



Regional Transit Framework

May 11, 2010

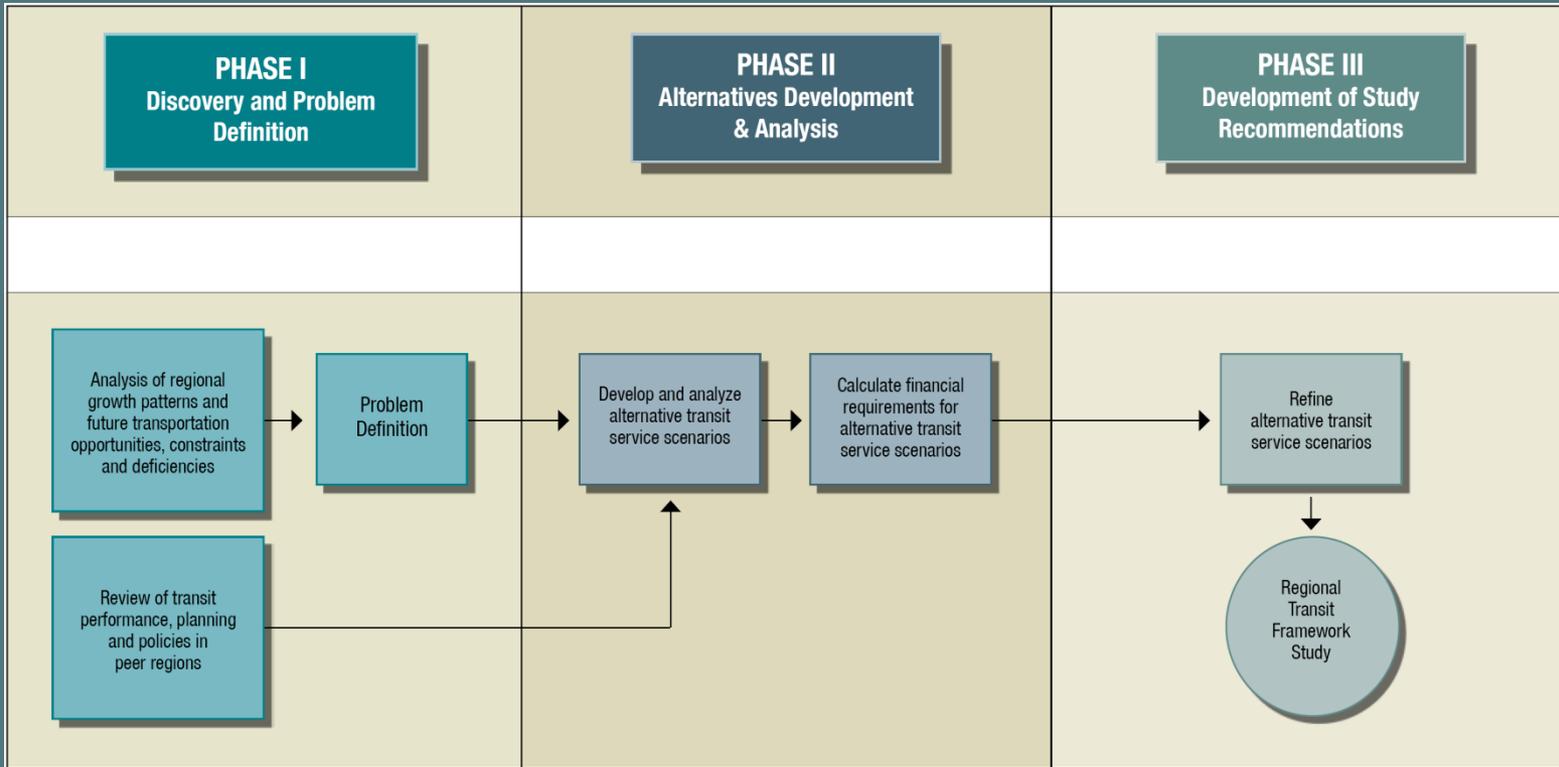


Study Overview

- Market based
- High-leverage investments
- Services necessary to attract choice riders
- Connectivity between activity centers
- Relate community mobility with trip purpose and length
- Technical framework for future policy discussions



Project Process



Key Elements

- Public and Agency Involvement
- Peer Regions Review
- Evaluation of Needs
- Development and Analysis of Study Alternatives





Public and Agency Involvement

Outreach Activities

- Four focus groups
 - Two with transit riders
 - Two with non-riders
- Survey of non-riders
- Public meetings
- Webinar
- On-line survey

Whale - it was the most prehistoric thing I could find. We should be more advanced from where we are. We should be moving ahead a lot faster and it should be more user friendly and we should be doing better than we are now. (Rider, 35+)

I live in Northeast Phoenix and work in East Mesa. This structure (existing transit network) doesn't work for me. The system is not there for us. (Non-rider, 35+)



Public Perception

- Local transit users and non-user focus groups and telephone survey
 - Key words to describe initial impressions of the public transit system in the Valley were “slow”, “old,” and “prehistoric”
 - In comparison, transit systems used by participants when visiting or living in other areas were described as “seamless” or “painless”...the systems were easy to use and allow the rider to get “anywhere,” at “any time”

“A lot of times it’s inconvenient, because you can’t make the connection or you have to wait a long time for the other bus.”

“An ideal transit system in the Valley would include more buses, more routes, greater reliability and frequency, as well better connectivity with other transportation”

“Create more direct transit options to popular areas”



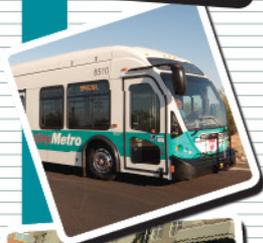
Barriers and Motivations for Using Transit

- **Barriers**

- Planning trips and substantial wait times
- Hours of operation, lack of frequency, and inadequate routes

- **Motivations**

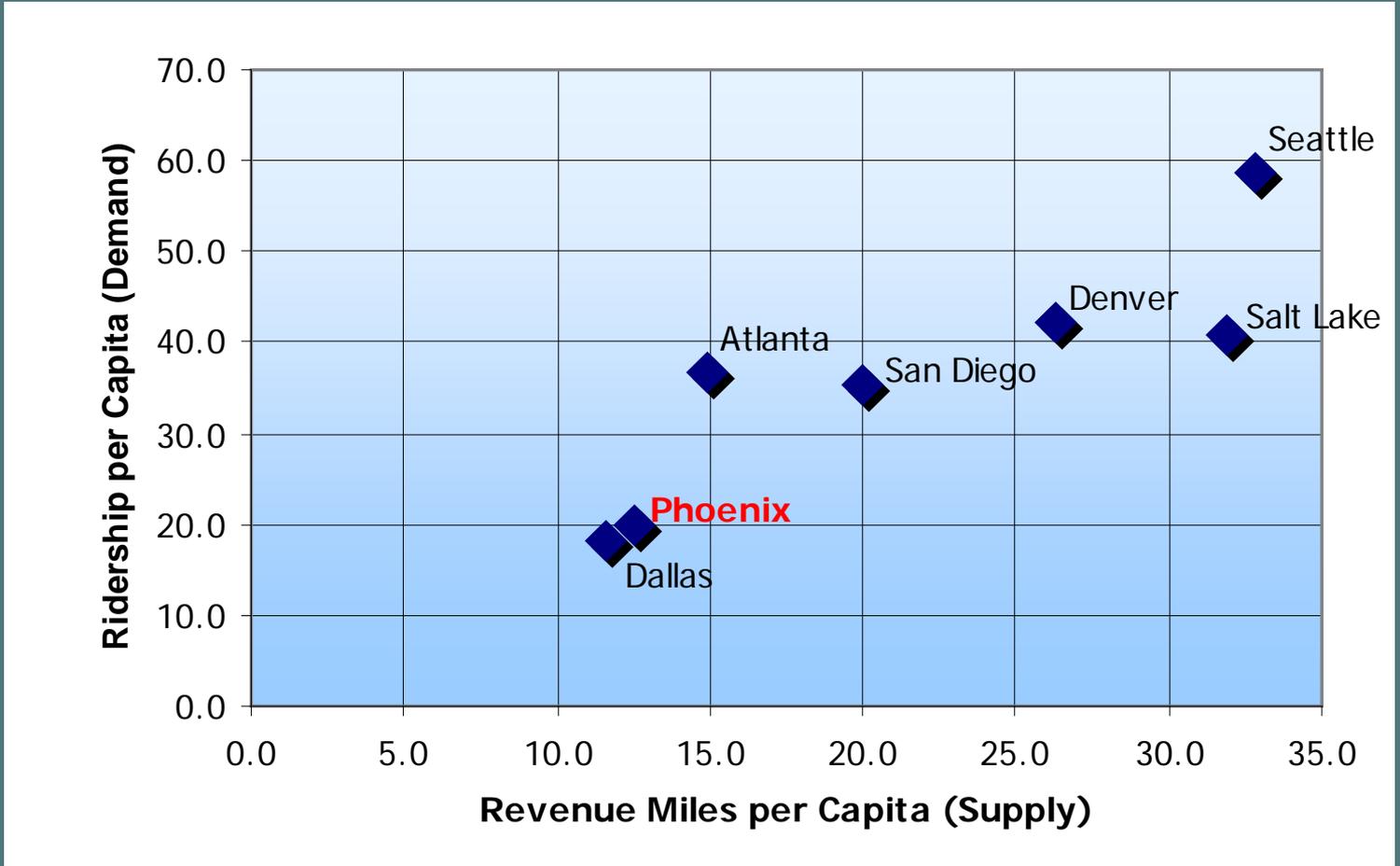
- Current riders want more buses, more routes, greater frequency, and longer service hours
- Non-riders are unlikely to consider public transit as a viable alternative until the system can offer them a benefit in relation to **convenience and time**





Peer Regions Review

2006 NTD Transit Supply & Demand



2006 Operating Investments



Region	Total Operating Expenses	Operating Expense per Capita	COLI*
Atlanta	\$331,704,840	\$81.88	96.1
Dallas	\$399,393,985	\$83.05	91.2
Denver	\$320,088,805	\$138.21	103.4
Salt Lake City	\$136,824,236	\$144.79	100.7
San Diego	\$264,244,089	\$97.08	139.5
Seattle	\$848,865,748	\$295.26	121.0
Average	\$383,520,284	\$129.87	---
MAG Region	\$229,507,781	\$71.10	100.6

* 2007 Composite Cost of Living Index

Peer Regions Observations

- Peer Region Panel Observations

- Consider what new transit services are needed and how the services will enhance overall regional connectivity
- Focus on transit market demand: Serve areas with high demand potential and attract choice riders
- Reliability and level of service trumps geographic coverage for attracting riders
- Commit to strengthening the relationship of land use to transit ridership and pursue local/regional policies that support transit
- **Current transit system is a collection of transit routes and services.** Develop a consolidated regional transit system





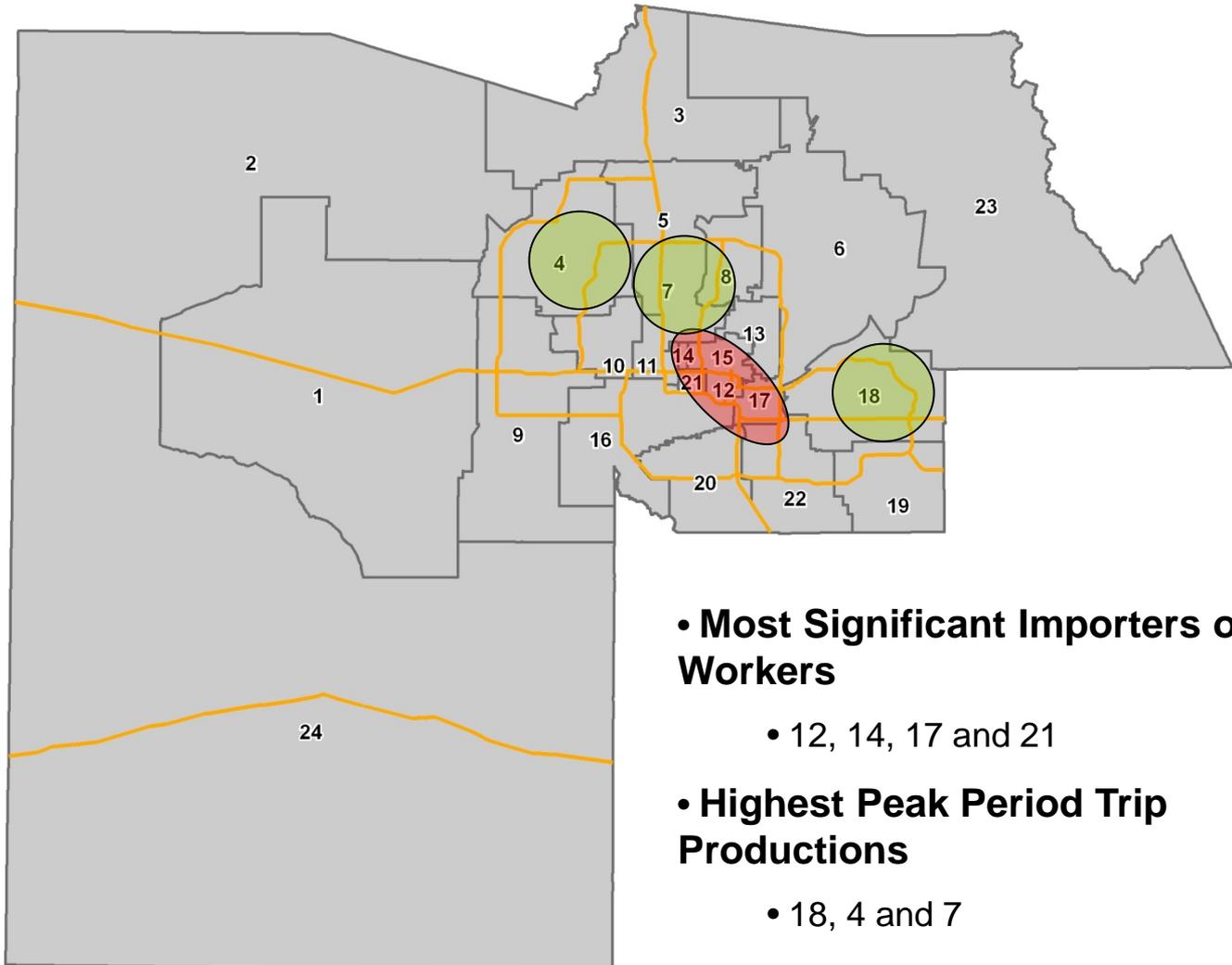
Evaluation of Needs

Regional Travel Demand

- Travel Demand Methodology
 - MAG Regional Travel Demand Model
 - Years 2006, 2019, 2030 (2050 sketch model)
 - Peak & Off-Peak Person Trips
 - Region divided into 26 transit influence zones (TIZ)
 - Based on commonly used MAG zone structure and zones used by METRO for previous travel demand analyses
 - 2 zones not in Maricopa County



Regional Travel Demand - 2006



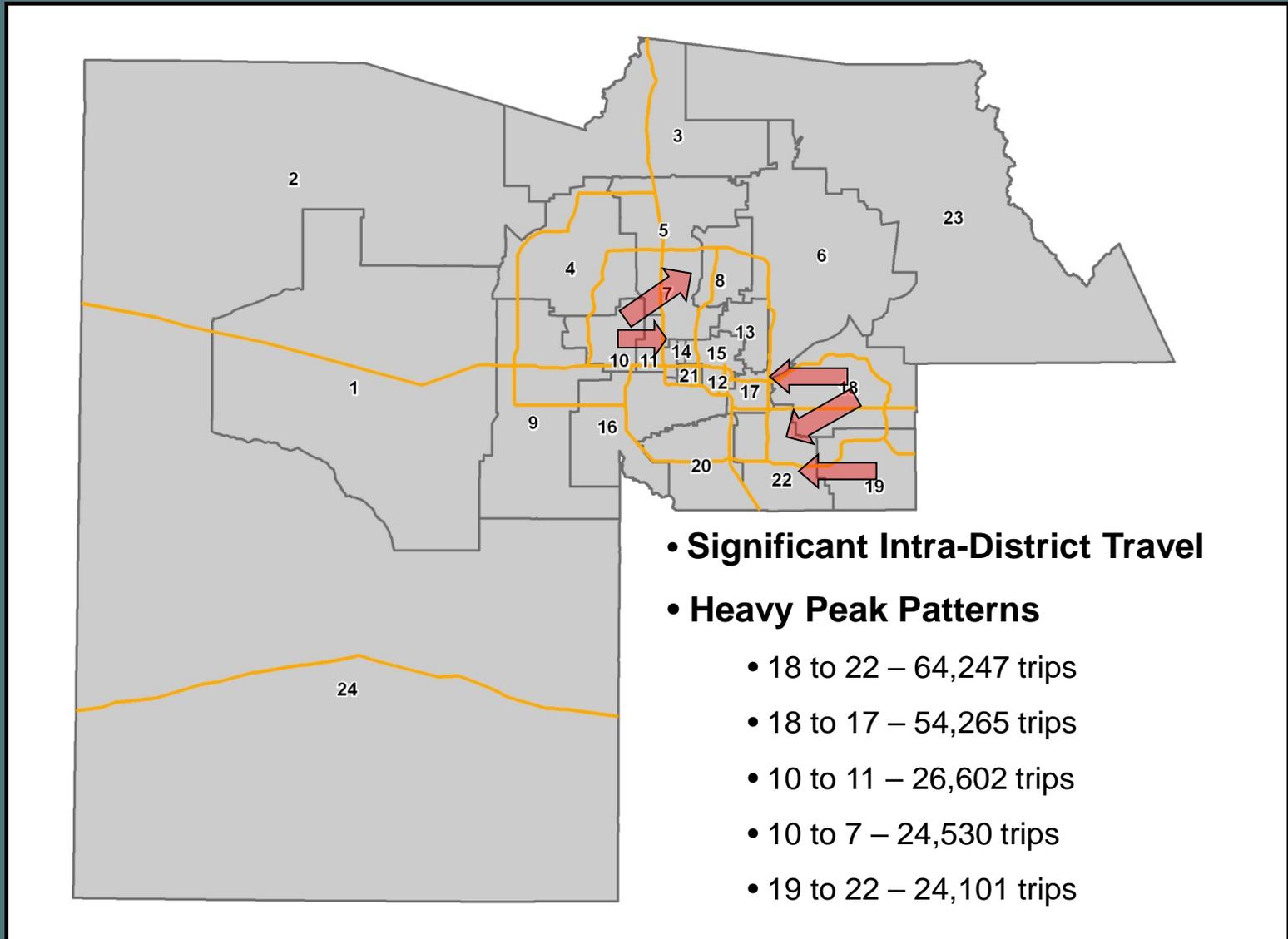
• Most Significant Importers of Workers

- 12, 14, 17 and 21

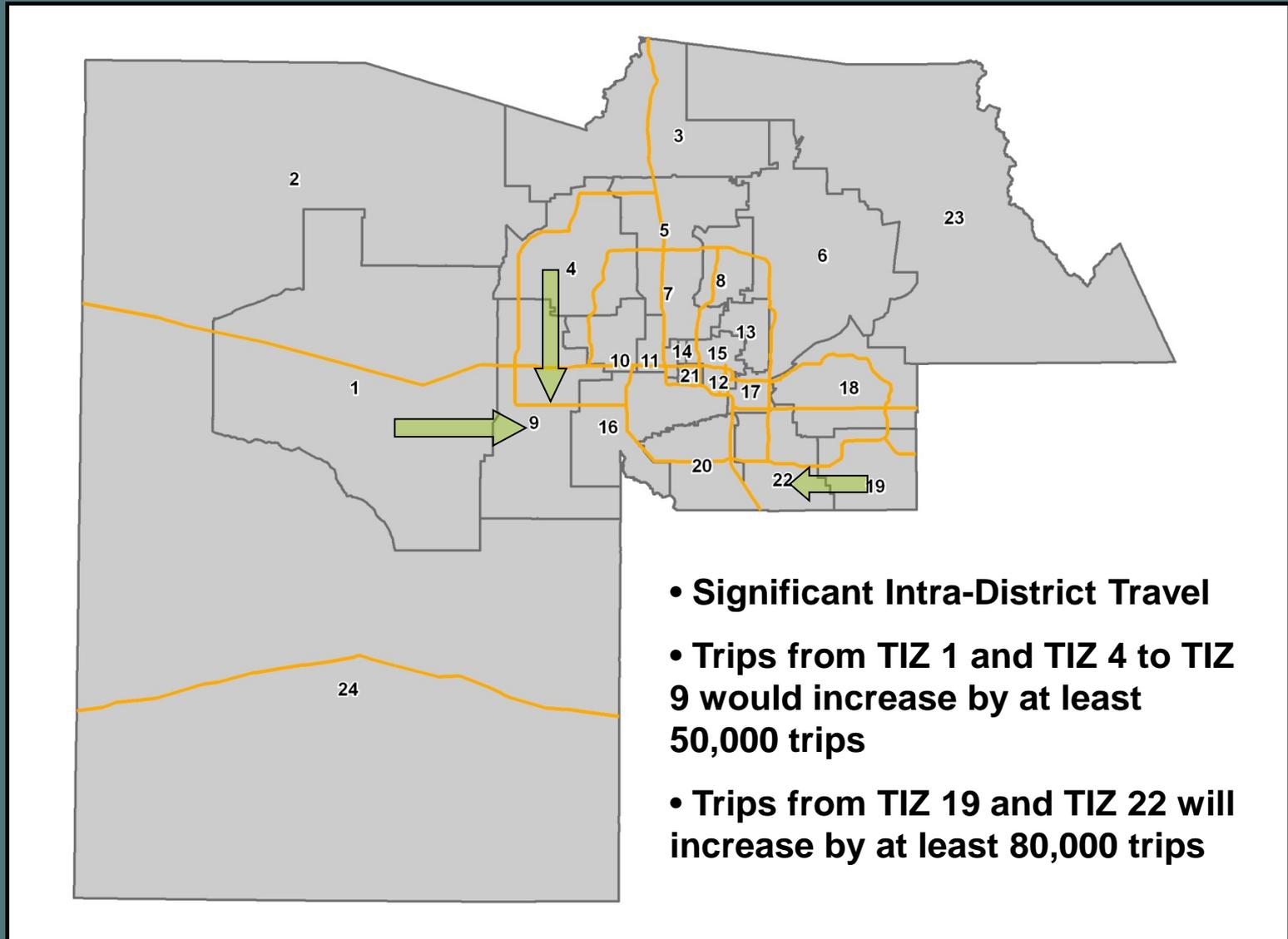
• Highest Peak Period Trip Productions

- 18, 4 and 7

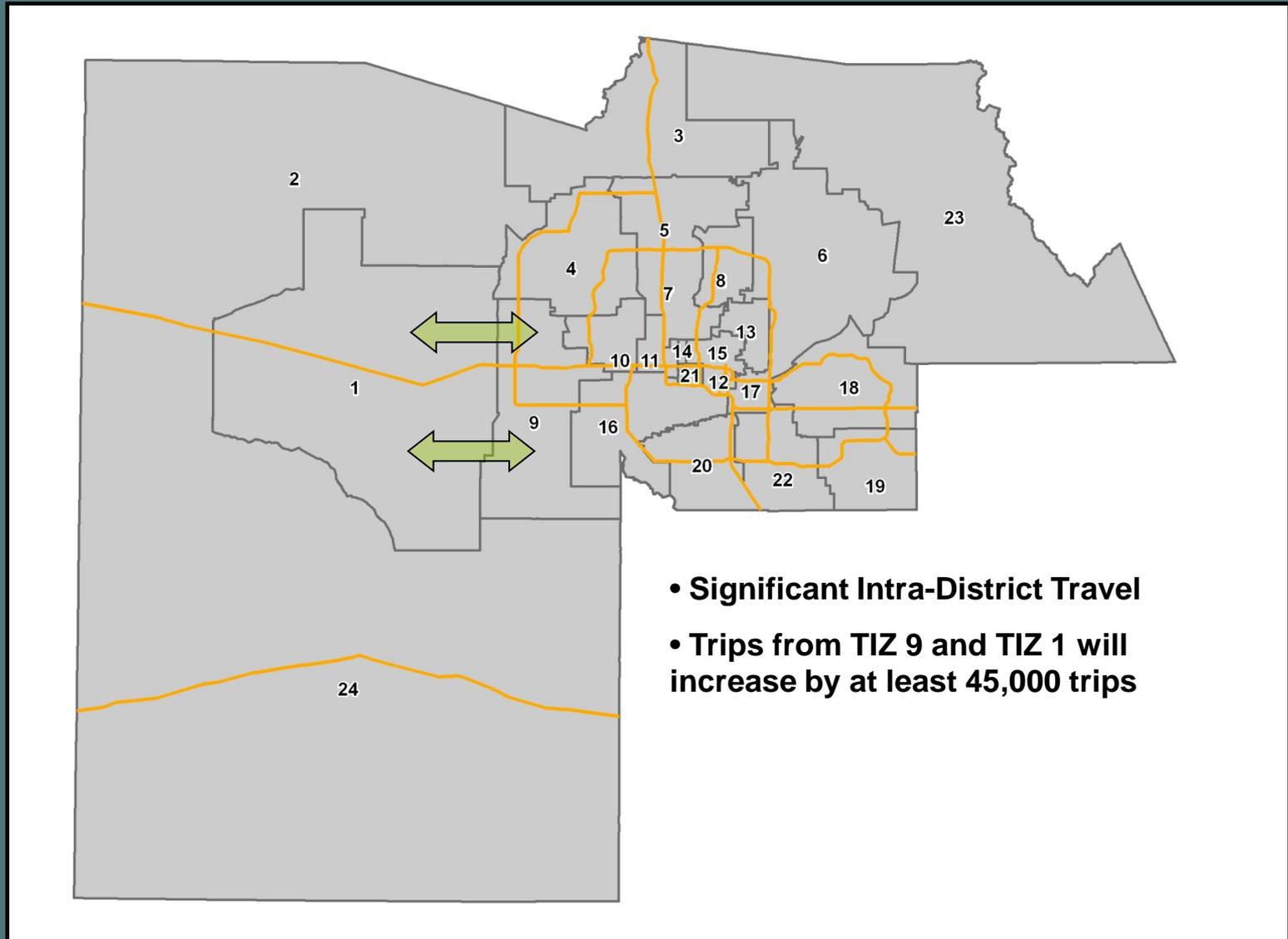
Regional Travel Demand - 2006



Regional Travel Demand Trends From 2006 to 2019



Regional Travel Demand Trends From 2019 to 2030

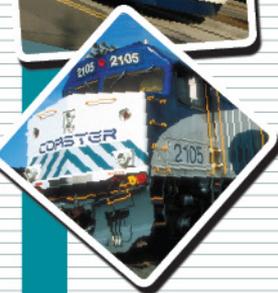
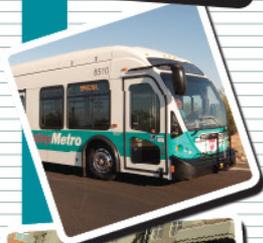


- Significant Intra-District Travel
- Trips from TIZ 9 and TIZ 1 will increase by at least 45,000 trips



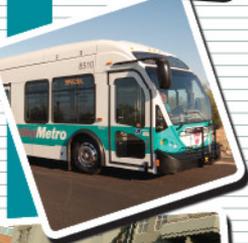
Regional Transit System Deficiencies

- Fixed Route Bus Deficiencies
 - Some existing developed areas have no service
 - High population and employment growth is expected outside of the current and funded transit service area
 - Improved headways and longer service spans are needed, especially on Sundays
 - Local bus system service levels are not always cohesive across jurisdictions
 - Overcrowding on local and express routes
 - Existing and planned bus service provides a limited number of peak period trips
 - With the exception of the Mesa Main St Arterial BRT service, all future BRT routes only have 40 to 48 trips funded each day
 - Regional Connector service provides a limited number of daily trips



Regional Transit System Deficiencies

- Demand Response
 - Inconsistent policies and fares between existing Dial-a-Ride operators
 - Time required to travel between jurisdictions can be prohibitive



Regional Transit System Deficiencies

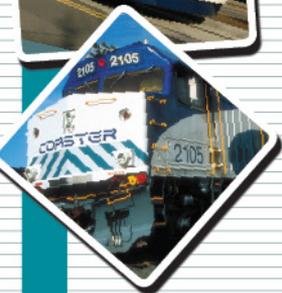
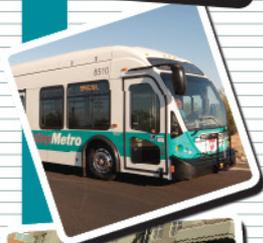
- Passenger Facilities

- A majority of park-and-ride facilities are joint-use facilities. These facilities typically have little or no amenities or services such as covered parking and security
- METRO estimates a potential shortfall of up to 1,600 spaces for the park-and-ride facilities that serve the LRT Starter Line
- Based on available data, two park-and-ride facilities exceeded 90% capacity over a ten month monitoring period
- No regional standardization for monitoring and assessing PNR performance for all facilities is in use



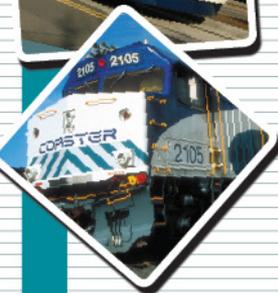
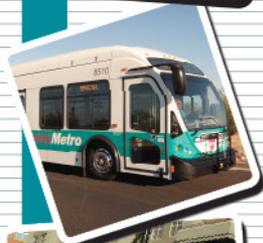
Regional Transit System Deficiencies

- Transit Priority Roadway Facilities Deficiencies
 - There are a limited number of direct HOV ramps. The lack of this infrastructure limits potential time savings
 - Current HOV polices allow access to HOV lanes anywhere on the freeway
 - Existing performance of some HOV lane segments do not offer speed advantages over general purpose lanes during peak periods
 - Regional HOV coverage is incomplete



Regional Transit System Deficiencies

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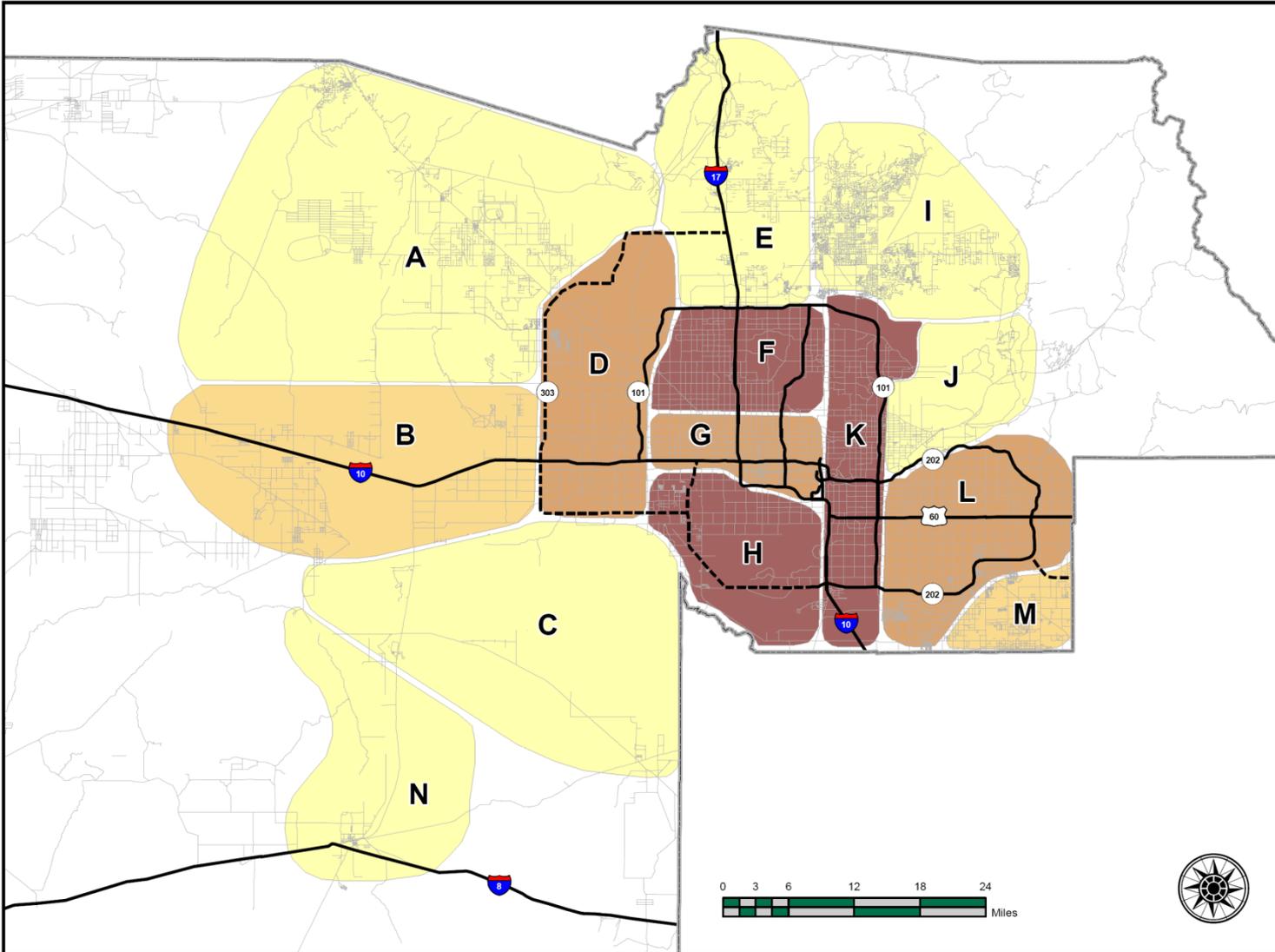


Regional Transit System Deficiencies

- Operations & Maintenance Facilities Deficiencies
 - O&M facility capacity for fixed route bus light rail transit will exceed available (including funded) capacity before 2030
- Other Deficiencies
 - High population and employment growth is expected outside of the current and funded transit service area
 - Some local funding sources begin expiring as early as 2020
 - RTP funding source expires in 2026



Regional Subarea Transit Deficiencies



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Regional Subareas with Transit Deficiencies

Freeways\Expressways & Major Roads

- Existing
- - - Planned
- Major Roads

Regional Subareas by Transit Deficiencies

- Includes 2 Deficiency Categories
- Includes 3 Deficiency Categories
- Includes 4 Deficiency Categories
- Includes 5 Deficiency Categories

Concepts for a Regional Transit Problem Definition

- Deficiencies
 - Transit Demand Exceeding Capacity
 - Limited Service Expansion
 - Capital Deficiencies
 - Safe & Convenient Services
 - Project Eligibility for Discretionary Funds
 - Unserved Developed Areas
 - Unserved Growth Areas
 - More Broadly Dispersed Employment
 - Congested Roadways
 - New Transit Investments Require Funding
 - Economic Competitiveness



Regional Transit Problem Definition

- Roadway/Corridor Travel Speeds
 - Ten regional transportation corridors identified as having significant travel speed deficiencies during the AM peak period
 - In general, arterial streets adjacent to or near impacted freeway corridors also experience reduced speeds and travel times during peak periods

Roadway travel speeds negatively impact transit service operations, capital requirements and potential ridership

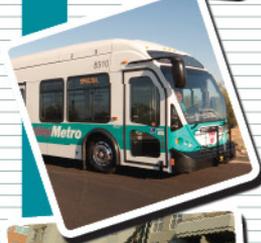


Development and Analysis of Study Alternatives



Transit Performance Standards & Indicators

- Goals and Philosophy Behind Transit Performance Standards & Indicators Include:
 - “High leverage” transit investments
 - Improved customer acquisition
 - Increased mode competitiveness
 - Increased transit market share
 - Attitudinal shift or accommodation regarding transit within the region
 - Local and regional support for planned transit investments



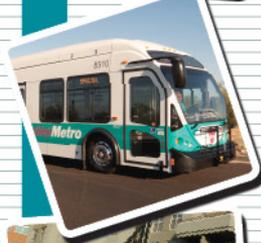
Transit Performance Standards & Indicators

- Drivers for Service Performance Standards & Indicators:
 - Focus groups
 - Valley Metro Annual Market Survey
 - Valley Metro Rider Satisfaction Survey
 - Existing service standards & indicators
 - FTA New Starts Program
 - ARS 28-505 (Proposition 400)
 - Building a Quality Arizona



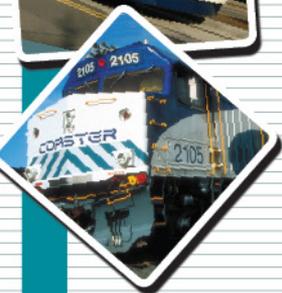
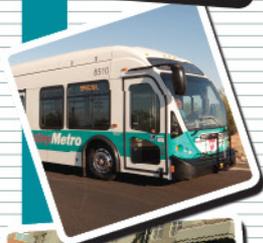
Transit Performance Standards & Indicators

- Planning Service Performance Standards & Indicators:
 - Customer Choice Centric Factors
 - Ridership
 - Flexibility and speed/travel time
 - Accessibility/availability
 - Safety & security
 - Comfort & convenience
 - System Compatibility Factors
 - Land use synergies
 - Community Values
 - Compatible with New Starts, ARS 28-505 and BQAZ

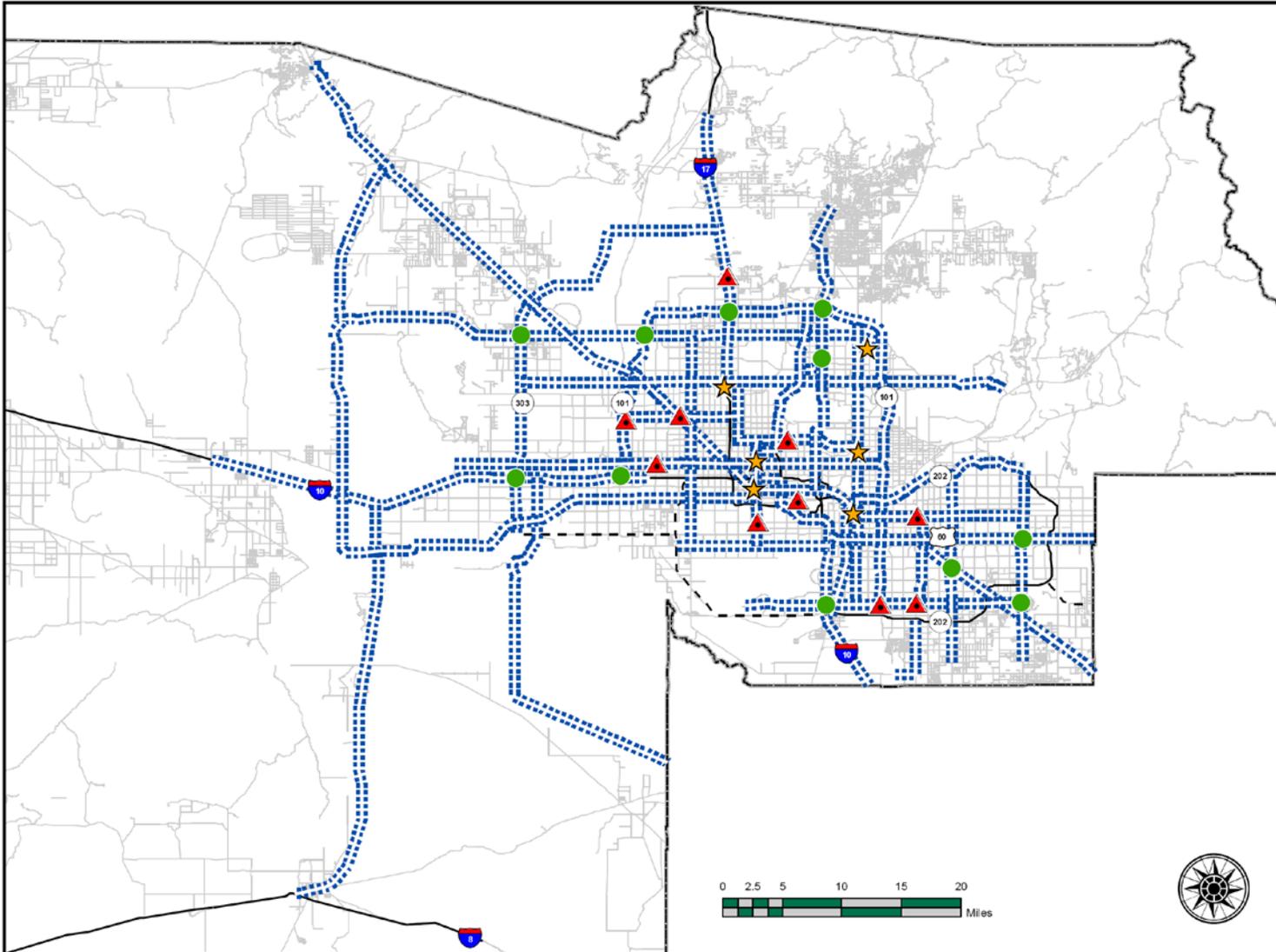


Transit Analysis Corridors Evaluation

- Standards & Performance Indicators
 - Corridors were assigned a high, medium, and low total evaluation value for each standard and performance indicator
 - Corridors with higher evaluation values were aggregated into three scenarios for modeling
 - Initial screening of corridors includes indicators within the following categories:
 - Flexibility and Speed/Travel Time
 - Accessibility/Availability
 - Regional Connectivity (Convenience)
 - Land Use Connections



Scenario Development Initial Analysis Corridors



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Initial Analysis Corridors

Activity Centers

- ★ Regional
- ▲ Sub-Area
- Community

Analysis Corridors

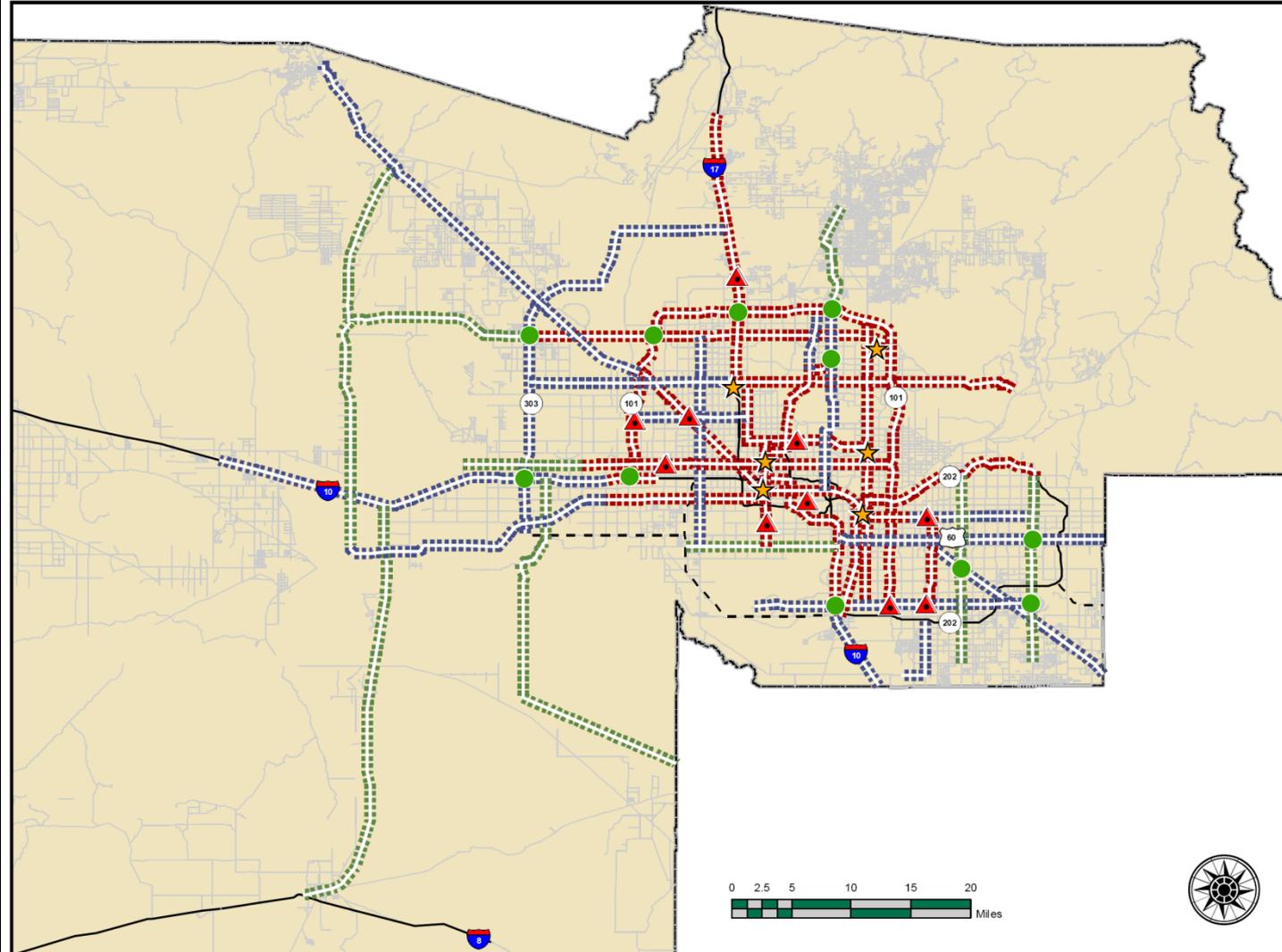


Freeways\Expressways and Major Roads

- Existing
- - - Planned
- Major Roads



Scenario Development Corridor Prioritization



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Initial Analysis Corridors Overall Potential to Increase Mobility*

Activity Centers

- ★ Regional
- ▲ Sub-Area
- Community

Analysis Corridors - Overall Potential to Increase Mobility

- Highest
- Higher
- High

Freeways/Expressways and Major Roads

- Existing
- - - Planned
- Major Roads

*Based on criteria defined in MAG Regional Transit Framework Study Draft Technical Memorandum: Transit Modeling Scenarios (1/9/09).

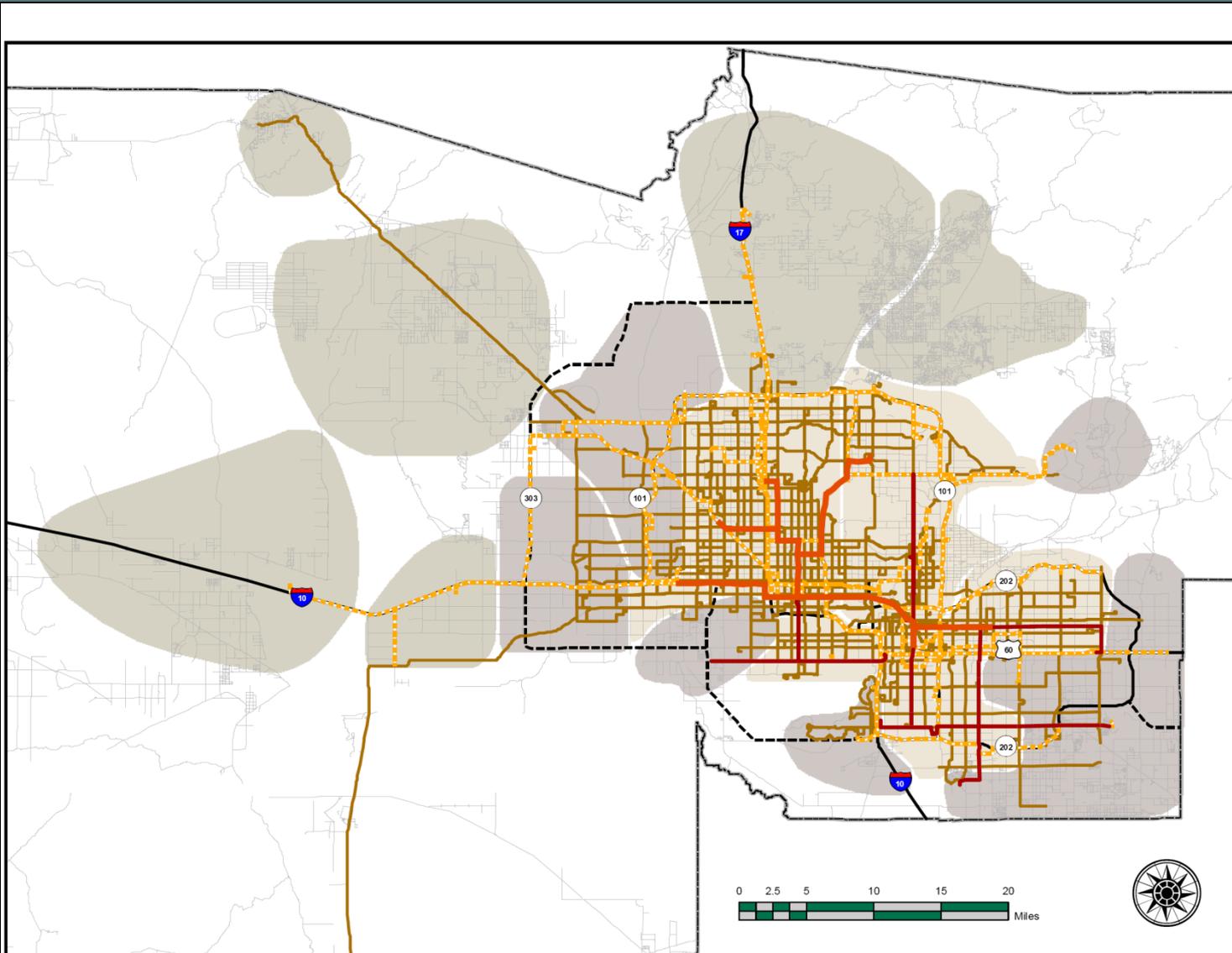
Scenario Development 2030 Local Transit Service Needs

- Local Transit Service Needs
 - Analysis
 - Comparison of areas with moderate or high travel demand and a moderate or low level of local transit service
 - Conducted by transit influence zones (TIZ)
 - Results
 - Areas classified in three categories by need
 - Level 1: Headway improvements and route coverage expansion
 - Level 2: Headway improvements and new local services
 - Level 3: New services in areas with little or no transit service



Scenario Development

2030 Local Transit Service Needs



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2030 Local Transit Service Needs

2030 Funded Transit Service

- High Capacity Transit
- Arterial BRT
- - - Express Bus
- Fixed Route Bus

Additional Local Transit Service Needs*

- Level 1 Needs
- Level 2 Needs
- Level 3 Needs

Freeways/Expressways & Major Roads

- Existing
- Planned
- Major Roads

*Represents areas that may require new or expanded local (non-regional) transit services such as circulators, shuttles or local fixed route bus. These local services would provide internal local circulation and connections to the regional transit network.

"Level 1 Needs" includes headway improvements and route coverage adjustments in areas with a reasonable level of transit service compared to the existing planned development patterns

"Level 2 Needs" includes headway improvements and new local services in areas with infrequent headways and minimal service coverage

"Level 3 Needs" includes implementation of transit service in areas with little or no transit service

Transit Modeling Assumptions

Service Types

Service Type	Purpose / Market Type	Corridor Characteristics	Mode Type
Regional Connector	Regional Access	Rural or Arterial St	Bus
Supergrid	Regional and local access	Arterial St	Bus
Express	Enhanced-speed, moderate-volume commuter or regional access	Mostly Freeway	Bus
Arterial BRT	Enhanced-speed, high-demand local or regional access	Arterial St	Bus
HCT Peak Period	Higher-speed, high-demand commuter or regional access	Dedicated Guideway	Bus or Train
HCT All Day	Higher speed, high-demand regional access	Dedicated Guideway	Bus or Train



Arterial Bus Rapid Transit



HCT Peak Period



HCT All Day

*Match headways of high capacity transit connections.



Creating Transit Mobility Scenarios

- **Community Level Regional Services (up to 8 miles)**
 - Provides connections in corridors between close proximity activity and population centers
 - Can include moderate density residential and commercial land use patterns
 - Examples: Albuquerque Rapid Ride & Portland Streetcar



Creating Transit Mobility Scenarios

- **Sub-Area Services (5 to 15 miles)**

- Provides connections in longer corridors between major regional activity centers\population centers and regional transit services
- Can include moderate to high density residential and commercial land use patterns
- Examples: Eugene EmX & Denver HOV Express



Creating Transit Mobility Scenarios

- **Regional Services (over 15 miles)**

- Provides long distance connections between regional activity centers\population centers
- Includes high density activity center within corridor
- Example: Los Angeles Orange Line, Salt Lake City TRAX & Seattle Sounder Commuter Rail, San Francisco BART (heavy rail)



Transit Scenarios Characteristics



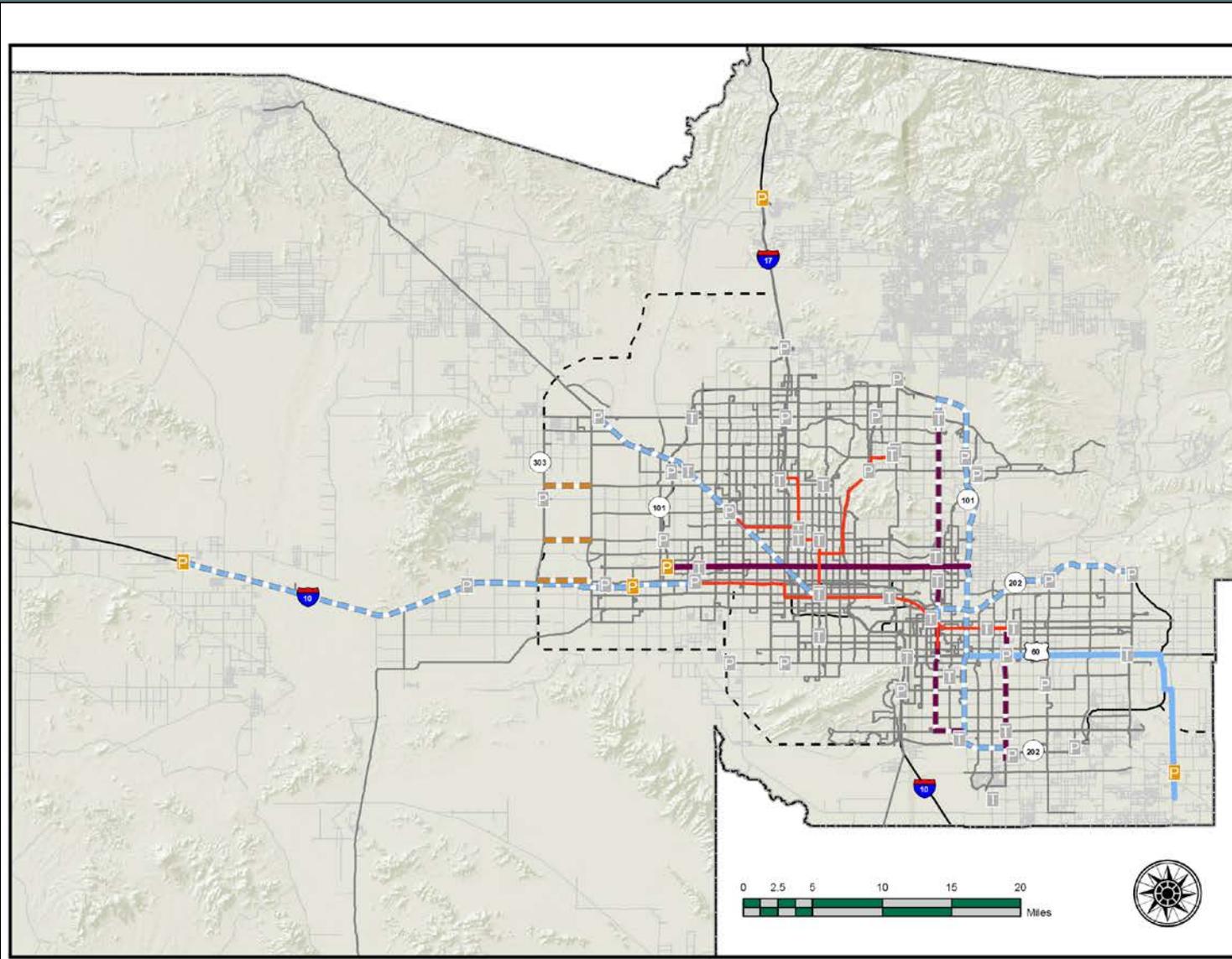
Scenario	Investment Level	Characteristics
I: Basic Mobility	Lowest <i>(extend existing sources)</i>	<ul style="list-style-type: none"> - Expands service to new areas - Improves service levels within a limited number of high demand transit corridors - Many deficiencies not addressed
II: Enhanced Mobility	Moderate <i>(comparable to peer regions level)</i>	<ul style="list-style-type: none"> - Expands regional transit service levels - Improves transit travel speeds in highest priority corridors - Existing service level deficiencies fully addressed, other deficiencies not
III: Transit Choice	Higher <i>(comparable to Seattle level)</i>	<ul style="list-style-type: none"> - Expands regional transit service levels - Provides a more comprehensive regional transit system - Improves transit travel speeds in many more corridors - Most deficiencies are addressed

Scenario 1: Basic Mobility Summary



- New or Expanded Services
 - Supergrid
 - Express Bus
 - Arterial BRT
- Transit Facilities
 - Additional PNR facilities to serve improved express bus services
 - Fixed Route operations and Maintenance (O&M) Facility to support planned service operations
- Service Levels
 - Enhances service on a limited number of routes
- Coverage
 - Focuses on high-demand corridors and in areas where no service exists

Scenario 1: Basic Mobility



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DRAFT Transit Modeling Scenario I*

DRAFT Framework Study Transit Services & Facilities

- New Arterial Bus Rapid Transit Service
- Expanded Arterial Bus Rapid Transit Service
- New Express Bus
- Expanded Express Bus
- Expanded Supergrid Bus
- New or Expanded Park & Ride Facility

Regional Transportation Plan Transit Service & Facilities

- 57 Mile HCT Network

- Transit Service
- Park & Ride Facility
- Transit Center Facility

Freeways, Expressways and Major Roads

- Existing
- Planned
- Major Roads

*Assumes the continuation of all existing regional and local transit funding sources through year 2030.

Scenario 2: Enhanced Mobility Summary

- New or Expanded Services
 - Regional Connector
 - Supergrid
 - Express Bus
 - Arterial BRT
 - HCT Peak Period
 - HCT All Day
- Transit Facilities
 - Additional PNR facilities to serve improved express bus services and provide transfer hubs for other modes
 - Fixed Route operations and Maintenance (O&M) Facility to support planned service operations

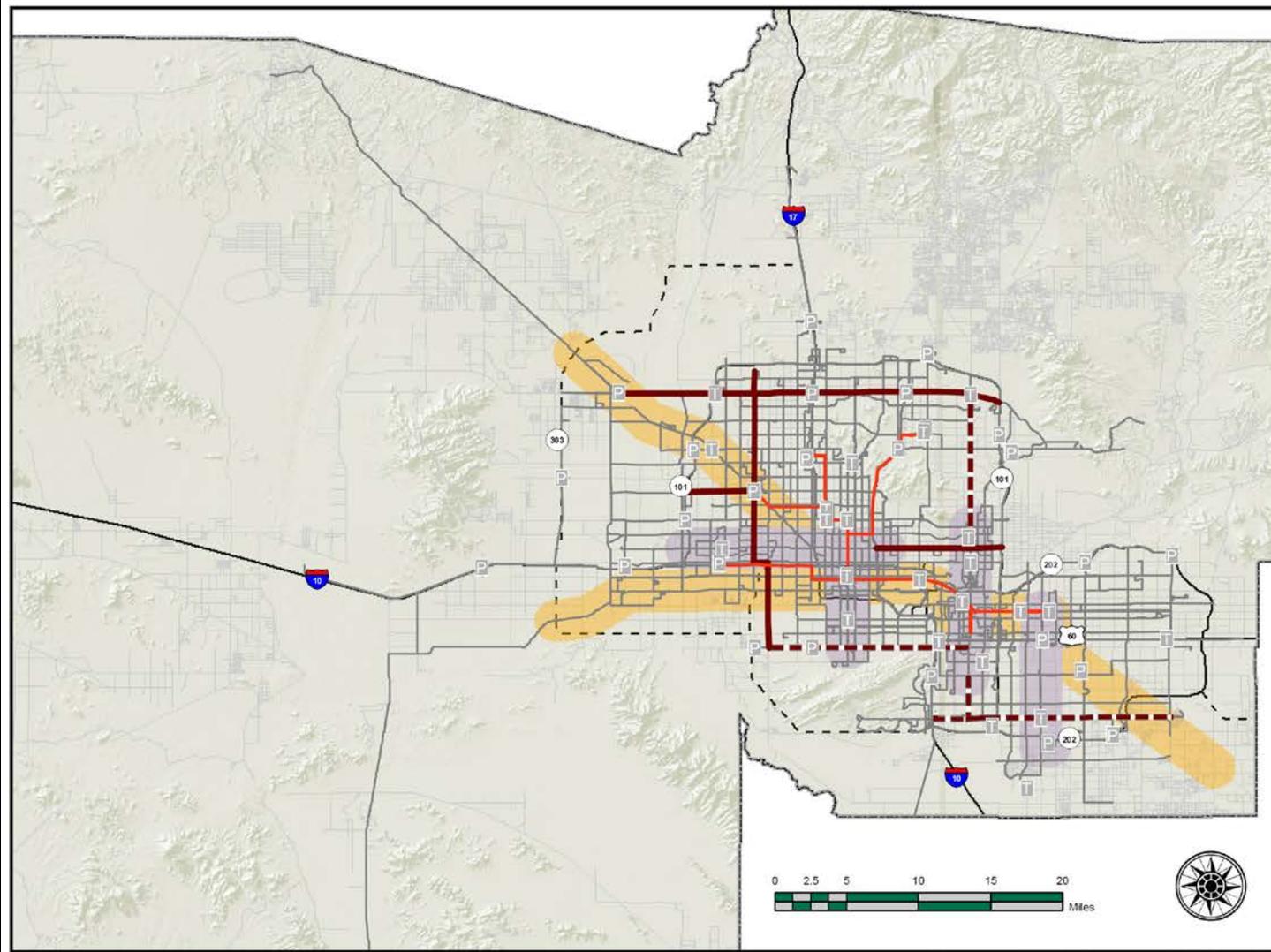


Scenario 2: Enhanced Mobility Summary

- Service Levels
 - Increases headways, service spans, capacity on several arterial BRT and express routes
- Coverage
 - Includes budgetary consideration for local (non-regional) transit service expansion and development
 - Expands coverage on a limited number of Supergrid routes- Expands arterial BRT service to more activity centers
 - Expands express bus on freeways serving activity centers
 - Implements a limited number of arterial BRT and express bus routes in high demand areas



Scenario 2: Enhanced Mobility



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DRAFT Transit Modeling Scenario II*

DRAFT Framework Study Transit Services & Facilities

- New Arterial Bus Rapid Transit
- Expanded Arterial Bus Rapid Transit
- New High Capacity Transit (All Day)
- New High Capacity Transit (Peak)

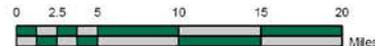
Regional Transportation Plan Transit Service & Facilities

- 57 Mile HCT Network
- Transit Service
- Park & Ride Facility
- Transit Center Facility

Freeways/Expressways and Major Roads

- Existing
- Planned
- Major Roads

*Assumes the continuation of all regional and local transit funding sources through year 2030 plus an additional \$6 billion to \$7 billion in public transit revenues between years 2015 and 2030 (2008\$). Total investment comparable to the 2006 average annual transit expenditures per capita of the MAG region's peers.



Scenario 3: Transit Choice Summary

- New or Expanded Services
 - Regional Connector
 - Supergrid
 - Express Bus
 - Arterial BRT
 - HCT Peak Period
 - HCT All Day
- Transit Facilities
 - Additional PNR facilities to serve improved express bus services and provide transfer hubs for other modes
 - Additional transit centers in emerging high demand corridors and near activity centers
 - Fixed Route operations and Maintenance (O&M) Facility to support planned service operations

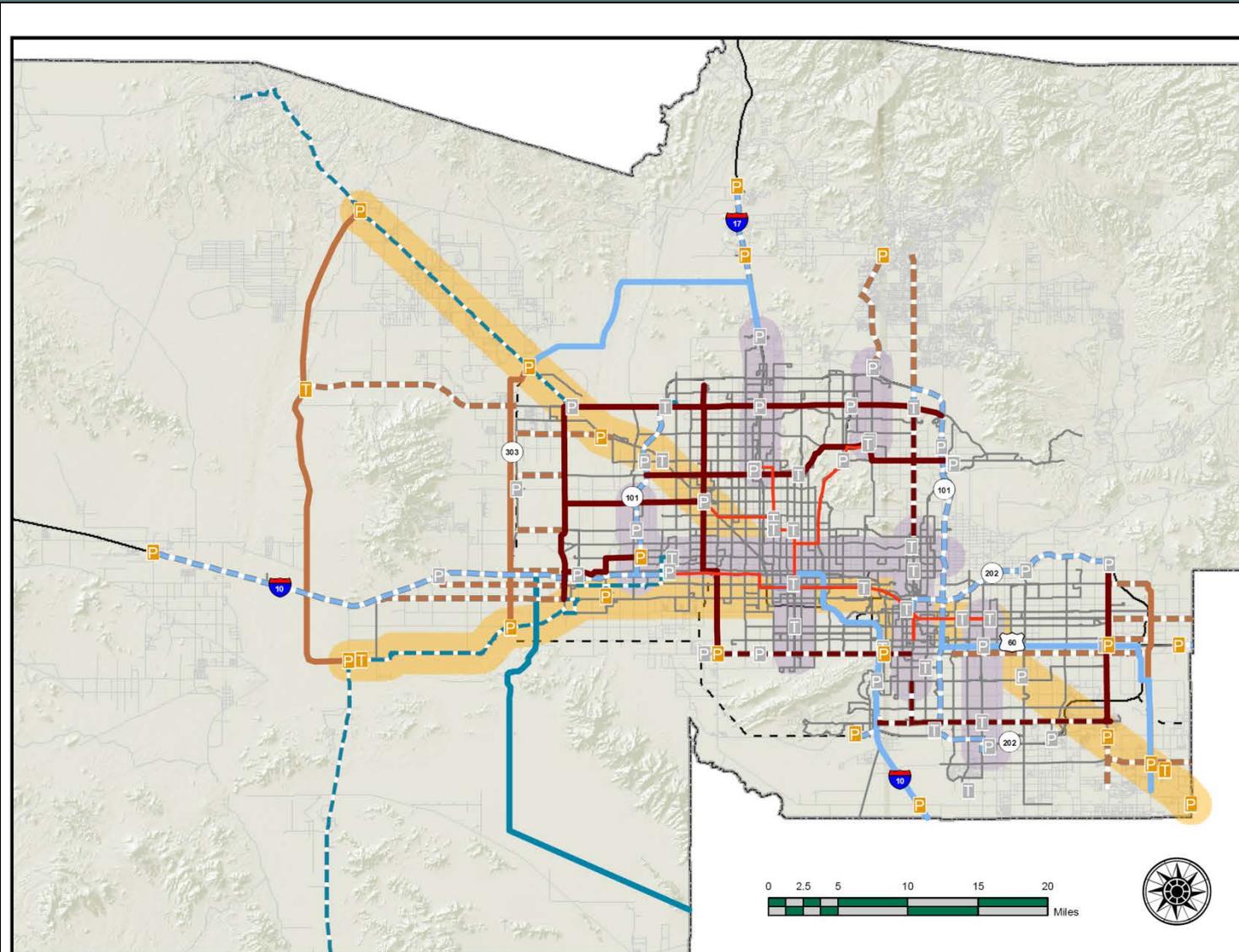


Scenario 3: Transit Choice Summary

- Service Levels
 - Provides feeder service to high-capacity transit stations
 - Provides suburb-to-suburb service along major corridors
- Coverage
 - Includes budgetary consideration for local (non-regional) transit service expansion and development
 - Expands coverage on several Supergrid routes
 - New coverage in the MAG region via arterial BRT and express bus routes
 - Enhanced access to all major corridors and activity centers



Scenario 3: Transit Choice



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DRAFT Transit Modeling Scenario III*

DRAFT Framework Study Transit Services & Facilities

- New Arterial Bus Rapid Transit
- Expanded Arterial Bus Rapid Transit
- New Express
- Expanded Express
- New Supergrid
- Expanded Supergrid
- New Regional Connector
- Expanded Regional Connector
- New High Capacity Transit (All Day)
- New High Capacity Transit (Peak)
- New Park & Ride Facility
- New Transit Center

Regional Transportation Plan Transit Service & Facilities

- 57 Mile HCT Network
- Transit Service
- Park & Ride Facility
- Transit Center Facility

Freeways/Expressways and Major Roads

- Existing
- Planned
- Major Roads

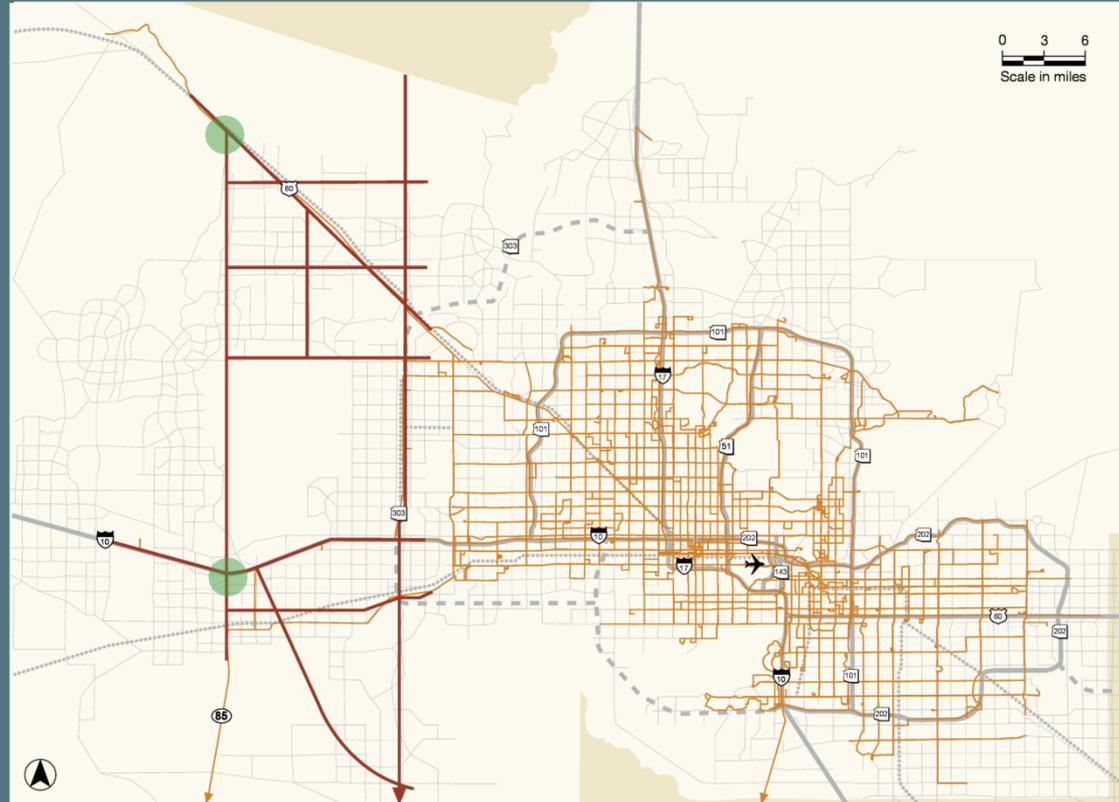
*Assumes the continuation of all regional and local transit funding sources through year 2030 plus an additional \$14 billion to \$15 billion in public transit revenues between years 2015 and 2030 (2008\$). Total investment comparable to the 2006 average annual rail and bus transit expenditures per capita in the Seattle Region.

Transit Corridors Beyond 2030



Wickenburg Way

Pinnacle Peak Rd
Beardsley Rd
Bell Rd
Waddell Rd
Peoria Ave
Northern Ave
Bethany Home Rd
Indian School Rd
McDowell Rd
Buckeye Rd
Broadway Rd
Baseline Rd



0 3 6
Scale in miles

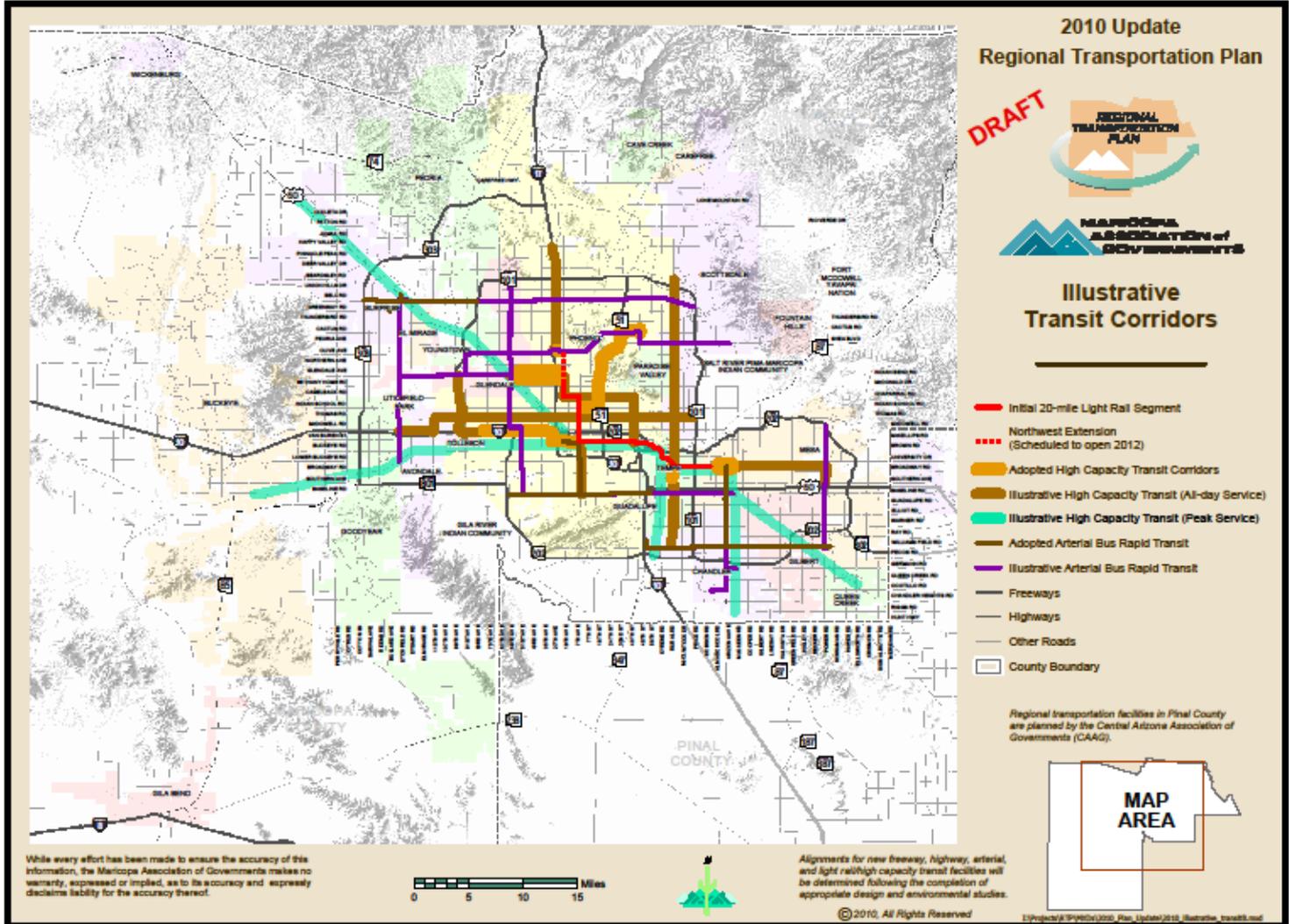
Anthem Way
Carefree Hwy
Deer Valley Rd
Union Hills Dr
Greenway Rd
Cactus Rd
Indian Bend Rd
Chaparral Rd
Thomas Rd
McKellips Rd
University Dr
Southern Ave
Guadalupe Rd
Warner Rd
Chandler Blvd
Germann Rd

379th Ave
Palo Verde Rd
Oglesby Rd
Miller Rd
Rainbow Rd
S. Jackrabbit Tr
Citrus Rd
Sanval Ave
Bullard Ave
Dysart Rd
Avondale Blvd
99th Ave
83rd Ave
67th Ave
51st Ave
35th Ave
19th Ave
Central Ave
24th St
40th St
56th St
Rural Rd
Price Rd
Alma School Rd
Mesa Dr
Gilbert Rd
Val Vista Dr
Higley Rd
Power Rd
Hawes Rd
Crismon Rd
Meridian Rd

LEGEND

Existing	Regional Supergrid Bus
Planned	Emerging Transit Corridors Beyond 2030
	Potential Future Intermodal Facility Location

Illustrative Corridors



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly declines liability for the accuracy thereof.



Alignments for new freeway, highway, arterial, and light rail/high capacity transit facilities will be determined following the completion of appropriate design and environmental studies.

Products

- Four project fact sheets
- Peer Regions Evaluation
- Non-Rider Survey, On-line Survey, Focus Group Report
- Working Papers
 - Working Paper #1: Analysis of Transit Travel Demand
 - Working Paper #2: Transit Performance Indicators and Service Standards
 - Working Paper #3: Existing Transit Services and Deficiencies
 - Working Paper #4: Problem Definition
 - Working Paper #5: Analysis of Planned Improvements, Future Deficiencies, and Additional Service Options
 - Working Paper #6: Cost analysis for Transit Capital, Operating, Maintenance and Modernization
- Executive Summary and Final Report





Regional Transit Framework

May 11, 2010

