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AUDITOR GENERAL

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DEPUTY AUDITOR GENERAL

July 1, 2021

The Honorable Karen Fann, President
Arizona State Senate

Mr. Eric Anderson, Executive Director
Maricopa Association of Governments

The Honorable Russell Bowers, Speaker
Arizona House of Representatives

Mr. Scott Smith, Chief Executive Officer
Valley Metro

Members of the Arizona Legislature

Mr. John Halikowski, Director
Arizona Department of Transportation

The Honorable Doug Ducey, Governor

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

A response to the audit can be found at the end of the report. Because this performance audit has no findings and recommendations, the entities did not have to indicate their agreement with and plans for implementing the recommendations, and the regional planning agency may not need to hold a public hearing on the findings and recommendations.

Sincerely,

Lindsey A. Perry

Lindsey A. Perry, CPA, CFE
Auditor General

cc: The Honorable Katie Hobbs, Arizona Secretary of State
Arizona State Transportation Board Members
Maricopa Association of Governments Regional Council Members
Maricopa Association of Governments Transportation Policy Committee Members
Maricopa County Board of Supervisors
Valley Metro Rail, Inc. Board of Directors
Valley Metro Regional Public Transportation Authority Board of Directors

Maricopa Association of Governments Regional Transportation Plan Fiscal Year 2021 Performance Audit



June 2021 – Final Report



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June 28, 2021

Lindsey Perry, Auditor General
2910 N. 44th Street, Suite 410
Phoenix, AZ 85018

Dear Ms. Perry:

Sjoberg Evashenk Consulting is pleased to submit our report for the *Fiscal Year 2021 Maricopa Association of Governments Regional Transportation Plan* performance audit in response to Arizona Revised Statutes §28-6313 and Proposition 400 passed in November 2004. The audit focused on the past and planned expenditures of the Regional Transportation Plan and system performance in relieving congestion and improving mobility looking at freeway, arterial, bus transit, and light rail transit as funded through Proposition 400 sales tax revenues.

Overall, many of the planned Proposition 400 projects were completed or were in-progress towards completion with just five years remaining in the Proposition 400 lifecycle to assist with mobility and congestion efforts. Moreover, Proposition 400 spending on transportation improvement projects on freeways, arterial streets, and the transit network generally improved mobility and relieved congestion with performance that mostly aligned with comparable areas we reviewed. Yet, roadway safety worsened where arterial crashes and pedestrian fatalities were on an upward trend with rates higher than those reported by others. To address these outcomes, the Maricopa Association of Governments and Arizona Department of Transportation developed a multitude of safety strategies centered on project engineering, education, enforcement, and technology.

We appreciate the professionalism and cooperation we received from all those who assisted us throughout the course of the audit including the Maricopa Association of Governments, Arizona Department of Transportation, Valley Metro Regional Public Transportation Authority, and Valley Metro Rail, Inc. Also, we thank you for the opportunity to have been of service to the Office of the Auditor General as it has been our pleasure to work with you and your staff.

Respectfully Submitted,

A handwritten signature in black ink that reads "CBrady". The signature is written in a cursive, flowing style.

Catherine Brady, Partner
Sjoberg Evashenk Consulting, Inc.

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REPORT HIGHLIGHTS

In November 2004, Maricopa County voters passed Proposition 400 (Prop 400) authorizing a 20-year continuation of a countywide, half-cent sales tax dedicated to transportation that sunsets on December 31, 2025. With the passage of Prop 400, voters added a significant investment in new and improved freeways, arterial street improvements, and transit features including bus and light rail to address transportation needs. These projects were specified as part of the region's Regional Transportation Plan (RTP) to help with mobility, congestion, and safety outcomes. These projects are planned, funded, implemented, and operated by several entities in Maricopa County including the Maricopa Association of Governments (MAG), Arizona Department of Transportation (ADOT), Valley Metro Regional Public Transportation Authority, Valley Metro Rail, Inc., and 27 local jurisdictional cities, towns, native nations, and Maricopa County.¹ We refer to these entities as the RTP Partners in this report.



Were Promised Prop 400 Projects Delivered as Expected to Meet Transportation Goals and Will Remaining Projects be Completed as Planned?

For the most part, MAG and its RTP Partners delivered Prop 400 projects as promised and realized many accomplishments in accordance with revised plans vetted by the appropriate decision makers. In fact, despite funding challenges resulting from the 2008 Great Recession that required the deferral of some projects beyond the Prop 400 horizon, many projects were already delivered as intended and improvements to-date have contributed towards better mobility in the region. The few Prop 400 freeway and roadway projects that remained outstanding as of June 30, 2020 are scheduled to be completed within the general Prop 400 timeframe. While Prop 400 sales tax collections cease on December 31, 2025, funds collected will still be available and used to complete envisioned projects for several additional years.

ANNUAL PROGRAMS TO REBALANCE PROJECTS



- Freeway, arterial, and transit projects were revisited annually to prioritize, add, or eliminate projects as warranted.
- Strong controls existed to match costs with available funding.
- RTP Partners demonstrated accountability to Prop 400 promises and transparency about project change decisions with staff publicly providing supporting data and justifications to local and regional oversight bodies for approval.

FREEWAY PROJECTS



- Multiple rebalancing efforts allowed the region to complete 280 of 344 original miles of new and improved freeways despite the funding shortfalls caused by the Great Recession.

ARTERIAL PROJECTS



- Sales tax funding for arterial projects was limited to amounts identified when Prop 400 passed, thus keeping program distribution more feasible as local jurisdictions were required to pay for any budget overages.
- 140 of 271 promised miles of new or improved arterial streets and 16 of 32 original intersections were open to traffic with another 112 miles underway to be completed prior to the end of Prop 400 in December 2025.
- Only 19 arterial miles and 3 intersections were deferred to date.

¹ Valley Metro Regional Public Transportation Authority operates the bus transit system and Valley Metro Rail, Inc. operates the light rail transit system. For purposes of this audit, we refer to the entities together as Valley Metro.

- 91 freeway miles were in-progress and projects encompassing approximately 39 miles were delayed beyond the Prop 400 sunset at the end of calendar year 2025, but were still planned for completion in the current 2040 Regional Transportation Plan. ²

LIGHT RAIL PROJECTS

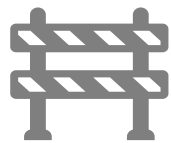


- 6.3 miles of the initial 27.7 miles were completed as of June 30, 2020.
- An additional 11.6 miles were planned to be completed by the time Prop 400 sunsets, for a total of 17.9 miles added with Prop 400 funding.
- Three planned projects were deferred due to the City of Phoenix's reduced available funding and its focus and prioritization on its city sales-tax funded transportation and transit program.

BUS TRANSIT PROJECTS



- Funding challenges required Valley Metro to defer:
 - 4 of 13 of park-and-ride lots.
 - 12 of 16 transit centers.
 - 65 percent of 1,200 new bus stops.
- Transit fleet purchases provided additional vehicles and transit services, although purchases will fall short of Prop 400 plans due to funding challenges.
- While some planned services were deferred due to the 2008 Great Recession, many improvements were made to bus service operations in terms of geographic coverage, daily span of service, and frequency of service.



Did Prop 400 Spending on Freeway and Arterial Projects Increase Mobility and Relieve Congestion?

Generally, yes—Prop 400 freeway and arterial projects completed have made positive impacts on mobility and congestion in the MAG region over the last five years. While performance can vary depending on the location and time period measured, we used the most relevant geographical area and aligned data with our July 1, 2015 through June 30, 2020 audit period where possible. We found that, between calendar years 2015 and 2019, systemwide average speed increased and delays improved on the freeways and arterial streets—often in areas where Prop 400 projects were completed. However, average travel time on certain freeways and arterial streets worsened during peak periods.

SPEED



- Systemwide speed increased, except for a slight decline during the evening peak period.
- Fastest speeds at 71 miles per hour were on Loop 202 Red Mountain.
- Slowest speeds averaging 40 miles per hour were on the I-10 between Loop 101 Agua Fria and I-17 eastbound in the morning and westbound in the evening.

DELAY

- Phoenix area had one of the largest reductions in delays when compared to other areas we reviewed including Dallas, Houston, Sacramento, San Diego, and Los Angeles. ³

IMPACT OF PROP 400 PROJECTS

- A Prop 400 project completed in 2016 on the Loop 101 freeway segment between Loop 202 Red Mountain and Pima Road / 90th Street showed the best average speed between calendar year 2015 and 2019.

ACTIONS TO ADDRESS ISSUES

- To address congestion and delays, MAG and ADOT were working on planning studies to improve traffic flow on the I-10 between Loop 101 Agua Fria and I-17.

GENERAL MULTIMODAL STRATEGIES

- A corridor management study on the I-17 / Loop 101 to the I-17 / I-10 was completed to help MAG and ADOT find mobility and congestion solutions for this freeway segment.

² The 2005 Annual Report on the Status of the Implementation of Proposition 400 list of freeway improvements identified projects that had a combined total of 410 miles to be funded by Proposition 400, while the Prop 400 Ballot language referenced 344 miles.

³ We compared the Phoenix metropolitan statistical area with other comparable areas including Dallas-Fort Worth, Texas; Houston, Texas; Los Angeles, California; Sacramento, California; and San Diego, California. These areas were also used by MAG in its Strategic Safety Plan and 2020 Best Practices Study and by Valley Metro in its peer comparisons.

TRAVEL TIME



- Systemwide travel time worsened between calendar years 2015 and 2019.
- Travel time in the Phoenix area took 21 percent longer on average to move the same distance on freeways and arterial streets during peak periods of traffic.
- Yet, Phoenix travel times were lower than comparable other metropolitan areas we reviewed.

- MAG and ADOT developed technology solution strategies for reducing congestion included adding cameras to respond to traffic, synchronizing signal timing on arterials, and adding electronic messaging to inform travelers of changing road conditions to assist mobility.

Has Transit Contributed to Mobility and Congestion Relief in the MAG Region?



Yes—combined with its ability to move large numbers of people through an area, both bus and rail transit performed efficiently to help enhance mobility and relieve congestion. Additionally, transit experienced growing levels of rider satisfaction, even though ridership declined between fiscal year 2015 and 2020. Overall, bus and rail transit service had reliable on-time performance better than peers reviewed, generally declining bus and rail vehicle breakdowns, and higher levels of rider satisfaction—indicating transit was a strong alternative means of travel.

RIDERSHIP

- Overall, ridership decreased by 26 percent between fiscal years 2015 and 2020.
- Light rail ridership decreased 10 percent, while bus ridership dropped by 30 percent.
- Valley Metro increased marketing and security to encourage riders to use transit vehicles and service.

TRANSIT EFFICIENCY

- Both bus and rail outperformed peers in several operational metrics.
- Prop 400 increased service miles, although ridership was decreased over the period reviewed.
- Operating costs rose, but preventive maintenance on vehicles was enhanced.
- Valley Metro transit service was more efficient and its operating costs were still lower than peers' operation costs.

RELIABILITY (ON-TIME AND BREAKDOWNS)

- Bus service was on-time at least 89 percent of the time, which was generally higher than peer performance.
- Light rail service was on-time 98 percent of the time and far exceeded its peers.

RIDER SATISFACTION



- As of May 2018, approximately:
 - 82 percent of bus-only riders were satisfied in 2018, up from 68 percent satisfaction in 2014.
 - 77 percent of light rail-only riders were satisfied in 2018, which is a decrease from 88 percent satisfaction in 2016.
 - 81 percent of riders who used both bus and light rail were overall satisfied in 2018, which is an increase from 63 percent in 2014.
- Total bus complaints decreased over the audit period from approximately 8,500 to 6,700 between fiscal years 2016 and 2020. However, the rate of complaints per 100,000 riders increased from 53 to 64 between fiscal years 2016 and 2020.
- Light rail complaints generally decreased over the period from a total of 131 complaints in fiscal year 2016 to 94 complaints in fiscal year 2020—similarly, the rate of complaints per 100,000 riders also decreased from 0.84 complaints per 100,000 riders to 0.72 over the same period.
- Complaints primarily focused on vehicles not stopping to pick up passengers as well as late arrivals and bus driver attitude.

VALLEY METRO ACTIONS

- Valley Metro increased marketing and security activities—such as its Respect-the-Ride Program in 2018 focused on the transit experience—encouraging riders to take transit and restore confidence in light rail.

- Bus breakdowns decreased and were aided by Prop 400 purchase of vehicles.

- Actions taken to address complaints included validating complaints with video coverage, resolving issues directly with riders, and providing remedial education and behavior training for drivers.

AVAILABILITY & SERVICE COVERAGE

- Approximately 65 percent of people lived within half-mile of transit.
- Service coverage generally aligned with most peers reviewed.

How Safe are Roads and Transit Operations?



In the past five years, safety declined in the region with an overall nine percent increase in the number of fatalities reported between calendar years 2015 and 2019—with more fatal crashes on arterial streets than freeways. Results were similar to comparable entities reviewed.⁴ While various factors can contribute to these results, many incidents were attributed to driver behavior. To address these outcomes, MAG, ADOT, and Valley Metro developed strategic safety plans to address issues on freeways and arterial streets in addition to safety campaigns for bicyclists and pedestrians.

FREEWAY AND ARTERIAL STREET FATALITIES

- Fatality rates were increasing, but sharply declined in 2019.
- 83 percent of crashes happened on arterial streets, rather than freeways.
- Data suggested that approximately 33 percent of fatalities were due to speed and 44 percent were due to impaired driving—although those factors were not mutually exclusive.
- Trends generally aligned with other counties we reviewed including Dallas, Harris, Los Angeles, Sacramento, and San Diego counties.

TRANSIT PREVENTABLE ACCIDENTS

- Preventable accidents involving buses were relatively stable over the audit period and decreased to a low 0.70 accidents per 100,000 miles of service in fiscal year 2020.
- Rail preventable accidents varied a bit with a spike in fiscal year 2019, although the rate lowered to 0.19 per 100,000 miles of service by fiscal year 2020.

TRANSIT SECURITY

- Reportable security incidents requiring police dispatch increased between 2015 and 2019 from 0.16 per 100,000 boardings to 0.45 per 100,000 boardings—primarily attributed by Valley Metro to a change in reporting methodology.

BICYCLE FATALITIES

- Rate of fatalities was higher than peers with a 21 percent increase since 2015.
- MAG developed strategies to encourage local jurisdictions to implement specific safety solutions for bicyclists.

PEDESTRIAN FATALITIES

- After four years of steady increase, pedestrian fatalities dropped in 2019 decreasing 26 percent.
- Fatality rate aligned with others, although raw numbers grew more than peers to a total of 134 fatalities in 2019.

RTP PARTNER ACTIONS TO ADDRESS ISSUES

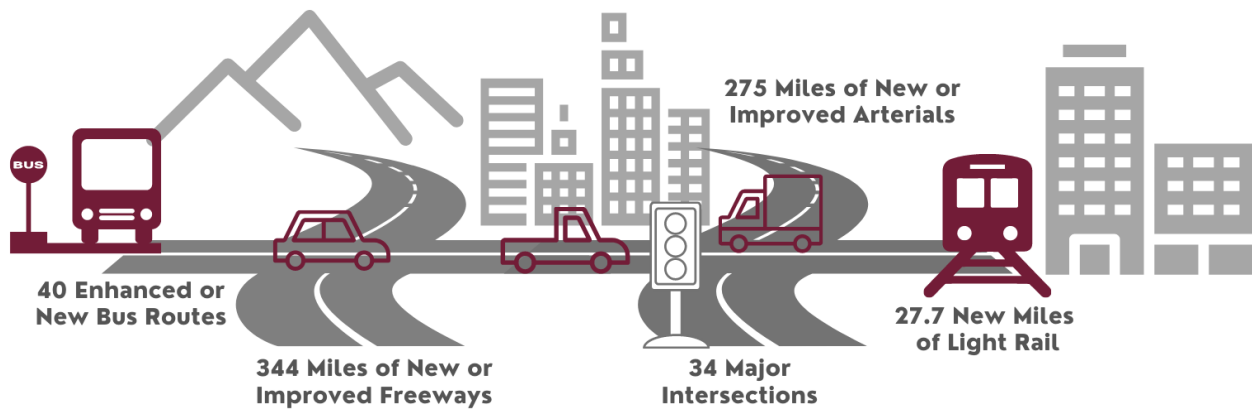
- Development of the MAG Strategic Transportation Safety Plan included 47 strategies focused on engineering solutions, education, enforcement, and technology.
- New Roadway Safety Program administered by MAG provided competitive grants to locals for more immediate short-term safety capital project improvements.
- As a regional agency, MAG designed and is implementing a broad educational campaign—called See Me AZ—in collaboration with local agencies. The campaign is focused on reducing bicyclist and pedestrian deaths as well as traffic crashes involving non-motorized modes of transportation.

⁴ We compared Maricopa County with other counties including Dallas County, Texas; Harris County, Texas; Los Angeles County, California; Sacramento County, California; and San Diego County, California. These areas were also used by MAG in its Strategic Safety Plan and 2020 Best Practices study and Valley Metro in its peer comparisons.

Introduction and Background

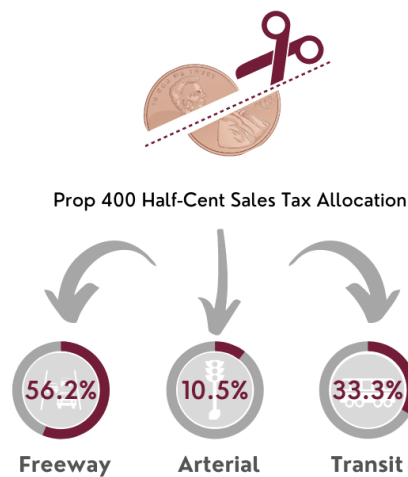
This performance audit reviewed transportation improvement projects and performance outcomes as funded by Proposition 400 (Prop 400), a 2004 Maricopa County voter-passed extension of an existing sales tax that was initially set to expire in 2005. We focused on the implementation and operation of Prop 400 funded freeways, arterials, bus service, and light rail capital projects in addition to performance of the entire transportation and transit system.⁵

Original 400 Funded Transportation Projects



In November 2004, Maricopa County voters passed Prop 400 authorizing a 20-year continuation of a countywide, half-cent sales tax that sunsets on December 31, 2025 to increase mobility and reduce congestion. With the passage of Prop 400, voters added a significant investment in new and improved freeways, street improvements, and transit features including bus and light rail to address needs through projects specified as part of the Regional Transportation Plan. Projects included 344 miles of new and improved freeways, 275 miles of new and improved arterials, 40 new or enhanced bus routes, and several light rail transit extensions, among other improvements on the region’s transportation network. Refer to

Appendices B, C, and D of this report for a listing of specific freeway, arterial, and transit projects funded by Prop 400 in the RTP.



The Prop 400 sales tax revenue was expected to provide nearly half of the funds for projects envisioned in the RTP, with state and federal sources funding the remainder of the projects. Monies generated under Prop 400 must be allocated to freeways, arterial streets, and public bus and rail transportation according to specified percentages.

Moreover, the enacted legislation prohibits the transfer of Prop 400 sales tax revenues from one transportation mode to another—for instance, freeway money cannot be transferred to transit projects, nor can transit funds be spent on arterial street projects.

⁵ Although Prop 400 does not fund light rail operations, Arizona Revised Statutes §28-6313(B) calls for the quintennial performance audit and requires an analysis of light rail operations.

Regional Transportation Plan to Implement Transportation Projects

Developed by the Maricopa Association of Governments (MAG) in its role as a federal transportation planning organization, the RTP includes goals and objectives for increasing mobility and reducing congestion through a mix of specific freeway, high-capacity arterial streets, and transit improvement projects and activities funded by a combination of federal, state, and local Prop 400 monies.

- **RTP Identified Projects to Address Transportation Needs**

In 2003, MAG identified specific projects in its RTP to be funded through Prop 400. The final composition of RTP projects and activities were considered significant and necessary to address current and future mobility needs and congestion concerns. The projects proposed were vetted and approved using results of sophisticated travel and economic projection models as well as analysis of performance metrics.

- **Long Range Plan Continually Updated and Changed Through Public Input Process**

Not only does the way people move throughout Maricopa County change over time, but transportation needs and demand are also impacted by evolving technology, demographics, economy, and legislation. Thus, the long range RTP is revisited, revised, and refined at least every four years to cover a rolling 20-year time-period or longer. This involves a public-input process whereby draft changes are distributed for public comment and regional decisions are reached through cooperative efforts with state and local entities with ultimate approval by MAG committees. The most recent plan is the 2040 update in February 2020; although MAG is currently developing a new plan that is anticipated to be completed in later 2021 or early 2022.

- **Several Entities Partner with MAG to Implement RTP**

While MAG is responsible for developing the RTP, several other entities partner with MAG to share responsibilities for implementation, operation, and monitoring of projects and programs funded through Prop 400. In essence, the Arizona Department of Transportation (ADOT) implements freeway projects and maintains the highway system, Valley Metro Regional Public Transportation Authority operates the regional bus system, Valley Metro Rail, Inc. implements rail projects and operates the light rail system, and local city and county jurisdictions implement arterial projects. Together, we refer to these entities as RTP Partners.

Scope and Methodology

Sjoberg Evashenk Consulting, Inc. was hired by the Arizona Auditor General to conduct an independent performance audit of the Maricopa Association of Governments (MAG) Regional Transportation Plan (RTP) for Maricopa County. Specifically, we were asked to:

- Examine whether past RTP expenditures and performance of the system have relieved congestion and improved mobility, as required by A.R.S. §28-6313(C)(2), for fiscal years 2016 through 2020;
- Examine the RTP and projects scheduled for fiscal years 2021 through 2025 within each transportation mode, as required by A.R.S. §28-6313(A) and A.R.S. §28-6313(C)(1), based on performance factors required by A.R.S. §28-505(A), including, but not limited to, congestion relief, economic benefits, safety, and environmental impacts in the context of the transportation system;
- Determine the extent to which performance measures have been met for each area, reasons for any deviations, and how the RTP and projects compare to industry standards and peer agencies including utilization of multimodal management tools to ensure RTP goals and performance standards, such as relieving congestion and improving mobility, are achieved;
- Examine light rail systems against federal criteria, as required by A.R.S. §28-6313(B), considering Federal Transit Administration criteria (i.e., project justification, including mobility and environmental benefits, and financial commitment) pursuant to 49 United States Code §5309(e)(1)(B) and the interrelationship among the criteria to provide federal funding for light rail systems;
- Examine light rail systems against other factors, as required by A.R.S. §28-6313(B), considering service levels, capital costs, operation and maintenance costs, transit ridership, and farebox revenues in addition to determine whether performance metrics have been met, reasons for any deviations, and how Valley Metro compares to industry standards and peer agencies; and
- Make recommendations, as required by A.R.S. §28-6313(C)(3), regarding whether further implementing a project or transportation system is warranted, warranted with modifications, or not warranted.

To meet the audit's objectives, we conducted a series of in-depth audit tasks involving data mining and analysis, documentary examinations, peer comparisons, data verification, and interviews with MAG, Arizona Department of Transportation, Valley Metro Regional Public Transportation Authority, and Valley Metro Rail, Inc. Appendix A provides the detailed methodology employed on this audit.

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

Chapter 1: Prop 400 Projects were Generally Accomplished as Planned, and Majority of Remaining Projects as Revised were Scheduled to be Completed within Prop 400 Timeframe

With Proposition 400 (Prop 400) nearing the end of its funding horizon in December 2025, we found that the Maricopa Association of Governments (MAG) and its Regional Transportation Plan (RTP) Partners made improvements to Maricopa County freeways, arterial streets, and the transit system that were generally in line with what was promised to voters nearly 20 years ago to help overall system mobility, congestion, and safety. Yet, MAG and its RTP Partners made some revisions to the projects originally envisioned under Prop 400 to address shifting needs as well as funding challenges—primarily from the 2008 Great Recession. Because travel behavior and mobility needs evolve along with economic changes, population fluctuations, and technology advancements, MAG and the RTP Partners need flexibility to develop new strategies, revise priorities, or change projects. Although there are just five years remaining in the Prop 400 sales tax collection timeframe, the majority of projects were scheduled to be completed as proposed.

While External Factors Impacted and Revised Prop 400 Projects, Use of the Life Cycle Certification Process Helped Accomplish Plans and Demonstrate Accountability

Regional transportation plans and projects are impacted by several external forces, with economic factors and changing travel demands being most influential. For instance, the 2008 Great Recession impacted the Prop 400 program when MAG and the Arizona Department of Transportation (ADOT) had to lower sales tax revenues forecasts by 47.6 percent with only \$8.8 billion expected to be available compared to the \$14.3 billion initially forecasted when Prop 400 passed. Additionally, travel demand changed over the last 15 years affecting capital project plans on how best to address needs. Thus, like other comparable regions with similar challenges, MAG and its RTP Partners had to revisit and revise the priority, schedule, and funding of the original Prop 400 portfolio of transportation improvement projects. This required moving funding from one project to another, modifying project limits or scope, and eliminating some projects altogether when available revenues were reduced and certain planned projects were no longer aligned with traveler attitudes, needs, or demands.

To balance needed changes with Prop 400 planned projects, MAG and its RTP Partners used a life cycle certification budget process to match estimated transportation project costs by freeway, arterial, and transit mode with available funding—in accordance with A.R.S. §28-6352(B)—and make changes to modify, add, or eliminate long-term projects as warranted.⁶ As part of this annual rebalancing process, MAG and its RTP Partners followed established life cycle policies to align decreased revenue projections

⁶ While MAG and ADOT conducted the “life cycle certifications” annually to ensure short-term and long-term funding is available for a particular project, Valley Metro’s life cycle certifications were updated on a periodic basis rather than annually.

with project needs and related expenditure estimates that helped ensure accountability to Prop 400 promises.⁷ Specifically, project revisions were vetted at the local jurisdictional and state level, in addition to being reviewed and approved by MAG committees based on clearly communicated and detailed project information provided in public meetings, public documentation, and required Prop 400 reports that demonstrated expected transparency.⁸ These controls also assisted with subsequent smaller rebalancing efforts when extra funding materialized and additional projects were added back into the Prop 400 program.

The life cycle program balancing process provided a control to understand the affordability of projects planned and steps taken to address and limit variances between project costs and revenues to fund the projects. Further, the life cycle program efforts were reasonable and sufficient to help prioritize and identify funding for the remaining projects as part of Prop 400.

For each Prop 400-funded transportation category, we reviewed cost variances between initial Prop 400 estimates and actual costs for projects completed during our audit period from July 1, 2015 through June 30, 2020 and did not identify any significant issues. Specifically, the major projects that opened to traffic in the past five years were within budget or had reasonable variances such as:

- ✓ *Freeway:* The largest-scale Prop 400 freeway project—the Loop 202 New South Mountain Freeway—opened to traffic in 2019 with three general purpose lanes and one high-occupancy vehicle lane in each direction. With construction costs at \$1.6 billion, the project came within range of the initial cost estimate when Prop 400 passed.⁹
- ✓ *Arterial:* A major arterial project—Avenida Rio Salado: 7th Street to Loop 202 South Mountain—opened to traffic in 2018 under the \$57 million budget estimate from nearly two decades ago.¹⁰ In the event an arterial project costs more than anticipated, funding the difference becomes the responsibility of the local jurisdiction since the Prop 400 contribution is capped at the amount established by the life cycle program.
- ✓ *Transit:* The MetroCenter Link/Northwest Extension light rail opened its first segment between 19th Avenue/Bethany Home to 19th Avenue/Dunlap in 2016 at a cost of \$326 million, again within range of its initial cost estimate.¹¹

⁷ Prior Arizona Auditor General performance audits in 2005 and 2011 evaluated revenue projection and expenditure estimation practices in-depth and the 2016 audit looked at controls and methodology as part of the life cycle program process. No significant changes in methodologies occurred since that time, except for strengthened right-of-way cost estimates; thus, we did not reassess the process and relied on revenue and cost data provided in addition to the adequacy of process controls.

⁸ Prior Arizona Auditor General performance audits in 2005 and 2011 assessed MAG's project planning and prioritization process. Additionally, the Federal Highway Administration and Federal Transit Administration conduct a federal certification review of MAG's planning activities every four years. No significant changes in methodologies occurred since that time; thus, we did not reassess the process and relied on the reasonableness of the processes to make changes to the RTP and Prop 400 portfolio.

⁹ The 2003 RTP estimated the South Mountain project to cost \$1.1 billion in 2005 dollars—\$1.1 billion escalated to 2019, the year the freeway opened, equals approximately \$1.5 billion. This is reasonable given the scale of the project as well as the additional high-occupancy vehicle lane scope addition that was not included in the budget when Prop 400 passed.

¹⁰ Similar to footnote 9, the \$57 million budget estimate for the arterial project in 2005 dollars equals \$72 million in 2018 dollars. The project cost \$62 million when it opened in 2018—or \$10 million under budget.

¹¹ The MetroCenter Link/Northwest Extension light rail project was estimated to cost \$278 million in 2007—escalated to the 2016 year open, the \$278 million equals approximately \$322 million. At a cost of \$326 million, the project came in only minimally over budget.

Many Prop 400 Freeway Projects were Generally Delivered or were In-Progress as Promised, Although Some Improvements were Deferred to Future Years

With the final quarter of the Prop 400 timeframe remaining, 280 miles, or 81 percent, of the promised 344 miles of new or improved freeways were completed and projects continued to be delivered in alignment with Prop 400 as shown in Exhibit 1. Prop 400 funded a variety of freeway projects including constructing entirely new freeways, adding new lanes to existing freeways, building freeway ramps and interchanges, protecting right-of-way for future freeway extensions, and providing funding for litter removal, landscaping, and pavement rehabilitation. We found that freeway improvements made were generally in line with what was promised to voters nearly 20 years ago even though sales tax revenues were 47.6 percent less than initial Prop 400 forecasts. As of June 30, 2020, 280 miles of new and improved freeways were open to traffic with another 91 miles in-progress and 39 miles deferred—for a total of 410 miles. This is greater than the 344 miles promised in the Prop 400 Ballot, but aligns with the miles outlined in the 2005 Annual Report on the Status of the Implementation of Prop 400.

EXHIBIT 1. FREEWAY CAPITAL PROJECT MILE ACCOMPLISHMENTS, AS OF JUNE 30, 2020 ^(A)



Source: 2003 Regional Transportation Plan, 2004 Prop 400 Ballot, 2005 Annual Report on the Status of the Implementation of Proposition 400; 2020 Annual Report on the Status of the Implementation of Proposition 400; Fiscal Year 2021 Annual Freeway Life Cycle Program Report.

Note: ^(A) Auditor defined “in-progress” as those projects that have started pre-design or planning within the Prop 400 timeframe, those projects will not necessarily be completed before Prop 400 expires. “Deferred” projects were defined as those that will not have any activity before Prop 400 sunsets in 2025. Sum of total miles open, in-progress, and deferred exceeded the Prop 400 Ballot miles as of June 2020—however, the 2005 Annual Report on the Status of the Implementation of Proposition 400 list of freeway improvements identified projects that had a combined total of 410 miles to be funded by Proposition 400, while the Prop 400 Ballot language referenced 344 miles.

In terms of projects completed, MAG and its RTP Partners delivered several significant projects over the last five years despite challenges surrounding reduced funding and increased program costs. Most notably, the opening of the 22-mile South Mountain Freeway in 2019 which marked the on-budget completion of the most expensive Prop 400 funded project at \$1.6 billion. Another significant freeway improvement that opened in 2016 included a general-purpose lane on the Loop 101 Pima between Shea Boulevard and Loop 202 Red Mountain. As highlighted in Chapter 2 of this report, the additional lane helped increased traffic flow and made it the “most improved” freeway segment when compared to other freeway segments in terms of positive changes in speed and travel time funded in part by Prop 400. Refer to Appendix B for the status of all Prop 400 freeway projects including those completed. Additionally, Chapters 2 and 4 of this report provide outcome information related to freeway mobility and safety—in part affected by Prop 400 investments in freeway projects.

Looking forward at the remaining five years of Prop 400, the freeway program still has other major Prop 400 improvements underway including the nearly \$750 million I-10 Maricopa “Broadway” curve project between I-17 / Black Canyon to Loop 202 Santan planned for completion by 2024. Other projects planned include several related to a 2018 study addressing traffic bottlenecks on the 31-mile stretch of I-17 between I-17 / Loop 101 in the north and I-10 / Loop 202 in the south.¹²

Because of Funding Challenges, Some Originally Planned Improvements were Deferred

After the 2008 Great Recession and additional funding challenges in 2019, MAG and ADOT “rebalanced” the freeway program by changing scope and delaying some Prop 400 projects. For instance, as part of the 2019 rebalance, approximately \$1.23 billion (year of expenditure dollars) of freeway improvements were either moved beyond the Prop 400 timeframe for completion in yet to-be determined future years or project scopes were modified to align the freeway program with available funds. Exhibit 2 shows the seven original projects that MAG deferred to the future and that will no longer use Prop 400 funding.

EXHIBIT 2. ORIGINAL FREEWAY IMPROVEMENTS PLANNED FOR FUTURE COMPLETION WITHOUT PROP 400 FUNDS



Source: 2003 Regional Transportation Plan, 2004 Proposition 400 Ballot, 2005 Annual Report on the Status of the Implementation of Proposition 400; 2020 Annual Report on the Status of the Implementation of Proposition 400; Fiscal Year 2021 Annual Freeway Life Cycle Program Report, August 26, 2020.

¹² The 2018 study was called the Interstate 10 / Interstate 17 Corridor Master Plan and set the blueprint for long-term improvements on this corridor. It is commonly referred to as the “Spine” Study, since this freeway corridor is critical to the region by providing access to downtown Phoenix and connecting communities in the north, south, and east.

Additionally, there were original Prop 400 projects where MAG and ADOT deferred only certain components, but not the entire project as shown in Exhibit 3. Those deferred project segments will not receive Prop 400 funding; however, the remaining in-progress segments will be paid for with Prop 400. For instance, Prop 400 envisioned adding a general purpose (GPL) and a high occupancy vehicle lane (HOV) to the SR 51 between Loop 101 Pima and Shea Boulevard—the HOV lane opened to traffic in 2009 as intended by Prop 400, but the GPL on the same stretch has been deferred beyond the Prop 400 horizon.

EXHIBIT 3. ORIGINAL FREEWAY IMPROVEMENTS WITH SOME SEGMENTS FUNDED BY PROP 400 AND SOME SEGMENTS DEFERRED FOR FUTURE COMPLETION



Source: 2003 Regional Transportation Plan, 2004 Proposition 400 Ballot, 2005 Annual Report on the Status of the Implementation of Proposition 400; 2020 Annual Report on the Status of the Implementation of Proposition 400; Fiscal Year 2021 Annual Freeway Life Cycle Program Report, August 26, 2020.

Note: GPL = General Purpose Lane—a freeway lane open to all vehicles. TI = Traffic Interchange—a freeway section where two or more freeways connect. An additional 2.5-mile of HOV and GPL on Loop 202 Red Mountain between Broadway Road and US 60 has been deferred (not on map).

Moreover, there were three specific projects where Prop 400 only provided funds to protect right-of-way for future improvements. Of those, two projects—the SR 74 between Loop 303 and US 60 and the SR 303 Extension from SR 30 to Riggs Road—had the right-of-way protection investment deferred.

While the Exhibit 3 projects are no longer planned to be funded by Prop 400, they are still being considered as part of the current RTP that extends to 2040. That said, MAG was in-process of updating the current RTP and making decisions on which transportation improvement projects will be funded on a go-forward basis—thus, these original Prop 400 projects may or may not be considered in the future. The update is expected to be approved by the MAG Regional Council in late 2021 or early 2022.

Most Original or Substituted Prop 400 Arterial Improvements Were Completed or In-Progress, with Remaining 10 Percent Expected to be Completed by Prop 400 Sunset

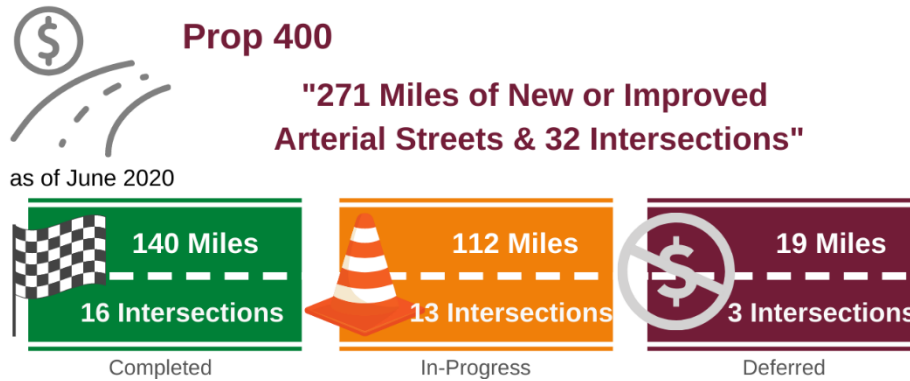
Prop 400 funded arterial capital projects including new and widened arterial streets across the region, improved intersections, new bridges, right-of-way protection, and traffic lights at intersections to improve traffic flow. Like freeways, the original Prop 400 arterial projects identified were also impacted by the economic downturn and other challenges requiring local jurisdictions to select and implement different arterial projects than were originally proposed.

In many instances, the local jurisdictions chose to reprioritize and substitute projects based on changes in travel patterns, funding deficits, or when developers paid for a planned improvement project releasing funds for use on a different project scope or location. Both MAG and local jurisdictions openly shared, vetted, and sought approval of revised projects through presentations of annual arterial lifecycle program updates to MAG oversight committees. As part of the presentations, MAG staff outlined reasons and provided rationale with details on the new projects receiving reallocated funds. Materials and presentations related to the annual arterial lifecycle program are posted on the MAG website, and the MAG oversight committee meetings are open to the public. As of June 2020, approximately 53 of the 94 original arterial projects were completed or in-progress as originally proposed with the remaining 41 original projects substituted for different projects, combined with other projects, or deferred. Refer to Appendix C for the status of all original and substituted Prop 400 arterial projects including those completed and in-progress. Moreover, Chapters 2 and 4 of this report provide outcome information related to mobility and safety—in part affected by Prop 400 investments in arterial projects.

Local Jurisdictions Completed or Started Most of the Prop 400 Arterial Projects and were Scheduled to Complete Remaining Projects by the Prop 400 Sunset

Since the beginning of Prop 400, MAG and its RTP Partners completed or started about half of the planned arterial projects—with approximately 140 miles of the 271 miles of planned improvements finished and 16 of 32 intersections completed as shown in Exhibit 4.

EXHIBIT 4. ARTERIAL CAPITAL PROJECT MILE AND INTERSECTION ACCOMPLISHMENTS, AS OF JUNE 30, 2020



Source: 2003 Regional Transportation Plan; 2004 Prop 400 Ballot, 2005 Annual Report on the Status of the Implementation of Proposition 400; 2020 Annual Report on the Status of the Implementation of Proposition 400; and Fiscal Year 2021 Annual Arterial Life Cycle Program Report.

Note: Auditor defined "in-progress" as those projects that will have at least started pre-design or planning within the Prop 400 timeframe. This does not mean those projects will be completed before Prop 400 expires. "Deferred" means projects will not have any activity before Prop 400 sunsets in 2025. The Prop 400 Ballot mentioned 275 arterial miles to be added or improved, but the first Annual Report on the Status of the Implementation of Proposition 400 in 2005 listed arterial projects totaling 271 miles—slightly less than the Prop 400 Ballot number. Similarly, for intersections, the Prop 400 Ballot called for 34 intersections, while the first Prop 400 report in 2005 listed 32 intersections.

Original arterial projects included capacity improvements such as new roads or widening existing roads, improved traffic flow solutions, and safety at intersections by implementing improvements such as protected left turns or synchronized traffic signals. While there were still more than a hundred miles of arterial streets and several intersections underway with only five years of the program left, it is anticipated that the majority of those in-progress projects will open to traffic by 2025.

Few Arterial Projects Were Deferred and May Not be Completed Within the Prop 400 Horizon

While local jurisdictions completed or started many arterial projects, there remain a handful of original Prop 400 arterial projects that may not be completed within the Prop 400 timeframe or may not use Prop 400 funding when they are planned for future completion. As shown in Exhibit 5, there were six original projects deferred in their entirety along with five additional original projects where a portion of the project was moved outside the Prop 400 horizon due to the lasting and compounding effects of funding challenges during the Great Recession. These projects span a total of 19 miles.

EXHIBIT 5. ORIGINAL ARTERIAL CAPITAL PROJECTS NO LONGER FUNDED BY PROP 400, BUT STILL PLANNED FOR FUTURE COMPLETION OUTSIDE THE PROP 400 HORIZON



Source: 2003 Regional Transportation Plan; 2004 Prop 400 Ballot; 2005 Annual Report on the Status of the Implementation of Proposition 400; 2020 Annual Report on the Status of the Implementation of Proposition 400; Fiscal Year 2021 Annual Arterial Life Cycle Program Report.

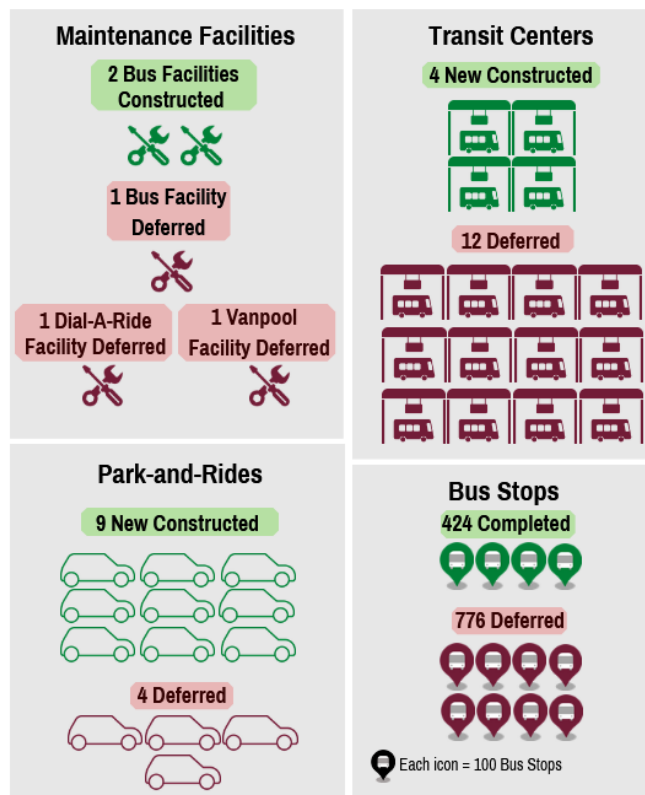
While these projects were not planned to be funded by Prop 400 as of June 2020, they may get moved back into the program as local jurisdictions go through their annual arterial life cycle program budget updates and as MAG finalizes its vision for the next RTP. Specifically, MAG informed us that as part of the upcoming fiscal year 2022 life cycle program update, it is anticipated that three of the projects marked as deferred in fiscal year 2021 were now likely to be added back and funded by Prop 400 due to increased sales tax revenues available. Those projects included the widening of Crismon Road between Broadway and Guadalupe in addition to Happy Valley Road between 35th Avenue and 67th Avenue, as well as improving the intersection at Dobson Road and University Drive.

Changing economic conditions and commute needs, as well as evolving local growth patterns, can impact transportation funding and require MAG and the local jurisdictions to alter and revise actual improvement projects implemented. This is typical in the transportation industry.

Several Bus Transit Capital Projects were Completed, but Funding Shortages and Travel Demand Affected Needs and Planned Delivery

Prop 400 also funded a series of bus transit capital projects including new park-and-ride lots and transit centers, improved bus stops, and new and upgraded maintenance and operation facilities to enhance the rider experience and increase service efficiency.¹³ As shown in Exhibit 6, several projects were completed as planned since 2005 with four projects completed during our audit period. These projects helped enable multimodal mobility where people from different transportation modes—such as freeway or arterial street vehicles, bicycles, and on foot—connect with bus transit or light rail in addition to projects that enhanced transit features improving rider experience. Refer to Appendix D for the status of Prop 400 transit projects including those completed and in-progress. Moreover, Chapters 3 and 4 of this report provide outcome information related to mobility and safety—in part affected by Prop 400 investments in transit projects.

EXHIBIT 6. BUS TRANSIT CAPITAL PROJECT ACCOMPLISHMENTS, AS OF JUNE 30, 2020



Source: 2003 Regional Transportation Plan; 2004 Prop 400 Ballot; 2005 Annual Report on the Status of the Implementation of Proposition 400; 2020 Annual Report on the Status of the Implementation of Proposition 400; Prop 400 Project White Paper; and Capital Facilities spreadsheet.




¹³ Improved bus stops included both new pullouts and shelters.

However, the 2008 Great Recession reduced funding available for these transit projects and Valley Metro had to revise plans such as deferring four park-and-ride projects—nearly a third of the park-and-ride lot projects—and 75 percent, or 12, of the transit centers projects initially envisioned until after the sunset of Prop 400. Valley Metro also deferred nearly 65 percent of the initially planned 1,200 new bus stops—only completing 424 of the bus stops planned. Yet, at the same time, transit demands changed and ridership declined as discussed in more detail in Chapter 3 of this report. With less people riding transit vehicles affecting the level of service needed, a corresponding drop would logically occur on the number of bus stops, park-and-ride lots, or transit centers required. While Valley Metro deferred several planned park-and-rides and transit centers beyond Prop 400, it was still strategizing on how to potentially fund and include the projects in the next iteration of the RTP later in 2021 or early in 2022 as they believed there was value with some of these facilities for improved rider experience and increased mobility.

Fleet Vehicle Purchases Completed and Planned will Fall Short of Prop 400 Estimates, Although Reductions were Reasonable Given Funding and Demand

To increase transit service as envisioned by Prop 400 and reliability of transit vehicles, Prop 400 called for the acquisition of 2,100 bus vehicles and 1,000 dial-a-ride vehicles—as well as a tripling of Valley Metro’s vanpool fleet, although no specific numbers were planned.¹⁴ As of June 30, 2020, Valley Metro purchased less than half of the envisioned 3,100 fleet vehicles as shown in Exhibit 7.¹⁵ Like the originally planned capital projects, Valley Metro revised its planned fleet purchases to reflect reduced funding available from Prop 400.

EXHIBIT 7. BUS TRANSIT FLEET PURCHASE STATUS, AS OF JUNE 30, 2020

	 Dial-a-Ride	 Bus	 Vanpool
Prop 400 Goal 2005	1,000	2,100	"Tripling" but no specific amount identified.
As of June 30, 2020	299	834	807
Future Prop 400 Funded	297	570	673
Total Fleet Improvements by End of Prop 400	596	1,404	1,480

Source: 2003 Regional Transportation Plan; 2004 Prop 400 Ballot; 2005 Annual Report on the Status of the Implementation of Proposition 400; and 2020 Annual Report on the Status of the Implementation of Proposition 400.

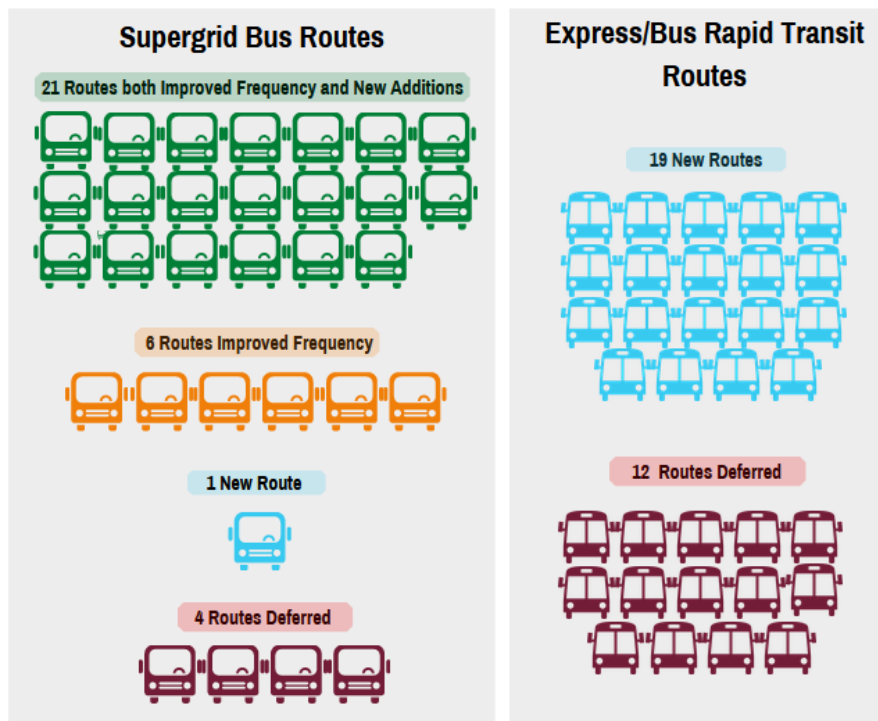
¹⁴ Dial-a-ride vehicles complement the existing transit system by providing transportation to people who are unable to utilize local bus service due to a disability. Vanpool vehicles carry a group of six to 15 people who commute to work together with riders sharing the cost of operating the van through a monthly fare.

¹⁵ During our audit period between July 1, 2015 and June 30, 2020, Valley Metro used Prop 400 funding to purchase 50 dial-a-ride vehicles, 150 buses, and 200 vanpool vehicles.

Many Bus Routes were Added and Service Frequency Enhanced; Yet, Several Routes Planned were Deferred Beyond Prop 400

In 2004, Prop 400 planned funding for new routes and enhanced bus services with improvements to express/bus rapid transit service.¹⁶ While the proposition identified specific routes planned, funding deficits from the 2008 Great Recession and changing bus service demographics and ride demand patterns required service routes to remain fluid. Despite these challenges, Valley Metro enhanced service and added many routes as shown in Exhibit 8—although Valley Metro had to defer several routes outside the Prop 400 timeframe.

EXHIBIT 8. BUS TRANSIT ROUTE SERVICE IMPROVEMENT STATUS, AS OF JUNE 30, 2020



Source: 2003 Regional Transportation Plan; 2004 Prop 400 Ballot; 2005 Annual Report on the Status of the Implementation of Proposition 400; 2020 Annual Report on the Status of the Implementation of Proposition 400; and Prop 400 Project White Paper.

Specifically, Prop 400 intended to fund improvements to 32 supergrid bus routes and 31 express/bus rapid transit routes. Of the 32 supergrid planned improvements, 28 routes, or approximately 88 percent, were completed with new service, enhanced service frequency, or both. Only four route improvements were deferred beyond the Prop 400 sunset. Of the 31 express/bus rapid transit route improvements planned, 19 routes were implemented—although, due to a lack of ridership, four of those routes were eliminated and

¹⁶ Services planned included supergrid routes and express/bus rapid transit routes. Supergrid bus routes are those that exist on the regional grid system, operating on major roads for a higher level of operational efficiency. Through additional regional funding, these key routes perform at a consistent level of service across all local jurisdictions. Express/bus-rapid transit (BRT) can be either be arterial BRT or freeway BRT. Arterial BRT routes operate as overlays on corridors served by local buses, but provide higher-speed services by operating with limited stops, signal priority systems, or other enhancements that operate during peak and off-peak periods. Freeway BRT routes use high occupancy vehicle (HOV) facilities to connect park-and-ride lots with major activity centers, such as downtown core areas. They also provide suburb-to-central city connections using the regional freeway system with limited stops.

another four routes were combined with other routes. Additionally, because of declining ridership and funding constraints, Valley Metro deferred 12 improvements, or approximately 39 percent, of the planned express/bus rapid transit improvements.

To make service route changes, Valley Metro followed a formal service planning process to actively consider and adjust service using performance data to monitor underperforming routes or routes reaching capacity to make revisions, increase or decrease service levels, or expand or eliminate service as warranted and aligned with leading practices. For instance, while Valley Metro added two rural routes early in the Prop 400 lifecycle, it subsequently eliminated one of them due to low productivity identified through its service planning efforts. Refer to Chapter 3 of this report for additional discussion on Valley Metro's service planning. Prior audits tested this planning process and found it to be reasonable and properly employed; thus, we considered route deferrals or eliminations following this process to be reasonable.

Rail Capital Projects Mostly Delivered as Promised and Complied with Federal Funding Criteria

After the passage of Prop 400 with its initial plans calling for 27.7 miles of new light rail track, Valley Metro planned additional miles of track extension for its light rail system. As of June 30, 2020, there were 41.4 total planned miles expected to be funded by Prop 400 and the City of Phoenix—one of the three jurisdictions in Maricopa County contributing funding to the light rail system—as shown in Appendix D.¹⁷

We found Valley Metro completed or started construction on more than 43 percent of the planned miles—or approximately 17.9 miles—expected to be complete by 2025. As shown in Exhibit 9, Valley Metro finished 6.3 miles of rail extension with another 11.6 miles in construction—although it did not complete any projects during our period under review.

Further, the City of Phoenix subsequently deferred the remaining 23.5 miles until after the Prop 400 timeframe due to the unavailability of city funds for rail projects at the time and new city priorities focused on different projects under the T2050 program. Specifically, in 2015, the City of Phoenix created the T2050 program guided by an extensive transportation plan investing a new dedicated city tax on bus service, light rail construction, and street improvement projects.

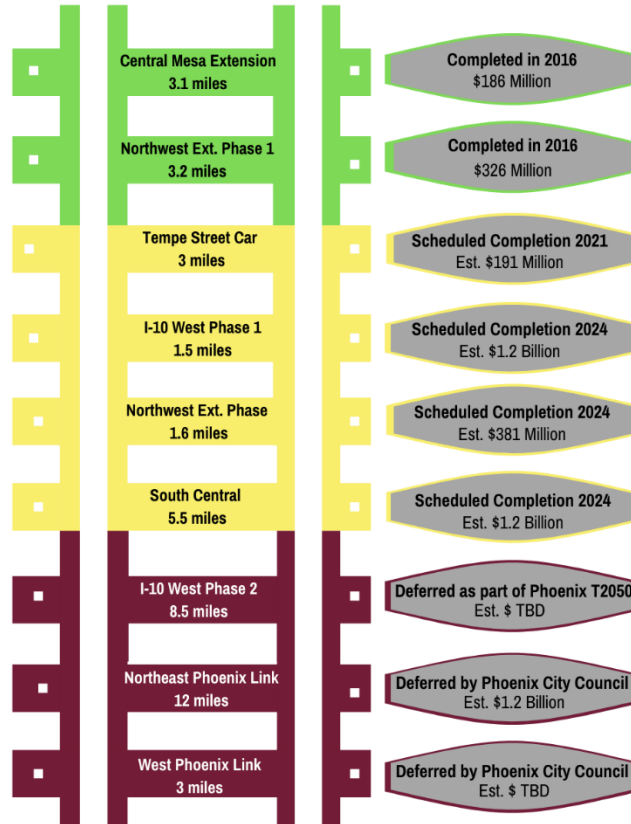
Moreover, for the Prop 400 projects, Valley Metro leveraged federal funds for these light rail projects and complied with federal provisions to document how individual projects will assist with the region's mobility, further environmental goals, and be cost-efficient.

¹⁷ The cities of Mesa, Phoenix, and Tempe are the contributing local jurisdictions to the Valley Metro light rail system.

EXHIBIT 9. LIGHT RAIL CAPITAL PROJECT STATUS, AS OF JUNE 30, 2020



Light Rail Project Status



Source: 2003 Regional Transportation Plan and 2020 Annual Report on the Status of the Implementation of Proposition 400.

Notes: City of Phoenix T2050, effective January 2016, is a voter-approved tax funding bus service, light rail, and street improvements.

"I-10 West Phase 1" project name changed to "Capital Extension (I-10West Phase 1)."

Chapter 2: Regional Congestion and Mobility Made Some Improvements Since 2015

Since 2015, population in the Maricopa Association of Government's (MAG) metropolitan area grew eight percent from 4.17 million people to 4.49 million people by 2019. With that growth, mobility can be compromised and travelers can experience longer travel times and more congestion. Higher traffic volumes can also mean travelers face lower average speeds and longer delays.¹⁸ Yet, there is no one single metric to comprehensively capture and benchmark a transportation network's mobility and performance when congested—rather, performance measurement depends on multiple indicators that should be considered, studied, and used to inform future transportation strategies and projects.¹⁹

To quantify the potential effect of Proposition 400 (Prop 400) regional transportation improvements in understandable terms to a broad audience, we focused on systemwide speed, delay, and travel time for purposes of this audit. When looking at performance in the Maricopa County region since calendar year 2015, travelers generally realized congestion relief with increased speed and less delay. The areas seeing benefits often coincided with areas where Prop 400 projects were completed. Depending on location, some people may have experienced longer average travel times on certain freeways. The data used for comparison was available at different geographical regions (county versus federal metropolitan statistical area) and time periods (calendar versus fiscal year). We used the most relevant geographical area and aligned data with our July 1, 2015 through June 30, 2020 audit period where possible.²⁰

While MAG and its Regional Transportation Plan (RTP) Partners can have some influence over performance outcomes with how they design and construct a project, incorporate multimodal strategies to educate and inform travelers, or operate a service, there are many external factors outside their control that affect mobility and congestion such as driver behavior, economic events reducing revenues, and changing technology.

Systemwide Average Speeds Generally Increased on Freeways, Although They Were Slightly Slower in the Evening

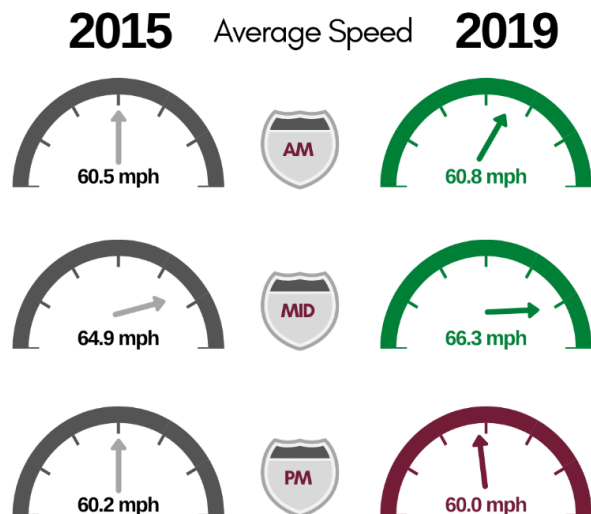
As a traffic-based measure of system performance, speed is one consideration of mobility. We found systemwide freeway speeds improved in the MAG region during the midday, while the two peak periods had little change over the years we reviewed. Specifically, between calendar years 2015 and 2019 (the most recent data available), morning speed rose slightly and midday speed showed modest increases; however, in the evening, there was a slight decline in average speed as shown in Exhibit 10.

¹⁸ Mobility and congestion can be measured in a multitude of ways based on different geographical areas, time of day, and other factors—thus, there is no one single measure used to assess performance. Performance fluctuates depending on the period assessed and definitive causes of outcomes can be difficult to determine, time-consuming to quantify, and require extensive analysis.

¹⁹ As part of MAG's regional transportation planning efforts and ADOT's statewide planning efforts, the entities track, consider, and report on a wide-range of mobility and congestion performance metrics both at the freeway segment or individual arterial street level.

²⁰ Our audit focused mostly on available systemwide and averaged data using a variety of regional, state, and federal data—as discussed in our detailed audit methodology in Appendix A—using the most recent five-year period where data was available.

EXHIBIT 10. MAG REGIONWIDE AVERAGE FREEWAY SPEEDS BY TIME OF DAY



Source: Third-party speed data from NAVTEQ and HERE on MAG MAGnitude Dashboard website, downloaded in January 2021.

Note: AM refers to morning data (6 a.m. to 9 a.m.); Mid refers to midday data (9 a.m. to 3 p.m.); PM refers to evening data (3 p.m. to 7 p.m.).

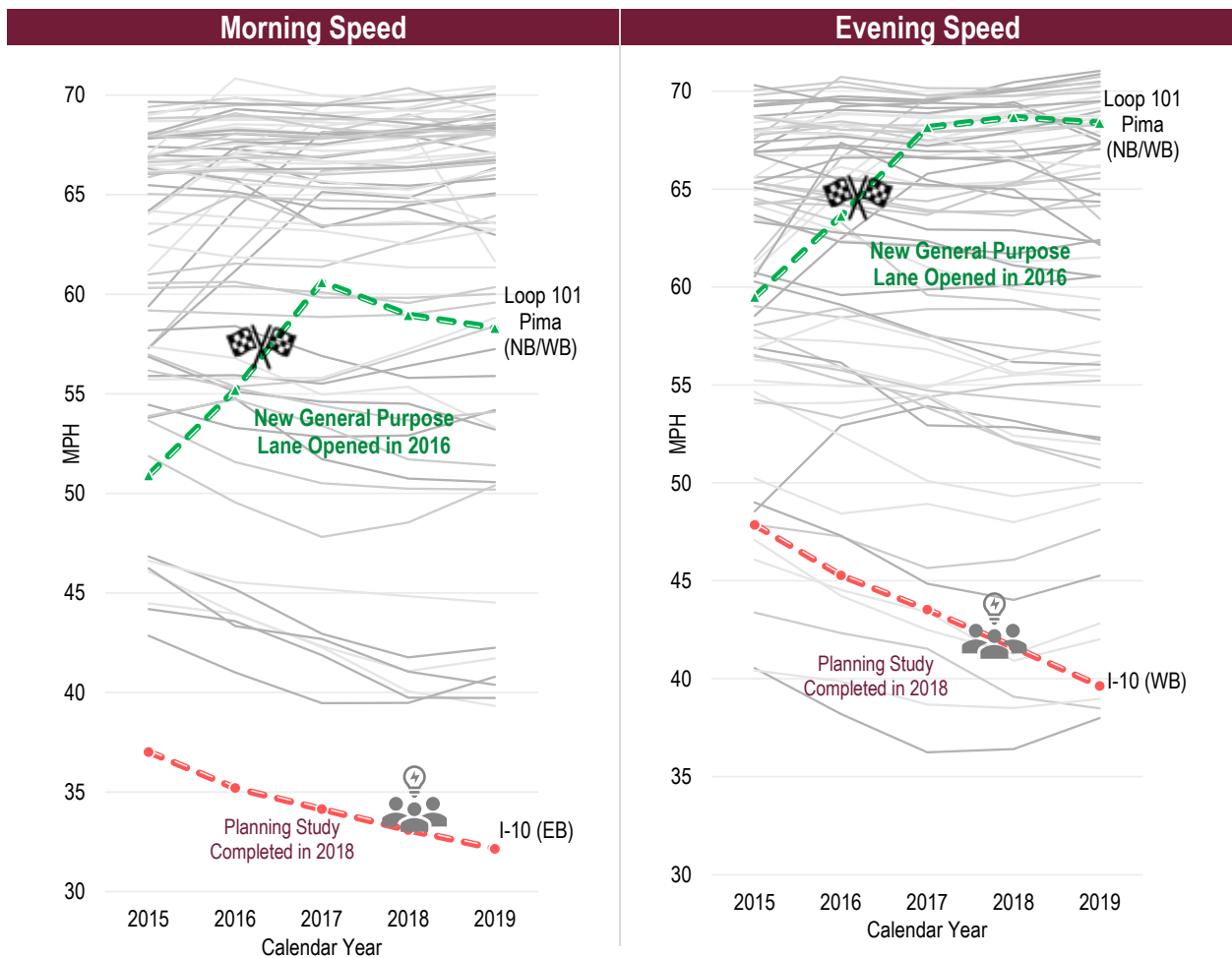
In Exhibit 11, we present average speeds for 70 individual freeway segments in the MAG region for the morning peak period and evening peak period captured between calendar years 2015 and 2019. Each freeway segment is depicted as an individual gray line in the exhibit. While individual freeway segment performance varied, most freeway segments experienced average speeds greater than 50 miles per hour over the period during both the morning and evening peak periods as indicated by the large number of freeway segments (gray lines) clustered at the higher speed ranges in Exhibit 11. We also identified the individual freeway segment seeing the largest increase in average speed between 2015 and 2019—highlighted in green at the top of the exhibit—and the individual freeway segment that experienced the greatest decrease in average speed highlighted in red near the bottom of the exhibit.

For the segment seeing the largest increase in speed in both the morning and evening—Loop 101 between Loop 202 Red Mountain and Pima Road / 90th Street—the Arizona Department of Transportation (ADOT) completed an original Prop 400 project on that segment in 2016 with the addition of a general-purpose lane that increased morning average speed from 51 miles per hour in calendar year 2015 to 58 miles per hour in calendar year 2019. Similarly, evening average speed increased from 60 miles per hour in calendar year 2015 to 68 miles per hour in calendar year 2019 on that freeway segment.

However, some of the slowest speeds were experienced on the I-10 between Loop 101 Agua Fria and I-17 eastbound in the morning averaging 32 miles per hour by calendar year 2019 and westbound in the evening averaging 40 miles per hour—corresponding to daily commute traffic into and out of downtown Phoenix. This freeway section also experienced the biggest decline in speed between calendar years 2015 and 2019, and likely was affected by construction on the Loop 202 South Mountain Freeway that ADOT completed in 2019. Both MAG and ADOT were aware of this bottleneck area and were working on projects and solutions to address levels of congestion. Specifically, while the original general purpose lane improvement to this stretch of the I-10 between Loop 101 Agua Fria and I-17 envisioned by Prop 400 was deferred outside the Prop 400 funding horizon, MAG and its RTP Partners were working on addressing

congestion through solutions such as better traffic signal timing on nearby arterials and improved interchanges connecting to the Loop 101 Agua Fria and I-17 freeways. Properly timed signals can assist with the more seamless flow of travelers exiting a freeway onto the local arterial street network potentially reducing backups on the freeway, and improved designs of interchanges can prevent backups by providing longer lane merge options and smoother transitions to other freeways or streets. In addition, MAG finalized a transportation study of this freeway segment in 2018 offering other options for this particularly busy freeway segment, and ADOT received federal funding to develop traffic solutions as part of its Loop 101 mobility project.²¹

EXHIBIT 11. FREEWAY AVERAGE SPEED FOR SEGMENTS IN THE MORNING PEAK AND EVENING PEAK TRAVEL



Source: Third-party speed data from NAVTEQ and HERE on MAG MAGnitude Dashboard website, downloaded in January 2021.

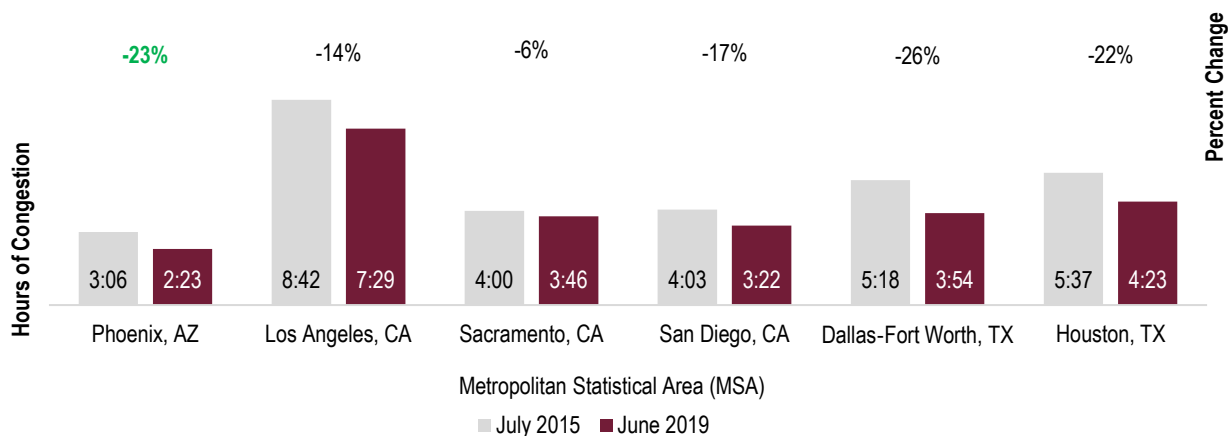
Note: AM refers to morning data (6 a.m. to 9 a.m.) and PM refers to evening data (3 p.m. to 7 p.m.). Each gray line in graphic represents a freeway segment for which performance measurement data is captured by MAG.

²¹ In 2018, MAG finalized its I-10 Integrated Corridor Management Planning Study. Solutions and options included detour plans for moving traffic off the freeway onto arterials, as well as the use of technology to manage traffic during congestion.

Drivers Experienced Generally Less Delay on Freeways and Arterial Streets

Congested freeways and arterial streets causing delays can be influenced by many factors including weather, traffic incidents, construction, or physical roadway design or capacity. When looking at systemwide freeway congestion in the Phoenix metropolitan area, we found hours of congestion decreased 23 percent between the reported July 2015 period and June 2019 period as shown in Exhibit 12. Specifically, freeway congestion decreased from 3 hours and 6 minutes in 2015 down to 2 hours and 23 minutes by 2019 per day—meaning drivers spent less time in congested conditions in June of 2019 as compared to July 2015 to help improve mobility on the freeways.²² When compared to other metropolitan regions we reviewed as shown in Exhibit 12, the Phoenix area experienced one of the largest reductions in congestion between periods measured in July 2015 and in June 2019 and had the lowest overall freeway congested hours.

EXHIBIT 12. PHOENIX AREA HOURS OF FREEWAY CONGESTION COMPARED TO OTHERS, JULY 2015 VS. JUNE 2019



Source: Operations Performance Measurement data from the Federal Highway Administration's Office of Operations website.

While freeway congestion decreased, arterial hours of congestion remained relatively flat. Of the approximate 4,600 arterial miles in Maricopa County, less than half of the miles, or 44 percent, were considered congested in 2019 with little change in congested miles during much of the day and showing a less than one percent decline since 2015.²³ Thus, arterial street drivers experienced the same number of hours stuck on congested roadways with high volumes of traffic and low speeds. However, during the evening peak period, arterial congested miles slightly dropped to only 41.7 percent of miles congested by 2019.

Travel Time Worsened between 2015 and 2019 Reducing Mobility

While speeds increased during mid-day and delays decreased in the MAG region, it generally took longer to travel on the freeway, on average, during peak periods. In fact, all peak travel periods showed some

²² Federal Highway Administration (FHWA) defines as an hour of congestion when speeds during peak periods are less than approximately 75 percent of speeds during off-peak periods. In simple terms, congestion occurs when there is a high volume of traffic within a confined area that is often characterized by low average speed.

²³ MAG defines a congested mile as when the average measured speed is less than 75 percent of the posted speed limit.

slowdown since calendar year 2015 where it took longer to travel over the same stretch of freeway, but the greatest decline was during the evening hours between 3 p.m. and 7 p.m. Travel time is often measured by an index that compares how long a trip takes in a peak period when traffic is typically more congested against “free flow” conditions where travelers are driving the same segment during off-peak hours. For example, Phoenix had an average travel time index of 1.21 meaning that a typical 30-minute trip took approximately 36 minutes during a peak period—or 21 percent more time.²⁴

Looking across all freeways, certain freeway segments showed improved travel time, while other segments experienced slowdowns between calendar years 2015 and 2019. However, there were four primary freeway segments that were consistently identified as either the most improved or the most slowed during the morning and evening peak periods. For example, the I-10 freeway segment that had the most slowdown in speed also registered the longest travel times.²⁵ This segment normally had a travel time of eight minutes during off peak hours, but eastbound traffic into Phoenix during the morning peak period took an average travel time of 15 minutes in calendar year 2015 and increased to 17 minutes in calendar year 2019—a 13 percent increase. As expected, this I-10 segment also had the most slowdown in the evening peak period that took 12 minutes to travel in calendar year 2015 but took 14 minutes in 2019. As previously mentioned, MAG and ADOT were aware of these bottlenecks and have Prop 400 projects such as freeway interchange improvements planned in the area that will help with traffic flow. In addition, according to MAG and ADOT the new Loop 202 South Mountain freeway, that recently opened in calendar year 2019 and connects with this stretch of the I-10, was also expected to help relieve congestion.

Freeway sections that saw the most improved travel times were the Loop 101 Pima, Loop 202 Red Mountain, and Loop 303—all areas which had previous Prop 400 projects implemented on those freeway sections. Specifically, between 2013 and 2016, several Prop 400 funded traffic interchanges along with new general-purpose lanes opened to traffic on the Loop 303 between US 60 / Grand Avenue and I-10. Similarly, on the Loop 101 Pima, a general-purpose lane opened in 2016 and on the Loop 202 Red Mountain, general-purpose and high-occupancy vehicles lanes opened between 2010 and 2017.

Compared to Other Metropolitan Areas, Phoenix Travel Times Were Better

Travel time comparison data was not available at the county level—rather, it was consistently tracked and measured using metropolitan statistical areas defined at the federal level.²⁶ For the entire Phoenix area, travel time was relatively flat with an index of 1.21 between the reported July 2015 period and the reported June 2019 period as shown in Exhibit 13. As previously mentioned, Phoenix’s average travel time index of 1.21 meant that a typical 30-minute trip took approximately 36 minutes to travel the same freeway segment

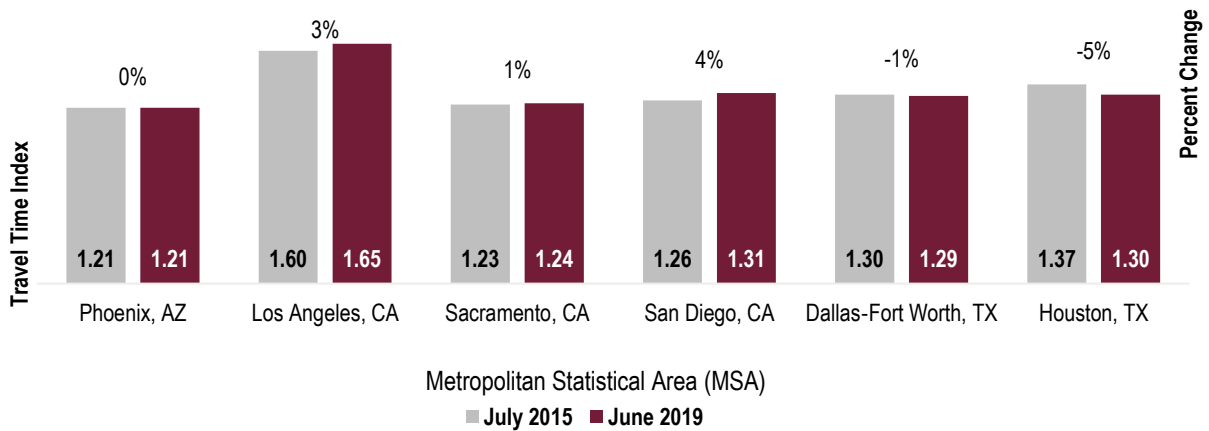
²⁴ Travel time is typically measured using an “index” that calculates a ratio of how long a trip takes in a peak period compared to free-flow conditions—free-flow measures actual speeds driven during non-peak periods of between 9 a.m. and 4 p.m. and between 7 p.m. and 10 p.m. that could be faster than the posted speed limit or slower than the posted speed limit if there was congestion due to an accident, construction, or weather. Basically, the index considers and measures unexpected delay looking at how much longer, on average, travel takes during periods of congestion versus when there is only light traffic.

²⁵ The segment with the most slowdown in speed was the I-10 between Loop 101 Pima and I-17, west of downtown Phoenix.

²⁶ For comparison purposes, reliable data existed in the Federal Highway Administration’s Urban Congestion Report by metropolitan statistical area which is defined by the U. S Office of Management and Budget to generally comprise one county, or a group of contiguous counties, that contain at least one city of 50,000 inhabitants or more. For our audit purposes, the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area (Phoenix MSA) was used and includes Maricopa County and Pinal County.

during a peak period. When we compared the Phoenix metropolitan statistical area to other areas, we found that the Phoenix area had the lowest travel times among the other five comparison areas with Phoenix travelers realizing less delay.²⁷ Other areas travel times, using a hypothetical 30-minute trip, took as low as 7 minutes more in the Sacramento metropolitan area to as high as more than 19 extra minutes in the Los Angeles area.

EXHIBIT 13 . PHOENIX TRAVEL TIME COMPARED TO OTHER AREAS REVIEWED, JULY 2015 VS. JUNE 2019



Source: Operations Performance Measurement data from the Federal Highway Administration's Office of Operations website.

In Addition to Prop 400 Projects, RTP Partners Developed Multimodal Strategies to Address Mobility and Congestion

Transportation planning agencies like MAG often use a variety of approaches to address mobility issues and mitigate congestion. Some involved capacity-building projects through new roads or additional freeway lanes, while other strategies involved providing access to alternative modes of travel through public transit in addition to technology to manage traveler behavior. While Prop 400 capitalized on both of those approaches, MAG and its RTP Partners were in process of deploying other multimodal technology strategies to serve the traveler and reduce congestion through solutions within existing freeway, arterial streets, and transit system capacity. While funded mostly by state and federal sources, there was less than five percent of Prop 400 monies involved with these strategies.

For instance, MAG developed and started deploying its Transportation Systems Management and Operations Plan to help manage congestion through collaborative efforts with ADOT and local jurisdictions. Projects involved:

- ✓ Cameras to monitor traffic and respond to roadway incidents;
- ✓ Message signs to inform travelers of changing road conditions such as a dust-warning system;
- ✓ Signal timing on arterial streets and freeway off ramps for efficient vehicle movement;

²⁷ Other areas used for comparison included the metropolitan statistical areas that aligned with Dallas County, Texas; Harris County, Texas; Los Angeles County, California; Sacramento County, California; and San Diego County, California. We selected these areas to be consistent with other comparable areas used in the report, align with areas frequently used by MAG for comparison, and have data available for analysis.

- ✓ Smart meters on freeways such as those installed on State Route-51 and Interstate-17 to actively control traffic flow; and,
- ✓ Operational activities using technology to detect and monitor wrong way driving events on the freeway and use a traffic management center to send emergency personnel in response.

Other related technology-driven projects and efforts were in place in the region. This included ADOT's 61-mile mobility project on State Route 101 (Loop 101) that will use technology and data to provide freeway and arterial congestion management and improved safety, information to assist traveler decision-making, and enhanced public transit service and accessibility. While there were no dedicated Prop 400 funds currently allocated to these efforts, this project will benefit travel time and delay in the region. MAG was also in process of using techniques that consider and improve the traffic flow and connections between freeway, arterial, and transit modes. For instance, freeway crashes cause traffic to divert onto arterial streets which can delay and slow down roadway drivers and the efficiency of transit vehicles. To better manage congestion and improve traffic flow on freeways and arterials, MAG planned improvements to arterial traffic signal timing to reduce backup of vehicles exiting the freeway on Interstate 10 west of downtown Phoenix.

Finally, Valley Metro was involved with and worked collaboratively with ADOT and MAG as warranted to provide transit options to improve congestion and mobility as well as worked with its local jurisdictions on new strategies to improve mobility. For instance, Valley Metro supported the City of Chandler studying the use of technology—such as a cell phone app—to request an immediate pick up anywhere when needed using existing bus service or another type of vehicle—for providing a more seamless commute.

Combined with freeway and arterial street capital construction projects and transit operations like those funded by Prop 400, these technology-based and multimodal solutions assist with mobility and congestion goals.

Chapter 3: Transit Generally Performed Efficiently to Help Relieve Congestion and Enhance Mobility

Transportation networks should have a variety of options for travelers to use and consider when moving from point to point including public transit. While the freeway and arterial streets provide the critical infrastructure, bus and rail transit can transport more people through an area efficiently and ultimately help reduce congestion. To position transit as a viable choice for riders and relieve pressure off the transportation network, it must be operationally efficient, of reliable quality in terms of on-time performance and few breakdowns, and provide a positive rider experience.

In Maricopa County, Proposition 400 (Prop 400) funded new bus routes, expanded bus service, purchases of transit vehicles, and extended light rail lines to increase mobility and travel options as well as more transit stations and bus stops to enhance rider satisfaction and increase the number of riders as described in Chapter 1 of this report. These efforts put in place by Valley Metro likely impacted the solid transit performance results reported between fiscal years 2015 and 2019.²⁸

Specifically, we focused on systemwide performance metrics for both bus transit and light rail transit—with some of our analysis specific to bus operations only or light rail operations individually, while other analysis focused more on global transit performance since some riders use both bus and light rail to travel to a particular destination. Overall, we found both Valley Metro systemwide bus transit and light rail services to be more efficient than other entities reviewed, reliable, and satisfactory to riders for the metrics we analyzed—although results did show that ridership declined.²⁹ Ridership is largely cited as tied to the price of gasoline in addition to economic factors external to Valley Metro’s control.

Transit Ridership Slowly Decreased Over Time Even as Additional Services were Offered through Prop 400

Attracting ridership on transit vehicles is not only critical for reducing miles traveled using private vehicles, but is also important for the general efficiency of the transit system and maximizing transit investments.

With Prop 400 funds, Valley Metro increased service by purchasing more bus transit vehicles to put on the road operating at greater frequency along with additional rail trains with the expansion of the light rail system. Yet, between fiscal years 2015 and 2019, total bus and rail ridership decreased by a combined 26 percent—and then dramatically dropped another 18 percent in fiscal year 2020 due to COVID-19 concerns and more people no longer commuting to a worksite. The loss of bus riders was the biggest driver of the overall ridership decline with bus ridership falling from approximately 56.5 million riders in fiscal year 2015 to approximately 39.7 million riders by fiscal year 2020—an overall decrease of nearly 30 percent. Nationally, transit ridership experienced similar declining ridership trends, both before and after the

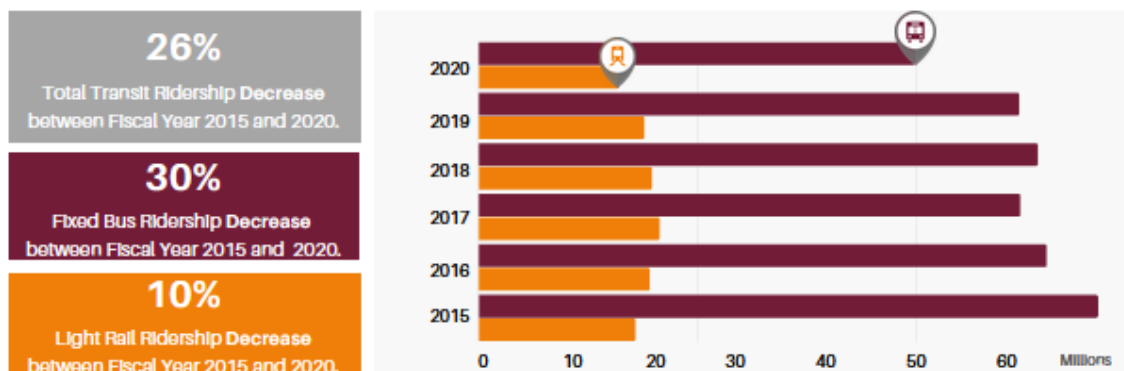
²⁸ Valley Metro Regional Public Transportation Authority operates the bus transit system and Valley Metro Rail, Inc. operates the light rail transit system. For purposes of this audit, we refer to the entities together as Valley Metro.

²⁹ Valley Metro tracked and reported on a wide variety of performance measures at the system level, by bus route, and by rail line. For audit purposes, we focused on systemwide performance for ridership, standard operational metrics, on-time service, vehicle breakdowns, availability, and rider satisfaction.

pandemic, largely cited as tied to the price of gasoline in addition to economic factors and changes in technology external to Valley Metro's control.

As shown in Exhibit 14, light rail ridership also decreased—by 10 percent between fiscal years 2015 and 2020. While the pandemic in 2020 negatively affected all transit ridership, light rail ridership had been slightly declining since fiscal year 2017. However, the Maricopa County's transit ridership was not impacted as much as other regions by the pandemic. According to the American Public Transportation Association, national bus and rail transit ridership decreased approximately 79 percent, on average, from calendar year 2019 to 2020. For comparison, during the first three months of the pandemic, Valley Metro's ridership decreased about 57 percent during that same time—possibly explained by the higher number of Valley Metro riders using transit to travel to essential service jobs in government, transportation sectors, and healthcare in Maricopa County. Yet, due to the continuation of the COVID-19 pandemic and uncertainty surrounding permanent impact on remote work behaviors, transit ridership may continue to face challenges throughout the remainder of the Prop 400 period.

EXHIBIT 14. FIXED-ROUTE BUS AND LIGHT RAIL RIDERSHIP, FISCAL YEARS 2015 THROUGH 2020



Source: Valley Metro Annual Transit Performance Reports.

Note: Fixed-Route refers to bus services provided on a repetitive, fixed schedule basis along a specific route.

To increase ridership, Valley Metro employed several strategies—some in response to customer feedback gathered in ridership surveys—including:

- Established codes of conduct and policies to discourage inappropriate or disruptive behavior.
- Increased outreach through new advertisements as part of a marketing strategy to inform neighborhoods of service changes and new reachable destinations using transit.
- Enhanced cleaning and sanitizing protocols, barriers, addressing capacity issues, and physical protections.
- Implemented ride-for-free programs and transit pass giveaways.

Bus Transit Was More Efficient than Other Entities and Reliable

Due to its subsidized nature, bus transit must be efficient in terms of revenues generated and costs minimized as well as must be reliable and satisfactory to be a viable and sustainable transportation option


for travelers. For Valley Metro bus transit, we found it was more efficient than others, reliable, and breakdowns declined—although more rider complaints were reported.

Efficiency Affected by Ridership Drop, Although the Region Outperformed Others

Although Valley Metro used Prop 400 funds to increase bus service, certain operational performance metrics between fiscal year 2015 and fiscal year 2019 were negatively impacted by ridership fluctuations. For instance, despite increased service with 22 percent more vehicle revenue miles, total boardings generally decreased—meaning there were fewer passengers on buses.³⁰ With operating costs over the period being relatively flat, fewer transit riders resulted in higher per-passenger costs and subsidies. Thus, this trend points to ridership issues, rather than inefficiencies associated with new services that increased revenue miles.³¹

Moreover, when compared to several other entities we reviewed, Valley Metro performed better than peer averages operating with lower costs per boarding at \$4.96 compared to the peer average of \$5.47 and revenue mile of service on average at \$7.89 compared to the peer average of \$9.52—although less of its operational transit costs were recovered through fare revenue as shown in Exhibit 15.³²

EXHIBIT 15. BUS TRANSIT PERFORMANCE COMPARED TO PEERS, FISCAL YEARS 2015 THROUGH 2019



	Valley Metro FY 2015	Valley Metro FY 2019	Valley Metro Average	Peer Average	Valley Metro % Change FY 2015 to FY 2019	Peer % Change FY2015 to FY 2019
Operating Cost per Revenue Mile	\$7.90	\$8.06	\$7.89	\$9.52	2%	14%
Boardings per Revenue Mile	1.94	1.39	1.62	1.90	-28%	-13%
Farebox Recovery	20.5%	12.8%	16%	19%	-38%	-23%
Operating Cost per Boarding	\$4.07	\$5.80	\$4.96	\$5.47	43%	28%
Subsidy per Boarding	\$3.24	\$5.80	\$4.33	\$4.55	79%	34%

Source: Valley Metro Annual Transit Performance Reports and Federal Transit Administration's National Transit Database.

Notes: Boarding is a count of one passenger on the public transit vehicle. Revenue mile is a mile traveled when the vehicle is available to the public and there is an expectation of carrying passengers. Farebox recovery refers to the portion of a trip's operating expense covered by passenger fare revenue. Operating Cost per Revenue Mile = Operating Expenses/Annual Revenue Miles; Average Boardings per Revenue Mile = Total Boardings/Annual Revenue Miles; Farebox Recovery Ratio = Fare Revenue/Operating Expenses; Operating Cost Per Boarding = Operating Expenses/Total Boardings; Subsidy per Boarding = (Operating Expenses net Fare Revenue)/Total Boardings.

³⁰ "Boardings" is the term used in industry to count a passenger of a public transit system. A subsidy per boarding would be the funding needed to close the gap between passenger fare money paid and the operating cost of service.

³¹ Revenue mile is the fare or other revenue received over a mile of service when a transit vehicle is available to the public and there is an expectation of carrying passengers.

³² Other entities reviewed include Dallas Area Rapid Transit, Denver Regional Transportation District, Houston METRO, Portland TriMet, Salt Lake City's Utah Transit Authority and San Diego's Metropolitan Transit System. These entities were selected as similar moderately-sized metropolitan areas in the Western United States and were used by Valley Metro to monitor performance.

Bus Service was Reliable and On-Time

We measured the reliability of transit service by assessing the on-time performance of vehicles picking up riders at its stated times on average, systemwide.

For the Valley Metro service area, bus service was generally reliable although average on-time performance slightly decreased from approximately 93 percent in fiscal year 2015 to 89 percent on-time by fiscal year 2019. Valley Metro tracked and controlled on-time performance through its service operator contracts setting performance incentive goals in addition to penalties for not meeting reliability targets.

Because Valley Metro used an arrival-based system to measure bus “on-time” performance prior to fiscal year 2020 and other entities typically used a departure-based methodology to capture on-time statistics, Valley Metro’s performance looked noticeably better than its peers. For instance, on-time performance realized by the other six entities we reviewed ranged from 75 percent to 90 percent. With its recent shift to using departure time like other transit agencies to measure reliability, Valley Metro expects its bus on-time performance may drop in the future.

In addition to on-time performance, Valley Metro’s largest bus operator, First Transit, began measuring percentage of trips completed in fiscal year 2017. On average, between fiscal years 2017 and 2020, the operator completed 99.95 percent of the scheduled trips—a strong performance and demonstration of reliability. Moreover, in a June 2018 ridership study Valley Metro conducted, approximately 62 percent of riders were satisfied with bus arrival and departure times, and there were no concerns about service reliability.³³

Fewer Bus Breakdowns Since 2015 Improved Reliability

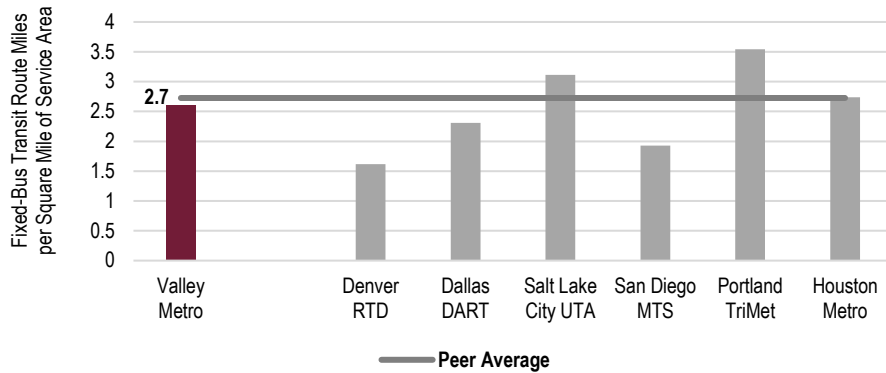
We also looked at the reliability of bus service in terms of mechanical failures. Over the period of our review, the rate of bus breakdowns greatly improved to help enhance its reliability. In fiscal year 2017, bus transit operators reported an average of 15 mechanical failures per 100,000 miles; but breakdowns decreased by almost half to just under 8 mechanical failures per 100,000 miles by fiscal year 2019. Prop 400 spending on more than 60 new bus vehicles directly impacted the improved performance as newer vehicles were expected to have fewer breakdowns. Valley Metro also used non-Prop 400 funds to implement more frequent and comprehensive preventive maintenance services increasing the useful life of bus vehicles in addition to more accurate tracking systems leading to fewer vehicle breakdowns.

Bus Service Coverage Generally Aligned with Other Entities Reviewed

One measure of availability of transit service coverage compares the number of route miles provided against the square miles of the potential service area. When compared to peers for fiscal year 2019, Valley Metro’s bus service coverage generally aligned with peers reviewed—some comparable entities had more coverage in their service area, while others had less coverage. As shown in Exhibit 16, Valley Metro operated 2.6 fixed-route bus transit miles per square mile of service area which was aligned with peer average of 2.7 fixed route miles per square mile of service area.

³³ While Valley Metro conducted a rider survey in June 2020, the focus was more heavily focused on safety, security, and perceptions concerning the COVID-19 pandemic on riders.

EXHIBIT 16. COMPARISON OF BUS TRANSIT ROUTE MILES PER SQUARE MILE OF SERVICE AREA WITH PEERS, FISCAL YEAR 2019



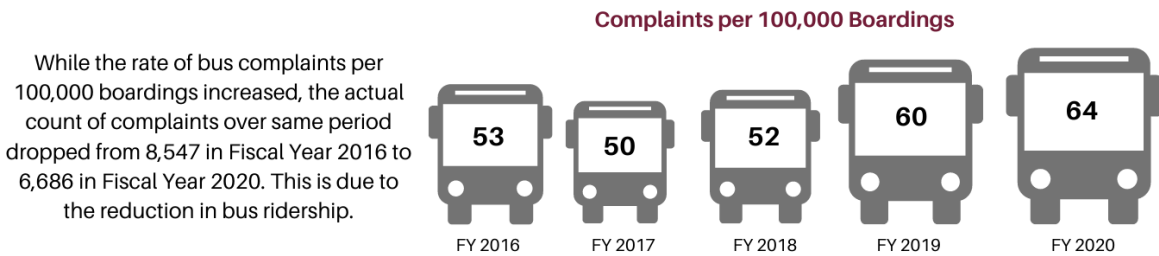
Source: Federal Transit Administration’s National Transit Database.

Note: Denver Regional Transit District (RTD), Dallas Area Rapid Transit (DART), Salt Lake City Utah Transit Authority (UTA), San Diego Metropolitan Transit System (MTS), Tri-County Metropolitan Transportation District of Oregon (TriMet) based in Portland, Metropolitan Transit Authority of Harris County (METRO) based in Houston.

Bus Complaints Filed Increased Since Fiscal Year 2016

One indicator of rider satisfaction relates to complaints. As seen in Exhibit 17, bus transit complaints steadily increased since fiscal year 2017 to an average of 64 complaints per 100,000 boardings by fiscal year 2020. The total number of complaints received that year was nearly 6,700. According to Valley Metro, most complaints related to bus vehicles “passing-by” without picking up passengers, as well as late arrivals, bus driver attitude, and hazardous practices. Valley Metro operators investigate every complaint, document results, and respond to customers.

EXHIBIT 17. AVERAGE BUS COMPLAINTS PER 100,000 BOARDINGS EACH MONTH, FISCAL YEARS 2016 THROUGH 2020



While the rate of bus complaints per 100,000 boardings increased, the actual count of complaints over same period dropped from 8,547 in Fiscal Year 2016 to 6,686 in Fiscal Year 2020. This is due to the reduction in bus ridership.

Source: Valley Metro Bus and Rail Operator Reported Data.

In response to increasing complaints, Valley Metro worked with its contracted bus operator who revised processes, informed drivers about complaints received, and implemented new employee recognition programs. Additionally, the Valley Metro contracted bus operator created a Customer Service Initiative Team to improve communication between supervisors and operators and increased its complaint-trend analysis. According to Valley Metro, the team has met multiple times since its establishment in August 2019 to update and create new tasks and discuss the efficacy of their improvements.

Generally Light Rail Transit was a Reliable Option for Travelers, and More Efficient than Other Entities Reviewed

When looking at Valley Metro light rail performance, we found it was more efficient than others, reliable, and less complaints were recorded—although vehicle breakdowns increased.

While Light Rail Costs Increased, Service was More Efficient than Other Entities we Reviewed


With two Prop 400 capital projects completed over the last five years augmenting the rail system by 6.3 miles, Valley Metro provided additional service to riders over a wider area. In fact, Valley Metro's light rail experienced a substantial 35 percent increase in revenue miles between fiscal year 2015 and fiscal year 2019. This growth was primarily due to the completion of several Prop 400-funded projects such as the Central Mesa Extension, which included four stations and a park-and-ride lot.

Yet, over the same period, light rail's operational costs notably increased, which Valley Metro attributed to the increase in augmented staffing and operational costs related to service for the additional light rail route extensions. In addition, Valley Metro costs increased as part of its enhanced preventive maintenance program that included major repair and engine overhaul activities required based on the age of Valley Metro's rail vehicles. When costs increase and ridership decreases, the overall efficiency of the system is affected for that period. This resulted in the subsidy per person boarding to nearly double between fiscal years 2015 and 2019.³⁴ Recent ridership drops due to the COVID-19 pandemic compound the issue with less riders paying fare revenues to recoup operating expenses without needing additional subsidies.

However, Valley Metro's light rail service was still more efficient than other entities we reviewed as shown in Exhibit 18. For instance, while Valley Metro subsidies increased by 94 percent between fiscal year 2015 and fiscal year 2019, its average subsidy of \$1.77 per passenger was significantly lower than the \$3.27 average of peers we reviewed.

³⁴ In public transit, passenger fare revenues are typically insufficient to cover the entire operational cost of providing transit service—thus, the cost of providing the service is “subsidized” with other funding that could come from sources such as sales tax measures such as Prop 400, federal monies, local jurisdictions, or other revenue.

EXHIBIT 18. LIGHT RAIL TRANSIT PERFORMANCE COMPARED TO PEERS, FISCAL YEARS 2015 THROUGH 2019



	Valley Metro FY 2015	Valley Metro FY 2019	Valley Metro Average	Peer Average	Valley Metro % Change FY 2015 to FY 2019	Peer % Change FY2015 to FY 2019
Operating Cost per Revenue Mile	\$12.60	\$14.55	\$12.95	\$13.82	15%	14%
Boardings per Revenue Mile	5.75	4.50	5.07	3.94	-22%	-14%
Farebox Recovery	41.0%	22.7%	32.4%	28.9%	-45%	-24%
Operating Cost per Boarding	\$2.19	\$3.23	\$2.58	\$3.76	47%	32%
Subsidy per Boarding	\$1.29	\$2.50	\$1.77	\$3.27	94%	75%

Source: Valley Metro Annual Transit Performance Reports and Federal Transit Administration’s National Transit Database.

Rail Transit Proved to be Extremely Reliable and On-Time

Like bus transit, we measured the reliability of transit service by assessing the on-time performance of vehicles picking up riders at its stated times on average, systemwide.

We found Valley Metro’s light rail on-time performance steadily increased over the audit period until it substantially jumped to more than 98 percent reliability by fiscal year 2019. Although light rail transit’s on-time performance since fiscal year 2015 was never below 92 percent, this performance exceeded other entities we reviewed where on-time performance ranged from 75 to 88 percent.

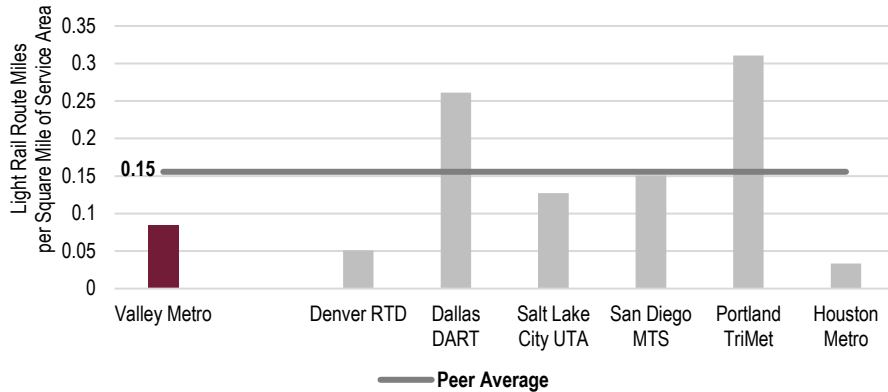
Vehicle Breakdowns Increased due to Aging Fleet, but Rail Network Improved

When measuring reliability in terms of mechanical failures, Valley Metro’s light rail vehicle breakdowns spiked in the last two years to more than 6 breakdowns per 100,000 revenue miles after being stable averaging only 2.6 breakdowns per 100,000 revenue miles between fiscal years 2015 and 2017. The primary reason for this decreased reliability included an aging fleet hitting a critical 10-year stage. Beginning in 2016, Valley Metro began a significant overhaul process of its light rail vehicles to adhere with vehicle manufacturers’ specification suggesting overhauls at the 10-year mark of vehicle usage. However, light rail transit delays caused by general system issues, such as electrical infrastructure problems, decreased from 4.23 breakdowns per 100,000 revenue miles in fiscal year 2016 to just 1.77 breakdowns per 100,000 revenue miles by fiscal year 2020.

Service Coverage Lower than Some Other Entities Reviewed

When looking at the availability of service coverage in terms of the number of route miles provided against the square miles of the potential service area, Valley Metro’s light rail coverage was lower than several peers for fiscal year 2019. As shown in Exhibit 19, Valley Metro had 0.08 miles of light rail track miles per square mile of service area compared to the peer average of 0.15 miles per square mile of service area.

EXHIBIT 19. COMPARISON OF LIGHT RAIL TRANSIT ROUTE MILES PER SQUARE MILE OF SERVICE AREA WITH PEERS, FISCAL YEAR 2019

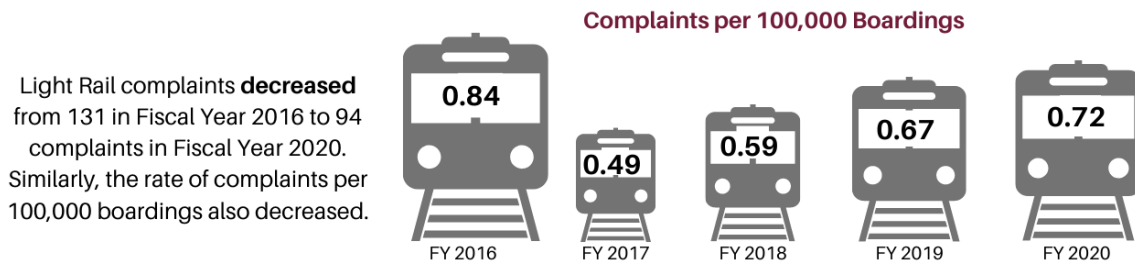


Source: Federal Transit Administration’s National Transit Database.

Light Rail Rider Complaints Decreased

For light rail transit, we found favorable results where complaints slightly dropped since fiscal year 2016 when complaints were at their highest at 0.84 per 100,000 people boarding the light rail—or 131 actual complaints. However, as shown in Exhibit 20, significantly fewer riders had complaints the next year, but they gradually rose again until fiscal year 2020 where riders registered slightly more than 0.72 complaints per 100,000 boardings. According to Valley Metro, rail complaints generally related to operators departing before stated time or arriving later than stated time—although our on-time performance data results did not highlight that issue.³⁵

EXHIBIT 20. AVERAGE BUS AND LIGHT RAIL COMPLAINTS PER 100,000 BOARDINGS EACH MONTH, FISCAL YEARS 2016 THROUGH 2020



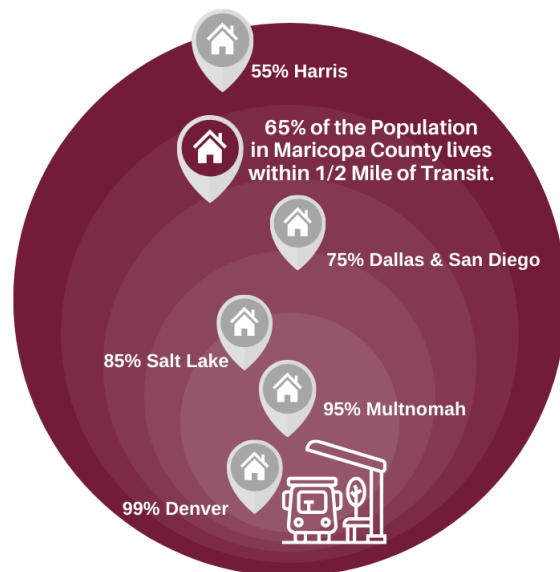
Source: Valley Metro Bus and Rail Operator Reported Data.

³⁵ Valley Metro defined a valid complaint as those items pertaining to the operation of the system that could be influenced by the externally-contracted light rail operator such as vehicle cleanliness, safety, service, and driver behavior as well as facility related to light rail rider platforms or transit stations.

Approximately 65 Percent of People Live Within Half-Mile of Transit

Another way to encourage transit as an alternate mode of travel is to ensure service is available at a location close to where people live. In Maricopa County, approximately 65 percent of people live within a half-mile of transit service. When compared to six other counties we reviewed, Maricopa County had a lower percentage of people living within a half-mile of transit than all but one peer entity as shown in Exhibit 21. Percentage of people located by transit service is affected by several factors including the density or amount of population in a jurisdiction's square mile or the size of the transit network and services available. Of all the counties reviewed, Maricopa County had the fewest people per square mile that influenced the number of potential riders that could have access to transit versus other counties, such as Denver County that had the most people per square mile of the peers reviewed and had a higher percentage of people living within a half mile of transit.

EXHIBIT 21. MARICOPA AND PEER COUNTIES
PERCENTAGE OF POPULATION LIVING WITHIN HALF MILE



Source: United States Census Data and General Transit Feed Specification Data.

Transit Rider Satisfaction Generally Increased in Recent Years before COVID-19

A critical factor in increasing transit ridership is encouraging transit as a viable alternative method of transportation and making sure customers want to use transit service; thus, rider satisfaction is important. Levels of satisfaction can be measured through a variety of methods including ridership surveys and complaints. In fact, Valley Metro measured rider satisfaction through bi-annual surveys and reported rider satisfaction by category of people who ride bus only, light rail only, or both bus and light rail. Since many riders use both types of transit vehicles to travel to their destination, Valley Metro captured the combined statistics on complaints filed in addition to bus only or light rail.

Rider Surveys

Looking at surveys conducted between May 2014 and May 2018, satisfaction of all transit riders increased nearly 16 percent rising from 70 percent to 81 percent satisfied riders. Additional reported satisfaction included:

- **Bus Only:** Rider satisfaction improved from 68 percent of bus riders being satisfied with service to 82 percent of riders satisfied. Additionally, 54 percent of bus-only riders reported improved service and only 3 percent of riders reported service declines. Bus-only riders also reported being most satisfied with the value of service for fare paid and the usefulness of Valley Metro's Transit Book—a Valley Metro document containing maps and schedules for all routes. Most cited concerns related to insufficient service frequencies or issues with on-time performance, although the performance data we reviewed did not support those concerns.

- **Light Rail Only:** Satisfaction among people only riding light rail slightly decreased between 2014 and 2018. Specifically, light rail only satisfaction decreased about 10 percent, from 88 percent to 77 percent. The survey indicates that the reduction in light rail-only rider satisfaction was mostly related to concerns with train arrival times, although the performance data we reviewed showed a 98 percent on-time performance on average.
- **Bus and Light Rail:** Satisfaction among people who regularly ride both bus and light rail increased between 2014 and 2018. Specifically, satisfaction among the group increased almost 20 percent, growing from 63 percent of riders satisfied in 2014 to 81 percent satisfied in 2018. Like the results of bus-only riders, people who regularly ride both bus and light rail reported being most satisfied with the value of service for fare paid. Further, bus and light rail riders were more satisfied with train arrival times.

To address customer feedback, Valley Metro introduced the Respect-the-Ride program in 2018 for enhancing the transit experience for riders. The program included new sets of behavioral rules for riding transit, additional station signage, paid fare zones, customer education, and additional security and customer service resources.³⁶

Valley Metro Regularly Monitored Transit Performance to Make Changes to Prop 400 Service as Warranted

On a biannual basis, Valley Metro reviewed performance metrics including on-time performance, boardings in general and by bus stop, revenue miles, demographics served, and farebox recovery for bus transit routes and light rail—including service funded by Prop 400—to identify inefficient routes or those exceeding capacity that may need service changes.

Specifically, for routes falling within the bottom 25 percent or rising to the top 25 percent in two of five specific metric areas evaluated, Valley Metro determined if system or route-specific adjustments were warranted such as route revisions, increased or decreased service levels, or expanded or eliminated services. For instance, during an April 2020 service planning cycle, Valley Metro used performance metrics to modify Prop 400-funded Route 184 because it routinely placed in the bottom quartiles for both boardings per revenue mile and farebox recovery. The proposed change eliminated 10 percent of the route that had historically low ridership.

These performance measures and service planning tools were used to evaluate existing services and operations, as well as assess the potential performance of new or expanded services being contemplated. Additionally, as part of biennial short-range transit planning, Valley Metro worked with its local member agencies—some of which operated their own bus transit service—to coordinate, evaluate, and prioritize any needed changes for enhancing the financial sustainability of operations, implementing routes proposed in the original Prop 400 plan, and supporting light-rail investments.³⁷

³⁶ Paid fare zones are transit space where the code of conduct is in effect.

³⁷ Prior Arizona Auditor General performance audits reviewed and tested Valley Metro's service planning efforts following its Transit Standards and Performance Measurement process. Auditors found that Valley Metro followed its protocols and its practices were reliable.

Chapter 4: Roadway Safety Declined in the Region, Although the RTP Partners have Strategies to Address Overall Outcomes

An efficient transportation system balances safety and mobility. Proposition 400 (Prop 400) funded a variety of regional transportation projects and services that may have focused directly on or considered safety implications during design, construction, and implementation. Yet, between calendar years 2015 and 2019, the Maricopa Association of Governments (MAG) region experienced increasing trends in crashes and fatalities—although specific performance trends will vary depending on the time measured.³⁸ Based on that information, both MAG and the Arizona Department of Transportation (ADOT) developed and implemented many strategies to address safety issues with many efforts still currently in-progress. There are, however, limitations to the impact transportation agencies can have on influencing performance outcomes. State and regional studies found that many roadway crashes were related to driver behavior with approximately 33 percent of fatal crashes indicating speeding and 44 percent indicating impaired driving as factors.³⁹

While roadway safety trends showed a decrease in fatal crashes when accounting for growth in roadway usage, bicyclists and pedestrians experienced higher rates of fatalities from crashes. Bus and light rail transit safety measured by preventable accidents and security incidents held relatively steady with no significant trends.

Compared to Other Regions, Maricopa County's Rate of Fatalities Generally Aligned after Declining from a High Rate in 2018

Safety metrics can be viewed by actual count as well as by rate of fatalities.⁴⁰ As found in national trends through calendar year 2019 where fatalities were on the decline, Maricopa County's roadway fatalities also dropped in recent years from a rate of 1.13 fatalities per 100 million miles of travel in calendar year 2015 to a rate of 1.11 fatalities by the end of calendar year 2019—even though the rate was still on the higher end compared to other regions as shown in Exhibit 22. While the fatality rate decreased, actual fatalities increased 9 percent from 409 fatalities in calendar year 2015 to 445 fatalities in calendar year 2019.⁴¹

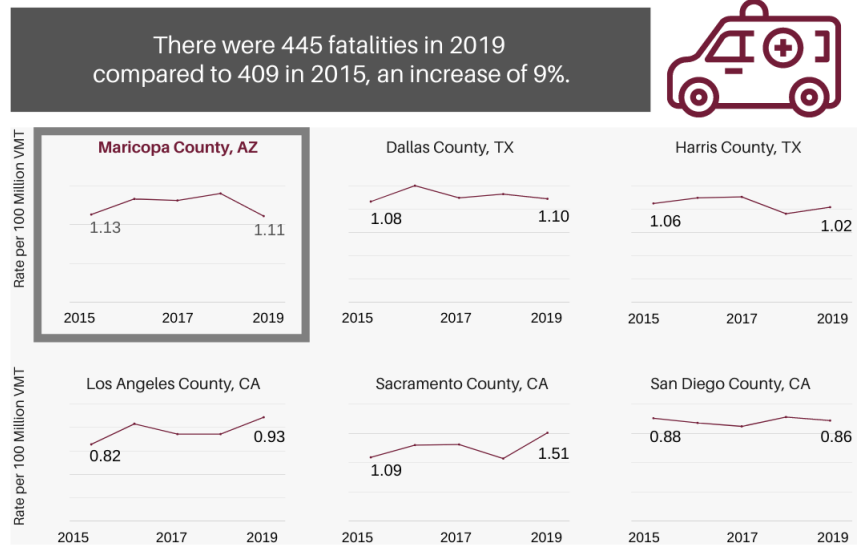
³⁸ MAG and its Regional Transportation Plan (RTP) Partners captured and reported on a variety of performance metrics on individual freeway segments, roadways, and transit routes. For audit purposes, we focused on systemwide performance.

³⁹ Crash factors were reported in the MAG's 2015 Strategic Transportation Safety Plan and were not mutually exclusive. As of April 2021, the 2020 Strategic Transportation Safety Plan is in development.

⁴⁰ Fatality rates consider vehicle miles of travel to normalize data for comparison over time and to other areas. According to the National Highway Traffic Safety Administration (NHTSA), the assumption is that higher levels of driving in an area increase the opportunities for collisions to occur and dividing the number of collisions or fatalities by vehicle miles of travel allows for comparisons across regions with varied amounts of vehicle miles of travel.

⁴¹ Other areas used for comparison included Dallas County, Texas; Harris County, Texas; Los Angeles County, California; Sacramento County, California; and San Diego County, California. We selected these areas based on the comparison areas presented in MAG's Strategic Safety Plan.

EXHIBIT 22. MARICOPA COUNTY ROADWAY FATALITIES FROM VEHICLE COLLISIONS COMPARED TO OTHERS



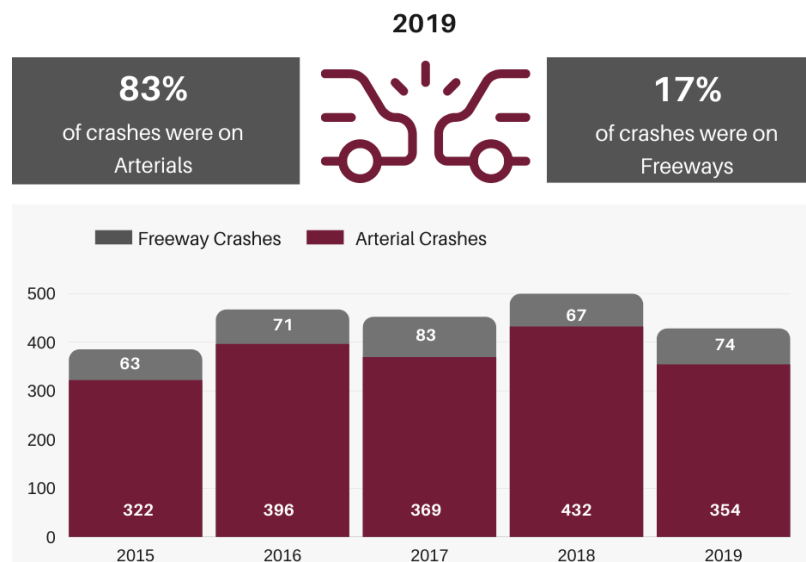
Source: Crash data provided by MAG based on ADOT's Accident Location Identification Surveillance System (ALISS) and Highway Performance Monitoring System (HPMS) in addition to comparison area's state department of transportation websites as of June 2019.

Note: Refer to Footnote 40 for explanation of fatality rate.

Maricopa County had more Fatal Crashes on its Arterial Network than on Freeways

In Maricopa County, 83 percent of the crashes resulting in at least one fatality occurred on arterial streets, while only 17 percent of fatal crashes occurred on a freeway as shown in Exhibit 23. Between calendar years 2015 and 2019, crashes resulting in fatalities increased by almost 10 percent on arterial roadways rising from 322 fatalities in calendar year 2015 to 354 fatalities by calendar year 2019—after dropping 18 percent from a high of 432 fatalities in calendar year 2018.

EXHIBIT 23. CRASHES RESULTING IN AT LEAST ONE FATALITY IN MARICOPA COUNTY



Source: Crash data provided by MAG based on ADOT's Accident Location Identification Surveillance System (ALISS) and Highway Performance Monitoring System (HPMS) in addition to comparison area's state department of transportation websites.

Factors contributing to fatalities included driver condition and behavior such as impaired driving, lack of seat belt restraints, and speeding. According to MAG, impaired driving is more likely to result in a fatal crash and was a factor in approximately 44 percent of fatal crashes in the MAG region. Additionally, nearly 31 percent of fatal crashes happened at intersections.

To address these safety trends, MAG coordinated with ADOT's Strategic Highway Safety Plan and prepared a regional Strategic Transportation Safety Plan issued in 2015.⁴² The plan identified many strategies to address impaired driving, speeding, and infrastructure including capital improvements, education, technology, and enforcement related to improving safety as discussed later in this chapter of the report. MAG made enhancements to its Road Assessment Program to assess high crash intersections and recommended safety improvements. In 2019, MAG initiated its Roadway Safety Program providing funds to local agencies through competitive grants for safety improvement projects such as flashing yellow arrows, improved left-turn signal visibility, median barriers, and signal improvements on arterial streets.

In addition to the MAG Roadway Assessment Program, ADOT took efforts to address safety on its freeway system. For instance, ADOT recently installed a wrong-way detection system along I-17 using thermal cameras to detect wrong-way vehicles and alert state troopers and other drivers via overhead message boards. ADOT is currently working on near-term, low-cost solutions to improve safety such as reducing lane departures and roadway confusion through better signage or striping. ADOT anticipates completing several signage projects—funded through non-Prop 400 sources—by calendar year 2022.

Bicycle Fatalities were Generally Higher than the National Average and Others

When looking at bicycle fatalities from roadway vehicle collisions, Maricopa County's rate of bicyclist fatalities per million population was decreasing through calendar year 2018 in line with national trends with declines since calendar year 2015. Yet, by calendar year 2019, Maricopa County bicycle fatalities rose again realizing a 21 percent increase since calendar year 2015—and were greater than most other counties we reviewed except for Los Angeles County.⁴³ Specifically, bicyclist fatalities increased 58 percent in a one-year span growing from 12 fatalities in calendar year 2018 to 19 fatalities in calendar year 2019 as shown in Exhibit 24.

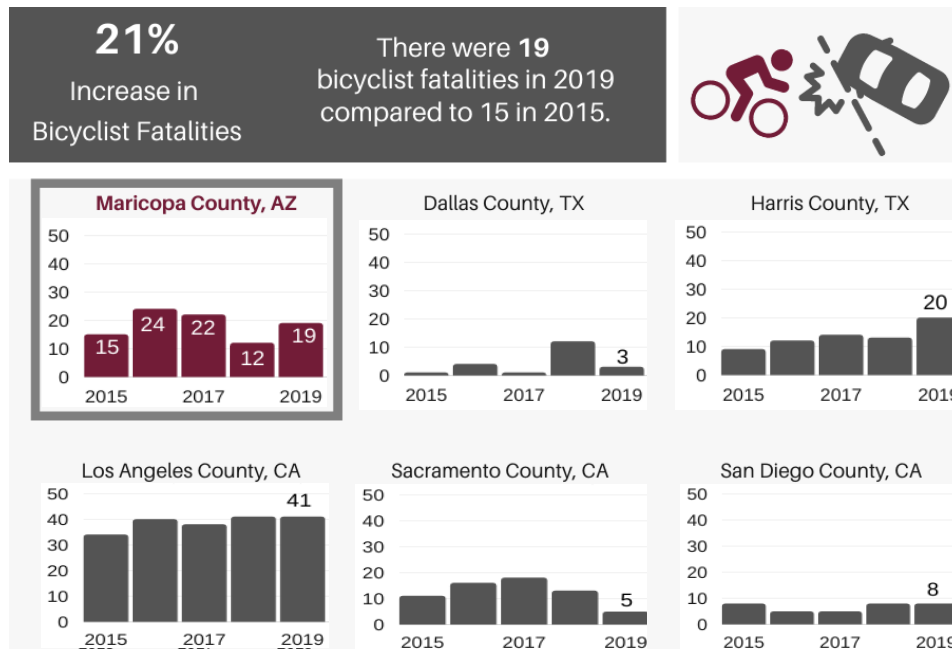
When looking at the rate of bicycle fatalities per 100 million vehicle miles of travel to account for how changes in the volume of vehicles on the road might affect the fatality rate, Maricopa County and Los Angeles County had similar rates and were generally higher than the other three comparison areas. We also assessed bicyclist fatality rates based on changes in population to see if results varied when accounting for changes in population, but we still found Maricopa County had higher fatality rates than national averages and was like Los Angeles County.

⁴² MAG was currently updating its 2020 Strategic Transportation Safety Plan planned for release in 2021.

⁴³ Fatality rates consider vehicle miles of travel to normalize data for comparison over time and to other areas. According to the National Highway Traffic Safety Administration (NHTSA), the assumption is that higher levels of driving in an area increase the opportunities for collisions to occur and dividing the number of collisions or fatalities by vehicle miles of travel allows for comparisons across regions with varied amounts of vehicle miles of travel. However, we also compared the rates of fatalities per 100,000 population; results aligned with rates using vehicle miles of travel and no different trends emerged.

While there were no specific Prop 400 sales-tax funded projects for bicycle safety enhancements such as road striping or separate bike lanes, bicyclists share space on the arterial roadways with projects that could have indirectly considered bicycle enhancements. To address bicycle safety concerns, MAG has developed several strategies as part of its Strategic Transportation Safety Plan to develop and encourage safety countermeasures such as bike lanes or bicyclist detection at traffic signals. While most of these safety efforts are planned through multiple state and federal funding sources, there may be some funded with Prop 400 monies.

EXHIBIT 24. MARICOPA COUNTY BICYCLIST FATALITIES FROM VEHICLE COLLISIONS COMPARED TO OTHER COUNTIES



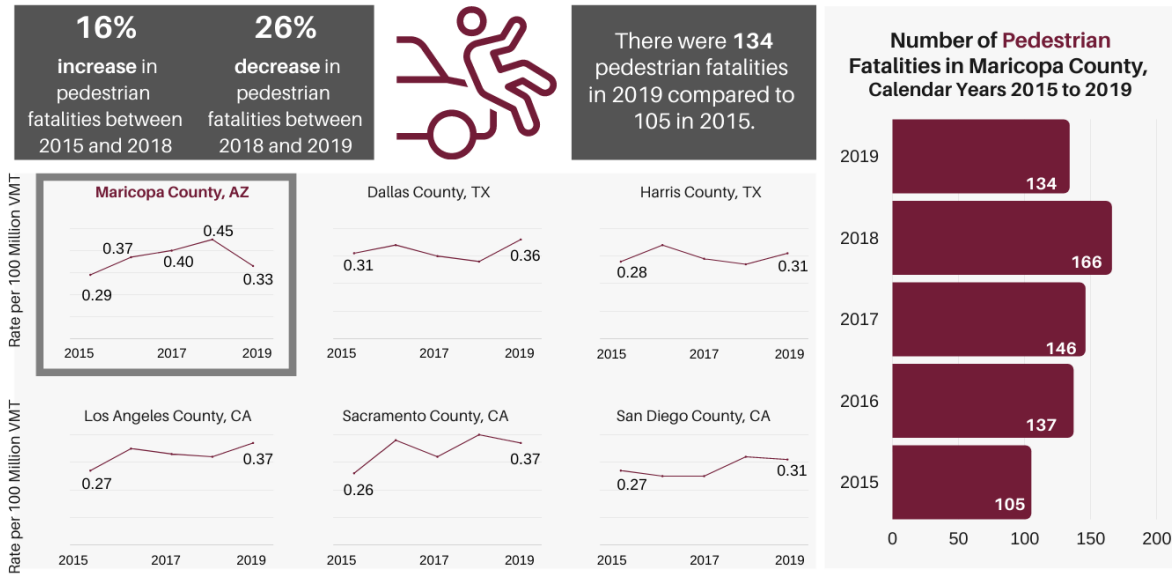
Source: Crash data provided by MAG based on ADOT’s Accident Location Identification Surveillance System (ALISS) and Highway Performance Monitoring System (HPMS) in addition to comparison area’s state department of transportation websites.

After Four Years of Steady Increase, Pedestrian Fatality Rates Dropped in 2019 and Generally Align with Most Other Areas Reviewed

After an average increase of 16 percent per year between calendar years 2015 and 2018, the rate of pedestrian fatalities significantly decreased by more than 26 percent from 0.45 fatalities per 100 million vehicle miles of travel in calendar year 2018 to 0.33 fatalities per 100 million vehicle miles of travel in calendar year 2019 as shown in Exhibit 25.⁴⁴ Although overall there was a slight increase in fatalities over the period, Maricopa County’s rate generally aligned with other areas we reviewed.

⁴⁴ Fatality rates consider vehicle miles of travel to normalize data for comparison over time and to other areas. According to the National Highway Traffic Safety Administration (NHTSA), the assumption is that higher levels of driving in an area increase the opportunities for collisions to occur and dividing the number of collisions or fatalities by vehicle miles of travel allows for comparisons across regions with varied amounts of vehicle miles of travel. However, we also compared the rates of fatalities per 100,000 population; results aligned with rates using vehicle miles of travel and no different trends emerged.

EXHIBIT 25. MARICOPA COUNTY PEDESTRIAN FATALITIES FROM VEHICLE COLLISIONS COMPARED TO OTHER COUNTIES



Source: Crash data provided by MAG (based on ADOT’s Accident Location Identification Surveillance System (ALISS) and Highway Performance Monitoring System (HPMS) and gathered from comparison area’s state department of transportation websites.

Yet, when looking at raw numbers in Exhibit 25, actual pedestrian fatalities resulting from vehicle collisions grew nearly 28 percent from 105 fatalities in calendar year 2015 to 134 fatalities by calendar year 2019—after dropping from a spike of 166 fatalities in calendar year 2018. Maricopa County’s growth was greater than the changes in fatality counts in most other areas reviewed other than Los Angeles County. This trend aligned with Arizona statewide trends in pedestrian fatalities as well, although statewide results showed an even steeper increase of 50 percent in the raw number of fatalities over the same period. Like bicyclists, there was no Prop 400 sales-tax funding available specific to pedestrian safety enhancements such as installing medians and pedestrian crossing islands on the arterial roadways that were funded.

ADOT studied outcomes and found pedestrian fatal and serious injuries were more commonly intersection related, had alcohol involved, and occurred more frequently at night. Similarly, MAG identified driver condition and behavior, including impaired driving and speeding, as factors that influenced a majority of crashes in the region. Both MAG and ADOT recognized regional issues with pedestrian safety and have started to consider and implement strategies to address the challenge through engineering, enforcement, and education such as:

- Capital project design activities to evaluate pedestrian safety as part of traffic impact analyses;
- Warning signals and street lighting at high-use pedestrian crossings for nighttime visibility; and
- Pedestrian education on safety at transit and other crossing locations, risks of walking while impaired, wearing reflective clothing, and crossing at well-lit locations after sunset.

With Regional Studies Indicating Many Roadway Crashes and Injuries were Caused by Driver Behavior, RTP Partners Developed Strategies to Influence Outcomes

While performance information tracks and measures the rate of roadway fatalities, there is a human factor behind the data—even one fatal crash, is one too many on the roadways. We found MAG and ADOT shared that safety philosophy and were actively working to address these serious issues. As mentioned earlier in this chapter, each entity developed several statewide or regional safety plans between calendar years 2015 and 2020 studying the cause of crashes and injuries in addition to developing solutions to affect change—although efforts were not funded by Prop 400 monies.

For instance, MAG’s current regional Strategic Safety Plan revealed the following causes for serious injuries and fatalities in Maricopa County:

- Impaired driving: 20 percent of serious injuries and nearly 44 percent of fatalities.
- Lack of restraints (safety belt or helmet): 26 percent of serious injuries and 46 percent of fatalities.
- Speeding: 31 percent of serious injuries and 33 percent of fatalities.

While MAG has limited control over driver behavior-related outcomes, it developed 47 discrete potential strategies surrounding engineering, education, and messaging for the roadways to address safety issues over a 10-year timeframe from July 2015 through June 2025. One such strategy MAG developed in 2019 was its Roadway Safety Program where local jurisdictions received competitive grants to provide low-cost, near term solutions to address safety needs. Projects funded include signal improvements, pedestrian crossing and median modifications, and street lighting. MAG also conducted roadway safety assessments at many intersections and light rail access locations in the region to suggest safety improvements for local jurisdictions to consider and implement as part of future capital arterial projects. Many strategies were in-progress and part of an updated plan anticipated for later in 2021 or had not yet started during our audit, so we were unable to evaluate efforts.

Similarly, ADOT developed a 2019 Strategic Traffic Safety Plan focused on building a framework for reducing fatalities and serious injuries on all statewide public roads—freeways and arterials—in coordination with local and federal entities. Its plan identified five safety-related areas of emphasis with goals, objectives, and strategies focused on highway behavior, lane departure, intersections, and pedestrians to name a few. Projects implemented include wrong-way detection measures on I-17 and dust-detection warning system for travelers on I-10.

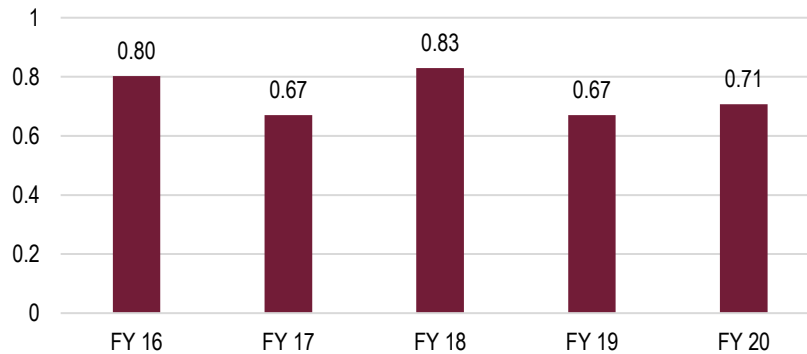
Bus Transit was Relatively Safe over the Five-Year period Reviewed

In addition to roadway vehicle safety, transit safety is an important element of mobility and critical to an efficient transportation system. For audit purposes, we assessed preventable accidents and rider security incidents and found that bus preventable accidents and security incidents remained low.⁴⁵

⁴⁵ An accident is defined as any contact or collision between bus and another vehicle, a fixed object, or a person—whether or not there is damage or injury—or any instance in or near the bus which results in injury to a rider. The distinction between preventable and non-preventable is based on whether the driver did everything that reasonably could have been done to prevent the accident.

For instance, looking at preventable bus accidents (regardless of whether the collision resulted in injury to the transit rider) reported by Valley Metro’s largest bus route operator, we saw that accidents remained stable over the five-year period between fiscal years 2016 and 2020—ranging from a monthly average rate of approximately 0.67 accidents to 0.83 accidents per 100,000 miles of service as shown in Exhibit 26. These results were below the maximum thresholds set in operator contracts. In addition to a stable number of accidents, buses reported a low number of security incidents between fiscal years 2015 and 2019.⁴⁶

EXHIBIT 26. BUS MONTHLY AVERAGE PREVENTABLE ACCIDENTS PER 100,000 MILES OF SERVICE, FISCAL YEARS 2016 THROUGH 2020

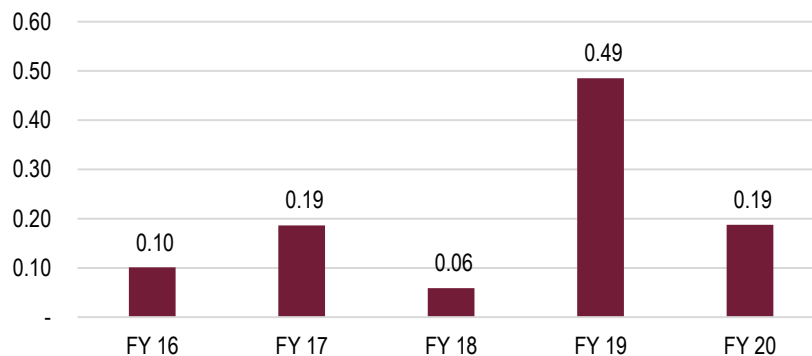


Source: Summary Data from reported to Valley Metro by its contracted fixed-bus operator, First Transit.

Light Rail Statistics Reveal that Preventable accidents Were Relatively Steady

As shown in Exhibit 27, the average monthly rate of light rail preventable accidents per 100,000 miles since fiscal year 2016 was generally stable in the 0.19 rate or lower except for a significant spike in fiscal year 2019. The raw statistics indicated there were 16 preventable accidents in fiscal year 2020 as compared to 6 accidents in fiscal year 2016.

EXHIBIT 27. LIGHT RAIL MONTHLY AVERAGE PREVENTABLE ACCIDENTS PER 100,000 MILES, FISCAL YEARS 2016 THROUGH 2020



Source: Data from Valley Metro’s Rail Tracking System and Rail Operator.

⁴⁶ Valley Metro defines a security incident for fixed-route bus service as a safety issue where a sworn law enforcement officer is called to the scene of the incident.

According to Valley Metro, the spike in preventable accidents in fiscal year 2019 was attributed to the influx of new train operators where Valley Metro identified many collisions involved employees with less than three years of experience. In response, Valley Metro increased operator training, including a required course in defensive operations, and required an annual refresher of the defensive training course. After these new training requirements for operators were implemented, there was a decrease in preventable accidents in the subsequent fiscal year as shown in Exhibit 27.

Another measure of safety relates to reportable security incidents. Over the audit period, data appears to indicate that security incidents per 100,000 boardings rose from 0.16 in fiscal year 2015 to 0.45 in fiscal year 2019. According to Valley Metro, the increase in security incidents was primarily due to a change in the Federal Transit Administration's reporting methodology for its National Transit Database—rather than an actual increase in incidents.⁴⁷

⁴⁷ A reportable security event for rail is defined as an incident that results in a fatality, injury requiring medical attention away from the scene, or an event that disrupts service, such as a collision, evacuation, or derailment.

Appendix A: Detailed Audit Methodology

Sjoberg Evashenk Consulting, Inc. (SEC) was hired by the Arizona Auditor General to conduct an independent performance audit of the Maricopa Association of Governments (MAG) Regional Transportation Plan (RTP) which includes Maricopa County. Specifically, we were asked to:

1. Examine whether past RTP expenditures and performance of the system have relieved congestion and improved mobility, as required by A.R.S. §28-6313(C)(2), for fiscal years 2016 through 2020;
2. Examine the RTP and projects scheduled for fiscal years 2021 through 2025 within each transportation mode, as required by A.R.S. §28-6313(A) and A.R.S. §28-6313(C)(1), based on performance factors required by A.R.S. §28-505(A), including, but not limited to, congestion relief, economic benefits, safety, and environmental impacts in the context of the transportation system;
3. Determine the extent to which performance measures have been met for each area, reasons for any deviations, and how the RTP and projects compare to industry standards and peer agencies including utilization of multimodal management tools to ensure RTP goals and performance standards, such as relieving congestion and improving mobility, are achieved;
4. Examine light rail systems against federal criteria, as required by A.R.S. §28-6313(B), considering Federal Transit Administration criteria (i.e. project justification, including mobility and environmental benefits, and financial commitment) pursuant to 49 United States Code §5309(e)(1)(B) and the interrelationship among the criteria to provide federal funding for light rail systems;
5. Examine light rail systems against other factors, as required by A.R.S. §28-6313(B), considering service levels, capital costs, operation and maintenance costs, transit ridership, and farebox revenues in addition to determine whether performance metrics have been met, reasons for any deviations, and how Valley Metro compares to industry standards and peer agencies; and
6. Make recommendations, as required by A.R.S. §28-6313(C)(3), regarding whether further implementing a project or transportation system is warranted, warranted with modifications, or not warranted.

To meet the audit's objectives, SEC performed the following audit steps:

- Interviewed management and staff from MAG, Arizona Department of Transportation (ADOT), Valley Metro, and City of Phoenix to obtain perspective on audit areas, description of processes and controls over revenues and expenditures, data integrity and quality control over data, changes in project management or reporting methodology, federal audits, and plans for remaining years of the Proposition 400 (Prop 400) program as applicable.
- Studied and evaluated a variety of documents including, but not limited to, Regional Transportation Plans since 2003, Transportation Improvement Program updates, Prop 400 Annual reports, Life Cycle Program updates for all modes, MAG performance measurement reports and MAGitude online data, Valley Metro white paper internal tracking documents, ADOT statewide safety reports, and MAG regional safety reports.
- Examined Prop 400 spending over fiscal years 2016 through 2020 as well as expenditures planned for future fiscal years 2021 through 2025 to evaluate status—completed, in-progress, not started, deferred, or cancelled—and cost and scope of freeway, arterial, and transit projects by:

- Gathering budget and expenditure data, baselines and actual schedules, and scope from the 2003 Regional Transportation Plan, 2004 Prop 400 Ballot, and 2005 Annual Report on the Status of the Implementation of Prop 400 to establish the universe of all projects envisioned. This included, where applicable, cross-walking improvements between original documents and maps to establish a Prop 400 “promised-baseline” to compare status as of June 30, 2020.
- Cross-referencing expenses or reimbursements at the program-level, through June 30, 2020, across fiscal year 2021 Life Cycle Program reports, the 2020 Annual Report on the Status of the Implementation of Prop 400, and information on MAG, ADOT, or Valley Metro websites.
- Reviewing materials presented to MAG committees on the rebalancing of the freeway program in 2019 for clarity and completeness of information including options considered and recommended, discussion on impacts on funding, and achievement of mobility goals.
- Capturing and summarizing outputs such as projects competed, miles added, intersections completed, and routes added against Prop 400 plans in addition to validating data, where practical, with project cards, fact sheets, and map tools.
- Reconciling original Prop 400 improvements with data presented in MAG reports as of June 30, 2020—specifically, the 2020 Annual Report on the Status of the Implementation of Prop 400, fiscal year 2021 Annual Freeway Life Cycle Program Report, and fiscal year 2021 Freeway Life Cycle Program Report issued in August 2020 as well as Arterial Life Cycle Program and Transit Life Cycle Program reports.
- Reconciling transit route and capital project data presented in the MAG 2020 Annual Report on the Status of the Implementation of Prop 400 as of June 30, 2020 as well as internal spreadsheets maintained by Valley Metro such as white papers and capital facilities data sheets to understand project status and funding of routes.
- Obtaining and verifying progress and project status with MAG’s interactive “Transportation Improvement Program Viewer” map tool at <https://geo.azmag.gov/maps/tip/>, and information from ADOT’s Central District website.
- Assessing transparency and accountability of data provided to the public and decision-makers for projects deferred beyond the Prop 400 horizon.
- Reviewing transportation studies such as the I-10 / I-17 Spine Corridor Master Plan from 2018 and the I-10 Broadway Curve Economic Evaluation from 2020 to understand conditions and reasonableness of changes made to Prop 400 projects.
- Determined progress of implementation of performance measures and targets to track performance across freeway, arterial, and transit modes.
- Assessed performance outcomes related to mobility, congestion, and transit efficiency, by performing the following:
 - Focusing on certain systemwide performance metrics from the multitude of performance data and metrics available; namely, speed, delay, travel time, and fatalities involving vehicles. For transit, we also focused on operational efficiency statistics (such as operating costs,

- farebox recovery, and subsidies), on-time performance, mechanical failures, preventable accidents, safety incidents, complaints, and rider satisfaction.
- Attempting to use the same geographical area and years within our audit period, but specific performance metric data captured by MAG, ADOT, Valley Metro, the National Transit Database, Transit Performance Reports, Federal Highway Administration, and U.S. Census reported data differently by county level, metropolitan statistical area, state level, or transit entity service area level and by different calendar years, fiscal years, or points in time.
 - Working with the varying methodologies used by entities to collect data and report by different geographical regions (city, county, or metropolitan statistical area), travel modes (freeway only, freeway and roads, non-motorized, bicyclists, or pedestrians), entities (transit agency or transit operator contract), time periods (monthly, calendar year, or fiscal year), or details (detailed counts, summary, or averages). Some metrics could not be easily compared, such as when comparing Valley Metro to peer agencies for on-time performance and rider satisfaction due to differing data collection methodologies and agency standards.
 - Attempting to capture and analyze raw data sorted for analysis; however, some entities only offered data in pre-structured canned reports or available for individual segments or routes through interactive maps without summary data.
 - Using the most recent data available—although there was often a time lag from when data was captured to when data was reported for review from the various local, state, or federal sources.
 - Comparing performance to national levels and other areas where practical and attempting to use the same areas across performance metrics—such as the same metropolitan statistical area, related county, and related transit service entity.
 - Studying completed Prop 400 project impacts on performance results as well as whether projects planned were in areas where performance had declined or concerns were noted.
- Evaluated use of multimodal management tools to relieve congestion and improve mobility through efforts such as integrated corridor management, intelligent transportation systems, and active traffic management tools as well as changes in technology such as messaging signs and ramp metering.
 - Considered federal criteria with respect to light rail system by reviewing any federal full-funding grant agreements and single-award grant agreements for light rail projects, related Project Management Oversight Committee reports, and Project Management Plans for light rail projects looking at mobility, financial commitments, environmental benefits, and more.
 - Reviewed federal audits and City of Phoenix reviews (as the federal recipient of funds) over Valley Metro (as a subrecipient) of Federal Transit Administration grants and light rail's performance and compliance with federal criteria.
 - Determined whether audit results warranted changes to projects implemented or the transportation system planned in Maricopa County.

Appendix B: Prop 400 Freeway Project Status

Proposition 400 (Prop 400) proposed freeway transportation improvement projects including widening of existing freeways, building entirely new freeways, improving interchanges, building freeway ramps, purchasing right-of-way, and updating traffic monitoring and managing technology to help with mobility and reduce congestion. This appendix provides the status of original projects envisioned in the 2005 Annual Report on the Status of the Implementation of Prop 400 Annual as of June 30, 2020.

As the Maricopa Association of Governments (MAG) and Arizona Department of Transportation (ADOT) studied and continue to study the original improvements for implementation, initial project limits or project types changed and may continue to change to best address transportation needs. For instance, there were original projects that opened to traffic as intended (e.g., I-10: Loop 303 to Dysart Road) and other projects that had segments changed (e.g., I-17: Loop 101 to Arizona Canal where the general-purpose lane was deferred, but pump stations were being constructed to aid with drainage). To facilitate an understanding of those types of changes and the status of freeway projects, Exhibit 28 provides explanations and clarifying information on how to read the project status listing shown in Exhibit 29.

EXHIBIT 28. EXPLANATIONS FOR THE FREEWAY PROJECT LISTING SHOWN AT EXHIBIT 29.

Description	Explanation
Original Prop 400 Improvement	Original Prop 400 Improvements are per the 2005 Annual Report on the Status of the Implementation of Prop 400 which is based on the 2003 Regional Transportation Plan that served as the foundation for the voter-approved Prop 400 sales tax extension in 2004.
2005 Improvement Planned	The type of facility envisioned: <ul style="list-style-type: none"> ○ General Purpose Lane (GPL) = Freeway lane open to all vehicles. ○ High Occupancy Vehicle Lane (HOV) = Freeway lane restricted to multi-passenger vehicles, motorcycles, and authorized other vehicles. ○ Traffic Interchange (TI) = Freeway section where two or more separate freeways connect. ○ HOV Ramp = Dedicated access to a HOV lane.
Total Expenses June 2020 (2020 \$)	Expenses are as of June 30, 2020, per the 2020 Annual Report on the Status of the Implementation of Prop 400 rounded to the nearest whole million and in 2020 dollars.
Miles	Miles shown are per the 2005 Annual Report on the Status of the Implementation of Prop 400.
Status	Status is as of June 30, 2020: <ul style="list-style-type: none"> ○ Open = Project is open to traffic. ○ Planned = Project had no activity, but is expected to start the pre-design and environmental stage prior to the expiration of Prop 400 in December 2025. ○ Pre-Design & Environmental = Project had started preliminary engineering and design efforts and is preparing to clear environmental requirements. ○ Design = Project had advanced from the planning and pre-design/environmental stage to the design phase where plans are finalized for construction. ○ Construction = Project is being built. ○ Deferred = Project will not have any activity prior to the expiration of Prop 400 in December 2025 and will not be funded by Prop 400. It is, however, still considered part of MAG's long range Regional Transportation Plan.
Year Open	The year the improvement opened to traffic or, for in-progress projects, the year it was estimated to open as of June 2020. For deferred projects, year open was provided where data was available—if not available, it is marked as to-be-determined (TBD).

EXHIBIT 29. STATUS OF ORIGINAL PROP 400 FREEWAY PROJECTS, AS OF JUNE 30, 2020 (EXPENSES IN MILLIONS)

Facility	Original Prop 400 Improvement	2005 Improvement Planned	Total Expenses June 2020 (2020 \$)	Miles	Status	Year Open			
I-10	SR 85 to Loop 303	GPL	\$9	8	Design	2022			
	a) SR 85 to Varrado b) Varrado to Sarival		\$31	4	Open	2011			
	Loop 303 to Dysart Road	GPL, HOV	\$39	5	Open	2011			
	Dysart Rd to Loop 101	GPL, HOV	\$93	6	Open	2010			
	Loop 101 to I-17	GPL	\$4	7	Deferred	2035			
	SR 51 to 40 th St (CD Roads)	CD	\$33	15	Design ^(A)	2024			
	40 th St to Baseline Rd (CD Roads)	CD							
	Baseline Rd to Loop 202/Santan	GPL							
Loop 202 Santan to Riggs Road	GPL, HOV	\$1	6	Pre-Design & Environmental	2027				
Total I-10			\$209	51					
I-10R	SR 85 to Loop 303	Road	\$4	11	Design	2035			
	Loop 303 to Loop 202 South Mountain	GPL	\$99	13					
Total I-10R (now SR 30 Tres Rios)			\$103	24					
I-17	Yavapai County to New River Road	Unidentified	\$0	13	Design	2022			
	New River Rd to Anthem Way	GPL							
	Anthem Way to Carefree Hwy	GPL, HOV	\$17	5	Open	2010			
	Carefree Hwy to Loop 101	GPL, HOV	\$179	9	Open	2010			
	Loop 101 to Arizona Canal (between Peoria & Dunlap Avenue) ^(B)	GPL	\$2	6	Deferred Construction	TBD 2021			
	a) GPL b) Pump Stations		\$6	-					
	Arizona Canal to McDowell Road ^(B)	GPL	\$1	7	Deferred	TBD			
	a) GPL		\$0	-	Deferred	2030			
	b) Glendale Interchange		\$0	-	Planned	2029			
	c) Northern Interchange		\$3	-	Design	2023			
d) Indian School Interchange e) Camelback Interchange	\$0		-	Pre-Design & Environmental	2025				
I-10 (West) to I-10 (East)	HOV	\$8	3.5	Design	2027				
a) I-10 Split to 19 th Ave Auxiliary Lane ^(B) b) 19 th Avenue to SR 101		\$0	3.5	Deferred	TBD				
Total I-17			\$208	47					
Loop 101	Agua Fria: US 60/Grand Avenue to I-17 ^(C)	GPL, HOV	\$0	-	Deferred	2030			
	a) US 60/Grand to 75 th Ave GP Lane		\$0	6.4	Design	2025			
	b) 75 th Avenue to I-17 GP Lane		\$0	15.6	Open	2011			
	c) I-10 to (US 60/Grand Avenue to I-17) to Tatum HOV Lane		\$109						
	Agua Fria: I-10 to US 60/Grand Avenue ^(C)	GPL, HOV	\$0	-	Deferred	TBD			
	a) I-10 to US 60/Grand GP Lane		^(D)	-	Open	2011			
	b) I-10 to (US 60/Grand Ave) to Tatum HOV Lane			\$0	-	Planned	2028		
	c) I-10 Interchange			\$0	-	Planned	2027		
	d) Northern Parkway Interchange		\$0	-					
	Sub-Total Agua Fria			\$109	22				
	Pima: I-17 to SR 51	GPL, HOV	\$146	-	Construction	2021			
	a) I-17 to (SR 51) to Pima/Princess GP Lane b) I-10 to (I-17 to SR 51) Tatum HOV Lane						^(D)	7	Open
	Pima: SR 51 to Princess Dr	GPL, HOV	^(E)	-	Construction	2021			
a) (I-17) to SR 51 to Pima/Princess GP Lane	^(D)						6	Open	2011
b) (I-10) to SR 51 to (Tatum) HOV Lane c) (Tatum) to Pima/Princess HOV Lane							\$18	-	Open
Pima: Princess Dr to Shea Boulevard	GPL, HOV	\$0	4	Design	2025				
a) GPL b) Pima/Princess to Shea (to Loop 202) HOV Lane							\$62	-	Open

Facility	Original Prop 400 Improvement	2005 Improvement Planned	Total Expenses June 2020 (2020 \$)	Miles	Status	Year Open
	Pima: Shea Blvd to Loop 202/Red Mountain a) GPL b) (Pima/Princess) to Shea to Loop 202 HOV Lane	GPL, HOV	\$100 (F)	15 -	Open Open	2016 2008
		Sub-Total Pima	\$326	28		
	Price: Loop 202/Red Mountain to Baseline Road	HOV	\$39	4	Open	2010
	Price: Baseline Rd to Loop 202/Santan a) (Loop 202/Red Mountain to) Baseline Road to Loop 202/Santan HOV Lane b) GPL	GPL, HOV	(G) \$71	6.4 -	Open Construction	2010 2020
		Sub-Total Price	\$110	10.4		
		Total Loop 101	\$546	60		
Loop 202	Red Mountain: I-10/SR 51 to Rural Road	HOV	\$216	9	Open	2011
	Red Mountain: Rural Road to Loop 101	HOV				
	Red Mountain: Loop 101 to Gilbert Road	GPL, HOV	\$173	6	Open	2016
	Red Mountain: Gilbert Road to Higley Road	GPL, HOV	(H)	5	Open	2015
	Red Mountain: Higley Road to US 60/Superstition a) Loop 101 to (Higley) to Broadway GP/HOV Lanes b) Broadway to US 60/Superstition GP/HOV Lane	GPL, HOV	(H) (I)	12.5 2.5	Open Deferred	2015 2030
		Sub-Total Red Mountain	\$389	30		
	Santan: I-10 to Dobson Road (J)	GPL, HOV	\$101	11	Open	2011
	Santan: Dobson Rd to Val Vista Road	GPL, HOV	\$2	1	Pre-Design & Environmental	2028
	Santan: Val Vista Rd to US 60/Superstition	GPL, HOV	\$0	11	Deferred	2030
		Sub-Total Santan	\$103	23		
	South Mountain: I-10 (West) to 51 st Avenue	GPL	1,727	22	Open	2019
	South Mountain: 51 st Avenue to Loop 202/I-10	GPL				
		Sub-Total South Mountain	\$1,727	22		
		Total Loop 202	\$2,219	75		
Loop 303	I-17 to US 60/Grand Avenue a) I-17 to Lake Pleasant (K) b) Happy Valley to Lake Pleasant c) US 60/Grand Avenue to Happy Valley	GPL	\$93 \$131 \$41	5.7 6.3 6	Open Construction Open	2011 2022 2015
	US 60/Grand Avenue to I-10 (L)	GPL	\$356	15	Open	2016
	I-10 to I-10R/MC 85	GPL	\$8	5	Pre-Design & Environmental	2030
	MC 85 to Riggs Road	ROW Protection	-	-	Deferred	TBD
		Total Loop 303	\$629	38		
SR 51	Loop 101/Pima to Shea Boulevard a) GPL b) HOV Lane	GP, HOV	\$0 \$53	- 6	Deferred Open	TBD 2009
		Total SR 51	\$53	6		
SR 74	US 60/Grand to Loop 303	ROW Protection	\$48	25	Open Passing Lane	2011
	Loop 303 to I-17		-	-	ROW Deferred	TBD
		Total SR 74	\$48	25		
SR 85	I-10 to Hazen Road	GPL	\$47	5	Open	2013
	Hazen Road to I-8	GPL	\$48	32	Open	2013
		Total SR 85	\$95	37		
US 60	99 th Avenue to 83 rd Avenue	Unidentified	\$12	2	Open	2011
	71 st Avenue to Grand Canal Bridge	Unidentified	\$4	6.5	Open	2007
	Grand Avenue: Loop 303 to Loop 101	GPL	\$33	10	Open	2011
	Grand Avenue: Loop 101 to Van Buren Street	GPL	\$32	11	Open	2014

Facility	Original Prop 400 Improvement	2005 Improvement Planned	Total Expenses June 2020 (2020 \$)	Miles	Status	Year Open
	Sub-Total Grand Avenue		\$81	29.5		
	Superstition: I-10 to Loop 101	GPL	\$30	5	Open	2010
	Superstition: Gilbert Road to Power Road	GPL, HOV	\$93	4	Open	2007
	Superstition: Crismon Road to Meridian Road	GPL, HOV	\$2	2	Deferred	2030
	Sub-Total Superstition		\$125	11		
	Total US 60			40.5		
WFG	Loop 202 to Ellsworth Road	GPL	\$120	2	Open	2014
	Ellsworth Road to Meridian Road ^(M)	GPL	\$46	3	Design	2022
	Total WFG (now SR 24)		\$166	5		
	Wickeburg Bypass	GPL	\$54	1.7	Open	2010
	Total Wickenburg Bypass		\$54	1.7		
			Total Miles	410		
New Interchanges						
I-10	Bullard Road	TI	\$17	-	Open	2008
	Chandler Heights (now Gila River Indian Community Access Improvements)	TI	\$0	-	Planned	2024
	El Mirage	TI	\$27	-	Open	2016
	Perryville Road	TI	\$29	-	Open	2014
I-17	Dixileta Drive (half interchange)	TI	\$48	-	Open	2008
	Dove Valley Road	TI	\$23	-	Open	2010
	Jomax Road (included in Dixileta Drive above)	TI	incl. with Dixileta Dr	-	Open	2008
Loop 101	64 th Street	TI	\$30	-	Open	2008
	Beardsley Road (half interchange, reconstruct Union Hills interchange)	TI	\$20	-	Open	2011
	Bethany Home Road	TI	\$10	-	Open	2007
Loop 202	Mesa Drive (ramps only)	TI	\$0	-	Deferred	2030
US 60	Superstition: Lindsay Road (half interchange)	TI	\$0	-	Deferred	TBD
	Superstition: Meridian Road (half interchange)	TI	\$13	-	Open	2015
New HOV Ramps						
Loop 101	I-10	HOV Ramp	\$0	-	Planned	2027
	I-17	HOV Ramp	\$0	-	Deferred	TBD
Loop 202	Red Mountain & US 60/Superstition	HOV Ramp	\$0	-	Deferred	TBD
	Santan & I-10	HOV Ramp	\$101	-	Open	2011
	Santan & Loop 101/Price	HOV Ramp				
SR 51	Loop 101/Pima	HOV Ramp	\$53	-	Open	2009

Note: ^(A) Improvements re-evaluated as part of new "Broadway Curve" project on I-10 between I-17 Split to SR 202/Santan.

^(B) Improvements along the I-17 Corridor are being re-evaluated as part of the 2018 "I-10 / I-17 Integrated Corridor Management (Spine) Study" where alternatives to congestion relief are assessed. Thus, several improvements have changed from GPL or HOV lanes to pump stations to aid with freeway drainage, traffic interchanges, and auxiliary lanes to help with traffic flow.

^(C) Improvements on the "Loop 101 Agua Fria Corridor" were restructured as part of the 2019 Freeway Life Cycle Program rebalance where some GPL segments were either in design, changed to traffic interchanges, or deferred to 2030. The HOV lane, however, opened in 2011; as such, auditors considered the project's HOV miles as open.

^(D) Improvement completed as part of "Loop 101 Agua Fria: I-10 to Tatum HOV Lane;" thus expenses only counted once.

^(E) Improvement included as part of "Loop 101 Pima: I-17 to Pima / Princess GPL;" thus expenses only counted once.

^(F) Improvement completed as part of "Loop 101 Pima: Pima/Princess to Shea HOV Lane;" thus expenses only counted once.

^(G) Improvement completed as part of "Loop 202 Red Mountain to Baseline Road;" thus expenses only counted once.

^(H) Improvement completed as part of "Loop 202 Red Mountain: Loop 101 to Gilbert Road", which was completed as a design-build project "Loop 101 to Broadway;" thus expenses only counted once.

^(I) "Loop 202 Red Mountain: Broadway to US 60" included as part of "Loop 202 Santan: Val Vista to US 60," which has been deferred with no expenses as of June 30, 2020.

- (J) "Loop 202 Santan: I-10 to Dobson" had the GPL deferred to 2030, while the HOV Lane opened in 2011 as part of the segment from "I-10 to Gilbert."
- (K) Prop 400 envisioned three GPLs, of which one interim GPL opened to traffic in 2011. The remainder GPLs were deferred past the Prop 400 horizon. Auditors considered the project's 5.7 GPL miles as open.
- (L) Improvements on the "Loop 303: US 60 to I-10" were changed to include a combination of shorter GPLs and traffic interchanges.
- (M) Two GPLs were anticipated to open to traffic by 2022, while the 3rd (and final) GPL was deferred to 2030. As such, auditors considered the project's two GPL miles as open.

Appendix C: Prop 400 Arterial Project Status

Proposition 400 (Prop 400) proposed 94 original arterial project improvements such as widening or extending existing major arterials, building new bridges and roads, improving or constructing new intersections, purchasing right-of-way for future improvements, upgrading traffic signals at major intersections, and providing technology for traffic monitoring and information systems. This appendix provides the status of the original projects envisioned in the 2005 Annual Report on the Status of the Implementation of Prop 400 as of June 30, 2020.

As the Maricopa Association of Governments (MAG) and local jurisdictions studied and continue to study the original improvements for implementation, initial project limits or project types changed and may continue to change to best address transportation needs. For instance, there were original projects that opened to traffic as intended (e.g., Beardsley Road: Loop 101 to Lake Pleasant Parkway) and other projects that had segments changed (e.g., Greenfield Road: University Drive to Baseline Road where the first segment from Baseline Road to Southern opened as intended, but the second segment from Southern to University Drive was replaced with an intersection at University Road / Stapley Drive). To facilitate an understanding of those types of changes and the status of arterial projects, Exhibit 30 provides explanations and clarifying information on how to read the project status listing shown in Exhibit 31.

EXHIBIT 30. EXPLANATIONS FOR THE ARTERIAL PROJECT LISTING SHOWN AT EXHIBIT 31.

Description	Explanation
Original Prop 400 Improvement	Original Prop 400 Improvements are per the 2005 Annual Report on the Status of the Implementation of Prop 400 which is based on the 2003 Regional Transportation Plan that served as the foundation for the voter-approved Prop 400 sales tax extension in 2004.
Miles	Miles shown are per the 2005 Annual Report on the Status of the Implementation of Prop 400. Where possible, auditor separated original miles into segment status to provide more detail on project status in terms of miles completed.
Status	Status is as of June 30, 2020: <ul style="list-style-type: none"> ○ Open = Project is open to traffic. ○ Planned = Project had no activity, but is expected to start the pre-design and environmental stage prior to the expiration of Prop 400 in December 2025. ○ Design = Project had advanced from the planning and pre-design/environmental stage to the design phase where plans are finalized for construction. ○ Construction = Project is being built. ○ Deferred = Project will not have any activity prior to the expiration of Prop 400 in December 2025 and will not be funded by Prop 400. It is, however, still considered part of MAG's long range Regional Transportation Plan.
Year Open	The year the improvement opened to traffic or, for in-progress projects, the year it was estimated to open as of June 2020. For deferred projects, year open was marked as to-be-determined (TBD).
Original Improvement Replaced With	Name of the replacement project(s). For instance, the original project "Arizona Avenue: Ocotillo Road to Hunt Highway" was replaced with "Lindsay Road: Ocotillo Road to Hunt Highway". In other instances, an original project was replaced with multiple other projects such as the "Scottsdale Airport: Runway Tunnel" that was replaced with 9 separate projects—all in different completion stages as of June 30, 2020.

EXHIBIT 31. STATUS OF ORIGINAL ARTERIAL PROP 400 PROJECTS, AS OF JUNE 30, 2020

#	Original Prop 400 Improvement	Miles	Status	Year Open	Original Improvement Replaced With
1	Arizona Avenue: Ocotillo Road to Hunt Highway	3	Design	2023	Lindsay Road: Ocotillo Road to Hunt Hwy
2	Avenida Rio Salado: 7 th St to SR 202 South Mountain	7	Open	2018	-
3	Baseline Rd: Power Road to Meridian Road a) Power Road to Ellsworth Road b) Ellsworth Road to Meridian Road	6	Open	2019	Mesa Main Street: Mesa Drive to Gilbert Road Light Rail
4	Beardsley Road: Loop 101 to Lake Pleasant Parkway	3	Open	2010	-
5	Black Mt Parkway: SR 51 to Black Mountain Parkway	1	Open	2016	-
6	Broadway Road: Dobson Road to Country Club Drive	2	Planned	2025	Broadway Road: Country Club Drive to Stapley Drive
7	Carefree Highway: Cave Creek Road to Scottsdale Road	2	Planned	2025	-
8	Crimson Road: Broadway Road to Germann Road: a) Broadway to Guadalupe b) Guadalupe to Ray c) Ray to Germann	3 3 3	Deferred Planned Open	TBD 2025 2019	b) Broadway Road: Country Club Drive to Stapley Drive c) Mesa Main Street: Mesa Drive to Gilbert Road Light Rail
9	Dobson Road: Salt River Bridge	1	Deferred	TBD	-
10	El Mirage Road: Bell Road to Jomax Road a) Bell Road to Deer Valley Rd b) Deer Valley Road to Loop 303 c) Loop 303 to Jomax Rd	4 Incl. above 2	Open Open Deferred	2011 2009 TBD	-
11	El Mirage Road: Paradise Lane over Grand Avenue to Thunderbird Road a) Bell Road to Picerne Drive b) Grand Avenue to Picerne Drive c) Cactus to Grand Avenue	2 2 2	Open Design Open	2014 2023 2018	b) Dysart Road: Northern to Peoria
12	El Mirage Road: Thunderbird Road to Northern Ave a) Cactus Road to Grand Avenue b) Peoria Avenue to Cactus Road c) Northern Avenue to Peoria Avenue	4	Open	2018 2017 2018	-
13	Elliot Rd Road Power Road to Meridian Road a) Power Road to Sossaman Road b) Sossaman Road to Ellsworth Road c) Ellsworth Road to Meridian Road	3 Incl. above 3	Planned Planned Open	TBD 2023 2020	-
14	Germann Road: Ellsworth Road to Signal Butte Road	2	Open	2019	Mesa Main Street: Mesa Drive to Gilbert Road Light Rail
15	Germann Road: Gilbert Road to Power Road a) Gilbert Road to Val Vista b) Val Vista to Higley c) Higley to Power	2 2 2	Design Open Open/Planned	2021 2016 2014, 2025	c) Higley to Power replaced with: o Santan Freeway to Pecos (2014) o Pecos to Chandler Heights (2025)
16	Gilbert Road: Loop 202 Santan to Hunt Highway a) Chandler Heights Road to Hunt Highway b) Loop 202 Santan to Queen Creek Road c) Queen Creek Rd to Chandler Heights Road	2 1 2	Open	2016 2010 2015	-
17	Gilbert Road: Salt River Bridge	1	Design	2025	-
18	Greenfield Road: Elliot Road to Warner Road	1	Design	2021	Val Vista Drive: Appleby Road to Riggs Road
19	Greenfield Road: University Drive to Road a) Baseline Road to Southern b) Southern to University Road	1 2	Open Planned	2011 2014	b) University Road at Stapley Drive
20	Guadalupe Road: Power Road to Meridian Road. a) Power Road to Hawes Road b) Hawes Road to Crimson c) Crimson to Meridian	2 2 2	Open	2019	Mesa Main Street: Mesa Drive to Gilbert Road Light Rail
21	Happy Valley Road: Loop 303 to 67 th Avenue a) Lake Pleasant Parkway to Terramar Boulevard b) Loop 303 to Lake Pleasant Parkway c) Terramar Boulevard to 67 th Avenue	2 2 1	Open Construction Open	2010 2020 2010	-

#	Original Prop 400 Improvement	Miles	Status	Year Open	Original Improvement Replaced With
22	Happy Valley Road: 67 th Avenue to I-17	1	Open	2005	-
	a) I-17 to 35 th Avenue b) 35 th Avenue to 67 th Avenue	3	Deferred	TBD	
23	Hawes Road: Broadway Road to Ray Road	2	Planned	2028	-
	a) Broadway to Baseline	2	Planned	2027	
	b) Baseline to Elliot	1	Planned	2027	
	c) Elliot to Santan d) Santan Freeway Ray Road	1	Open	2011	
24	Higley Road: US 60 to Loop 202 Red Mountain	3	Open	2019	Mesa Main Street: Mesa Drive to Gilbert Road Light Rail
	a) Loop 202 to Brown Road b) Brown Road to US 60	3.5			
25	Jomax Rd Road Loop 303 to Sun Valley Pkwy	17	Design	2022	Jomax Road: Loop 303 to Vistancia
26	Lake Pleasant Parkway: Beardsley Road to Loop 303	4	Deferred	TBD	-
	a) Dynamite Boulevard to SR-74: 0 to 6 lanes	5	Open	2015	
	b) West Wing Parkway to Loop 303	Incl. above	Open	2008	
	c) Union Hills Drive to Dynamite Road, 4 lane portion d) Union Hills Drive to Dynamite Road: 4 to 6 lanes	Incl. above	Open	2008	
27	Loop 101 Frontage Roads: North (West Bound) Pima/ Princess Drive to Scottsdale Road	1	Open	2009	b) Hayden/Miller Road: Adele Court to Juan Tabo Drive
	a) Hayden Road to Scottsdale Road b) Pima Road / Princess Drive to Hayden Road	1	Design	2022	
28	Loop 101 South Frontage Roads: Hayden to Pima	1	Open	2008	Pima Road: Loop 101 to Thompson Peak Parkway
29	McKellips Road: East of Sossaman Rd to Meridian Rd	3	Open	2008	-
	a) East of Sossaman to Crismon b) Crismon to Meridian	2	Planned	2026, 2029	
30	McKellips Road: Gilbert Road to Power Road	2	Open	2019	Mesa Main Street: Mesa Drive to Gilbert Road Light Rail
	a) Gilbert Road to Val Vista Drive	2			
	b) Val Vista Drive to Higley Road c) Higley Road to Power Road	2			
31	McKellips Road: Salt River Bridge	1	Deferred	TBD	-
32	McKellips v: Loop 101 to Mesa city limit	2	Design	2023	-
33	Meridian Road: Baseline Road to Germann Road	4	Open	2019	Mesa Main Street: Mesa Drive to Gilbert Road Light Rail
	a) Baseline Road to Ray Road b) Ray Road to Germann Road	3			
34	Mesa Drive: Broadway Road to US 60	2	Open	2014	-
35	Miller Road: Princess Drive to Center St (101L underpass)	0.5	Planned	2028	-
36	Northern Avenue: Grand Avenue to Loop 101	(A)	Design	2025	-
37	Northern Avenue: Loop 101 to Loop 303	(A)	Construction Design	2022	-
	a) Dysart to 111th b) 99th to Loop 101			2026	
38	Northern Avenue: Dysart Road to Loop 303	(A)	Open	2014	-
39	Pecos Road: Ellsworth Road to Meridian Road	3	Planned	2027	-
40	Pima Road: Deer Valley Road to Happy Valley Road and Dynamite Road to Cave Creek Road	2	Open	2012	-
	a) Deer Valley Road to Happy Valley Road b) Dynamite Blvd to Cave Creek (Stagecoach Road)	5	Planned	2026	
41	Pima Road: Happy Valley Road to Dynamite Road	2	Planned	2025	-
42	Pima Road: McKellips to Via Linda	2	Design	2022	-
	a) Via Linda to Via de Ventura	2	Open	2012	
	b) Via de Ventura to Krail Street	2	Design	2022	
	c) Krail Street to Chaparral Road	2	Design	2023	
	d) Chaparral Road to Thomas Road e) Thomas Road to McDowell	2	Design	2023	
43	Power Road: Baseline Road to Galveston	1	Open	2009	-
	a) Baseline Road to East Maricopa Floodway (EMF) b) East Maricopa Floodway (EMF) to Galveston	2.5	Planned	2023	
44	Power Road: Galveston to Chandler Heights Road	2.5	Open	2014	-
	a) Galveston to Pecos b) Pecos to Chandler Heights	2.5		Planned	

#	Original Prop 400 Improvement	Miles	Status	Year Open	Original Improvement Replaced With
45	Price Road (Ext.): Loop 202 Santan to I-10	6	See Replacement Projects	See Replacement Projects	Replaced with 9 Projects: 1) Chandler Heights Road: Arizona to McQueen (2020) 2) Chandler Heights Road: McQueen to Gilbert (design) 3) McQueen Road: Ocotillo to Riggs (2016) 4) Ocotillo Road: Arizona to McQueen (2016) 5) Ocotillo Road: Copper to Gilbert (2019) 6) Old Price/Queen Creek (2016) 7) Price Road: Santan Freeway to Germann (2008) 8) McQueen Road: Chandler Heights to Riggs (2017) 9) Chandler Heights: Gilbert to Val Vista (design)
46	Queen Creek Road.: Arizona Avenue to Power Road. a) Arizona Avenue to McQueen Road b) McQueen Road to Lindsay Road c) Lindsay Road to Power Road	1 3 5	Open	2009 2020 2012	-
47	Ray Road: Val Vista Drive to Power Road	4	Design	2023	Lindsay Road: Loop 202 Santan Transportation Interchange & Corridor
48	Ray Road: Sossaman Road to Meridian Road a) Sossaman Road to Ellsworth Road b) Ellsworth Road to Meridian Road	2 3	Open	2011 2015	-
49	Scottsdale Airport: Runway Tunnel	1	See Replacement Projects	See Replacement Projects	1) Frank Lloyd Wright - Loop 101 Interchange (design) 2) Raintree - Loop 101 Interchange (construction) 3) Northsight Boulevard: Hayden to Frank Lloyd Wright (2014) 4) Redfield Road: Raintree Drive to Hayden Road (design) 5) Raintree Drive: Scottsdale Road to Hayden Road (construction) 6) Raintree Drive: Hayden Road to Loop 101 (construction) 7) Frank Lloyd Wright at 76 th / 78 th / 82 nd Street Intersections (2014) 8) Drinkwater Boulevard Bridge (2020) 9) Hayden Road - Loop 101 Interchange (planned)
50	Scottsdale Road: Thompson Peak Parkway to Happy Valley Road a) Thompson Peak to Pinnacle Peak Phase I b) Thompson Peak to Pinnacle Peak Phase II c) Pinnacle Peak to Happy Valley to Jomax	1 1 1	Open Planned Planned	2014 2028 2028	-
51	Scottsdale Road: Happy Valley Road to Carefree Highway a) Pinnacle Peak to Happy Valley to Jomax b) Jomax to Dixileta c) Dixileta to Carefree Hwy (Ashler Hills)	6	Planned Planned Planned	2028 2023 2025	-
52	Shea Boulevard: Loop 101 (PI) to SR 87 a) Loop 101 Pima to Via Linda o Shea Boulevard at 90 th / 92 nd /96 th o Shea Auxiliary Lane: 90 th to Loop 101 o Shea Boulevard at Via Linda Phase 1 o Shea Boulevard Intersection b) Via Linda to SR 87	0.5 0.5 0.5 0.5 10	Open Planned Open Design Open	2007 2025 2006 2024 2018	-
53	Shea Boulevard: Palisades Blvd to Saguaro Blvd a) Palisades to Technology b) Technology to Cereus Was	1.5 1.5	Planned Open	2023 2015	-

#	Original Prop 400 Improvement	Miles	Status	Year Open	Original Improvement Replaced With
54	Signal Butte Road: Broadway Road to Pecos Road	4	Planned	2029	-
	a) Broadway Road to Elliot Road	2	Open	2015	
	b) Elliot Road to Pecos Road	1	Deferred	TBD	
	o Ray Road to Williams Field o Williams Field to Germann	1	Design	2022	
55	Sonoran Parkway: Central to 32nd Street	4	Open	2013	-
56	Southern Avenue: Country Club Drive to Recker Road	2	Construction	2022	a) SR 24 Interchange & Corridor Improvements b) Southern at Stapley Interchange c) Southern at Lindsay Interchange d) Southern at Higley Interchange
	a) Country Club Drive to Stapley Drive	2	Design	2023	
	b) Stapley Drive to Lindsay Road	2	Design	2022	
	c) Lindsay Road to Greenfield Road d) Greenfield Road to Recker Road - Design	2	Design	2021	
57	Southern Ave: Sossaman Rd to Meridian Rd	5	Deferred	TBD	-
58	Thomas Road: Gilbert Road to Val Vista Drive	2	Open	2019	Mesa Main Street: Mesa Drive to Gilbert Road Light Rail
59	Union Hills: Hayden to Pima	1	Planned	2023	-
60	University Drive: Val Vista Drive to Hawes Road	3	See Replacement Projects Open	See Replacement Projects 2017	a) Replaced with 4 Projects: 1) Sossaman Rd at Baseline Rd 2) Ellsworth Rd: Ray Rd to Germann Rd 3) Sossaman Rd: Warner Rd to Ray Rd 4) Ray Rd at Ellsworth Rd b) Higley to Sossaman replacement project further substituted with a) above.
	a) Val Vista Drive to Higley	4			
	b) Higley to Hawes o Higley to Sossaman Road o Sossaman Road to 88th Street				
61	Val Vista Drive: University Drive to Baseline Road	1	Construction Design Open	2020 2024 2020	b) Baseline Road: 24th St to Consolidated Canal
	a) Baseline Road to Southern o Baseline to US 60 o US 60 to Pueblo				
	b) Southern to University				
62	Val Vista Road: Warner Road to Pecos Road	3	Open	2006	-
Total Miles		271			
Traffic Intersections					
63	Arizona Avenue: Elliot Road	-	Open	2006	-
64	Arizona Avenue: Ray Road	-	Open	2007	-
65	Arizona Avenue: Chandler Blvd	-	Open	2006	-
66	Chandler Boulevard: Alma School Road	-	Open	2018	-
67	Chandler Boulevard: Dobson Road	-	Open	2011	-
68	Chandler Boulevard: Kyrene Road	-	Construction	2022	Cooper Road: South of Queen Creek to Riggs
69	Country Club Drive: University Drive	-	Deferred	TBD	-
70	Country Club Drive: Brown Road	-	Open	2019	Mesa Main Street: Mesa Drive to Gilbert Road Light Rail
71	Dobson Road: Guadalupe Road	-	Open	2011	-
72	Dobson Road: University Drive	-	Deferred	TBD	-
73	Elliot Road: Greenfield Road	-	Construction	2021	Elliott Road at Cooper
74	Elliot Road: Higley Road	-	Design	2021	Val Vista Drive: Appleby Road to Riggs Road
75	Elliot Road Cooper Road	-	Construction	2021	-
76	Elliot Road: Gilbert Road	-	Design	2021	Val Vista Drive: Appleby Road to Riggs Road
77	Elliot Road: Val Vista Drive	-	Design	2021	Val Vista Drive: Appleby Road to Riggs Road
78	Gilbert Road: University Drive	-	Open	2010	-
79	Guadalupe Road: Greenfield Road	-	Planned	2023	McQueen at Elliott
80	Guadalupe Road: Power Road	-	Planned	2025	-
81	Guadalupe Road: Cooper Road	-	Open	2018	-
82	Guadalupe Road: Gilbert Road	-	Open	2015	-
83	Guadalupe Road: Val Vista Drive	-	Design	2021	Val Vista Drive: Appleby Road to Riggs Road

#	Original Prop 400 Improvement	Miles	Status	Year Open	Original Improvement Replaced With
84	Higley Road: US 60 to Loop 202 (Red Mt) Construct 3 grade separations	-	Open	2019	Mesa Main Street: Mesa Drive to Gilbert Road Light Rail
85	Kyrene Road: Ray Road	-	Construction	2022	Cooper Road: South of Queen Creek to Riggs
86	Lindsay Road: Brown Road	-	Open	2019	Mesa Main Street: Mesa Drive to Gilbert Road Light Rail
87	Ray Road: Alma School Road	-	Open	2012	-
88	Ray Road: Dobson Road	-	Open	2018	-
89	Ray Road: Gilbert Road	-	Deferred	TBD	-
90	Ray Road: McClintock Drive	-	Design	2025	Alma School Rd: Pecos Rd to Queen Creek Rd
91	Ray Road: Rural Road	-	Construction	2022	Cooper Rd: South of Queen Creek to Riggs
92	Stapley Drive: University Drive	-	Planned	2024	-
93	Warner Road: Cooper Road	-	Open	2010	-
94	Warner Road: Greenfield Road	-	Open	2020	Higley at Baseline

Note: ^(A) No miles were identified in the 2005 Annual Report on the Status of the Implementation of Prop 400.

Appendix D: Prop 400 Bus Transit and Light Rail Project Status

Proposition 400 (Prop 400) was initially intended to fund several transit operational and capital construction projects, including fixed-route bus service and route improvements, light rail additions, new passenger facilities, maintenance facilities, and fleet acquisitions. Depending on transit needs and performance, Valley Metro changed or continues to review service performance to make changes to original operational improvements planned. Similarly, for capital construction projects, Valley Metro and its member local jurisdictions studied and continue to study the original improvements for implementation, initial project limits, or types of facilities and vehicles and may continue to change to best address transit needs. This appendix provides a status of the Prop 400 bus transit and light rail transportation improvements envisioned in the ballot as updated in the 2005 Annual Report on the Status of the Implementation of Prop 400 as of June 30, 2020.

Bus Route Operational Improvements

Prop 400 proposed a series of operational bus improvements to 32 supergrid and 31 express/bus-rapid transit (BRT) routes. Supergrid bus routes are routes on the region’s regional grid that are operated along major roads in the arterial grid network. The supergrid network allows a higher level of operational efficiency than the local bus network by regionally funding key routes at a consistent level of service across all local jurisdictions served by Valley Metro. Regional express/BRT transit services can be arterial BRT or freeway BRT. Arterial BRT routes operate as overlays on corridors served by local fixed-route buses, but provide higher-speed services by operating with limited stops, signal priority systems, or other enhancements that operate during peak and off-peak periods. Freeway express/BRT routes use high occupancy vehicle (HOV) facilities to connect park-and-ride lots with major activity centers, such as downtown core areas. They also provide suburb-to-central city connections using the regional freeway system with limited stops. To facilitate understanding of the status of transit projects, Exhibit 32 provides explanations and clarifying information on how to read the project status listing in Exhibits 33 and 34.

EXHIBIT 32. EXPLANATIONS FOR FIXED-ROUTE BUS ROUTES SHOWN IN EXHIBITS 33 AND 34

Description	Explanation
Original Prop 400 Route	Original Prop 400 Routes are per the 2005 Annual Report on the Status of the Implementation of Prop 400 which updated the 2003 Regional Transportation Plan that served as the foundation for the voter-approved Prop 400 sales tax extension in 2004.
Status	Status shown is the status of the improvement as of June 30, 2020. Implemented = Improvement or new route was implemented. Deferred = Improvement or new route was deferred beyond Prop 400. Cancelled = Route was initially implemented, but cancelled due to low ridership. Combined = Route was cancelled and service route was combined with other existing route to serve area.
Improvement Type	Increased peak frequency = Improvement planned in 2003 RTP and 2005 Annual Report on the Status of the Implementation of Prop 400 include increasing peak frequency of existing route. New Service = Improvement planned in 2003 RTP and 2005 Annual Report on the Status of the Implementation of Prop 400 include new portions of route.
Service Start Date	The year service began on the improvement. Service start date for deferred projects is listed as TBD.
Funding Source	Indicates how the route is funded. Due to the nature of transit, certain segments of bus routes may be funded differently. Most routes receive funding from the local jurisdictions and funding from Prop 400. <ul style="list-style-type: none"> • Prop 400—At least a portion of the route receives Prop 400 funding for operations. • Local—at least a portion of the route is funded by the local jurisdiction that the route serves.

EXHIBIT 33. STATUS OF ORIGINAL SUPERGRID BUS ROUTES, AS OF JUNE 30, 2020

#	Original Prop 400 Route	Rt #	Status	Improvement type		Service Start Date	Funding Source
				Increased Peak Frequency	New Service		
1	Scottsdale/Rural	72	Implemented	x	x	2006	Prop 400, Local
2	Glendale Avenue	70	Implemented	x	-	2006	Prop 400, Local
3	Main Street	40	Implemented	x	x	2009	Prop 400, Local
4	Baseline/Southern/Dobson Extension	61 66 96	Implemented	x	-	2013	Prop 400, Local
5	Arizona Avenue/Country Club	112	Implemented	x		2006	Prop 400, Local
6	Gilbert Road	136	Implemented	x	x	2010	Prop 400
7	Chandler Boulevard	156	Implemented	x	x	2008	Prop 400, Local
8	University Drive (to Ellsworth Road)	30	Implemented	x	-	2020	Local
9	Camelback Road	50	Implemented	x	x	2006	Prop 400, Local
10	Broadway	45	Implemented	x	x	2011	Prop 400, Local
11	Elliot Road	108	Implemented	x	x	2011	Prop 400, Local
12	Alma School Road	104	Implemented	x	x	2006	Prop 400, Local
13	Hayden/McClintock	81	Implemented	x	x	2006	Prop 400, Local
14	Peoria Ave/Shea (3)	80 106	Implemented	x	x	2006	Prop 400, Local
15	Dysart Road	131	Implemented	x	x	2030	Local
16	59th Avenue	59	Implemented	x	x	2006	Prop 400, Local
17	McDowell/McKellips	17	Implemented	x	x	2013	Prop 400, Local
18	Power Road	184	Implemented	x	x	2011	Prop 400
19	Tatum/44th Street	44	Implemented	x	-	2030	Prop 400, Local
20	Ray Road	140	Implemented	-	x	2018	Prop 400, Local
21	Van Buren	3	Implemented	x	x	2013	Prop 400, Local
22	Queen Creek Road (Pecos P&R to Power Road)	-	Deferred	-	x	TBD	
23	Bell Road (via 303)	170	Implemented	x	x	2019	Prop 400, Local
24	Waddell/Thunderbird	138	Implemented	x	x	2015	Prop 400, Local
25	Thomas Road (2)	29	Deferred	x	x	2014	Prop 400, Local
26	Buckeye Road (Litchfield Road to Central Ave.)	13	Implemented	x	-	2035	Prop 400, Local
27	Indian School Road	41	Implemented	x	x	2019	Local
28	Dunlap/Olive Avenue	90	Implemented	x	x	2020	Prop 400, Local
29	99th Avenue	-	Deferred	-	x	TBD	
30	83d Avenue/75th Avenue	83	Implemented	x	x	2023	Local
31	Litchfield Road	-	Deferred	-	x	TBD	
32	Greenfield Road	-	Deferred	-	x	TBD	

EXHIBIT 34. STATUS OF ORIGINAL EXPRESS/BRT ROUTES, AS OF JUNE 30, 2020

#	Original Prop 400 Project/Route	Route	Status	Service Start Date	Funding Source
1	North Loop 101 Connector Surprise to Scottsdale P&R ^(A)	-	Cancelled		
2	North Glendale Express	575	Implemented	2008	Prop 400
3	Papago Fwy Connector (to West Buckeye P&R)	562	Implemented	2009	Prop 400
4	West Loop 101 Connector (to North Glendale P&R) ^(B)	-	Cancelled	2009	
5	East Loop 101 Connector ^(C)	-	Cancelled	2009	
6	Red Mountain Express	535	Implemented	2009	Prop 400
7	Main Street Arterial BRT ^(D)	-	Combined	2009	Prop 400, Local
8	Desert Sky Express	I10W	Implemented	2006	Local
9	Apache Junction Express	-	Deferred	2027	
10	Arizona Avenue Arterial BRT ^(E)		Cancelled	2011	Prop 400, Local
11	Buckeye Express (to West Buckeye P&R) ^(F)	563	Combined	2030	Prop 400
12	Superstition Freeway Connector	-	Deferred	2028	
13	Pima Express (To Airpark P&R)	-	Deferred	2030	
14	Grand Avenue Limited	GAL	Implemented	2006	Prop 400
15	Scottsdale/Rural Arterial BRT	-	Deferred	2035	
16	Peoria Express (to Peoria R&R)	573	Implemented	2031	Prop 400
17	South Central Avenue	SME Rapid	Implemented	2013	Local
18	South Central Avenue Arterial BRT	SMW Rapid	Implemented	2031	Local
19	Black Canyon Freeway Corridor	-	Deferred	2031	
20	Ahwatukee Connector	-	Deferred	2031	
21	Santan Express	-	Deferred	2032	
22	Anthem Express	-	Deferred	2031	
23	Red Mountain Freeway Connector	-	Deferred	2032	
24	Superstition Springs Express	533	Implemented	2032	Prop 400
25	Deer Valley	I-17	Implemented	2006	Prop 400, Local
26	Avondale Express ^(E)	563	Combined	2026	Prop 400
27	North I-17 Express	-	Deferred	2031	
28	Loop 303 Express	-	Deferred	2031	
29	SR. 51 Express	SR 51 RAPID	Implemented	2006	Local
30	Chandler Boulevard Arterial BRT	-	Deferred	2032	
31	Ahwatukee Express	I10E Rapid	Implemented	2006	Local

Source: 2003 Regional Transportation Plan, 2020 Annual Report on the Status of the Implementation of Prop 400, Internal Valley Metro Documents.

Note: (A) Route cancelled due to lack of ridership.

(B) Route cancelled due to lack of ridership.

(C) Route cancelled due to lack of ridership.

(D) Service combined with Route 40.

(E) Service combined with Route 112.

(F) Buckeye Express and Avondale Express combined to form Route 563.

Light Rail Capital Construction Projects

Prop 400 also proposed high-capacity light rail transit be added to the region, both new high-capacity transit and track extensions. As Prop 400 was implemented, Valley Metro added new light rail projects through the RTP process—primarily as part of the 2015 RTP. To facilitate an understanding of those types of changes and the status of light rail projects, Exhibit 35 provides explanations and clarifying information on how to read the project status listing shown in Exhibit 36 with projects shown in the order of which they were planned. Projects 1 through 4 were listed in the original Prop 400 Ballot language, projects 5 and 6 were in the 2003 Regional Transportation Plan (RTP), and project 7 was added to the RTP in 2015.

EXHIBIT 35. EXPLANATION OF LIGHT RAIL PROJECTS SHOWN IN EXHIBIT 36.

Description	Explanation
Project	Original Prop 400 = Project listed on initial Prop 400 Ballot Measure. 2003 RTP = Project listed on 2003 RTP, but not the initial Prop 400 Ballot Measure. 2015 RTP = Project added to RTP in 2015.
Miles	Planned miles to be added per Prop 400 ballot pamphlet. Current miles to be added per the 2020 Prop 400 Annual Report.
Status	Planning = project is currently in planning phase of pre-construction. Construction = Project in construction. Completed = Project construction completed and is in service. Deferred = Improvement or new route has been deferred beyond Prop 400.
Year Open	The year service began on the project. Service start date for projects not completed is the scheduled completion date.

EXHIBIT 36. STATUS OF PROP 400 FUNDED LIGHT RAIL PROJECTS, AS OF JUNE 30, 2020

#	Project	Planned Miles ^(A)	Current Miles ^(B)	Status	Year Open
1	I-10 West Link/Phoenix —Downtown Phoenix along the I-10 Corridor to 79th Avenue ^(C) a) Phase 1 —Washington Avenue/Central Avenue to Capitol b) Phase 2 —Capitol to 79th Avenue	11	1.5 8.5	Planning Deferred	2024 2030
2	Tempe Streetcar —Apache Boulevard to Southern Avenue along Rural Road	2	3	Construction	2021
3	Northeast Phoenix Link —Central Phoenix to Paradise Valley Mall	12	12	Deferred	2035
4	West/Central Mesa Link —Transit along Main Street from Sycamore to Mesa Drive in Mesa	2.7	3.1	Completed	2015
	Subtotal Miles, Original Prop 400 Projects	27.7	28.1		
5	West Phoenix/ Central Glendale Link —19th Avenue/Bethany Home to Downtown Glendale ^(D)	5	3	Deferred	TBD
6	MetroCenter Link/Northwest Extension —19th Avenue/Bethany Home to MetroCenter ^(E) a) Phase 1 —19th Avenue/Bethany Home to 19th Avenue/Dunlap b) Phase 2 —19th Avenue/Dunlap to MetroCenter	3.2 1.8	3.2 1.6	Completed Construction	2016 2024
7	South Central —Washington/Jefferson to Baseline Road ^(F)	5	5.5	Construction	2024
	Subtotal Additional Miles, Subsequent RTP Projects	15	13.3		
	Total Miles	42.7	41.4		
	Total Miles Completed as of June 30, 2020		6.3 miles		
	Total Miles to be Completed between July 1, 202 through June 30, 2026		11.6 miles		
	Total Miles Deferred beyond June 30, 2026		11.6 miles		

Source: Prop 400 ballot, 2003 RTP, 2015 RTP, 2020 Annual Report on the Status of the Implementation of Prop 400, Valley Metro Documents.

Note: (A) Planned Miles Source: Projects 1 to 4 from Prop 400 Ballot; Project 5 from 2003 RTP; Project 6 from 2007 Annual Report on the Status of the Implementation of Prop 400, and Project 7 from 2016 Annual Report on the Status of the Implementation of Prop 400.

(B) Current Miles Source: 2020 Annual Report on the Status of the Implementation of Prop 400, except for Project 5 that was from the 2020 Update to RTP.

(C) Phased approach as part of T2050.

(D) Project was part of 2003 RTP. Glendale portion of the project removed from RTP in 2020, although Valley Metro calculated it spent approximately \$3.5 million of Prop 400 funds and federal Congestion Mitigation and Air Quality Improvement funds planning the project up to the locally preferred alternative decision phase. The City of Phoenix City Council voted to defer the remaining miles until 2040.

(E) Project part of 2003 RTP. Phased approach began in 2007.

(F) Amended into 2015 RTP as part of T2050.

Capital Construction Passenger Facility Projects

Prop 400 also planned for capital improvements to transit passenger facilities including park-and-ride lots and transit centers. To facilitate understanding of the status of passenger facility projects, Exhibit 37 provides clarifying information on how to read the project status listing shown in Exhibit 38.

EXHIBIT 37. EXPLANATIONS OF PASSENGER FACILITY PROJECTS SHOWN IN EXHIBIT 38

Description	Explanation
Facility	Park-and-Ride = Park-and-ride facilities are parking lots with public transport connects to allow commuters heading to metropolitan centers to leave their vehicles and enter a city through public transit. Transit Center = Sheltered waiting areas located where several bus routes and/or light rail converge.
Status	Completed = Facility was completed and open. In process = Facility was in planning stages. Deferred = Facility was deferred beyond Prop 400.
Year Open	The year service began on the facility. Year open date for projects not completed is listed as TBD.
Funding Source	Indicates how the facility was funded: Prop 400 = Prop 400 funds used to construct the facility. Local funds = Local funds used to construct the facility. Federal funds = Federal funds used to construct the facility.

EXHIBIT 38. STATUS OF PASSENGER FACILITY PROJECTS, AS OF JUNE 30, 2020

#	Facility	Status	Year Open	Funding Sources
Park-and-Rides				
1	Peoria and Grand Avenues (Peoria)	Completed	2018	Prop 400, local, federal
2	Grand and Surprise Avenues (Surprise)	Completed	2011	Prop 400, local, federal
3	Glendale and Grand Avenues	In process	TBD	Local
4	Loop 303 (Surprise)	Deferred	TBD	
5	East Buckeye Road (Buckeye)	Completed	2011	Prop 400, local
6	Elliot Road/I-10 (Phoenix)	Deferred	TBD	
7	Camelback Road and Loop 101 (Phoenix)	Deferred	TBD	
8	Happy Valley Road and I-17 (Phoenix)	Completed	2011	Prop 400, local, federal
9	Laveen and 59th Avenue	Completed	2016	Prop 400, local, federal
10	Cactus Road/Loop 101 (Scottsdale)	Completed	2010	Prop 400, local, federal
11	County Club Drive and Highway 60 (Mesa) ^A	Completed	2011	Prop 400, local, federal
12	Price Road Loop 202 (Chandler)	Completed	2009	Prop 400, local, federal
13	Val Vista and Loop 202 (Gilbert)	Deferred	TBD	

#	Facility	Status	Year Open	Funding Sources
Transit Centers				
1	Glendale/Grand (4-Bay New) (Glendale)	Deferred	TBD	
2	Peoria (4-Bay New) (Peoria) ^B	Completed	2015	Prop 400, local, federal
3	19th Ave/Camelback (6-Bay New)	Deferred	TBD	
4	Metrocenter (Expansion/Rehab)	Deferred	TBD	
5	Central Station (Expansion/Rehab)	Completed	2011	Federal and local
6	44th/Cactus (6-Bay New)	Deferred	TBD	
7	Chandler Mall (4-Bay New) (Chandler)	Deferred	TBD	
8	South Tempe (4-Bay New) (Tempe)	Deferred	TBD	
9	Downtown Chandler (4-Bay New) (Chandler)	Deferred	TBD	
10	Mesa Downtown (6-Bay New) (Mesa) ^C	Completed	2016	Prop 400, local, federal
11	Scottsdale Airpark/101 (4-Bay New) (Scottsdale)	Deferred	TBD	
12	College/ASU (Expansion/Rehab) Tempe	Deferred	TBD	

Source: Internal Valley Metro Documents.

Note: (A) Reprogrammed as Thunderbird Park-and-Ride.

(B) Combined with Peoria Park-and-Ride.

(C) Mesa Drive Bus Interface Facility and Glendale Bus Interface Facility.

Other Transit Structures and Fleet Vehicle Purchases

Finally, Prop 400 planned for the addition of other capital structures and vehicle purchases to enhance the transit network as shown in Exhibit 39.

EXHIBIT 39. STATUS OF OTHER TRANSIT STRUCTURES AND FLEET VEHICLE PURCHASES FUNDED BY PROP 400, AS OF JUNE 30, 2020

Other Capital Investments	Number as of June 30, 2020	Number at Prop 400 End ^(A)
Other Structures		
Pull Outs/Shelters ^(B)	424	424
Vanpool Vehicle Maintenance Facility ^(C)	0	0
Fixed-Route Bus Maintenance Facility ^(D)	2	2
Dial-a-Ride Maintenance Facility ^(E)	0	0
Fleet Purchased		
Fixed Route	818	1,404
Rural Route	16	30
Vanpool	807	1,480
Paratransit	299	596

Source: 2020 Annual Report on the Status of the Implementation of Prop 400.

Note: (A) "Number at Prop 400 End" will be the number as of June 30, 2026. Despite the half-cent sales tax associated with Prop 400 ending December 31, 2025, Valley Metro plans on using those funds through the end of the fiscal year.

(B) Pull-Outs are located on side of road where buses may pull out of the flow of traffic to pick up and drop off passengers. Due to funding shortfall, there are no plans to build more pull-outs or shelters.

(C) Postponed indefinitely; Valley Metro prefers current facility.

(D) Additional Costs for expansion after sunset.

(E) Planning on doing after sunset, currently being worked on in RTP.

Appendix E: Auditee Response



June 22, 2021

Ms. Catherine Brady, Partner
Sjoberg Evashenk Consulting Group
455 Capitol Mall, Suite 700
Sacramento, CA 95814

Subject: Response to the June 2021 audit report - **Maricopa Association of Governments (MAG)**
Regional Transportation Plan (RTP) Fiscal Year 2021 Performance Audit

Dear Ms. Brady:

Thank you for providing the Fiscal Year 2021 MAG RTP Performance Audit report to the agencies on June 15, 2021. MAG and Valley Metro are pleased to learn the RTP audit contains no recommendations or findings. Given the complexity of transportation funding and the numerous federal and state requirements, this result is a testament to the partnership between our agencies and our resolve to serve the region and our member agencies.

We would like to express our gratitude to you and the audit team on your efforts during this process. MAG, Valley Metro and our member agencies and implementing partners look forward to continuing to deliver Proposition 400 programs and projects to our residents, further improving our regional transportation system.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric J. Anderson".

Eric J. Anderson
Executive Director
Maricopa Association of Governments

A handwritten signature in blue ink, appearing to read "Scott W. Smith".

Scott W. Smith
Chief Executive Officer
Valley Metro