

May 17, 2012

TO: Members of the MAG Transportation Review Committee

FROM: David Meinhart, City of Scottsdale, Chair

SUBJECT: MEETING NOTIFICATION AND TRANSMITTAL OF TENTATIVE AGENDA

Thursday, May 24, 2012, 10:00 a.m.
MAG Office, Suite 200, Saguaro Room
302 North 1st Avenue, Phoenix

A meeting of the MAG Transportation Review Committee (TRC) will be held at the time and place noted above. **Please park in the garage under the building. Bring your ticket to the meeting as parking will be validated. Bicycles can be locked in the rack at the entrance to the parking garage.**

The next meeting of the MAG Transportation Review Committee will be held at the time and place noted above. Committee members or their proxies may attend **in person, via videoconference or by telephone conference call**. Those attending video conference must notify the MAG site three business days prior to the meeting. Those attending by telephone conference call please contact MAG offices for conference call instructions.

Pursuant to Title II of the Americans with Disabilities Act (ADA), MAG does not discriminate on the basis of disability in admissions to or participation in its public meetings. Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting Christina Hopes or Jason Stephens at the MAG Office. Requests should be made as early as possible to allow time to arrange the accommodation.

Please be advised that under procedures adopted by the MAG Regional Council on June 26, 1996, all MAG committees need to have a quorum in order to conduct business. A quorum is a simple majority of the membership or fourteen people for the MAG TRC. If the Transportation Review Committee does not meet the quorum requirement, members who have arrived at the meeting will be instructed a legal meeting cannot occur and subsequently be dismissed. Your attendance at the meeting is strongly encouraged. If you are unable to attend the meeting, please make arrangements for a proxy from your jurisdiction to represent you. Please contact Eric Anderson or Christina Hopes at (602) 254-6300 if you have any questions or need additional information.

TENTATIVE AGENDA

	COMMITTEE ACTION REQUESTED
1. <u>Call to Order</u>	
2. <u>Approval of Draft April 26, 2012 Minutes</u>	2. Approve Draft minutes of the April 26, 2012 meeting.
3. <u>Call to the Audience</u> An opportunity will be provided to members of the public to address the Transportation Review Committee on items not scheduled on the agenda that fall under the jurisdiction of MAG, or on items on the agenda for discussion but not for action. Citizens will be requested not to exceed a three minute time period for their comments. A total of 15 minutes will be provided for the Call to the Audience agenda item, unless the Transportation Review Committee requests an exception to this limit.	3. For information and discussion.
4. <u>Transportation Director's Report</u> Recent transportation planning activities and upcoming agenda items for the MAG Management Committee will be reviewed by the Transportation Director.	4. For information and discussion.

ITEMS TO BE HEARD

5. <u>Project Changes – Amendment and Administrative Modification to the FY 2011-2015 MAG Transportation Improvement Program</u> The Fiscal Year (FY) 2011-2015 Transportation Improvement Program (TIP) and Regional Transportation Plan (RTP) 2010 Update were approved by the MAG Regional Council on July 28, 2010 and have been modified fifteen times with the last modification pending approval by the MAG Regional Council on April 25, 2012. Since then, there is a need to modify projects in the programs. The requested project changes include freeway, highway safety, roadway, and transportation enhancements.	5. For information, discussion, and to recommend approval of amendments and administrative modifications to the FY 2011-2015 MAG Transportation Improvement Program, Arterial Life Cycle Program, and as appropriate, to the Regional Transportation Plan 2010 Update.
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The changes included may be categorized as exempt from conformity determinations, and administrative modifications do not require a conformity determination. Handouts for this item will be emailed to Committee prior to the meeting.

6. Update on the MAG Managed Lanes Network Development Strategy – Phase I Project

On November 15, 2010, the MAG Regional Council authorized procurement of consultant services to develop the MAG Managed Lanes Network Development Strategy - Phase I project. This multi-phase effort was in response to consideration for public-private-partnership (P3) opportunities in the Phoenix Metropolitan Area where high occupancy vehicle (HOV) lanes could be operated as high occupancy toll (HOT) lanes as part of an overall managed lanes strategy. The project consultant, Parsons Brinckerhoff, has developed eight planning papers on the following topics: Project Goals and Objectives, Legal and Regulatory Issues, HOV Hours of Operation, HOV Occupancy, HOV Separation Treatment, Pricing and Tolling Methods, Procurement and Financing, and Initial Assessment of Potential Managed Lanes. Please refer to Attachment One for a summary of the recommendations. The links to the papers themselves can be found on the MAG website. As the study team completes further research on this project, comments will be sought from the Committee on these recommendations from the planning papers as the region considers a Managed Lanes Network strategy.

7. SR-101L/Pima-Princess Diverging Diamond Interchange (DDI) Proposal

Scottsdale has identified the SR-101L/Pima Freeway traffic interchange at Pima Road and Princess Drive as a critical location on their transportation network to accommodate travel demand between the

6. For information and discussion.

7. Information and discussion.

central and northern portions of the City. Previous planning efforts have recommended construction of directional fly-over ramps to facilitate the heavy movements in the interchange, that are exceeding \$40 million according to current cost estimates. As the City wants to meet this travel demand, an alternative traffic interchange design, the Diverging Diamond Interchange (DDI), has been identified as lower-cost solution at this location. The City requested and received MAG assistance in studying the engineering and traffic operations of a DDI solution. A summary of the outcomes from this study will be provided to the Committee. MAG provided this assistance to Scottsdale through the On-Call Transportation Planning Services contract.

8. Request for Future Agenda Items

Topics or issues of interest that the Transportation Review Committee would like to have considered for discussion at a future meeting will be requested.

9. Member Agency Update

This section of the Agenda will provide Committee members with an opportunity to share information regarding a variety of transportation-related issues within their respective communities.

10. Next Meeting Date

The next regular Transportation Review Committee meeting will be scheduled Thursday, June 28, 2012 at 10:00 a.m. in the MAG Office, Saguaro Room.

8. For information and discussion.

9. For information.

10. For information.

DRAFT MINUTES OF THE
MARICOPA ASSOCIATION OF GOVERNMENTS
TRANSPORTATION REVIEW COMMITTEE

April 26, 2012

Maricopa Association of Governments Office
302 North First Avenue, Suite 200, Saguaro Room
Phoenix, Arizona

MEMBERS ATTENDING

Scottsdale: David Meinhart, Chair	Maricopa County: Clem Ligocki for John Hauskins
Avondale: David Fitzhugh, Vice-Chair	Mesa: Scott Butler
ADOT: Kwi-Sung Kang for Floyd Roehrich	*Paradise Valley: Bill Mead
*Buckeye: Scott Lowe	Peoria: Andrew Granger
Chandler: Patrice Kraus	Phoenix: Rick Naimark
El Mirage: Lance Calvert	#Queen Creek: Tom Condit
*Fountain Hills: Randy Harrel	RPTA: Bryan Jungwirth
*Gila Bend: Eric Fitzer	Surprise: Bob Beckley
*Gila River: Doug Torres	Tempe: Chad Heinrich
Gilbert: Leah Hubbard	Valley Metro Rail: John Farry
Glendale: Terry Johnson	*Wickenburg: Rick Austin
Goodyear: Cato Esquivel	Youngtown: Grant Anderson for Lloyce Robinson
*Guadalupe: Gino Turrubiarres	
Litchfield Park: Paul Ward for Woody Scoutten	

EX-OFFICIO MEMBERS ATTENDING

*Street Committee: Charles Andrews, Avondale	*ITS Committee: Debbie Albert, Glendale
Bicycle/Pedestrian Committee: Katherine Coles, City of Phoenix	*Transportation Safety Committee: Julian Dresang, City of Tempe

* Members neither present nor represented by proxy. + - Attended by Videoconference
- Attended by Audioconference

OTHERS PRESENT

Eric Anderson, MAG	Bob Antilla, RPTA
Bob Hazlett, MAG	Dan Cook, Chandler
Roger Herzog, MAG	Andi Welsh, El Mirage
Christina Hopes, MAG	Tom Remes, Phoenix
Teri Kennedy, MAG	Robert Reiss, Gannett Fleming
Eileen Yazzie, MAG	Greg Haggerty, Dibble
Tim Wolfe, ADOT	Bill Cowdrey, HDR
Ed Stillings, FHWA	

1. Call to Order

Chairman David Meinhart from the City of Scottsdale called the meeting to order at 10:01 a.m.

Chairman Meinhart announced that revised handouts were at their places for agenda items: #6 on project changes to the Fiscal Year 2011-2015 MAG Transportation Improvement Program, #7 on additional Federal Fiscal Year 2012 Congestion Mitigation and Air Quality (CMAQ) Funds available to transit projects, and #10 on the implementation of the Proposition 400 performance audit.

2. Approval of Draft March 29, 2012 Minutes

Chairman Meinhart asked if there were any changes or amendments to the March 29, 2012 meeting minutes, and there were none. Chairman Meinhart requested a revision to the item on the Freeway Life Cycle Rebalancing. He requested for the minutes to reflect that he had inquired if any other freeway segments, aside from the Pima Freeway between Loop 202 and Shea Boulevard, were in final design and being considered for deferment, and that Mr. Hazlett indicated that the improvements to that segment of the Pima Freeway were the only improvements in final design being considered for deferment.

Mr. Rick Naimark from the City of Phoenix motioned to approve the minutes as amended. Mr. Grant Anderson from Town of Youngtown seconded, and the motion passed by a unanimous voice vote of the Committee.

3. Call to the Audience

Chairman Meinhart announced that he had not received any cards requesting to speak and moved on to the next item on the agenda.

4. Transportation Director's Report

Chairman Meinhart invited Mr. Eric Anderson, MAG Transportation Director, to provide the Transportation Director's Report. Mr. Anderson reported that Highway User Revenue Fund (HURF) revenues were flat with 0.5 percent growth for the first nine months of the fiscal year. He stated the low HURF collections were a result of lower gas tax and vehicle license tax collections. He stated that the HURF collections for the year would be close to the forecasted amounts.

Next, Mr. Anderson discussed analysis he had conducted on fuel economy standards. He reported that the standards had been the same for the last several years at 27 miles per gallon. He announced that the Obama Administration had negotiated with the auto maker industry to increase the fuel economy standards to 56 miles per gallon by 2025. He noted that the standards only would apply to new cars in the fleet. He explained that with the aging of the current fleet

and the new standards, future gas tax collections would decrease by at least 30 percent. Mr. Anderson stated that those calculations were based on the assumption that no additional increases in the gas tax would occur in the near future. He informed the Committee that over 80 percent of federal transportation funds are derived from fuel tax revenues.

Moving on, Mr. Anderson addressed Regional Area Road Fund (RARF) collections. He stated that RARF collections were up 5.6 percent for the first nine months of the fiscal year. He noted that over the last two months, collections had been flat compared to the previous fiscal year. Mr. Anderson cautioned that RARF collections continued to be soft adding that in the past, a double digit growth had occurred when the economy started to improve.

Chairman Meinhart commented that a reduction in the vehicle miles traveled (VMT) also would impact the tax collections. He cited a recent study that stated over 25 percent of people from age 18 to 34 did not own cars. Mr. Anderson stated that the 30% reduction in revenues assumed the current VMT levels. He stated that a reduction in VMT would result in a greater decline of revenues. He added that a reduction in VMT was likely as more people were choosing to drive less by having a smaller commute to work or use transit.

Chairman Meinhart inquired if there were any questions or comments. There were none, and he proceeded to the next item on the agenda.

5. Consent Agenda

Addressing the next item of business, Chairman Meinhart directed the Committee's attention to the consent agenda. He asked the Committee if there were any questions or comments regarding consent agenda items 5a on the Project Workbooks for Federally Funded Project Monitoring. There were none. Chairman Meinhart proceeded to the next item on the agenda because the consent agenda was for information only. Chairman Meinhart announced that the Committee would be hearing agenda item #9 on the rebalancing of the Regional Freeway and Highway Life Cycle Program out of order due to a scheduling conflict.

9. Regional Freeway and Highway Life Cycle Program – 2012 Rebalancing

Chairman Meinhart invited Mr. Hazlett to present on the rebalancing of the Regional Freeway and Highway Life Cycle Program (FLCP). Mr. Hazlett stated that at the April Committee several rebalancing scenarios had been presented for information and input and that the item was now on the agenda for action based on input received through the committee process. He explained that MAG needed to remove \$390 million from the FLCP to maintain the fiscal balance of the program.

Mr. Hazlett displayed a graph of the program cashflows that illustrated the decline in forecasted HURF and RARF revenues. He noted a steep decline in the program cashflow between FY2014 and FY2016. He explained that the decline made it impossible to construct concurrently the South Mountain Freeway and the improvements to Interstate 10 at the Durango Curve.

Mr. Hazlett announced that MAG Staff had developed twelve rebalancing scenarios. He stated that the scenarios would not impact projects currently underway, such as Loop 303. He presented a chart of cost changes over the life of the program. Mr. Hazlett reported that the FLCP was a \$9.6 billion program. He stated that \$3.5 billion had been obligated as of this year and that \$6.1 billion was left in the program until FY2026. Then, Mr. Hazlett proceeded to summarize four rebalancing scenarios that had been selected to move forward through the Committee process.

First, Mr. Hazlett discussed Scenario 8. He stated that under the scenario, the construction of general purpose lanes on Loop 101, Pima and Price Freeways, and Loop 202, the Red Mountain Freeway, would be deferred. He reported that deferring these improvements would make up the deficit needed to rebalance the program. Mr. Hazlett announced that MAG had conducted a cost-benefit analysis on deferring the improvements. He stated that results were negative, which indicated deferring the improvements from the program would have a negative effect of the regional freeway system.

Mr. Scott Butler from the City of Mesa joined the meeting, and his proxy, Mr. Jeff Martin, continued to attend the meeting as a member of the audience.

Next, Mr. Hazlett discussed Scenario 10a. He explained that under the scenario, the regional funds allocated to improvements on Interstate 17 and Loop 303 from US-60 to I-17 would be reduced. He stated that the recent bids for Loop 303 between I-10 and Grand Avenue had been considerably favorable. He stated the right-of-way acquisition and bid savings from Loop 303 would probably cover the reduction in the regional funds allocated to the project.

Mr. Hazlett reported that \$1.1 billion had been identified for improvements to I-17. He stated that the Arizona Department of Transportation (ADOT) was in the process of conducting a corridor study and Environmental Impact Statement (EIS) for I-17. He informed the Committee that specific improvements to the corridor had not been identified. He added that the initial results of the EIS indicated that \$2.2 billion in improvements would be needed for the corridor. Mr. Hazlett explained that given these circumstances it was recommended that alternative approaches, such as managed lanes or a public-private partnership be considered for the corridor.

Moving on, Mr. Hazlett addressed Scenario 10b, which was similar to Scenario 10a. He explained that the primary difference between the scenarios was that the ultimate improvements to Loop 303 from US-60/Grand Avenue to I-17 would be deferred from the program and that the initial construction of Loop 303 south of I-10 would be returned to the program. Mr. Hazlett discussed economic development opportunities near Loop 303 both north and south of I-10. He reported that MAG had conducted a cost-benefit analysis on the scenario and that it had scored a five, which was very high. Mr. Eric Anderson noted that analysis had indicated that the interim improvements to Loop 303 north of I-10 would be sufficient to handle the current and projected average daily traffic (ADT). A brief discussion followed regarding ADT on the corridor.

Finally, Mr. Hazlett summarized Scenario 12, which included varying the start times for improvements to Loop 202/South Mountain and Interstate 10/Maricopa projects. He explained that adjusting the construction schedules reduced the financing burden on the program. He added that under the scenario, the programmed amounts for improvements to Interstate 17 and Loop 303 from US-60 to I-17 also would be reduced.

Mr. Hazlett stated that analysis indicated that the order of the constructions schedules for South Mountain and I-10 had a minimal impact on the cashflow. He explained that selecting which project would be built first under the scenario was a matter of priorities. Mr. Hazlett stated that South Mountain was the regional priority. He stated that South Mountain had been in the plan since Proposition 300 and that the corridor was needed to provide a connection between south Phoenix and the Chandler/Queen Creek area. He stated that for ADOT, constructing the improvements to I-10 was a priority. A brief discussion followed.

Mr. Hazlett announced that based on analysis and input through the committee process that MAG was recommending Scenario 10b and to retain funds in the program for the construction of an interchange on Loop 303 at El Mirage Road.

Mr. Eric Anderson stated that additional analysis would be conducted on the scenarios before the recommendation was presented to Management Committee. He explained that MAG was waiting for additional information from ADOT on the cashflows, which was why the analysis was not prepared at this time. He added that action was needed during the current committee cycle because the State Transportation Board was slated to take action on the program in June.

Mr. Bob Beckley from the City of Surprise requested clarification on the impact of the scenario to the improvements to Loop 303. Mr. Hazlett explained that in 2009 the FLCF was rebalanced and several projects were deferred to Phase V, which was unfunded. He stated that improvements to Loop 303 south of I-10 and the ultimate construction of Loop 303 north of I-10 had been deferred to Phase V at that time.

Mr. Terry Johnson from the City of Glendale requested clarification on the motion. Mr. Hazlett stated that the requested action was to approve Scenario 10B, where the MAG Regional Freeway and Highway Program meets the projected \$390 million shortfall by repositioning the SR-202L/South Mountain Freeway and Interstate 10/Maricopa Freeway projects to improve the Program's cash flow; transfer funding from the SR-303L segment between US-60 and Interstate 17 to the SR-303L segment between Interstate 10 and MC-85, remove \$300 million from the Program's budget for the Interstate 17/Black Canyon Freeway corridor, and to encourage ADOT to focus upon cost-effective solutions that will provide opportunities to return projects to the Program in the future. Mr. Johnson inquired if the construction of South Mountain would occur before the improvements to I-10. Mr. Hazlett replied yes.

Mr. Eric Anderson stated that the Draft EISs for South Mountain and I-10 would be released by the end of the year. He stated that these documents were needed before the projects could proceed. He added that MAG would monitor the progress on the documents and reevaluate the programming of the projects next year. He noted that MAG would have revised revenue projections and additional information on when the construction schedules were reevaluated.

Mr. Naimark inquired if the cost-benefit analysis conducted was the system as a whole or just for the areas near the improvements. Mr. Hazlett replied that the analysis was conducted for the area. Mr. Clem Ligocki from Maricopa County inquired about ADOT's position on the scenarios presented. Mr. Kwi-Sung Kang from ADOT stated that ADOT was coordinating with MAG on a modified version of Scenario 12. He stated that MAG needed additional cashflow information, which ADOT hoped to provide in the next few days. Mr. Eric Anderson stated that MAG needed to understand how the ADOT cashflows worked because of the close timing of Scenarios 10b and 12.

The Committee had a brief discussion about the cost benefit analysis as well as the prioritization of the construction of South Mountain and the improvement to I-10. Mr. Hazlett reminded the Committee that the improvements to South Mountain dated back to 1983, which was a contributing factor to the desire to construct the project before the improvements to I-10.

Mr. Lance Calvert from the City of El Mirage motioned to recommended approval of 2012 Rebalancing Scenario 10B, where the MAG Regional Freeway and Highway Program meets the projected \$390 million shortfall by repositioning the SR-202L/South Mountain Freeway and Interstate 10/Maricopa Freeway projects to improve the Program's cash flow; transfer funding from the SR-303L segment between US-60 and Interstate 17 to the SR-303L segment between Interstate 10 and MC-85, but retain funding for a grade separated interchange at the existing El Mirage Road intersection; remove \$300 million from the Program's budget for the Interstate 17/Black Canyon Freeway corridor; and to encourage ADOT to focus upon cost-effective solutions that will provide opportunities to return projects to the Program in the future. Mr. Butler seconded the motion, and the motion passed by a majority voice vote of the Committee. Mr. Kang abstained from voting on behalf of ADOT.

6. Project Changes – Amendment and Administrative Modification to the FY 2011-2015 MAG Transportation Improvement Program

Chairman Meinhart invited Ms. Teri Kennedy, MAG Transportation Improvement Program Manager, to present amendments and administrative modifications to the Fiscal Year (FY) 2011-2015 Transportation Improvement Program (TIP). Ms. Kennedy directed the Committee's attention to the revised handouts at their places.

Ms. Kennedy announced that Valley Metro Rail (VMR) had received a Federal Transit Administration (FTA) Section 5309 Small Starts award of \$35.5 million in Federal Fiscal Year 2012. She stated that VMR had requested to amend eight budget items and add sixteen new project budgets for the Central Mesa Light Rail extension. She noted that a project overview for the light rail extension had been included in the agenda packet.

Ms. Kennedy reported that the MAG Transit Committee had recommended to approve the reprogramming the Transit Center/Park and Ride in Glendale to line up with the project development schedule, and to program the remaining STP-Flex, 5309-FGM, and 5307 funds for preventive maintenance.

Next, Ms. Kennedy summarized the project changes submitted for approval. She stated that Table A listed all Non Arterial Life Cycle Program (ALCP) project change requests and that Tables B and C included all the ALCP items. She added that Table D included changes necessary to the Fiscal Year 2011-2015 MAG Transportation Improvement Program (TIP) and Regional Transportation Plan (RTP) 2010 Update that were specific to the transit reprogramming of CMAQ and section 5307 funds for preventative maintenance.

Ms. Kennedy announced that the requested action in the agenda packet had been modified and displayed the corrected action.

Mr. Johnson inquired about the difference between the project change sheets included in the mailout and the revised copies at their places. Ms. Kennedy replied that the revisions had been highlighted in yellow. Mr. Farry motioned to approve amendments and administrative modifications to the FY 2011-2015 MAG Transportation Improvement Program, FY2012 Arterial Life Cycle Program, and to the Regional Transportation Plan 2010 Update, as appropriate. Ms. Patrice Kraus from the City of Chandler seconded, and the motion passed by a unanimous voice vote of the Committee.

7. Additional FFY2012 CMAQ Funds Available to Transit Projects

Next, Chairman Meinhart invited Ms. Eileen Yazzie, Transportation Planning Project Manager, to present on the additional Federal Fiscal Year (FFY) 2012 Congestion Mitigation and Air Quality (CMAQ) funds available for transit projects. Ms. Yazzie reported that in February the Regional Council approved to increase funding for local government highway projects and a flex of over \$25 million over to transit projects. She stated that the MAG Transit Committee had met in February, March, and April to analyze and review five different scenarios.

Ms. Yazzie announced that at the April meeting the Transit Committee approved a recommendation to use the CMAQ flex funds in FFY2013 and 2014 for bus purchases and to reallocate the funds programmed for the bus purchase to fund preventive maintenance. Ms. Yazzie stated should could provide additional information about the scenarios conducted.

Mr. Naimark motion to recommend to approve the programming the \$25,248,413 of CMAQ for bus purchases in 2013 and 2014, programming related 5307 funds from 2013 and 2014 for preventive maintenance; and the related modifications to the FY2011-2015 MAG TIP, and as appropriate the 2010 RTP Update. Mr. Brian Jungwirth from Valley Metro seconded, and the motion passed with a unanimous voice vote of the Committee.

8. Fiscal Year (FY) 2012 Arterial Life Cycle Program Regional Area Road Fund Closeout

Chairman Meinhart invited Ms. Christina Hopes, MAG Transportation Planner, to present on the Fiscal Year (FY) 2012 Arterial Life Cycle Program (ALCP) Regional Area Road Fund (RARF) Closeout. Ms. Hopes stated that the ALCP was funded with three revenues sources: RARF also known as the half-cent sales tax as well as CMAQ and STP funds.

Ms. Hopes stated that RARF Closeout process was established in the ALCP Policies and Procedures adopted by the MAG Regional Council on December 9, 2009. She stated that according to the policies, projects eligible for RARF closeout must be completed and programmed in the approved ALCP with RARF funds. She explained that for an ALCP project to be eligible for reimbursement that three project requirements had to be completed and on file with MAG. She stated these requirements included a Project Overview (PO), a Project Agreement (PA), and a Project Reimbursement Request (PRR).

Ms. Hopes reported that the ALCP Policies also established the RARF Closeout priorities. She stated that projects would be selected in consecutive order based on the chronological order of the programmed reimbursement in the approved ALCP up until the available RARF Closeout funds were exhausted. She stated that if multiple projects were programmed for reimbursement in the same fiscal year and there were insufficient funds to reimburse the projects, then the project completed first would be funded with RARF Closeout funds. She stated that if multiple projects had been completed in the same fiscal year, then the priority would be based on the date of the project's final invoice and the date the final PRR was accepted by MAG Staff as complete.

Moving on, Ms. Hopes provided a brief history of the RARF Closeout process. She stated that the closeout process had been established to address the number of project deferrals occurring annually in the program. Ms. Hopes then display a chart illustrating the amount of funds programmed for reimbursement, reimbursed, and deferred annually over the last several years.

Ms. Hopes informed the Committee that MAG Staff conducted a detailed fiscal analysis to determine the amount of funds available for RARF Closeout. She explained that during the analysis, MAG reviewed eligible projects, programmed and actual expenditures in the current fiscal year, historical and projected trends in revenue collections, the approved and draft ALCP bonding program as well as the impact of the various Closeout reimbursement scenarios on the Draft FY 2013 life cycle budget and bonding program.

Next, Ms. Hopes displayed several graphs pertaining to RARF Revenue Forecasts and ALCP Program expenditures. First, she displayed a graph of the year over year decline in forecasted revenues over the program. Then, she displayed a graph that compared the current forecast to the programmed expenditures.

Ms. Hopes discussed the development of the draft FY2013 ALCP. She stated that annually, MAG Staff updates the ALCP based on revised project schedules and costs. She reported that per the ALCP Policies, MAG inflated programmed reimbursements to current year dollars using the Consumer Price Index.

Ms. Hopes directed the Committee's attention to a graphic that demonstrated that program expenditures were exceeding forecasted revenues over the life of the program. She stated that insufficient revenues had required MAG to delaying the approval of the Draft FY2013 ALCP while staff reviewed options to restore the fiscal balance to the program.

Ms. Hopes reported that MAG would proceed with RARF Closeout to reduce the deferral of programmed reimbursement despite the estimated program shortfall. She stated that \$71.4m

in RARF reimbursements had been programmed for FY2012. She reported that of the \$71.4m, \$19.8m had been reimbursed and \$6.5m had been deferred to a later year in the program. Ms. Hopes also estimated that of the \$45.1m in remaining reimbursements, at least \$11.9m would be deferred. She stated that the actual/estimated deferrals for FY2012 would be at least \$18.4m or higher.

Ms. Hopes announced that the MAG Staff recommendation was to advance \$18.924m in reimbursements for four of the six projects eligible for RARF Closeout. She explained that the amount being recommended for RARF Closeout approximately equaled the number of known and highly probably deferrals for the current fiscal year. She displayed a table listing the projects recommended for RARF Closeout, which included:

- Pima Road from Via de Ventura to Krail Street for \$3.454 million;
- Queen Creek Road from Lindsay Road to Higley Road for \$12.029 million;
- Ray Road from Sossaman Road to Ellsworth Road for \$3.024 million; and,
- Hawes Road from Santan Freeway to Ray Road for \$0.417 million.

Ms. Hopes stated that delay in the approval of the FY2013 ALCP had impacted in the FY2012 ALCP program scheduled. She reported that agencies would have an additional month or more to submit and complete project requirements.

Mr. Naimark requested clarification about the asterisks next to projects listed in the RARF Closeout Eligibility Table included in the agenda packet. Ms. Hopes explained that all ALCP project must complete three project requirements (PO, PA, and PRR) before they may be reimbursed. She stated that the projects in the table were in the process of completing these requirements.

Mr. Naimark questioned why MAG Staff would recommend these projects for approval if all project requirements were not complete. Ms. Hopes replied that MAG Staff was actively working with each Lead Agency to ensure the completion of the requirements in a timely manner. She stated the Project Agreements had been initiated by MAG and were on the respective Lead Agency's council agendas for approval. She added that MAG and Lead Agency Staff were coordinating concurrently on the reimbursement request while the legal agreements were being approved to expedite the approval process. Ms. Hopes stated that MAG Staff reviewed each Lead Agency's ability to complete the project requirements by the established deadlines before selecting the recommended RARF Closeout projects.

Mr. Naimark inquired if the next eligible project would receive RARF Closeout funds if a Lead Agency failed to meet the established deadlines. Ms. Hopes replied that due to the tight program schedule, MAG Staff would not have sufficient time to return to the Committee and request approval of the reallocation of RARF Closeout funds.

Mr. Naimark inquired if the Committee could request that if a Lead Agency failed to meet the established deadlines that the remaining eligible RARF Closeout funds be allocated to subsequent eligible projects based on the established priorities. Ms. Hopes replied that MAG could move the approved amount to other prioritized projects, but that the subsequent projects may not be fully reimbursed because the programmed reimbursements varied by project. She

cautioned that reimbursing projects further out in the program has a more significant impact on the bonding stream than reimbursing projects programmed earlier in the program.

Mr. Naimark inquired why Lead Agencies with completed projects had not submitted all program requirements to MAG. Ms. Hopes replied that per the ALCP Policies and Procedures, Lead Agencies were required to submit the documents to MAG before or at project completion. She added that MAG Staff encouraged agencies to submit requirements when projects were underway and by project completion, but that MAG lacked the enforcement power to compel agencies to submit these requirements in accordance with the established policies. Mr. Naimark stated that the Committee should review this issue in the future. Ms. Hopes replied that MAG would be conducting an ALCP Working Group meeting in the fall to discuss revisions to the ALCP Policies and Procedures and that the issue could be discussed at that time.

Mr. Naimark motion to recommend approval of the ALCP project reimbursements for the Fiscal Year 2012 ALCP RARF Closeout, and amend the FY 2012 Arterial Life Cycle Program, the 2011-2015 Transportation Improvement Program, and Regional Transportation Plan 2010 Update, as necessary and to allocate any unused RARF Closeout funds to the next project(s) on the list if one or more of the recommended projects fail to meet all ALCP Project Requirements by the established deadlines.

Mr. Ligocki thanked Mr. Naimark for his proposed motion as Maricopa County was the next agency on the prioritized list to receive RARF Closeout funds. He stated that in the spirit of regional cooperation that the County would be willing to split any regional funds reallocated under the proposed motion with Phoenix because the City was after the County on the list. Mr. Naimark thanked Mr. Ligocki for his consideration. He inquired about the process for prioritizing projects. Ms. Hopes stated that projects were prioritized based on the fiscal years reimbursements were programmed in the approved ALCP. She explained that the County's project was programmed for reimbursement in Phase III of the program and that Phoenix's project was programmed in Phase IV. Mr. Naimark stated that he would not disagree with the County's offer to split any regional funds reprogrammed under the proposed motion.

Mr. Butler from the City of Mesa inquired that if additional funds were deferred from FY2012 could MAG increase the amount of funds reimbursed through RARF Closeout. Ms. Hopes stated that the draft FY2013 ALCP was not fiscally balanced because program expenditures exceeded forecasted revenues. She explained that MAG had delayed the release of the first draft of the program while staff attempted to address the program deficit. She stated that MAG Staff was developing rebalancing scenarios to restore the fiscal balance of the program before bringing the draft before the Committee for approval in June and July. Ms. Hopes stated that analysis indicated that an additional \$30 million in programmed reimbursements would need to be removed from the program to restore the fiscal balance. She reported that MAG Staff had been contacted by Lead Agencies with concerns about deferred reimbursements in the draft. She stated that these deferrals were necessary, particularly in the first few years of the program, because MAG would not have sufficient funds, based on the revenue forecasts, to pay for reimbursements as programmed in the FY2012 ALCP. She reported that starting in FY2013 that program expenditures exceeded forecasted revenues and that the program was out of balance starting in Phase IV. Ms. Hopes explained that MAG had been conservative in the

current RARF Closeout process due to the fiscal balance issues. She told Mr. Butler that MAG may be able to reimburse more through the process if additional deferrals occurred, but that MAG would need to conduct further analysis to determine if it was a fiscally wise decision. A brief discussion followed.

Mr. Eric Anderson suggested that the Committee move forward with RARF Closeout as proposed by Mr. Naimark. He stated that once the revised revenue projections were released and the uncertainty regarding federal transportation funding was addressed that the group could revisit the issue of RARF Closeout again and potentially conduct a second closeout. Mr. Anderson stated that balancing the program was a delicate balance between maximizing reimbursements and maintaining the fiscal balance given the multiple uncertainties in future funding.

Chairman Meinhart expressed support for Mr. Anderson's comments and cautioned the Committee about changing established policies on the fly without having staff conduct a detailed analysis of the potential ramifications. A brief discussion followed.

Mr. Naimark restated the existing motion. Mr. Butler seconded, and the motion passed by a unanimous voice vote of the Committee.

10. Implementation of the Proposition 400 Performance Audit

Moving on, Chairman Meinhart invited Ms. Monique de los Rios-Urban, MAG Staff, to present on the implementation of the Proposition 400 Performance Audit recommendations. She announced that a full report and the recommendations were available for download on the MAG website.

Ms. de los Rios-Urban reported that under state law, board action on the audit recommendations was required from the State Transportation Board, the Maricopa County Board of Supervisors, the Board of the Regional Public Transportation Authority, and the Board of the Citizens Transportation Oversight Committee (CTOC). Ms. de los Rios-Urban stated that the presentation would include the results of the board actions and MAG'S implementation plan in response to the recommendations that pertained to MAG.

Ms. de los Rios-Urban noted that a revised matrix of all board actions for each of the recommendations and MAG's responses were at each place. She indicated that the matrix was developed as a graphic tool to illustrate the steps in the proposed implementation plan.

Ms. de los Rios-Urban stated that not all boards were required to respond to all recommendations and that the Auditors identified the agencies that were required to respond in each case. She pointed out that in the handout the green check mark indicated full agreement with the recommendation, the yellow check mark indicated agreement with modifications, and the red cross indicated that the agency is not in agreement. She also noted that the recommendations highlighted with red dots are the ones that received most unanimous agreement or disagreement by agency boards.

Ms. de los Rios-Urban then addressed the matrix in detail and noted the recommendations that were supported by all of the boards. These recommendations included:

- Audit Recommendation #7: Continue to implement the current transportation system and strive to continually reassess system performance to make modifications as necessary;
- Audit Recommendation # 14: Ensure that documentation describes basis, source, deliberations, outcome, and rationale for resulting actions and decisions related to project and RTP changes;
- Audit Recommendation #15: Summarize and communicate data to MAG committees on options, alternatives, risks, opportunities and impacts for each alternative related to congestion or performance; and,
- Audit Recommendation # 20: Memorialize, document and maintain discussions at RTP Partner meetings to include items discussed, agreements reached and action items.

Ms. De Los Rios-Urban stated that Audit Recommendations #22 and 23 pertained to the MAG Transportation Policy Committee (TPC) membership and composition and the CTOC structure and staffing. She stated that #22, to adjust MAG Transportation Policy Committee membership requirements to include RPTA and METRO transit representatives, was not supported by MAG and Maricopa County. She noted that RPTA, the State Transportation Board and CTOC did not provide a direct response in agreement or disagreement. Ms. de los Rios-Urban stated that Audit Recommendation # 23, to reaffirm the role of CTOC and increase effectiveness by implementing several changes, which included CTOC being staffed by MAG, was generally accepted by the boards with modifications. She explained that recommendations # 22 and 23 would require state legislative action to be implemented.

Ms. de los Rios-Urban stated that one of the observations shared by RTP partners was that the audit report was repetitive, unclear, and in some cases inconsistent. She stated that in order to define an implementation plan, staff grouped the 25 recommendations into categories according to common themes of (1) documentation, (2) analysis, (3) coordination, (4) reporting, and (5) organization. Ms. de los Rios-Urban stated that the recommendations grouped in the Documentation category included preparing summary notes of RTP partner meetings and summary notes of all coordination meetings, creating links to all committee meetings, links to web archives, database entries for all Congestion Management Program programming activities, dashboard reporting, performance reporting, and project report card reporting.

Ms. de los Rios-Urban stated that for the recommendations grouped in the Coordination category, the auditors mentioned the need for coordination among the RTP Partners. She noted that coordination sessions among agencies to integrate formats and track implementation progress are already underway. Ms. de los Rios-Urban stated that the implementation plan would be to develop standardization of formats and reporting methodologies and to possibly create an intranet crossagency communication tool.

Ms. de los Rios-Urban stated that there were five recommendations that refer to the Reporting category. She said that staff was proposing to create an internet interactive dashboard, and a project report card, continuing performance reporting, and develop a system to connect all website links and source information.

Ms. de los Rios-Urban stated that the recommendations grouped in the Organizational category had been interpreted differently by the partners and actions from the boards were varied. She stated that MAG proposed to monitor the existing transit memorandum of understanding to determine if any modifications were necessary.

Chairman Meinhart inquired if there were any questions or comments on the agenda item. There were none, and he proceeded to the next item on the agenda.

11. Request for Future Agenda Items

Chairman Meinhart inquired if the members had any topics or issues of interest they would like to have considered for discussion at a future Committee meeting. There were none, and Chairman Meinhart moved onto the next agenda item.

12. Member Agency Update

Chairman Meinhart asked members of the Committee if they would like to provide updates, address any issues or concerns regarding transportation at the regional level, and asked if any members in attendance would like to address recent information that was relevant to transportation within their respective communities. There were none.

13. Next Meeting Date

Moving on, Chairman Meinhart informed members in attendance that the next regularly scheduled meeting of the Committee would be held on Thursday May 24, 2012, at MAG. There being no further business, Chairman Meinhart adjourned the meeting at 11:18 a.m.

ATTACHMENT ONE

Managed Lanes Network Development Strategy – Phase I

White Paper Summary of Recommendations

MARICOPA ASSOCIATION OF GOVERNMENTS

Prepared by:

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In cooperation with:

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HS Public Affairs**

Revision History

Revision	Date	Description	Submitted by
1.0	04/06/2012	Initial draft for internal review	DJH
1.1	04/09/2012	Draft for client review	DJH

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1.0 BACKGROUND

The Maricopa Association of Governments (MAG) is working in cooperation with the Arizona Department of Transportation (ADOT), Federal Highway Administration (FHWA), and other regional partner agencies to explore the regional managed lanes system, including determining future needs for High-Occupancy Vehicle (HOV) system expansion and the potential for introducing enhanced lane management techniques such as value pricing in the form of High-Occupancy Toll (HOT) lanes, and active traffic management. The outcome of this effort will be a MAG Managed Lanes Network Development Strategy – Phase I Report that will guide future planning and investment in HOV and Managed Lanes facilities in the region.

To support the evaluation of the managed lanes network in the MAG region, a series of technical “white papers” have been developed to examine the relevant issues by drawing upon the substantial and growing research and experience on managed lanes around the nation. These white papers will assess the pros and cons associated with each relevant issue to better enable the regional partners to reach conclusions on the feasibility and specific technical aspects of managed lanes for the Phoenix area. The complete series of white papers will be made available for review on the MAG website. The following is a bulleted summary of the key recommendations of the policy and practice white papers. The subsequent sections provide additional narrative regarding the policy and practice recommendations, in no particular order of priority.

1.1. Regional Managed Lanes Goals and Objectives

Goals	Objectives
Improved Mobility	<ul style="list-style-type: none"> • Reduce travel times and improve travel time reliability • Manage travel demand and traffic congestion • Improve/maximum existing system infrastructure • Maximize use of technology • Increase capacity • Provide mobility options • Improve transit service options, efficiency and reliability
Revenue Alternatives	<ul style="list-style-type: none"> • Leverage existing revenue sources • Access new/alternative revenue sources • Accelerate project delivery to complete the system • Support ongoing operations and maintenance • Support transit service provision • Better plan future investments
Public and Political Support	<ul style="list-style-type: none"> • Support public education and outreach • Identify/foster political champions • Facilitate equitable distribution of costs whereby users pay for what they use
Improved Environmental Quality	<ul style="list-style-type: none"> • Provide air quality benefits • Enhance quality of life

1.2. Access Treatment

- Utilize near-continuous access design and operations
 - Maintain consistency with the current continuous access for the region's HOV lane system
 - Afford operational, enforcement and toll collection benefits of restricted access in strategic locations
 - Traffic conditions and other design, operational and cost considerations will determine specific segments for limited access

1.3. Lane Separation

- Continue current HOV lane separation techniques in conjunction with managed lanes
 - Primarily utilize a combination of painted line and painted buffer lane separation
 - Barrier separation where elevated segments (including Direct HOV ramps) or contraflow operations are involved.
- Begin modifying existing HOV markings to reflect the Manual of Uniform Traffic Control Devices (MUTCD)

1.4. Hours of Operation

- Expand hours of operation to ensure time savings and reliability throughout more of the day
 - Initially expand peak hours of operation (5:00 AM to 10:00 AM; 2:00 PM to 7:00 PM)
 - Establish performance thresholds for expanding to daytime and weekend hours of operation (e.g., 5:00 AM to 9:00 PM)
 - Any change in hours of operation will require extensive public outreach and analysis to explore potential impacts to traffic.
- Ensure regional consistency to promote familiarity and support for managed lanes

1.5. Occupancy Requirements

- Maintain existing occupancy requirement of two or more persons per vehicle (2+) during initial deployment of HOT
 - Permit eligible carpools to use managed lanes facilities toll-free
- Require all managed lanes users to carry a transponder with switchable settings to declare carpool status
 - Simplify enforcement while ensuring flexibility to adjust over time
- Ensure regional consistency in occupancy requirements
 - Possibly utilize different uniform occupancy requirement for all regional HOV facilities compared to regional HOT facilities

1.6. Pricing Methods

- Utilize variable pricing to manage lanes based on levels of congestion within segments of each facility.
 - Fixed-schedule variable pricing provides predictability for users
 - Dynamic variable pricing can better adjust for real-time demand
- Calculate tolls on a per mile basis but communicate toll rates to customers per-segment
 - Utilize per-facility pricing for full length trips on multi-segmented corridors

1.7. Active Traffic Management and Managed Freeways

- Active Traffic Management utilizes various Intelligent Transportation System technologies to dynamically manage and control traffic using following strategies:
 - Speed Harmonization/Lane Control
 - Queue Warning
 - Hard Shoulder Running
 - Junction Control
 - Dynamic Re-routing
 - Traveler Information
- Managed Freeways implement a comprehensive package of strategies to fully manage access to and demand for a freeway facility
 - Utilize integrated data collection sensors along the roadway and advanced system management tools to monitor and control real time traffic conditions to ensure a more consistent level of freeway performance

2.0 REGIONAL MANAGED LANE GOALS AND OBJECTIVES

Managed lane goals and objectives should be consistent with regional and statewide goals and objectives, and should represent one component of a larger congestion management planning effort, since managed lanes are only one of the many tools available. Although managed lane vision, goals, and objectives for central Arizona will be unique and specific to local needs, examples from other areas provide appropriate guidance as a basis for further consideration and development in a local context.

Building upon the vision and guiding principles for transportation the State of Arizona and MAG region, and goals and objectives for managed lanes in other areas, specific goals and objectives for managed lanes in the MAG region were identified by the Project Planning Partners Advisory Group. These goals and objectives will establish the parameters by which subsequent specific policy elements can be defined and the performance of managed lanes can ultimately be evaluated.

Table 2-1 MAG Region Managed Lanes Goals and Objectives

Goals	Objectives
Improved Mobility	<ul style="list-style-type: none"> • Reduce travel times and improve travel time reliability • Manage travel demand and traffic congestion • Improve/maximum existing system infrastructure • Maximize use of technology • Increase capacity • Provide mobility options • Improve transit service options, efficiency and reliability
Revenue Alternatives	<ul style="list-style-type: none"> • Leverage existing revenue sources • Access new/alternative revenue sources • Accelerate project delivery to complete the system • Support ongoing operations and maintenance • Support transit service provision • Better plan future investments
Public and Political Support	<ul style="list-style-type: none"> • Support public education and outreach • Identify/foster political champions • Facilitate equitable distribution of costs whereby users pay for what they use
Improved Environmental Quality	<ul style="list-style-type: none"> • Provide air quality benefits • Enhance quality of life

Overall, the Project Partners placed an emphasis on improving mobility over revenue alternatives, with providing travel time reliability being identified and the most important aspect of mobility. In balancing potentially conflicting mobility and revenue goals, the group placed 2/3 emphasis mobility and 1/3 revenue, where the emphasis on revenue should be used to meet the mobility goals. The group felt that utilizing revenue to leverage existing funding should be a priority over generating new revenue. Achieving political support was also viewed as a key goal to advocate and facilitate implementation of a network of managed lanes within the MAG region.

3.0 ACCESS TREATMENT

Arizona's experience with HOV lanes began with construction commencing in 1983, and completion of the first operational facility on I-10 in 1988. The lanes were (and continue to be) constructed with a continuous line and/or buffer separation design, as shown in Figure 3-1.

Figure 3-1 Sample Lane Separation Treatments on Phoenix-area HOV Lanes



There are three types of access to the existing HOV lanes in the Phoenix area, based upon the location within the corridors.

The first pertains to the mainline HOV lanes, where continuous access to the HOV lanes is provided at all points. Vehicles may cross the painted buffer, regardless of the width and appearance of the buffer at that point, provided such a movement otherwise conforms to moving vehicle guidance and safety requirements.

The remaining two conditions pertain to direct-access to the HOV lanes from other facilities. Freeway-to-freeway direct connectors provide dedicated freeway-to-freeway movement between HOV lanes without weaving, thus positively affecting operations across all lanes of travel at these interchanges. Direct access ramps (DAR) provide dedicated connections from intersecting arterial streets to the HOV lanes. In the MAG region, these direct-access provisions are collectively referred to as Direct HOV (DHOV) ramps. In both cases, the construction of these access ramps may be costly, but the operational benefits can be significant at key locations (Figure 3-2).

Figure 3-2 Sample DHOV Ramps in the Phoenix-area



As the requirements of the Phoenix area managed lane network are developed, it is recommended that a regional tolling approach utilizing near-continuous access design and operations be defined to best maintain consistency with the current continuous access system in place for the region's HOV lane system while affording the

operational, enforcement and toll collection benefits of restricted access in strategic locations. Prevailing traffic conditions and other design, operational and cost considerations will need to be evaluated to determine the specific segments or corridors that require the application of limited access to maximize the efficiency and effectiveness of a managed lanes network.

A regional preference for utilizing near-continuous access allows the region to focus subsequent efforts to identify system-based options for resolving various operational and enforcement issues associated with access to managed lanes. Preliminary options include the expanded use of technology and operational treatments that can positively affect compliance. Altogether, developing a near-continuous access managed lane system is possible – and desirable – but these issues must be addressed as planning and design of the managed lanes system proceeds.

Near-continuous access is currently utilized on managed lanes facilities in Salt Lake City, Utah, and Minneapolis, Minnesota, as depicted in Figure 3-3.

Figure 3-3 Sample Near-Continuous Access Managed Lanes



A: I-15 (Salt Lake City)



B: I-35W (Minneapolis)

4.0 LANE SEPARATION

Three different approaches for separating managed lanes from adjacent general purpose lanes are typically used on facilities in the United States.

- Painted line/buffer separation (as found on HOV lanes throughout California, and priced managed lanes facilities including I-15 in Salt Lake City and SR-167 in Seattle)
- Traffic channelizer separation (as found on SR-91 in Orange County, California, I-10 in Houston, and I-95 in Miami)
- Barrier separation (as found on I-15 in San Diego and I-25 in Denver)

All HOV lanes in Arizona currently exhibit painted line/buffer separation approach of employing pavement markings to communicate the HOV lane(s) next to adjacent

general purpose traffic lanes. Solid single or double white (with chevrons) pavement markings are standard in Arizona. The 2009 Manual on Uniform Traffic Control Devices (MUTCD) updated the pavement markings guidance as they pertain to Line and Buffer Separated managed lanes (including both HOV lanes and priced managed lanes). The guidance is as follows:

- Prohibited access segments consist of double-solid white lines on either side of the buffer and chevron markings if the buffer is wider than 4 feet.
- Discouraged access segments consist of two solid white lines. The MUTCD is silent on the desired width of the discouraged-access segment.
- Permitted (open) access segments should consist of either single or double wide broken lines without buffer.

All three conditions are shown in Figure 4-1 and Figure 4-2 below.

Figure 4-1 Controlled Access Buffer-Separated Lane Markings (2009 FHWA MUTCD)

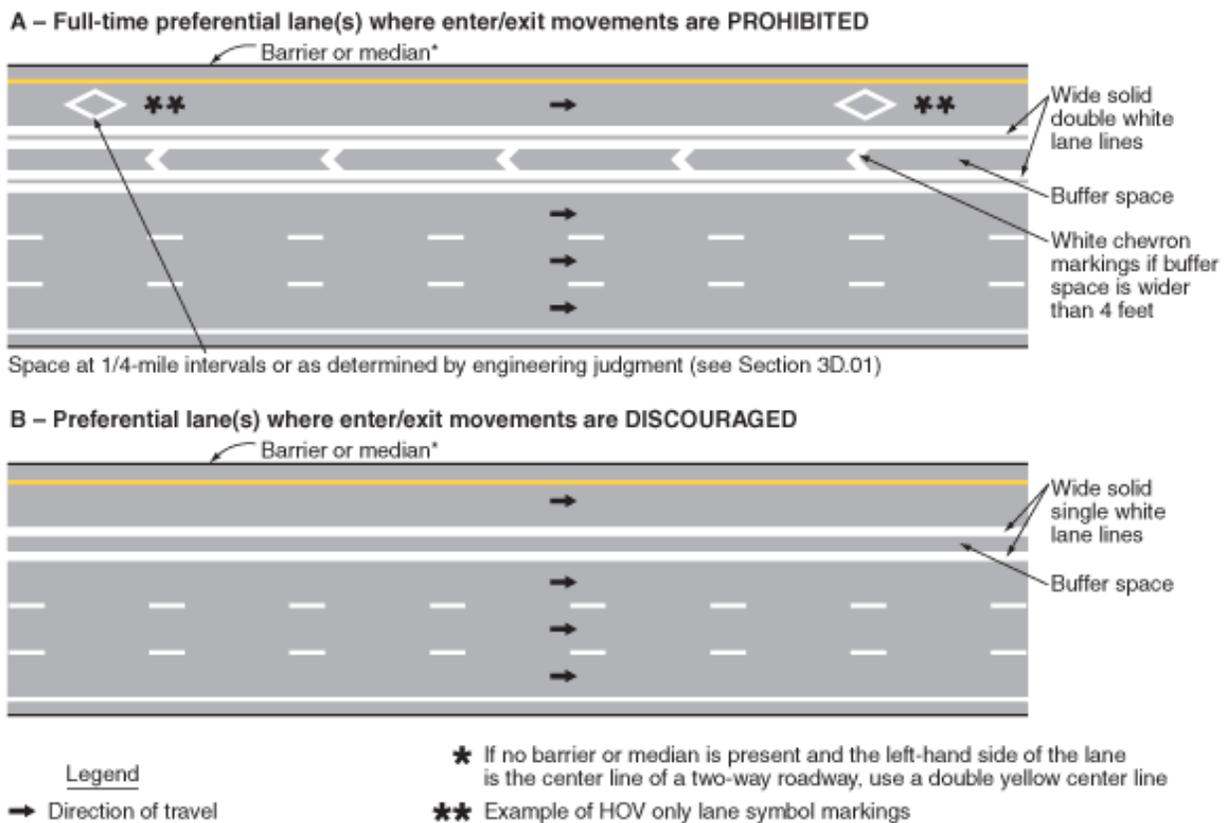
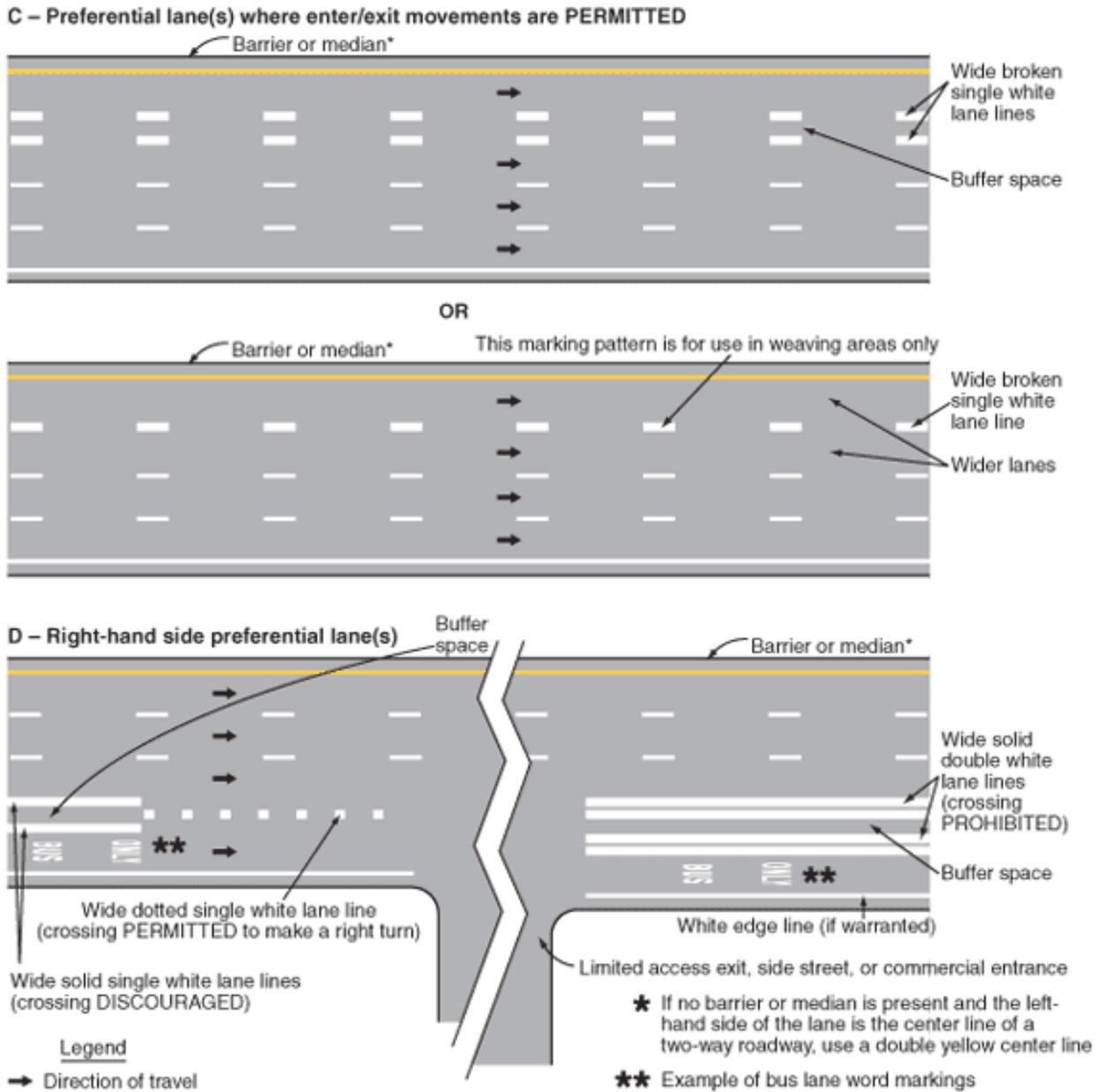


Figure 4-2 Open Access Buffer-Separated Lane Markings (2009 FHWA MUTCD)



For the MAG region, a continuation of the current HOV lane separation techniques is generally recommended in conjunction with the implementation of managed lanes. This approach would continue to primarily utilize a combination of painted line and painted buffer lane separation. Barrier separation would continue to be the preferred separation technique where elevated segments (including DHOV) or contraflow traffic conditions are involved.

It is recommended that ADOT begin the process of modifying the existing HOV lane marking to reflect the recently adopted provisions of the MUTCD. Specific

modifications involve the use of wide broken striping to designate continuous access, as illustrated previously in Figure 4-2. Modifying lane marking to be consistent with MUTCD will be critical to ensure limited access can be clearly demarked and enforced should managed lanes implementation in the region result in the use of near-continuous or limited access treatments. Similarly, ensuring lane markings reflect MUTCD requirements will ensure managed lanes facilities in the MAG region and consistent with applications elsewhere in the nation.

5.0 HOURS OF OPERATION

HOV lanes in Maricopa County currently operate part time. Occupancy restrictions on the lanes are in effect Monday through Friday between 6:00 AM to 9:00 AM, and 3:00 PM to 7:00 PM. During all other periods and during weekends the HOV lanes effectively operate as general purpose lanes and are open to all traffic.

As one of several tools available for managing traffic, implementing a consistent policy for hours of operation for a managed lane facility should complement other demand management strategies such as occupancy restrictions, tolling policy and access treatments. In the context of a managed lanes network spanning a metropolitan area, efforts should also be made to ensure that policies such as hours of operation are consistent to promote familiarity and support of the managed lanes concept. Any expansion to the hours of operation coupled with the introduction of pricing will require extensive public outreach and further analysis to explore potential impacts to traffic.

For the MAG region, it is recommended that the hours of operation expand from the current part-time hours of operation with the introduction of pricing to ensure time savings and reliability benefits throughout a greater portion of the day. Initially this approach could include expanded peak period hours of operation (e.g., 5:00 AM to 10:00 AM; 2:00 PM to 7:00 PM) as a means to maintain part-time operations while affording greater ability to manage HOT demand during the shoulders of the peak period. This approach could also be accompanied by establishing system performance thresholds that would trigger further incremental expansion of hours of operation to ultimately achieve daytime hours of operation (e.g., 5:00 AM to 9:00 PM) across the system. This approach could also include consideration for implementing weekend hours of operation that would extend the ability to manage HOT demand during weekends when recreational and special event traffic in the MAG region can create congestion at certain times in specific corridors (e.g., recreational traffic on southbound I-17 on Sunday or holiday Monday afternoons; sporting or concert event traffic near University of Phoenix Stadium, Sun Devil Stadium, downtown Phoenix, spring training baseball stadiums).

6.0 OCCUPANCY REQUIREMENTS

HOV lanes in Maricopa County currently operate part time. A uniform HOV 2+ (two-or-more persons per vehicle) minimum occupancy policy is enforced during these operational times.

Due to the high level of interconnectivity across the existing regional HOV system, it is recommended that a uniform minimum occupancy requirement for HOT facilities be applied in the MAG region to ensure consistency across corridors and to minimize driver confusion. However, due to the clear differences between HOT and HOV lane operations, it could be possible to utilize a different uniform occupancy requirement for all regional HOV facilities compared to regional HOT facilities. For the MAG region, it is recommended the existing carpool minimum occupancy requirement of two or more persons per vehicle (2+) be maintained during the initial deployment of HOT operations to ensure existing carpool users continue to be rewarded for their beneficial travel behavior. To continue to promote carpool, vanpool and transit modes as the highest priority for using managed lanes, it is recommended that eligible carpools be permitted to utilize managed lanes facilities without a requirement to pay a toll. In light of continuous advances in technology and associated reductions in costs to acquire tolling related equipment, it is recommended that all managed lanes users be required to carry a transponder with switchable settings to self declare carpool status, like the example depicted in Figure 6-1 which is being developed for projects in Los Angeles, California. The requirement for all managed lanes users to carry a switchable transponder simplifies the process of delineating and enforcing eligible carpools from other users, while also ensuring sufficient flexibility to adjust policies over time.

Figure 6-1 Example Switchable Transponder

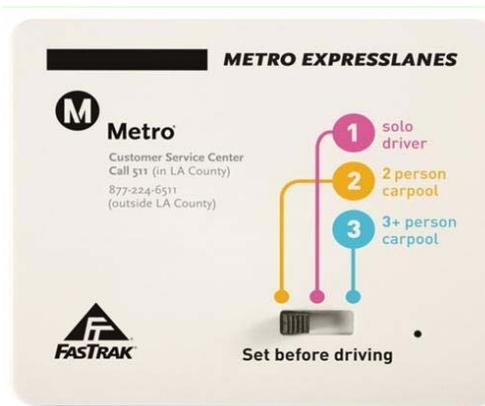


Image source: LA Metro

The recommended approach for managed lanes occupancy should also be supplemented by establishing system performance thresholds that would trigger further incremental changes in minimum occupancy requirements (i.e., increases in minimum occupancy to 3+) for both HOV and HOT facilities, and commensurate changes in HOV tolling policy specifically on HOT facilities (i.e., HOV 3+ no-toll; HOV 2 discounted toll). Initial system design considerations and requirements for all managed lanes users to utilize a switchable transponder will ensure the flexibility to facilitate changes in occupancy requirements without the need for significant design or technology changes.

7.0 PRICING METHODS

Phoenix's HOV lane system currently permits certain vehicle types during specified periods of the day (morning and afternoon peak periods), wherein other vehicle types are restricted from the lanes. The current system has approximately 375 lane miles, with more under development. Existing permitted users include carpools with two or more occupants, vanpools, motorcycles, and buses.

For the implementation and operation of priced managed lanes, additional permission would be granted to single- and/or low-occupancy vehicles (SOV/LOV) – depending upon either HOV 2+ or HOV 3+ definition for the corridor – that do not meet the prevailing occupancy requirements and carry an active transponder/account, or otherwise meet established criteria for paying tolls. Nationally, initial priced managed lane applications involved existing HOV facilities with demonstrable underutilization. However, more recent proposals have examined the potential of implementing priced managed lanes in more constrained conditions, including in conjunction with increasing the occupancy requirement where overutilization is degrading the performance of the HOV facilities, or as a means of providing higher returns on investment from the provision of new capacity.

As both revenue generation and demand management attributes are incorporated within any pricing scheme, the challenge is how to balance the effects of each objective within the pricing system. As with any management system, capabilities and limitations of the pricing system will have consequential effects on achieving the pricing objectives. Consistent application of any tolling program is important to customer understanding and as an equitable means of adopting and implementing a tolling policy. Overall, the business rules must anticipate all scenarios, and apply them consistently. For the managed lanes these may include:

- Balancing the needs of revenue generation and demand management within the toll algorithm;
- Establishing differential toll rates by vehicle class and occupancy
- Determining minimum toll rates for uncongested conditions, maximum toll rates for saturated conditions on general-purpose lanes, maximum toll rates for incidents on the managed lanes; and
- Determining toll rates for downstream segments from point of entry (e.g., charged the prevailing toll per segment or the “entrance toll” locked in at point of vehicle entry to system).

Operational and system parameters affect the customer's use of the pricing system. There are multiple points of contact with the customer:

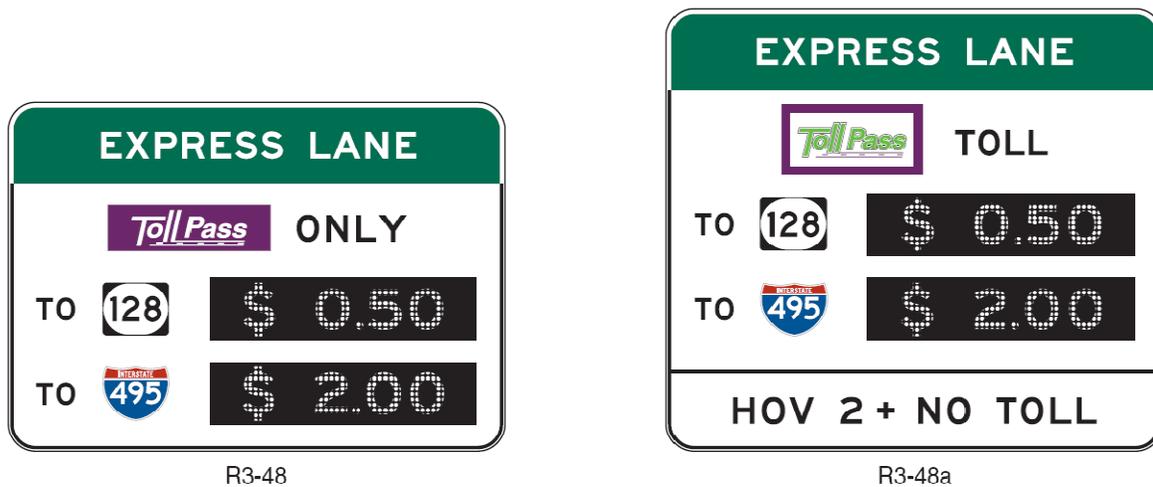
- Hours of Operation. When are the managed lanes open and accepting customers?

- Exemptions. Exemptions and discounts can be offered by vehicle occupancy, class, or other qualifications. All *operational* priced managed lanes offer free access to at least HOV 3+. In order to provide exemptions or discounts, it is necessary to determine a declaration mechanism.
- Communication of Price. In order to make an informed decision concerning use of the priced managed lanes, the customer must understand the price for making his or her trip. The more complicated the system of pricing (e.g., per mile pricing), the more difficult it will be for the customer to estimate the trip cost.
- Lock in of Price. After communicating the price, the customer must have reliance the price will not change once he or she has committed to use of a managed lane toll segment or facility.
- Overrides. In certain cases, conditions will deteriorate rapidly within the managed lane facility. In this situation, refunds or toll negotiation may be necessary as travel time reliability is jeopardized. Furthermore, diversion of general purpose traffic into a managed lane may also be necessary during periods of incident response.

Fixed-schedule variable and dynamic pricing provide the ability to price managed lanes relative to the level of congestion with segments of each facility, although options and tradeoffs exist. Fixed-schedule variable pricing provides predictability for users because the toll schedule is published in advance, although the use of fixed-schedule pricing precludes the ability to adjust tolls to manage demand in real-time based on prevailing traffic conditions. In contrast, dynamic variable pricing can better adjust toll to reflect for real-time demand but reduces the ability for drivers to be aware of the toll rate in advance of their travel.

A consistent customer experience on the managed lane system will be informed by a combination of interactions with the customer. As it pertains to pricing, applying a consistent pricing algorithm (particularly in the case of dynamic pricing) and pricing interval are critical. In terms of the pricing interval, per-mile, per-segment, and per-facility, are each workable options, but come with benefits and challenges. Calculating tolls on a per mile basis is typical, especially on dynamic pricing facilities that utilize automated tolling algorithms to calculate tolls. Per-segment pricing is generally applied as the most effective option for communicating toll rates to customers, as illustrated in Figure 7-1. Per-segment pricing can also be used in conjunction with per-facility pricing for full length trips on multi-segmented facilities.

Figure 7-1 Segmental Toll Rate Regulatory Signs for Managed Lanes (MUTCD 2009)



8.0 ACTIVE TRAFFIC MANAGEMENT AND MANAGED FREEWAYS

Since the 1990's, Phoenix area agencies have been engaged in a variety of traffic management and ITS endeavors, including the following:

- Freeway Management
- Incident Management
- Traveler Information
- Arterial System Operations
- Managed Lanes

Active Traffic Management (ATM) utilizes various ITS technologies to manage traffic flow and lane use. The key differentiator of ATM from other ITS applications is the approach to *dynamically* manage and control traffic using and integrating the following strategies:

- **Speed Harmonization/Lane Control:** utilizing regularly spaced, over lane speed and lane control signs to dynamically and automatically reduce speed limits in areas of congestion, construction work zones, accidents, or special events to maintain traffic flow and reduce the risk of collisions.
- **Queue Warning:** utilizing either side mount or over lane signs to warn motorists of downstream queues and direct through-traffic to alternate lanes, effectively utilizing available roadway capacity and reducing the likelihood of collisions related to queuing.
- **Hard Shoulder Running:** using the roadway shoulder (inside or outside) as a travel lane during congested periods to alleviate recurrent (bottleneck) congestion for all or a subset of users such as transit buses. Hard shoulder

running can also be used to manage traffic and congestion immediately after an incident.

- **Junction Control:** using lane use control, variable traffic signs, and dynamic pavement markings to direct traffic to specific lanes (mainline or ramp) within an interchange area based on varying traffic demand, to effectively utilize available roadway capacity to reduce congestion
- **Dynamic Re-routing:** changing major destination signing to account for downstream traffic conditions within a roadway network or system.
- **Traveler Information:** providing estimated travel time information and other roadway and system conditions reports allowing travelers to make better pre-trip and in-route decisions.

The concept of Managed Freeways builds upon the ITS applications of ATM and the dynamic demand management capability of managed lanes to implement a comprehensive package of strategies to fully manage access to and demand for a freeway facility. Managed Freeways utilize integrated data collection sensors along the roadway and advanced system management tools to monitor and control real time traffic conditions to ensure a more consistent level of freeway performance.

ATM strategies have been successfully implemented in Europe for many years. In the US, both WSDOT and MnDOT have successfully implemented ATM strategies, as depicted in Figure 8-1. Beyond ATM, fully integrated managed freeways are emerging as a strategy for maximizing the efficiency of roadways. The successful deployment of the M1 Freeway Management System in Melbourne, Australia, as pictured in Figure 8-2, has demonstrated the effectiveness of implementing a comprehensive package of strategies to fully manage access to and demand for a freeway facility by combining the ITS applications of ATM and the dynamic demand management capability of managed lanes. The MAG region has previously demonstrated a commitment to implementing advanced traffic management techniques. ATM and managed freeways represent the latest techniques for regional stakeholders and decision makers to consider as they collectively address existing and ongoing travel demand.

Figure 8-1 Example Active Traffic Management



I-35W, Minneapolis, Minnesota

Image source: MnDOT

Figure 8-2 Example Managed Freeway



M-1 Monash Freeway, Melbourne, Australia

Image source: VicRoads