

For Information and Discussion.

# Outcome of the Central Phoenix Transportation Framework Study

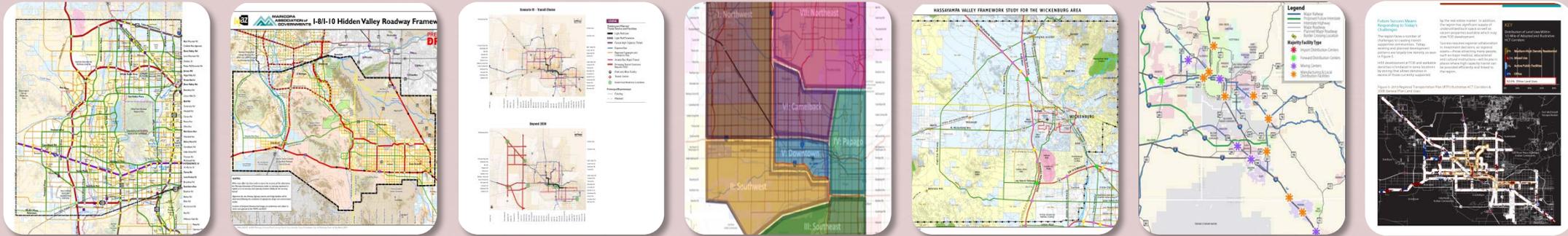
Transportation Review Committee  
September 25, 2014



# MAG Framework Studies



BUILDING A QUALITY ARIZONA  
www.bqaz.org



**Interstate 10/  
Hassayampa  
Valley  
Roadway  
Framework  
Study**

**Interstates 8  
and 10/  
Hidden Valley  
Transportation  
Framework  
Study**

**Regional  
Transit  
Framework  
Study**

**Central  
Phoenix  
Transportation  
Framework  
Study**

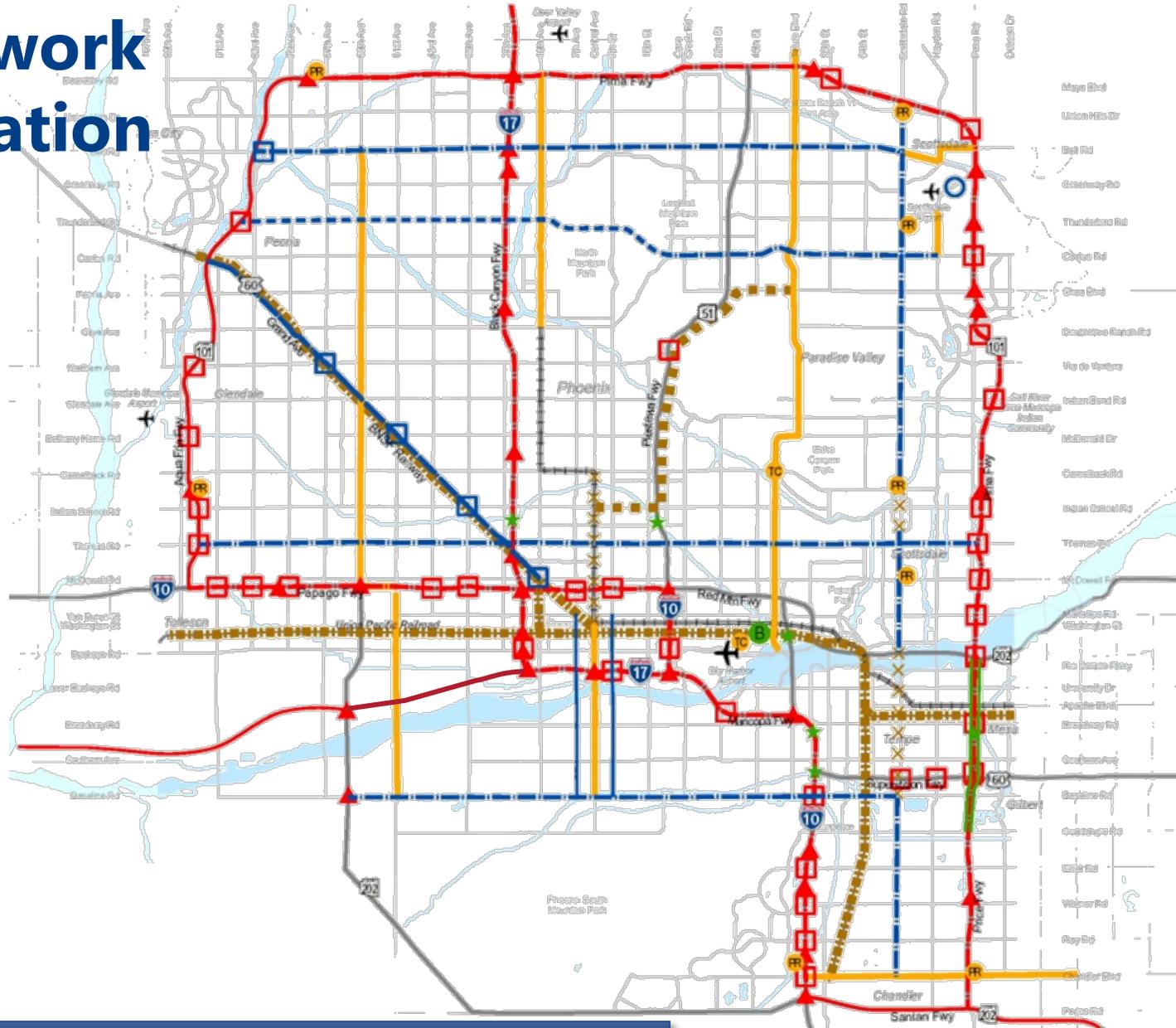
**Hassayampa  
Framework  
Study for the  
Wickenburg  
Area**

**Freight  
Transportation  
Framework  
Study**

**Sustainable  
Transportation  
and Land Use  
Integration  
Study**

**Inform the Planning Process > MAG REGIONAL TRANSPORTATION PLAN**

# Framework Foundation



- Legend**
- Transit\_Point**
    - Improvement\_Type
      - RR New Park-N-Ride Location
      - TC New Transit Center
  - PedBike\_Point**
    - Improvement\_Type
      - B Add Bike Parking
      - O Add Mid-Block Signalized Ped Crossing
      - ☆ Ped/Bike Crossing
    - PedBike\_Link**
      - Improvement\_Type
        - New Bike Route
        - New Multi-Use Path
        - New Pedestrian Route
    - Arterial\_Point**
      - Improvement\_Type
        - O New Roundabout
        - Urban Grade Separation
      - Arterial\_Link**
        - Improvement\_Type
          - Indirect-Left Corridor Conversion
          - Arterial Improvements
          - Transit Oriented Parkway Conversion
          - × Subway/Elevated
      - Freeway\_Point**
        - Improvement\_Type
          - Modify Traffic Interchange
          - ▲ New Direct HOV Ramps
          - ☆ New Freeway Crossing
          - New Traffic Interchange
        - Freeway\_Link**
          - Improvement\_Type
            - Add Frontage Road
            - Add General Purpose Lanes
            - Add HOV Lanes
            - Add Managed Lanes
        - Transit\_Link**
          - Improvement\_Type
            - Intercity Rail
            - New Commuter Rail
            - New Express Service
            - New High Capacity Transit
            - New Light Rail Transit
            - × × Subway/Elevated

**Transit**

**Bicycles and Pedestrians**

**Arterials Intersections and Links**

**Freeway Interchanges and Links**

**Transit**

**More than 200 Project Possibilities Identified.**

# Work Products



BUILDING A QUALITY ARIZONA  
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**Improvement Strategies**



**"Spine Corridor"**



**Freeway System Plan**



**SR-30 Corridor Extension**



**DHOVs and Park-n-Rides**



**DHOVs**



**ATM Deployment**



**Roadway Maintenance**



**Freeway Interchange Options**



**Arterial Improvement Strategies**



**Transit Improvement Concepts**

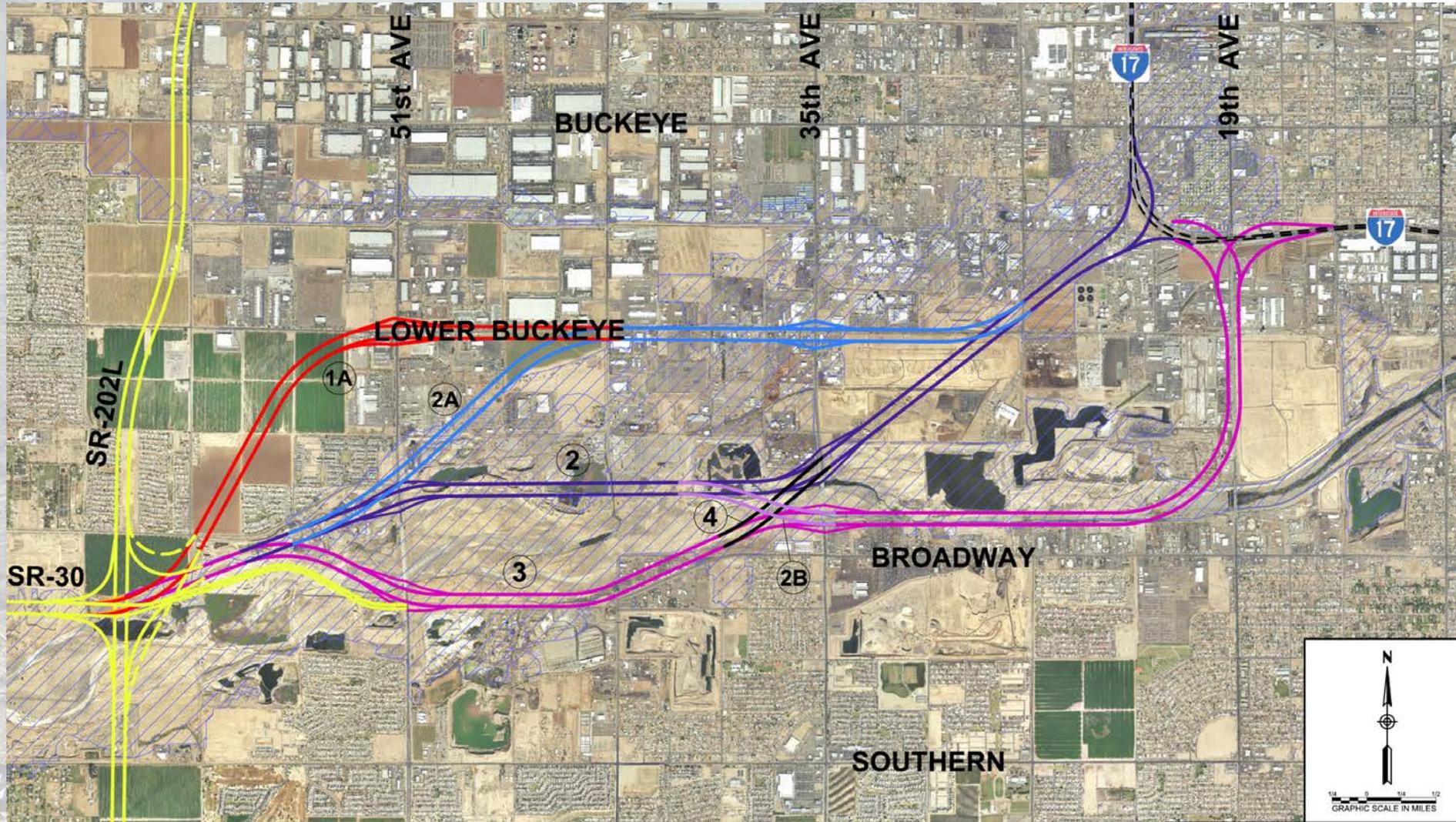


**Pedestrian/Bicycle Concepts**



**Executive Summary Poster**

# SR-30 Corridor Extension



# What and where are DHOVs?



- I-10 Westbound – 3rd St
- I-10 Eastbound – 3rd Ave/5th Ave
- I-10 Westbound -79th Ave



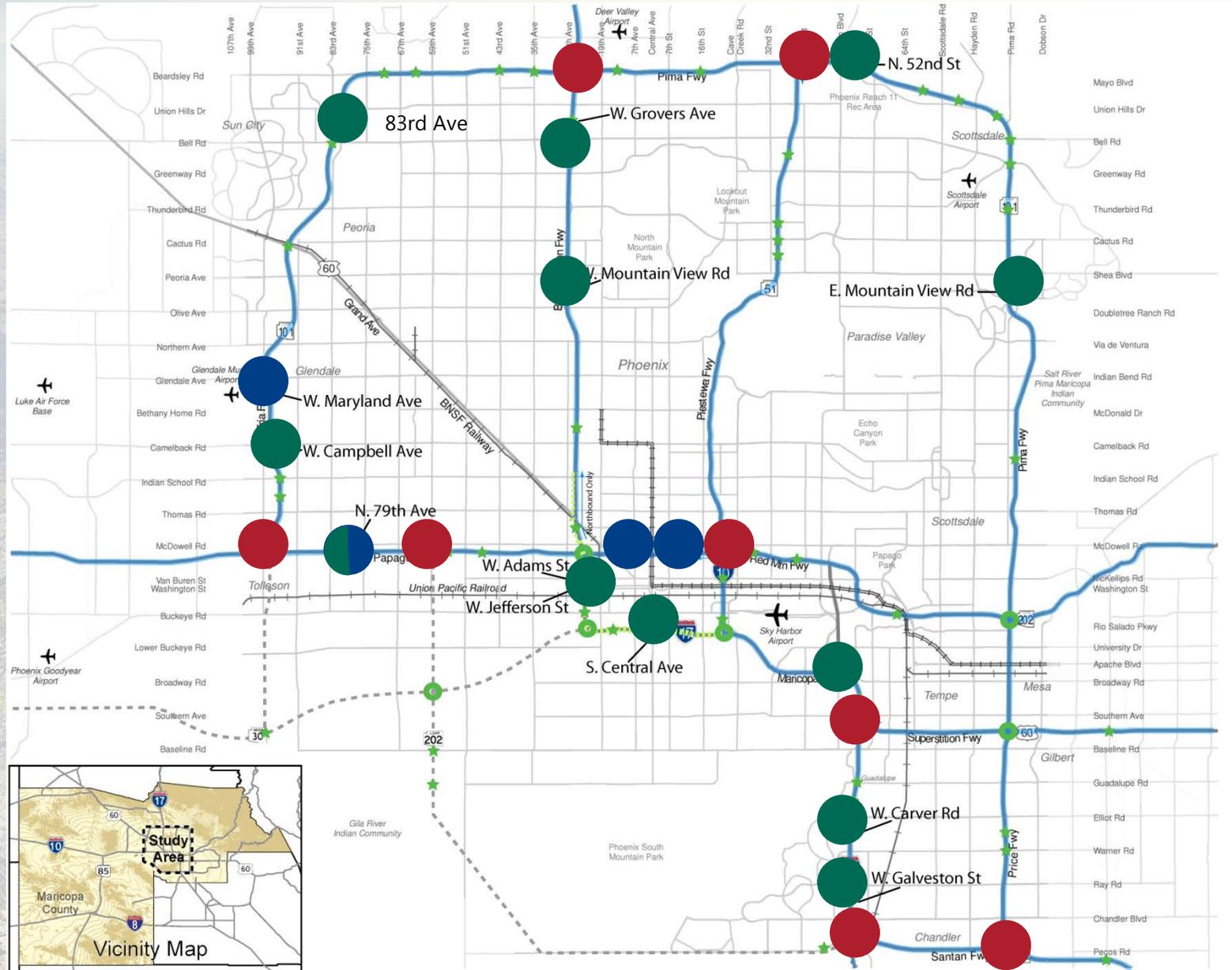
- I-10 West to/from SR-202L East
- I-10 East to/from SR-51 North
- I-10 West to/from US-60 East



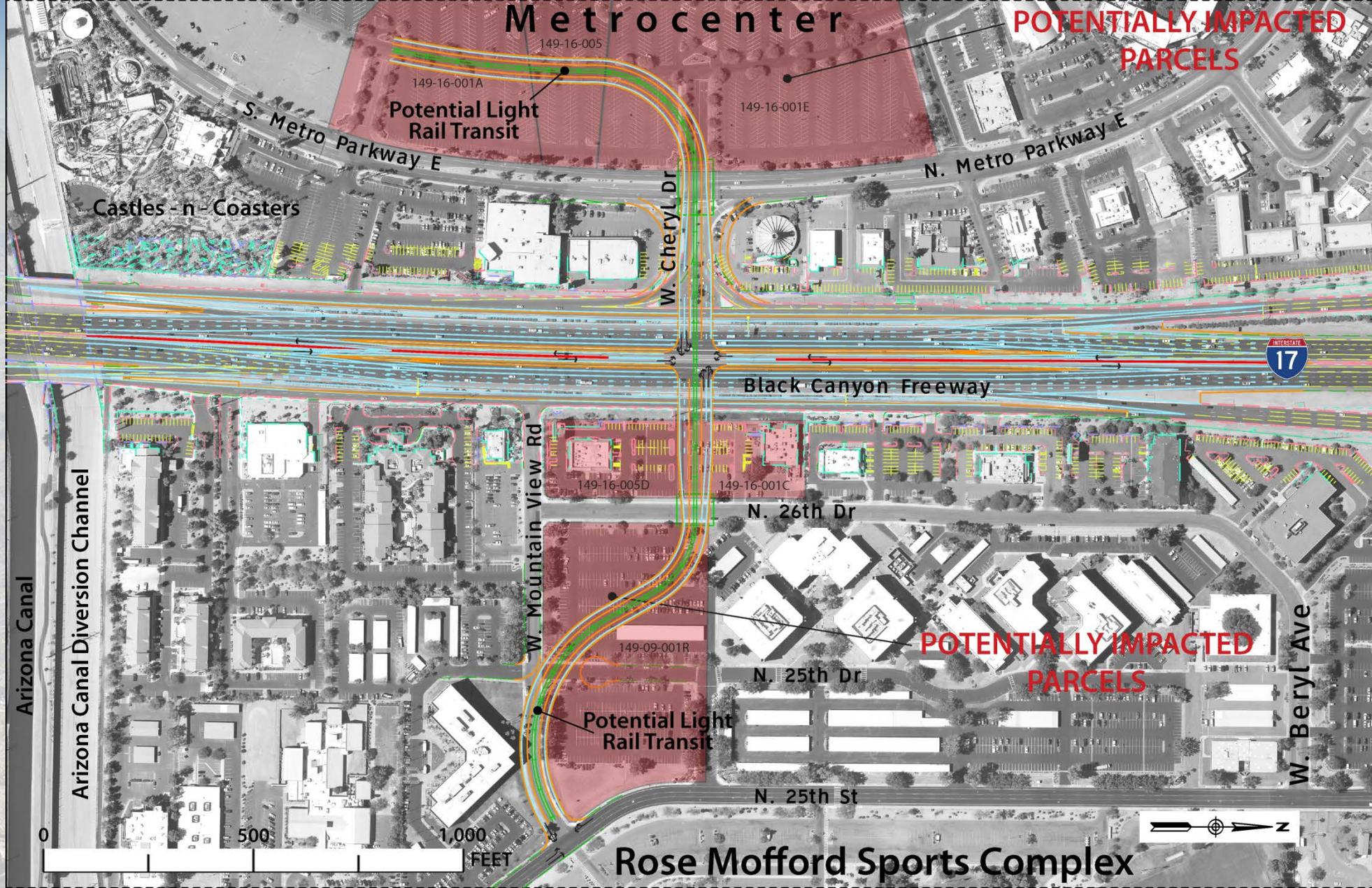
- SR-51 South to/from SR-101L Pima
- I-10 West to/from SR-202L Santan
- SR-101L Price to/from SR-202L Santan
- SR-101L/Maryland Ave

# DHOV Ramps

- RTP existing and proposed DHOV ramp locations.
- RTP existing and proposed DHOV ramp arterial locations.
- Candidate DHOV ramp locations.



DHOV = Direct High Occupancy Vehicle Ramp and Interchange



## Potential DHOV at Mountain View Rd and Interstate 17

# Park-and-Ride

Case studies of Best Practices were conducted for **San Diego, Denver, and Seattle** to:

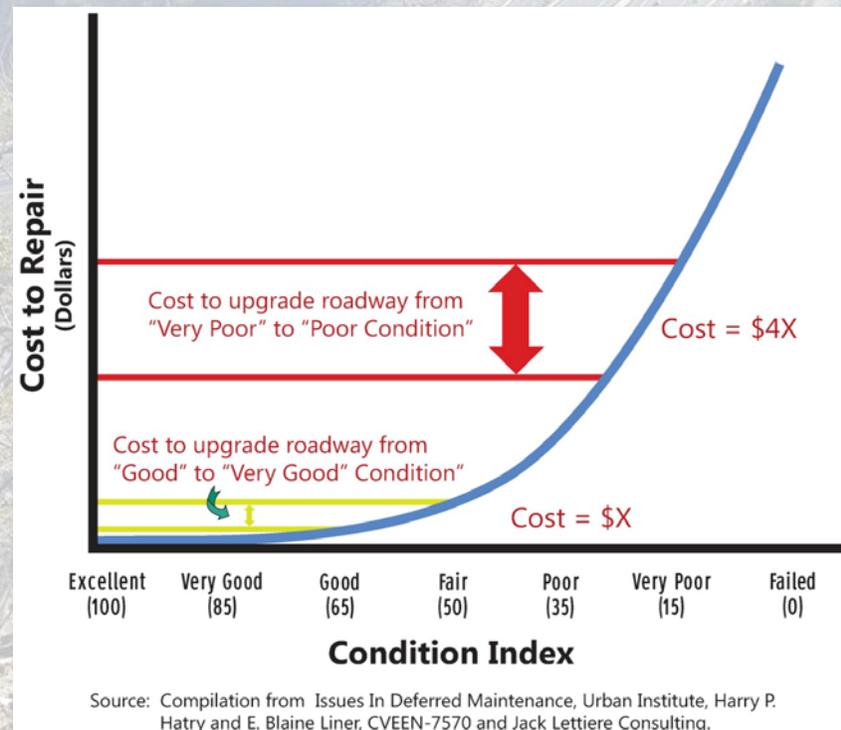
- Define integration with freeway system.
- Establish background for **development and character of future Direct HOV (DHOV) Ramps** on the freeway system, including:
  - Physical features.
  - Operational conditions.
  - Benefits.



# Roadway Maintenance

## 2013 Maintenance and Operations (in \$Millions)

	Identified Need	Actual Budgeted	Deficit	% Unfunded
Entire MAG Program	\$80.8	\$49.6	<b>\$31.2</b>	<b>38.6%</b>
<b>Central Phoenix Study Area</b>	<b>\$35.1</b>	<b>\$21.5</b>	<b>\$13.6</b>	<b>38.7%</b>



# Local Agency Operations and Maintenance

- Average cost for municipal street operations and maintenance is **\$15,000 per lane-mile per year.**
- Central Phoenix study opportunities to **address known bottlenecks** while at the same time consider potential **complete streets** and provisions for **transit and pedestrian friendly amenities.**
- Should there be a distinction to **identify surface street improvements** and maintenance that is **regionally significant?**

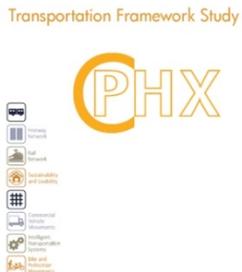
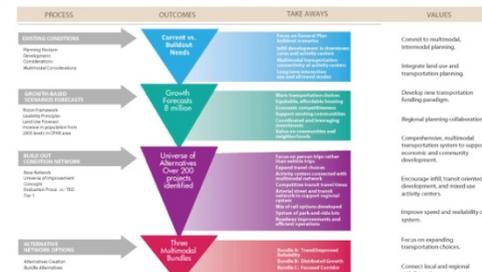
Major Regional Improvements			
PROGRAM	FUNDED	UNFUNDED	TOTAL
Arterial Streets	\$715,000,000	\$753,000,000	\$1,468,000,000
Bridges (New)	\$112,000,000	\$751,000,000	\$863,000,000
Bridges (Maint/Rehab/Replacement)	\$34,000,000	\$52,000,000	\$86,000,000
Intersection Restoration	\$17,000,000	\$94,000,000	\$111,000,000
Regional Transportation Plan	\$229,000,000	\$313,000,000	\$542,000,000
Rehabilitation Program	\$468,000,000	\$357,000,000	\$825,000,000
<b>Total Major Regional Improvements</b>	<b>\$1,575,000,000</b>	<b>\$2,320,000,000</b>	<b>\$3,895,000,000</b>
Major Drainage Improvements			
PROGRAM	FUNDED	UNFUNDED	TOTAL
Detention Basins and Channels	\$83,000,000	\$489,000,000	\$572,000,000
Storm Sewers/Storm Sewer Rehab	\$125,000,000	\$341,000,000	\$466,000,000
<b>Total Major Drainage Improvements</b>	<b>\$208,000,000</b>	<b>\$830,000,000</b>	<b>\$1,038,000,000</b>
Other Local Improvements			
PROGRAM	FUNDED	UNFUNDED	TOTAL
ADA Compliance	\$6,000,000	\$28,000,000	\$34,000,000
Bikeway/Pedestrian Bridge/Tunnel	\$22,000,000	\$21,000,000	\$43,000,000
Dam and Levee Safety Program	\$2,000,000	\$15,000,000	\$17,000,000
Dust Control	\$32,000,000	\$8,000,000	\$40,000,000
Landscape Retrofit/Screen Walls	\$53,000,000	\$18,000,000	\$71,000,000
Local Drainage	\$47,000,000	\$154,000,000	\$201,000,000
Local Street Modernization	\$139,000,000	\$161,000,000	\$300,000,000
Safety Projects/Traffic Calming	\$42,000,000	\$26,000,000	\$68,000,000
Signals (New)	\$77,000,000	\$23,000,000	\$100,000,000
Signal System Upgrade	\$25,000,000	\$52,000,000	\$77,000,000
<b>Total Other Local Improvements</b>	<b>\$445,000,000</b>	<b>\$506,000,000</b>	<b>\$951,000,000</b>
<b>Total Infrastructure Needs</b>	<b>2,228,000,000</b>	<b>3,656,000,000</b>	<b>5,884,000,000</b>

# Arterial Improvement Strategies

## Railroad Grade Separations

- 66 crossings examined.
- 9 Locations determined feasible for grade separation.
- Additional local review required.
- US-60/Grand Ave COMPASS addressing this corridor.





STAKEHOLDER OUTREACH

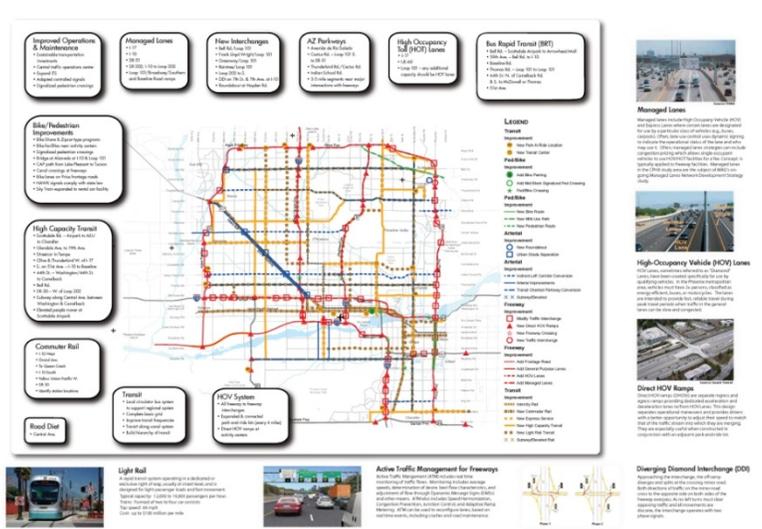
The study was guided by the contributions of stakeholders throughout the process. Municipal and agency representatives comprised the study's Planning Partners team...

BIG IDEAS

- Active Traffic Management, Managed Lanes, and High Occupancy Toll Lane (HOT) Strategies
High Occupancy Vehicle (HOV) Ramps and Park-and-Ride Connectivity
Improved Efficiency at Freeway Interchanges

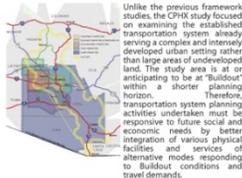
OPPORTUNITIES

At the midpoint of the CHPX study process, the Planning Partners convened for a day-long charrette during which a series of over 300 potential improvement concepts were identified for the CHPX study area...



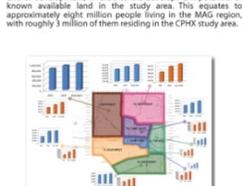
STUDY OVERVIEW

The Central Phoenix Transportation Framework Study (CPHX) was undertaken as one study in a series of Statewide Transportation Framework Studies conducted in conjunction with the Building a Quality Arizona (BqAZ) Study...



POPULATION & EMPLOYMENT

What is Buildout? The CHPX study focused on the long-range, 'Buildout' needs of the study area. 'Buildout' refers to the general development of available land at a some hypothetical maximum level...



STUDY TEAM

WILSON & COMPANY
In Association with
CH2M Hill
Fehr & Peers
IBI Group
Jack Lettierie & Associates
Partners for Strategic Action

PHX Central Phoenix Transportation Framework Study

STUDY WORK PRODUCTS

The CHPX study involved a collaborative process with study area stakeholders that identified values, big ideas, and potential opportunities for improving the transportation system and services of the core of the Phoenix metropolitan area...

TRANSIT

Transit-supportive policies require the coordination of a broad cross-section of decision-makers and stakeholders to frame community needs and issues within the context of the study system of services. A charrette conducted early in the CHPX study was a major contribution to understanding strategies for how the public transit system could support the mobility and accessibility needs of each community and the CHPX study area...

DIRECT HIGH OCCUPANCY VEHICLE INTERCHANGES

High-occupancy vehicle (HOV) lanes have been constructed on most of the freeways in the CHPX study area. Direct HOV (DHOV) access ramps (also referred to as DHOV allow lanes, carpools, carpooling, carpooling, and other qualifying vehicles) in the CHPX study area...

DIVERGING DIAMOND INTERCHANGES

The Diverging Diamond Interchange (DDI) is a variant of the more traditional urban diamond interchange, which has been constructed at many locations on the CHPX study area freeway system. The DDI design directs the two opposing traffic flows on the arterial street to cross over the opposite side of the roadway through the interchange...

FREEWAY SYSTEM PLAN

During the study, a special Workshop was convened to address physical constraints present in the I-10 and I-17 corridors - 'The Spine' - that imposed significant limitations and costs on the extent and character of potential future improvements. As a result of the Workshop, a map the 'Spine' concept was developed that established the Arizona Department of Transportation (ADOT) existing physical right-of-way limits of the 'Spine' for improvements in capacity...

AZ SR-30 EXTENSION

SR 30 (Franklin Road) is identified in the MAG 2011 Update Regional Transportation Plan (RTP) as a freeway connecting the planned Loop 202 (SR 101) 'Sunset Freeway' to the planned Loop 202 (SR 101) / Estrella Freeway. The transportation framework study identified extension of SR-30 to I-17 as a plausible solution to West Valley capacity issues. Subsequently, the City of Phoenix requested MAG examine the extension in consideration of it being a 'missing link' in the overall MAG Regional Freeway and Highway Program...

'THE SPINE'

Interstate 10 (Maricopa Freeway) connecting with Interstate 17 (Black Canyon Freeway) at 'The Spine' interchange carries much of the traffic flow through the Phoenix metropolitan area. The transportation framework study identified extension of SR-30 to I-17 as a plausible solution to West Valley capacity issues. Subsequently, the City of Phoenix requested MAG examine the extension in consideration of it being a 'missing link' in the overall MAG Regional Freeway and Highway Program...

ACTIVE TRAFFIC MANAGEMENT

The Active Traffic Management (ATM) program recently developed an Integrated Corridor Management (ICM) Action Plan to identify key operational improvements, intelligent transportation system (ITS) needs, and priorities and responsibilities for advancing ICM in the Phoenix region. There was a need to build on the high-level recommendations presented in the ICM Action Plan by identifying additional Active Traffic Management (ATM) enhancements that might be included in a regional ICM program. ICM represents several methods for monitoring and dynamically adjusting traffic flows to manage congestion...

ARTERIALS

During the initial stages of the study, several arterial roadways were identified as being significant with respect to the city-to-day travel experience. These arterials were considered to be 'strategic regional arterials' due to the importance of their regional functions. This Technical Memorandum addresses techniques and design treatments for arterials, even increasing the capacity of these arterials, as well as the role of arterials as a whole. Applications studied include the feasibility of converting the significant arterials to Arterial Parkways, a roadway classification Framework. Studies completed by MAG The potential for conversion for arterials is also addressed.

BICYCLE/PEDESTRIAN AND COMPLETE STREETS

MAG adopted a Complete Streets Guide in 2011. Complete Streets is a concept that embraces the principle that roadway facilities should be designed to accommodate all traveler modes and abilities. It is a concept aimed at addressing the needs of motorists, sustainable and motorist's bicycles, pedestrians, persons with travelability challenges, transit users, emergency responders, and goods movement (trucks).

MAINTENANCE

Executing regular maintenance programs to extract the longest and best use of transportation system assets has proven difficult in most every community. Commonly, leaders facing budgetary constraints are challenged to balance transportation system maintenance requirements against the need for new capacity to accommodate the demands of growth. Conditions for the economic downturn have resulted in a decline in revenues, which has resulted in cuts to all MAG programs, including the maintenance program. The maintenance program is a critical component of the region's freeway system and major arterials. The MAG regional maintenance budget is \$410 million, which is approximately 53.2 million less than required to maintain the regional roadway system in 'Good Condition'.

RELATED STUDIES AND NEXT STEPS

Throughout the course of the Central Phoenix Transportation Framework Study, several strategies were identified that potentially could improve the travel experience and safety for people traveling to and through the study area. Many of these strategies already have become the subject of additional detailed study. The study efforts derived from strategies identified during the course of the CHPX study include: Inner Loop Reevaluation Model, Southeast Corridor Major Investment Study, US-60/Gard Avenue Corridor Optimization and Access Management (COMPASS) Study, Managed Lanes Network Development Study, Interstate 10/Interstate 17 'The Spine' Corridor Master Plan, Downtown Phoenix Core Connections Operations Study/Transportation Master Plan.

Next Generation Regional Transportation Plan

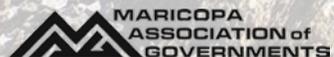




CENTRAL PHOENIX TRANSPORTATION  
FRAMEWORK STUDY

# Downtown Phoenix Core Connections and Operations Study

A CENTRAL PHOENIX TRANSPORTATION  
FRAMEWORK STUDY INITIATIVE



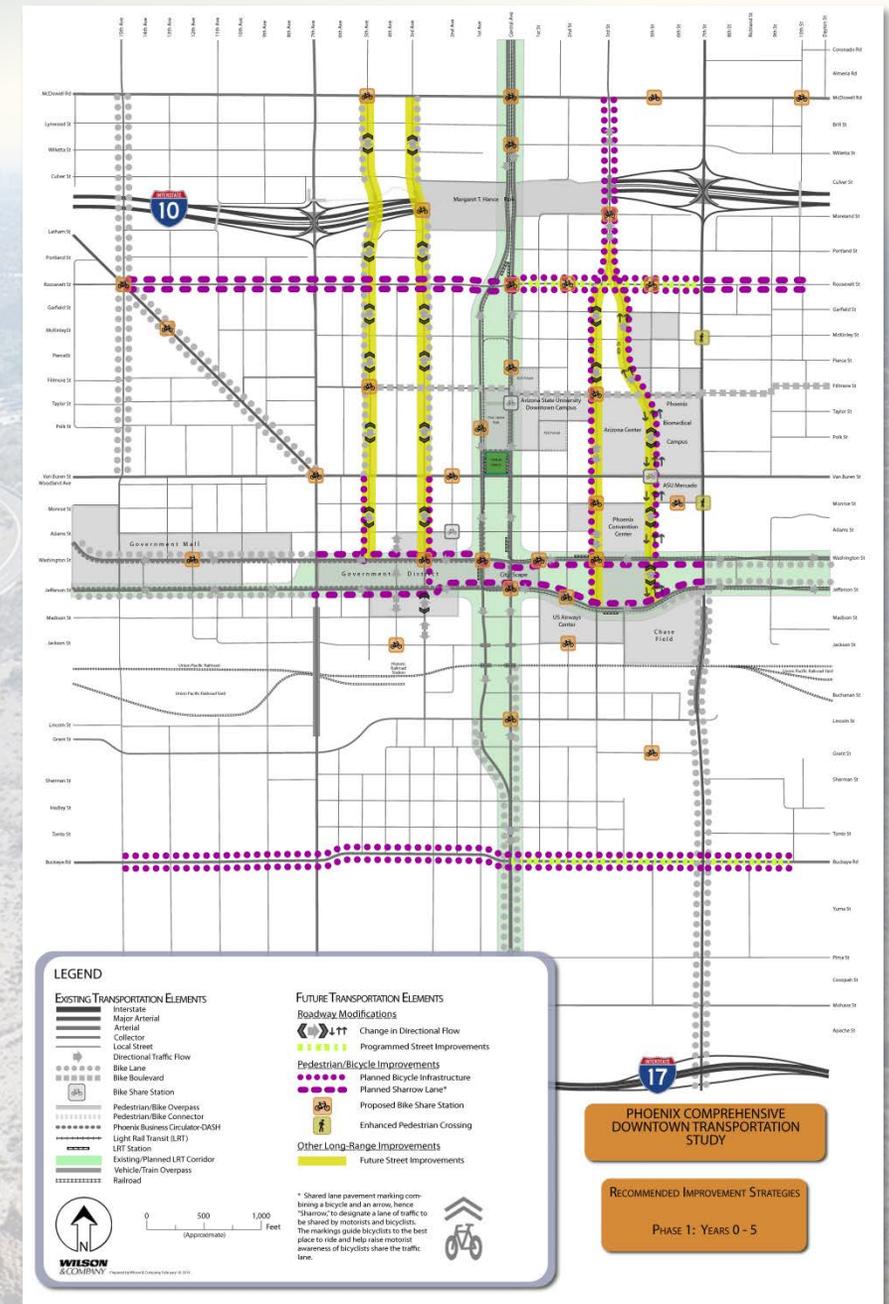
# Analysis of Special Topics

- One-way versus two-way streets.
- Roadway restriping for bike lanes.
- Future of Central Avenue.
- Potential Light Rail Transit turnaround on 5th Street.
- Minor modifications to enhance event management plan (Sunburst Plan).
- Complete Streets.
- Parking Strategies.



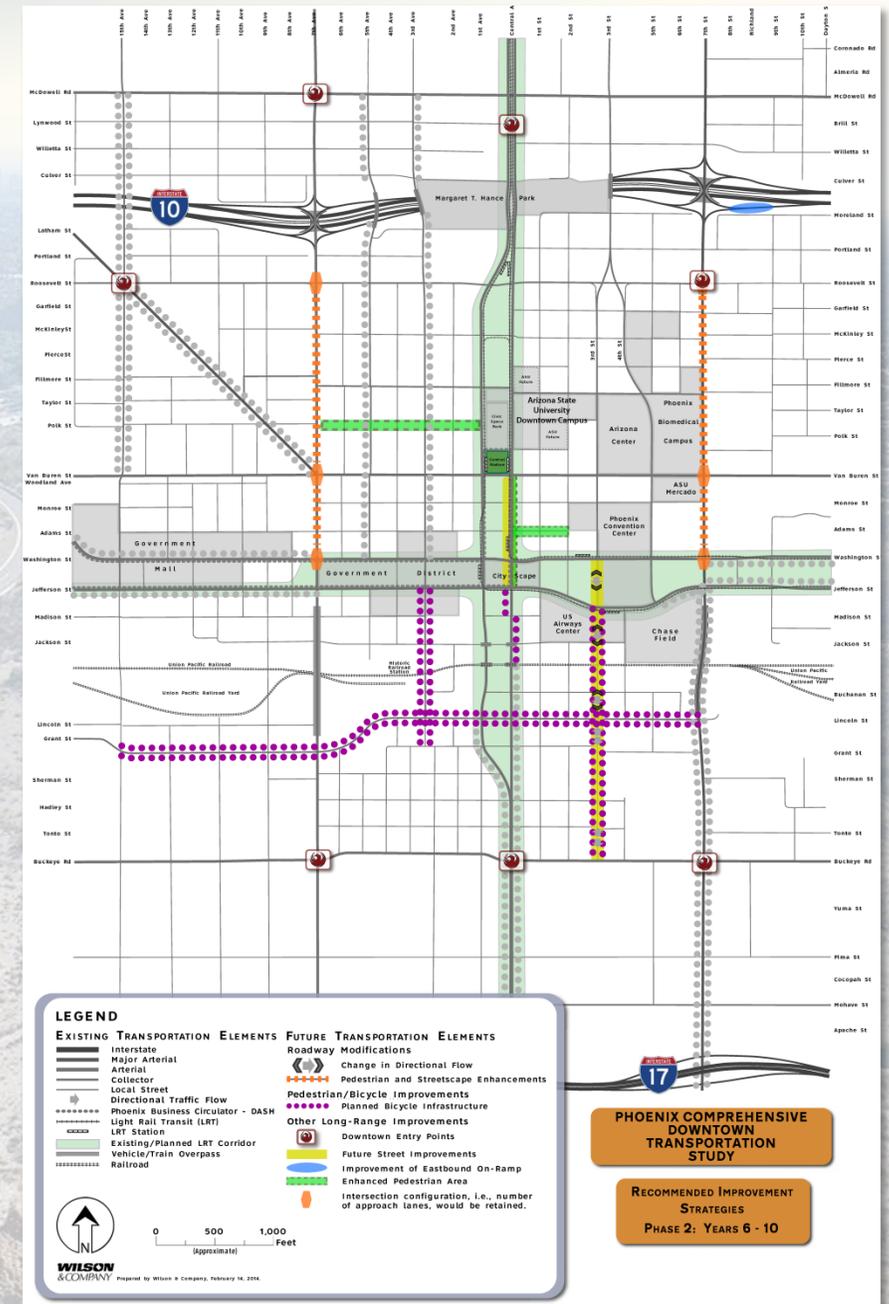
# Phase 1 Recommendations First Five Years

- Addresses:
  - Roosevelt Street.
  - Buckeye Road.
  - Bike Share Expansion.
- 3rd and 5th Streets changed to **two-way streets with bike facilities** with extensions.
- **Bike facilities** on Washington and Jefferson Streets between 7th Avenue and 7th Street.



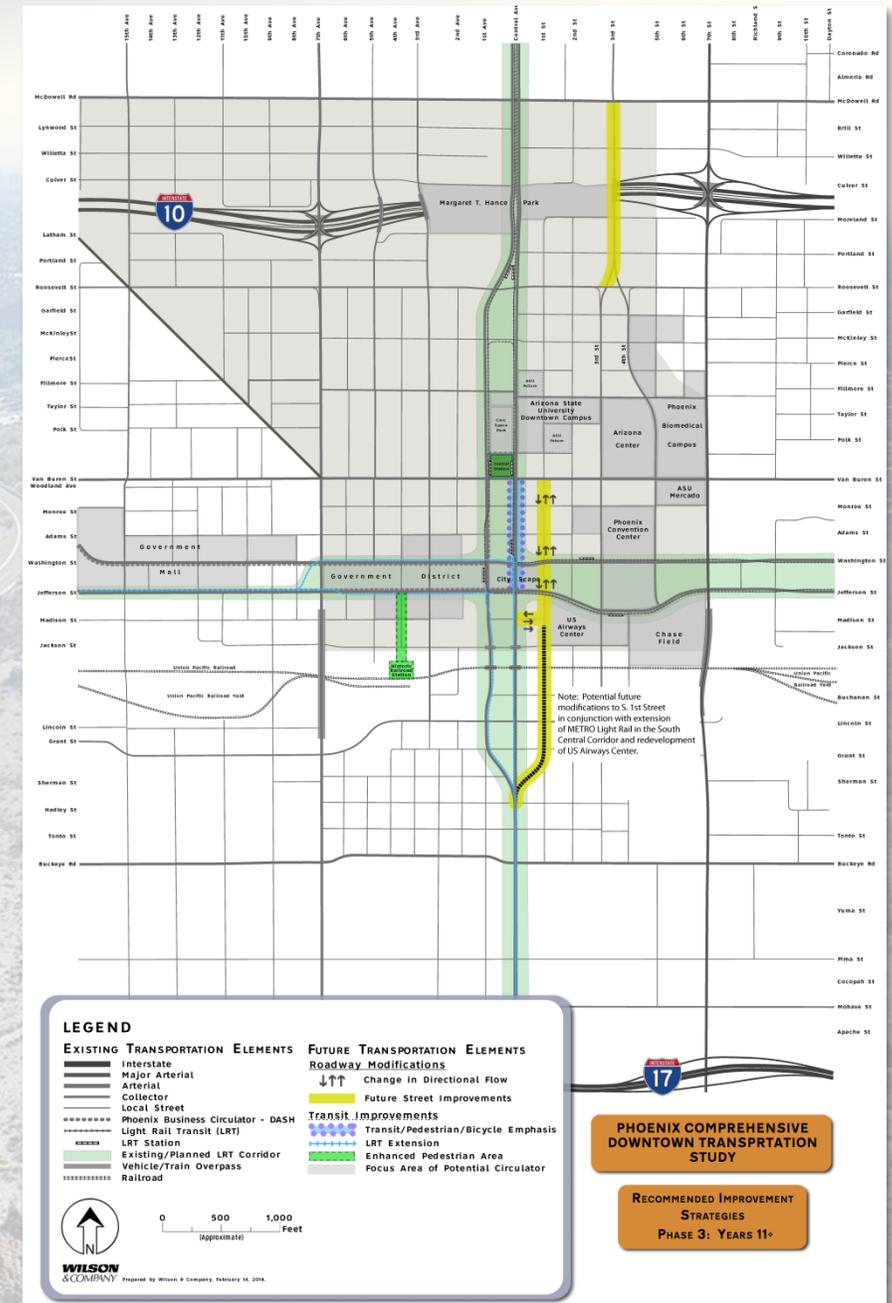
# Phase 2 Recommendations Second Five Years

- Gateways.
- 7th Avenue and 7th Street modifications.
- Beginning phases of converting **Central Avenue into transit/bicycle/pedestrian mall** begins.
- Bike lanes along 3rd Avenue south of Jefferson Street to Grant Road and Lincoln Street.
- **Address entrance ramp** from 7th Street to Eastbound Interstate 10.



# Phase 3 Recommendations After Ten Years

- 3rd and 5th Avenues changed to two-way streets. Regional bus traffic removed.
- Final transition** of Central Avenue into **transit/bicycle/pedestrian mall** between Jefferson Street and Van Buren Street.
- First Street emphasis expands with change to Central Avenue.
- Downtown circulator.



For Information and Discussion.

# Outcome of the Central Phoenix Transportation Framework Study

Bob Hazlett  
Senior Engineering Manager  
[bhazlett@azmag.gov](mailto:bhazlett@azmag.gov)  
602 254-6300

