $ 2.68 | $ 1.95 | $ 6.26 | 2,191,611 | 2.33 |
| | FY 2009 | 33% | $ 2.68 | $ 1.79 | $ 6.77 | 2,434,222 | 2.52 |
| | FY 2010 | 31% | $ 3.22 | $ 2.22 | $ 6.62 | 2,017,348 | 1.57 |

*Source: Annual Transit Performance Reports issued by RPTA for Fiscal Years 2006-2007 through 2009-2010*

As illustrated in Table 29, Route 72 has generally not met systemwide performance targets. Specifically, it appears operating costs per revenue mile and per boarding have consistently been higher than systemwide targets and farebox recovery ratios have consistently been significantly lower than targets. Moreover, there was a substantial decrease in ridership between Fiscal Years 2007-2008 and 2009-2010.

*Table 29: Route 72 Performance for Fiscal Years 2006-2007 through 2009-2010*

| Route | Fiscal Year | Cost Efficiency/Effectiveness | | | | Service Effectiveness | |
|---|---|---|---|---|---|---|---|
| | | Farebox Recovery Ratio | Operating Cost per Boarding | Subsidy (Net Operating Cost) per Boarding | Operating Cost per Revenue Mile | Total Boardings | Boardings per Revenue Mile |
| Route 72 | FY 2007 | 19% | $ 3.15 | $ 2.55 | $ 4.13 | 1,499,638 | 1.31 |
| | FY 2008 | 22% | $ 3.18 | $ 2.49 | $ 4.76 | 1,766,007 | 1.50 |
| | FY 2009 | 14% | $ 4.11 | $ 3.52 | $ 5.59 | 1,613,039 | 1.36 |
| | FY 2010 | 19% | $ 5.15 | $ 4.20 | $ 5.86 | 1,350,059 | 0.97 |

*Source: Annual Transit Performance Reports issued by RPTA for Fiscal Years 2006-2007 through 2009-2010*

As illustrated in Table 30, since beginning operations in Fiscal Year 2008-2009, Route 511 has generally not met systemwide performance targets. Specifically, it appears operating costs per

boarding have consistently been higher than systemwide targets and farebox recovery ratios have consistently been significantly lower than targets.

***Table 30: Route 511 Performance for Fiscal Years 2008-2009 through 2009-2010***

| Route | Fiscal Year | Cost Efficiency/Effectiveness | | | | Service Effectiveness |
|---|---|---|---|---|---|---|
| | | Farebox Recovery Ratio | Operating Cost per Boarding | Subsidy (Net Operating Cost) per Boarding | Operating Cost per Revenue Mile | Total Boardings |
| Route 511 | FY 2009 | 3% | $ 35.35 | $ 34.22 | $ 5.26 | 10,514 |
| | FY 2010 | 4% | $ 35.50 | $ 34.01 | $ 5.14 | 11,385 |

*Source: Annual Transit Performance Reports issued by RPTA for Fiscal Years 2006-2007 through 2009-2010*

As illustrated in Table 31, Routes 535 and 536 generally have not met systemwide performance targets. Specifically, it appears operating costs per boarding have consistently been higher than systemwide targets and farebox recovery ratios have been much lower than targets. Route 536 was eliminated in Fiscal Year 2010-2011 due to low performance.

***Table 31: Routes 535 and 536 Performance for Fiscal Years 2008-2009 through 2009-2010***

| Route | Fiscal Year | Cost Efficiency/Effectiveness | | | | Service Effectiveness |
|---|---|---|---|---|---|---|
| | | Farebox Recovery Ratio | Operating Cost per Boarding | Subsidy (Net Operating Cost) per Boarding | Operating Cost per Revenue Mile | Total Boardings |
| Route 535 | FY 2009 | 14% | $ 6.72 | $ 5.78 | $ 5.25 | 28,815 |
| | FY 2010 | 18% | $ 7.10 | $ 5.82 | $ 5.11 | 28,770 |
| Route 536 | FY 2009 | 2.5% | $ 33.57 | $ 32.74 | $ 5.25 | 3,621 |
| | FY 2010 | 5% | $ 24.38 | $ 23.16 | $ 5.14 | 9,586 |

*Source: Annual Transit Performance Reports issued by RPTA for Fiscal Years 2006-2007 through 2009-2010*

As illustrated in Table 32, while Route I-17 RAPID has consistently met farebox recovery ratios, it has not met the remaining systemwide targets. Specifically, operating costs per boarding and revenue mile have consistently been higher than targets. Moreover, there was a large decrease in ridership between Fiscal Year 2006-2007 and Fiscal Year 2009-2010.

***Table 32: Route I-17 RAPID Performance for Fiscal Years 2006-2007 through 2009-2010***

| Route | Fiscal Year | Cost Efficiency/Effectiveness | | | | Service Effectiveness |
|---|---|---|---|---|---|---|
| | | Farebox Recovery Ratio | Operating Cost per Boarding | Subsidy (Net Operating Cost) per Boarding | Operating Cost per Revenue Mile | Total Boardings |
| Route I-17 | FY 2007 | 32% | $ 3.99 | $ 2.71 | $ 7.06 | 307,250 |
| | FY 2008 | 29% | $ 4.31 | $ 3.06 | $ 7.29 | 292,459 |
| | FY 2009 | 39% | $ 4.04 | $ 2.47 | $ 6.78 | 321,830 |
| | FY 2010 | 23% | $ 6.86 | $ 5.30 | $ 9.67 | 285,897 |

*Source: Annual Transit Performance Reports issued by RPTA for Fiscal Years 2006-2007 through 2009-2010*

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# Appendix E: Performance Analysis for Initial Rail Operating Segment

As required by ARS §28-6313(C)(2), the performance audit was mandated to examine project expenditures between July 1, 2005 and June 30, 2010 and examine the performance of the system in relieving congestions and improving mobility. As such, we reviewed the completed 20-mile METRO light rail project to assess performance. Additionally, other statutes imposed additional audit requirements. Specifically, ARS §28-6313(B) required the audit to consider criteria used by the Federal Transit Administration (FTA) related to mobility, land use, environmental benefits, cost effectiveness, and operating efficiencies. Those requirements also outline specific performance indicators to consider when assessing light rail performance including:

- Service Levels
- Capital Costs
- Operation and Maintenance Costs
- Transit Ridership
- Farebox Revenues

While RPTA captures and tracks light rail performance through the RPTA's Transit Performance Report process, METRO's light rail activities are also accountable to the Federal Transit Administration oversight and "new starts" criteria related to mobility improvements, land use, environmental benefits, cost effectiveness, and operating efficiencies. While the "new starts" criteria requires applicants to provide a broad analysis of the impact of proposed projects in meeting criteria, actual project specific performance targets and expectations are included in the FTA "Record of Decision" approving the project and incorporating provisions into the Full Funding Grant Agreement. As part of the Full Funding Grant Agreement with FTA and in accordance with ARS §28-6313, METRO was required to forecast performance (i.e. targets) for service levels, capital costs, operation and maintenance costs, transit ridership, and farebox revenues. The FTA monitors all rail projects through monthly project oversight reviews of activities and documentation to ensure the rail entity adheres to federal provisions.

Overall, we found that METRO activities comply with federal new starts criteria and the terms of the Full Funding Grant Agreement that provide expectations for performance. Based on our audit procedures as well as review of monthly FTA project oversight reports, the METRO initial light rail project has met or exceeded expectations as discussed in the sections that follow.

## Service Levels

While the Full Funding Grant Agreement or related FTA decisions did not identify specific service levels, the FTA did require the initial 20-mile light rail segment project to provide a reliable alternative to auto travel. To achieve this requirement, METRO set target on-time performance at 93 percent, meaning service was performing as scheduled at least 93 percent of the time. METRO light rail exceeded on-time performance targets in both Fiscal Year 2008-2009 and Fiscal Year 2009-2010, with actual on-time performance reported at 93.9 percent and 95.8 percent, respectively.

## Capital Costs

Similarly, we found that METRO completed construction of the 20-mile segment on-time, within its capital expenditures budget, and within original project specifications, as illustrated in Table 33. Specifically, the project began revenue service on December 27, 2008 as required by the Full Funding Grant Agreement and was completed within budget. As of March 2011, METRO had spent nearly $1.398 billion of the of the $1.412 billion budget for the initial light rail segment—realizing a cost savings of approximately $14.859 million. According to METRO, with the exception of finalizing some right-of-way acquisition expenses due to condemnation proceeding settlements, METRO does not anticipate any additional capital costs for the 20-mile initial light rail project.

Ultimately, the light rail project final costs will be nearly $9.1 million less than the original project estimate and Full Funding Grant Agreement budget due to two primary reasons. First, costs for one of the seven parking structures planned for development was shared with other entities under a joint power agreement. Secondly, due to timing, certain finance costs for expected cash flow loans were lower due to market conditions.

***Table 33: Comparison of FFGA Project Specifications with Projects Completed on Light Rail Segment***

| FFGA Project Specifications | Accomplished To Date |
|---|---|
| Build:<br>• 19.6 mile LRT from 19th Ave. to Bethany Home Rd (Phoenix) to Main St. & Sycamore St. (Tempe).<br>• 27 Stations<br>• 7 Surface Parking Lots<br>• 2 Bridges over Town Lake in Tempe and at 48th St. in Phoenix<br>• 1 Maintenance & Storage Facility in Phoenix<br>Purchase:<br>• 36 vehicles<br>Operations:<br>• Begin Revenue Operations by 12/27/2008 | Built:<br>• 19.66 mile LRT from northwest Phoenix to Mesa<br>• 28 Stations<br>• 6 parking lots, 1 parking structure<br>• 2 new, replaced 5 existing, and modified 2 bridges<br>• 1 Maintenance & Storage Facility in Phoenix<br>Purchased:<br>• 50 vehicles<br>Operations:<br>• Began Revenue Operations by 12/27/2008 |

*Source: (1) FTA Full Funding Grant Agreement (FFGA); (2) Before and After Study-Interim Report (Draft) May 2009*

## Operation and Maintenance Costs

Since its operations began in December 2008, METRO has performed well within its operating budget experiencing only slight cost overages related to vehicle maintenance labor and material costs categories. Specifically, METRO was under budget by $84,000 (or 1 percent) and more than $768,000 (or 2 percent) for Fiscal Years 2008-2009 and 2009-2010, respectively. Yet, for the same timeframe, vehicle maintenance labor and material costs were nearly $117,000 (or 4 percent) and $283,000 (or 5 percent) over budget, respectively, as illustrated in Table 34. Maintenance costs were higher than budgeted because METRO increased the service levels to meet the increased ridership needs; in turn, the additional service increased vehicle mileage requiring more frequent preventive maintenance service and higher costs.

***Table 34: Budget to Actual Comparison of Light Rail Costs for Vehicle Maintenance and Operations for Fiscal Years 2008-2009 and 2009-2010***

| | Budget | Actual | Variance Over/(Under) |
|---|---|---|---|
| **Fiscal Year 2008-2009** | | | |
| LRT Vehicle Maintenance Labor and Materials Costs | $ 2,761,377 | $ 2,877,895 | $ 116,518 |
| Total LRT Operating Costs | $ 15,762,407 | $ 15,678,389 | $ (84,018) |
| **Fiscal Year 2009-2010** | | | |
| LRT Vehicle Maintenance Labor and Materials Costs | $ 5,657,373 | $ 5,940,386 | $ 283,013 |
| Total LRT Operating Costs | $ 33,733,169 | $ 32,964,701 | $ (768,468) |

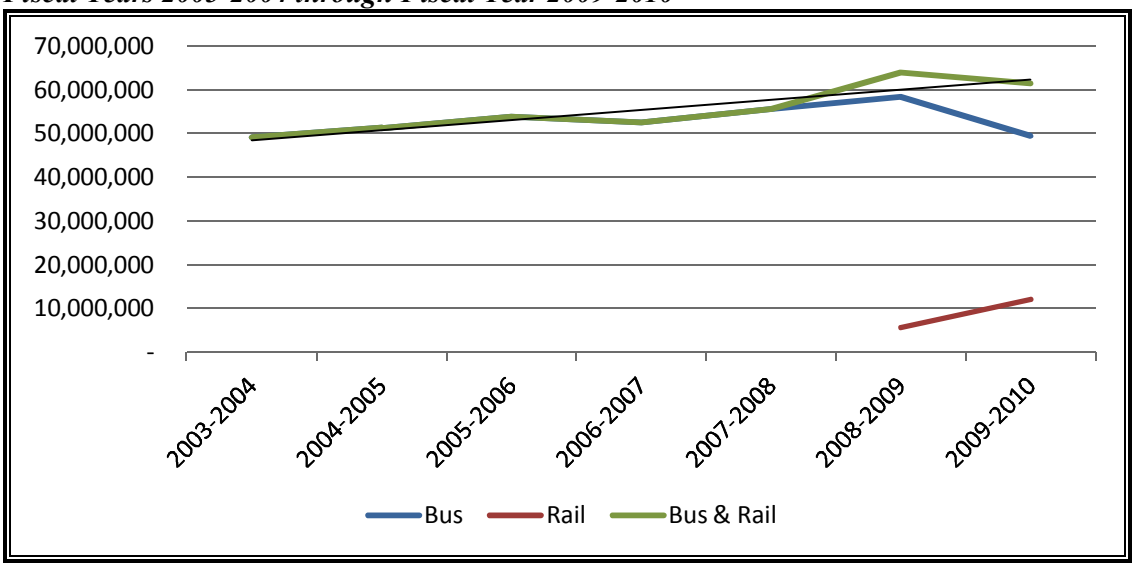
*Source: METRO financial records for Fiscal Years 2008-2009 and 2009-2010*

## Transit Ridership

Not only did Fiscal Year 2008-2009 ridership of nearly 5.6 million riders exceed 2008 projections of 3.9 million riders, but when ridership projections were increased to approximately 7.8 million, actual ridership in Fiscal Year 2009-2010 significantly surpassed expectations by more than 55 percent realizing more than 12.1 million riders.

To assess the impact of light rail on bus transit ridership and public transportation ridership systemwide, we analyzed ridership data between Fiscal Year 2003-2004 and Fiscal Year 2009-2010. In the areas where rail was offered (Mesa, Tempe, and Phoenix), transit ridership generally increased in comparison to prior years when light rail was not in operation as shown in Figure 12. While total ridership in these regions increased at an average rate of more than 3 percent annually between Fiscal Year 2003-2004 and Fiscal Year 2007-2008, total ridership spiked by nearly 9 percent from Fiscal Year 2007-2008 to Fiscal Year 2009-2010—the timeframe when METRO completed the first 20-mile operating segment of the light rail system. Thus, the introduction of light rail had a positive impact on public transportation ridership adding new riders to the combined bus and rail transit system.

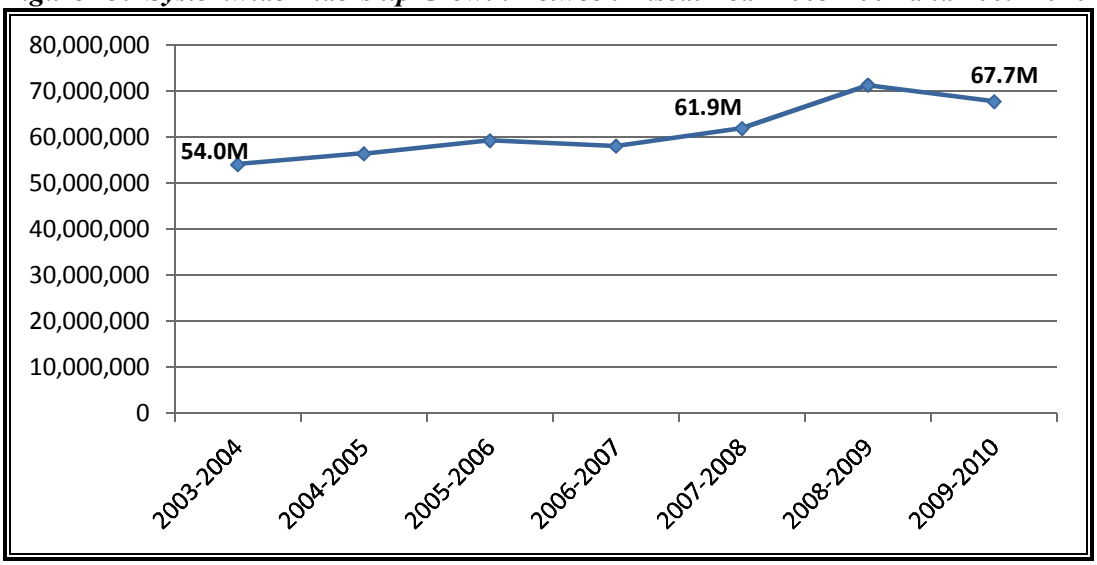
***Figure 12: Combined Fixed Route and Light Rail Ridership for the Mesa, Tempe, and Phoenix Areas, Fiscal Years 2003-2004 through Fiscal Year 2009-2010***




*Source: Ridership Reports available on RPTA website for Fiscal Years 2003-2004 through 2009-2010*

Systemwide, Maricopa County ridership generally increased at an average annual rate of 3.5 percent from Fiscal Year 2003-2004 to Fiscal Year 2007-2008 growing from 54 million to 61.9 million riders. Yet, once light rail operations began in Fiscal Year 2008-2009, total systemwide ridership increased by nearly 9.5 percent from approximately 61.9 million riders in Fiscal Year 2007-2008 to nearly 67.7 million riders in Fiscal Year 2009-2010 as illustrated in Figure 13. Although, bus ridership declined over the same period, in recent years, the economic recession seems to have been a factor in some loss in systemwide ridership.

***Figure 13: Systemwide Ridership Growth Between Fiscal Year 2003-2004 and 2009-2010***




*Source: 2009 National Transit Database Report and Valley Metro Ridership Reports Fiscal Years 2009 and 2010 (1) Light Rail only operated for six months in Fiscal Year 2008-09; (2) Metro Rail performance data for Fiscal Year 2009-2010 is included for comparative purposes since light rail only operated for six months in Fiscal Year2008-2009.*

*Notes: (1) Light Rail only operated for six months in Fiscal Year 2008-09; (2)Metro Rail performance data for Fiscal Year 2009-2010 is included for comparative purposes since light rail only operated for six months in Fiscal Year 2008-2009.*

## Farebox Revenues and other Metrics

METRO established targets and tracks performance using similar performance measures as RPTA uses for bus transit. Light rail has mostly surpassed nearly all of its internal performance expectations, with the exception of farebox recovery ratio in Fiscal Year 2008-2009 as illustrated in Table 35, and data reported in the National Transit Database indicates it outperforms its peers across the nation as well, as illustrated in Table 35. For example, since light rail began operation in December 2008, it has exceeded total boarding expectations of 3.9 million riders by nearly 1.7 million in the first year of operation with actual ridership registering 5.6 million riders and also exceeded 2010 expectations of 7.8 million boardings by nearly 4.3 million with total ridership numbers of more than 12.1 million as shown in Table 35.

***Table 35: Comparison of Light Rail Targets with Actual Performance for Fiscal Years 2008-2009 and Fiscal Year 2009-2010***

| | FY 2009 | | FY 2010 | |
|---|---|---|---|---|
| | **Target** | **Actual[(1)]** | **Target** | **Actual** |
| ***Cost Efficiency/Effectiveness*** | | | | |
| Farebox Recovery Ratio | 25% | 21% | 25% | 28% |
| Operating Cost per Boarding | $3.04 | $2.81[2] | $3.19 | $2.72 |
| Subsidy (Net Operating Cost) per Boarding | $2.23 | $2.21[2] | $2.34 | $1.96 |
| Operating Cost per Revenue Hour | $15.43 | $11.66 | $16.19 | $12.43 |
| ***Service Effectiveness*** | | | | |
| Total Boardings | 3,913,500 | 5,580,857 | 7,827,000 | 12,112,738 |
| Boardings per Revenue Mile | 3.94 | 4.10 | 3.94 | 4.57 |
| On-time Performance | 93% | 93.90% | 93% | 95.80% |

*Source: Fiscal Year 2008-2009 and Fiscal Year 2009-2010 Annual Transit Performance Reports*

*Notes: (1) Light Rail operated only half a year in Fiscal Year 2009 (2) National Transit Database information used for these metrics upon request by METRO*

Additionally, we compared Maricopa County to the following nine other peer rail systems across the country based on service area miles, revenue hours, vehicle revenue miles, and boardings:

- ✓ Sacramento Regional Transit District
- ✓ Salt Lake Utah Transit Authority
- ✓ San Diego Metropolitan Transit System
- ✓ Santa Clara Vehicle Transportation Authority
- ✓ Portland TriMet
- ✓ Dallas Area Regional Transit
- ✓ Minneapolis Metro
- ✓ Denver Regional Transit District
- ✓ Los Angeles County Metropolitan Transportation Administration

When compared to its peers, METRO light rail is outperforming its peers in many categories—or, is at least closely aligned with its peers in other categories. We analyzed federal National Transit Database information to compare METRO with others across the nation. While the

federal data is self-reported and there can be inconsistencies and inaccuracies between regional reporting, it is the best source of comparable data available. As shown in the Table 36, METRO's light rail performance mostly aligns with its peers in all areas except farebox recovery ratio, which were lower, and operating costs which out-performed peers. Like bus transit performance ratios, the farebox recovery ratio is approximately 3 percentage points lower than the 9-peer average and may also be caused by the fare pricing structure, which is below the average pricing for the light rail peer group.

***Table 36: Maricopa County Light Rail Peer Averages Comparison for Fiscal Year 2008-2009***

| | FY 2010 | FY 2009 | | |
|---|---|---|---|---|
| | Maricopa County (Metro Rail) 2010[2] | Maricopa County (Metro Rail) 2009[1] | 9 Peer Average | 9 Peer Median |
| Miles of Track | 20 | 20 | 43.1 | 42.2 |
| Operating Expenses | $32,964,701 | $15,678,389 | $69,183,244 | $58,068,693 |
| Fare Revenue | $9,256,913 | $3,371,103 | $19,241,869 | $16,090,405 |
| Annual Vehicle Revenue Miles | 2,833,111 | 1,362,250 | 5,558,248 | 5,007,225 |
| Annual Vehicle Revenue Hours | 182,781 | 95,213 | 305,226 | 265,490 |
| Total Boardings (Unlinked Passenger Trips) | 12,112,738 | 5,580,857 | 23,589,389 | 18,965,249 |
| Farebox Recovery Ratio | 28.1% | 21.5% | 31.1% | 33.3% |
| Operating Cost Per Boarding (Unlinked Passenger Trip) | $2.72 | $2.81 | $3.15 | $2.58 |
| Subsidy per Boarding | $1.96 | $2.21 | $2.31 | $1.60 |
| Operating Cost per Revenue Mile | $11.64 | $11.51 | $12.82 | $12.99 |
| Average Boardings Per Revenue Mile | 4.28 | 4.10 | 4.20 | 4.11 |

*Source: 2009 National Transit Database Report;, Track Miles from Provider Websites; Metro Rail financial information from Metro Rail Fiscal Year end June 30, 2010 Comprehensive Annual Financial Report; and Valley Metro Ridership Reports Fiscal Years 2008-2009 and 2009-2010*

*Note: (1) Light Rail only operated for six months in Fiscal Year 2008-2009; (2) Metro Rail performance data for Fiscal Year 2009-2010 is included for comparative purposes since light rail only operated for half a fiscal year in 2008-2009.*

# Appendix F: Summary of Audit Recommendations

| Recommendations | State Legislature | MAG | ADOT | RPTA | METRO | CTOC |
|---|---|---|---|---|---|---|
| **Chapter 1: Some Performance Data Exists, But Results of Proposition 400 Efforts Cannot be Fully Measured** | | | | | | |
| 1. Formally identify and quantify what the MAG Regional Council, in collaboration with its partners, expects to achieve through implementation of the RTP. | | x | | | | |
| 2. Work with ADOT to establish targets and baselines for performance to insert more accountability into the process and ensure that the regional performance framework aligns with state performance measures as well as work with local jurisdictions to set similar targets to track arterial performance. | | x | x | | | |
| 3. Once available, measure and analyze all available freeway and arterial performance data against set baselines, once established, at a system level and at a project level to better understand how individual projects impact overall system performance. | | x | x | | | |
| 4. Coordinate applicable RTP Partner's individual performance measurement activities with MAG's overall performance system for the RTP, especially with ADOT's evolving long-range transportation plan measures to minimize duplication or contradiction and maximize efforts and results. | | x | x | | | |
| 5. Publish certain summary performance data on a pre-determined basis on MAG's website showing targets and actual performance by corridor and by project as well as providing specific project level performance related to budget and schedule with links to the other RTP Partner websites. Consider providing data at a summary and mode level showing performance of individual projects or segments through a performance dashboard feature. | | x | | | | |
| 6. Communicate results and analysis from MAG's Performance Measurement Framework and work with RPTA to communicate results of the Transit Performance Report to committees on a more frequently basis, such as quarterly. | | x | | x | | |

| Recommendations | State Legislature | MAG | ADOT | RPTA | METRO | CTOC |
|---|---|---|---|---|---|---|
| 7. Continue to implement the current transportation system and strive to continually reassess system performance to make modifications as necessary. | | x | x | x | x | |
| **Chapter 2: Cost and Schedule Variances Appear Supported, Although Underlying Data is Difficult to Gather and Assimilate** | | | | | | |
| 8. Develop and use a "report card" type feature to provide, 1-page project snapshots summarizing project budget and schedule by development phase, actual costs against estimated budget and schedule, project performance measures and progress toward targets, financial assumptions and highlights of project changes to scope, schedule, or cost. Moreover, these report cards could feature a brief project description, project manager contacts, project risks, and percent completion as well as provide a history of each project from the 2003 RTP proposed to the voters. | | x | x | x | x | |

| Recommendations | State Legislature | MAG | ADOT | RPTA | METRO | CTOC |
|---|---|---|---|---|---|---|
| 9. Ensure consistency in data reported and facilitate the tracking of totals and data between the annual Proposition 400 reports and RTP Updates in addition to the various life cycle program reports published, as well as adding footnotes to clarify data sources in the reports and reasons for amounts that vary between the reports. Additionally, consider:<br>• Clarifying terms used in the reports or using the term "open to traffic" rather than "programmed for final construction" related to project schedule;<br>• Providing explanation of timing of expenditure data and that some "actual" data is just estimated for the fourth quarter of the year being reported;<br>• Consistently report projects and expenditure information from year to year, and fully explain whether revenues and costs are reflective of full RTP funding sources or only the Proposition 400 portion of project funds; and<br>• Making necessary corrections, in future reports, to communicate past inaccuracies noted by the auditors in previous reports relating to typos and incomplete information from missing projects completed to ensure that future reports reflect the most accurate information. | | x | x | x | x | |
| **Chapter 3: Criteria for Project Change is Vague and Documentation of Potential Impacts Provided to MAG Committees for Decision-Making Could be Improved** | | | | | | |
| 10. Clarify priority criteria to be more specific, use some type of weighted measure for ranking, and provide mechanics of specifically how criteria is to be applied in project change discussions. This recommendation should be led and developed by MAG, with input from the other RTP Partners. | | x | | | | |
| 11. Ensure documentation exists linking projects selected and changes suggested with the priority criteria, quantifying a technical ranking of corridors or projects by priority ranking[A], and discussing the rationale behind changes.<br>[A] *Refer to page 181 for additional Auditor Comments* | | x | x | x | x | |

| Recommendations | State Legislature | MAG | ADOT | RPTA | METRO | CTOC |
|---|---|---|---|---|---|---|
| 12. Have MAG require the use of the Congestion Management Program tool among local cities and counties to identify projects with regional benefits as well as expand use of the tool into other modes in the region, as warranted, for decision-making and project reprioritizations. | | x | | | | |
| 13. Use a performance based model as part of project change and reprioritization processes on a go forward basis to enhance both transparency of the process and accountability to legislative mandates and the public, and document efforts, deliberation, and decisions to show consideration of performance factors such as volume, capacity, and/or delays. | | x | x | x | x | |
| 14. Ensure documentation is maintained describing basis, source, deliberations, outcome, and rationale for resulting actions and decisions related to project and RTP changes. | | x | x | x | x | |
| 15. Summarize and communicate data to MAG oversight committees on options available and alternatives considered, risk and opportunities for each alternative, impacts of each alternative related to congestion or performance such as mobility and safety, and rationale behind final recommendations. | | x | x | x | x | |
| 16. Ensure any additional information provided to individual committee members outside the formal open meeting process is distributed to all committee members as well as made available to the public to stay fully informed. | | x | | | | |
| 17. Continue efforts to develop a user-friendly guide book providing a public "road map" clarifying how the public can influence transportation projects, at what points input can be provided in the RTP development and update process, and where citizens can go to get information. MAG should lead this effort with input from the other RTP Partners. | | x | | | | |

| Recommendations | State Legislature | MAG | ADOT | RPTA | METRO | CTOC |
|---|---|---|---|---|---|---|
| **Chapter 4: Current Organizational Structure Provides Oversight, Although there are Opportunities to more Effectively Accomplish RTP Program Goals** | | | | | | |
| 18. Develop detailed provisions for the MOU agreements between the four RTP Partners, and possibly the City of Phoenix, guiding the practical aspects of the working relationships between the agencies where coordination and collaboration is needed for planning and expenditure of federal and Proposition 400 funds including specific codes of conduct, conflict resolution, and communication protocols. | | x | x | x | x | |
| 19. Similarly, strengthen the existing transit planning MOU to describe the mechanics and specificity of process behind the level of cooperation required in terms of communication frequency, timing, and content as well as the level, timing, and weight of input into agency activities. | | x | | x | x | |
| 20. Memorialize and maintain key meeting discussions at RTP Partner meetings to document items discussed, agreements reached, action items, and responsible partners for future meetings as well as attendees of the meetings. | | x | x | x | x | |
| 21. Through the MAG Transportation Policy Committee, or other committee, assume a stronger and more proactive leadership role in setting framework for RTP related activities rather than just facilitating discussions—although RTP Partners should retain authority to operate and implement shared vision. For instance:<br>• Being more prescriptive in programming based on performance measures and what is best for the region by defining specific performance targets in specific corridors and requiring RTP projects or subsequent changes to demonstrate how those performance objectives were considered, among other factors such as economic, population density, and regional development, as a condition of receiving funds. | | x | | | | |

| Recommendations | State Legislature | MAG | ADOT | RPTA | METRO | CTOC |
|---|---|---|---|---|---|---|
| • Crafting policy with defined procedures for making changes to the RTP requiring projects to demonstrate how they support regional goals and not just local preferences. Some procedures currently exist to guide arterial project change related to improving congestion and mobility in the region that could be used to craft policies for all modes.<br>• Working collaboratively with the other agencies to get agreement and set protocols on how life cycle working group process will function and the timing of when proposed projects and alternatives should be provided through the MAG committee process for early deliberation.<br>• Establishing protocols for multi-modal involvement in life cycle programs and working group meetings to enhance collaboration and the sharing of modal expertise to better understand regional impacts.<br>• Encouraging freeway and transit implementers and operators to utilize MAG staff as a resource on initial project change discussions to help shape the type of regional project decisions that will be accepted by the RTP committee process to meet the goals of the RTP and better connect planners with implementers and operators.<br>• Defining RTP Partners' roles and responsibilities in planning and implementation, ensuring coordination and reducing duplication, and resolving conflict.<br>• Tracking system performance and success of the implementation of the RTP. | | | | | | |
| 22. Adjust MAG Transportation Policy Committee membership requirements to include RPTA and METRO transit representatives to better convey transit operator perspective and achieve full multi-modal input, expertise, and support for regional vision and policy formation. | x | x | | | | |
| 23. Reaffirm the role of CTOC and increase effectiveness by considering: | x | x | x | | | x |

| Recommendations | State Legislature | MAG | ADOT | RPTA | METRO | CTOC |
|---|---|---|---|---|---|---|
| • Developing operating protocols and guiding principles describing how CTOC will function.<br>• Identifying the type of substantive information it needs from the RTP Partners, in addition to the current status updates, to fulfill duties.<br>• Actively questioning and deliberating items at meetings.<br>• Receiving meeting packets for review and analysis prior to meetings.<br>• Providing formal recommendations or reports directly to the MAG Regional Council or MAG Transportation Policy Committee related to project and program delivery as well as overall performance.<br>• Receiving support from MAG staff, rather than ADOT staff.<br>• Ensuring all committee members have the requisite skills needed to oversee a multi-modal system and possibly requiring more specific types of expertise needed for committee members to possess, such as transit experience. | | | | | | |
| 24. Continue investigating cost efficiencies that could result from a combination of RPTA and METRO and implement measures as soon as practical to realize maximum value from initiatives. | | | | x | x | |
| 25. Work towards realizing more benefits from regionalizing bus transit activities by strengthening regional entity role and implementing regional activities that have potential for cost savings or better outcomes for riders such as route scheduling, fleet planning and purchasing, fare inspection and collection, coordinated automated tools, and regional service hearings. | | | | x | | |
| **Chapter 5: Revenue and Expenditure Model is a Reliable Tool for Planning** | | | | | | |
| 26. Expand project documentation to explain the methodology for estimating federal revenues and costs to improve process clarity. | | x | x | | | |

| Recommendations | State Legislature | MAG | ADOT | RPTA | METRO | CTOC |
|---|---|---|---|---|---|---|
| 27. Enhance overall RTP Financial Plan by including information summarizing revenue forecasts and cost estimate techniques for all modes showing projection assumptions. | | x | | | | |
| **Chapter 6: Air Quality Violations Remain a Concern and can Jeopardize the Completion of RTP Projects** | | | | | | |
| No recommendations | | | | | | |
| **Total Number of Recommendations** | **2** | **25** | **14** | **13** | **11** | **1** |

MARICOPA ASSOCIATION of GOVERNMENTS

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December 13, 2011

Ms. Debra Davenport
Auditor General
Arizona Office of Auditor General
2910 N. 44th Street, Suite 410
Phoenix, Arizona 85018-7243

Dear Ms. Davenport:

The Maricopa Association of Governments (MAG) has completed its review of the final draft report of the Performance Audit of the Maricopa County Regional Transportation Plan (RTP) that we received on November 21, 2011. This response supersedes our response of December 9, 2011. MAG was notified by the audit contractor on December 12, 2011 that MAG as well as the other agencies who reviewed and responded to the audit, used the "marked-to-show-changes" version of the document that was transmitted on November 21, 2011. According to the audit contractor, subsequent changes were made to the report that were not reflected in the "marked-to-show-changes" version of the document. 1

We appreciate the efforts and the time your office has invested in conducting the performance audit and we understand the limitations that are inherent with consultants who are located in another state. MAG staff agrees with the findings with some exceptions and concurs with the majority of the recommendations presented in the audit report. Since the audit recommendations have policy and operational implications for MAG, the MAG Regional Council, our governing body, with input from the MAG Management Committee and the Transportation Policy Committee, has the ultimate authority on implementation of the MAG-related recommendations. Please note that the committee structure shown in the audit on pages 17 and 20 are not accurate as MAG stated in the comments on the first draft report and discussed during the exit conference held on November 9, 2011. 2

As we carefully review the findings and recommendations we believe the Performance Audit could have been significantly strengthened with a better understanding of the expectancies under Proposition 400 to build the plan. Also, legislative constraints were established for changing the plan strictly through the major amendment process. Both the citizens and the legislature expected that the plan presented to voters would be completed. We believe the MAG planning process and the Arizona Department of Transportation have kept faith with the voters and the legislature.

The downturn in the American economy drastically affected the state of Arizona and in particular the MAG region. We have experienced thirty-five consecutive months of year-over-year economic decline, unprecedented in the history of Maricopa County. This situation dramatically affected how we look at the components of our Regional Transportation Plan and how we make decisions about our transportation future. Consequently, over the last four years, MAG has placed a focus on outcome performance measures as applied to mobility, safety and accessibility on the multimodal transportation system. The region's most significant outcome performance measure is the fact that despite the loss of $369 million in half-cent sales tax dollars in originally anticipated revenues and additional losses in state and federal funds during the last three years, MAG and partner agencies have been able to sustain their ability to implement the plan, and continue to deliver RTP projects with the unanimous support of regional policymakers.

Our primary task, as outlined by the Proposition 400 ballot measure is to deliver the transportation system delineated in the RTP to the citizens of the region. Projects are being built, the system continues to be developed and improvements being made are enhancing the performance of the MAG region transportation system. Specifically, in the last four years, freeway and arterial travel times have improved on entire corridors, peak hour congestion duration has decreased, recurring congestion at certain bottleneck locations has been relieved, fatalities and injuries have decreased by 25 percent and transit revenue miles as well as boardings per mile have increased. A scrupulous rebalancing effort applied to future RTP phases was successful in deferring significant projects without significantly affecting future forecasted performance and maintaining the integrity of the transportation networks and systems.

The final draft report notes important performance findings where improvements are recommended and recognizes positive examples of practices that demonstrate efficiency and effectiveness in multi modal regional transportation planning.

We look forward to continue working with our RTP Partners in addressing the process improvements as recommended and will continue working to enhance the current practices that have been instrumental in successfully implementing the Regional Transportation Plan for the MAG region.

MAG is appreciative of the auditor's efforts to constructively comment on the performance of the Regional Transportation Plan and offers the agency's response to the general findings of the audit in Appendix A and specific responses to audit recommendations as follows:

1. Formally identify and quantify what the MAG Regional Council, in collaboration with its partners, expects to achieve through the implementation of the RTP.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented. The 2003 RTP set out a number of quantified performance measures for the system. These performance measures are currently part of MAG's Performance Measurement Framework and are updated as the Regional Transportation Plan Updates are developed.

2. Work with ADOT to establish targets and baselines for freeway performance to insert more accountability into the process and ensure that the regional performance framework aligns with state performance measures as well as work with local jurisdictions to set similar targets to track arterial performance.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented. The regional performance framework was developed specifically for the MAG region, the largest urban area in the state with 60 percent of the state's population. The state performance measures and targets are under development by ADOT and will reflect the State's interest rather than specifically for the MAG region.

3. Once available, measure and analyze all available freeway and arterial performance data against set baselines, once established, at a system level and at a project level to better understand how individual projects impact overall system performance.

The finding of the Auditor General is agreed to and a different method of dealing with the finding will be implemented. Measuring project level performance as it relates to overall system performance has to recognize that often the performance analysis of a single project may significantly over- or underestimate the project's contribution to system performance. For example, a project to add high-occupancy vehicle (HOV) lanes on one section of freeway may appear to perform poorly when analyzed in isolation with the overall system, when in fact the single project is part of a series of system improvements to build the HOV network. Corridor level performance will continue to be monitored.

4. Coordinate all RTP Partner's individual performance measurement activities with MAG's overall performance system for the RTP, especially with ADOT's evolving long-range transportation plan measures to minimize duplication or contradiction and maximize efforts and results.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented. MAG and transit agency performance measures will be coordinated and incorporated into MAG's proposed reporting tools. ADOT's state level long range performance measures will be integrated wherever applicable.

5. Publish certain summary performance data on a pre-determined regular basis on MAG's website showing targets and actual performance by corridor and by project as well as providing specific project level performance related to budget and schedule with links to the other RTP Partner websites. Consider providing data at a summary and mode level showing performance of individual projects or segments through a performance dashboard feature.

The finding of the Auditor General is agreed to and a different method of dealing with the finding will be implemented. System level and corridor level performance data will be published on a pre-determined basis. Project level performance data will not be published as part of the MAG performance reporting. Project benefits will be listed on the project "report card."

6. Communicate results and analysis from MAG's Performance Measurement Framework and work with RPTA to communicate results of the Transit Performance Report to committees on a more frequently basis, such as quarterly.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented. Performance data will be provided on a pre-determined basis depending on data availability and data volatility.

7. Continue to implement the current transportation system and strive to continually reassess system performance to make modifications as necessary.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

8. Develop and use a "report card" type feature to provide, 1-page project snapshots summarizing project budget and schedule by development phase, actual costs against estimated budget and schedule, project performance measures and progress toward targets, financial assumptions and highlights of project changes to scope, schedule, or cost. Moreover, these report cards could feature a brief project description, project manager contacts, project risks, and percent completion as well and provide a history of each project from the 2003 RTP proposed to the voters.

The finding of the Auditor General is agreed to and a different method of the finding will be implemented. Specific project performance targets will not be included, but rather the project benefits will be listed as illustrated by the Nevada Department of Transportation example.

9. Ensure consistency in data reported and facilitate the tracking of totals and data between the annual Proposition 400 reports and RTP Updates in addition to the various LCP reports published, as well as adding footnotes to clarify data sources in the reports and reasons for amounts that vary between the reports. Additionally, consider:
    - Clarifying terms used in the reports or using term "open to traffic" rather than using "programmed for final construction" related to project schedule;

- Providing explanation of timing of expenditure data and that some "actual" data is just estimated for the fourth quarter of the year being reported;
- Consistently report projects and expenditure information from year to year, and fully explain whether revenues and costs are reflective of full RTP funding sources or only the proposition 400 portion of project funds; and
- Making necessary corrections, in future reports, to communicate past inaccuracies noted by the auditors in previous reports relating to typos and incomplete information from missing projects completed to ensure that future reports reflect the most accurate information.

The finding of the Auditor General is agreed to and a different method of dealing with the finding will be implemented. Note that the reports reflect different reporting time periods. MAG will attempt to synchronize, whenever possible, the various reports, including clarifying terms used and noting where data is actual or estimated.

10. Clarify priority criteria to be more specific, use some type of weighted measure for ranking, and provide mechanics of specifically how criteria is to be applied in project change discussions. This recommendation should be led and developed by MAG, with input from the other RTP Partners.

The finding of the Auditor General is agreed to and a different method of dealing with the finding will be implemented. MAG will review and revise the priority criteria where appropriate, and will explore the potential use of weighted criteria. Note that the priorities were established in the 2003 Regional Transportation Plan, which is the foundation of Proposition 400, and significant changes to priorities may not be warranted.

11. Ensure documentation exists linking projects selected and changes suggested with the priority criteria, quantifying a technical ranking of corridors or projects by performance measures, and discussing the rationale behind changes.

The finding of the Auditor General is agreed to and a different method of dealing with the finding will be implemented. MAG agrees that the criteria used to make program changes needs to be documented as MAG does now. It is advised that this recommendation be changed from "..or projects by performance measures.." to "..or projects by priority ranking.." which makes this clause consistent with the first part of the sentence.

12. Have MAG require the use of the Congestion Management Program (CMP) tool among local cities and counties to identify projects with regional benefits as well as expand use of the tool into other modes in the region, as warranted, for decision making and project reprioritizations.

The finding of the Auditor General is agreed to and a different method of dealing with the finding will be implemented. This recommendation does not include what context MAG would require the use of the CMP tool. Also, the CMP tool may not be the best vehicle for transit. MAG is exploring different analytic tools that could enhance transit planning.

13. Use a performance based model as part of project change and reprioritization processes on a go forward basis to enhance both transparency of the process and accountability to legislative mandates and the public, and document efforts, deliberation, and decisions to show consideration of performance factors such as volume, capacity, and/or delays.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented. MAG already follows this process as demonstrated by the document "Tentative Scenario for the MAG Regional Freeway and

Highway Program," dated October 2009, which memorialized the analysis of the efforts that MAG went through to baiance the freeway program that was $6.6 billion out of balance. MAG will work with our transit partners on how changes in transit priorities can be better documented with respect to performance factors.

14. Ensure documentation is maintained describing basis, source, deliberations, outcome, and rationale for resulting actions and decisions related to project and RTP changes.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented. MAG produced the document "Tentative Scenario for the MAG Regional Freeway and Highway Program," dated October 2009, which memorialized the analysis of the efforts that MAG went through to balance the freeway program that was $6.6 billion out of baiance.

15. Summarize and communicate data to MAG oversight committees on options available and alternatives considered, risk and opportunities for each alternative, impacts of each alternative related to congestion or performance such as mobility and safety, and rationale behind final recommendations.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented. MAG provides the necessary information concerning options and alternatives as appropriate and as requested by the members of the MAG committees.

16. Ensure any additional information provided to individual committee members outside the formal open meeting process is distributed to all committee members as well as made available to the public to stay fully informed.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented. MAG always provides all information to committee members and to the public that is relevant to the committee's decisions. MAG presently distributes pertinent and relative information for decision-makers prior to committee action. MAG uses a Transmittal Summary that ensures transparency regarding issues and how votes are taken throughout the review process. Our minutes of our process are very extensive to serve as a record of the decisions that are made.

17. Continue efforts to develop a user-friendly guide book providing a public "road map" clarifying how the public can influence transportation projects, at what points input can be provided in the RTP development and update process, and where citizens can go to get information. MAG should lead this effort with input from the other RTP Partners.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented. This effort is presently underway.

18. Develop detailed provisions for the MOU agreements between the four RTP Partners, and possibly the City of Phoenix, guiding the practical aspects of the working relationships between the agencies where coordination and collaboration is needed for planning and expenditure of federal and Proposition 400 funds including specific codes of conduct, conflict resolution, and communication protocols.

The finding of the Auditor General is agreed to and a different method of dealing with the finding will be implemented. The current Memorandum of Understanding (MOU) between MAG and the transit partners was adopted in the spring of 2010 to guide transit planning in the MAG region. In February 2011, provisions of the MOU related to Alternatives Analysis (AA) were clarified through a memorandum. If other aspects of the relationships and

coordination need clarification in the future, appropriate action will be followed to either amend the MOU or provide clarification through implementation memoranda.

19. Similarly, strengthen the existing transit planning MOU to describe the mechanics and specificity of process behind the level of cooperation required in terms of communication frequency, timing, and content as well as the level, timing, and weight of input into agency activities.

The finding of the Auditor General is agreed to and a different method of dealing with the finding will be implemented. The current Memorandum of Understanding (MOU) between MAG and the transit partners was adopted in the spring of 2010 to guide transit planning in the MAG region. In February 2011, provisions of the MOU related to Alternatives Analysis (AA) was clarified through memorandum. If other aspects of the relationships and coordination need clarification in the future, appropriate action will be followed to either amend the MOU or provide clarification through implementation memoranda.

20. Memorialize and maintain key meeting discussions at RTP Partner meetings to document items discussed, agreements reached, action items, and responsible parties for future meetings as well as attendees of the meetings.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented. Agendas and meeting notes will be kept for the RTP Partner meetings.

21. Through the MAG Transportation Policy Committee, or other committee, assume a stronger and more proactive leadership role in setting framework for RTP related activities rather than just facilitating discussions-although RTP Partners should retain authority to operate individually and implement shared vision.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

22. Adjust MAG Transportation Policy Committee membership requirements to include RPTA and METRO transit representatives to better convey transit operation perspective and achieve full multi-modal input, expertise, and support for regional vision and policy formation.

The finding of the Auditor General is not agreed to and the audit recommendation will not be implemented. The role of transit participation was addressed in establishing the Transportation Policy Committee. As memorialized in State Statutes, elected officials from the MAG member agencies are already directly involved in the transit decision-making process. This item will be brought forward to the Transportation Policy Committee for consideration.

23. Reaffirm the role of CTOC and increase effectiveness by considering:
    - Developing operating protocols and guiding principles describing how CTOC will function.
    - Identifying the type of substantive information it needs from the RTP Partners, in addition to the current status updates, to fulfill duties.
    - Actively questioning and deliberating items at meetings.
    - Receiving meeting packets for review and analysis prior to meetings.
    - Providing formal reports and/or recommendations directly to the MAG Regional Council or MAG Transportation Policy Committee related to project and program delivery as well as overall performance.

- Receiving support from MAG staff, rather than ADOT staff.
- Ensuring all committee members have the requisite skills needed to oversee multi-modal system and possibly requiring more specific types of expertise needed for committee members to possess, such as transit experience.

The finding of the Auditor General is agreed to and the audit recommendation will be implemented. The implementation of this recommendation requires legislative action.

24. Continue investigating cost efficiencies that could result from a combination of RPTA and METRO and implement measures as soon as practical to realize maximum value from initiatives.

This finding corresponds to Transit Agencies and does not directly relate to MAG

25. Work towards realizing more benefits from regionalizing bus transit activities by strengthening the regional entity role and implementing regional activities that have potential for cost savings or better outcomes for riders such as route scheduling, fleet planning and purchasing, fare inspection and collection, coordinated automated tools, and regional service hearings.

This finding corresponds to Transit Agencies and does not directly relate to MAG.

MAG again wants to thank you and your audit team for your efforts and recommendations on how MAG, along with our RTP Partners, can improve the delivery of the Proposition 400 program and improve the regional transportation system. There are areas in the audit report that we believe could have been strengthened and improved through additional discussion resulting in a more robust audit report, such as an accurate portrayal of the MAG committee structure; we believe the audit recommendations are a positive step toward improving transportation in the region.

If you have any questions, please contact me or Eric Anderson, MAG Transportation Director, at the MAG Office.

Sincerely,

Dennis Smith
Executive Director

cc: Eric J. Anderson
Kurt R. Sjoberg

APPENDIX A

MAG General Comments

AUDIT FINDING #1

- Some Performance Data Exists, But Determining Results of Proposition 400 Efforts Cannot Be Fully Measured

MAG's Performance Measurement Program is the result of an extensive process of investigation, exploration and adoption of best practices in the field. The program is based on a MAG-developed Performance Measurement Framework and is in a constant state of evolution and development as base data and resources become available. This Framework explains the direct relationship between all measures selected and each focus area derived from goals and objectives in MAG's Regional Transportation Plan (RTP. To assist in the audit process, MAG provided highway and arterial performance measurement information on a timely basis in various formats, electronic spreadsheets, FTP transfer, raw traffic data, analysis results, one-on-one interviews, and narrative documents, as well as web-based documentation, on the following performance measured results:

Limited Access Highway & High Occupancy Vehicle (HOV) Lane Performance

- Access and Mobility Measures
  - Throughput – Vehicle
  - Lost Capacity
  - Per Capita Vehicle-Miles of Travel
  - Throughput – Freight

- Travel Time, Reliability and Delay Measures
  - Speed
  - Point-to-Point Travel Times
  - Travel Time Reliability
  - Extent of Congestion Delay
- Safety Measures
  - Crash/Injury/Fatality Rate
  - Crash/Injury/Fatality Totals for Large Truck-Involved Crashes on the Freeway System

Arterial Performance

- Access and Mobility Measures
  - Throughput - Vehicle
- Travel Time, Reliability and Delay Measures
  - Extent of Congestion Delay
- Safety Measures
  - Intersection Crash Ranking
  - Crash/Injury/Fatality Totals for Large Truck-Involved Crashes on the Arterial System

RTP highway and arterial projects that have been delivered to date are predominantly parts of larger segments or corridors. MAG's Performance Report documents performance results for all RTP instrumented highway

corridors and arterial corridors supported by observed data. A careful review of the performance analysis and results for MAG highway and arterial facilities reveals the extent to which projects within these corridors relieve congestion and improve mobility in the MAG region.

Upon developing the MAG Performance Measurement Framework in collaboration with member agencies and in consultation with national experts in the field of transportation performance measurement, a key finding was the recognition that the nature of measuring performance and establishing targets is very different for highway and transit modes. Moreover, measuring performance by quantifying results of individual highway and arterial projects rendered inconsistent and sometimes unexplainable results.

The behavior and performance of highway and arterial transportation facilities is influenced and, in some cases, determined by multiple, dynamic and external factors such as land use and density changes, incidents, seasonal demand, visibility, etc. In the MAG region these significant factors tend to affect performance more consistently at a corridor or sub-area level rather than at an intersection or individual freeway segment project level. To further differentiate the nature of measuring performance across modes, highway and arterial modes do not benefit from the direct feedback mechanism such as the inherently controlled environment of a fare box recovery system that automatically quantifies necessary parameters for straightforward quantification of effectiveness and efficiency of results.

AUDIT FINDING #2

- Cost and Schedule Variance Appear Supported, Although Underlying Data is Difficult to Gather and Assimilate.

The audit review found that the sheer volume and complexity of data and documents makes it challenging to consistently report and track variances in cost and schedule. Cradle to grave tracking and reporting is encouraged to create a full historic picture of Proposition 400 programs. A project report card is specifically suggested that could combine changes, costs, schedules and performance. With respect to the comment that data are inconsistent and incomplete, MAG currently reports cost and schedule variances on a regular basis by publishing RTP Updates, Proposition 400 Annual Reports and various Life Cycle Reports. Each of these reports is prepared in different cycles, which means that at any given point in time, each report may not contain the latest data presented in another report. Every effort is made to use consistent sources in preparing the reports, but since they are not all released on exactly the same date, some differences may continue to be present.

AUDIT FINDING #3

- Criteria for Project Change is Vague and Documentation of Potential Impacts Provided to MAG Committees For Decision Making Could be Improved.

- MAG recognizes that there is always room for improvement and that the process of developing and implementing changes to a multimodal, multiagency transportation plan is intricate and complex and agrees that there is room for improvement in the information delivery process. Ample documentation is consistently and universally available through the MAG website as well as distributed to all meeting attendees and the public in various formats prior to decision-making by the Transportation Policy

Committee and Regional Council. Additionally, all published reports are available to the public in the MAG Document Review Room. These documents include, but are not limited to, meeting minutes, agendas, reports, project summaries, maps, graphics, posters and multimedia. Numerous resources available memorialize the iterative and transparent process followed by MAG at all instances pertaining to policy decisions.

With respect to recent changes in the Regional Freeway Life Cycle Program, MAG in cooperation with the Arizona Department of Transportation (ADOT), developed a document, the *Tentative Scenario for the Regional Freeway and Highway Program* (October 2009), which contains analysis and ample supporting documentation regarding rationale, impacts and trade-offs for options to balance the program. Travel demand estimates for 2028, comparative Level of Service (LOS) analysis, as well as forecasted volumes, were used to assess and develop various tentative scenarios. This document also summarizes the process followed by MAG regional policy making bodies, the Regional Council, Transportation Policy Committee, and Management Committee meetings from October 2008 through October 2009, to balance the program. Procedures for changes to the Arterial Life Cycle Program (ALCP) are detailed in the ALCP Policy document and are presented through the Committee process for review and recommendation. Following MAG standard procedures, staff distributes abundant supporting documentation, resources, exhibits and references in advance of any meeting to all decision making bodies.

The rebalancing process was developed through extensive technical and policy discussions. This process was used to balance more than $6.6 billion from the program due to lower than anticipated tax revenue and more than $3.5 billion in cost increases and scope creep. At no point did the technical deliberations get out in front of consultation with the MAG Management Committee, Transportation Policy Committee, and the MAG Regional Council. Considerable information about the Value Engineering options is presented in the report *Tentative Scenario for the MAG Regional Freeway and Highway Program* (MAG, October 2009).

AUDIT FINDING #4

Current Organizational Structure Provides Oversight, Although There are Opportunities to More Effectively Accomplish RTP Goals

MAG agrees that the Transportation Policy Committee's guiding and coordinating role could be strengthened as it develops policy positions for the MAG Regional Council.

MAG continues to be concerned by the erroneous depiction of the MAG Management Committee in the decision making organizational charts included twice in the report (see pages 17 and 20). Despite verbal and written comments submitted to the audit team to this effect, one of the key decision-making bodies for our regional transportation policy process is still not properly portrayed.

The transit planning partners meet on a monthly basis as a Regional Transit Planning Team. Discussion topics usually include: current planning projects, the Transit Life Cycle Program (TLCP), short range plan/program, capital and operations, among others. This is the forum where partners work cooperatively to develop solutions to regional transit planning, projects, and project changes. Besides the standing meeting frequency,

additional meetings are held on a case-by-case basis as transit projects are subject to the influences of local and federal funding in addition to the regional priorities and funding. The report states that Life Cycle Program meetings are conducted within the individual modes with little multimodal representation. The nature of discussions and recommendations stemming from each modal committee requires the level of expertise from technical staff and all appropriate staff representing member agencies on specific modal topics. Modal committee recommendations are presented monthly at the Transportation Review Committee. Transit agencies, Street, Highway and Bicycle/Pedestrian representatives sit on the Transportation Review Committee.

With respect to changes in the Arterial Life Cycle Program (ALCP), this program is regulated by Policies and Procedures adopted by the MAG Regional Council that outline specific procedures regarding proposed project changes to the ALCP.

The audit report indicates that the Citizens Transportation Oversight Committee's (CTOC) responsibilities are not clearly defined and that it "may not be operating as effectively as it could." Furthermore, it suggests that the committee fails to facilitate citizen's involvement. In 2009, CTOC deliberated among various public participation opportunities at their meetings. Following the Open Meeting Law, all their meetings are open to the public and CTOC has an option to make a Call to the Public. Although it is not required, they voted to adopt the MAG Open Call to the Public practice in which the public may comment on agenda action items at the time the item is heard, after the presentation and before the committee discussion and action; for non-action items and for items not on the agenda, each member of the public has three minutes for a total of fifteen minutes for all speakers. CTOC adopted this practice after examining various practices in place at State, County and local Council governing boards.

CTOC's Annual Report presents status updates on freeway, arterial and transit Life Cycle Programs, information on revenues, expenditures, construction updates, ADOT budget updates, framework studies, Illustrative corridors, private public partnerships as well as a Financial Compliance Audit.

MAG agrees with the finding that there are a number of opportunities to bolster CTOC's contribution and operate more efficiently developing clear operational protocols and adopting formal guidelines in order to fulfill its duties.

AUDIT FINDING #5

- Revenue and Expenditure Model is a Reliable Tool for Planning

This finding discusses the revenue and cost models that are used to project future revenues and costs. It is important to clarify the difference between expenditures and costs. In the context of the life cycle programs, expenditures represent the flow of funds to pay for program costs. ADOT, for example, maintains the cash flow model for the freeway life cycle program and produces projects of expenditures for each year of the program. Costs, on the other hand, represent the cost of complete projects or pay for operations and maintenance of the system. For the freeway program, for example, costs to complete the South Mountain Freeway are divided among right of way, design and construction by construction segment.

The revenue forecasting process is well-documented by ADOT and incorporates sensitivity analysis in the process and has since 1992:

"The revenue forecast is highly dependent on estimates of independent variables. In order to deal with variability between estimated and actual values, the Department introduced the Risk Analysis Process (RAP) in 1992. The RAP relies on probability analysis and the independent evaluation of the model's variables by an expert panel of economists. The process results in a series of forecasts, with specified probabilities of occurrence, rather than a single or "best guess" estimate." (Maricopa County Excise Tax Forecasting Process & Results, FY 2011-2026, Arizona Department of Transportation, October 2010, pg. 1, http://www.azdot.gov/Inside_ADOT/FMS/PDF/rarfcastproc1126.pdf).

The same process is used for the Highway Users Revenue Fund (HURF) projections. In essence the analytic process uses the input of the expert panel for each variable that is in the econometric and runs through a Monte Carlo simulation using the distribution of the panel inputs.

A major issue that MAG has had with the Proposition 400 program and that was discussed with the Audit Team is the wide variation in project cost estimates. For example, for the Loop 303 Corridor, the costs have varied from $1,467 billion in 2006, to $3,044 billion in 2009, to $1,835 billion in 2011. MAG also just completed a cost review of the South Mountain corridor and has found that there may be over $500 million of savings that could be realized through more economical designs that still provide the same level of service and safety. The concept of designing to a budget was a central recommendation from the first Performance Audit for the Regional Freeway System in 1991.

AUDIT FINDING #6

- Air Quality Violations Remain a concern and can jeopardize the Completion of RTP Projects

Significant air quality improvements have been made in the MAG region over the past 20 years. The audit document presents the air quality issue related to PM-10 as a risk factor that can jeopardize the completion of RTP projects. MAG is not sure why this particular factor was included and not other risk factors. In reviewing the parts of the consultant work tasks as described in Appendix B of the draft we could not find any task related to air quality or risk factors that might impact the completion of RTP projects. For example, the availability of federal transportation funds, both highway and transit formula funds and discretionary funding such as the FTA New Starts and Small Starts Program (5309), currently have a high degree of uncertainty. The completion with a record of decision for the South Mountain Corridor Environmental Impact Study (EIS) and the I-10 Corridor EIS, and a positive outcome of any potential litigation are substantial risks to the completion of these two programs.

# Arizona Department of Transportation

## Office of the Director

206 South Seventeenth Avenue Phoenix, Arizona 85007-3213

Janice K. Brewer
*Governor*

John S. Halikowski
*Director*

John A. Bogert
*Deputy Director for Operations*

Floyd Roehrich, Jr.
*Deputy Director for Policy*


December 13, 2011

Debbie K. Davenport, CPA
Auditor General
Arizona Auditor General's Office
2910 North 44th Street, Suite 410
Phoenix, Arizona 85018

Dear Ms. Davenport:

Arizona Department of Transportation (ADOT) has completed its review of the Performance Audit of the Maricopa County Regional Transportation Plan conducted by Sjoberg Evashenk Consulting, Inc., dated November 21, 2011.

We have carefully reviewed all of the recommendations contained in the report and our responses to the recommendations directed to ADOT are as follows:

**Recommendation #2:** Work with ADOT to establish targets and baselines for performance to insert more accountability into the process and ensure that the regional performance framework aligns with state performance measures as well as work with local jurisdictions to set similar targets to track arterial performance.

**ADOT Response to Recommendation #2:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

ADOT will support MAG in defining targets and baselines for performance to insert more accountability into the process for the Regional Transportation Plan Freeway Program (RTPFP).

**Recommendation #3:** Once available, measure and analyze all available freeway and arterial performance data against set baselines, once established, at a system level and at a project level to better understand how individual projects impact overall system performance.

**ADOT Response to Recommendation #3:** The finding of the Auditor General is agreed to and a different method of dealing with the finding will be implemented.

Once the targets and baseline measurements are defined, ADOT will support MAG in measuring and analyzing the appropriate freeway program data at the system level, not at a project level.

**Recommendation #4:** Coordinate all RTP Partner's individual performance measurement activities with MAG's overall performance system for the RTP, especially with ADOT's evolving long-range transportation plan measures to minimize duplication or contradiction and maximize efforts and results.

**ADOT Response to Recommendation #4:** The finding of the Auditor General is agreed to and a different method of dealing with the finding will be implemented.

ADOT will work with MAG to ensure that ADOT's long-range planning measures are coordinated with MAG's overall performance system for the RTP. However, ADOT's long-range plan is not consistent with the RTP because of the switch from capacity to preservation. The performance measures used are consistent (or at least correlations can be drawn).

**Recommendation #7:** Continue to implement the current transportation system and strive to continually reassess system performance to make modifications as necessary.

**ADOT Response to Recommendation #7:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

ADOT will work with MAG to continually reassess system performance and make modifications as necessary.

**Recommendation #8:** Develop and use a "report card" type feature to provide, 1-page project snapshots summarizing project budget and schedule by development phase, actual costs against estimated budget and schedule, project performance measures and progress toward targets, financial assumptions and highlights of project changes to scope, schedule, or cost. Moreover, these report cards could feature a brief project description, project manager contacts, project risks, and percent completion as well and provide a history of each project from the 2003 RTP proposed to the voters.

**ADOT Response to Recommendation #8:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

ADOT will support MAG in developing a project "report card" that incorporates the recommended information and features deemed appropriate. Much of the information recommended is currently being captured and reported in ADOT's Data Warehouse.

**Recommendation #9:** Ensure consistency in data reported and facilitate the tracking of totals and data between the annual Proposition 400 reports and RTP Updates in addition to the various LCP reports published, as well as adding footnotes to clarify data sources in the reports and reasons for amounts that vary between the reports. Additionally, consider: * Clarifying terms used in the reports or using the term "open to traffic" rather than using

"programmed for final construction related to project schedule;" * Providing explanation of timing of expenditure data and that some "actual" data is just estimated for the fourth quarter of the year reported; * Consistently report projects and expenditure information from year to year, and fully explain whether revenues and costs are reflective of full RTP funding sources or only the Proposition 400 portion of project funds; and * Making necessary corrections, in future reports, to communicate past inaccuracies noted by the auditors in previous reports relating to typos and incomplete information from missing projects completed to ensure that future reports reflect the most accurate information.

**ADOT Response to Recommendation #9:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

To ensure consistent reporting, ADOT will assist and provide project and program information to MAG as needed for MAG update reporting.

**Recommendation #11:** Ensure documentation exits linking projects selected and changes suggested with the priority criteria, quantifying a technical ranking of corridors or projects by performance measures, and discussing the rationale behind changes.

**ADOT Response to Recommendation #11:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

To better support changes to project or corridor priority status and assist in ranking proposed projects or corridors, ADOT will work with MAG to provide necessary technical information, including a discussion of rationale used in developing proposed changes.

**Recommendation #13:** Use a performance based model as part of project change and reprioritization processes on a go forward basis to enhance both transparency of the process and accountability to legislative mandates and the public, and document efforts, deliberation, and decisions to show consideration of performance factors such as volume, capacity, and/or delays.

**ADOT Response to Recommendation #13:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

ADOT will provide necessary engineering information, cost and technical data to support MAG in the use of a performance based freeway model as part of the project change and reprioritization process.

**Recommendation #14:** Ensure documentation is maintained describing basis, source, deliberations, outcome, and rationale for resulting actions and decisions related to project and RTP changes.

**ADOT Response to Recommendation #14:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

ADOT will support MAG by including the details and information concerning freeway program actions and decisions in their Life Cycle program records.

**Recommendation #15:** Summarize and communicate data to MAG oversight committees on options available and alternatives considered, risk and opportunities for each alternative, impacts of each alternative related to congestion or performance such as mobility and safety, and rationale behind final recommendations.

**ADOT Response to Recommendation #15:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

ADOT will work with and support MAG by providing more comprehensive project and program information.

**Recommendation #18:** Develop detailed provisions for the MOU agreements between the four RTP Partners, and possibly the City of Phoenix, guiding the practical aspects of the working relationships between the agencies where coordination and collaboration is needed for planning and expenditure of federal and Proposition 400 funds including specific codes of conduct, conflict resolution, and communication protocols.

**ADOT Response to Recommendation #18:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

ADOT will participate with MAG and the RTP Partners in the development of detailed provisions for the MOU agreements.

**Recommendation #20:** Memorialize and maintain key meeting discussions at RTP Partner meetings to document items discussed, agreements reached, and action items and responsible partners for future meetings as well as attendees of the meetings.

**ADOT Response to Recommendation #20:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

ADOT will support MAG in documenting and maintaining records reflecting decision making or action items affecting the RTPFP.

**Recommendation #23:** Reaffirm the role of CTOC and increase effectiveness by considering: * Crafting a purpose or mission statement. * Developing operating protocols and guiding principles describing how CTOC will function. * Identifying the type of substantive information it needs from the RTP Partners, in addition to the current status updates, to fulfill duties. * Actively questioning and deliberating items at meetings. * Receiving meeting packets for review and analysis prior to meetings. * Making formal reports and/or recommendations directly to the MAG Regional Council or TPC related to project and program delivery as well as overall performance. * Receiving support from MAG staff, rather than ADOT staff. * Ensuring all committee members have the requisite skills needed to oversee multi-modal system and possibly requiring more specific types of expertise needed for committee members to possess, such as transit experience.

**ADOT Response to Recommendation #23:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

ADOT will work with MAG and the other RTP partners to better define the CTOC's role and effectiveness.

**Recommendation #26:** Expand project documentation to explain the methodology for estimating federal revenues and costs to improve process clarity.

**ADOT Response to Recommendation #26:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

ADOT will work with MAG to document methodology and assumptions used in estimating federal revenues and costs.

We appreciate the efforts that went into the audit and the cooperative spirit shown by all parties involved. Although we cannot fully agree on every point, many of the recommendations will help us improve the management of the Regional Transportation Plan.

The audit team from Sjoberg Evashenk Consulting, Inc. and the Auditor General's staff has been very accommodating during the course of the audit and their diligence and expertise in assisting the Department are appreciated.

Sincerely,

John S. Halikowski

cc: Floyd Roehrich, Deputy Director for Policy
Kurt R. Sjoberg, Partner, Sjoberg Evashenk Consulting
Kim Hildebrand, Performance Audit Manager, Office of the Auditor General

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VALLEY METRO

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ValleyMetro.org | T 602.262.7433 F 602.523.6099 TTY 602.251.2039

December 13, 2011

Mr. Kurt Sjoberg, Partner
Sjoberg Evashenk Consulting
455 Capitol Mall, Suite 700
Sacramento, CA 95814

Subject: Response to Revised Draft Performance Audit Report

Dear Mr. Sjoberg:

In response to your letter dated November 21, 2011, below and on the subsequent pages are responses for each audit recommendation. Please note our responses are contingent upon Valley Metro Board of Directors approval.

Recommendation Response

***Recommendation 6**. Communicate results and analysis from MAG's Performance Measurement Framework and RPTA's Transit Performance Report to committees and the public on a more frequently basis, such as quarterly.*

**Response:** The finding of the auditor general is agreed to and a different method of dealing with the finding will be implemented. RPTA agrees; currently most financial data is not available on a more frequent basis than annually, as the operating agencies do not have this available for dissemination. However, ridership data is available and RPTA will work with MAG to post this on MAG's website.

***Recommendation 7**. Continue to implement the current transportation system and strive to continually reassess system performance to make modifications as necessary.*

**Response:** The finding of the auditor general is agreed to and the audit recommendation will be implemented.

***Recommendation 8**. Develop and use a "report card" type feature to provide, 1-page project snapshots summarizing project budget and schedule by development phase, actual costs against estimated budget and schedule, project performance measures and progress toward targets, financial assumptions and highlights of project changes to scope, schedule, or cost. Moreover, these report cards could feature a brief project description, project manager contacts, project risks, and percent completion as well and provide a history of each project from the 2003 RTP proposed to the voters.*

**Response:** The finding of the auditor general is agreed to and the audit recommendation will be implemented. RPTA will work with MAG to develop a report card framework for the transit element of the RTP and will include a reporting requirement into the IGAs with the requisite jurisdictions for Proposition 400 projects.

***Recommendation 9.*** *Ensure consistency in data reported and facilitate the tracking of totals and data between the annual Proposition 400 reports and RTP Updates in addition to the various LCP reports published, as well as adding footnotes to clarify data sources in the reports and reasons for amounts that vary between the reports. Additionally, consider:*

- *Clarifying terms used in the reports or using the term "open to traffic" rather than using "programmed for final construction related to project schedule;"*
- *Providing explanation of timing of expenditure data and that some "actual" data is just estimated for the fourth quarter of the year reported;*
- *Consistently report projects and expenditure information from year to year, and fully explain whether revenues and costs are reflective of full RTP funding sources or only the Proposition 400 portion of project funds; and*
- *Making necessary corrections in future reports, to communicate past inaccuracies noted by the auditors in previous reports relating to typos and incomplete information from missing projects completed to ensure that future reports reflect the most accurate information.*

**Response:** The finding of the auditor general is agreed to and the audit recommendation will be implemented.

***Recommendation 11.*** *Ensure documentation exists linking projects selected and changes suggested with the priority criteria, quantifying a technical ranking of corridors or projects by performance measures, and discussing the rationale behind changes.*

**Response:** The finding of the auditor general is agreed to and the audit recommendation will be implemented.

***Recommendation 13.*** *Use a performance based model as part of project change and reprioritization processes on a go forward basis to enhance both transparency of the process and accountability to legislative mandates and the public, and document efforts, deliberation, and decisions to show consideration of performance factors such as volume, capacity, and/or delays.*

**Response:** The finding of the auditor general is agreed to and a different method of dealing with the finding will be implemented. The methodology will follow the Board-approved TLCP policies, including a policy that specifically states jurisdictional equity will be maintained.

***Recommendation 14.*** *Ensure documentation is maintained describing basis, source, deliberations, outcome, and rationale for resulting actions and decisions related to project and RTP changes.*

**Response:** The finding of the auditor general is agreed to and the audit recommendation will be implemented.

***Recommendation 15.*** *Communicate substantive data to MAG oversight committees providing details on options available, alternatives considered, risk and opportunities for each alternative, and rationale behind final recommendations to stimulate more extensive committee questioning and deliberations as well as ensure committee presentation packets summarize key discussions and actions taken by prior committees in addition to their voting results.*

**Response:** The finding of the auditor general is agreed to and the audit recommendation will be implemented. Meeting summaries with relevant discussions of all RPTA Proposition 400-related meetings will be provided to MAG oversight committees, as well as the rationale/criteria provided by the relevant jurisdiction.

***Recommendation 18.*** *Develop detailed provisions for the MOU agreements between the four RTP Partners, and possibly the City of Phoenix, guiding the practical aspects of the working relationships between the agencies where coordination and collaboration is needed for planning and expenditure of federal and Proposition 400 funds including specific codes of conduct, conflict resolution, and communication protocols.*

**Response:** The finding of the auditor general is agreed to and a different method of dealing with the finding will be implemented based on participation with the RTP partners as appropriate.

***Recommendation 19.*** *Similarly, strengthen the existing transit planning MOU to describe the mechanics and specificity of process behind the level of cooperation required in terms of communication frequency, timing, and content as well as the level, timing, and weight of input into agency activities.*

**Response:** The finding of the auditor general is agreed to and a different method of dealing with the finding will be implemented. The current planning agreement has not been in place for long and effectiveness results are not yet available; however, RPTA will work with the RTP partners to strengthen the agreement once viable information is available and the agreement will be modified as appropriate.

***Recommendation 20.*** *Memorialize and maintain key meeting discussions at RTP partner meetings to document items discussed, agreements reached, and action items and owners for future meetings as well as attendees of the meetings.*

**Response:** The finding of the auditor general is agreed to and the audit recommendation will be implemented.

***Recommendation 24****. Continue investigating cost efficiencies that could result from a combination of RPTA and METRO and implement measures as soon as practical to realize maximum value from initiatives.*

**Response:** The finding of the auditor general is agreed to and the audit recommendation will be implemented. This item is in process and discussions of a single CEO between the two agencies are occurring between the METRO Board and the RPTA Board.

***Recommendation 25.*** *Work towards realizing more benefits from regionalizing bus transit activities by strengthening regional entity role and implementing regional activities that have potential for cost savings or better outcomes for riders such as route scheduling, fleet planning and purchasing, fare inspection and collection, coordinated automated tools, and regional service hearings.*

**Response:** The finding of the auditor general is agreed to and the audit recommendation will be implemented. The RPTA agrees; however, this will take time and agreement from the Valley Metro RPTA member agencies. The Valley Metro Board resolution from April 2007 directs the "Executive Director to work with Valley Metro member agencies toward the development of a single regional transit agency, which over time integrates fixed route, paratransit and rail operations within Valley Metro RPTA."

Thank you for allowing RPTA the opportunity to respond to the Final Draft findings. If you have any questions, please don't hesitate to contact me at 602-523-6002.

Sincerely,

David A. Boggs
Executive Director

Emailed on 12/13/2011

Electronic copies: C. Brady, Sjoberg Evashenk
A. DeVore
D. Boggs
B. Jungwirth

December 13, 2011

Mr. Kurt R. Sjoberg
Partner
Sjoberg Consulting Group
455 Capitol Mall, Suite 700
Sacramento, CA 95814

Dear Mr. Sjoberg:

I am writing in response to the draft final report, Performance Audit of the Maricopa County Regional Transportation Plan, sent to me on November 11, 2011.

Generally speaking, METRO is in agreement with the findings of the Performance Audit, especially those related to the performance of light rail. METRO's initial 20-mile LRT project has far surpassed performance expectations and that is clearly reflected in the audit.

The report mentions that a more regional approach to transit would have potential for cost savings or better outcomes for riders. The METRO and RPTA Boards have recognized that this would be an appropriate action as well and hope to continue efforts at consolidation in the coming months and years. Efficiencies will be realized with a more regional approach to transit services.

Attached you will find our response the audit recommendations. Thank you for the opportunity to provide these comments and please let me know if you have any questions related to them.

Sincerely,

Stephen R. Banta
Chief Executive Officer

# Comments to the
# Final Draft Performance Audit of the
# Maricopa County Regional Transportation Plan

Valley Metro Rail, Inc. (METRO)
December 13, 2011

**Preliminary Recommendations Directed At METRO & METRO Response:**

**Recommendation #7 (Chapter 1)**: Continue to implement the current transportation system and strive to continually reassess system performance to make modifications as necessary.

> **METRO Response:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.
> **Notes:** The METRO 20-mile light rail project has surpassed performance expectations and looks forward to the continued success of light rail as part of the regional transportation system.

**Recommendation #8 (Chapter 2)**: Develop and use a "report card" type feature to provide, 1-page project snapshots summarizing project budget and schedule by development phase, actual costs against estimated budget and schedule, project performance measures and progress toward targets, financial assumptions and highlights of project changes to scope, schedule, or cost. Moreover, these report cards could feature a brief project description, project manager contacts, project risks, and percent completion as well and provide a history of each project from the 2003 RTP proposed to voters.

> **METRO Response:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

**Recommendation #9 (Chapter 2)**: Ensure consistency in data reported and facilitate the tracking of totals and data between the annual Proposition 400 reports and RTP Updates in addition to the various LCP reports published, as well as adding footnotes to clarify data sources in the reports and reasons for amounts that vary between the reports. Additionally, consider:

- Clarifying terms used in the reports or using the term "open to traffic" rather than using "programmed for final construction related to the project schedule."
- Providing explanation of timing of expenditure data and that some "actual" data is just estimated for the fourth quarter of the year reported;
- Consistently report projects and expenditure information from year to year, and fully explain whether revenues and costs are reflective of full RTP funding sources or only the Proposition 400 portion of project funds, and;
- Making necessary corrections, in future reports, to communicate past inaccuracies noted by the auditors in previous reports relating to typos and incomplete information form missing projects completed to ensure that future reports reflect the most accurate information.

**METRO Response:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.
**Notes:** RTP partners to implement standard approach to ensure consistency.

**Recommendation #11 (Chapter 3)**: Ensure documentation exists linking projects selected and changes suggested with the priority criteria, quantifying a technical ranking of corridors or projects by performance measures, and discussing the rationale behind changes.

**METRO Response:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.
**Notes:** RTP partners to implement a standard approach.

**Recommendation #13 (Chapter 3):** Use a performance based model as part of project change and reprioritization processes on a go forward basis to enhance both transparency of the process and accountability to legislative mandates and the public, and document efforts, deliberation, and decisions to show consideration of performance factors such as volume, capacity, and/or delays.

**METRO Response:** The finding of the auditor general is agreed to and a different method of dealing with the finding will be implemented.
**Notes:** While, in general, a performance based model is a good tool to help guide project changes and reprioritization, the success of some transit projects are related to sustainability, land use, and economic development opportunities that may not be easy to measure in a performance model. These elements are recognized by the Federal Transit Administration (FTA) when considering federal funding. Additionally, some consideration must be given to overall regional mobility.

**Recommendation #14 (Chapter 3):** Ensure documentation is maintained describing basis, source, deliberations, outcome, and rationale for resulting actions and decisions related to project and RTP changes.

**METRO Response:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

**Recommendation #15 (Chapter 3):** Summarize and communicate data to MAG oversight committees on options available and alternatives considered, risk and opportunities for each alternative, impacts of each alternative related to congestion or performance such as mobility and safety, and rationale behind final recommendations.

**METRO Response:** The finding of the auditor general is agreed to and a different method of dealing with the finding will be implemented.

**Notes:** METRO, MAG, RPTA and Phoenix entered into an agreement in April 2010 that specifies how projects are discussed and approved through the MAG committee process. In addition, the project review and approval process was further clarified in a MAG staff memorandum presented to the MAG Executive Committee in February 2011 titled "Clarification of Transit Planning Roles and Responsibilities." METRO will follow these processes to assure MAG committees are informed and involved. Additionally, as noted in the response to Recommendation #13, the success of some transit projects are related to sustainability, land use, and economic development opportunities. These elements are recognized by the Federal Transit Administration (FTA) when considering federal funding.

**Recommendation #18 (Chapter 4):** Develop detailed provisions for the MOU agreements between the four RTP Partners, and possibly the City of Phoenix, guiding the practical aspects of the working relationships between the agencies where coordination and collaboration is needed for planning and expenditure of federal and Proposition 400 funds including specific codes of conduct, conflict resolution, and communication protocols.

**METRO Response:** The finding of the auditor general is agreed to and a different method of dealing with the finding will be implemented.
**Notes:** METRO, MAG, RPTA and Phoenix entered into an overarching agreement in April 2010. The agencies will work cooperatively to develop refinements to this agreement as the need arises.

**Recommendation #19 (Chapter 4):** Similarly, strengthen the existing transit planning MOU to describe the mechanics and specificity of process behind the level of cooperation required in terms of communication frequency, timing, and content as well as the level, timing, and weight of input into agency activities.

**METRO Response:** – The finding of the Auditor General is agreed to and a different method of dealing with the finding will be implemented.
**Notes:** METRO, MAG, RPTA and Phoenix entered into an overarching agreement in April 2010. The agencies will work cooperatively to develop refinements to this agreement as the need arises.

**Recommendation #20 (Chapter 4):** Memorialize and maintain key meeting discussions at RTP Partner meetings to document items discussed, agreements reached, and action items and owners for future meetings as well as attendees of the meetings.

**METRO Response:** The finding of the Auditor General is agreed to and the recommendation will be implemented.

**Recommendation #24 (Chapter 4):** Continue investigating cost efficiencies that could result from a combination of RPTA and METRO and implement measures as soon as practical to realize maximum value from initiatives.

> **METRO Response:** The finding of the Auditor General is agreed to and the audit recommendation will be implemented.
> **Notes:** We are actively working on this and agree that this will be beneficial to the region.

**Preliminary Recommendations Not Directed At METRO & METRO Response:**

**Recommendation #1 (Chapter 1):** Formally identify and quantify what the MAG Regional Council, in collaboration with its partners, expects to achieve through implementation of the RTP.

> **METRO Response:** N/A
> **Notes:** METRO and RPTA are not identified for follow up, but should be actively involved with MAG to implement.

**Recommendation #4 (Chapter 1):** Coordinate all RTP Partners' individual performance measurement activities with MAG's overall performance system for the RTP, especially with ADOT's evolving long-range transportation plan measures to minimize duplication or contradiction and maximize efforts and results.

> **METRO Response:** N/A
> **Notes:** This recommendation appears to be directed at the arterial and freeway elements of the RTP. This needs to be clarified in the recommendation.

**Recommendation #17 (Chapter 3):** Continue efforts to develop a user-friendly guide book providing a public "road map" clarifying how the public can influence transportation projects, at what points input can be provided in the RTP development and update process, and where citizens can go to get information. MAG should lead this effort with input from the other RTP Partners.

> **METRO Response:** N/A
> **Notes:** METRO is not identified for follow up, but will be involved with MAG to provide a roadmap. METRO should have an active role in helping MAG develop this roadmap.

**Recommendation #21 (Chapter 4):** Through the MAG Transportation Policy Committee, or other committee, assume a stronger and more proactive leadership role in setting framework for RTP related activities rather than just facilitating discussions—although RTP Partners should retain authority to operate and implement shared vision. For instance:

- Being more prescriptive in programming based on performance measures and what is best for the region by defining specific performance targets in specific corridors and requiring RTP projects or subsequent changes to demonstrate how those performance objectives were considered, among other factors such as economic, population density and regional development, as a condition of receiving funds.
- Crafting policy with defined procedures for making changes to the RTP requiring projects to demonstrate how they support regional goals and not just local preferences. Some procedures currently exist to guide arterial project change related to improving congestions and mobility in the region, that could be sued to craft policies for all modes.
- Working collaboratively with the other agencies to get agreement and set protocols on how life cycle working group process will function and the timing of when proposed projects and alternatives should be provided through the MAG committee process for early deliberation.
- Establishing protocols for multi-modal involvement in LCPs and working group meetings to enhance collaboration and the sharing of modal expertise to better understand regional impacts.
- Encouraging freeway and transit implementers and operators to utilize MAG staff as a resource on initial project change discussions to help shape the type of regional project decisions that can and will be accepted by the RTP committee process to meet the goals of the RTP and better connect planners with implementers and operators.
- Defining RTP Partners roles and responsibilities in planning and implementation, ensuring coordination and reducing duplication, and resolving conflict.
- Tracking system performance and success of the implementation of the RTP.

**METRO Response:** N/A
**Notes:** METRO is not identified for follow up, but generally agrees that the MAG Transportation Policy Committee plays an important role in approving RTP changes. However, given the audit's finding to strengthen the combined governance of regional transit operations between METRO and RPTA, transit plan changes should be addressed through a coordinated approach that includes a strong role for the more unified METRO/RPTA structure.

**Recommendation #22 (Chapter 4):** Adjust MAG Transportation Policy Committee membership requirements to include RPTA and METRO transit representatives to better convey transit operator perspective and achieve a full multi-modal input, expertise, and support for regional vision and policy formation.

**METRO Response:** N/A
**Notes:** METRO is not identified for follow up and this will be an issue ultimately decided by the TPC. However, through the MOU related to transit planning, MAG has taken on a greater role in regional transit planning, and we agree that transit interests should be represented.

**Recommendation #26 (Chapter 5):** Expand project documentation to explain the methodology for estimating federal revenues and costs to improve process clarity.

**METRO Response:** N/A
**Notes:** METRO is not identified for follow up, but METRO includes federal funding estimates as part of its life cycle document. The RTP partners should agree on a methodology for transit as well as highways.

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CITIZENS TRANSPORTATION CTOC OVERSIGHT COMMITTEE

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www.azdot.gov/ctoc

December 12, 2011

Catherine M. Brady, Director
Sjoberg Evashenk Consulting, Inc.
455 Capitol Mall, Suite 700
Sacramento, California 95814

Dear Ms. Brady:

I am responding to the request from your firm as the Chair of CTOC my personal opinion regarding specifically the recommendations for CTOC in the Five Year Performance Audit. I'm forwarding this information to the CTOC members for their concurrence. Upon their review I will forward our final comments to you. Below is my response to Recommendation # 23 on page 139 and the bullet points on page 140 of Draft Prop 400 Performance Audit.

I generally agree with the Auditor General's Report. However, CTOC will have to take the recommendations under advisement and verify that the recommendations are in compliance with ARS 28-6356, 42-6104 or 42-6105. Also, the recommendations, if implemented will need to be mutually agreed upon by the agencies ADOT and MAG and I cannot speak for them. My sense is that in a future day, CTOC, MAG and ADOT will come together and agree on the appropriate action and time line that will be acceptable to all to appropriately implement these and other suggestions for the improvement of the oversight of the Prop 400 process as mandated by the Statute.

To the last bullet point calling for greater skills of the CTOC members; this will be difficult since the appointments are made by the Governor and members of the Maricopa County Board of Supervisors. We can make suggestions, but have little input to their appointments.

Thank you for giving me an opportunity to comment on the CTOC portion of the Draft Audit report.

Sincerely,

Roc Arnett, Chairman
Citizens Transportation Oversight Committee
President & CEO
East Valley Partnership
Office: 480-834-8335 Ext. 202
Cell: 602-999-3444

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## Auditor Comments to the Maricopa Association of Governments' Response

To provide clarity and perspective, we are commenting on the Maricopa Association of Governments' response to our audit report. The numbers correspond with the numbers we have placed in their response.

1 = On November 21, 2011, the audit team provided a final draft report on the Performance Audit of the Maricopa County Regional Transportation Plan mandated by Proposition 400 for the auditees formal written response. That final draft report included changes made based on preliminary comments received from the auditees, internal audit quality control processes, and any other editorial modifications deemed necessary. There were no subsequent changes made to this final draft report provided on November 21, 2011 that the auditees did not have in their possession prior to submitting their response.

Also, on that same date, the audit team provided a marked-up copy of the report and indicated that the "marked-up" version showed those changes made to the report based upon the agencies preliminary comments. The auditors provided this "marked-up" version to assist the auditees in more easily identifying changes made based on their comments.

2 = We believe the figures are accurate as presented with their intended purpose. As indicated by the titles of Figures 2 and 4, the intent behind Figures 2 and 4 was to highlight selected committees involved in the RTP oversight and decision-making processes—not to necessarily depict the sequence of how information flows between the MAG technical and policy committees or between the other RTP Partners.

Additionally, based on MAG's written response, the auditors agree to change the audit recommendation #11 as follows:

**A** = *Original Text:* Ensure documentation exists linking projects selected and changes suggested with the priority criteria, quantifying a technical ranking of corridors or projects by **performance measures**, and discussing the rationale behind changes.

*Revised Text:* Ensure documentation exists linking projects selected and changes suggested with the priority criteria, quantifying a technical ranking of corridors or projects by **priority ranking** and discussing the rationale behind changes.

The changes are reflected on pages 70 and 143 of the report.