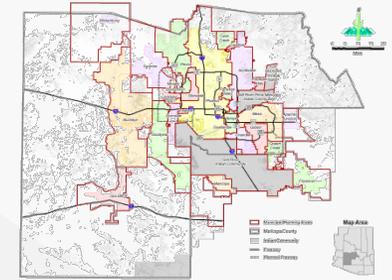




Transportation Policy Committee



June 17, 2020





Agenda Item 3

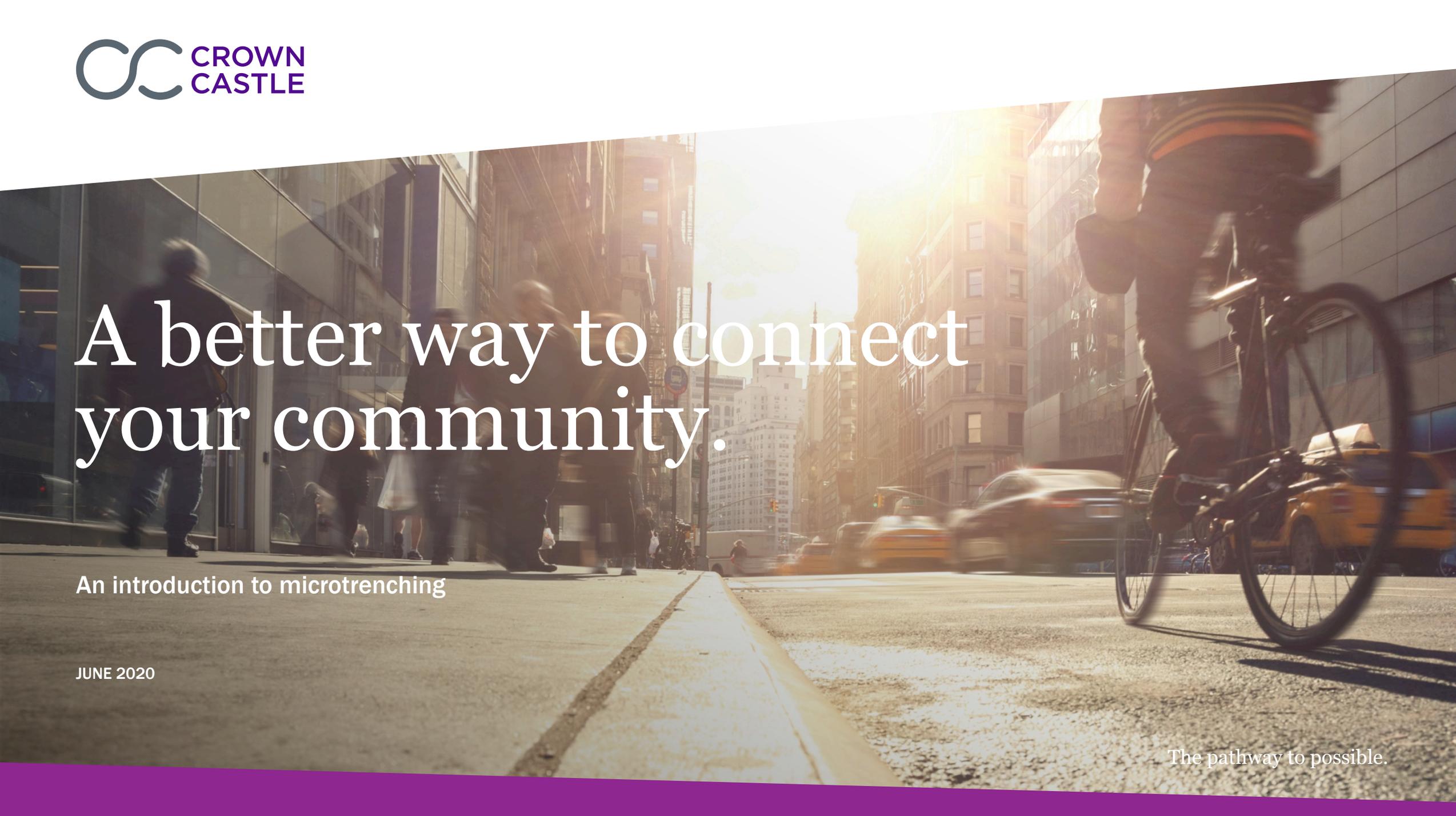


■ ITEMS PROPOSED FOR CONSENT

Agenda Item 4



- **Introduction to Microtrenching for Fiber Installation**
 - Crown Castle



A better way to connect your community.

An introduction to microtrenching

JUNE 2020

The pathway to possible.

About Us

- Local Crown Castle office in Chandler, AZ
- Existing towers, small cells, and fiber throughout the MAG Members Municipal Planning Areas and the rest of Arizona
- Future projects to build additional fiber infrastructure through out the area
- Want to be good partners and minimize impact to communities during construction



Our role in your world.

We own and operate the nation's most unique and comprehensive portfolio of communications infrastructure. It all works together to meet unprecedented demand—connecting people, businesses, and communities and erasing life's conventional boundaries.

Our infrastructure transforms everything around us.

People

We connect people to the devices, apps, and data they rely on to communicate, stay informed, and live their lives to the fullest.

Businesses and organizations

We make sure businesses and other large organizations have secure access to the essential data and applications they need to embrace new technologies and stay ahead.

Communities

We provide connections that improve safety and efficiency and that make communities better places to live.

Schools and universities

Our fast, secure fiber networks support new learning technologies in the classroom and promote groundbreaking research in higher education.

First responders

We give police officers, firefighters, and EMTs secure access to the information they need to react quickly to emergencies.

Venues

We give stadiums, convention centers, amusement parks, and other venues the wireless coverage and capacity to accommodate large crowds.

Innovators

We help deploy exciting new technologies that build smarter communities and create new opportunities for cities and technology companies alike.

© 2019 Crown Castle
CC-IG-CCI01-0219



Cell towers

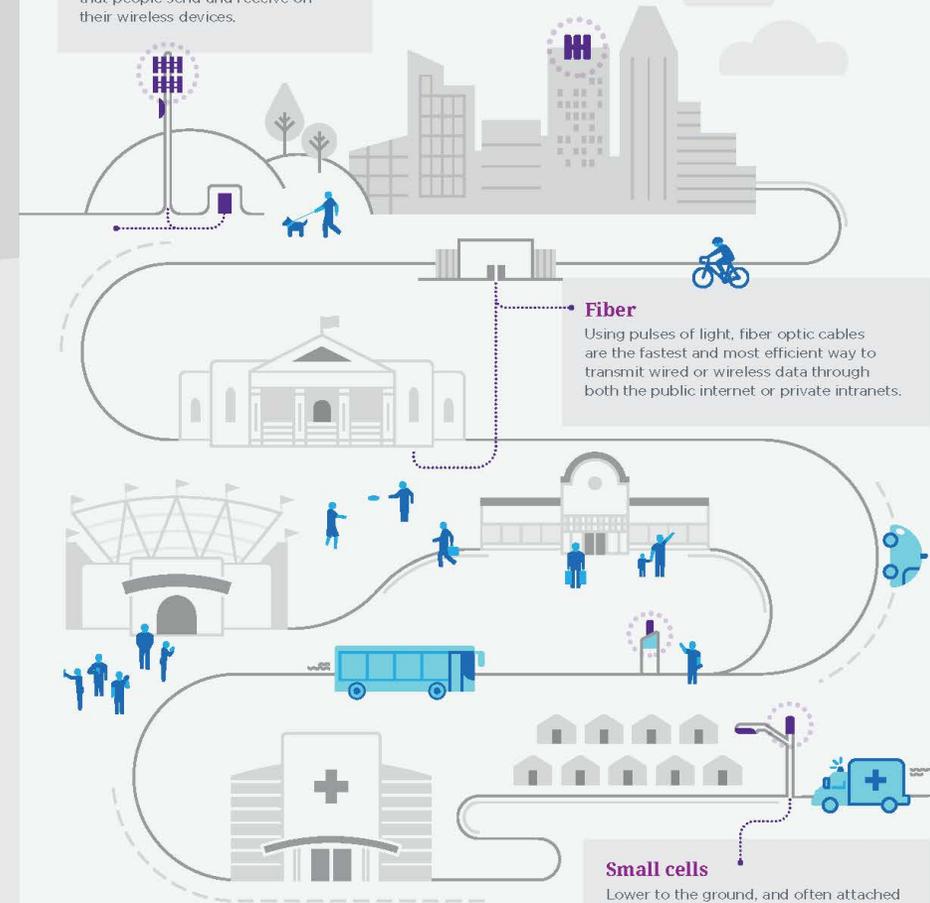
Towers receive and transmit cellular signals over a large geographic area—carrying the voice and data that people send and receive on their wireless devices.

Fiber

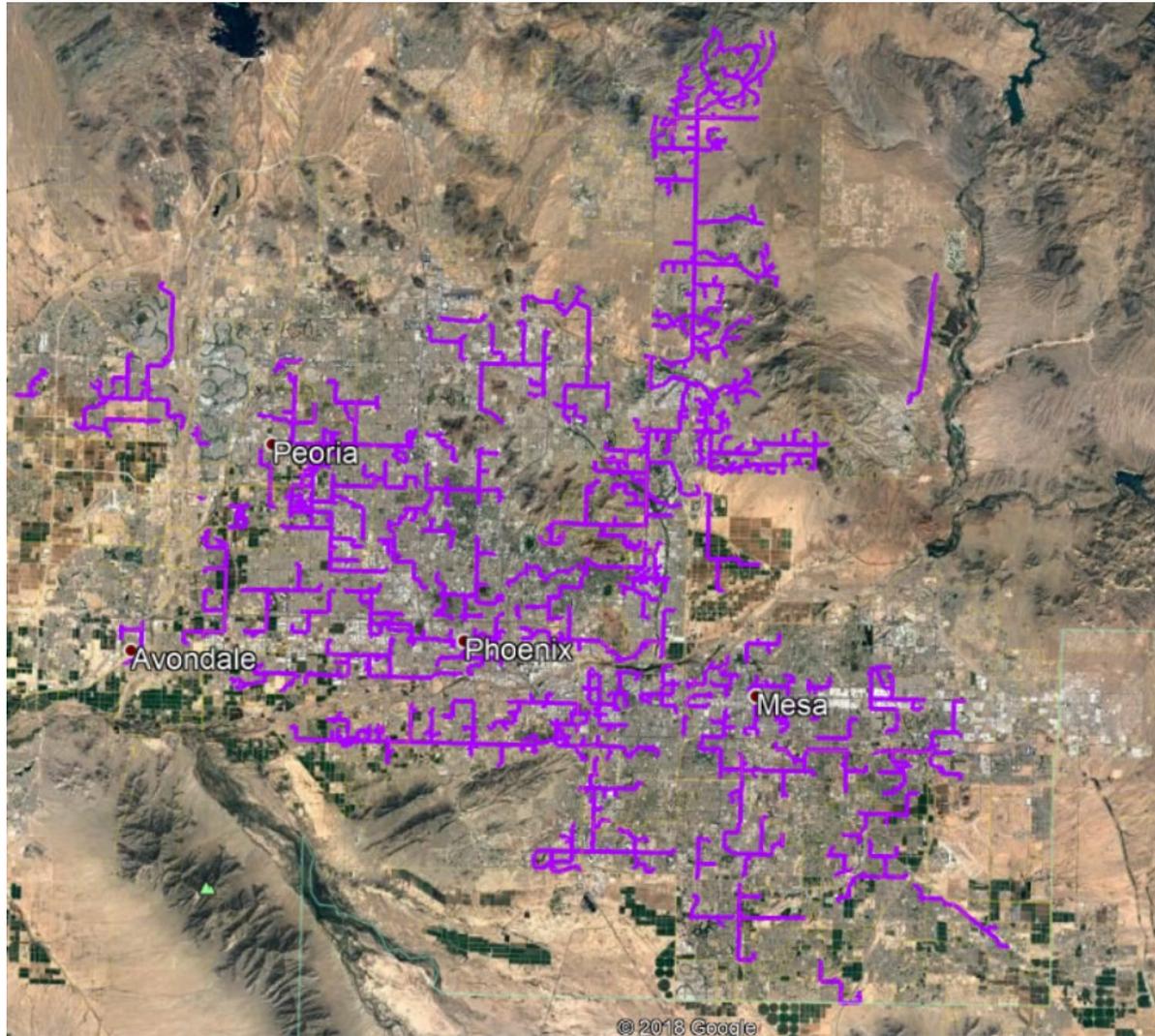
Using pulses of light, fiber optic cables are the fastest and most efficient way to transmit wired or wireless data through both the public internet or private intranets.

Small cells

Lower to the ground, and often attached to streetlights or utility poles, small cells add additional wireless coverage and capacity—or bring new coverage where towers aren't feasible.



Current and Future Fiber in MAG Areas



MAG Members Municipal Planning Areas

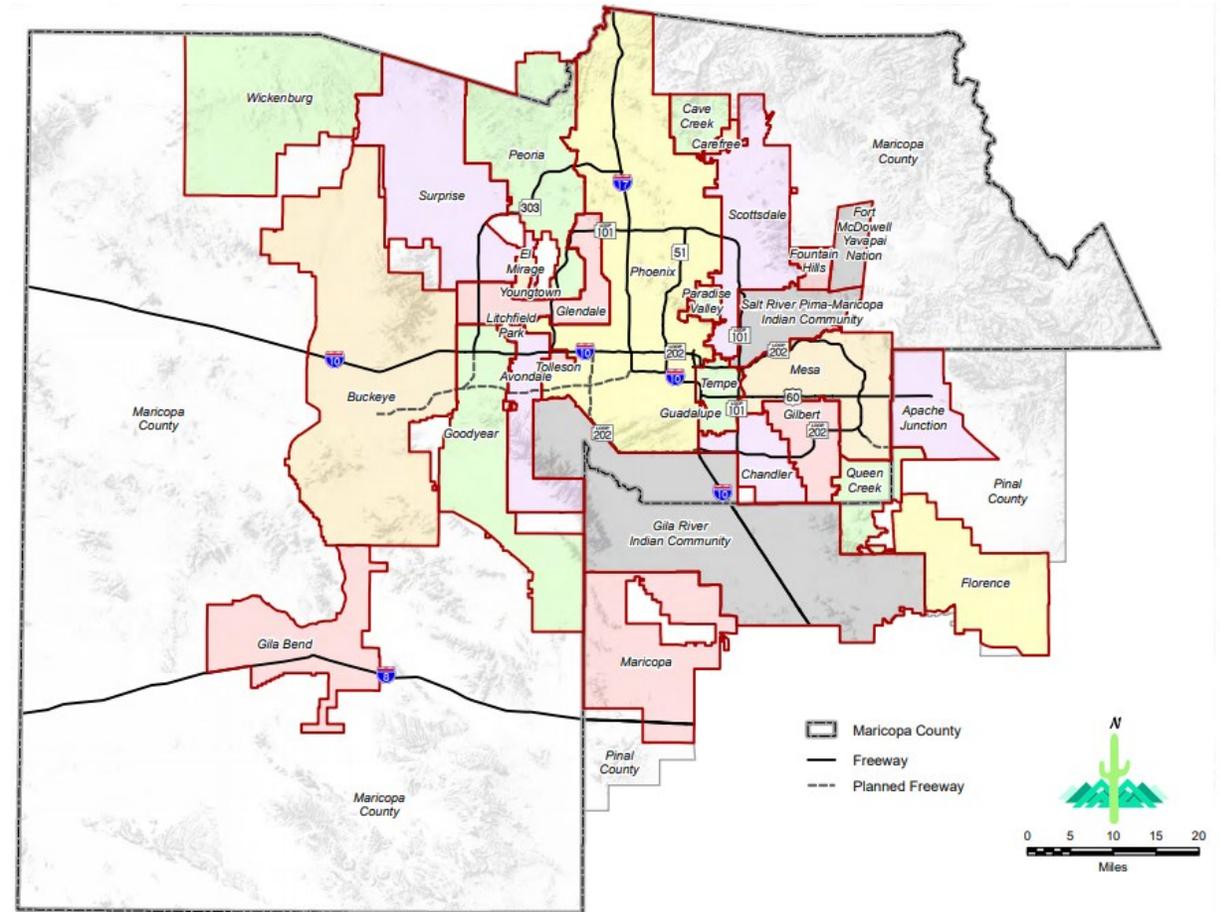


Figure 1: Map of MAG Member Agencies

New technologies are driving greater data demand and usage.

More devices, faster speeds, and more data-heavy traffic.

2x

Expected growth
in broadband speed
from 2017 to 2022.

10B+

Expected growth in
connected devices from
2017 to 2022.

82%

Expected amount of all
consumer internet traffic that
will be video by 2022.

To support this growing demand, it's estimated we'll need 800,000 small cells by 2026¹—each supported by fiber.

Sources: Cisco Visual Networking Index Forecast. Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2017–2022 White Paper, February 2019. S&P Global Market Intelligence, "Small Cell and Tower Projections through 2026," 2016

Microtrenching - an innovated and improved way to install fiber

Faster, smaller, and less disruptive from installation to restoration



Pre-installation



Installation



Conduit Placement



Restoration



Example of a restored microtrench

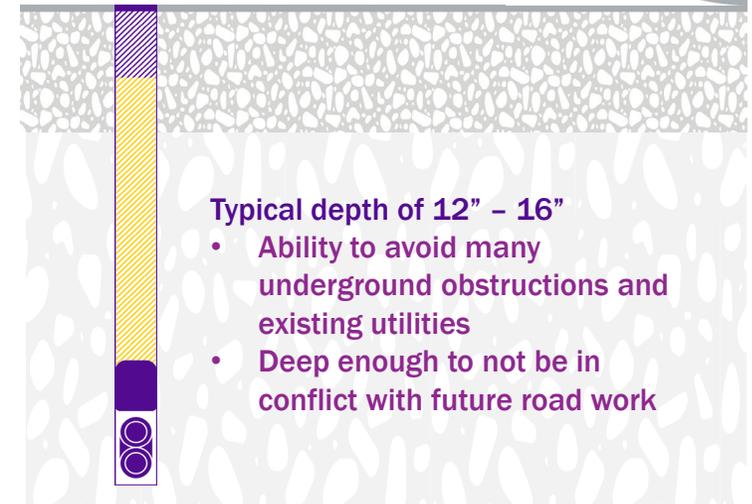
DAYS VS. WEEKS
Less construction time means less disruption

- 80% faster than traditional trenching
- Minimal disruption to traffic
- Less noise and equipment
- Fewer resident complaints
- Less waste and debris from microtrenching are vacuumed up during process
- Fewer new materials needed to reinstate roadway



Typical width of 2"

- minimizes impact to your streets and municipal infrastructure



And we're using it successfully in communities around the country.

- Austin, TX
- Boston, MA
- Charlotte, NC
- Chicago, IL
- Dallas, TX
- El Paso, TX
- Lexington, KY
- Los Angeles, CA
- Louisville, KY
- Manhattan Beach, CA
- Miami-Dade County, FL
- Mt. Vernon, NY
- New York City, NY
- San Diego, CA

Example 5 year old Microtrench - Austin, TX

Originally installed in 2015

Photos taken February 2020



Example Project – Los Angeles



Q&A



Thank you

For further information please contact:

Robert Pizorno

T: (602) 598-7248 | M: (480) 329-8219

Robert.Pizorno.Contractor@crowncastle.com

Scott Scandalis

T: (408) 468-5556 | M: (408) 318-4911

Scott.Scandalis@crowncastle.com



Agenda Item 5 Diamond Grind Pilot Program

Transportation Policy Committee
June 17, 2020

Presentation Overview

1. Rubberized Asphalt Overview
2. Freeway Pavement Noise Reduction Analysis Study
3. Diamond Grind Pilot Program

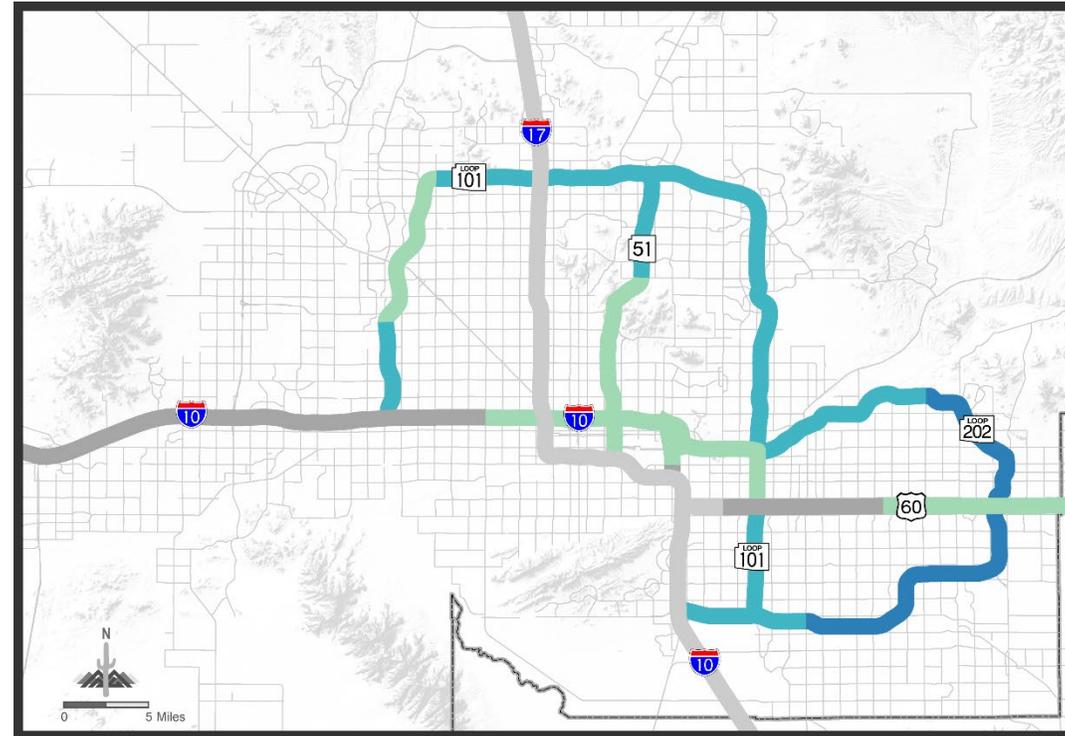


Photo Source: ADOT



Rubberized Asphalt: Overview and History

- Concerns in the early 2000s about freeway noise
- ADOT began investigating ways to mitigate noise
- Ultimately decided on a rubberized asphalt overlay
 - Asphalt Rubber Asphaltic Concrete Friction Course (AR-ACFC)
 - Quiet Pavement/Quiet Pave

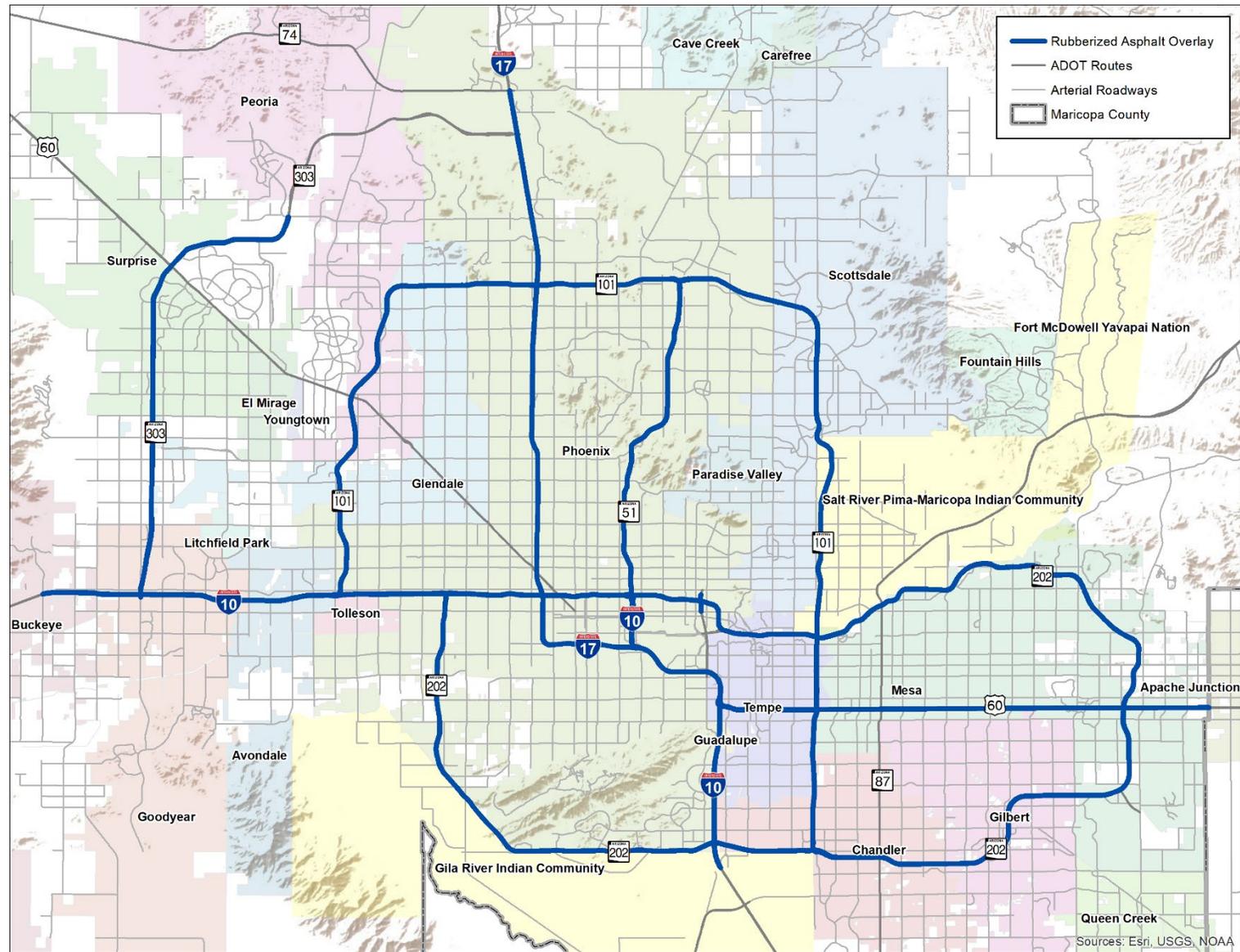


Freeway Construction Maricopa County

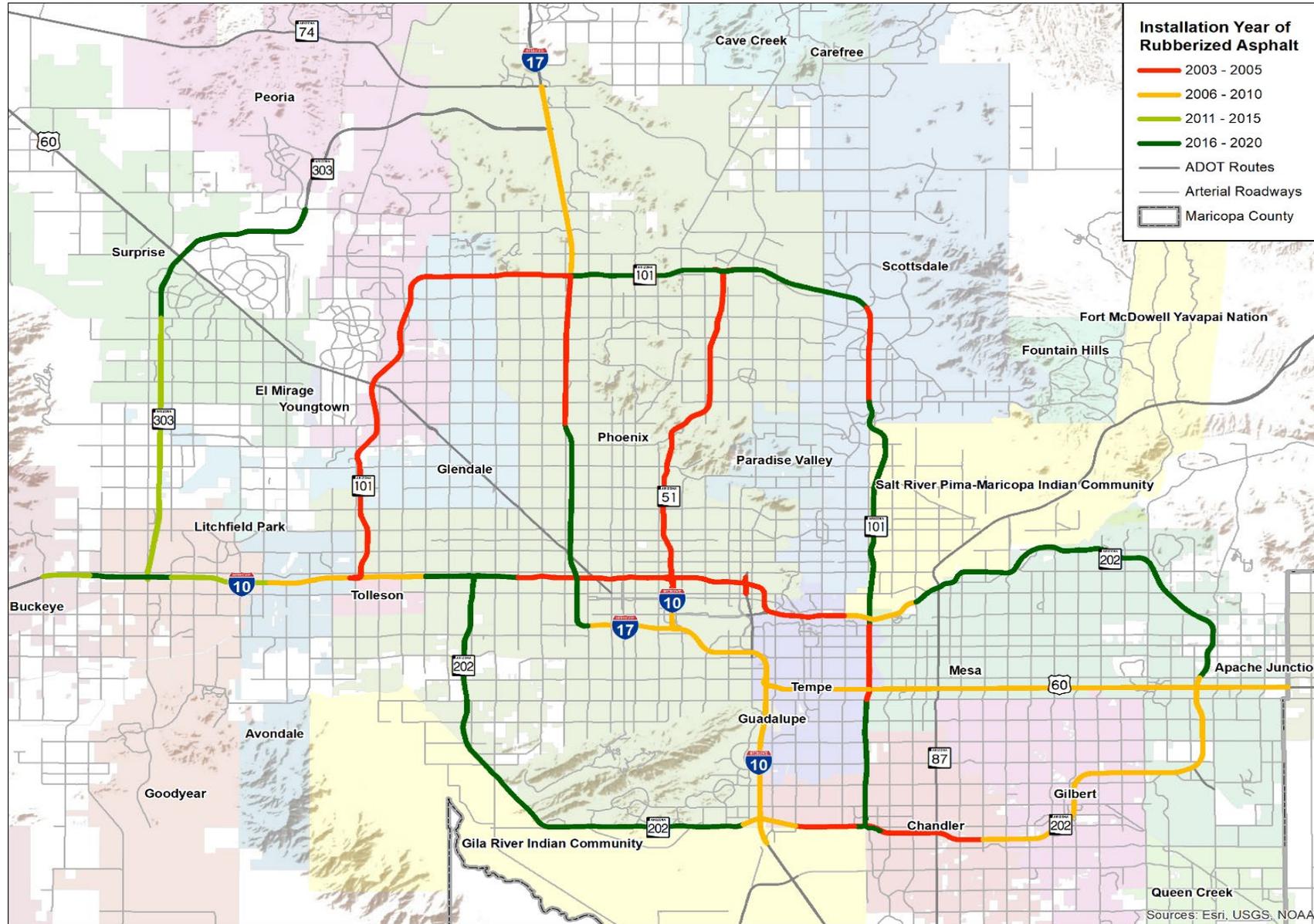
Year Open

- 2004 - 2010
- 1996 - 2003
- 1985 - 1995
- 1971 - 1984
- Before 1971

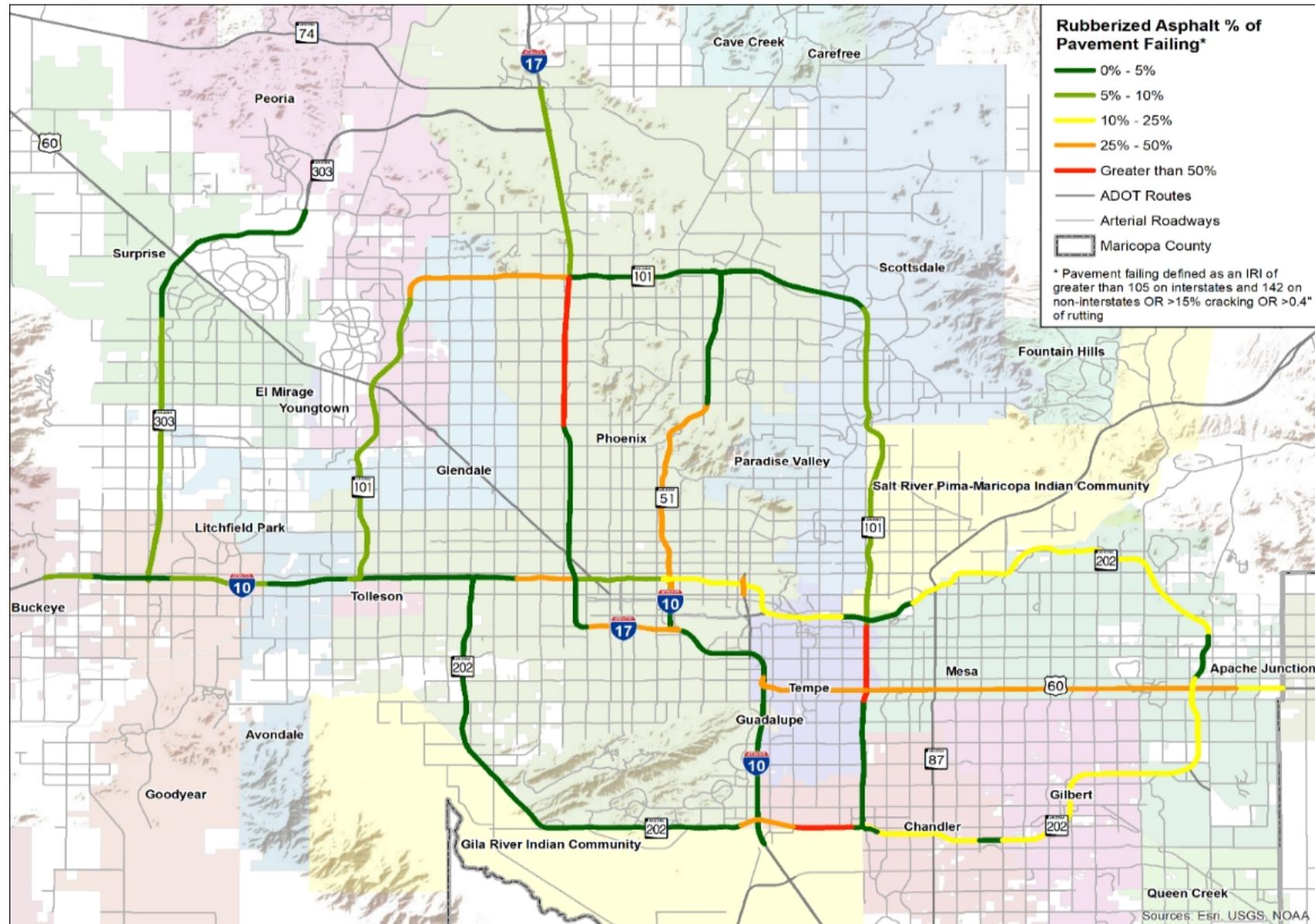




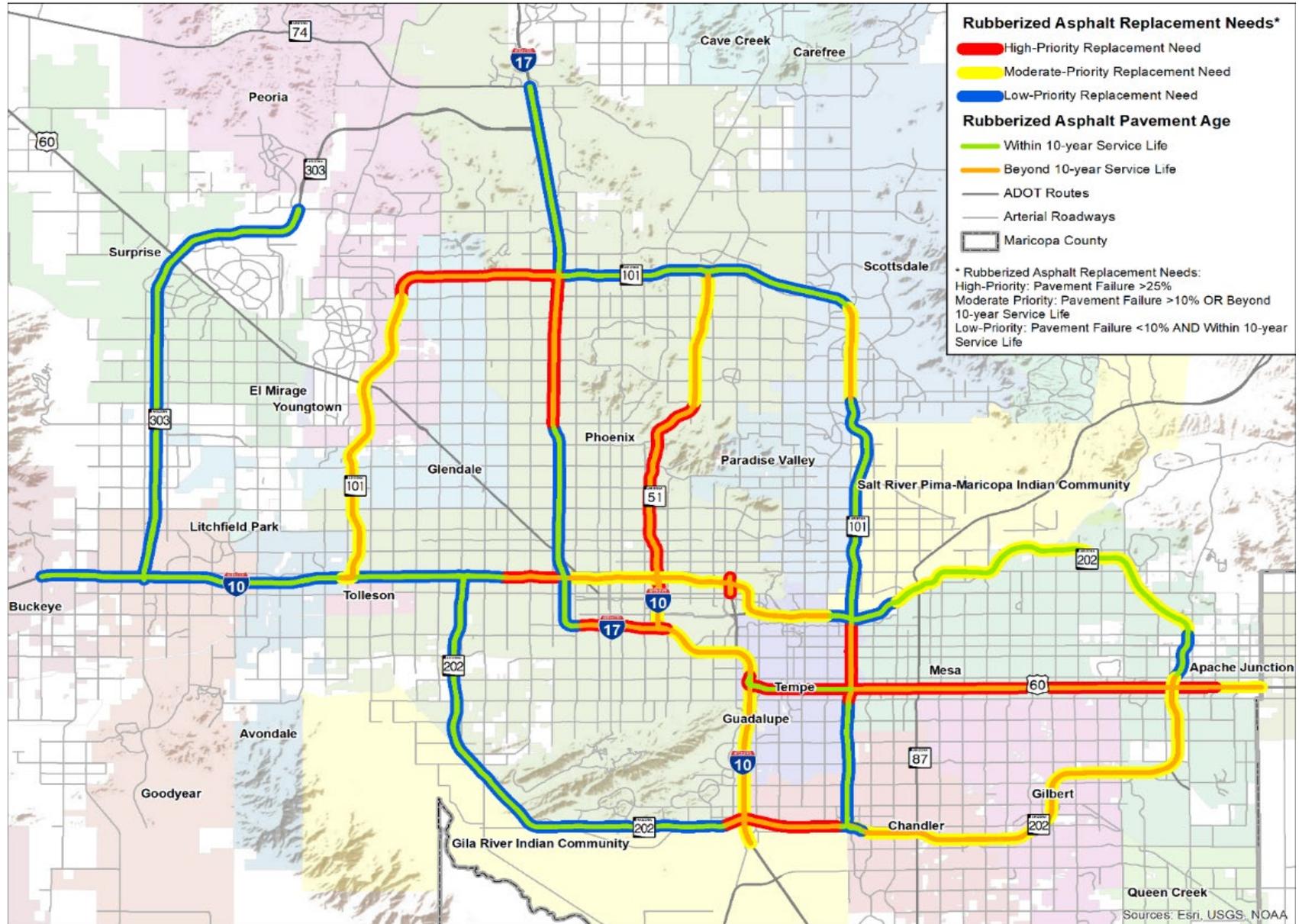
Rubberized Asphalt: Installation Year



Percentage of 'Failing' Rubberized Asphalt Pavement in 2018 by Segment



Rubberized Asphalt Replacement Needs



Freeway Pavement Noise Reduction Analysis Study



Pavement Surface Treatment Alternatives



Diamond Grind Treatment



Whisper Grind Treatment

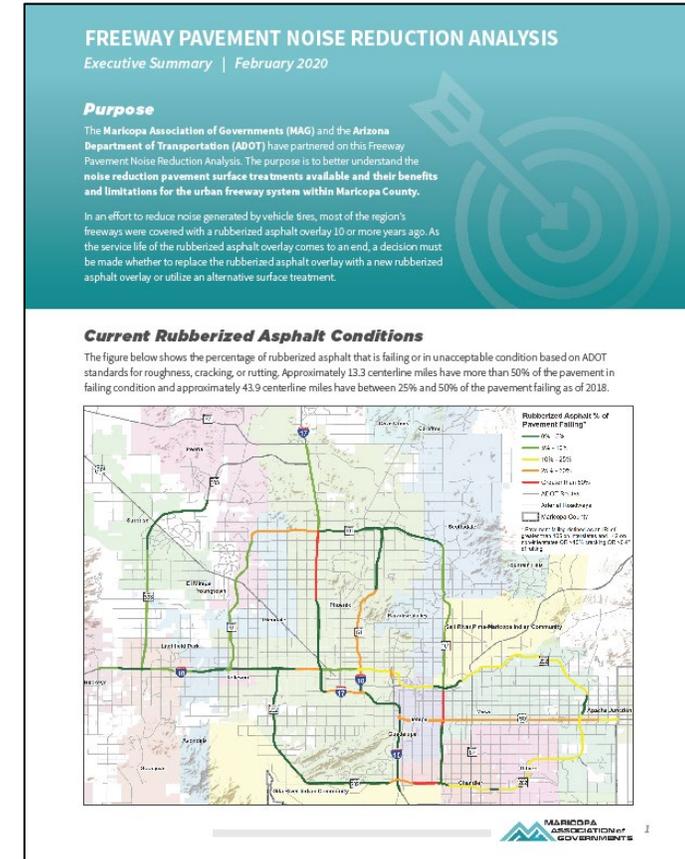


Skidabrader Treatment



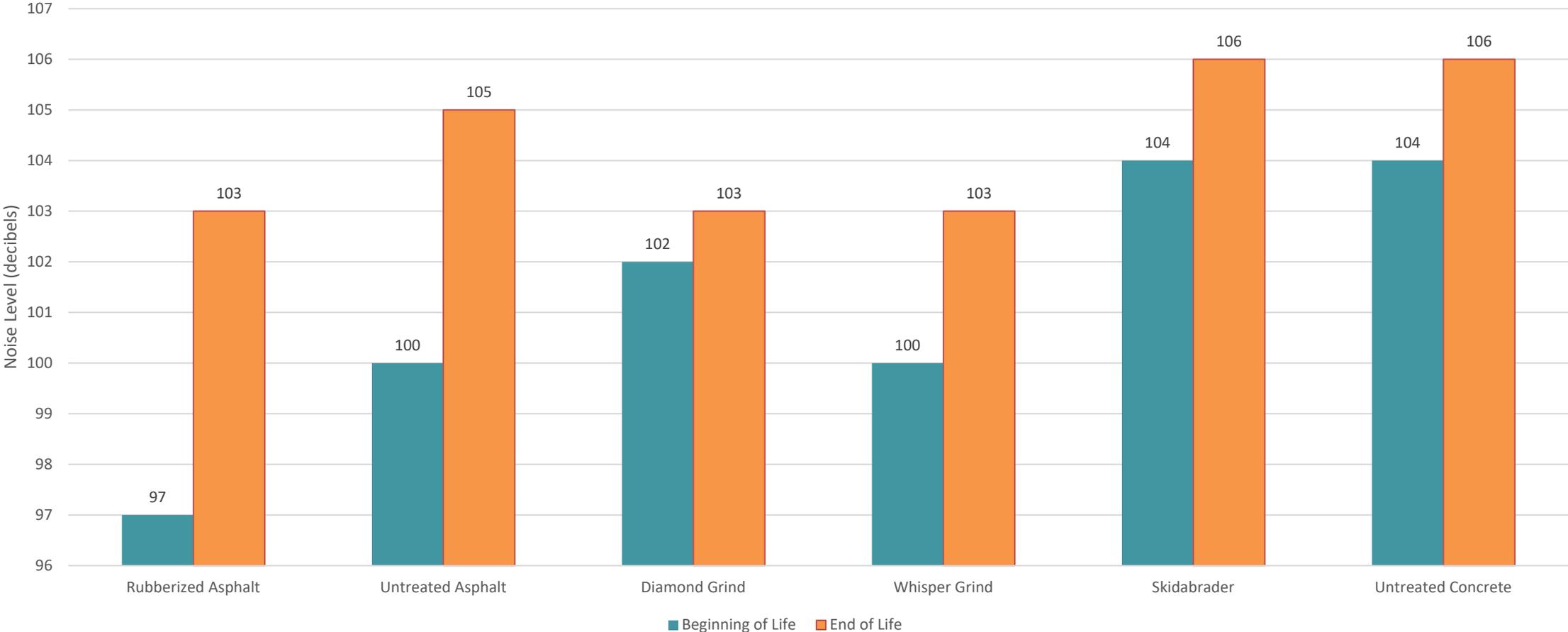
Freeway Pavement Noise Analysis Reduction Study

- MAG and ADOT partnered on the Freeway Pavement Noise Reduction Analysis Study
- Presented to the RTP Management Committee Work Group on March 4, 2020
- Presented to MAG Management Committee on March 11, 2020



Freeway Life Cycle Program

Typical Pavement Surface Noise Level over Service Life



Advantages and Disadvantages of Surface Treatments

Surface Attribute	Concrete Surface	Asphalt Surface
 NOISE LEVEL	<ul style="list-style-type: none"> + Little change over time - Typically higher than asphalt initially 	<ul style="list-style-type: none"> + Typically lower than concrete initially - Increases over time, ultimately being equal to or higher than concrete
 LIFE-CYCLE COST	<ul style="list-style-type: none"> + Lower than asphalt over service life - Typically higher than asphalt initially 	<ul style="list-style-type: none"> + Typically lower than concrete initially - Higher than concrete over service life
 ROAD SMOOTHNESS	<ul style="list-style-type: none"> + Little change over time - Has expansion cracks from heat/cold cycles 	<ul style="list-style-type: none"> + Has no expansion cracks - Raveling and cracking increase over time, especially when traffic volumes are high or there are many heavy vehicles (trucks)
 AESTHETICS	<ul style="list-style-type: none"> + Little change over time - Hard to see white pavement markings unless black outline of markings on white concrete surface are provided 	<ul style="list-style-type: none"> + Easy to see white pavement markings on dark asphalt surface - Deteriorates over time
 ENVIRONMENTAL IMPACTS	<ul style="list-style-type: none"> + Cooler than asphalt during the day - Hotter than asphalt at night; cannot easily be recycled 	<ul style="list-style-type: none"> + Cooler than concrete at night; can easily be recycled; provides slight reduction in PM-10 emissions compared to untreated concrete - Hotter than concrete during the day



Noise Levels, Life Span, and Costs

Pavement Noise Reduction Treatment	Typical Noise at Beginning of Service Life (dBA)	Typical Noise at End of Service Life (dBA)	Life Span (years)	Costs ¹			
				Per Lane Mile	Corridor ²	Life-Cycle Corridor ³	Life-Cycle System ⁴
Rubberized Asphalt	97	103	10	\$116,000	\$9,280,000	\$41,760,000	\$1,239,901,000
Diamond Grind	102	103	15	\$123,000	\$9,840,000	\$29,520,000	\$912,784,000
Whisper Grind	100	103	15	\$150,000	\$12,000,000	\$36,000,000	\$1,098,290,000
Skidabrader	104	106	15	\$90,000	\$7,200,000	\$21,600,000	\$686,054,000

1. Bridge joint replacement work is included in the diamond grind, whisper grind, and Skidabrader cost estimates.

2. Corridor costs based on a new 10-mile, eight-lane section (four lanes in each direction) with auxiliary lanes and shoulders.

3. Life-cycle costs based on corridor costs over a period of 25 years.

4. System costs based on maintenance and construction cost of the treatment for the entirety of the freeway system that currently has rubberized asphalt over a period of 25 years.

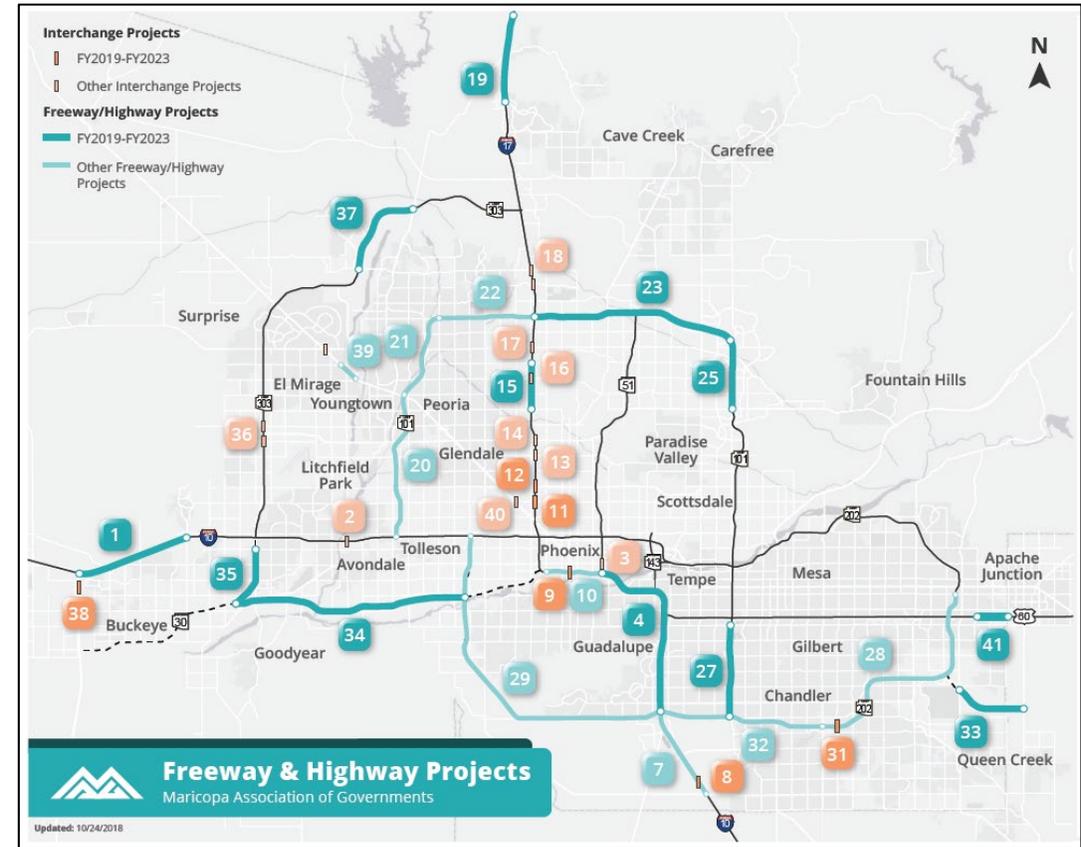


Diamond Grind Pilot Program



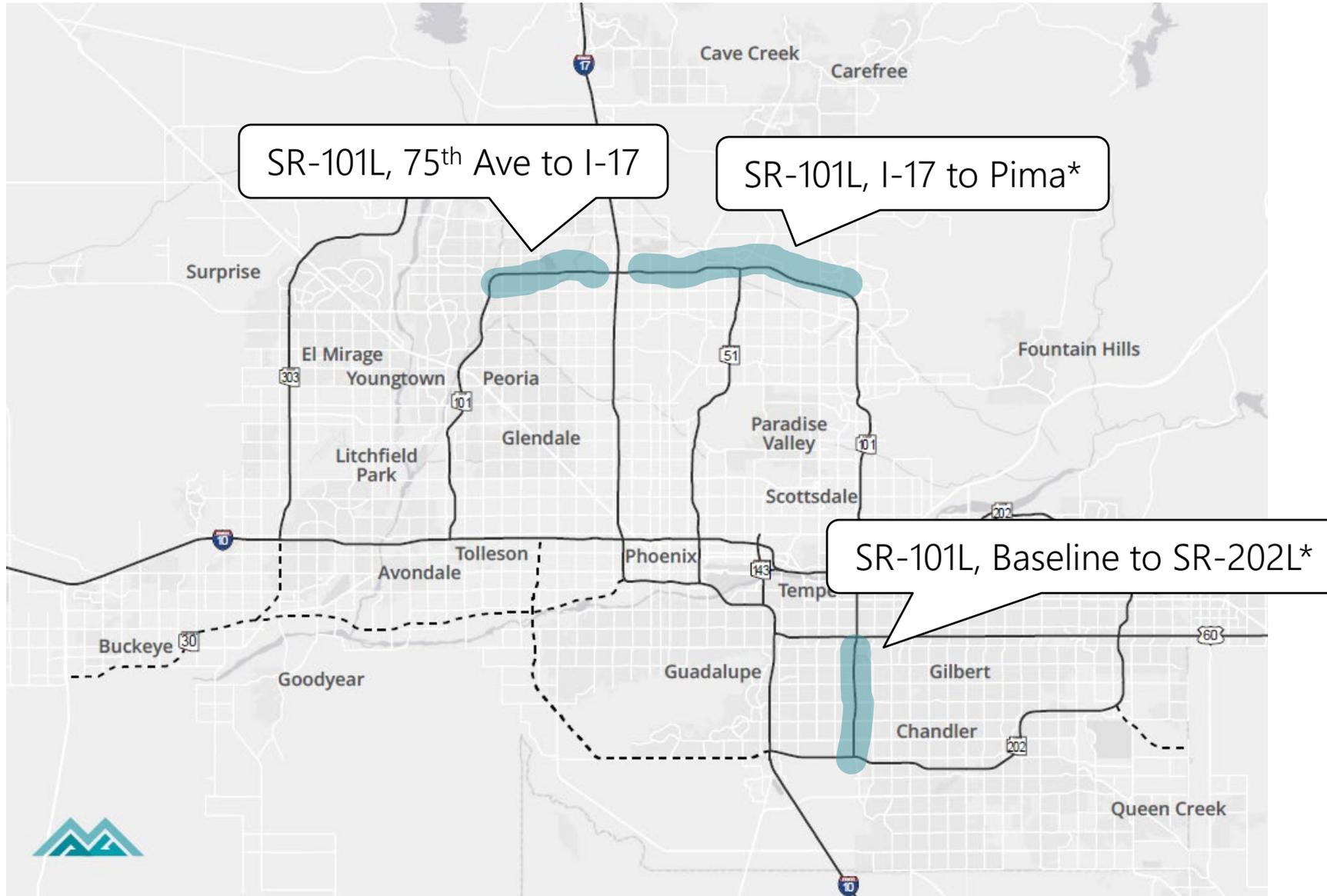
Diamond Grind Pilot Program

- Direction was provided to explore concrete-based surface treatments as an alternative to a rubberized asphalt overlay
- MAG has been working with ADOT to determine which FLCP projects could be candidates for a diamond grind pilot program



Freeway Life Cycle Program

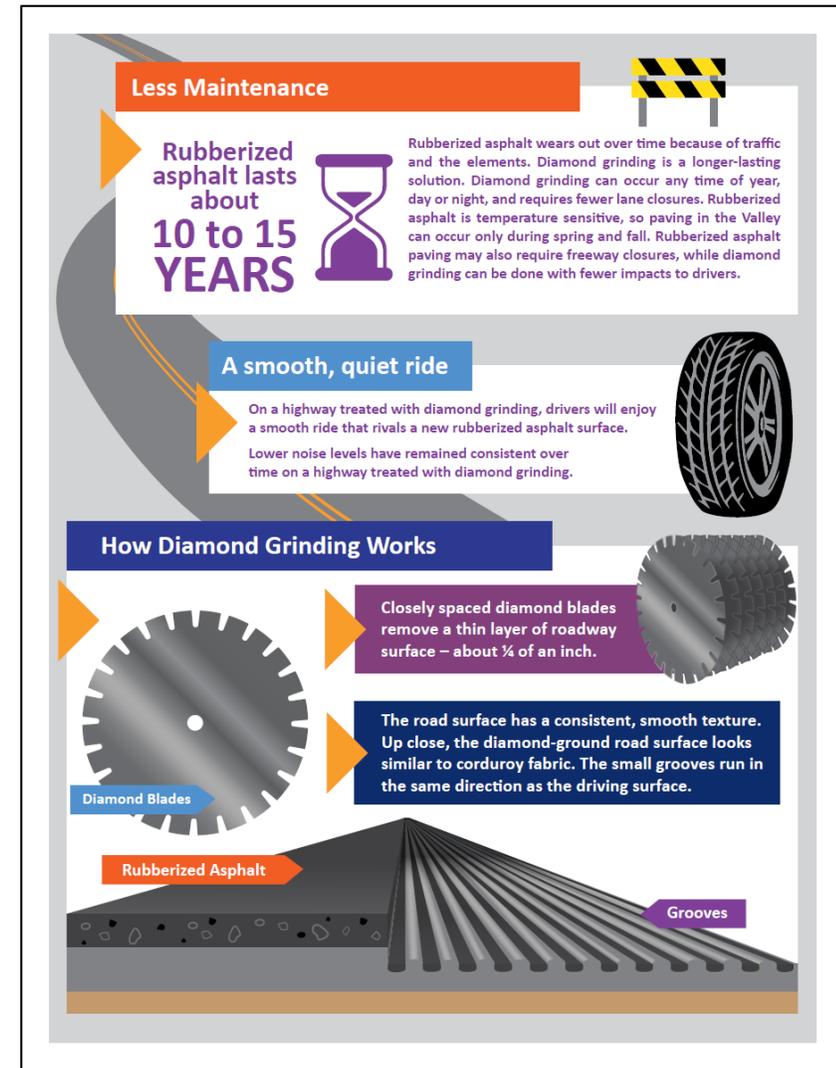
Diamond Grind Pilot Program: Projects



*Under Construction

Diamond Grind Pilot Program: Moving Forward

- ADOT will assess:
 - Life cycle costs
 - Quality of ride
 - Public acceptance of a ground concrete surface
- Formal approval to modify the project scopes to replace rubberized asphalt with a diamond grind surface treatment
- If the pilot demonstrates diamond grind is less effective, funding would be provided for a rubberized asphalt overlay



Freeway Life Cycle Program

Requested Action:

Recommend approval of the diamond grind pilot program.



Freeway Life Cycle Program

Agenda Item 6 Update on the Development of a New Regional Transportation Plan

Transportation Policy Committee

June 17, 2020



Today's Focus

- RTP Call for Projects Update
 - Summary of submissions
 - Updated sketch estimates
- Performance-Based Evaluation Framework
 - Draft Vision, Goals
 - Draft Regionally Significant Definitions
- Next Steps



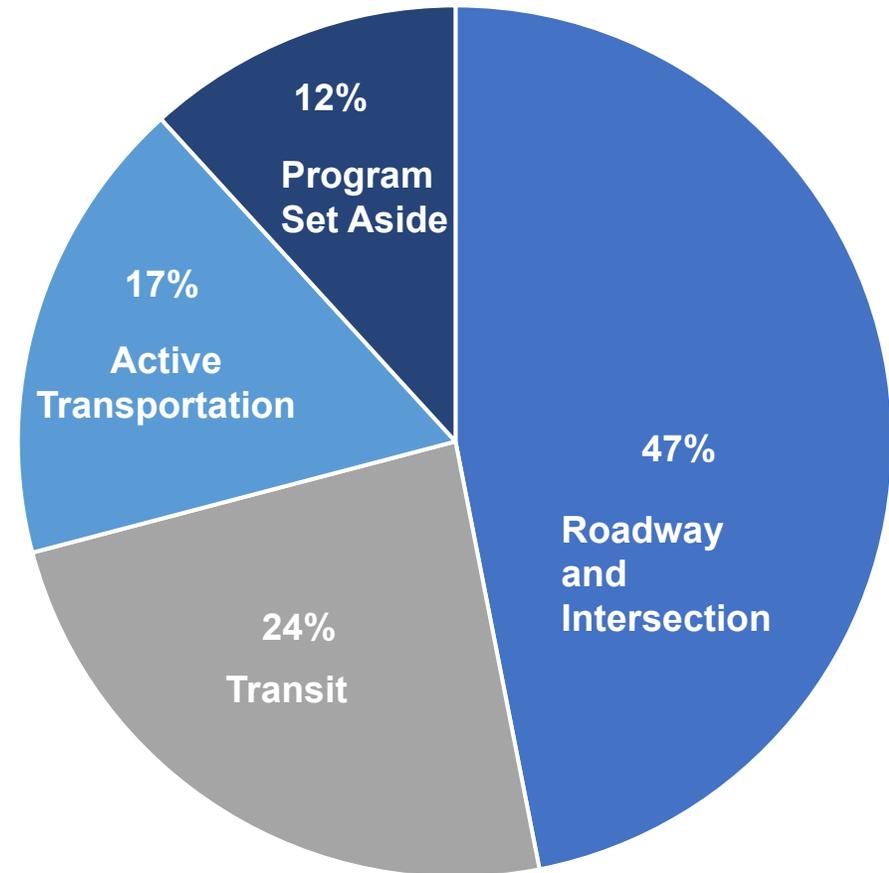
RTP Call for Projects Update: Summary of Submissions

Recap: Existing Prop 400-era Programs

- Freeway Life Cycle Program
- Transit Life Cycle Program
- Arterial Life Cycle Program
- Seniors and Persons with Disabilities Transportation (Enhanced Mobility, §5310)
- Active Transportation
 - Infrastructure
 - Design Assistance
- Safety
 - Safe Routes to Schools
 - Regional Roadway Safety Assessments
 - Regional Safety Program
- Systems Management & Operations
- Air Quality
 - Regional Ride Share
 - Trip Reduction Program
 - Streetsweepers
 - Paving of Unpaved Roads
- Don't Trash Arizona, litter and landscape
- Pinal County Arterial and Bridge Program

Member Agency Call for Projects

- Closed April 17, 2020
(extended due to COVID-19)
- Nearly 1,300 individual
project and program
submissions received



“Buckets” of Submissions

1. Freeway, Highway and Parkway
2. Arterial Roadway
3. Arterial Intersection
4. Roadway Other
5. Pavement Preservation
6. Commuter Rail
7. High Capacity Transit
8. Regional Bus Service
9. Other Transit
10. Active Transportation
11. Safety
12. Intelligent Transportation Systems
13. Transportation Demand Management
14. Planning, Support
15. Other Infrastructure

1. Freeway, Highway and Parkway (capital)

- New facilities
- Capacity improvements, system interchanges, traffic interchanges
- Reconstruction, modernization



Source: ADOT

2. Arterial Roadway (capital)

- New facilities
- Capacity improvements
- Reconstruction, modernization
- Freight plan implementation



3. Arterial Intersections (capital)

- Major arterial intersections
- Minor arterial intersections
- ITS improvements
- Safety improvements*



4. Roadway Other (capital)

- Local collector
- Bridges
 - New river crossings
 - Railroad crossings
 - Reconstructions
 - Preservation
 - Maintenance
- Roundabouts
- Complete Streets
- ADOT roadway turnbacks
- Safety improvements*



Source: MCDOT

5. Pavement Preservation

- Arterial, et al



Source: City of Phoenix

6. Commuter Rail

- Capital
- Operations



Illustrative commuter rail

7. High Capacity Transit (capital and operations)

- Light rail extensions, overlay service
- Streetcars
- Bus Rapid Transit



Source: Valley Metro

8. Regional Bus Service (capital and operations)

- Regional grid service
- Express/commuter bus
- Fleet/asset management
- Park and rides
- Operations and maintenance centers
- Transit centers/mobility hubs



Source: Valley Metro

9. Other Transit (capital and operations)

- Circulators
- Microtransit
- First/last mile solutions
- Localized transit (flexible, on-demand)
- Transit accessibility
- Transit stops
- ADA
- Seniors and Persons with Disabilities Transportation (\$5310, etc.)



10. Active Transportation

- Active Transportation Plan implementation
- Separated/protected bike lanes, bike boulevards
- Multiuse paths
- Bridges and connections (freeway, arterial, waterway/canal, railroad crossings)
- Trail, path, and sidewalk lighting
- Sidewalks
- ADA
- Design assistance



11. Safety*

- Safe Routes to Schools
- Roadway Safety Assessments (multimodal)
- Educational programming
- Traffic calming
- Incident response, analysis, REACT
- Infrastructure improvements
 - Spot safety
 - Left turn lanes
 - Intersection improvements
 - Variable messages signs



Source: ADOT

12. Intelligent Transportation Systems

- Transportation systems management and operations
- Integrated Corridor Management (ICM)
- Fiber
- Traffic Management Centers (capital, operations)
- Signal infrastructure, programming, optimization (priority, transit pre-emption)
- Emerging technology
- Equipment (radios, traffic cameras, etc.)
- Emergency support, connectivity



13. Transportation Demand Management

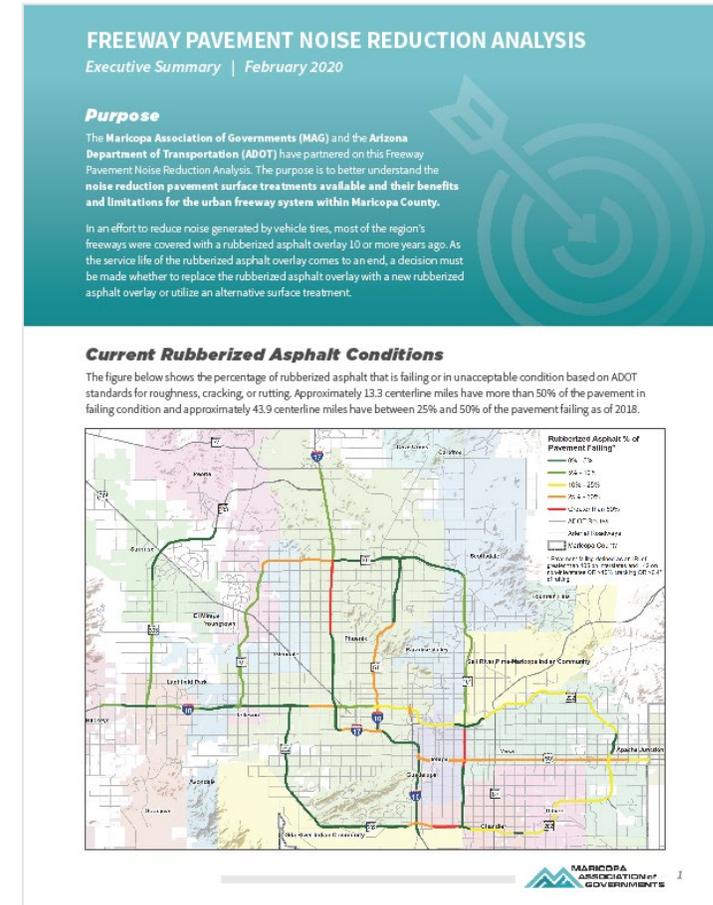
- Capital
- Operations
- Programmatic and policy support



Source: Valley Metro

14. Planning, Support

- Transportation studies
- Pilot programs
- Traffic counts
- Inventory, asset management
- Administration support (federal grant management)



15. Other infrastructure

- Street sign replacement
- Traffic signals, replacements
- Streetlights, LED conversions
- Electric vehicle charging stations
- Utility relocations
- Public art maintenance
- Landscape, beautification, tree replacement program



What Wasn't Submitted?

- Air quality programs
 - Streetsweepers
 - Paving of unpaved roads*
 - Rideshare
- Freeway management system (FMS), large-scale technology



Updated Sketch Estimates

Sketch System Costs - Review

- Last fall, as part of activities related to enabling legislation, preliminary, high-level estimates (“sketch”)
- The information was intended to provide order-of-magnitude context
 - Included known and studied projects
 - Did not include several other categories (arterial, safety, technology)
 - Did not include any direct member agency submissions



Fall 2019 Summary: Sketch System Costs, Revenues

Sketch Costs (2026-2050)

Studied Freeway Capital	\$14.40 b
Commuter Rail	\$3.34 b
Active Transportation	\$0.50 b
System Mgmt & Operations	\$0.63 b
Arterial O&M	\$2.84 b
Freeway O&M	\$7.00 b
Bus Transit	\$13.45 b - \$17.86 b
High Capacity Transit	\$7.07 b - \$11.66 b
Total	\$49.23 b - \$58.23 b

Sketch Revenue Estimates (2026-2050)

Sales tax (half-cent)	\$14.94 b
ADOT funds	\$8.89 b
MAG federal funds	\$3.17 b
Transit funds*	\$2.06 b
Total	\$29.08 b

**Transit federal discretionary funds* \$1.82 b – \$4.28 b

Total with discretionary \$30.88 b – \$33.34 b



Sketch Estimate Updates - Methodology

- Updated the sketch estimates based on a high-level analysis of the RTP Call for Projects submissions.
- Intended to demonstrate relative amounts for project categories, not actual submission data.
 - Approximately half of submissions did not include cost estimates
 - Inconsistency across submission estimates
 - Extrapolation of submission concepts



Updated Summary: Sketch System Costs, Revenues

Sketch Costs (2026-2050)

Freeway Capital	\$17.00 b - \$20.00 b
Commuter Rail	\$3.34 b
Active Transportation	\$0.68 b - \$2.75 b
SM&O, Technology	\$1.00 b - \$2.00 b
Arterial O&M	\$4.00 b - \$8.00 b
Freeway O&M	\$7.00 b
Bus Transit*	\$13.45 b - \$17.86 b
High Capacity Transit	\$10.00 b - \$16.00 b
Arterials	\$6.00 b - \$12.00 b
Safety	\$0.50 b - \$1.75 b

Total **\$62.97 b - \$90.70 b**

Sketch Revenue Estimates (2026-2050)

Sales tax (half-cent)	\$14.94 b
ADOT funds	\$8.89 b
MAG federal funds	\$3.17 b
Transit funds*	\$2.06 b

Total **\$29.06 b**

Transit federal discretionary funds* **\$2.00 b - \$6.50 b

Total with discretionary **\$31.06 b - \$35.56 b**



Draft RTP Vision & Goals

Draft RTP Vision & Goals

The transportation system plays a critical role in ensuring a high quality of life for residents of the MAG region. The purpose of the Regional Transportation Plan is to establish a sustainable, resilient, multimodal transportation investment program that connects people with opportunities to prosper and thrive. Residents deserve a world-class transportation system that reflects the following mission-critical goals:

- **Economic Vitality** – support economic competitiveness and prosperity through strategic transportation investments.
- **Resiliency** – invest in a transportation system that expand travel choices, accommodates future growth, and is flexible to adapt to changing needs and innovations.
- **Quality of Life** – invest in a transportation system that supports health and well-being, and sustains the environment.
- **Safety** – provide for the safety and security of the traveling public.
- **System Preservation** – maintain our region’s transportation infrastructure to protect existing investments and ensure continued mobility.
- **Mobility** – develop a multimodal transportation system that provides ease of movement for people and goods throughout the region and provides equitable access to essential services and destinations.



Alignment of MAG Draft Goals to FHWA Planning Factors

FAST Act Planning Factors	Draft MAG Goal Areas					
	Economic Vitality	Resiliency	Quality of Life	Safety	System Preservation	Mobility
1. Support Economic Vitality	Direct	Support	Support	Support	Support	Direct
2. Increase Safety	Support	Support	Direct	Direct	Support	Support
3. Increase Security	Support	Support	Direct	Direct	Support	Support
4. Increase Accessibility	Direct	Support	Direct	Support	Support	Direct
5. Protect & Enhance Environment	Support	Direct	Direct	Support	Support	Direct
6. Enhance Integration and Connectivity	Direct	Direct	Direct	Support	Support	Direct
7. Promote System Efficiency	Support	Direct	Direct	Support	Support	Direct
8. Emphasize System Preservation	Support	Direct	Direct	Support	Direct	Support
9. Resiliency and Reliability	Support	Direct	Support	Support	Direct	Direct
10. Enhance Travel & Tourism	Direct	Support	Support	Support	Support	Support

FHWA's Metropolitan Transportation Planning Factors



Draft Regional Significance Definitions

Federal Guidance

- FHWA definition
- At a minimum, principal arterial highways and fixed guideway transit
- Projects need to demonstrate a **regional benefit**

Other RTPs

- Identify regional system
- Define Rough Order of Magnitude (ROM) cost threshold
- Proportionality test

Call for Projects

- 1,300 submissions with a wide range of project/program ideas
- Informed by agencies responses to project justification narrative
- Regional significance informed by submissions

Historical Precedent

- Prop 300 (Freeways/Highways)
- Prop 400 (Freeways/Highways + Arterials + Transit)
- **Do projects funded under Prop 300 & 400 meet the definition? Yes!**



Draft Regional Significance Definition

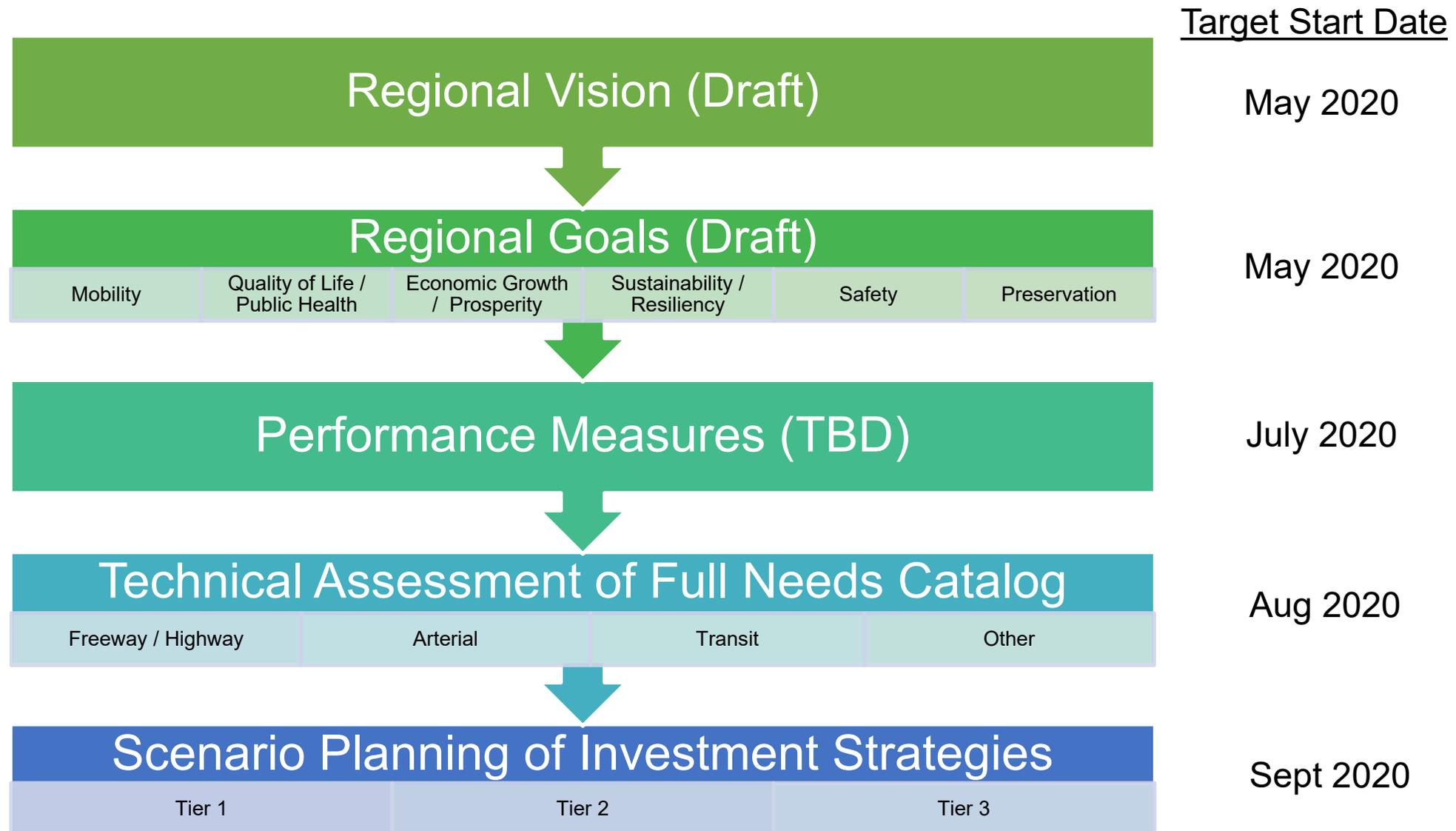
A **regionally significant project** is one that substantially contributes to the regional transportation system, benefitting the movement of people and goods across jurisdictions and connecting communities, activity centers, and destinations. The benefits of a regionally significant project should be as high for users outside the jurisdiction for which it is located as it is for those that reside within that jurisdiction. Projects are often high capacity (e.g., freeway, highway, rail, BRT) or contribute to a system network (e.g., regional bus network, grid arterial network, bridge/connect a gap).

A **regionally significant program** is one that is consistent with the regions values/vision and achieves unique or distinct priorities shared across the region.



Where do we go from here?

Project Assessment Activities



Agenda Item 7

■ Legislative Update



302 North 1st Avenue, Suite 300 • Phoenix, Arizona 85003
Phone (602) 254-6300 • FAX (602) 254-6490
E-mail: mag@azmag.gov • www.azmag.gov



June 16, 2020

The Honorable Greg Stanton
128 Cannon HOB
Washington, DC 20515

Dear Congressman Stanton:

The INVEST Act is a significant step in addressing our nation's transportation infrastructure and allows us to continue making investment decisions for the people of our region. We thank you for serving as a representative on the House Transportation and Infrastructure Committee and for your leadership in advancing our issues.

We would like to call your attention to two areas of concern in the INVEST Act. First, we currently benefit from existing funding programs that provide flexibility to allocate dollars to projects as needed. In particular, this flexibility has allowed the region to prioritize multimodal improvements; significant amounts of our Federal Highway Administration funding is allocated to transit and bicycle/pedestrian projects every year. The INVEST Act proposes additional core programs that take away percentage allocations from the existing flexible programs, and by doing so, becomes more prescriptive in how funds are invested. One option might be to allow the larger regions, such as those with a population of over one million, additional flexibility.

Second, we continue to be concerned with funding formulas being tied to 2009 allocations. These allocations are tied back to the formulas that were used in SAFETEA-LU which Congress passed in 2005, and were based on traffic volumes from that period and the 2000 Census. As you are well aware, the Phoenix metro region and State of Arizona have the highest rates of population growth in the nation. Preserving funding formulas tied to twenty-year-old population numbers—formulas that will be twenty-five years old at the end of the INVEST Act—does not allow the state and region to effectively address our infrastructure needs, continuing to place the burden on local communities to address. We encourage you to consider amending the INVEST Act so that funding formulas utilize recent Census population figures.

Thank you for serving on the House Transportation and Infrastructure Committee. Arizona has gone too long without representation on this important committee, especially during this time of dramatic growth. Please contact us with any questions or concerns.

Mark W. Mitchell
Mayor of Tempe
Chair, MAG Regional Council

Jerry P. Weiers
Mayor of Glendale
Chair, Transportation Policy Committee

More Than 50 Years of Serving the Region

City of Apache Junction • Arizona Department of Transportation • City of Avondale • City of Buckeye • Town of Carefree • Town of Cave Creek • City of Chandler • City of El Mirage • Town of Florence
Fort McDowell Yavapai Nation • Town of Fountain Hills • Town of Gila Bend • Gila River Indian Community • Town of Gilbert • City of Glendale • City of Goodyear • Town of Guadalupe
City of Litchfield Park • City of Maricopa • Maricopa County • City of Mesa • Town of Paradise Valley • City of Peoria • City of Phoenix • Pinal County • Town of Queen Creek
Salt River Pima-Maricopa Indian Community • City of Scottsdale • City of Surprise • City of Tempe • City of Tolleson • Town of Wickenburg • Town of Youngtown

Legislative Update



- **MAG staff continues to track state and federal transportation funding activities**
- **ADOT finance has generated preliminary RARF and HURF estimates that reflect COVID-19 revenue impacts**
 - Cumulative 14% decrease in the RARF forecast between FY 2020 – FY 2022
 - Cumulative 15% decrease in the HURF forecast between FY 2020 – FY 2022
- **ADOT will present the FY 2021-2025 ADOT Five-Year Transportation Construction Program to the State Transportation Board on June 19, 2020**
 - Draft program includes significant reductions in statewide project

Legislative Update



- **Foundational elements of the draft FY 2021 Freeway Life Cycle Program (FLCP) were completed in February 2020**
 - Program remains in balance through FY 2023, even with ADOT's recent revenue estimates

- **Next steps:**
 - Monitor actual revenue collections
 - RARF: March 2020 down 5.3% versus March 2019; April 2020 down 12.2% versus April 2019
 - HURF: March down 13.5% versus 2019
 - Track right of way and construction costs
 - Incorporate any additional federal funding

Agenda Item 8



■ Request for Future Agenda Items

Agenda Item 9

- **Comments from the Committee**

