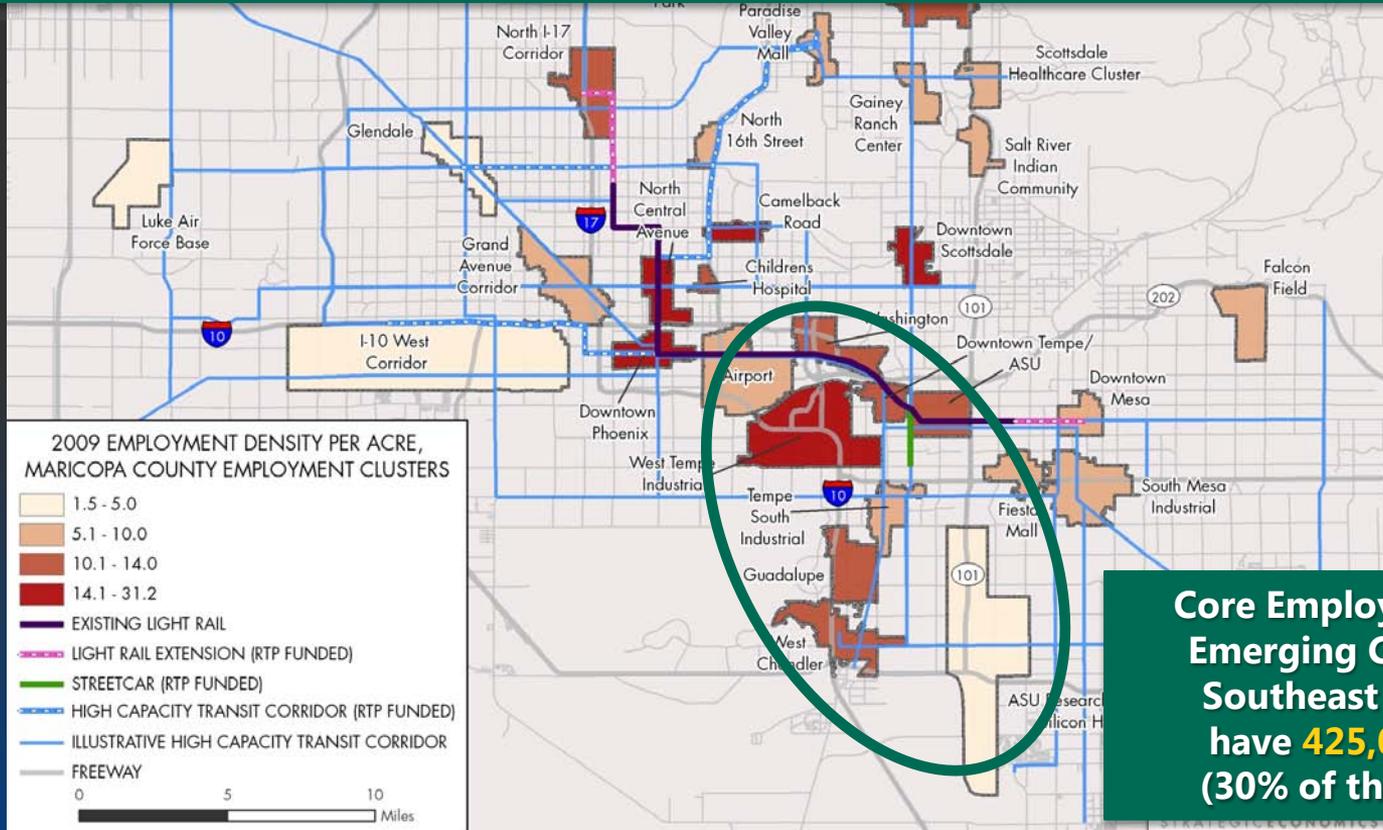




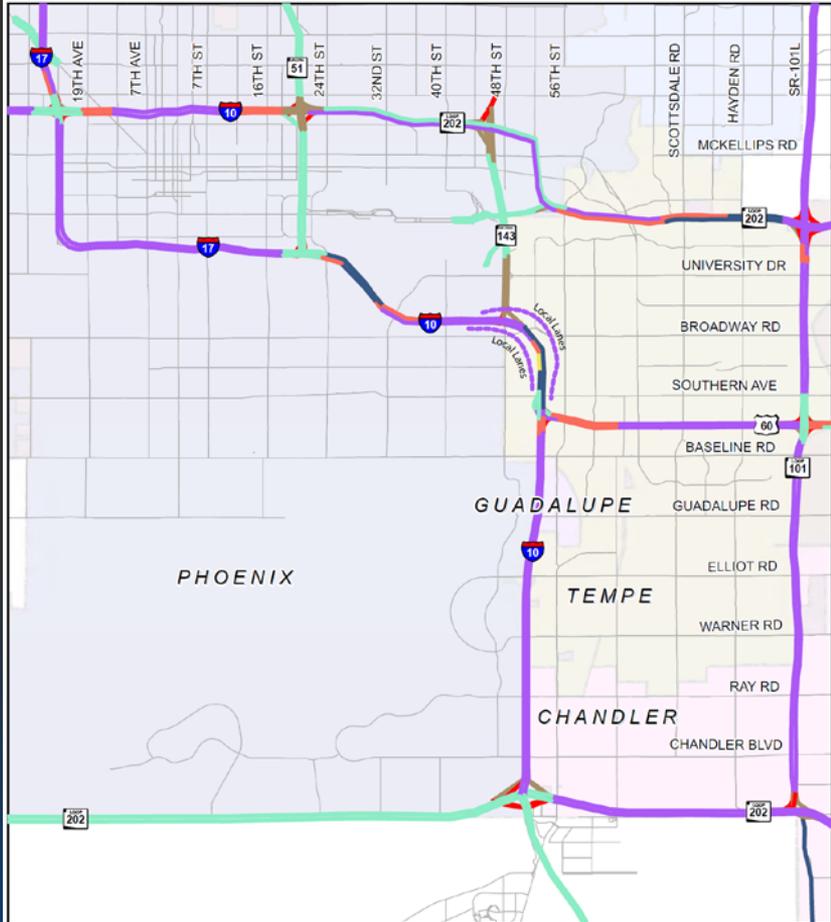
SOUTHEAST CORRIDOR MAJOR INVESTMENT STUDY

Transportation Policy Committee
September 19, 2012

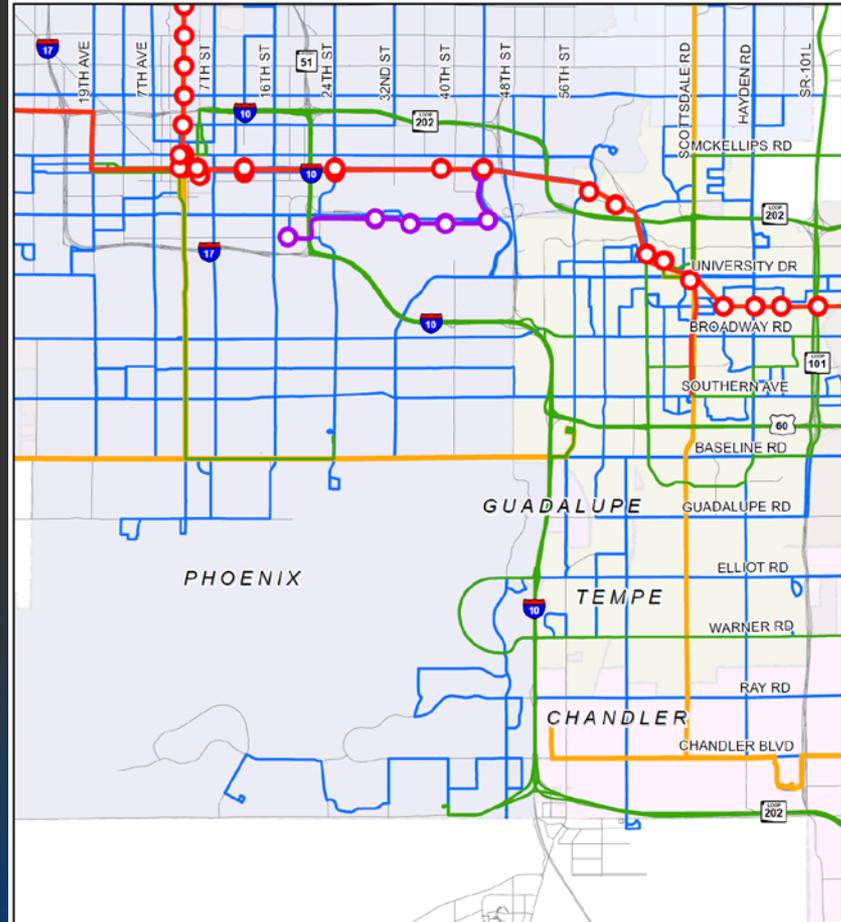
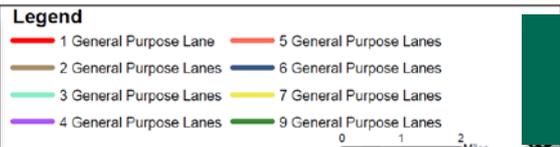
Southeast Corridor Major Investment Study



Core Employment and Emerging Clusters in Southeast Corridor have 425,000 Jobs (30% of the region)



2031 Freeway Lanes



2031 Transit



Alternatives Development into “Bundles”

- Numerous ideas:
 - Roadway
 - Transit
 - Non-motorized
- Constrained based on peer region indexed investment levels – **consistent with Regional Transit Framework Study**
- Investment levels provide “reasonability” check

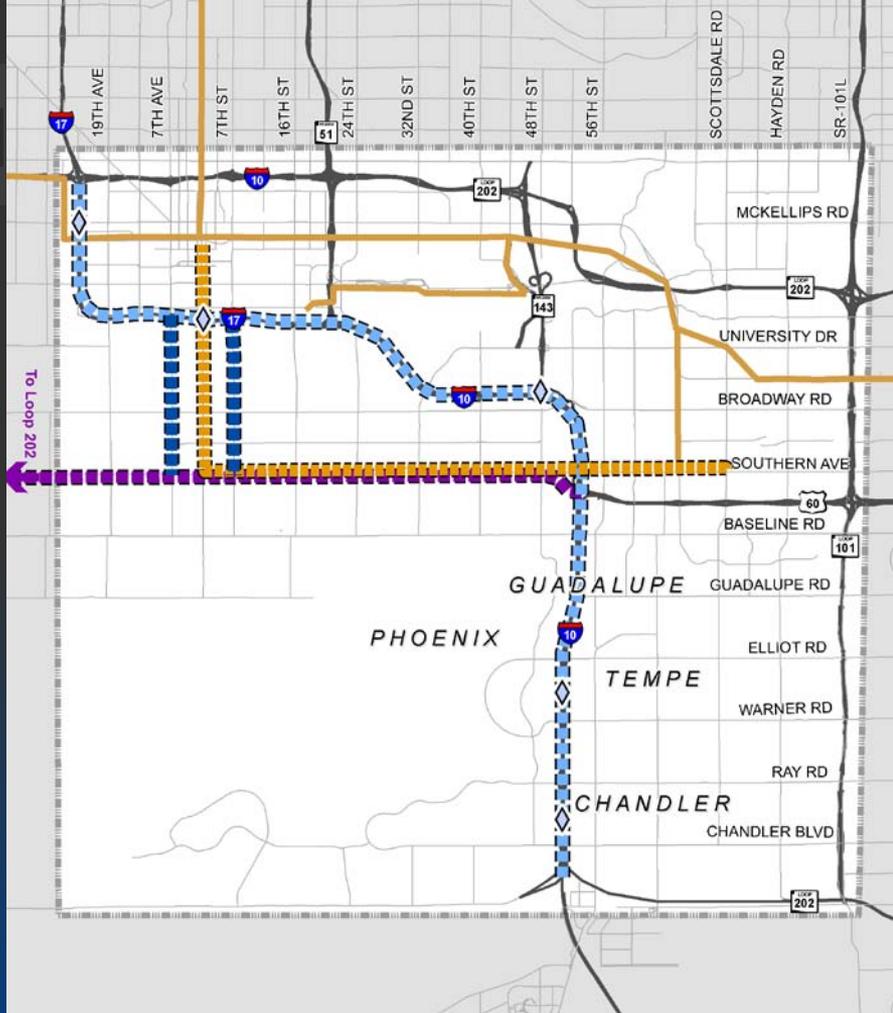


Basic Mobility Bundle

\$350 million investment

Central Ave-Southern Ave
Bus Rapid Transit Corridor

Interstate 10 Managed Lanes



Legend

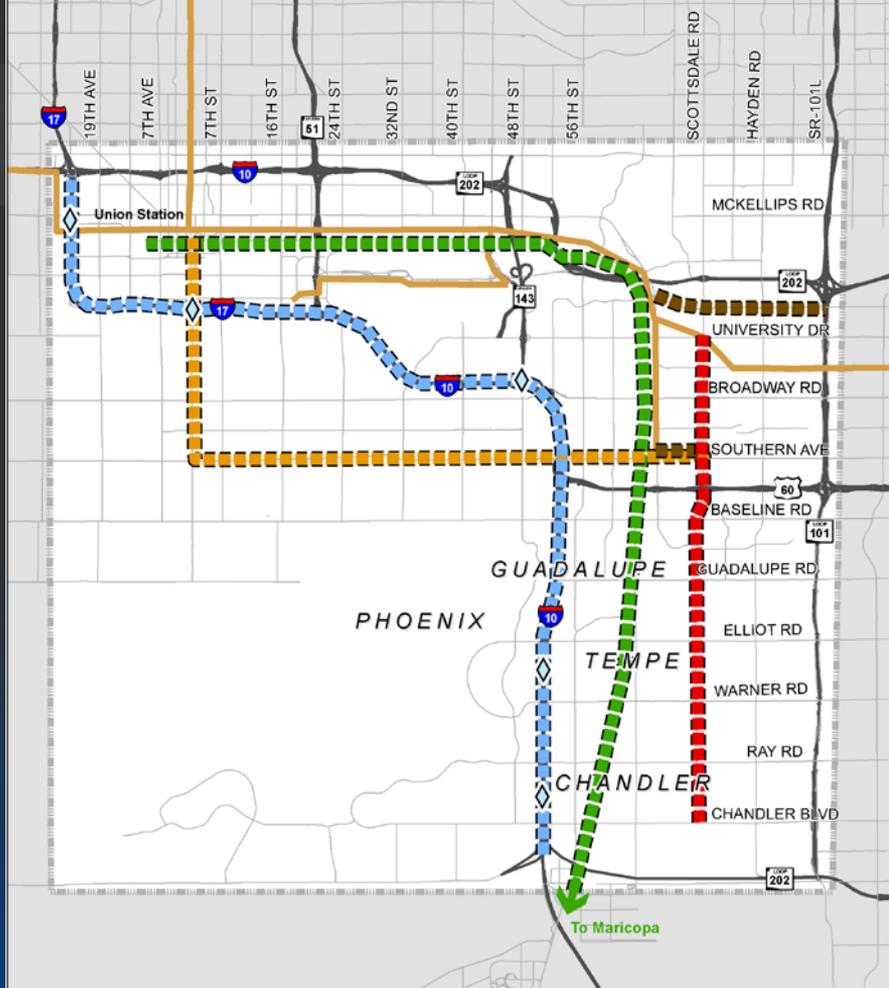
- Southeast Corridor Study Area
- Highways
- Major Roads
- Planned High Capacity Transit
- New Direct HOV Ramp
- Bus Rapid Transit
- Managed Lanes
- Parkway (3 GP and 1 BRT lane each direction)
- Add one lane each direction (restripe)

0 1 2 Miles

Peer Competitive Bundle

\$2.8 billion investment

- Central Ave-Southern Ave Bus Rapid Transit Corridor
- Interstate 10 Managed Lanes
- Commuter Rail
- Rural Rd High Capacity Transit Corridor
- Modern Street Car Extensions



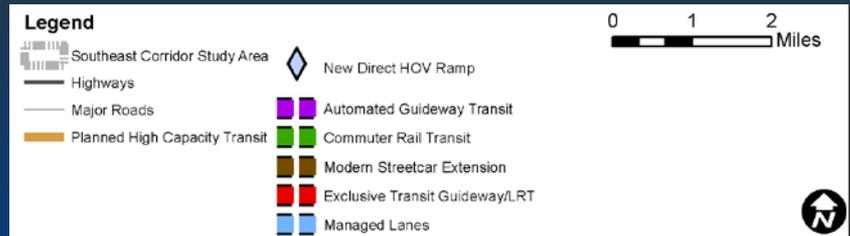
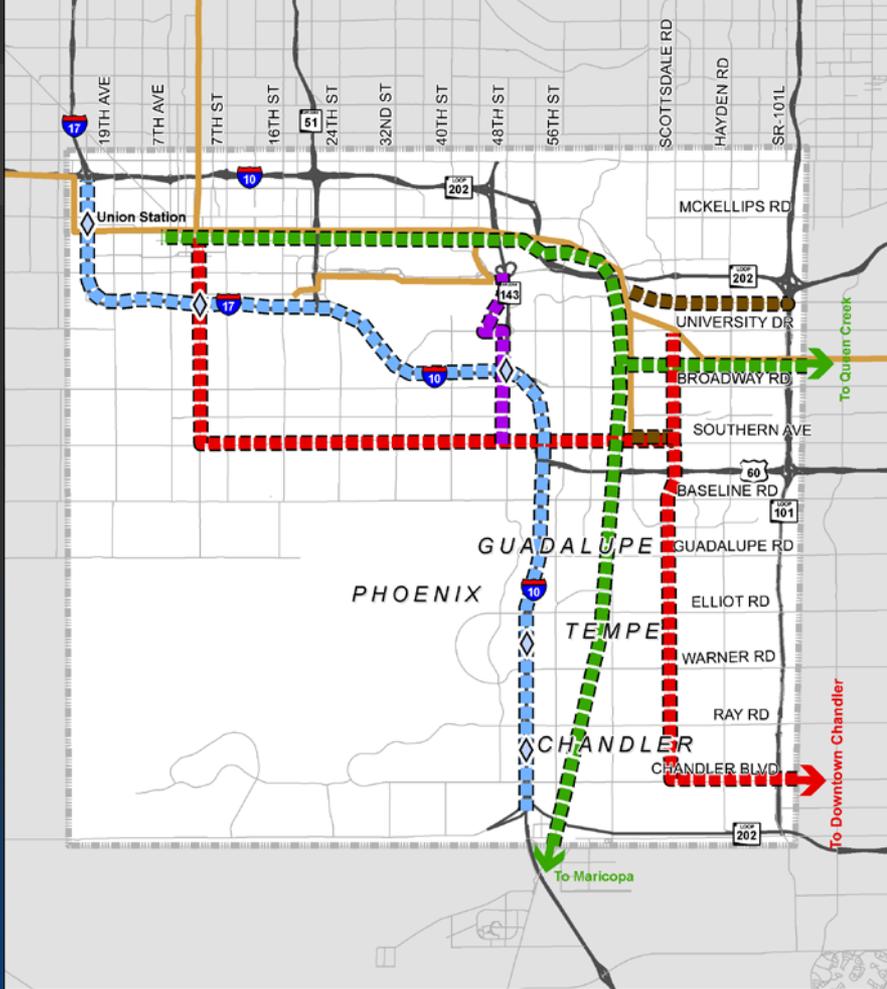
Legend

Southeast Corridor Study Area	New Direct HOV Ramps
Highways	Arterial Bus Rapid Transit
Major Roads	Commuter Rail Transit
Planned High Capacity Transit	Exclusive Transit Guideway/LRT
	Managed Lanes
	Modern Streetcar Extension

0 1 2 Miles

Transit Focus Bundle

- \$5.1 billion investment**
- Central Ave-Southern Ave-Rural Rd High Capacity Transit Corridor
- Interstate 10 Managed Lanes
- Commuter Rail
- Automated Guideway Transit Extension
- Modern Street Car Extensions
- Modern Street Car Extensions



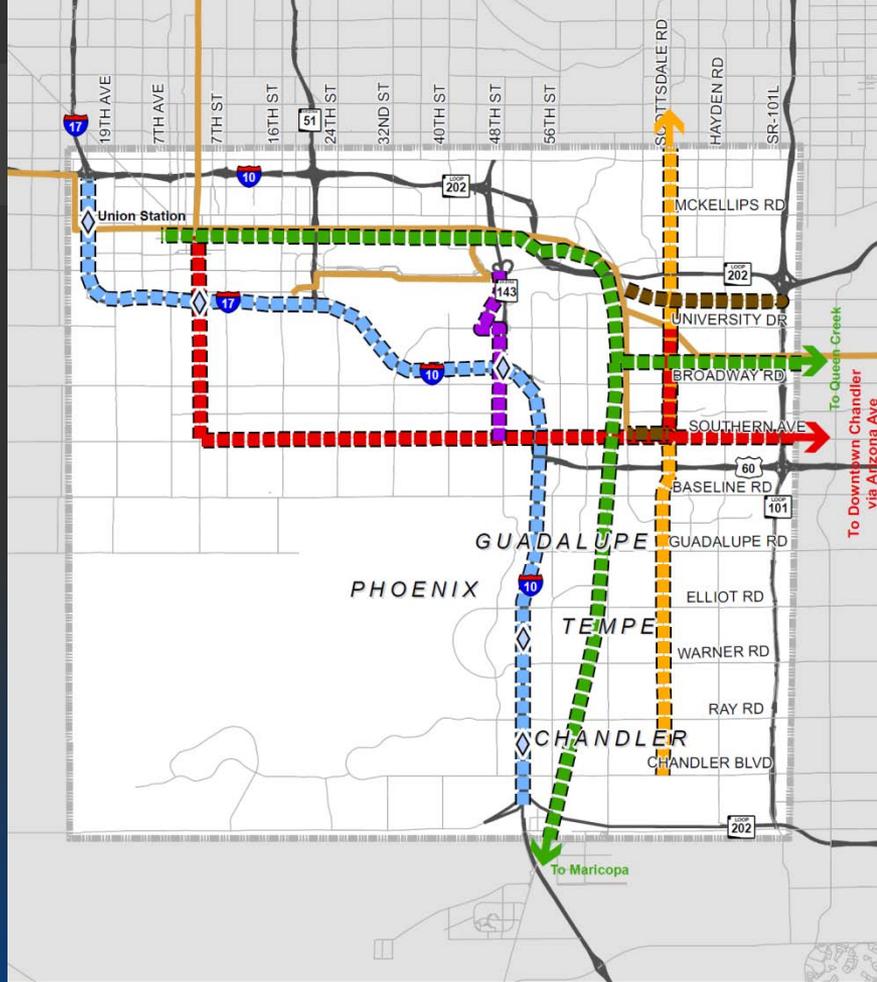
Transit Focus Bundle

Alternative 3.2.D

Remove LRT on Rural south of Southern Ave

Add LRT to Chandler CBD via Arizona Ave

Add BRT on Rural Rd (restore Prop 400 service)



Legend

Planned High Capacity Transit	Automated Guideway Transit
Highways	Commuter Rail Transit
Major Roads	Modern Streetcar Extension
Southeast Corridor Study Area	Exclusive Transit Guideway/LRT
New Direct HOV Ramp	Bus Rapid Transit
	Managed Lanes

0 1 2 Miles

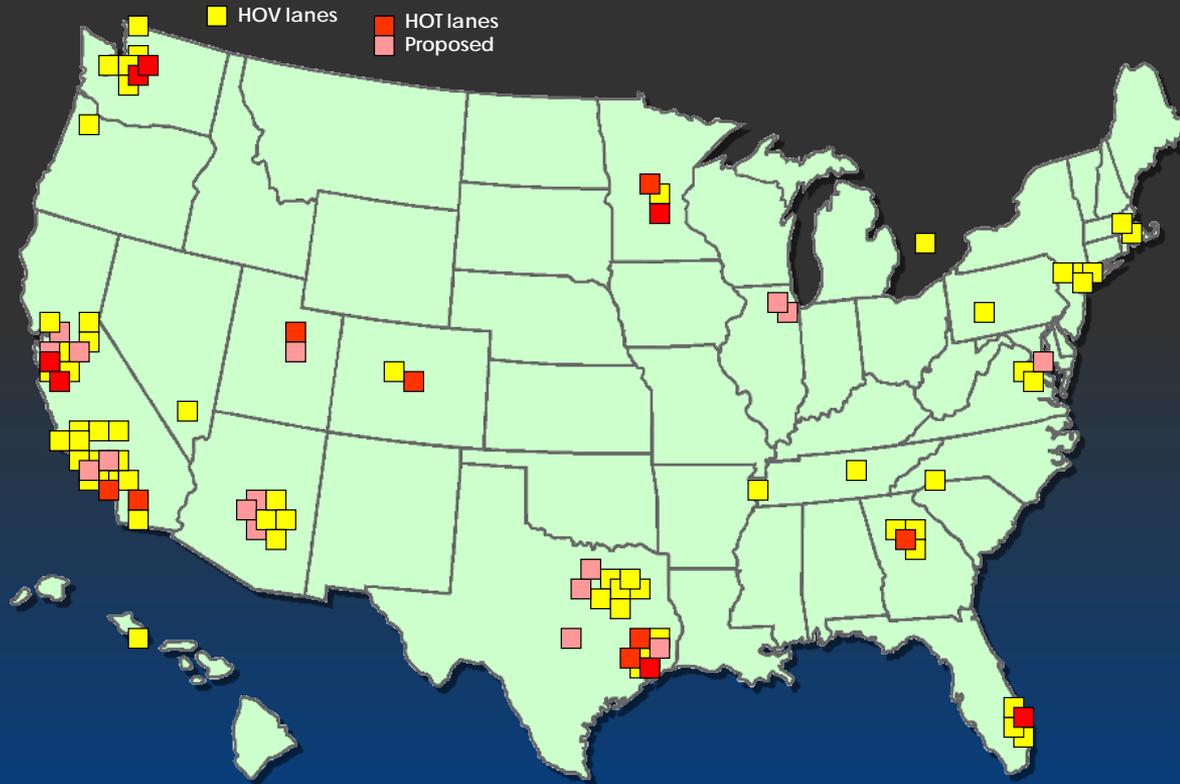
Managed Lanes Concept

- Managed Lanes are dedicated lanes for one or more user groups.
- Proactively managed to provide better reliability and/or level-of-service.
- **Primary benefit is travel time savings.**



Express Lanes, Orange County, CA.

Lane Management Strategies



Fifteen projects in U.S. currently use congestion pricing.

Lane Management Strategies

- Four mega-projects valued between **\$1.8 billion and \$2.6 billion** are currently being constructed in the U.S.:
 - Capital Beltway (I-495) in Northern Virginia (near Washington, DC).
 - IH-635 LBJ Freeway in Dallas, Texas.
 - North Tarrant Expressway in Dallas, Texas.
 - I-595 in Fort Lauderdale, Florida.



Capital Beltway, Northern Virginia.

Evaluation Criteria

- Environmental Impacts
- Socioeconomic Impacts
- Capital Development Feasibility
- Operational Feasibility
- Performance
- Financial Feasibility
- Cost Effectiveness

Table 20. Socioeconomic Conditions – Equity Minority

Category	Description																		
Measure:	Equity - Minority																		
Unit:	<p>Total population as minority within census tracts 0.75 miles of improvements (2010 Census).</p> <p>The five minority groups addressed by Title VI and Executive Order 12898, Environmental Justice, are:</p> <p>(1) American Indian and Alaska Native, which refers to people having origins in any of the original peoples of North and South America (including Central America), and who maintain tribal affiliation or community attachment;</p> <p>(2) Asian, which refers to people having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam;</p> <p>(3) Black or African American Populations, which refers to peoples having origins in any of the Black racial groups of Africa;</p> <p>(4) Hispanic or Latino Populations, which includes persons of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race; or</p> <p>(5) Native Hawaiian and Other Pacific Islander, which refers to people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands</p>																		
Rationale:	National studies indicate that the presence of minority populations is one of several indications that an area could have a potentially strong transit market ¹ . In addition, to receive federal funding, public transportation projects must provide minority populations, as defined above, with equitable access to transportation services (Title VI and Executive Order 12898, Environmental Justice).																		
Discussion:	According to 2010 U.S. Census data, the transportation projects in Bundle 3.2D would serve a population of approximately 153,596 minorities within an area 0.75 mile to each side of proposed transportation corridors. As a result, Bundle 3.2.D receives a rating of ● for best or most preferred performance with the largest minority population in its service area.																		
Relative Rating:	Number of Minorities within 0.75 Mile of each Bundle																		
	<table border="1"> <thead> <tr> <th>Bundle 1</th> <th>Bundle 2</th> <th>Bundle 3</th> <th>Bundle 3.2.A</th> <th>Bundle 3.2.B</th> <th>Bundle 3.2.C</th> <th>Bundle 3.2.D</th> <th>Bundle 3.2.E</th> <th>Bundle 3.2.F</th> </tr> </thead> <tbody> <tr> <td>137,908</td> <td>134,088</td> <td>149,315</td> <td>149,315</td> <td>149,315</td> <td>149,315</td> <td>153,596</td> <td>119,961</td> <td>115,249</td> </tr> </tbody> </table>	Bundle 1	Bundle 2	Bundle 3	Bundle 3.2.A	Bundle 3.2.B	Bundle 3.2.C	Bundle 3.2.D	Bundle 3.2.E	Bundle 3.2.F	137,908	134,088	149,315	149,315	149,315	149,315	153,596	119,961	115,249
	Bundle 1	Bundle 2	Bundle 3	Bundle 3.2.A	Bundle 3.2.B	Bundle 3.2.C	Bundle 3.2.D	Bundle 3.2.E	Bundle 3.2.F										
137,908	134,088	149,315	149,315	149,315	149,315	153,596	119,961	115,249											
<table border="1"> <tbody> <tr> <td>●</td> <td>○</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>○</td> <td>○</td> </tr> </tbody> </table>	●	○	●	●	●	●	●	○	○										
●	○	●	●	●	●	●	○	○											

Source: HDR Engineering, 2012

¹ National Research Council, Transportation Research Board, TCRP Report 28: Transit Markets of the Future - The Challenge of Change, Washington, D.C.: National Academy Press. 1998

Key Findings

- Managed Lane** operations along Interstate 10 and Interstate 17, including DHOV ramps, **provides highest level of performance while accommodating increased traffic volumes** in the freeway corridor.

Table 27. Performance – Roadway Volume

Category	Description																		
Measure:	I-10 at Broadway Road GP Lane Traffic Volumes																		
Unit:	Traffic volumes on I-10 GP lanes at Broadway Road for each bundle, provided for morning peak (6:00 – 9:00 AM) and evening peak (3:00 – 6:00 PM) travel times.																		
Rationale:	Traffic volumes are one way to measure roadway performance. In general, the higher the average traffic volume, the higher the level of traffic congestion and lower the overall roadway performance.																		
Discussion:	<p>The morning and evening peak traffic volumes for each of the bundles are very similar. However, when compared to the base year, the bundles all have significantly lower traffic volumes. Morning peak hour GP lane traffic volumes for bundles 1, 2, 3, 3.2.D, 3.2.E, 3.2.F are expected to be approximately 5,000 vehicles lower than the base. Bundles 3.2.A, 3.2.B, and 3.2.C have expected morning peak hour GP lane traffic volumes approximately 1,000 to 3,000 vehicles lower than the base. Bundle 3.2.A has an expected evening peak hour GP lane traffic volume that is higher than the base. Bundle 3.2.C has an expected evening peak hour GP lane traffic volume that is only slightly lower than the base.</p> <p>Evening peak hour traffic volumes for bundles 3.2.A and 3.2.C are expected to be greater than or almost equal to the base, and AM peak hour volumes are moderately higher than the base. Bundles 3.2.A and 3.2.C receive a rating of 'O' for poor performance relative to the other bundles.</p>																		
Base	Average I-10 at Broadway Road GP Lane Traffic Volume																		
AM: 44,856 PM: 43,485	<table border="1"> <thead> <tr> <th>Bundle 1</th> <th>Bundle 2</th> <th>Bundle 3</th> <th>Bundle 3.2.A</th> <th>Bundle 3.2.B</th> <th>Bundle 3.2.C</th> <th>Bundle 3.2.D</th> <th>Bundle 3.2.E</th> <th>Bundle 3.2.F</th> </tr> </thead> <tbody> <tr> <td>AM: 38,437 PM: 40,278</td> <td>AM: 38,374 PM: 40,229</td> <td>AM: 39,837 PM: 41,825</td> <td>AM: 43,308 PM: 43,764</td> <td>AM: 40,486 PM: 42,092</td> <td>AM: 42,433 PM: 43,462</td> <td>AM: 39,795 PM: 41,785</td> <td>AM: 39,936 PM: 41,879</td> <td>AM: 39,977 PM: 40,683</td> </tr> </tbody> </table>	Bundle 1	Bundle 2	Bundle 3	Bundle 3.2.A	Bundle 3.2.B	Bundle 3.2.C	Bundle 3.2.D	Bundle 3.2.E	Bundle 3.2.F	AM: 38,437 PM: 40,278	AM: 38,374 PM: 40,229	AM: 39,837 PM: 41,825	AM: 43,308 PM: 43,764	AM: 40,486 PM: 42,092	AM: 42,433 PM: 43,462	AM: 39,795 PM: 41,785	AM: 39,936 PM: 41,879	AM: 39,977 PM: 40,683
Bundle 1	Bundle 2	Bundle 3	Bundle 3.2.A	Bundle 3.2.B	Bundle 3.2.C	Bundle 3.2.D	Bundle 3.2.E	Bundle 3.2.F											
AM: 38,437 PM: 40,278	AM: 38,374 PM: 40,229	AM: 39,837 PM: 41,825	AM: 43,308 PM: 43,764	AM: 40,486 PM: 42,092	AM: 42,433 PM: 43,462	AM: 39,795 PM: 41,785	AM: 39,936 PM: 41,879	AM: 39,977 PM: 40,683											
Relative Rating:	<table border="1"> <tbody> <tr> <td>●</td> <td>●</td> <td>●</td> <td>○</td> <td>●</td> <td>○</td> <td>●</td> <td>●</td> <td>●</td> </tr> </tbody> </table>	●	●	●	○	●	○	●	●	●									
●	●	●	○	●	○	●	●	●											

Source: HDR Engineering, 2012

¹ MAG TDM, 2011

Key Findings

- Strategically focused network of **high capacity transit services featuring exclusive guideway transit** offers most productive transit investment.

Table 28. Performance – Transit Ridership

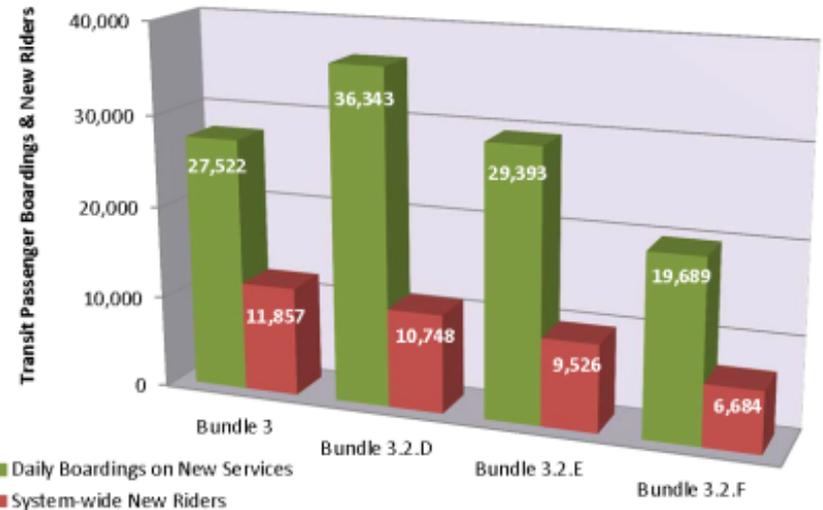
Category	Description									
Measure:	Transit Ridership									
Unit:	Average weekday transit ridership on NEW transit services.									
Rationale:	There are a number of benefits to attracting more riders to public transit. Higher transit ridership would contribute to lower traffic congestion and improved mobility within the study area. In addition, lower traffic congestion is a contributing factor to improved air quality.									
Discussion:	Bundle 3.2.D offers the most new transit service, and is expected to attract the highest average weekday ridership. As a result, Bundle 3.2.D receives a rating of ● for best or most preferred performance.									
	Average Weekday Transit Ridership on NEW Transit Services									
	Bundle 1	Bundle 2	Bundle 3	Bundle 3.2.A	Bundle 3.2.B	Bundle 3.2.C	Bundle 3.2.D	Bundle 3.2.E	Bundle 3.2.F	
	7,100	15,100	27,500	28,100	27,400	28,000	36,300	29,400	19,700	
Relative Rating:	○	○	●	●	●	●	●	●	○	

Source: HDR Engineering, 2012

Key Findings

- An east/west transit connection between **Central Avenue and the East Valley in a parallel corridor to Interstate 10** and a **north/south connection along Rural Rd or Arizona Ave** produces the highest number of new system-wide transit riders.

Figure 29. Estimated Transit Utilization Comparison (Alternate Bundles)



Source: 2031 MAG TDM

Key Findings

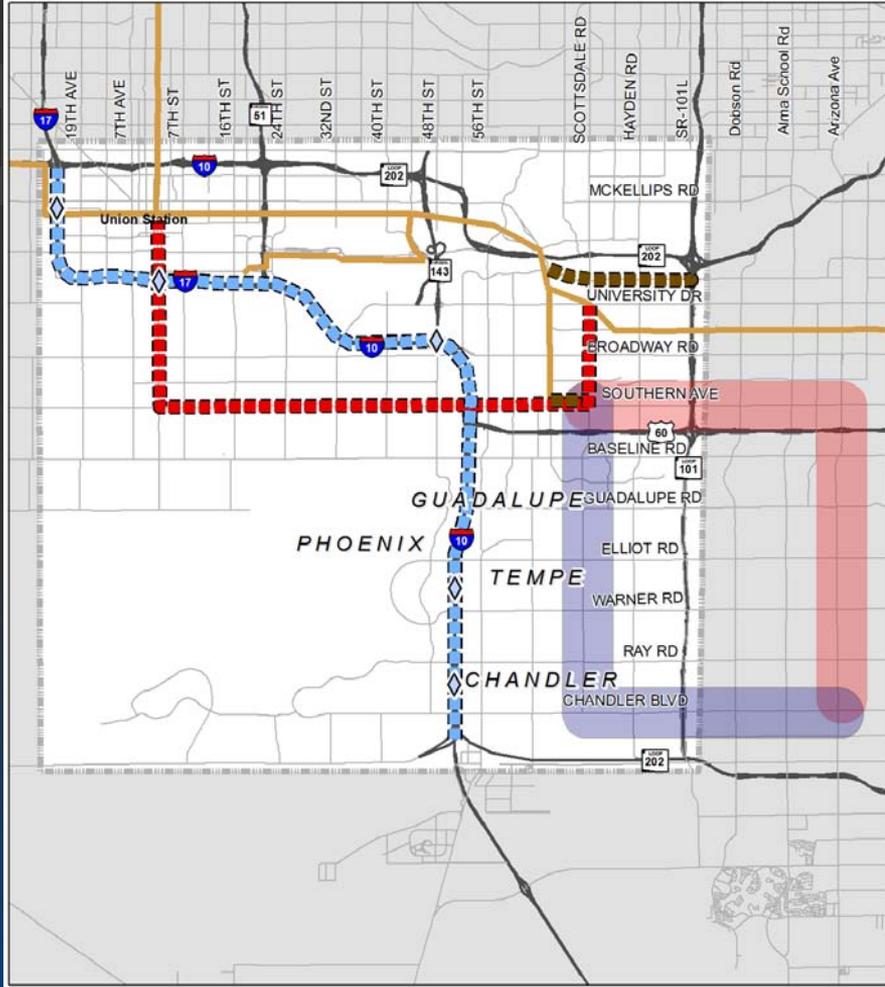
- Modeling results indicate an exclusive guideway transit investment in either Rural Rd or Arizona Ave **will not have a significantly discernible impact on traffic volumes** or speeds on Interstate 10.

Table 14. General Purpose Lanes Volume and Speed

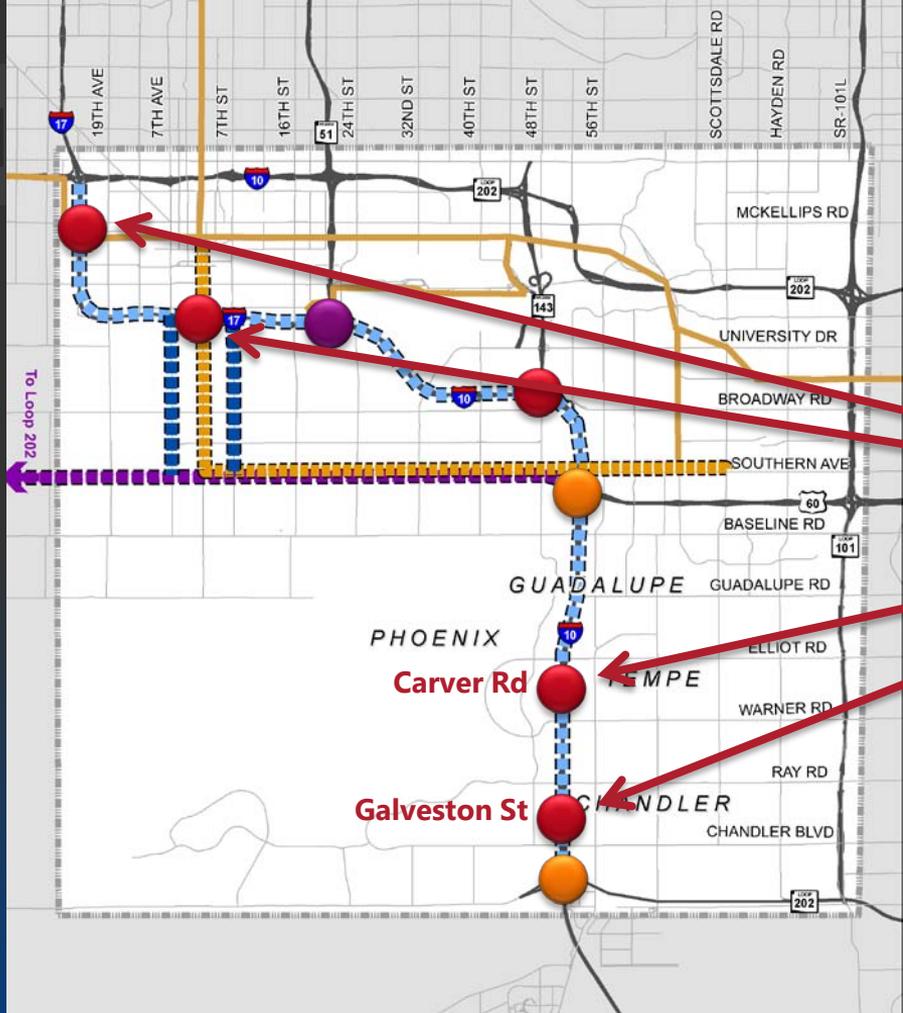
	Base (2031 RTP)	Bundle 1 (Basic Mobility)	Bundle 2 (Peer Competitive)	Bundle 3 (Transit Focus)	Bundle 3.2.A	Bundle 3.2.B	Bundle 3.2.C	Bundle 3.2.D	Bundle 3.2.E	Bundle 3.2.F	
Outbound (Eastbound I-10)	Volume	20,350 (43,485)	17,770 (40,278)	17,736 (40,229)	17,255 (41,825)	17,333 (43,764)	18,153 (42,092)	18,149 (43,462)	17,242 (41,785)	17,259 (41,879)	17,260 (40,683)
	Speed	61.3 (28.1)	62.4 (40.5)	62.4 (40.6)	62.7 (40.4)	63.5 (35.9)	62.3 (40.5)	63.5 (35.7)	62.7 (40.4)	62.7 (40.4)	62.7 (41.4)
Inbound (Westbound I-10)	Volume	44,856 (32,908)	38,437 (26,781)	38,374 (26,691)	39,837 (28,481)	43,308 (31,149)	40,486 (29,754)	42,433 (30,474)	39,786 (28,458)	39,936 (28,457)	39,977 (28,100)
	Speed	34.8 (46.3)	46.6 (54.6)	46.7 (54.7)	46.4 (54.4)	42.2 (53.2)	46.3 (53.7)	42.0 (53.3)	46.2 (54.4)	46.0 (54.7)	46.1 (54.8)
XXX – Morning Peak 6:00 – 9:00 AM, (XXX) – Evening Peak 3:00 – 6:00 PM											
Source: MAG TDM, 2011											

Recommended Bundle

- Managed Lanes
- New DHOV Ramps
- Exclusive Guideway Transit
- Modern Streetcar Extensions

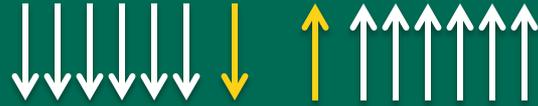


DHOV (Direct HOV) Ramps



Performance Statistics

Interstate 10 – Salt River Bridge Outbound Traffic, Evening Peak



2031 Regional Transportation Plan

58.3 mph

30.4 mph

3,200 vehicles

36,800 vehicles



SE Corridor MIS – Express Lanes

63.8 mph

39.0 mph

9,500 vehicles

32,600 vehicles



SE Corridor MIS – Express Lanes, No Toll

64.3 mph

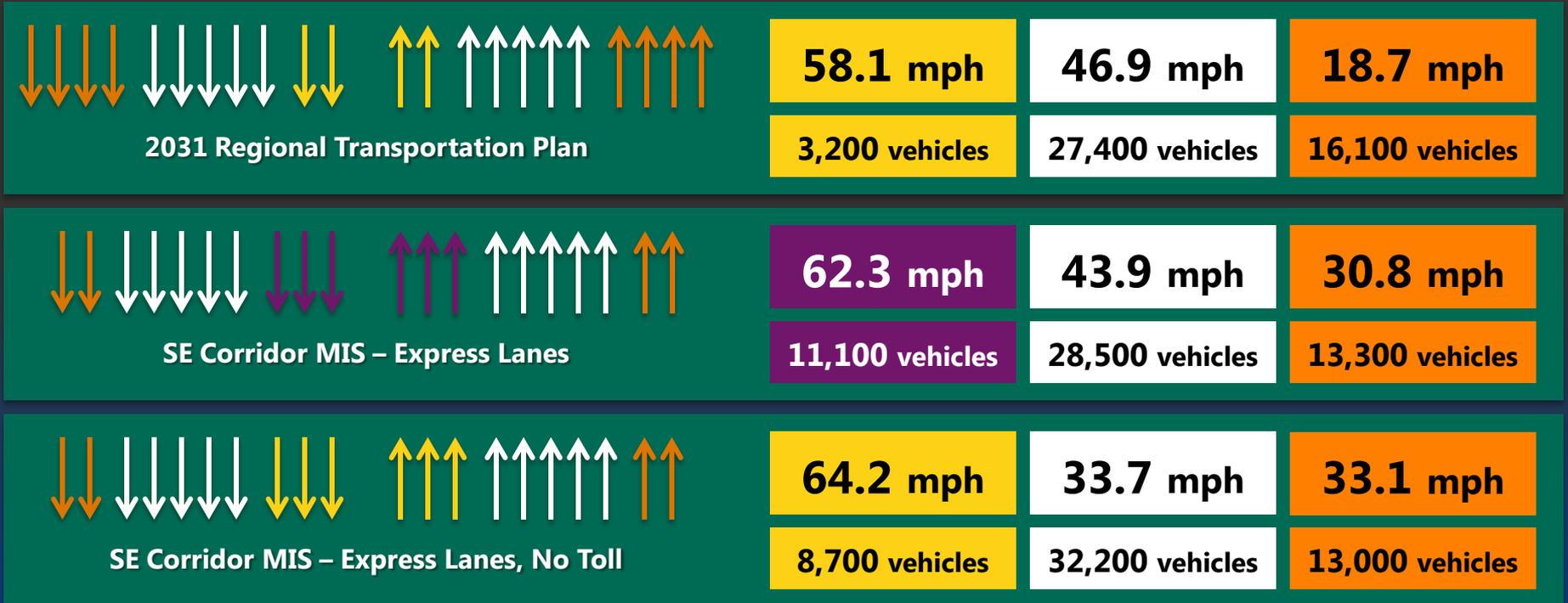
35.6 mph

8,600 vehicles

34,000 vehicles

Performance Statistics

Interstate 10 – Before US-60/Superstition Freeway Outbound Traffic, Evening Peak



Performance Statistics

Interstate 10 – North of Chandler Blvd Outbound Traffic, Evening Peak



2031 Regional Transportation Plan



42.9 mph

31.3 mph

2,400 vehicles

24,200 vehicles



SE Corridor MIS – Express Lanes



51.2 mph

44.9 mph

5,600 vehicles

24,200 vehicles



SE Corridor MIS – Express Lanes, No Toll



44.4 mph

38.3 mph

4,600 vehicles

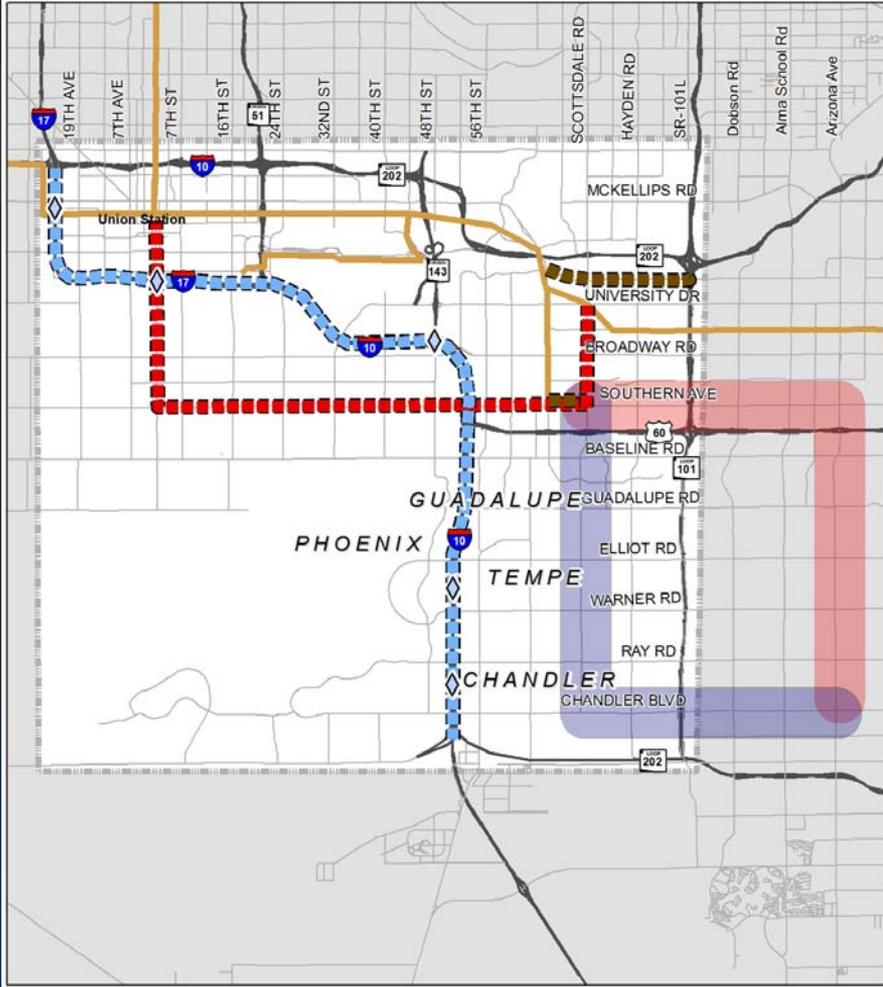
27,200 vehicles

Transit System Performance

Transit Characteristics	System Level Performance			
	2031 RTP	Basic Mobility	Peer Compatible	Transit Focus
Average Ridership	413,900	418,400	423,600	433,300
Average Revenue Miles	154,600	155,500	159,500	162,600
Average Riders/Rev Mile	2.67	2.69	2.66	2.66
Daily Transit Ridership on NEW Services	--	7,100	15,100	26,100

Recommended Bundle

- Managed Lanes
- New DHOV Ramps
- Exclusive Guideway Transit
- Modern Streetcar Extensions





SOUTHEAST CORRIDOR MAJOR INVESTMENT STUDY

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