

For Information and Discussion.

Outcome of the Central Phoenix Transportation Framework Study

Transportation Policy Committee
September 17, 2014



MAG Framework Studies



**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**

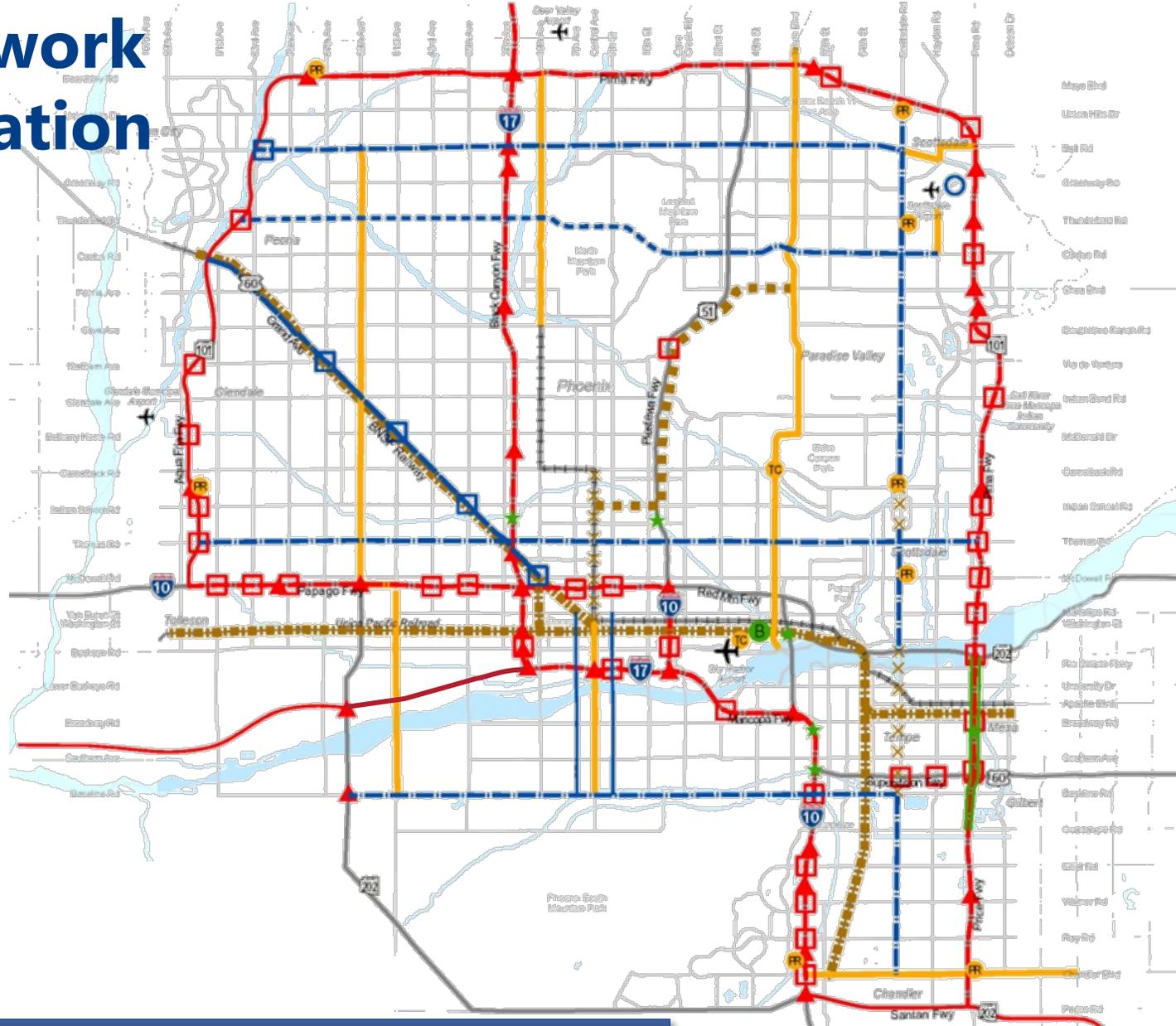
**Hassayampa
Framework
Study for the
Wickenburg
Area**

**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
 - X X 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
 - X X 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
www.bqaz.org



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

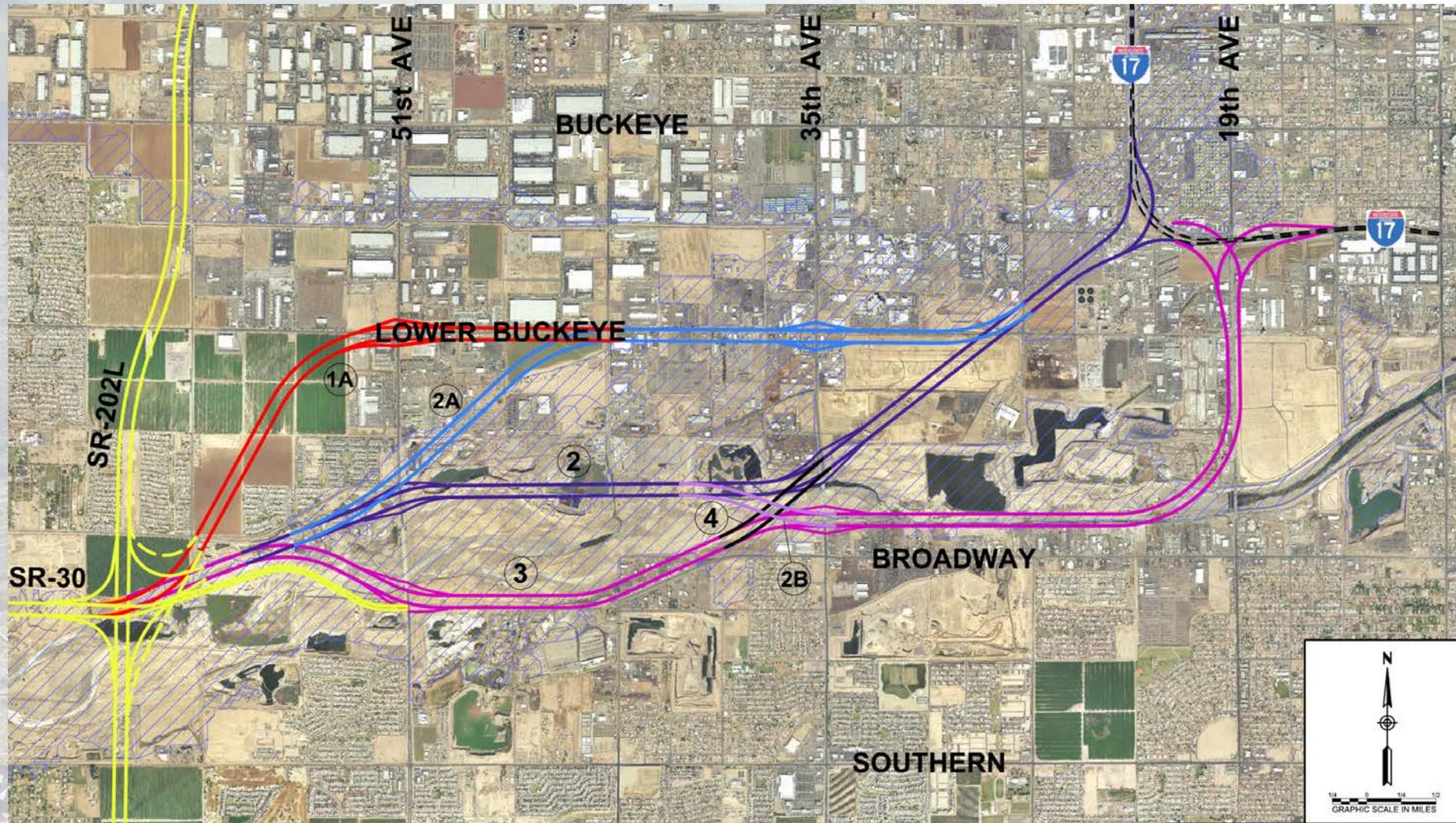


Pedestrian/Bicycle Concepts



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



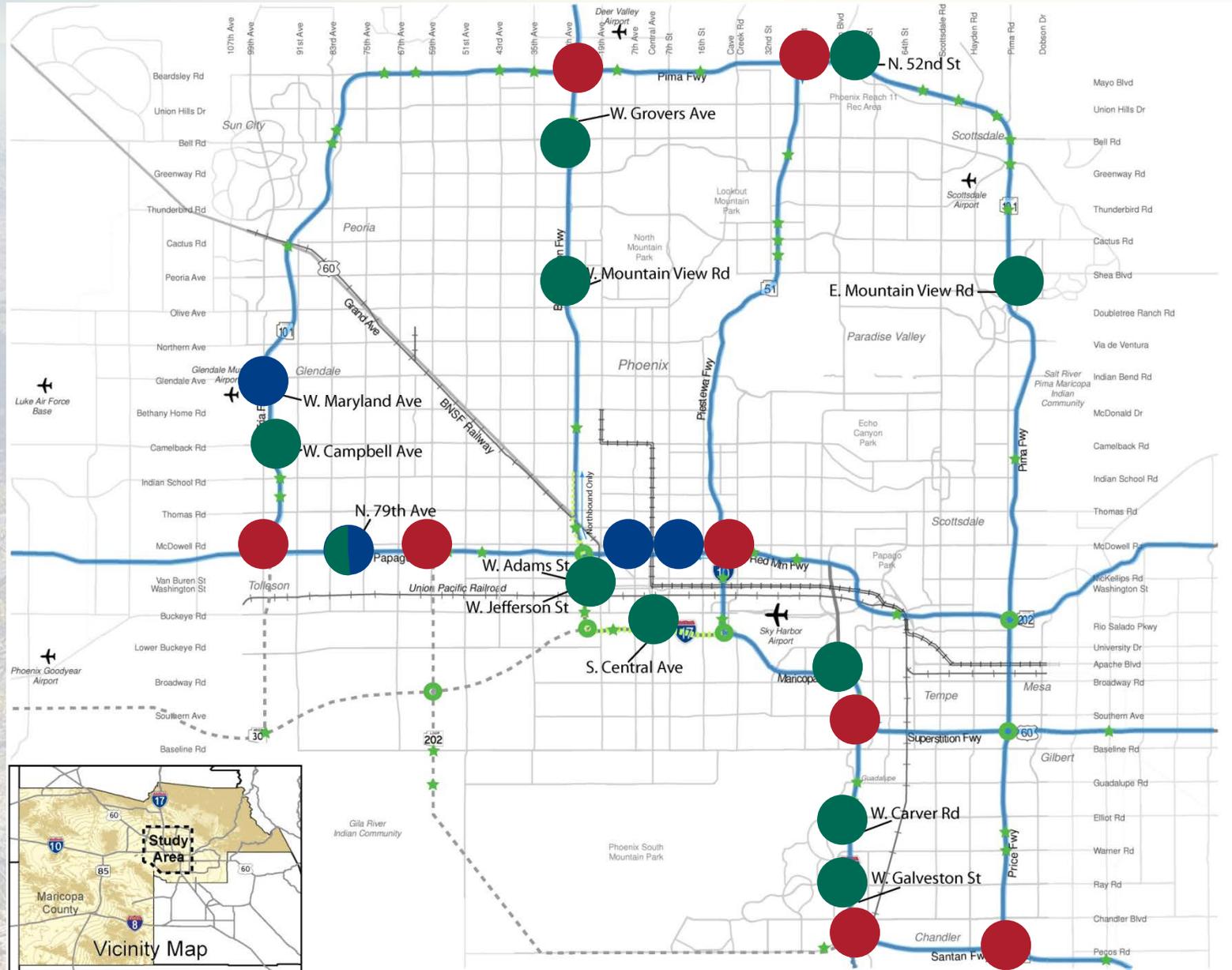
- I-10 West to/from SR-202L East
- I-10 East to/from SR-51 North
- I-10 West to/from US-60 East



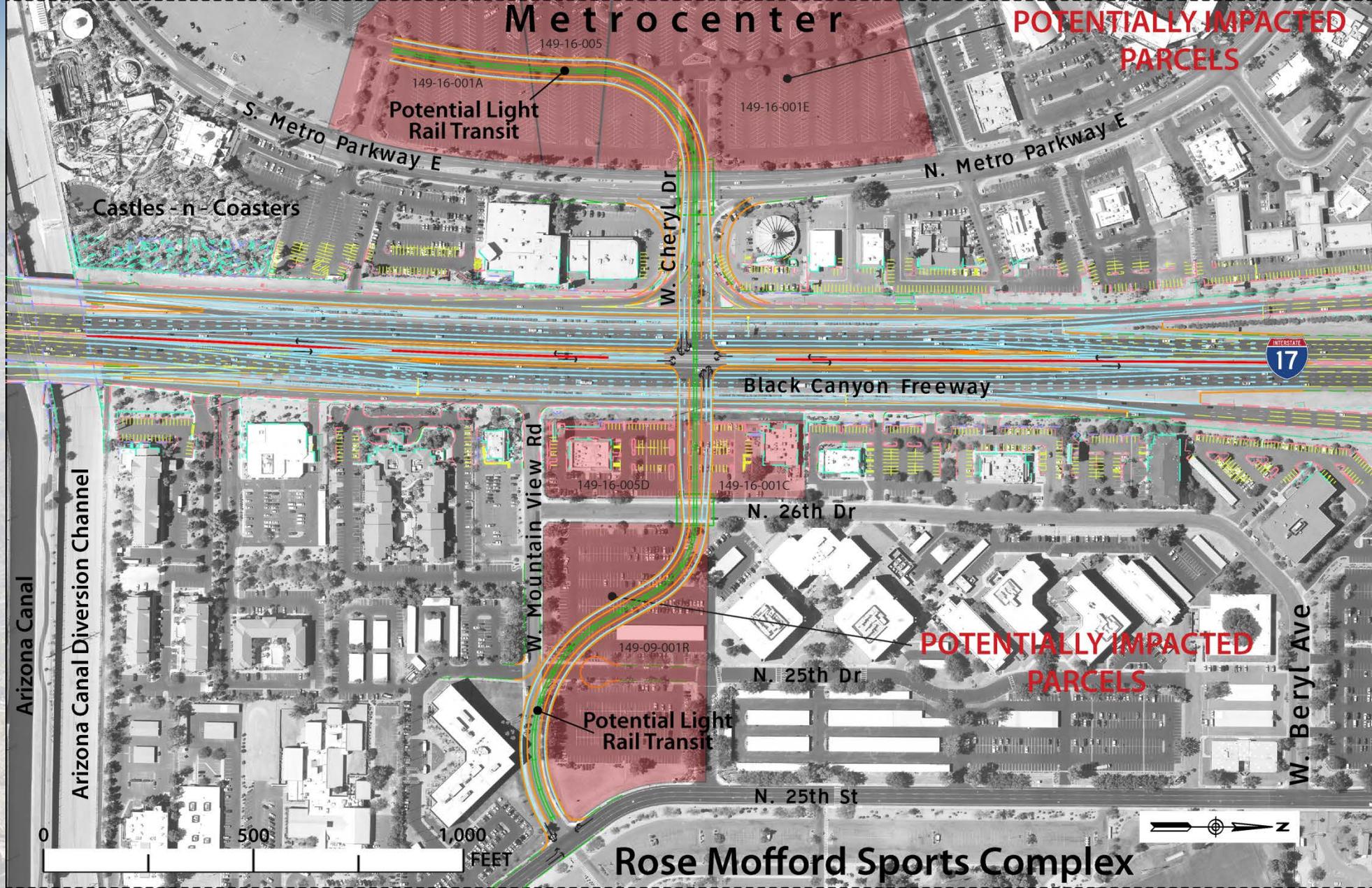
- SR-51 South to/from SR-101L Pima
- I-10 West to/from SR-202L Santan
- SR-101L Price to/from SR-202L Santan
- SR-101L/Maryland Ave

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:

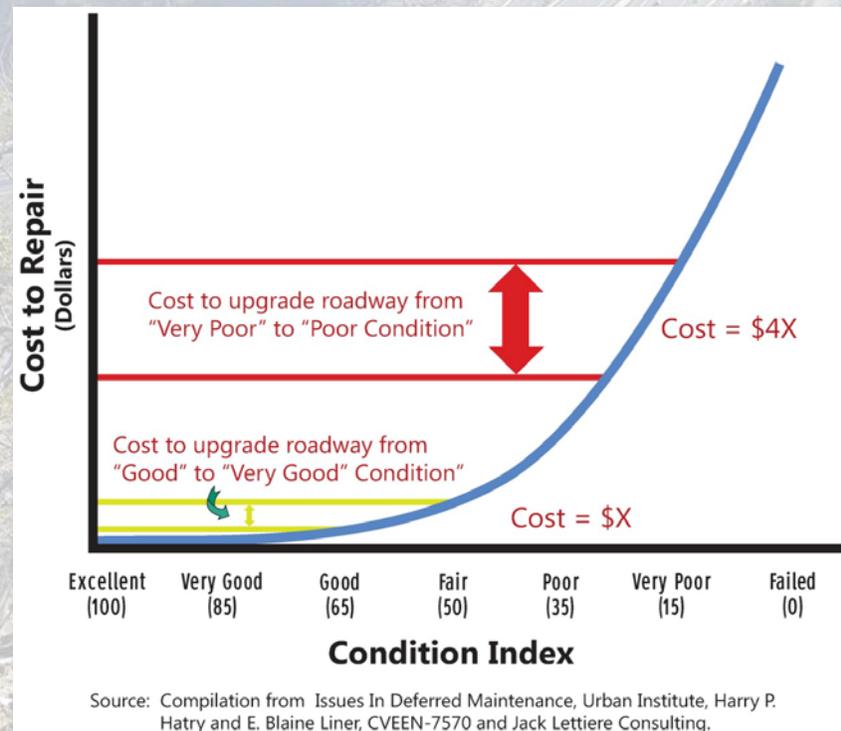
- Define integration with freeway system.
- Establish background for **development and character of future Direct HOV (DHOV) Ramps** on the freeway system, including:
 - Physical features.
 - Operational conditions.
 - Benefits.



Roadway Maintenance

2013 Maintenance and Operations (in \$Millions)

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



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?**

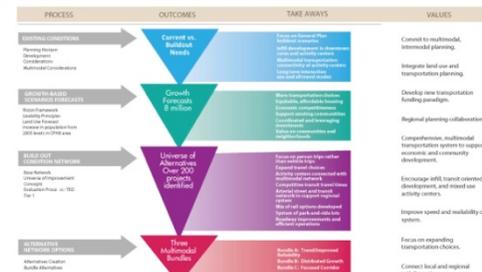
Major Regional Improvements			
PROGRAM	FUNDED	UNFUNDED	TOTAL
Arterial Streets	\$715,000,000	\$753,000,000	\$1,468,000,000
Bridges (New)	\$112,000,000	\$751,000,000	\$863,000,000
Bridges (Maint/Rehab/Replacement)	\$34,000,000	\$52,000,000	\$86,000,000
Intersection Restoration	\$17,000,000	\$94,000,000	\$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
Total Major Regional Improvements	\$1,575,000,000	\$2,320,000,000	\$3,895,000,000
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
Total Major Drainage Improvements	\$208,000,000	\$830,000,000	\$1,038,000,000
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
Total Other Local Improvements	\$445,000,000	\$506,000,000	\$951,000,000
Total Infrastructure Needs	2,228,000,000	3,656,000,000	5,884,000,000

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.





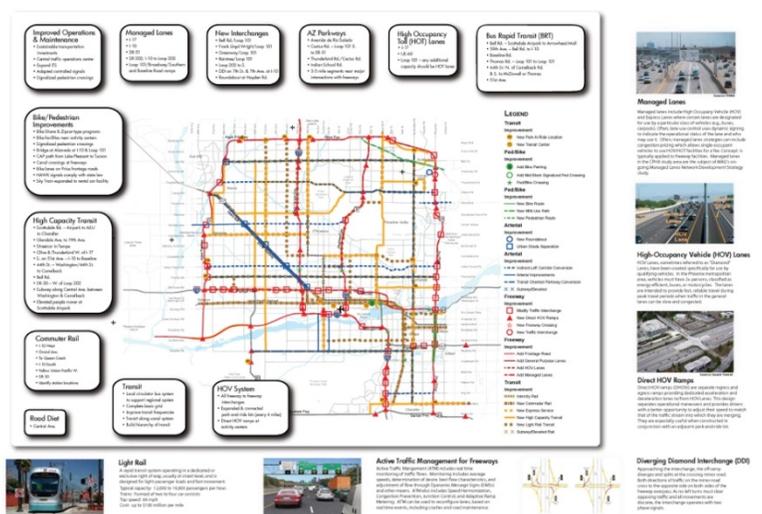
STAKEHOLDER OUTREACH

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

- 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...



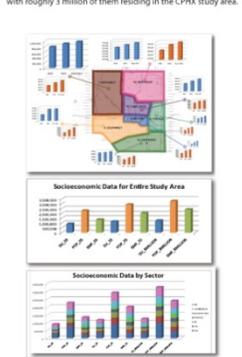
STUDY OVERVIEW

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...

- 1. Anticipate potential travel demand associated with intense population growth and economic activity.
2. Identify multimodal transportation systems necessary to accommodate forecast mobility needs.

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 specific hypothetical maximum level...



STUDY TEAM

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

TRANSIT

Transit-supportive policies require the coordination of a broad cross-section of decision-makers and stakeholders to frame community goals and vision 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...

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 17) and South Mountain Freeway to the Phoenix area...

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 vehicles, emergency responders, and goods movement (trucks).

This Technical Memorandum provides a general background document to support evaluation of opportunities or strategies for improving bicycle and pedestrian travel in 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 (e.g., electric and hybrid)) to directly access the HOV lanes in the center of the freeway. DHOV access ramps connect from regional park-and-ride facilities. DHOVs improve safety segregating HOV lane traffic from the general purpose lanes...

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 area. The Phoenix RTP identifies the Phoenix area as a high-growth region and identifies the Phoenix area as a high-growth region...

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.

This Technical Memorandum discusses the implications of deferred maintenance. It introduces to decision-makers strategies to extend asset service life and mitigate the impact of future replacement costs. It points out that no visible deterioration will occur in the near term because the system is still relatively new. But, over the long term, deferred maintenance will take its toll in reduced service life and higher repair costs.

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 at the opposite side of the roadway through the interchange. This shift of the traffic allows left-turning traffic to travel unopposed to the freeway...

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.

RELATED STUDIES AND NEXT STEPS

Through 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. Below are study efforts derived from strategies identified during the course of the CHPX study that include:

- Inner Loop Reevaluation Model
Southwest Corridor Market Investment Study
US-60/Grand 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

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 key concept (concept now called existing physical right-of-way study) of the program concept was identified that established the Arizona Department of Transportation (ADOT) existing physical right-of-way study of the corridor. This 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 key concept (concept now called existing physical right-of-way study) of the program concept was identified that established the Arizona Department of Transportation (ADOT) existing physical right-of-way study of the corridor. This 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 key concept (concept now called existing physical right-of-way study) of the program concept was identified that established the Arizona Department of Transportation (ADOT) existing physical right-of-way study of the corridor.

ARTERIALS

During the initial stages of the study, several arterial roadways were identified as being significant with respect to the city-to-city 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. Below are study efforts derived from strategies identified during the course of the CHPX study that include:

Next Generation Regional Transportation Plan

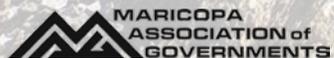




CENTRAL PHOENIX TRANSPORTATION
FRAMEWORK STUDY

Downtown Phoenix Core Connections and Operations Study

A CENTRAL PHOENIX TRANSPORTATION
FRAMEWORK STUDY INITIATIVE



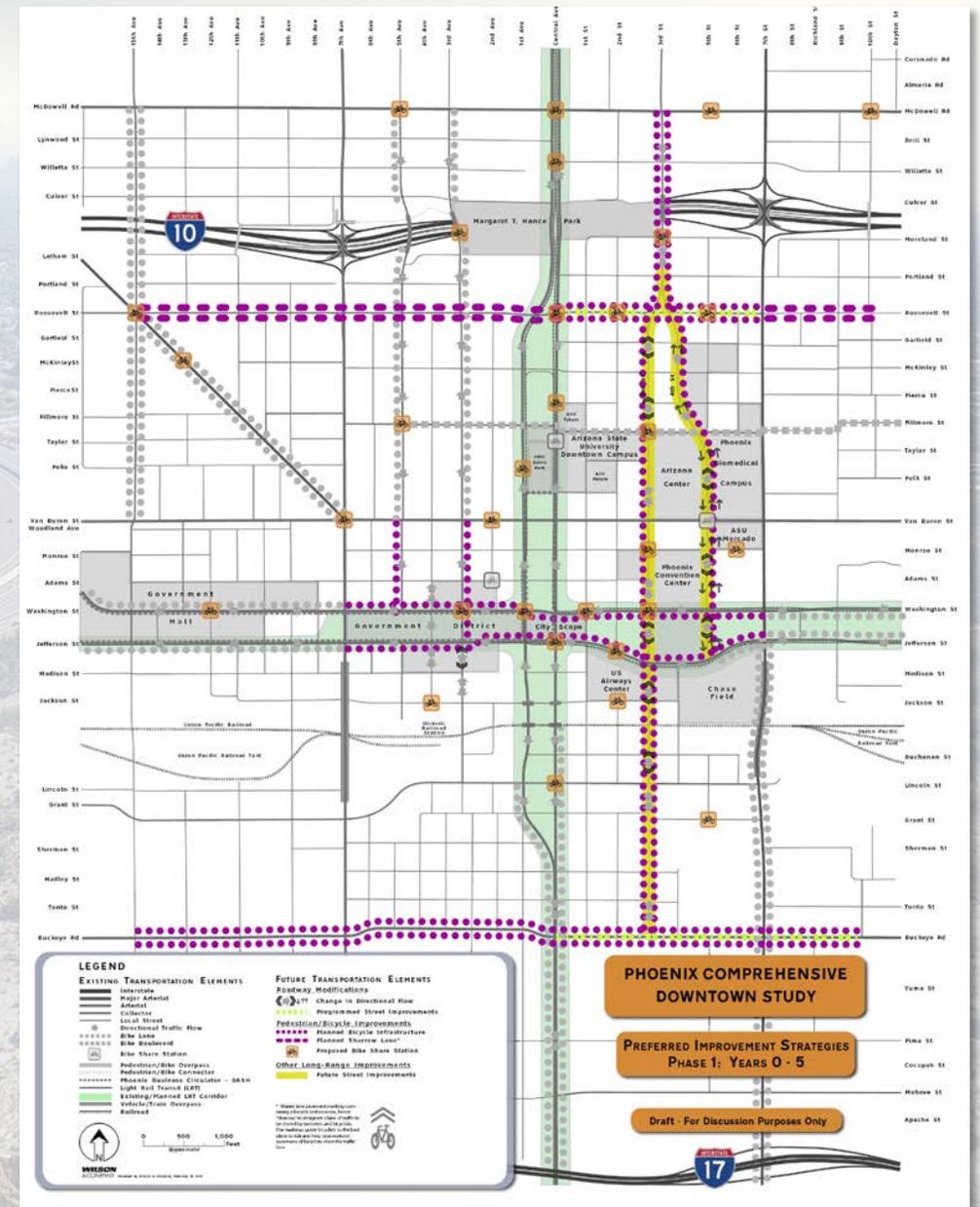
Analysis of Special Topics

- 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.



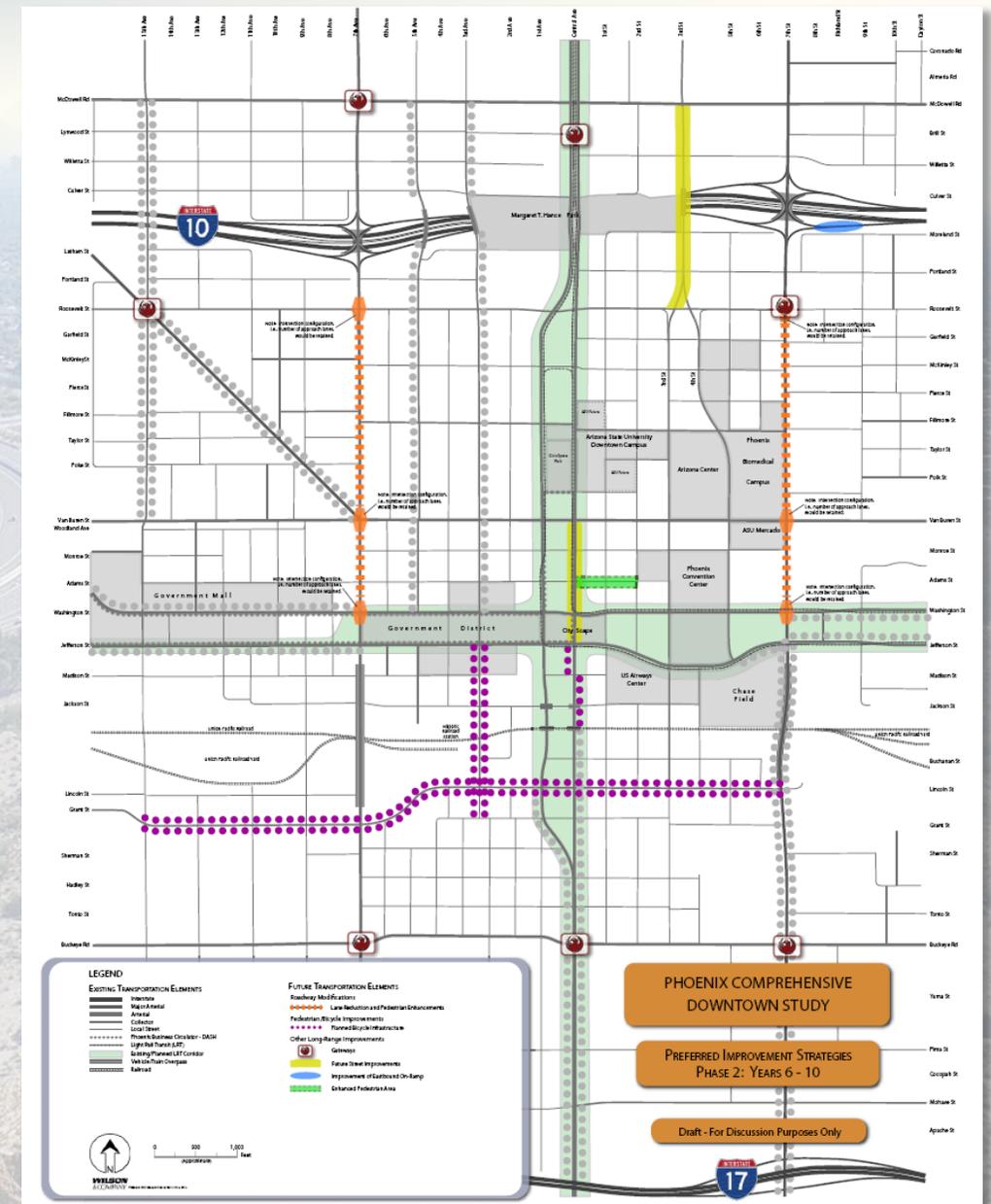
Phase 1 Recommendations First Five Years

- 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.



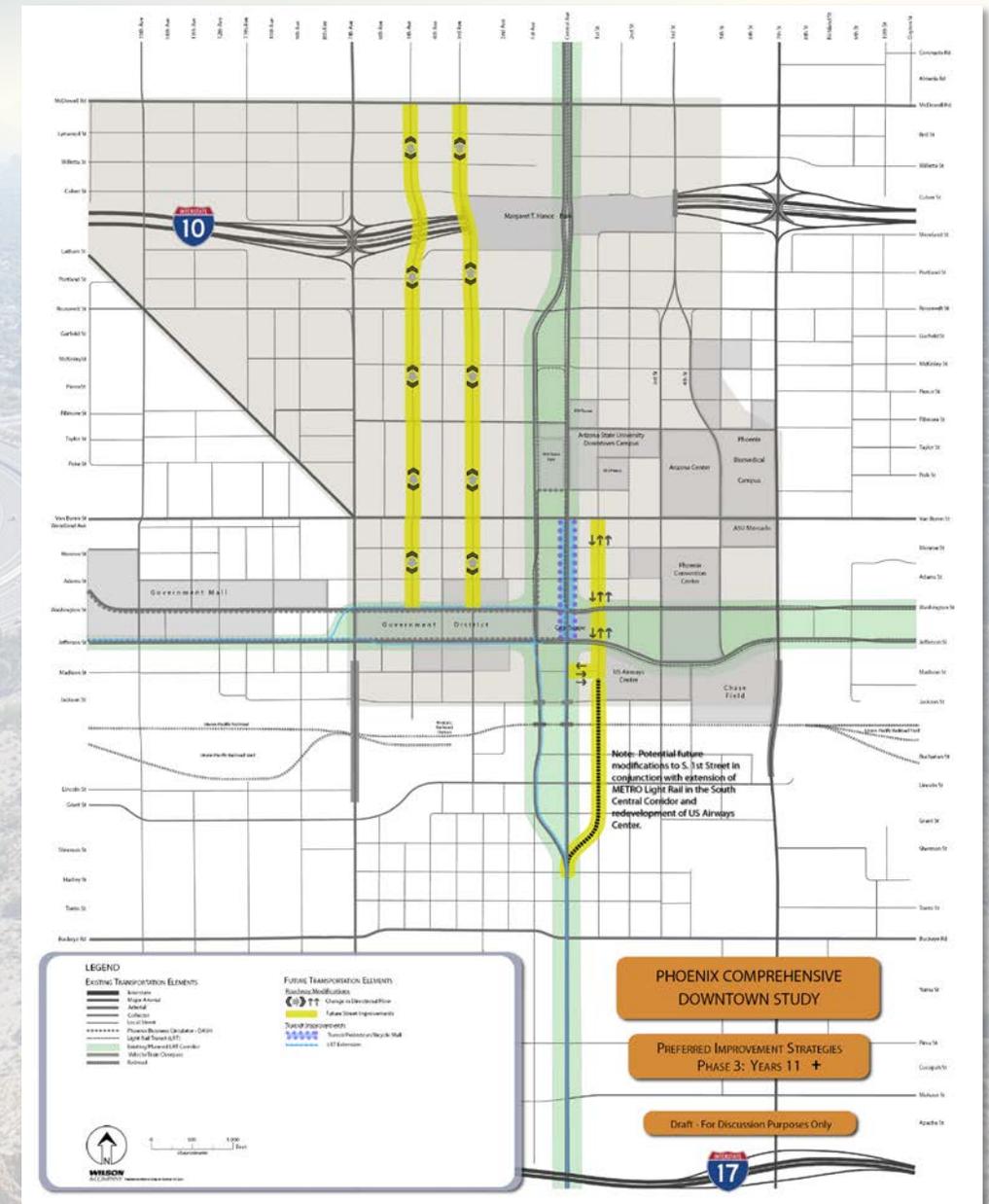
Phase 2 Recommendations Second Five Years

- 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

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