

# COMMUTER RAIL

System Planning



**Commuter Rail Planning  
Stakeholder Presentation  
July 8, 2009**

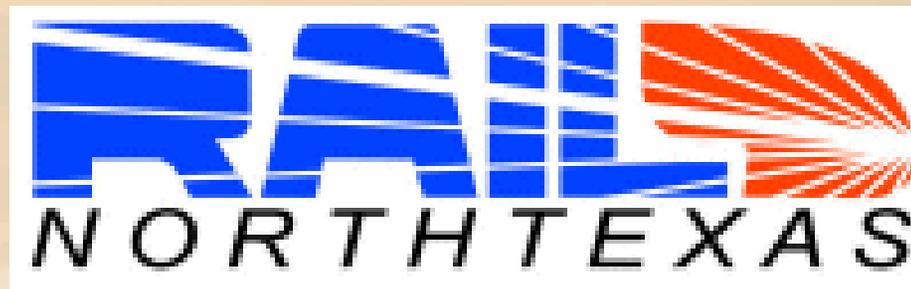
# Meeting Agenda

- ⟨ **Study Key Issues and Lessons Learned**
- ⟨ **Study Purpose and Key Elements**
- ⟨ **Grand Avenue Existing and Future Conditions**
- ⟨ **Commuter Rail Planning Factors**
- ⟨ **Corridor/Segment Review**
- ⟨ **Schedule**
- ⟨ **Q & A**

# Study Key Issues and Lessons Learned

# Key Issues/Lessons Learned

- ◁ The implementation of commuter rail in other areas provides an outline of potential issues and lessons to be learned.
- ◁ A project from Rail North Texas provides a useful list of lessons to be learned and potential issues to be aware of.



# Key Issues/Lessons Learned (cont.)

- ◀ Issue: Railroad Coordination
  - ▶ Keep railroads informed and involved
  - ▶ Collect as much data as possible
  - ▶ Be realistic in developing operating agreements and scenarios, while understanding the railroads' perspective
- ◀ Issue: Cost Estimating
  - ▶ Update cost estimates annually or more often
  - ▶ Be conservative but use recent actual industry prices
  - ▶ Be sure stakeholders understand the baseline cost estimate

# Key Issues/Lessons Learned (cont.)

## ◀ Issue: Rail Vehicles

- ▶ Long lead-time, unpredictable cost item
- ▶ Explore options early and be flexible
- ▶ Prepare stakeholders for options
- ▶ Seek out partnering opportunities with other agencies

## ◀ Issue: Existing and Future Land Use Plans

- ▶ Consider necessary land use changes and timing
- ▶ Consider jurisdictional desires while managing expectations and being realistic
- ▶ Identify additional work needed before locating station nodes

# Key Issues/Lessons Learned (cont.)

## ◀ Issue: Community Issues

- ▶ There will always be opposition so be prepared
- ▶ Try to answer all questions (within reason)
- ▶ Educate the public and be proactive
- ▶ Be realistic as to what impacts may occur
- ▶ Typical issues may include traffic impacts at crossings and park and rides, safety, quiet zones, property values

## ◀ Issue: Funding

- ▶ There are no easy answers and Federal funding may not always be realistic
- ▶ Local funding has budget and schedule advantages
- ▶ Finding right mix of funding that has public, agency and legislative support
- ▶ Funding sources needed for both capital and operating expenses

# Commuter Rail Corridor Development Plan Purpose and Key Elements

# Grand Avenue and Yuma West Commuter Rail Corridor Development Plans

## < Purpose:

- Determine feasibility of implementing commuter rail service:
  - ▶ Wickenburg to downtown Phoenix (Grand Avenue)
  - ▶ Arlington to central Phoenix (Yuma West)
- Corridor Development Plan elements necessary to successfully implement commuter rail service along corridor

# Grand Avenue and Yuma West Commuter Rail Corridor Development Plans (cont.)

## ◀ Key Elements

- Stakeholder outreach
- Railroad coordination
- Purpose and Need technical assessment:
  - ▶ Past planning efforts
  - ▶ Rail facilities and operations
  - ▶ Highway facilities and operations
  - ▶ Adjacent land uses and access requirements
  - ▶ Commuter rail design and operating requirements

# Grand Avenue and Yuma West Commuter Rail Corridor Development Plans (cont.)

## ◀ Key Elements

- Existing and future conditions:
  - ▶ Demographics, land use, physical inventory
- Railroad operational assessment
- Inventory of parallel highway networks
- Rail service operating and capital requirements

# Grand Avenue Existing and Future Conditions

# Yuma West Corridor Development Plan Update

- ◀ Activities Completed or in Progress:
  - ▶ Project Management Plan – Complete
  - ▶ Purpose and Need Technical Memorandum – Complete
  - ▶ Railroad Inventory – Complete
  - ▶ Existing and Future Conditions Technical Memorandum – In progress
  - ▶ Station Planning Technical Memorandum – In progress
  - ▶ Operations Plan – In progress

# Existing and Future Conditions

## ◀ Total Project Corridor Population

- Increase by more than 41% from 2007 to 2030

## ◀ Total Corridor Employment

- Increase by more than 52% from 2007 to 2030

Project Corridor Total *Population* between 2007-2030

Study Area	2007	2030	% Change 2007-2030
<i>MAG Region</i>	3,927,827	6,122,490	55.9
Project Corridor	692,537	978,647	41.3

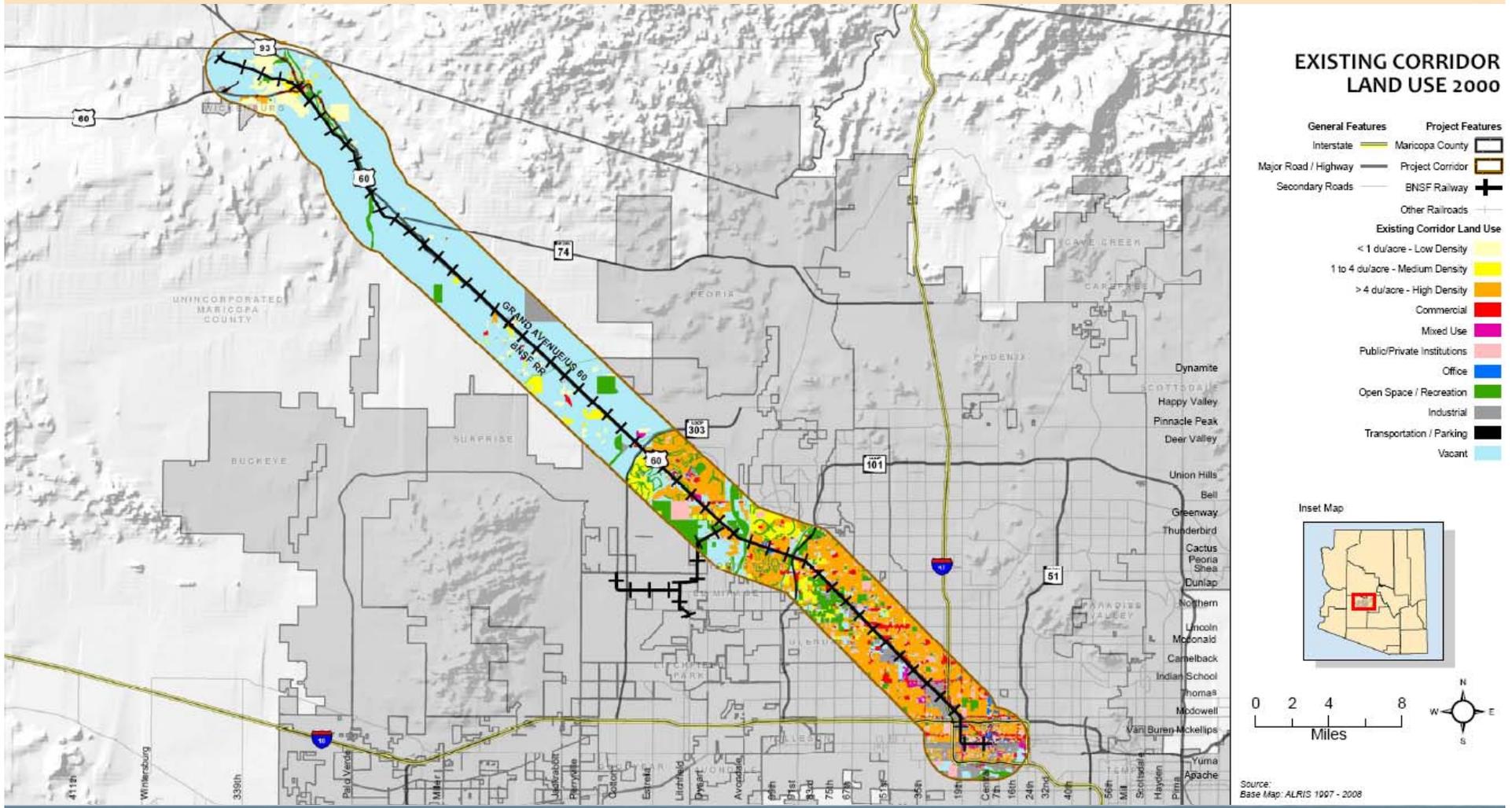
Project Corridor Total *Employment* between 2007-2030

Study Area	2007	2030	% Change 2007-2030
<i>MAG Region</i>	1,935,423	3,373,001	74.3
Project Corridor	365,903	557,917	52.5

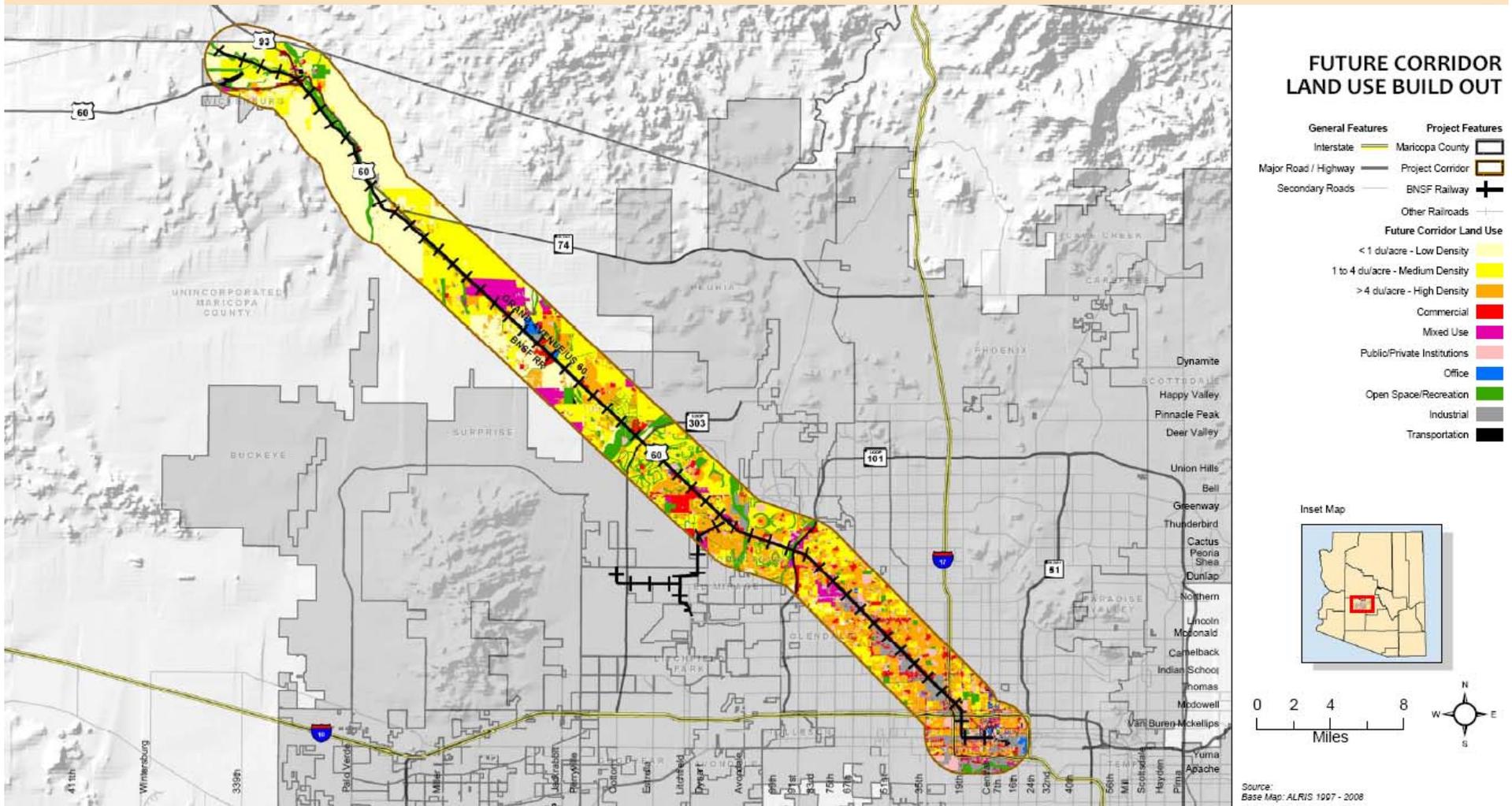
## Existing and Future Conditions (cont.)

- ◀ **The most prevalent existing land uses identified in the project corridor are:**
  - Vacant Land: 51%
  - Residential: 26%
  - Open Space/Recreation: 9%
  
- ◀ **The most prevalent projected future land uses identified for build-out in the project corridor are:**
  - Residential 70%
  - Open Space/Recreation 9%,
  - Commercial 6%.

# Existing and Future Conditions (cont.)



# Existing and Future Conditions (cont.)



# Existing and Future Conditions (cont.)

## ◀ **BNSF Existing Facilities**

- Phoenix Yard
- Mobest Yard
- The Desert Lift Intermodal Facility
- Alhambra Yard
- Glendale North/South Yards
- The BNSF Automobile Distribution Center
- Ennis Wye

# Existing and Future Conditions (cont.)

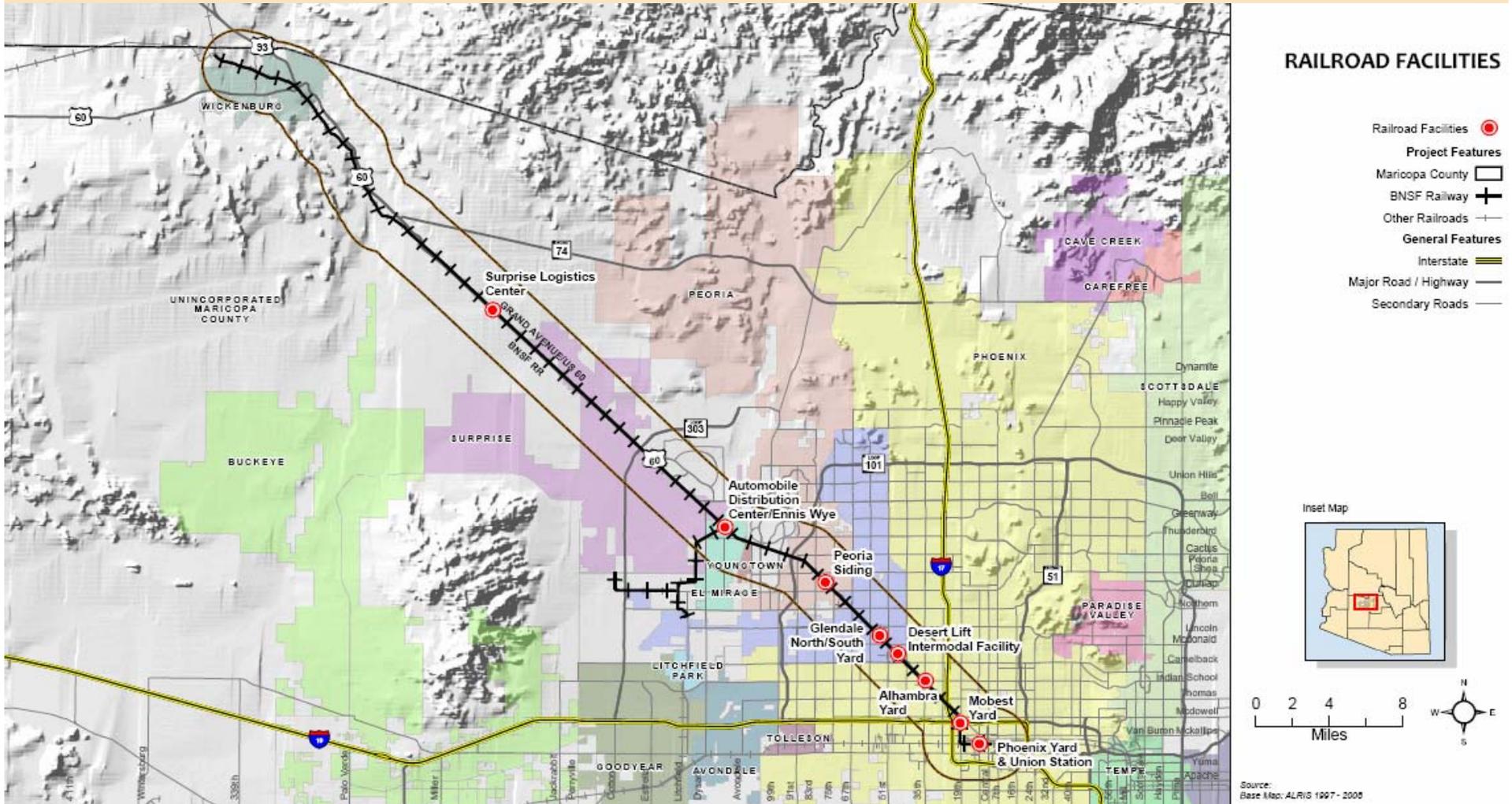
## ◀ **BNSF Future Plans**

- 41,000 carloads a year enter into Phoenix equating to 10 trains a day
- Number of carloads will increase to 71,000 by 2012 and increase the number of trains per day to 17

## ◀ **Expansion and relocation opportunities:**

- Ennis Wye
- Surprise Logistics Center
- Peoria Siding
- Connect North/South Glendale Yards

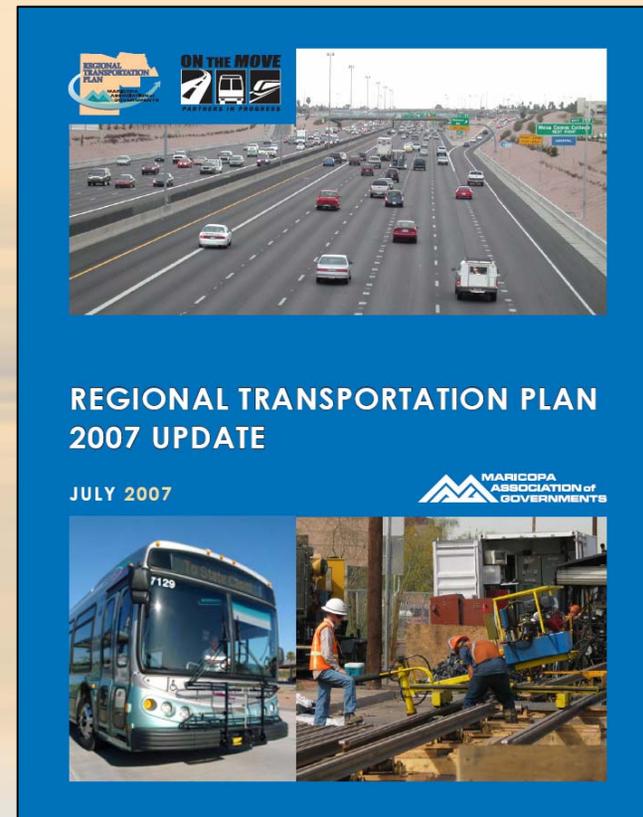
# Existing and Future Conditions (cont.)



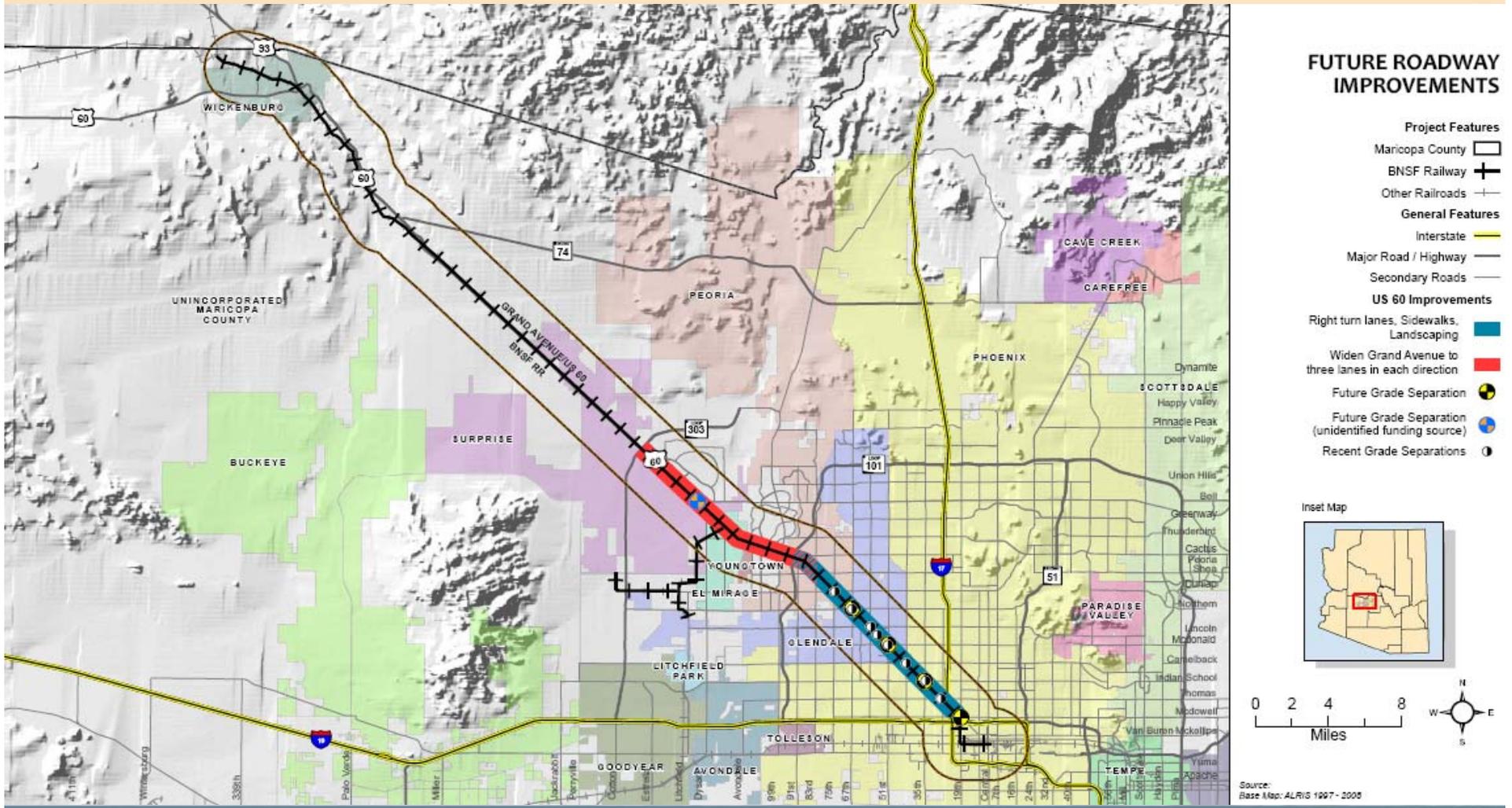
# Existing and Future Conditions (cont.)

## < RTP future improvements identified:

- Addition of *general purpose lanes*;
- Addition of *grade separations*; and
- Other improvements, such as *right turn lanes, sidewalks, and landscaping*.



# Existing and Future Conditions (cont.)



# Existing and Future Conditions (cont.)

## ◀ *Existing Fixed Route Bus Service*

### **Local Bus Routes**

- ▶ Total of 16 bus routes serving corridor
- ▶ Grand Avenue Limited (Monday through Friday service)

### **Circulators**

- ▶ Glendale Urban Shuttle 1
- ▶ Glendale Urban Shuttle 2

# Existing and Future Conditions (cont.)

## Regional Connectors

- ▶ Wickenburg Connector: Wickenburg to Arrowhead Town Center in Glendale

## Express Bus

- ▶ Route 572 operating between Surprise and Scottsdale
- ▶ Route 571 providing service downtown
- ▶ No stops located along Grand Avenue

# Existing and Future Conditions (cont.)

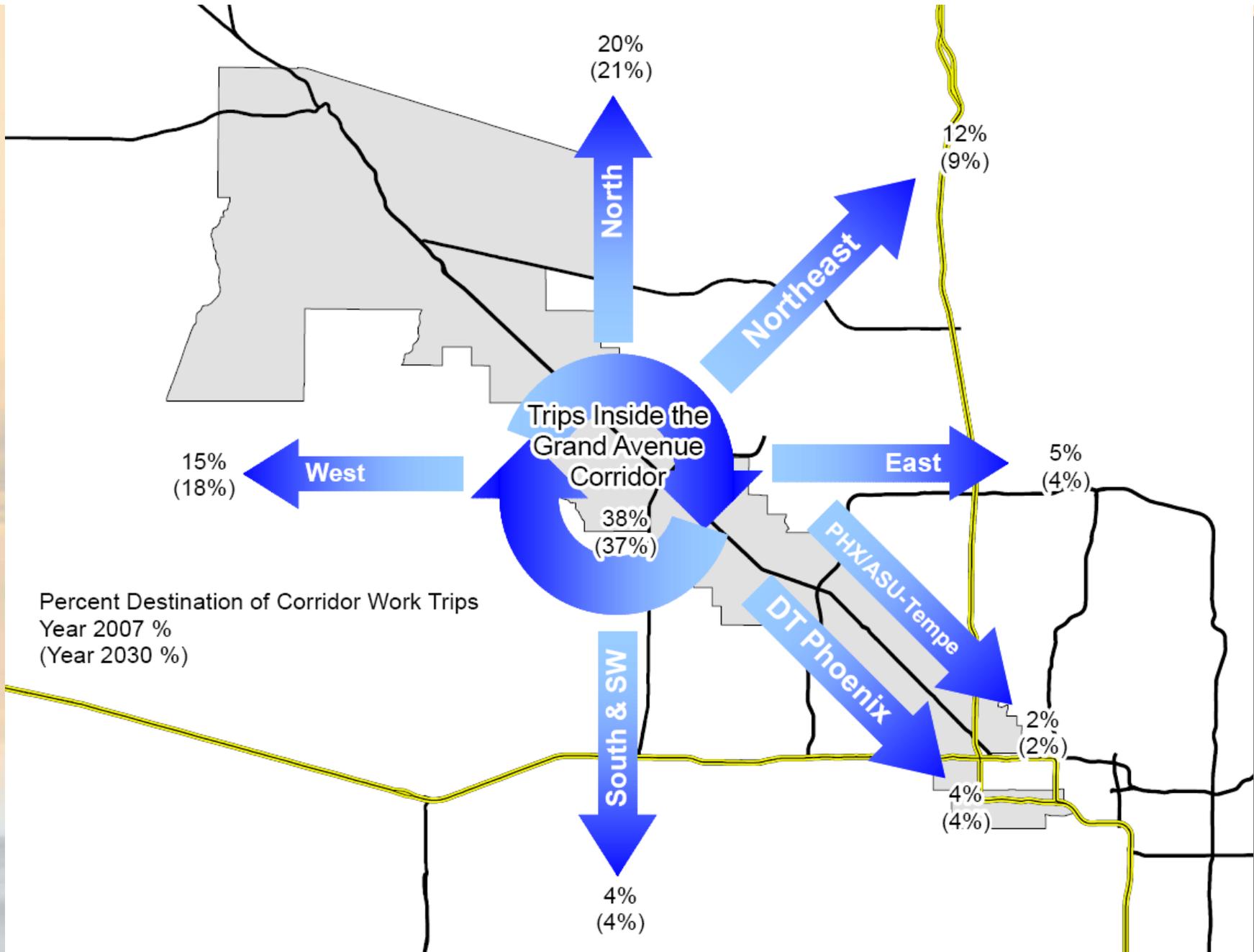
## ***Planned Fixed Route Bus Service***

- MAG RTP identifies 12 Supergrid routes in the project corridor
- Express Bus: Loop 303 Express between Arrowhead Towne Center and Desert Sky Mall via SR-303L

# Existing and Future Conditions (cont.)

## Home Based Work Trip Modeling Analysis

- ◀ Home Based Work Trips (HBW) were analyzed from the MAG TransCAD model.
- ◀ Purpose was to understand the destinations of HBW within the corridor for year 2007 and 2030.
- ◀ Nearly 172,000 originated within the corridor, with 38% of these trips remaining within the corridor.



Percent Destination of Corridor Work Trips  
Year 2007 %  
(Year 2030 %)

# Commuter Rail System Study Purpose and Key Elements

# Purpose of the Project

- ◀ Evaluate commuter rail options for the MAG region and the potential connecting routes immediately adjacent to the MAG region.
- ◀ Establish priorities for implementing commuter rail service through the evaluation of ridership potential, operating strategies, and associated capital and operating costs.
- ◀ Evaluate existing freight corridors and possible rail extension areas identified in the Commuter Rail Strategic Plan.

# MAG Commuter Rail System Study

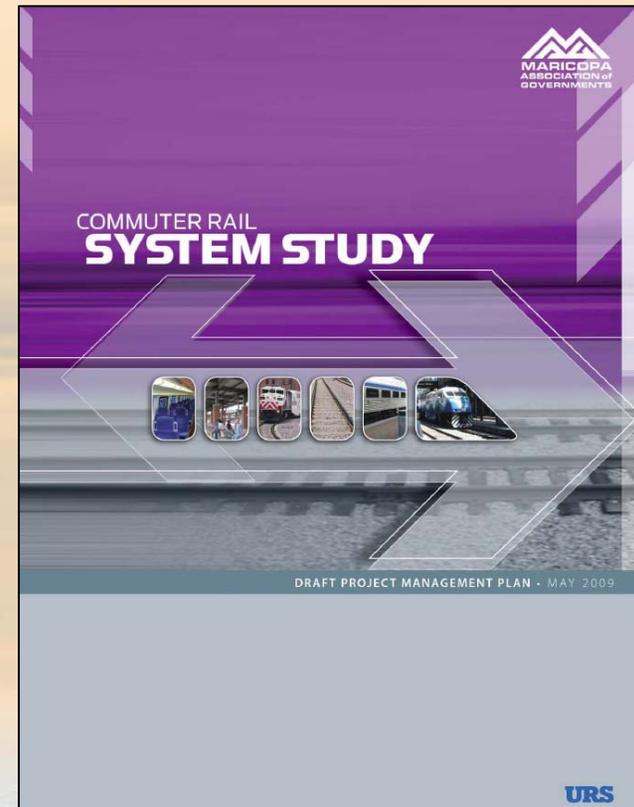
## ◀ **Key Elements:**

- Analysis of regional ridership potential
- Operating strategies and transit connectivity
- Railroad coordination
- Collaboration with statewide and inter-regional planning processes

# MAG Commuter Rail System Study (cont.)

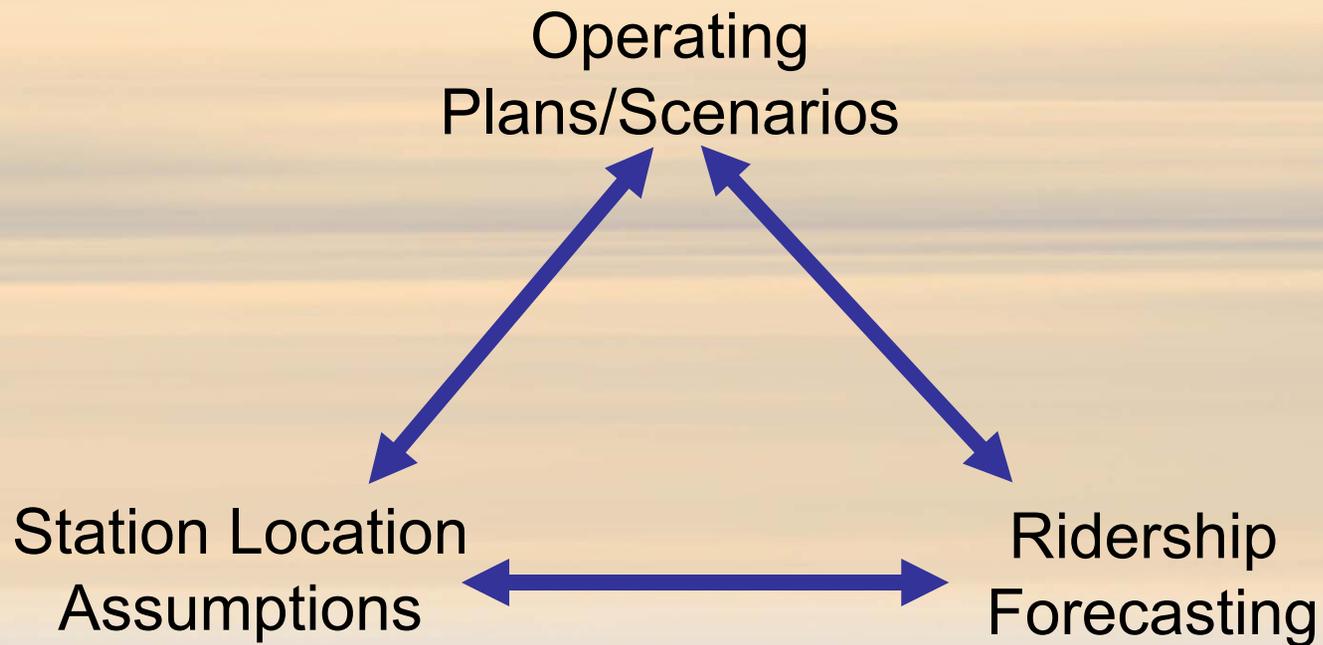
## < Key Elements:

- Prioritize corridors:
  - ▶ Conceptual level financial analysis
    - Service implementation
    - FTA New Starts funding



# Commuter Rail Planning Study Factors

# Operations/Stations/Ridership



# Operations/Stations/Ridership (cont.)

- 1. Develop initial operating concepts**
- 2. Review/refine initial regional assumptions for stations:**
  - ▶ High-Capacity Transit Study
  - ▶ Commuter Rail Strategic Plan
  - ▶ Regional Transit Framework Study

# Operations/Stations/Ridership (cont.)

## 3. Refine operating plans

- ▶ Station spacing
- ▶ Run times (including dwell times)
- ▶ Fleet size assumptions

## 4. Input into travel demand forecasting process

## 5. Run forecasts

- ▶ Stand-alone corridors first; evaluate vs. No Action
- ▶ Interlining or networks next; evaluate vs. No Action
- ▶ Model runs in July

# Cost Methodologies

## Capital costs:

1. **Grand/Yuma Corridors**: based on individual infrastructure components (length of track, number of turnouts, special conditions, etc.) since more detail is available
2. **System Study Corridors**: unit per-mile costs based on current industry costs, engineering/ constructability issues, railroad issues (sliding scale based on degree of complexity)

# Cost Methodologies (cont.)

Operating and maintenance costs:

1. **All Corridors**: based on analysis of comparable systems; latest estimates for labor, fuel, etc.; National Transit Database reports on operating costs.

# Commuter Rail Corridor Evaluation Process

- ◀ **Developed as many comparable categories and criteria as possible, which focused on:**
  - ▶ Primary mode choice
  - ▶ Rider perception
  - ▶ System/policy compatibility
  - ▶ Cost-effectiveness
  - ▶ Implementation/constructability

# Commuter Rail Corridor Evaluation Process (cont.)

## ◀ **Primary mode choice:**

- Estimated corridor end-to-end travel time savings
- Total daily ridership forecast
- Total peak hour ridership forecast

## ◀ **Rider perception:**

- Direct connections to activity centers

# Commuter Rail Corridor Evaluation Process (cont.)

## ◀ **System/Policy Compatibility:**

- Land use compatibility
- Impact on Regional Travel and Air Quality

## ◀ **Cost effectiveness:**

Total capital cost per corridor or system mile

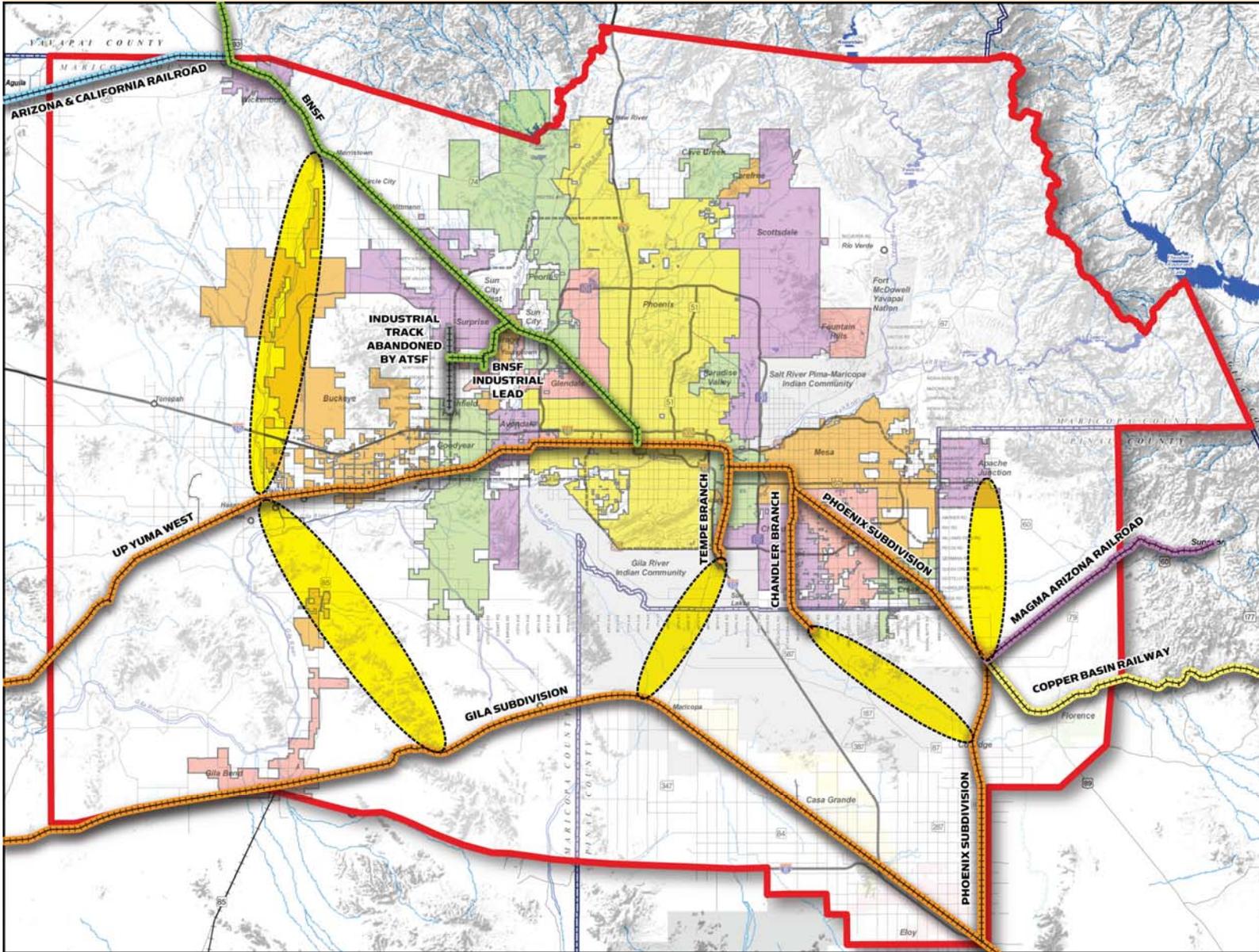
- Total annualized capital and O & M cost per corridor or system mile
- Annual O & M cost per annual rider
- Total annual cost per annual rider
- Annual cost per travel time savings

# Commuter Rail Corridor Evaluation Process (cont.)

## < **Implementation / constructability:**

- Ease of implementation/constructability (issues related to ROW, environmental factors, etc.)
- Compatibility with freight railroad
- Benefit to adjacent or crossing highway infrastructure

# Corridor/Segment Review



**MAG COMMUTER RAIL STRATEGIC PLAN**

**EXISTING RAILROADS & POSSIBLE EXTENSIONS**

**Legend**

-  BNSF
-  UP Mainline
-  Magma Arizona Railroad
-  Copper Basin Railway
-  Arizona & California Railroad (AZRC) (since 1991)
-  Industrial track abandoned by ATSF (early 1990s)
-  Possible rail extension areas
-  Commuter Rail Study Area



Source: URS

Date: Jan. 2008

# Corridor Segment Assumptions

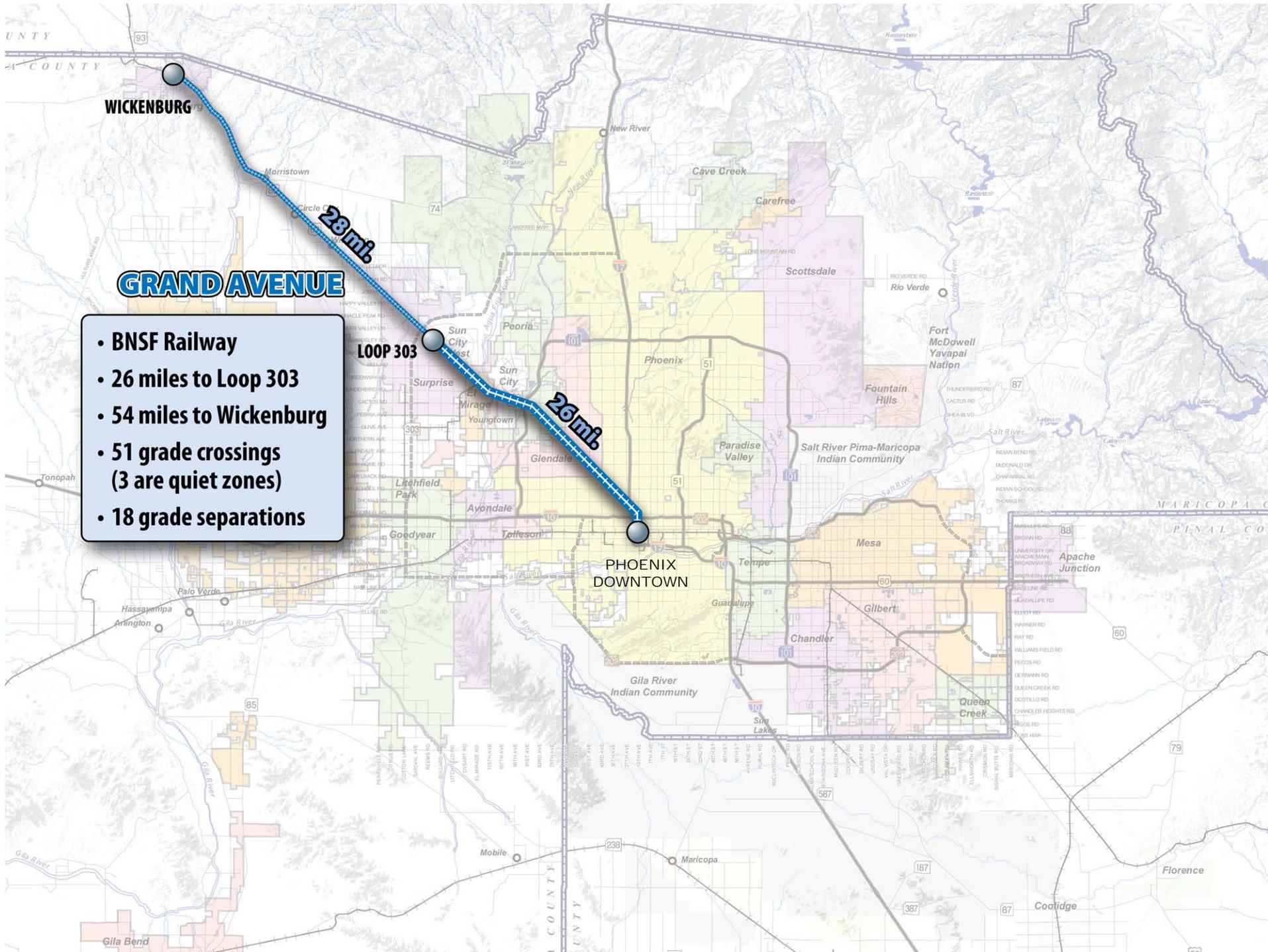
## ◀ **Extent of rail line**

## ◀ **Minimum Cost:**

- Initial Service
- One or more corridors
- Limited capital improvements
- Peak period service focus

## ◀ **Maximum Service:**

- Full corridor or system
- Peak period and all day service
- Significant capital improvements



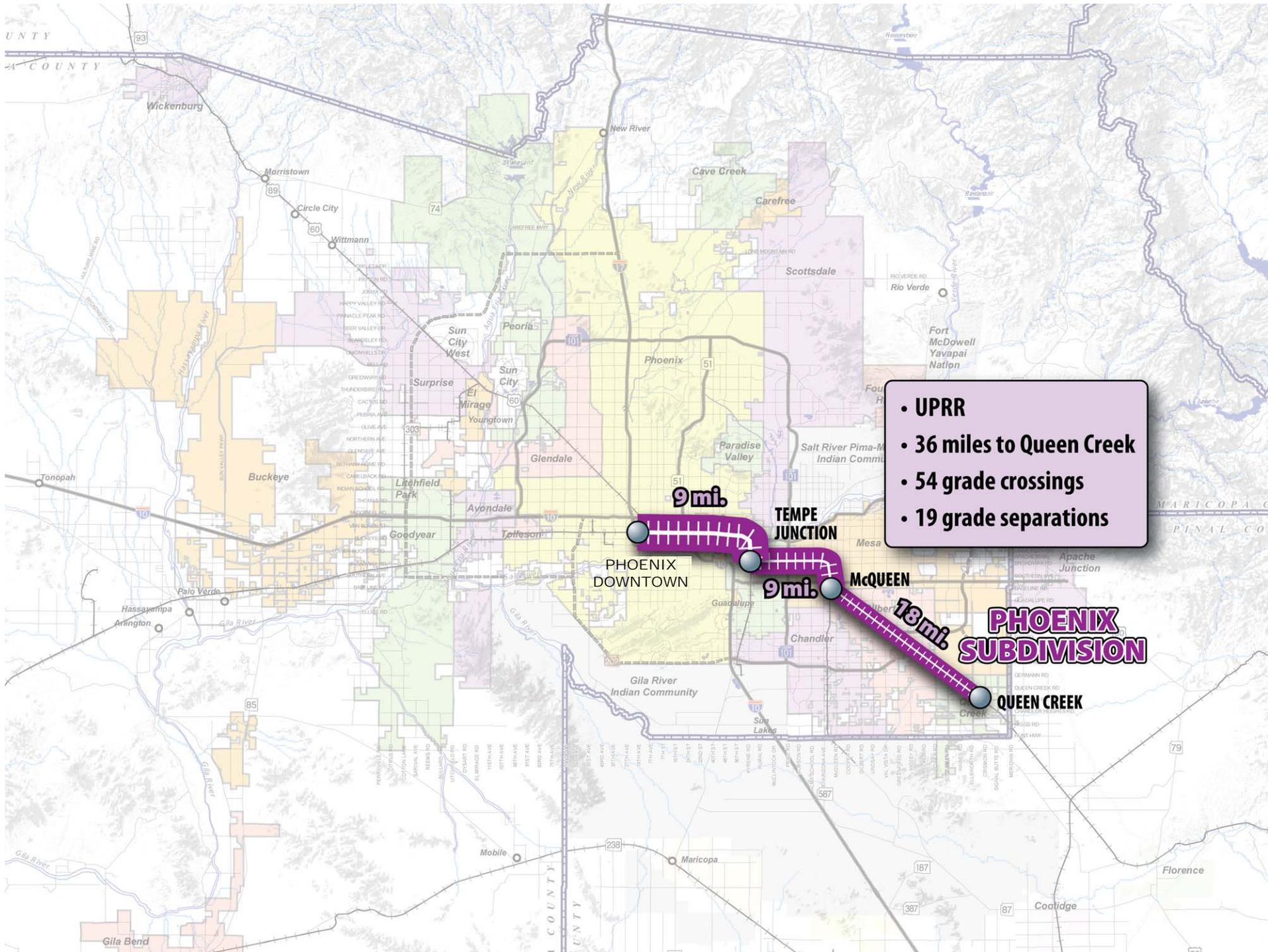
# GRAND AVENUE

- BNSF Railway
- 26 miles to Loop 303
- 54 miles to Wickenburg
- 51 grade crossings (3 are quiet zones)
- 18 grade separations

28 mi.

26 mi.





- UPRR
- 36 miles to Queen Creek
- 54 grade crossings
- 19 grade separations

**PHOENIX SUBDIVISION**

PHOENIX DOWNTOWN

TEMPE JUNCTION

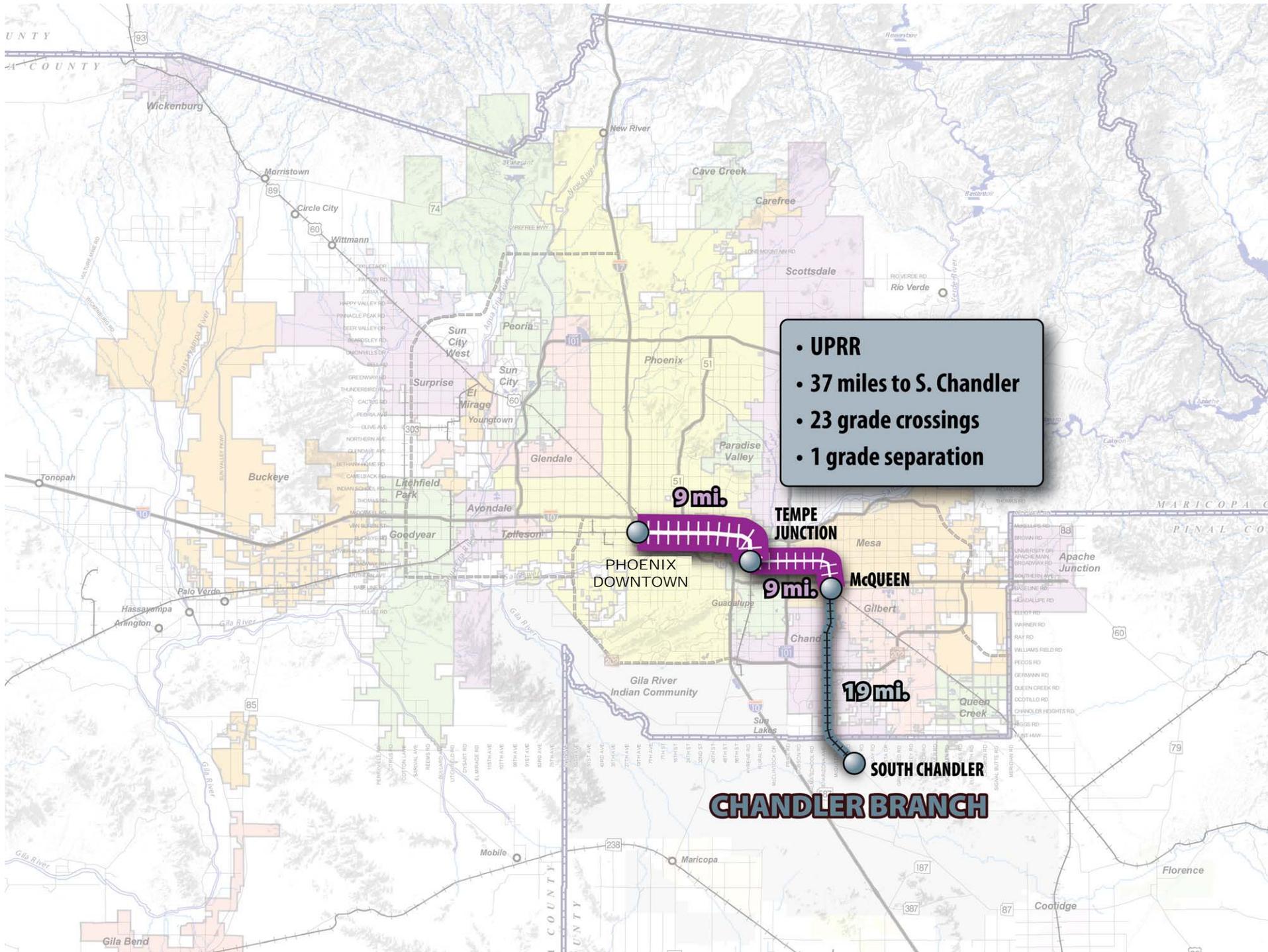
McQUEEN

QUEEN CREEK

9 mi.

9 mi.

13 mi.



- UPRR
- 37 miles to S. Chandler
- 23 grade crossings
- 1 grade separation

9 mi.

PHOENIX  
DOWNTOWN

TEMPE  
JUNCTION

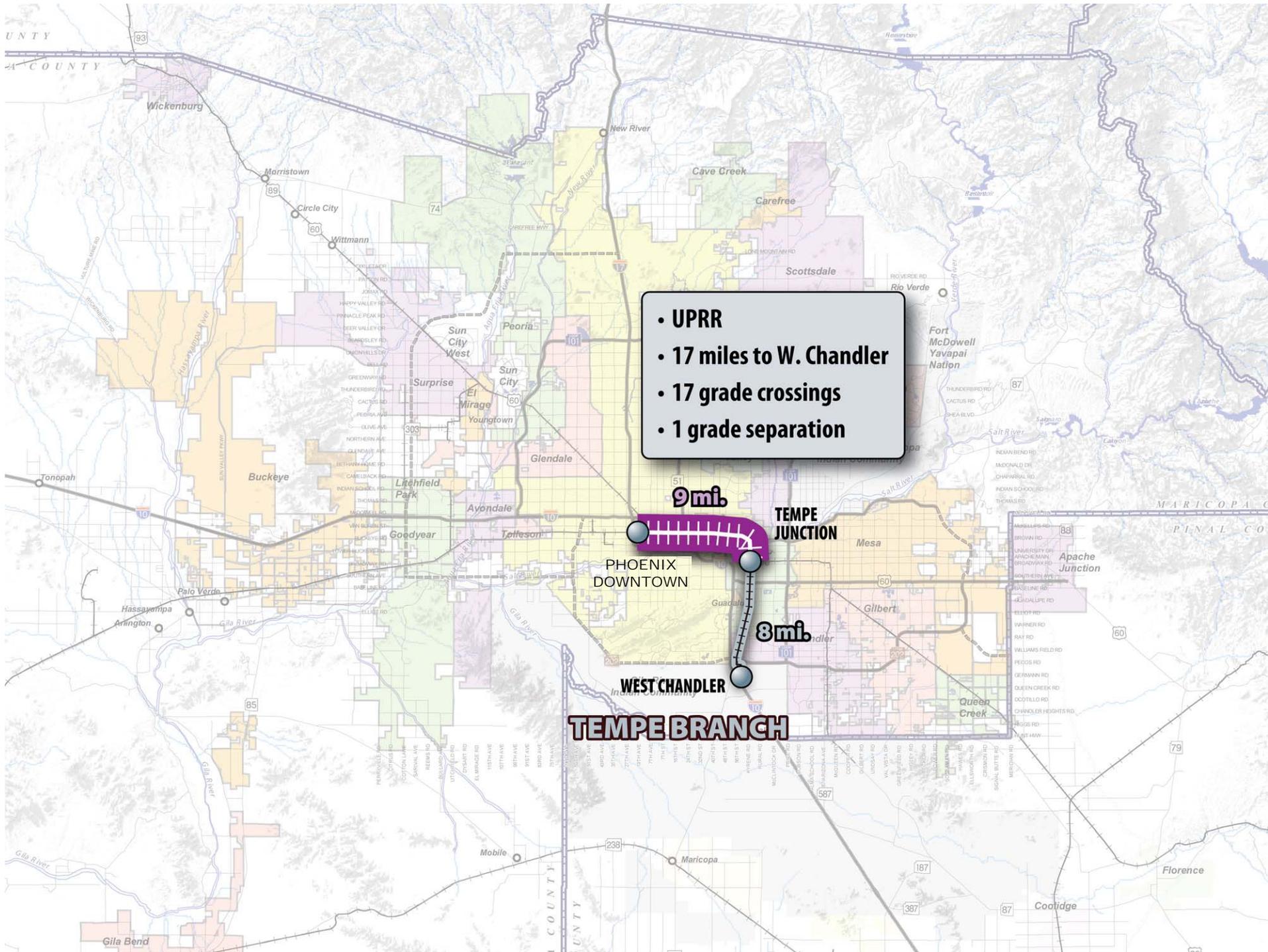
9 mi.

McQUEEN

19 mi.

SOUTH CHANDLER

# CHANDLER BRANCH



- UPRR
- 17 miles to W. Chandler
- 17 grade crossings
- 1 grade separation

9 mi.

PHOENIX  
DOWNTOWN

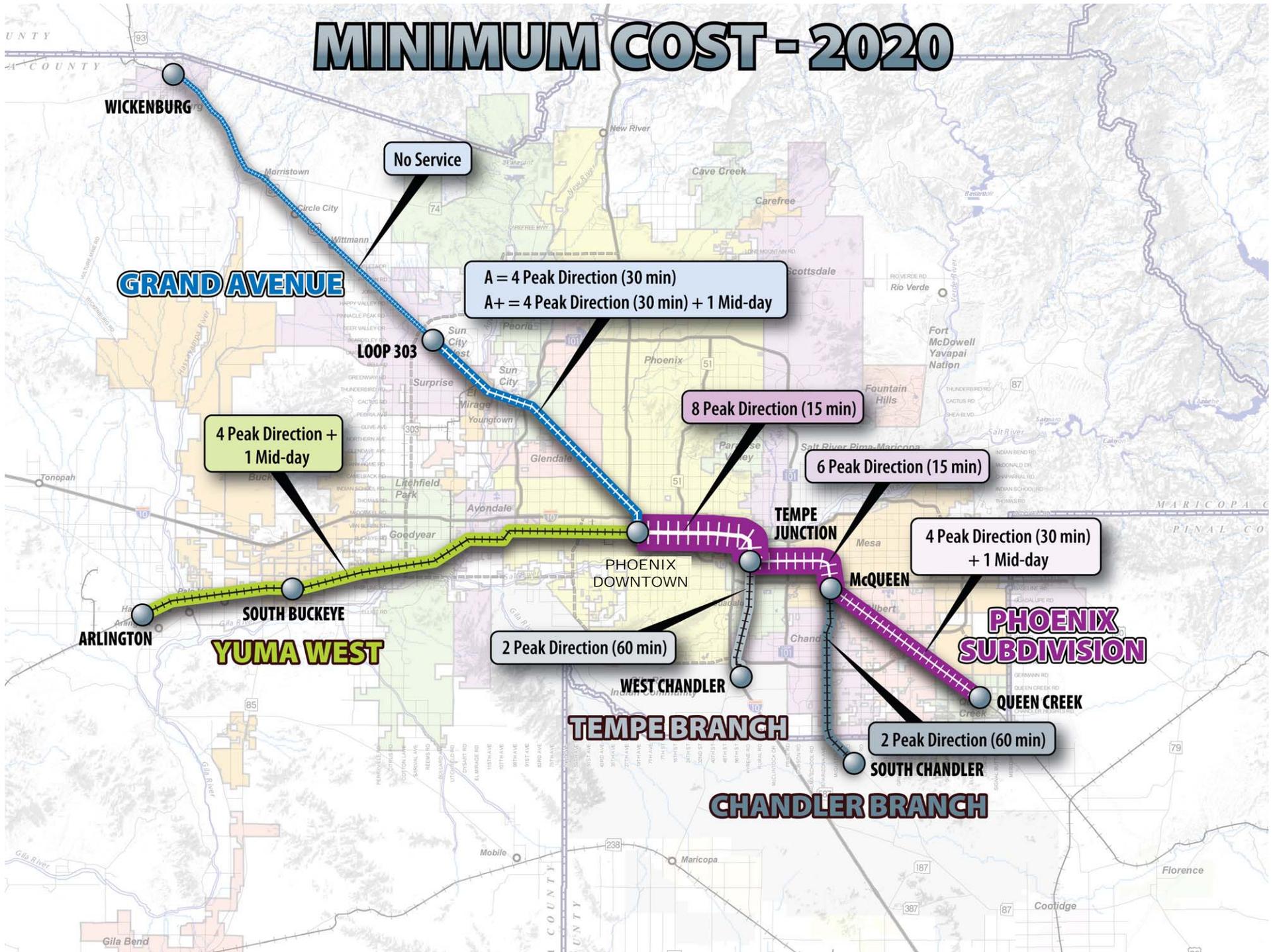
TEMPE  
JUNCTION

8 mi.

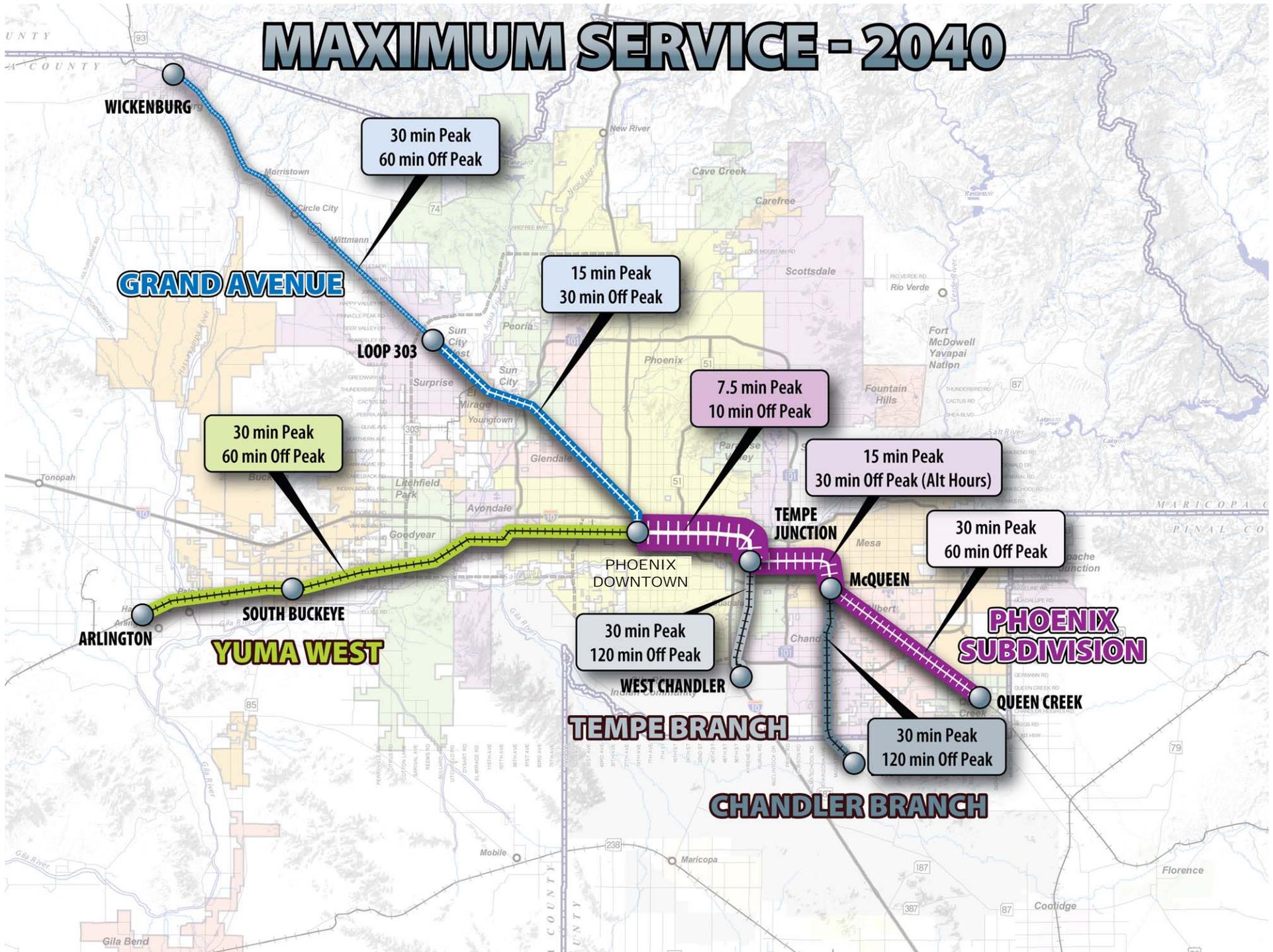
WEST CHANDLER

**TEMPE BRANCH**

# MINIMUM COST - 2020

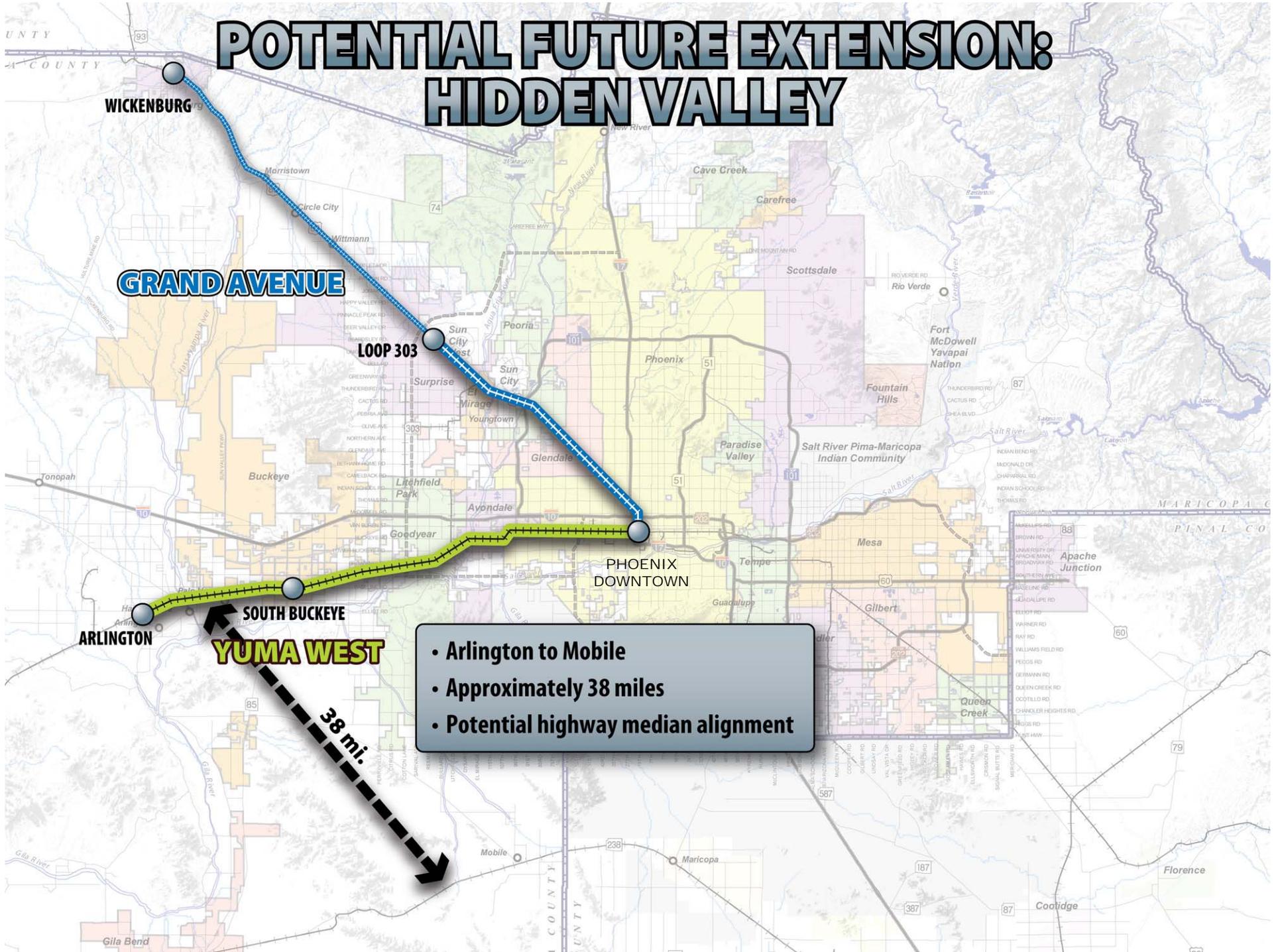


# MAXIMUM SERVICE - 2040





# POTENTIAL FUTURE EXTENSION: HIDDEN VALLEY



**GRAND AVENUE**

**LOOP 303**

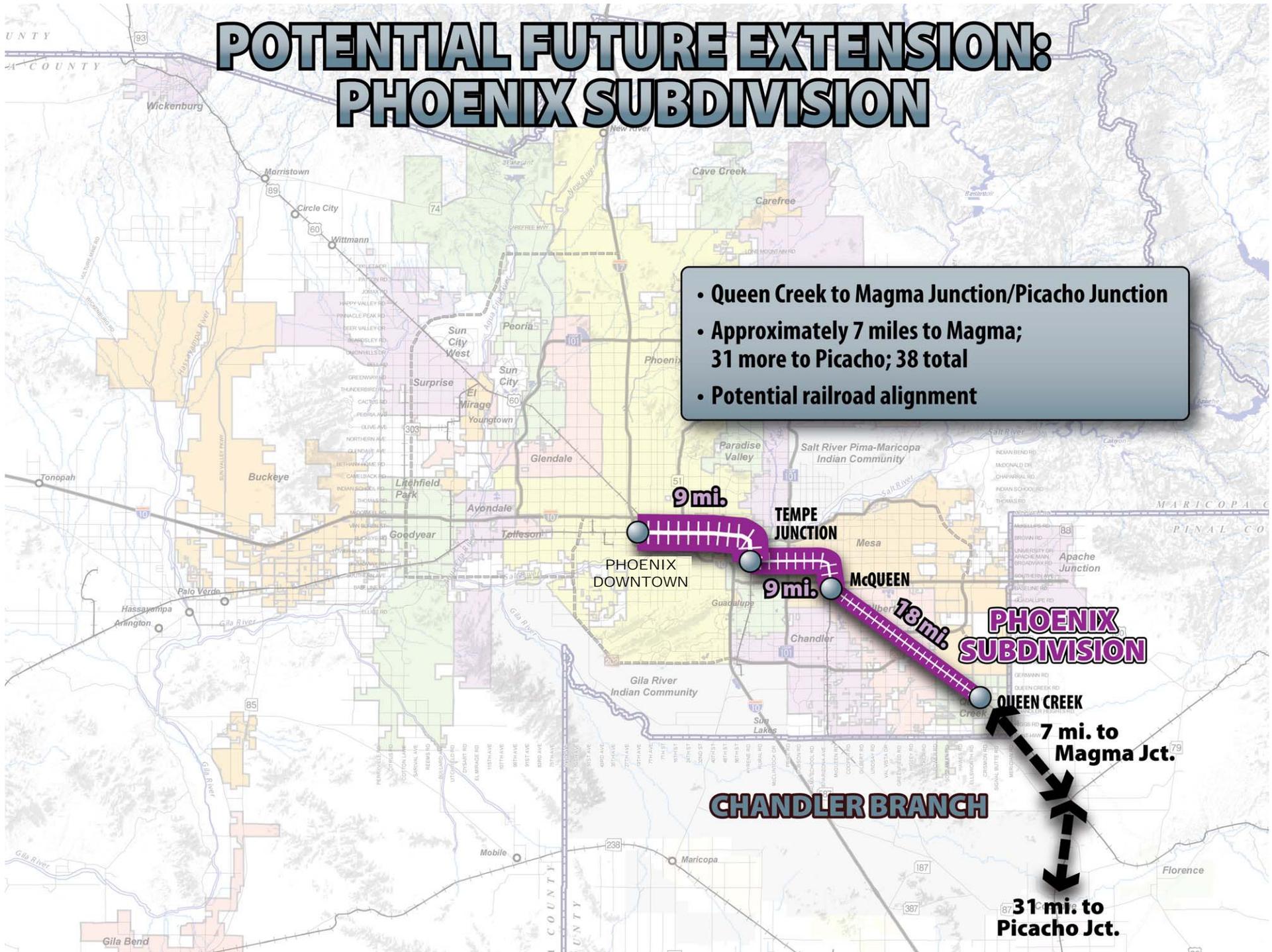
**SOUTH BUCKEYE**  
**YUMA WEST**

**38 mi.**

- Arlington to Mobile
- Approximately 38 miles
- Potential highway median alignment

# POTENTIAL FUTURE EXTENSION: PHOENIX SUBDIVISION

- Queen Creek to Magma Junction/Picacho Junction
- Approximately 7 miles to Magma; 31 more to Picacho; 38 total
- Potential railroad alignment



9 mi.

9 mi.

13 mi.

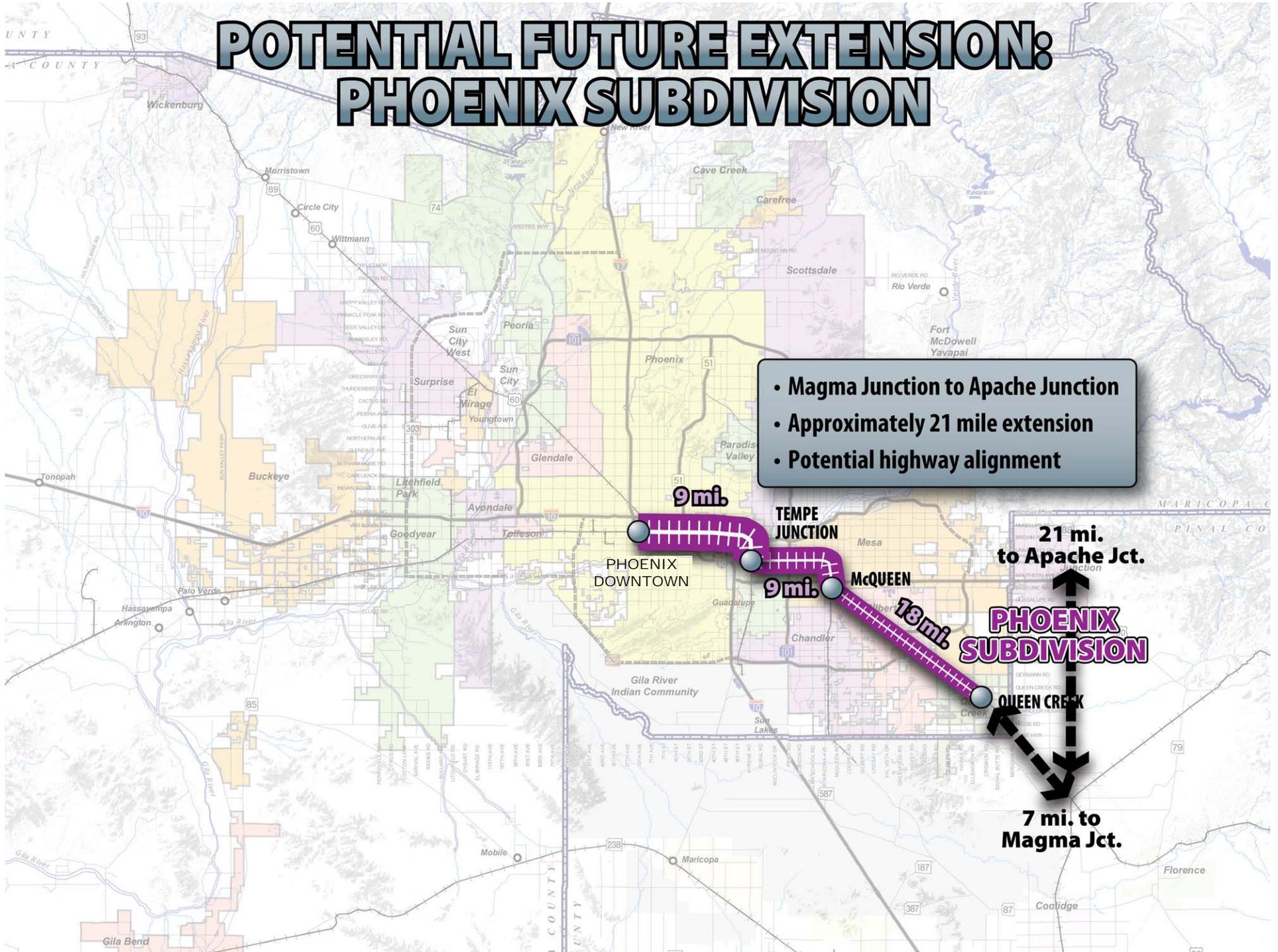
**PHOENIX  
SUBDIVISION**

**7 mi. to  
Magma Jct.**

**CHANDLER BRANCH**

**31 mi. to  
Picacho Jct.**

# POTENTIAL FUTURE EXTENSION: PHOENIX SUBDIVISION



- Magma Junction to Apache Junction
- Approximately 21 mile extension
- Potential highway alignment

9 mi.

PHOENIX DOWNTOWN

9 mi.

13 mi.

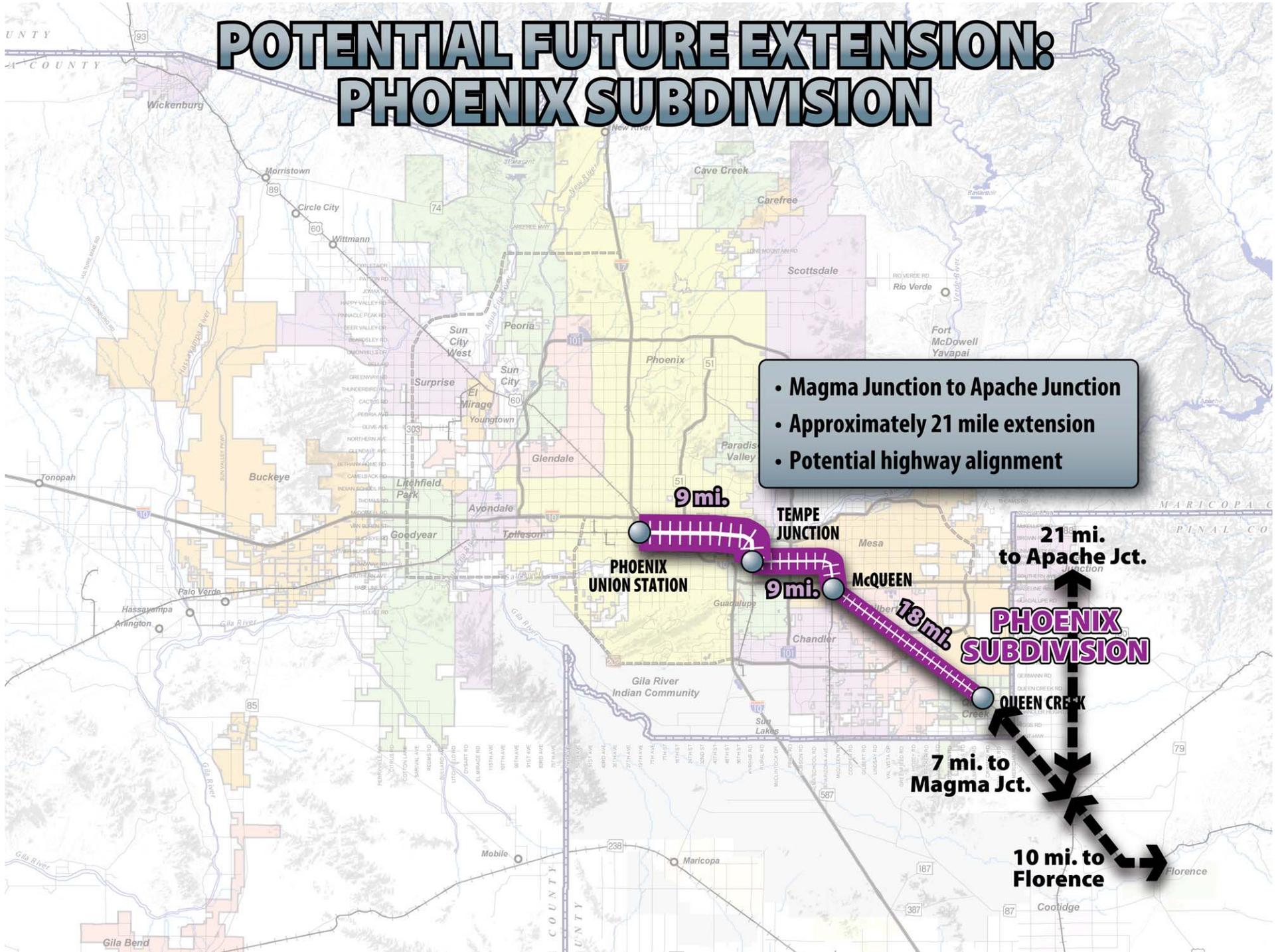
**PHOENIX SUBDIVISION**

QUEEN CREEK

21 mi. to Apache Jct.

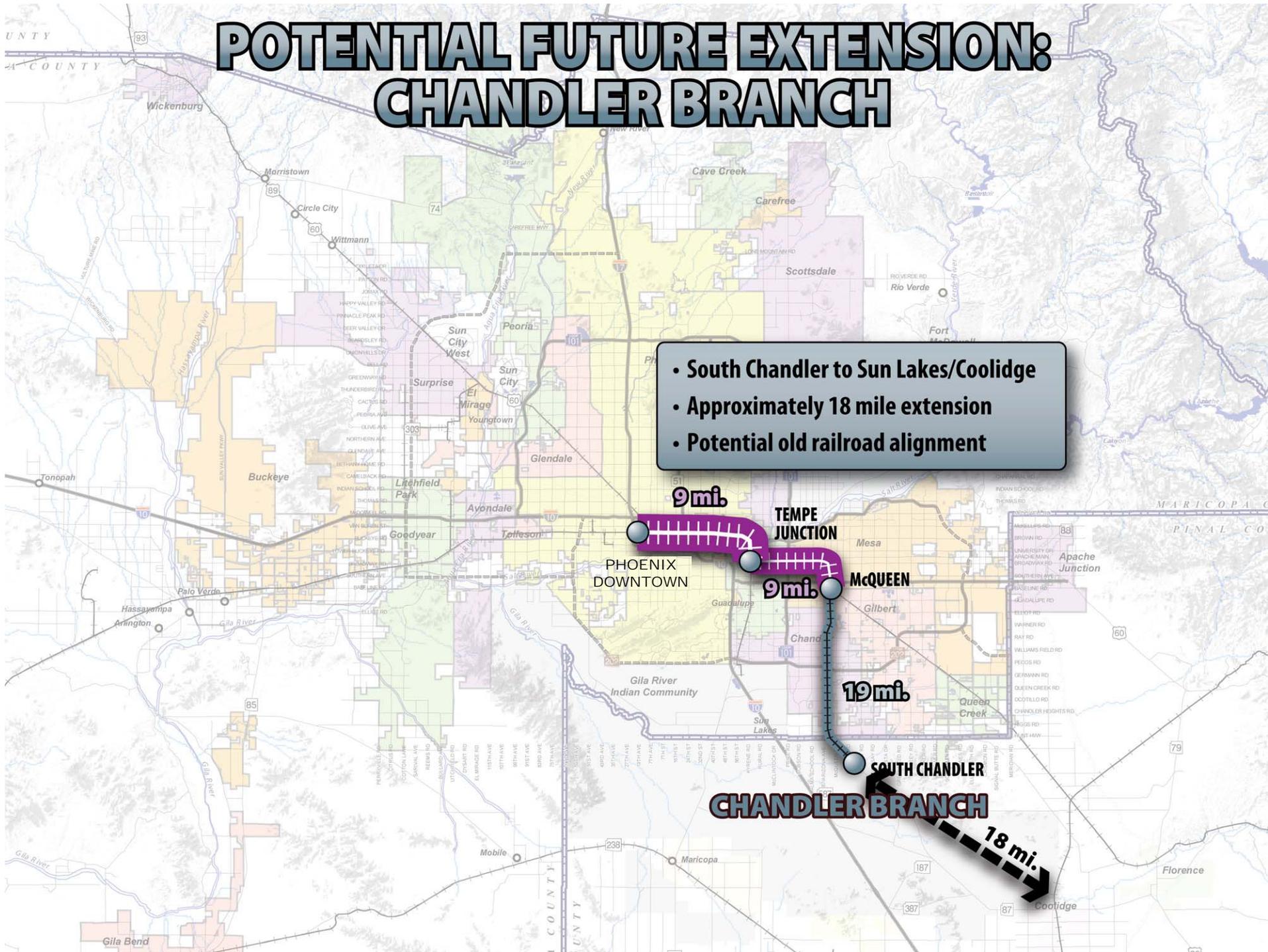
7 mi. to Magma Jct.

# POTENTIAL FUTURE EXTENSION: PHOENIX SUBDIVISION



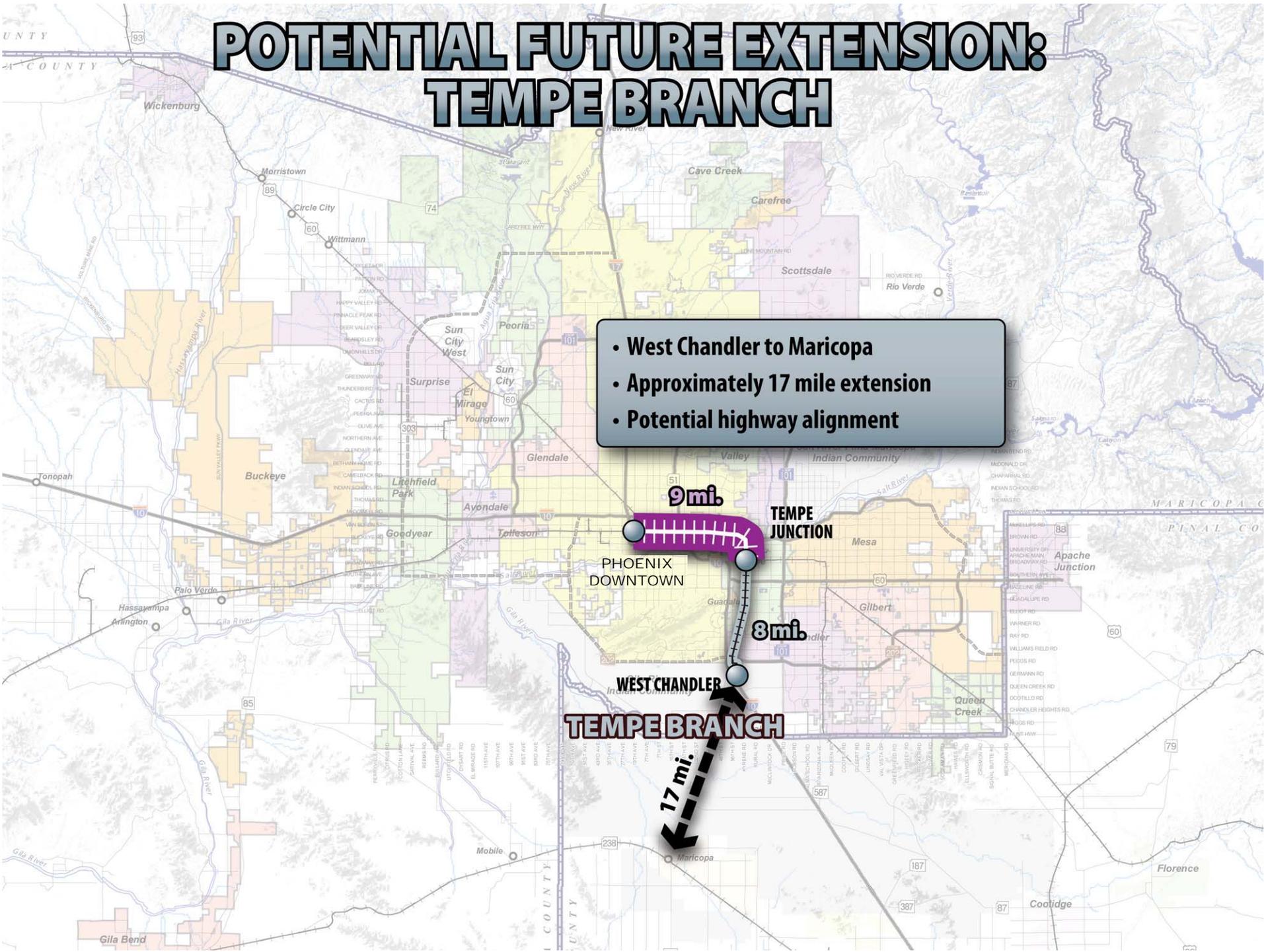
# POTENTIAL FUTURE EXTENSION: CHANDLER BRANCH

- South Chandler to Sun Lakes/Coolidge
- Approximately 18 mile extension
- Potential old railroad alignment



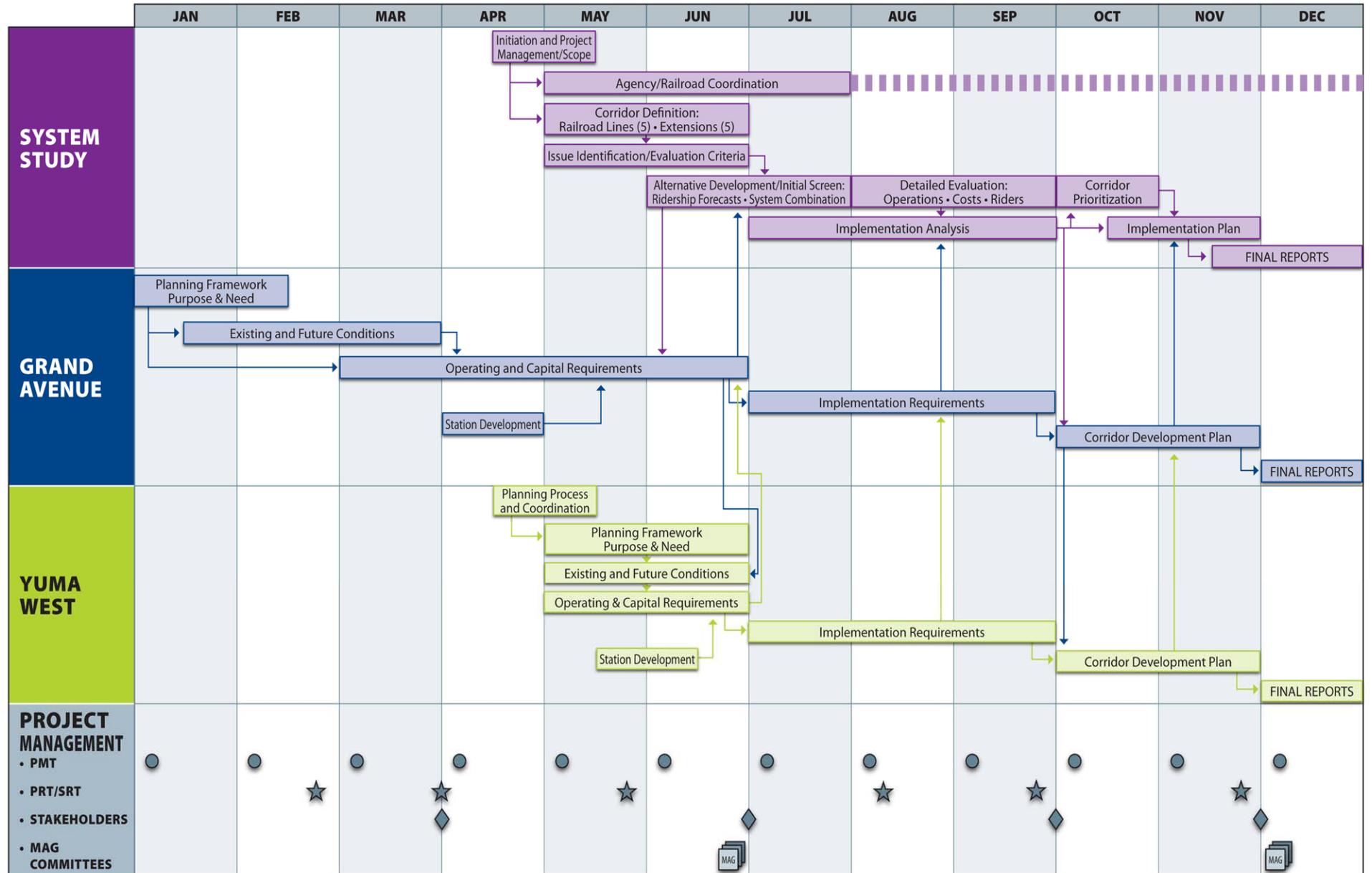
# POTENTIAL FUTURE EXTENSION: TEMPE BRANCH

- West Chandler to Maricopa
- Approximately 17 mile extension
- Potential highway alignment



# Project Schedule

# COMMUTER RAIL PROJECT INTEGRATION - DRAFT



June 5, 2009

Thank you!

Q & A