

DRAFT MINUTES OF THE  
MARICOPA ASSOCIATION OF GOVERNMENTS  
TRANSPORTATION REVIEW COMMITTEE

July 28, 2016

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

MEMBERS ATTENDING

Avondale: David Janover	Maricopa County: Jennifer Toth
ADOT: Kwi-Sung Kang for Mike Kies	*Mesa: Scott Butler
Apache Junction: Giao Pham	Peoria: Dan Nissen for Andrew Granger
#Buckeye: Scott Lowe	Phoenix: Ray Dovalina
*Cave Creek: Ian Cordwell	#Pinal County: Louis Andersen
Chandler: Dan Cook, Chair	Queen Creek: Mohamed Youssef
El Mirage: Jorge Gastelum	#Scottsdale: Todd Taylor for Paul Basha
*Florence: Jess Knudson	Surprise: Mike Gent
#Fountain Hills: Randy Harrel	#Tempe: Robert Yabes for Shelly Seyler
Gila River Indian Community: Tim Oliver	#Tolleson: Frank Aponte for Jamie McCracken
#Gilbert: Leah Hubbard	Valley Metro: John Farry
Glendale: Debbie Albert, Vice Chair	*Wickenburg: Vince Lorefice
Goodyear: Rebecca Zook	#Youngtown: Grant Anderson
Litchfield Park: Woody Scoutten	

EX-OFFICIO MEMBERS ATTENDING

*Street Committee: Chris Hauser, City of El Mirage	*Bicycle/Pedestrian Committee: Jim Hash, City of Mesa
*ITS Committee: Marshall Riegel, City of Phoenix	*Transportation Safety Committee: Dana Alvidrez, City of Chandler
FHWA: Ed Stillings	
* Members neither present nor represented by proxy.	+ - Attended by Videoconference # - Attended by Audioconference

OTHERS PRESENT

Monique de los Rios-Urban, MAG	Jamie Bennett, Queen Creek
Chaun Hill, MAG	Bill Cowdrey, AZTEC Engineering
Teri Kennedy, MAG	Richard Erickson, ADOT
Audra Koester Thomas, MAG	Eric Gudino, ADOT
David Massey, MAG	Kay Lumley, Sundt Construction
Nathan Pryor, MAG	Christine McMurdy, Goodyear
Brian Rubin, MAG	Lynn Sugiyama, ADOT
Jason Stephens, MAG	
Stephen Tate, MAG	

1. Call to Order

Chair Dan Cook called the meeting to order at 10:00 a.m. Chair Cook noted that the quorum requirement for the July 28, 2016 Transportation Review Committee meeting was 13 committee members.

2. Approval of Draft May 26, 2016 Minutes

Chair Cook asked the committee if there were any comments on the draft May 26, 2016, meeting minutes. There were none. Mr. Woody Scoutten moved to approve the minutes. Mr. Mike Gent seconded the motion. The motion carried unanimously.

3. Call to the Audience

There were no public comments from the audience.

4. Transportation Director's Report

Chair Cook invited Mr. Eric Anderson, MAG Transportation Director, to provide the Transportation Director's Report.

Mr. Eric Anderson stated that at the completion of State Fiscal Year (FY) 2016, Regional Area Road Fund (RARF) revenues were up 3.7% over the previous year. He noted that RARF revenues in FY 2016 exceeded revenues for FY 2007. He stated that \$396 million in RARF revenue was collected in FY 2016.

Mr. Eric Anderson stated that Highway User Revenue Fund (HURF) revenue was up 5.1% for the eleven months of available data for FY 2016 and that May revenues were up 4.6%. He noted strong growth in fuel tax revenues.

Mr. Eric Anderson stated that MAG will be issuing a call for projects on August 15th for \$1.9 million in available CMAQ funding for PM-10 certified street sweepers and \$400,000 in available Transportation Alternatives Program funding for non-infrastructure Safe Routes to School activities.

Mr. Eric Anderson stated that work is continuing on the Regional Freeway and Highway Program rebalancing. He stated that there is over \$500 million to reprogram with another \$300-400 million possible in a few years once all of the right-of-way for the South Mountain Freeway is acquired. He stated that there are a number of meetings ongoing and that the August Transportation Policy Committee meeting will likely be canceled to give staff some more time to work on analysis. He stated that staff are working on technical analysis and different weightings of evaluation criteria.

Mr. Eric Anderson stated that the court decision on the South Mountain Freeway lawsuit has not been issued yet. He noted that ADOT continues to acquire and clear right of way.

Mr. Eric Anderson stated that the Tier One Environmental Impact Statement (EIS) development process has been kicked off. He requested that any community wishing to be a participating agency contact him. He noted that Buckeye had recently requested to

participate.

Chair Cook stated that it was good to hear RARF revenues back to where they were before the recession. He thanked MAG staff and all agencies involved in the life cycle programs.

Chair Cook thanked Mr. Anderson for his report.

5. Consent Agenda

Chair Cook directed the Committee's attention to the consent agenda items.

Chair Cook asked the Committee if there were any questions or comments. There were none.

Mr. Ray Dovalina moved to approve the consent agenda. Vice Chair Debbie Albert seconded the motion. The motion carried unanimously.

5A – Project Changes Amendment and Administrative Modification to the FY 2014-2018 Transportation Improvement Program, the FY 2017-2021 MAG Transportation Improvement Program, FY 2017 Arterial Life Cycle Program, the 2035 Regional Transportation Plan, and, As Necessary, to the 2035 Regional Transportation Plan

The MAG Transportation Review Committee, by consent, recommended approval of amendments and administrative modifications to the FY 2014-2018 and/or FY 2017-2021 MAG Transportation Improvement Program, FY 2017 Arterial Life Cycle Program, and as appropriate, to the 2035 Regional Transportation Plan, and of necessary project advancement, deferrals, modifications, inclusion of detailed TIP listings for previously approved priority ordered projects related to apportioned federal fiscal year 2016 funding, that are needed to balance the FY 2016 Obligation Authority or utilize FY2016 FTA allocations based on the forthcoming final Obligation Authority distributions from ADOT and/or notifications by the region's transit Designated/Direct Recipient, supported by funding notices from Federal Highway Administration and Federal Transit Administration.

5B – MAG Federally Funded, Locally Sponsored Project Development Status Report

The MAG Transportation Review Committee, by consent, recommended acceptance of the MAG Federally Funded, Locally Sponsored Project Development Status Report.

5C – Memorandum of Understanding (MOU) for Coordination of Transportation Planning Activities in MAG and SCMPO Planning Areas in the Pinal County Area

The MAG Transportation Review Committee, by consent, recommended approval of signing the Memorandum of Understanding.

5D – ADOT Red Letter Process Report and Request to Participate

The MAG Transportation Review Committee, by consent, received the ADOT Red Letter Process report and request to participate.

6. MAG Pedestrian and Bicycle Facilities Design Assistance Program

Chair Cook invited Mr. Jason Stephens to present this item.

Mr. Stephens stated that, each year, MAG budgets money in the Unified Planning Work Program (UPWP) for design assistance for pedestrian and bicycle facilities. He stated that, for Fiscal Year 2017, \$400,000 was available. He stated that, after a call for projects, MAG received 10 applications from seven member agencies and that, after an evaluation and ranking process, the top six projects were picked for funding. He noted that the total funding request for these six projects was \$454,500.

Mr. Stephens stated that the Bicycle and Pedestrian Committee discussed these projects and the sponsoring agencies decided to adjust their project funding requests to fit all six projects into the \$400,000 total budget. He stated that this item would be going to Management Committee and Regional Council for approval in August.

Mr. Mike Gent moved to recommend approval of the six projects for the MAG Design Assistance Program. Mr. Mohamed Youssef seconded the motion. The motion carried unanimously.

7. Planning for Autonomous Vehicles

Chair Cook invited Mr. Eric Anderson to present this item.

Mr. Eric Anderson stated that he gave this presentation earlier in the year to the Transportation Policy Committee and that he thought it would be useful to have a conversation at the Transportation Review Committee about how to plan for a future with autonomous vehicles.

Mr. Eric Anderson stated that there are a lot of moving parts both with technology development and how technology is applied to transportation. He noted that the idea of how we improve transportation has been around a long time. He presented a cover of a magazine from 1923 showing a prediction of automobiles in 1973, noting that the predictions were a bit off. He presented a magazine cover from 1946 showing an atomic-powered bubble for transportation.

Mr. Eric Anderson stated that a lot of things we see in cars today are ideas that go back many years. He presented a graphic from Popular Science magazine in 1938 showing concepts of highways of the future. He noted the concepts of lane control and blind spot warning using cables to keep cars in their lane. He noted radio controlled traffic lights appearing in dashboard. He noted a television receiver concept showing road directions similar to modern GPS units. He noted automatic braking photoelectric cell detecting when brake lights come on. He noted that automatic braking is becoming standard equipment in the 2017 model year. He noted the median showing bus rapid transit.

Mr. Eric Anderson presented a “highway of the future” concept from 1944. He noted the adaption of the odograph which was used for mapping during World War II. He noted that the military said that technology could be adapted for use in the car. He noted that the idea that in-vehicle mapping was needed was being thought about in 1944 and that we see that

in our daily lives now.

Mr. Eric Anderson presented an advertisement from a power company talking about automated electric vehicles. He also presented an example from General Motors of autonomous vehicles in testing using electronic cables under the roadway. He noted the same thinking was there but the technology wasn't quite ready.

Mr. Eric Anderson presented some pictures of autonomous vehicles being developed. He noted a picture of the Google car, stating that it showed the version most people are familiar with. He noted that visually challenged persons can use a fully autonomous vehicle for better mobility. He noted a 12-passenger fully autonomous low speed shuttle being rolled out by a car dealership in Chandler.

Mr. Eric Anderson stated that this technology is being developed fairly quickly and will change how we travel around the roadway system with implications for future planning. He presented some pictures of concept and prototype autonomous and connected trucks. He stated that a big advantage will be for truck platooning. He stated that, at the Transportation Policy Committee meeting, the representative from Swift Trucking says all trucks will have sensors on board for truck platooning with a lead driver. He noted that truck platooning will allow trucks to be more efficient both with saving fuel and dealing with a truck driver shortage.

Mr. Eric Anderson stated that the Institute of Electrical and Electronics Engineers (IEEE) surveyed 2000 experts on autonomous vehicles and found that the biggest obstacles are legal liability and consumer acceptance. He stated that IEEE predicted that by 2030 cars won't have rear view mirrors, horns, or emergency brakes and by 2035 steering wheels and gas and brake pedals will be gone. He noted his own skepticism.

Mr. Eric Anderson stated that there is a lot of thinking going on. He presented a summary of a National Cooperative Highway Research Program (NCHRP) study identifying over 100 questions for policy, infrastructure planning, and harmonization of regulations across states. He noted implications for future engineering, speed limits, parking, and safety. He added implications for a 2040 long range transportation plan and assumptions for availability of technology. He noted the question of whether to maintain the current approach for planning for system expansion in the face of a tremendous amount of uncertainty and the rapid pace of technology change.

Mr. Eric Anderson noted implications for future land use and urban form and that people are already thinking about changes due to car-sharing, ride-hailing, and autonomous vehicles. He noted implications for driver education and licensing, vehicle registration, and auto insurance and liability.

Mr. Eric Anderson presented a chart showing levels of automation, noting major advancements in the previous few years. He presented a chart from Bloomberg showing potential market share of partially and fully autonomous vehicles, noting a prediction that 25% of the market will be fully or partially autonomous by 2035. He noted Tesla vehicles in production currently that have the ability to function partially autonomously.

Mr. Eric Anderson presented graphs showing safe spacing and highway capacity increases

with partially and fully autonomous vehicles. He noted that freeways currently have a maximum capacity of 2,000 vehicles per hour per lane and this could potentially be increased to 12,000 with a fully autonomous fleet.

Mr. Eric Anderson presented potential decreases in auto insurance premiums with autonomous vehicle technology, noting a potential decrease from \$1,100 per year to \$230 per year. He noted data from the Insurance Institute for Highway Safety (IIHS) showing that the rate of severe injury in auto crashes is less than half of what it was historically thanks to improvements in safety technology. He noted that autonomous vehicle technology can both improve traffic flow and reduce rear end collisions.

Mr. Eric Anderson presented a chart showing a survey of what people would do while riding in a self-driving car. He noted a story he heard that someone with a Tesla took a nap while traveling from Los Angeles to Las Vegas with his car in the autonomous mode. He noted that self-driving cars will have implications on how people travel and activities they could do while traveling.

Mr. Eric Anderson stated that this technology will have implications on planning and revenue flows and asked the committee members to stay tuned.

Chair Cook thanked Mr. Eric Anderson for his presentation.

8. Development Status and Overview of the MAG Activity Based Model for Transportation Planning

Chair Cook invited Mr. Vladimir Livshits to present this item.

Mr. Livshits stated that the development of the activity-based model has come out of a need to prepare and plan for new disruptive technologies. He stated that there is a need for new planning tools as the old tools will not work for modeling scenarios with autonomous and connected vehicles, ride-sharing and ride-hailing apps, and other new transportation technology. He stated that there are two definitions for “ABM”: activity-based model and agent-based model, noting that these overlap but MAG is developing an activity-based model.

Mr. Livshits presented a summary of the development of the activity-based model. He stated that work started in 2009 and completed in 2015, and that the model was successfully deployed at MAG in 2016. He noted that the model development process received joint support from MAG, PAG, and Parsons Brinckerhoff. He stated that the MAG activity based model may be the most advanced model in the world at the moment. He noted that development piggy-backed on advanced models when the project began and that other models are being built on top of the MAG model. He stated that another agency will be more advanced in a few years.

Mr. Livshits stated that MAG is not the first agency to develop an activity-based model. He stated that almost all large MPOs are developing or updating activity-based models. He presented a map showing MPOs in the United States which are using or developing activity-based models. He stated that CT-RAMP is the most widespread activity-based model in the US and that MAG is using this model.

Mr. Livshits stated that the model is a megaregional model, which is becoming common around the country. He presented a map showing three combined regions covered by the model, which included Maricopa County, Pinal County, and a portion of Pima County including Tucson. He noted that the model is based on micro-analysis zones, which are like traffic analysis zones but much smaller. He noted that the model contains 26,000 micro-analysis zones versus 3,000 traffic analysis zones in the traditional four-step model.

Mr. Livshits stated that this model is the first model in the world that uses true tour formation. He stated that a tour is the full chain of travel, not just a single trip. He stated that the model looks at the entirety of a tour which makes it very consistent, especially with transit simulation. He stated that the problem with the previous activity-based model is that it generated a number of tours and then assigned trips to them based on socioeconomic data, but that the MAG model looks at socioeconomic data for generating tours before trip assignment.

Mr. Livshits stated that this is one of the first models with establishment-driven activity scheduling. He stated that the traditional four-step model mostly models from the residential side. He stated that in reality if there is a major cultural or entertainment event to attend, people will structure their day around this event. He stated that the model incorporates special event submodels and that if an event is coming up the model will schedule travel accordingly.

Mr. Livshits presented a visualization produced by the model showing a continuous timeline and the movement of population with purpose within micro-analysis zones. The presentation showed the progression of a day with people traveling between home, work, and other locations for other purposes.

Mr. Livshits then presented a visualization of the model showing travel for a block party special event on Mill Avenue in Tempe. The visualization showed travel between micro-analysis zones to the location of the event throughout the day.

Mr. Livshits stated that the model produces extremely detailed output, similar to the information collected during the household survey. He stated that this is very different from a traditional model.

Mr. Livshits presented a comparison of the inputs and interface for the activity-based model and the traditional model. He stated that the activity-based model is a continuous time model. Mr. Eric Anderson stated that one of the benefits of this, especially on the transit side, is that the model picks up non-rush hour trips that the traditional model does not pick up.

Mr. Livshits stated a quote saying “all models are wrong but some models are useful.” He stated that the activity-based model is less wrong and more useful. He added that the activity-based model can also answer a lot of questions that can’t be answered with a trip-based model. He stated that the traditional model is not suitable for planning challenges of today and that the activity-based model is modeling individuals and households in the entire population.

Mr. Livshits presented a list of planning challenges and future scenarios that require new tools such as the activity-based model. He then presented new assumptions that were used to apply the model to future scenarios with connected and autonomous vehicles.

Mr. Livshits presented the next steps for model development. He noted the application of the activity-based model for challenging planning projects. He also noted various planned improvements to the model, such as implementing additional special generators, improved travel time reliability results based on the Strategic Highway Research Program 2 (SHRP 2) results. He noted future integration with a megaregional freight model which uses an agent-based model to model individual trucking firms. He noted further development of visualization tools.

Chair Cook stated that the presentation contained a lot of information.

Mr. Oliver stated that the previous presentation was on autonomous vehicles and one of the work items was how the fleet will change in the future. He asked if any work had been done through the Transportation Research Board (TRB) on lane capacity changes as the fleet changes. Mr. Livshits responded that some work has been done but that he is not sure about research through the SHRP 2 program.

Mr. Oliver asked if any work had been done with the American Transportation Research Institute (ATRI), as they have been researching truck platooning and autonomous trucks. Mr. Livshits responded that a lot of freight modeling is being done in the private sector and that private software companies are very protective of their algorithms and software.

Mr. Eric Anderson noted that people are starting to use technology differently for transportation. He stated that Uber and Lyft are getting into carpool matching, providing lower rates than their traditional taxi services.

Mr. John Farry noted that the slides reference kiss-and-ride and that the definition being used seemed different from existing transit terminology. Mr. Eric Anderson responded that, for autonomous vehicles, kiss-and-ride means the autonomous vehicle goes home after going to transit. Mr. Livshits added that, in the model, kiss-and-ride accounts for people being dropped off anywhere, not just at a transit station.

Chair Cook thanked Mr. Livshits for his presentation.

9. Request for Future Agenda Items

There were no requests for future agenda items.

10. Member Agency Update

There were no updates from member agencies.

11. Next Meeting Date

The next regular Transportation Review Committee meeting will be scheduled for Thursday, September 1, 2016 at 10:00 a.m. in the MAG Office, Saguaro Room.

The meeting was adjourned at 10:57 a.m.