



System Interchange, Avondale - Tolleson

MAG Regional Freeway and Highway Program and FY 2019 Unified Planning Work Program Updates

American Society of Highway Engineers – Phoenix Sonoran Section
March 13, 2018

Legend – Project Coloring

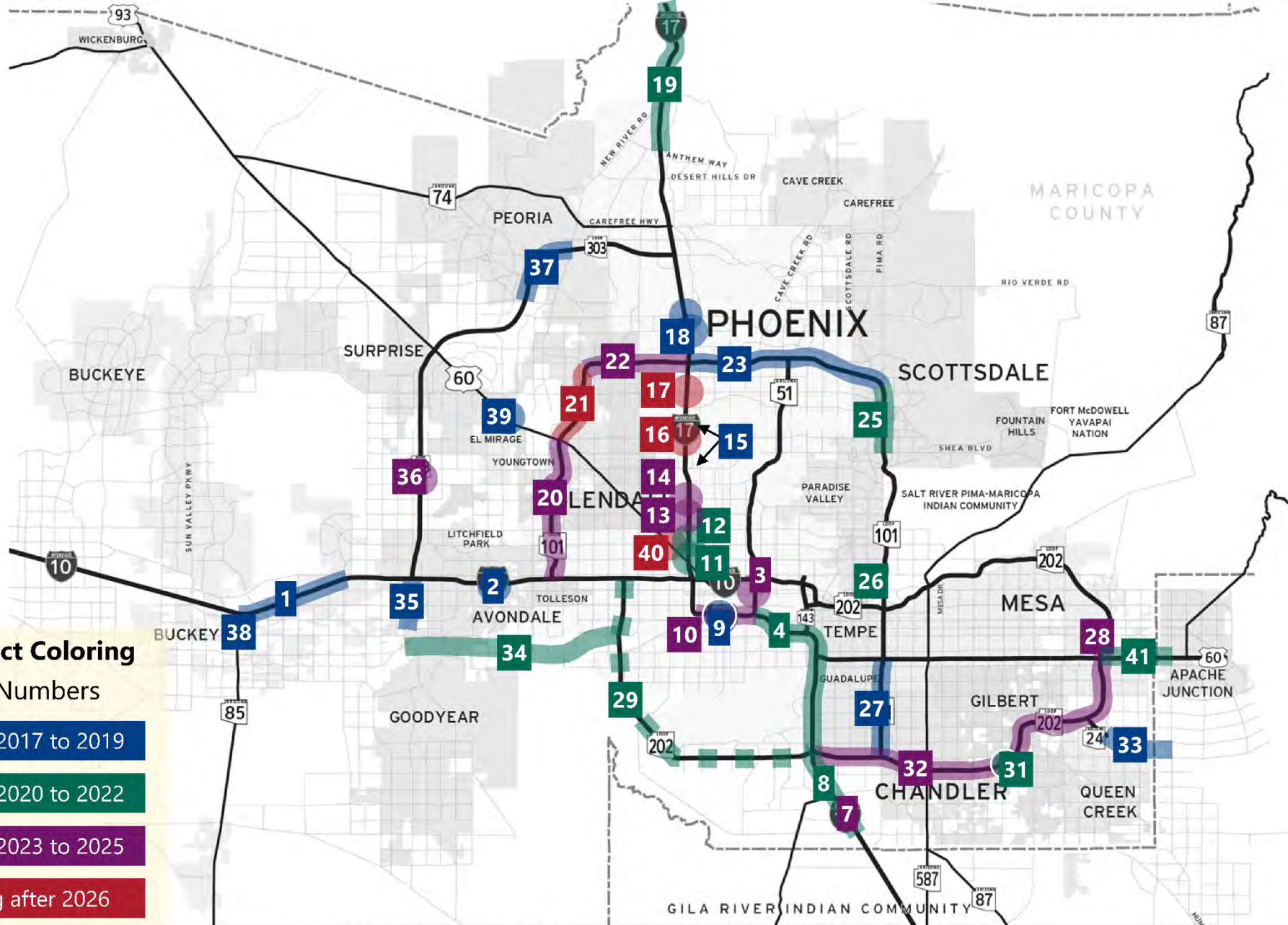
1 Map ID Numbers

Projects starting 2017 to 2019

Projects starting 2020 to 2022

Projects starting 2023 to 2025

Projects starting after 2026



RFHP Map IDs and Project Scheduling

(as of 6/5/2017)

Numbers represent project identification numbers, only.

No. 1



- **Add Lanes SR-85 to Verrado Way**
- Consultant projected started.
- **Progress meetings underway; Buckeye coordination.**
- Construction start August 2019.

No. 2



- **Fairway Drive Traffic Interchange**
- Design nearing completion.
- **Material cost change requested.**
- Construction start April 2018.

No. 4



- **Add Lanes/Mainline Reconstruction I-17 Split to Loop 202 Pecos Stack**
- General Engineering Consultant (GEC) selection this Spring.
- Construction start May 2021.

No. 9



- **Reconstruction Central Avenue Overcrossing**
- Design consultant selected.
- **Valley Metro/City of Phoenix coordination.**
- Construction start May 2019.

No. 11



- **Reconstruction Indian School Rd Traffic Interchange**
- **Predesign consultant selected.**
- Construction start January 2020.

No. 12



- **Reconstruction Camelback Rd Traffic Interchange**
- Predesign activities underway.
- Construction start July 2021.

No. 15



- **Reconstruction Drainage/Flood Control Peoria Ave to Greenway Rd**
- Predesign activities underway.
- Construction start January 2019.

No. 18



- **Reconstruction Pinnacle Peak Rd Happy Valley Rd Traffic Interchanges**
- 90% Design nearing completion.
- **Material change request pending.**
- Construction start August 2018.

No. 19



- **Add Lanes North of Anthem Way**
- Predesign activities underway.
- Combining efforts with Yavapai County widening – INFRA grant submitted.
- Construction start January 2020.

No. 23



- **Pima Freeway**
- **Add Lanes I-17 to Pima Rd**
- Design-Build procurement.
- General engineering consultant selected.
- **Coordination with Miller Rd ALCP undercrossing project.**
- Construction Start January 2019.

No. 27



- **Price Freeway**
- **Add Lanes
Baseline Rd to
Loop 202/Santan**
- Design-Build procurement.
- **General engineering consultant selected.**
- Construction start January 2019.

No. 32



- **Santan Freeway**
- **Add Lanes
Gilbert Rd to I-10/Maricopa**
- Predesign activities underway.
- **Examining extending runouts from Loop 101 system TI to SR-87.**
- Construction start January 2024.

No. 33



- **Phase I Construction
Ellsworth Ave to
Ironwood Dr**
- Environmental amendment underway.
- Construction start November 2019.

No. 34



- **Phase I Construction
Loop 303 to Loop 202/South Mountain**
- Environmental Assessment underway; FONSI anticipated Spring 2019.
- **Early ROW advancement requested.**
- Construction start June 2022.

No. 35



- **New Freeway
MC-85 to
Van Buren St**
- Environmental Assessment nearing completion.
- **Public meetings for preferred alternative underway.**
- Construction start September 2019.

No. 37



- **Add Lanes
Happy Valley Pkwy to Lake
Pleasant Pkwy**
- Design Consultant selection
underway.
- Construction start
June 2019.

No. 38



- **New Warner St
Overcrossing**
- Design work complete.
- **City of Buckeye consultation
completed; action plan
developed.**
- Construction start
January 2019.

No. 39



- **Grand Avenue**
- **Frontage Road
Reconstruction
Greenway to Thunderbird
Rd**
- Design consultant selected.
- Construction start
March 2018.

No. 41



- **Superstition Freeway**
- **Add Lanes
Crismon Rd to Meridian Rd**
- Design underway.
- Construction start
June 2020.

Issues and Continuing Coordination

- High level of coordination with ADOT and Federal Highway.
 - ADOT continuing to meet internal targets for contract execution and project delivery.
- **Material cost change requests received.**
 - **Working with ADOT to develop system for continual monitoring of project risks identified during the CRA process.**
- Next quarterly update – April 2018.



FY 2018 and 2019 UPWP Projects

- SR-30/Tres Rios, SR-85 to Loop 303 Scoping Study and PEL Statement.
- SR-30/Tres Rios, Loop 202/South Mountain to I-17 Scoping Study and PEL Statement.
- SR-347, SR-238 to I-10/Maricopa Scoping Study and PEL Statement.
- Laveen-South Mountain Transportation Study.



Continuing MAG Planning Activities

- Proposition 500/Next generation of the **MAG Regional Transportation Plan**.
- Transition of regional travel demand model to account for activity-based trip distribution and dynamic traffic assignment.
- MAG Systems Management and Operations Plan.





Photo courtesy
Waymo, a self-driving technology company at Alphabet Inc.
Downloaded 10/16/2017

Planning for Autonomous Vehicles

SAFETY

94
PERCENT
of U.S. crashes involve
human error. [1]

1.2
MILLION
deaths worldwide
due to vehicle crashes
in 2013. [2]

37,461
ROAD DEATHS
in the U.S. in 2016 and
2.4 million injuries
in 2015. [3]

2
OUT OF 3
people will be involved
in a drunk driving crash
in their lifetime. [4]

SOCIETY

\$594
BILLION
in harm from loss of life and
injury each year. [5]

\$277
BILLION
in annual economic costs. [6]

\$160
BILLION
in gas burned and
time lost each year. [7]

MOBILITY AND QUALITY OF LIFE

3
MILLION
Americans age 40 and older
are blind or have low vision. [8]

79
PERCENT
of seniors age 65 and older
living in car-dependent
communities. [9]

42
HOURS
wasted in traffic each year
per person. [7]

Important Facts About the Current State of Travel

Source: "On the Road to Fully Self Driving – Waymo Safety Report", Waymo, Inc., October 2017

For on-road vehicles



Human driver



Automated system

		Steering and acceleration/ deceleration	Monitoring of driving environment	Fallback when automation fails	Automated system is in control
Human driver monitors the road	0 NO AUTOMATION				N/A
	1 DRIVER ASSISTANCE				SOME DRIVING MODES
	2 PARTIAL AUTOMATION				SOME DRIVING MODES
Automated driving system monitors the road	3 CONDITIONAL AUTOMATION				SOME DRIVING MODES
	4 HIGH AUTOMATION				SOME DRIVING MODES
	5 FULL AUTOMATION				

GM "Super Cruise"



Tesla Model S



Waymo (Google)



Levels of Automation



BOSCH

DAF

DAIMLER

DELPHI



Google



HONDA



IVECO



Mercedes-Benz



RENAULT



PSA
GROUPE



TATA ELXSI
engineering creativity

TESLA



TOYOTA



Volkswagen

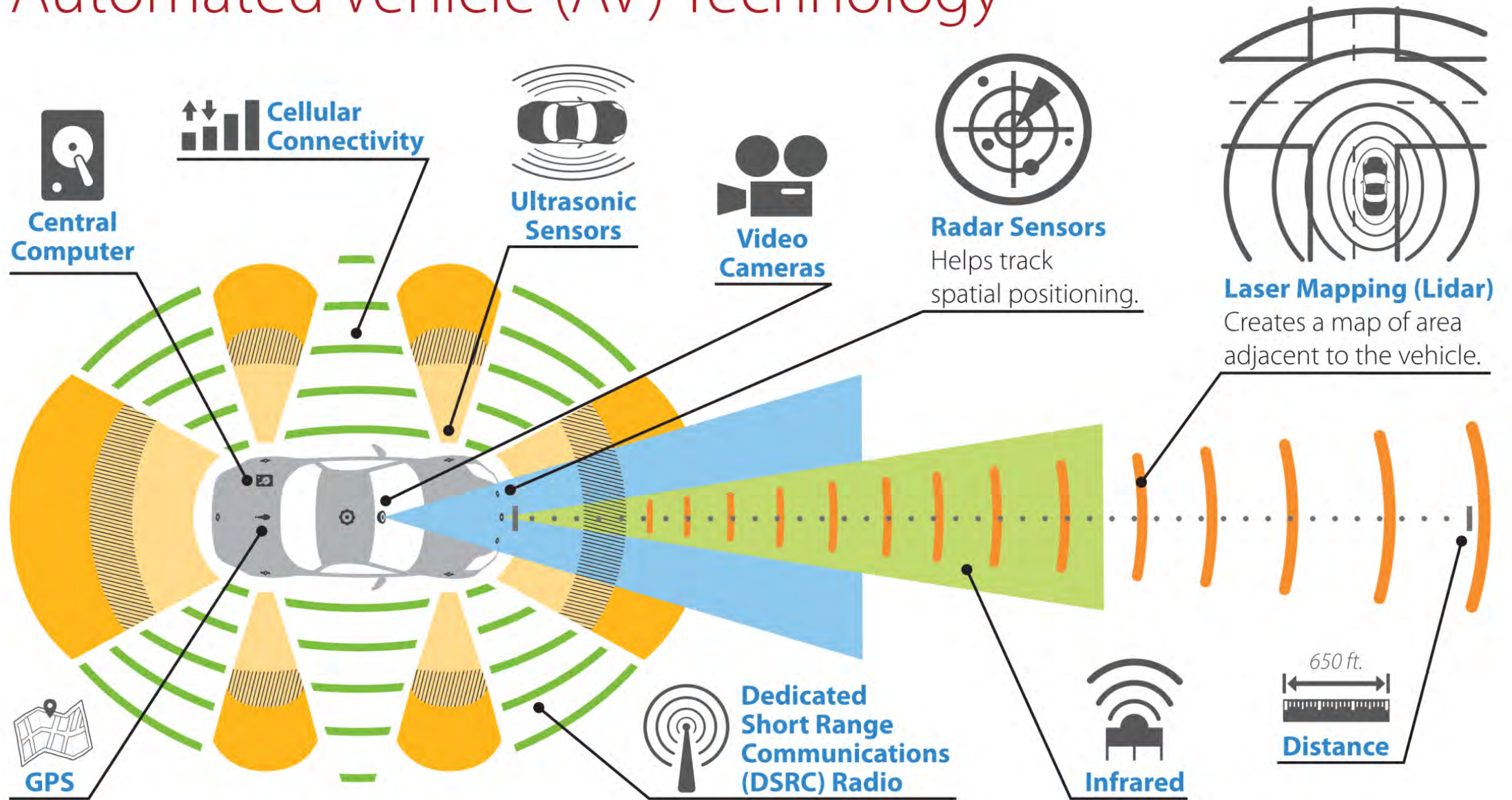


YUTONG

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Automated Vehicle (AV) Technology



How will autonomous vehicles arrive?

Fully
Autonomous

Personal Automation



**Shared Automated/
Platooning**



Semi-
Autonomous

Driver

Business as Usual

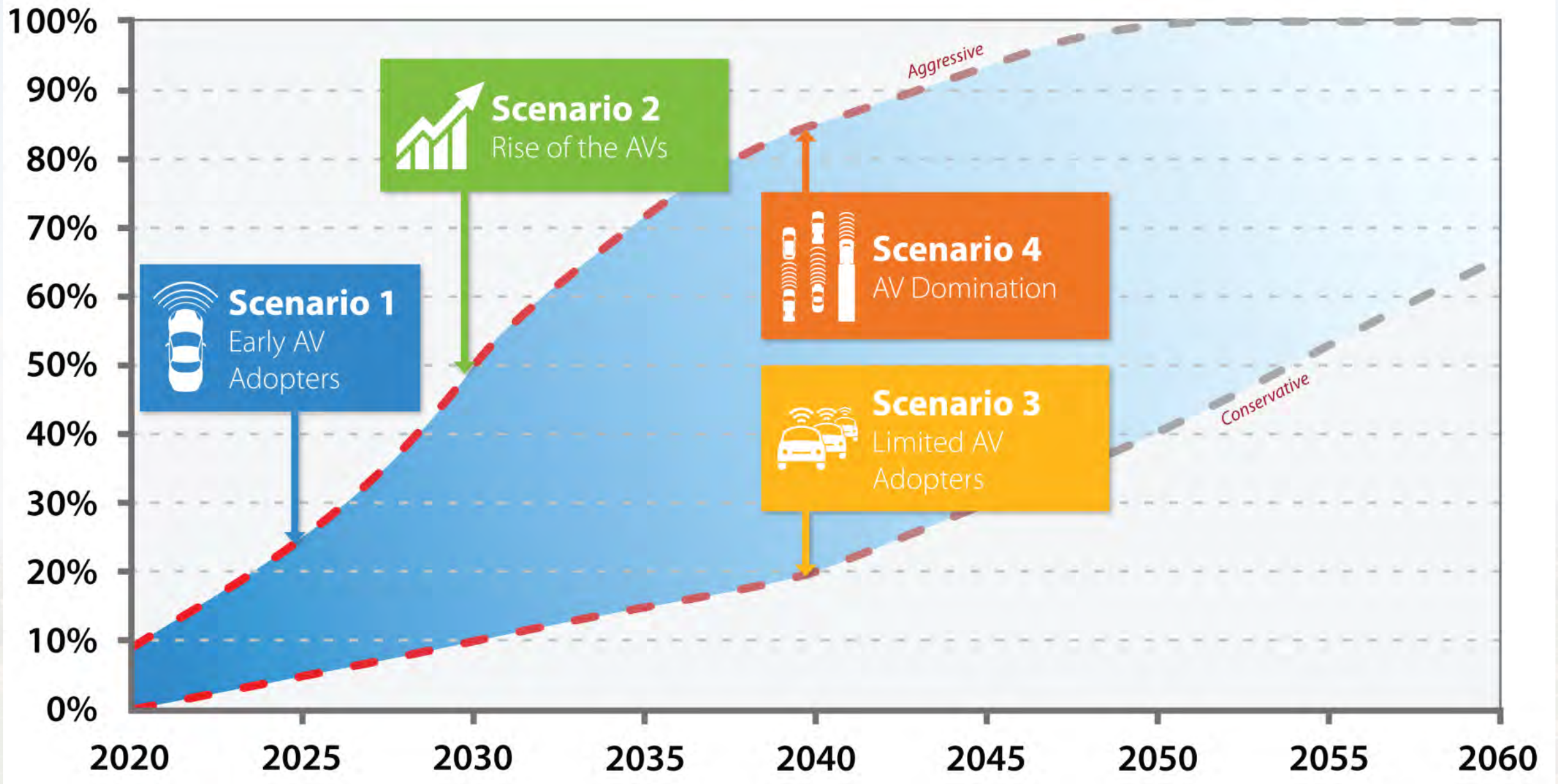


Shared Mobility



Personally Owned

Mobility Fleets



50% Penetration for Partial AV by 2030 or Not

Source: HDR Engineering, Inc.

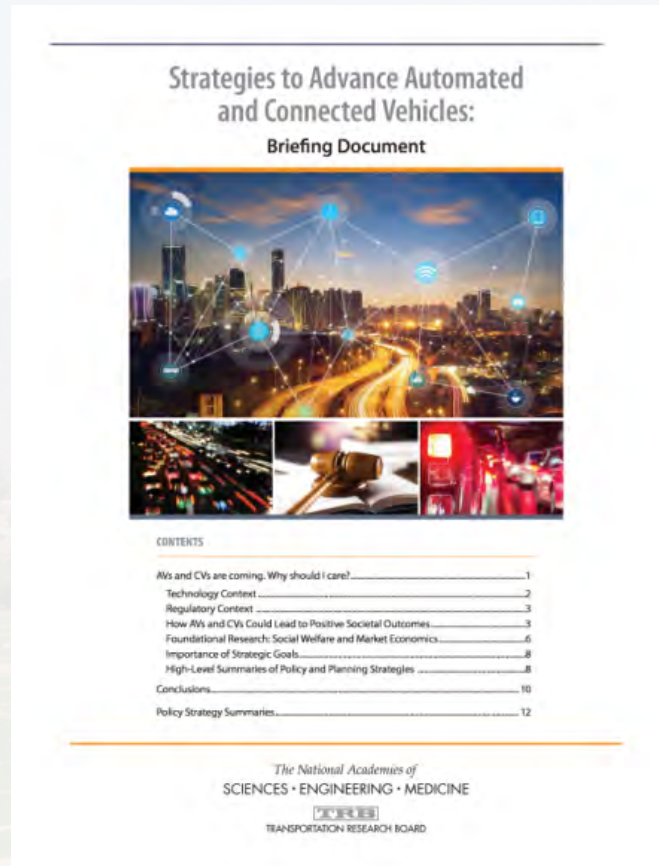


Why does this
matter?

How does this
effect us?

Ford Motor Company Photo
Downloaded 10/16/2017

Research



The National Academies of
Science, Engineering, and
Medicine

Transportation Research Board

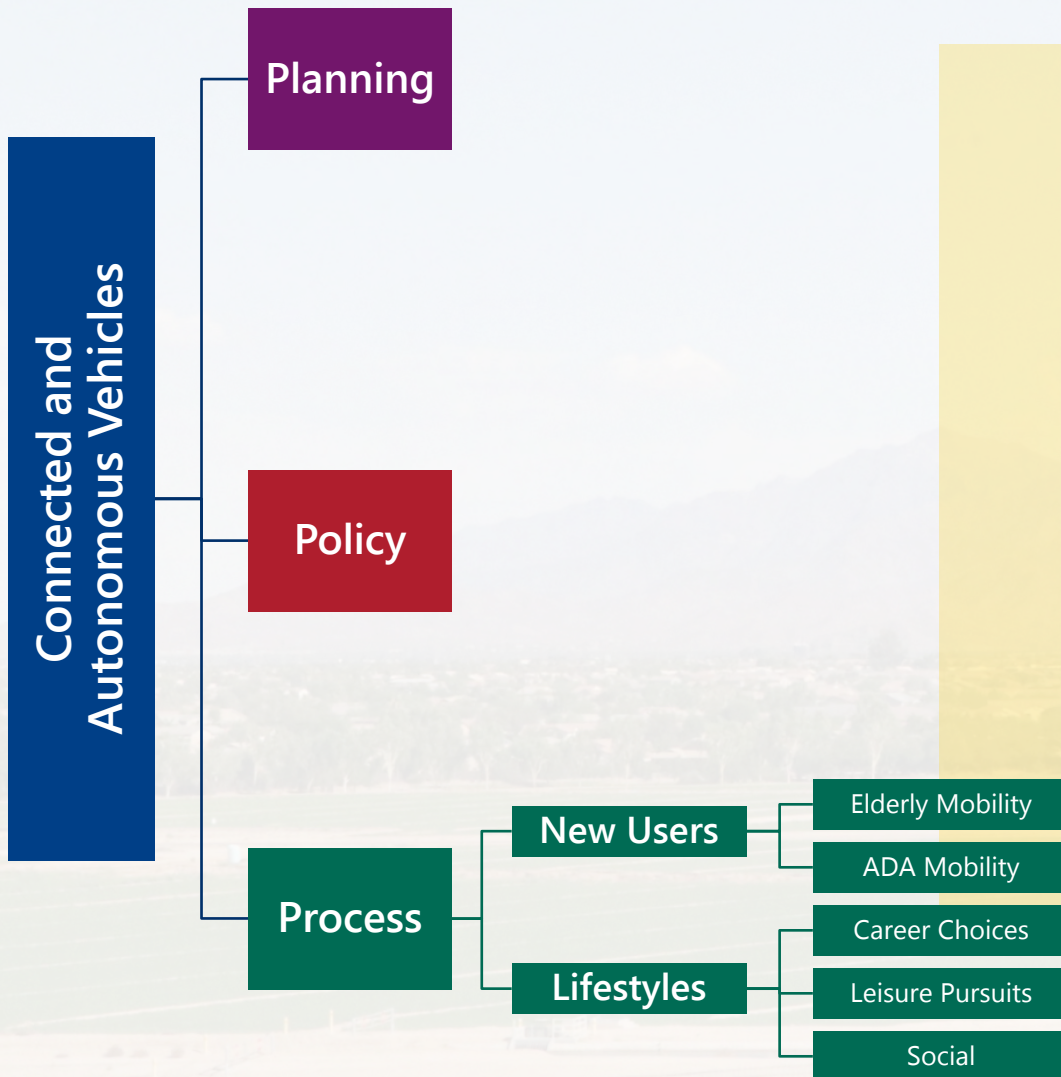
U.S. Department of Transportation ▪ Federal
Highway Administration ▪ Federal Highway
Administration ▪ Federal Transit
Administration ▪ National Highway Traffic
Safety Administration ▪ State Departments
of Transportation ▪ American Association of
State Highway and Transportation Officials ▪
Association of Metropolitan Planning
Organizations ▪ National Association of
Regional Councils ▪ National League of
Cities

Connected and Autonomous Vehicles

Planning

Policy

Process

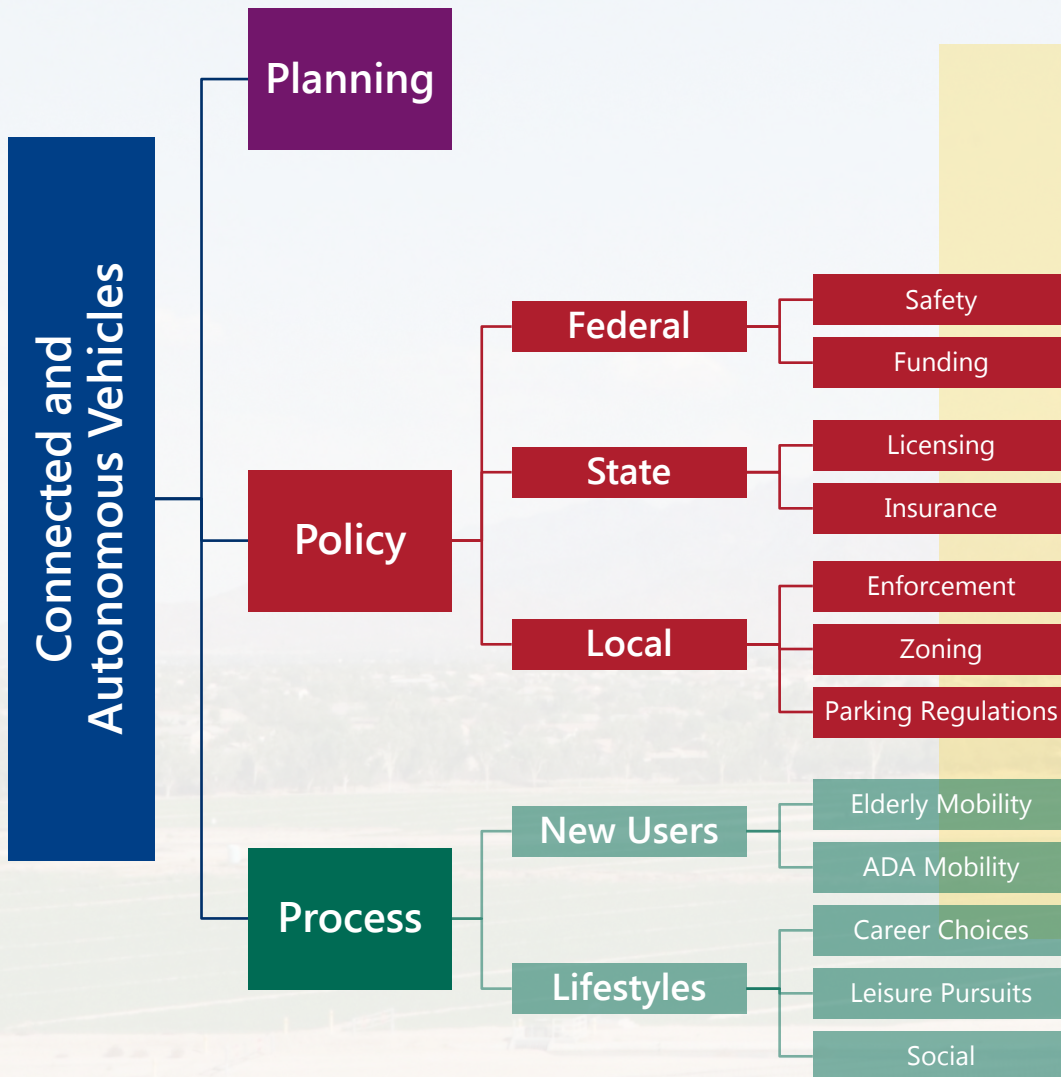


Potential Benefits

Driving Externality	Connected Vehicles	Autonomy	Share Autonomy	Electric Fleet
Safety				
Congestion				
Emissions				
Land Use				
Mobility				

Strong
 Some
 Weakest
 Uncertain

Source: NCHRP Research Report 845, *Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Officials*, Transportation Research Board, The National Academies of Sciences, Engineering, and Medicine, Washington DC, August 2017.



- **Economic Instruments**

- Fuel Taxes
- Value Added Taxes
- Vehicle Age Taxes

- **Regulatory Instruments**

- Insurance Requirements
- Establish/Update Rules of the Road and License Requirements

- **Structure of Private Rights**

- **Service Provisions**

- **Information/Education**

- **Financing/Contracting/Collaboration**

Source: NCHRP Research Report 845, *Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Officials*, Transportation Research Board, The National Academies of Sciences, Engineering, and Medicine, Washington DC, August 2017.

Connected and Autonomous Vehicles

Planning

Land Use

- Commercial
- Residential
- Retail
- Institutional

Policy

Federal

- Safety
- Funding

State

- Licensing
- Insurance

Local

- Enforcement
- Zoning
- Parking Regulations

Process

New Users

- Elderly Mobility
- ADA Mobility

Lifestyles

- Career Choices
- Leisure Pursuits
- Social

When car ownership fades, this parking garage will be ready for its next life



If fewer people were to own and drive their own cars, parking lots and garages could be converted to other uses. Architecture firm Gensler illustrated how a parking structure might be turned into offices. (Gensler)

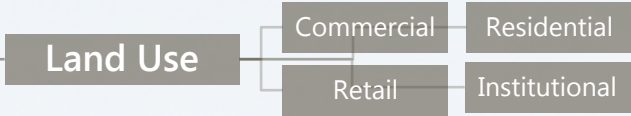


By **Roger Vincent**

Source: *Los Angeles Times*, April 16, 2017, downloaded October 17, 2017.

Connected and Autonomous Vehicles

Planning



Transportation

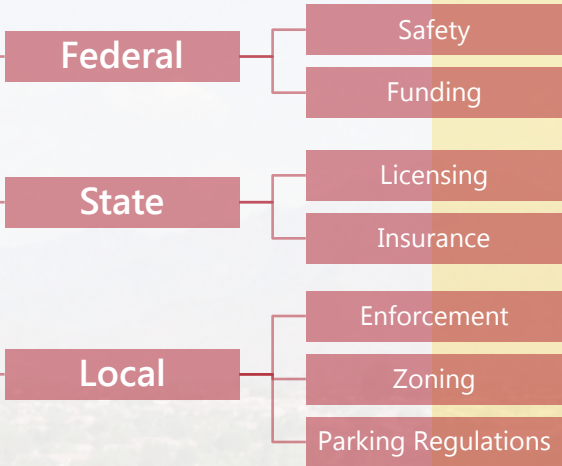
Infrastructure Investments Management and Operations

Statewide

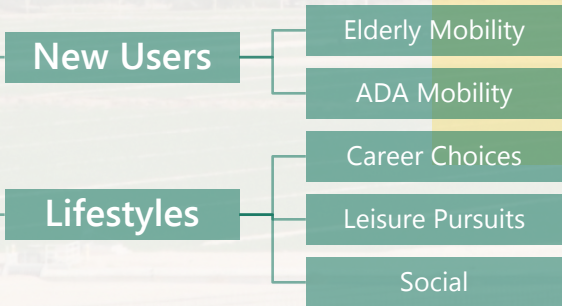
Regional

Local

Policy



Process



Source: Autonomous Vehicles: A Policy Preparation Guide, National League of Cities, Washington DC, April 19, 2017, downloaded October 17, 2017.



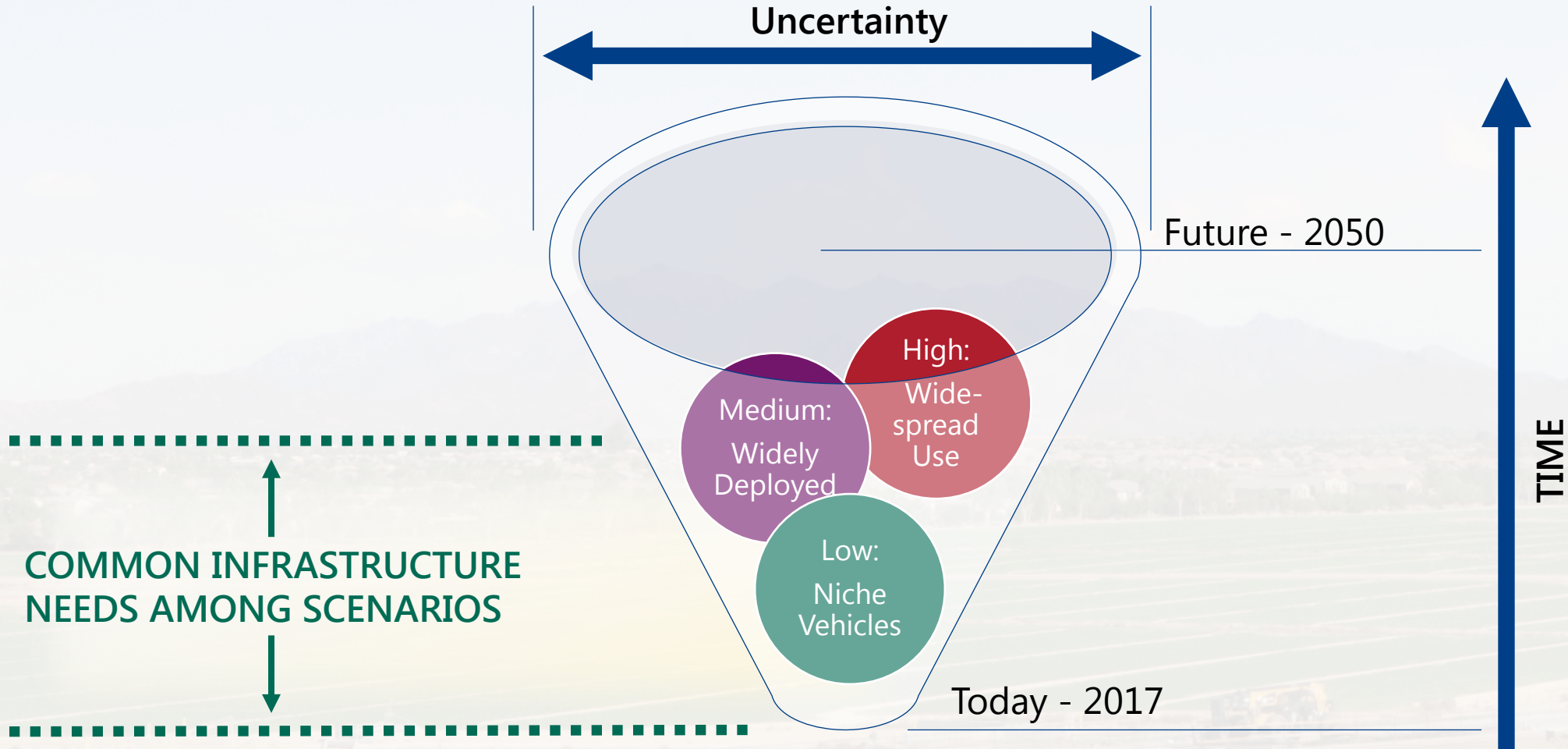
Connected and Autonomous Vehicles



How will these vehicles affect our planning process?

Scenario Planning

CONNECTED VEHICLE/AUTONOMOUS VEHICLE FUTURE



Scenarios depicted in this slide are for illustration purposes, only.

Developing **Imagine**

MAG'S NEXT REGIONAL TRANSPORTATION PLAN

- Pick a range of scenarios.
- Focus what is in our control.
- Look for collaboration opportunities.
- Constantly reassess.
- **Relax!**



Photo source: Fiat-Chrysler, downloaded 10/16/2017.

Roles for MAG to Consider

- Serve as an information clearinghouse.
- Evaluate a range of effects on long-range plans.
- Consider developing guidance documents, templates, etc. for use by local governments.



Photo source: Ford Motor Company, downloaded 10/16/2017.

TRB's Standing Committees

MAG MEMBERSHIP

Vladimir Livshits

- Standing Committee on Artificial Intelligence and Advanced Computing Applications (ABJ70)
- Standing Committee on Travel Demand Forecasting (ADB40)
- Travel Analysis Methods (ADB00, Research Coordinator)

Sarath Joshua

- Standing Committee on Regional Transportation Systems Management and Operations (AHB10)

Monique de los Rios-Urban

- Standing Committee on Performance Management (ABC30)

Teri Kennedy

- NCHRP 10-101 Panel Member: Examining State DOT and USDOT Construction Cost Inflation Indices and Methods

Bob Hazlett

- Standing Committee on Metropolitan Policy, Planning, and Processes (ADA20, Outgoing Committee Chair)
- Standing Committee on Transportation Planning Applications (ADB50)
- Transportation System Policy, Planning and Processes (ADA00, Incoming Section Chair)





April 2019

Phoenix or Tempe

MAG – Agency Sponsor



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