

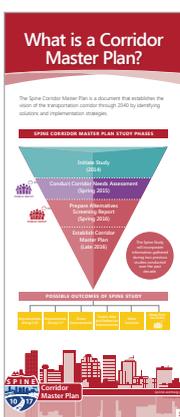
Welcome

THANK YOU FOR ATTENDING!

Purpose of This Meeting

- Present study overview, existing and future conditions and potential improvement strategies for the Spine Corridor.
- Present an overview of how alternatives will be evaluated.
- Provide an opportunity for public comment.

TONIGHT'S MEETING CONSISTS OF 3 COMPONENTS:



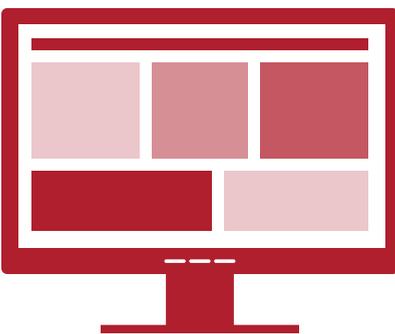
Banners

- You are encouraged to start here and review the banners in sequence. These banners will help you learn about the study process, the work completed to date and the next steps.



Aerial Map

- View a detailed map of the study area.
- Speak with study team members.



MetroQuest Computer Survey

- Complete this short online survey and provide your priorities and preferences to the study team.



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What is the Spine Study?

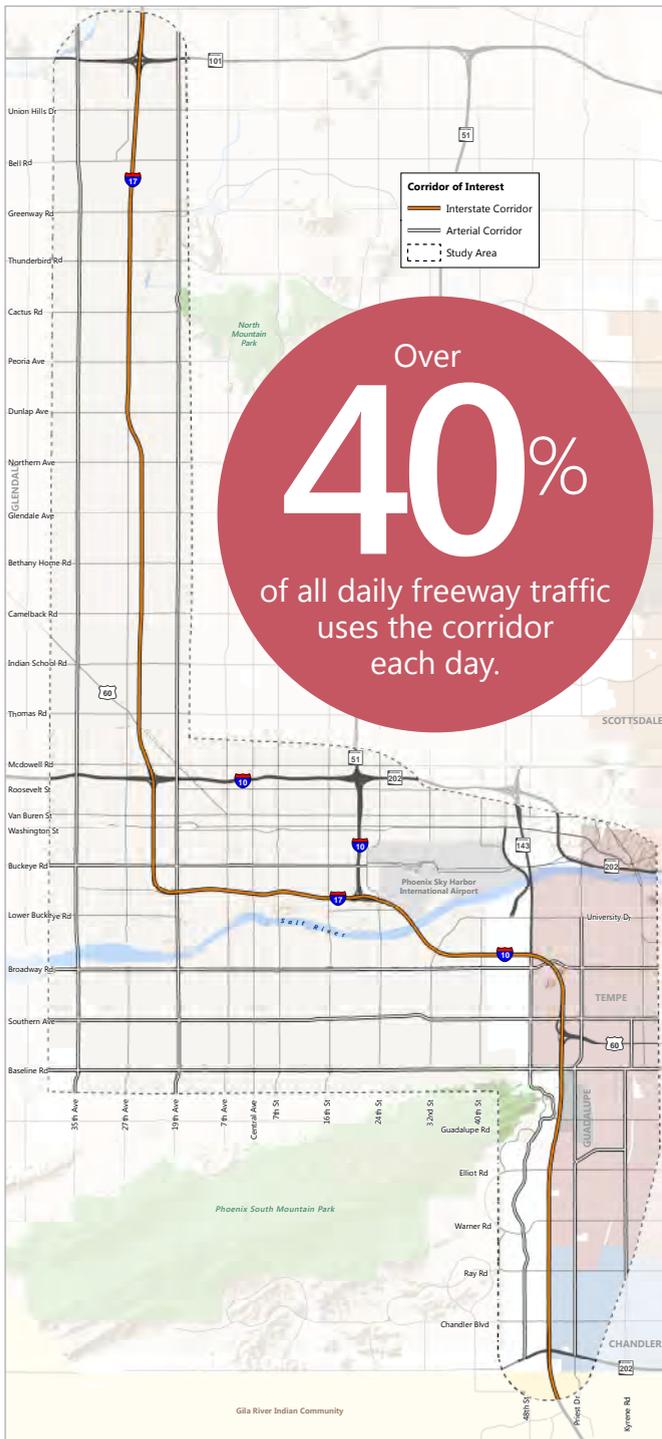


The Interstate 10/Interstate 17 Corridor Master Plan Study is a proactive effort to anticipate and respond to future traffic needs for both freeways and streets in the corridor by 2040. The study is conducted by the Maricopa Association of Governments (MAG), in partnership with the Federal Highway Administration (FHWA) and the Arizona Department of Transportation (ADOT). This corridor has been named the "Spine," because it serves as the backbone for transportation in the metropolitan Phoenix area. The study also will evaluate all modes of transportation, including cars, transit, biking, freight and walking.

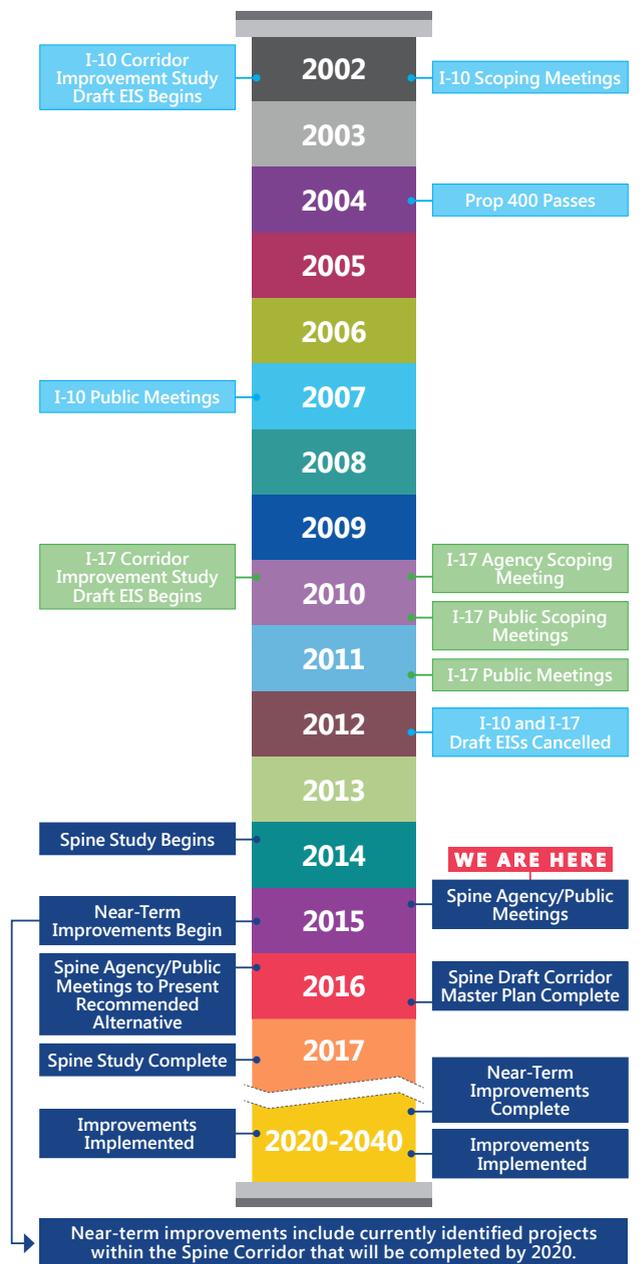
The Study Area includes freeways, streets and major transit corridors. This area was delineated to include all major transportation routes that could reasonably be considered alternatives to I-10 and I-17.

THE SPINE STUDY GOALS ARE TO:

- Identify future transportation needs in corridor.
- Develop a plan to accommodate future needs.
- Create a strategy to implement the plan.
- Ask what goals you'd like to see.



CORRIDOR MILESTONES



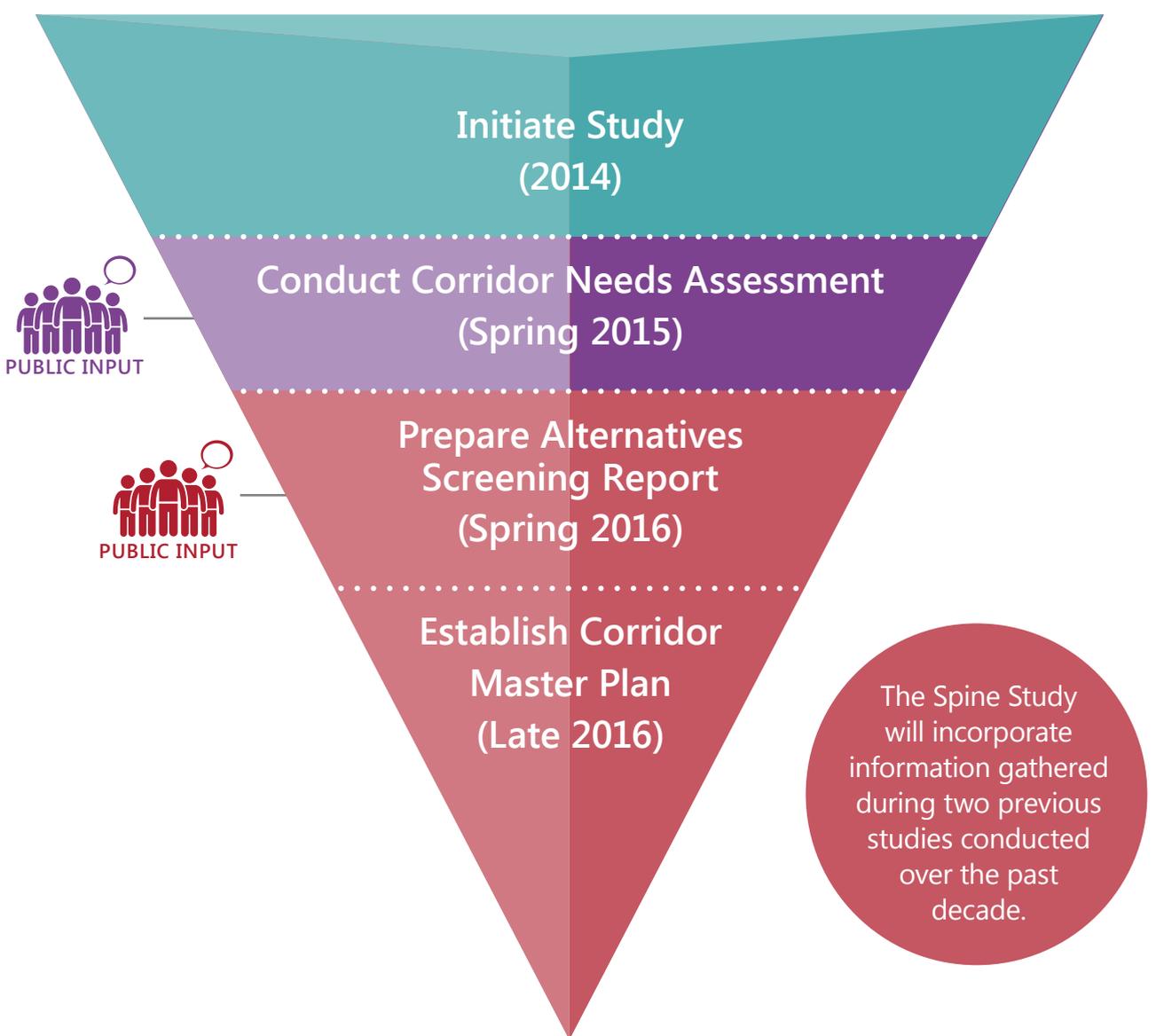
SEE BANNERS 5 & 21 FOR MORE INFORMATION.



What is a Corridor Master Plan?

The Spine Corridor Master Plan is a document that establishes the vision of the transportation corridor through 2040 by identifying solutions and implementation strategies.

SPINE CORRIDOR MASTER PLAN STUDY PHASES



POSSIBLE OUTCOMES OF SPINE STUDY



Corridor Master Plan

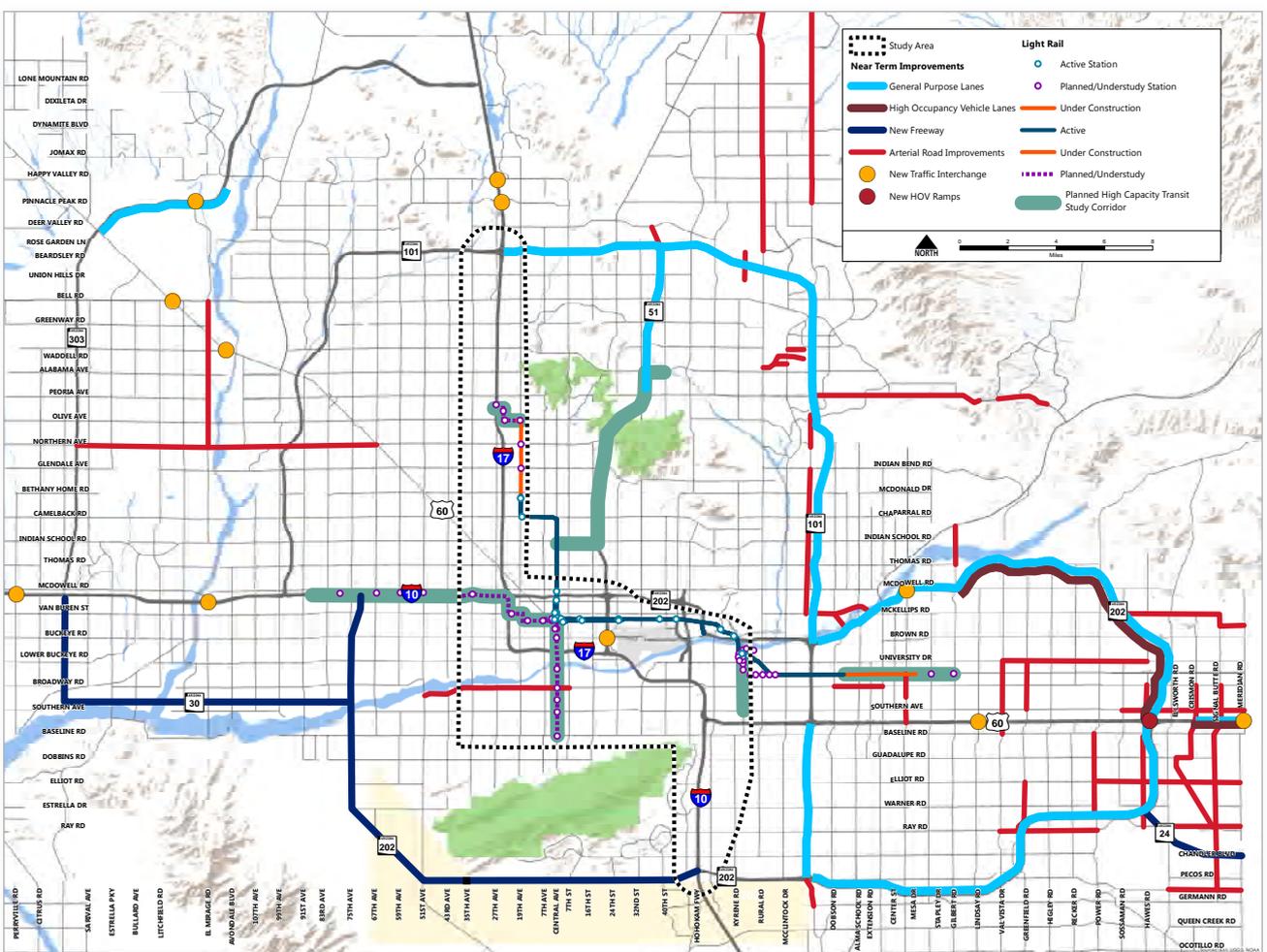
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What other projects are currently planned in the region?

The *Regional Transportation Plan* has identified projects throughout the Valley for construction. These projects are in addition to the improvements that will be recommended through this study.

PROJECTS PLANNED THROUGHOUT THE VALLEY



Did You Know?

No additional lanes will fit through the Deck Park Tunnel.



New lanes cannot be added to I-10 inside the park tunnel due to space constraints. Consequently, I-17 around the Durango Curve represents the best opportunity to improve freeway traffic flow in and around downtown Phoenix.

TECHNOLOGY ENHANCEMENTS PLANNED FOR THE REGION

- Faster and safer traffic diversions from the freeway during incidents.
- New technology on freeways and arterials to make them work better together.
- Smarter ramp meters that adjust to traffic flow.
- Expanded real-time information for travelers to make informed choices.
- Travel times on adjacent streets.

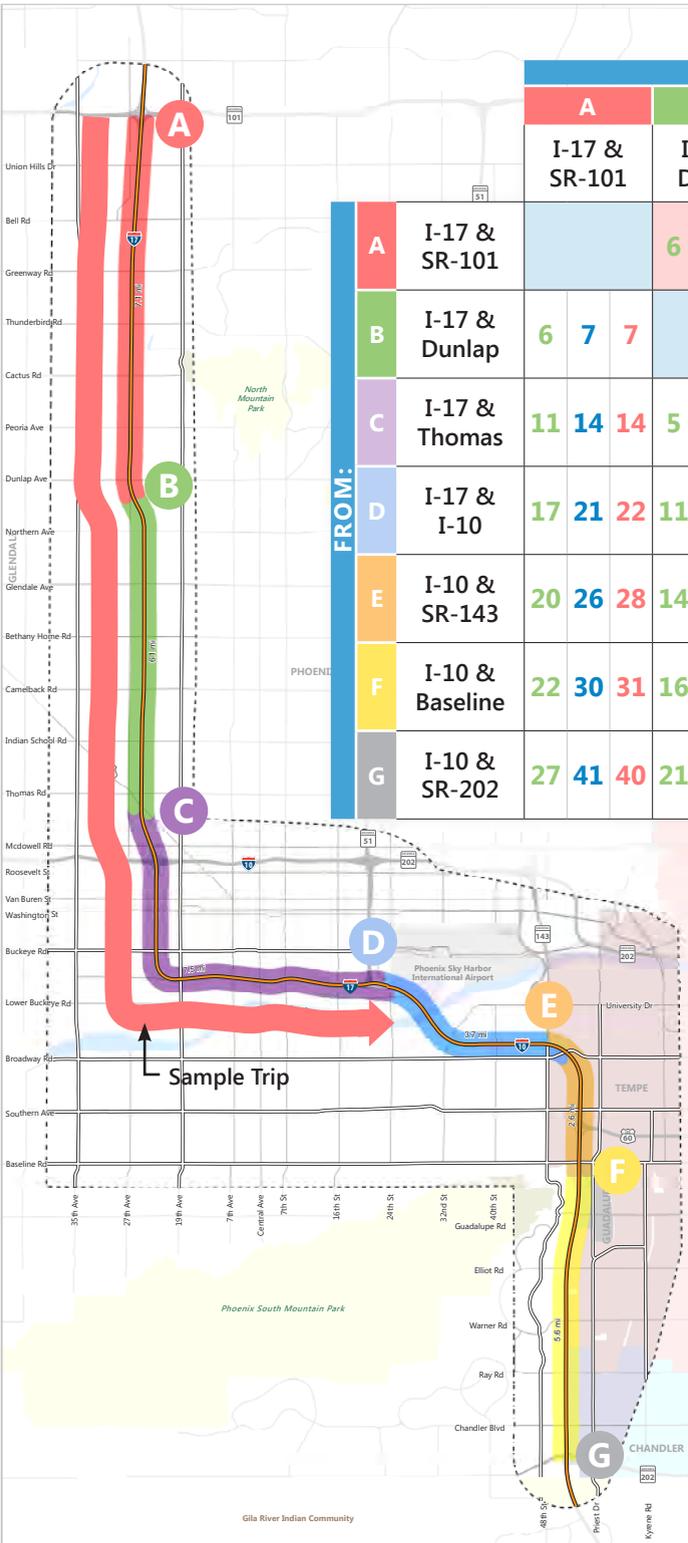


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How will travel times change in the morning over the next 25 years?



MORNING TRAVEL TIME MATRIX:

		TO:						
		A	B	C	D	E	F	G
		I-17 & SR-101	I-17 & Dunlap	I-17 & Thomas	I-17 & I-10	I-10 & SR-143	I-10 & Baseline	I-10 & SR-202
FROM:	A		6 11 13	11 25 30	17 37 47	20 41 53	22 43 55	27 48 60
	B	6 7 7		5 14 17	11 26 34	14 30 40	16 32 42	21 37 47
	C	11 14 14	5 7 7		6 12 17	9 16 23	11 18 25	16 23 30
	D	17 21 22	11 14 15	6 7 8		3 4 6	5 6 8	10 11 13
	E	20 26 28	14 19 21	9 12 14	3 5 6		2 2 2	7 7 7
	F	22 30 31	16 23 24	11 16 17	5 9 9	2 4 3		5 5 5
	G	27 41 40	21 34 33	16 27 26	10 20 18	7 15 12	5 11 9	

MORNING TRAVEL TIME IN MINUTES:

- # - Uncongested Conditions
- # - 2040
- - Sample Trip Travel Time
- # - Today

HOW TO READ THE MATRIX – 2040 SAMPLE TRIP TRAVEL TIME:

From **A** to **D** =

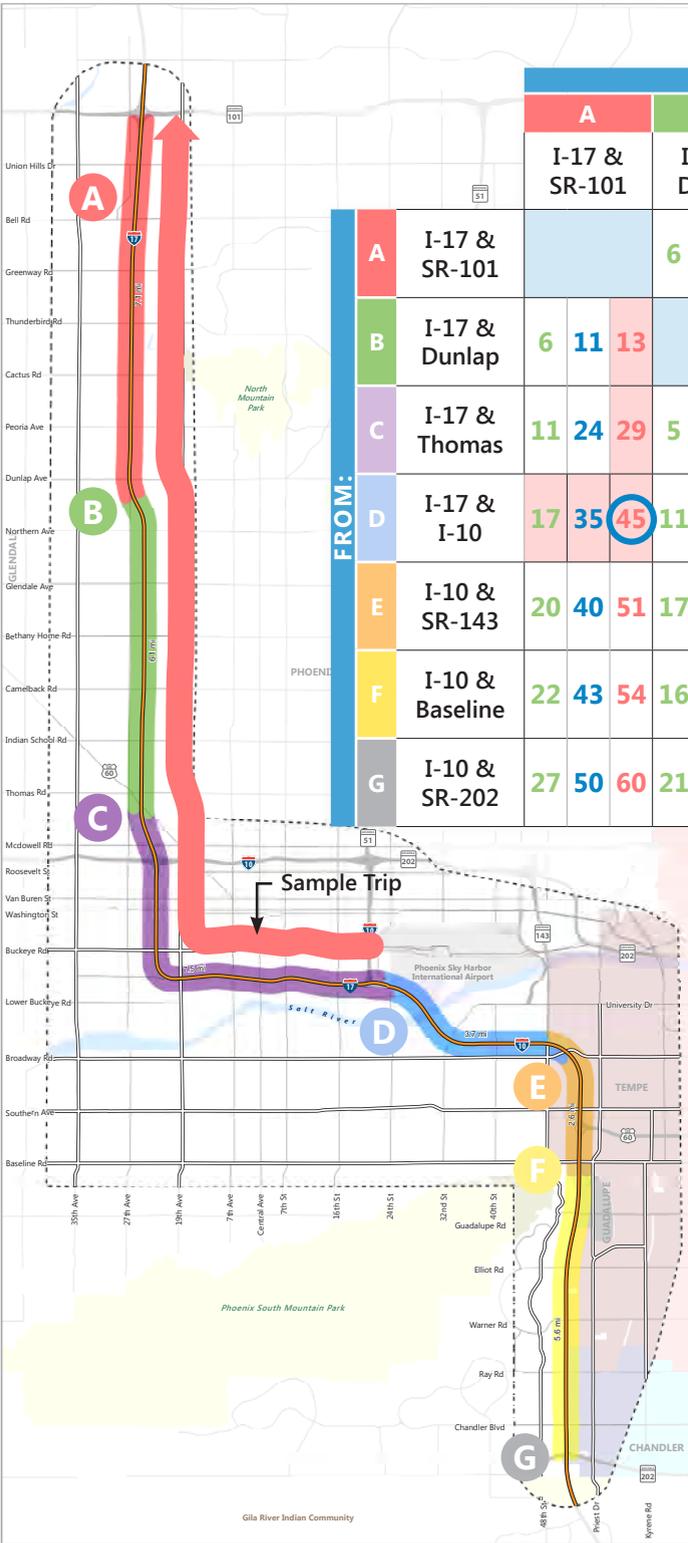


Did You Know ?

In 2040, drivers commuting between I-17/Loop 101 and Downtown will take a total of **87** more hours per year. That equals **3.6** more days commuting compared to 2014.



How will travel times change in the evening over the next 25 years?



EVENING TRAVEL TIME MATRIX:

		TO:						
		A	B	C	D	E	F	G
		I-17 & SR-101	I-17 & Dunlap	I-17 & Thomas	I-17 & I-10	I-10 & SR-143	I-10 & Baseline	I-10 & SR-202
FROM:	A		6 8 9	11 17 18	17 26 23	20 32 36	22 36 33	27 47 47
	B	6 11 13		5 9 9	11 18 20	14 24 27	16 28 30	21 29 38
	C	11 24 29	5 13 16		6 9 11	9 15 18	11 19 21	16 30 29
	D	17 35 45	11 24 32	6 11 16		3 6 7	5 10 10	10 21 18
	E	20 40 51	17 29 38	9 16 22	3 5 6		2 4 3	7 15 11
	F	22 43 54	16 32 41	11 19 25	5 8 9	2 3 3		5 11 8
	G	27 50 60	21 39 47	16 26 31	10 15 15	7 10 9	5 7 6	

EVENING TRAVEL TIME IN MINUTES:

- # - Uncongested Conditions
- # - 2040
- - Sample Trip Travel Time
- # - Today

HOW TO READ THE MATRIX – 2040 SAMPLE TRIP TRAVEL TIME:

From **D** to **A** =

Total
45
minutes

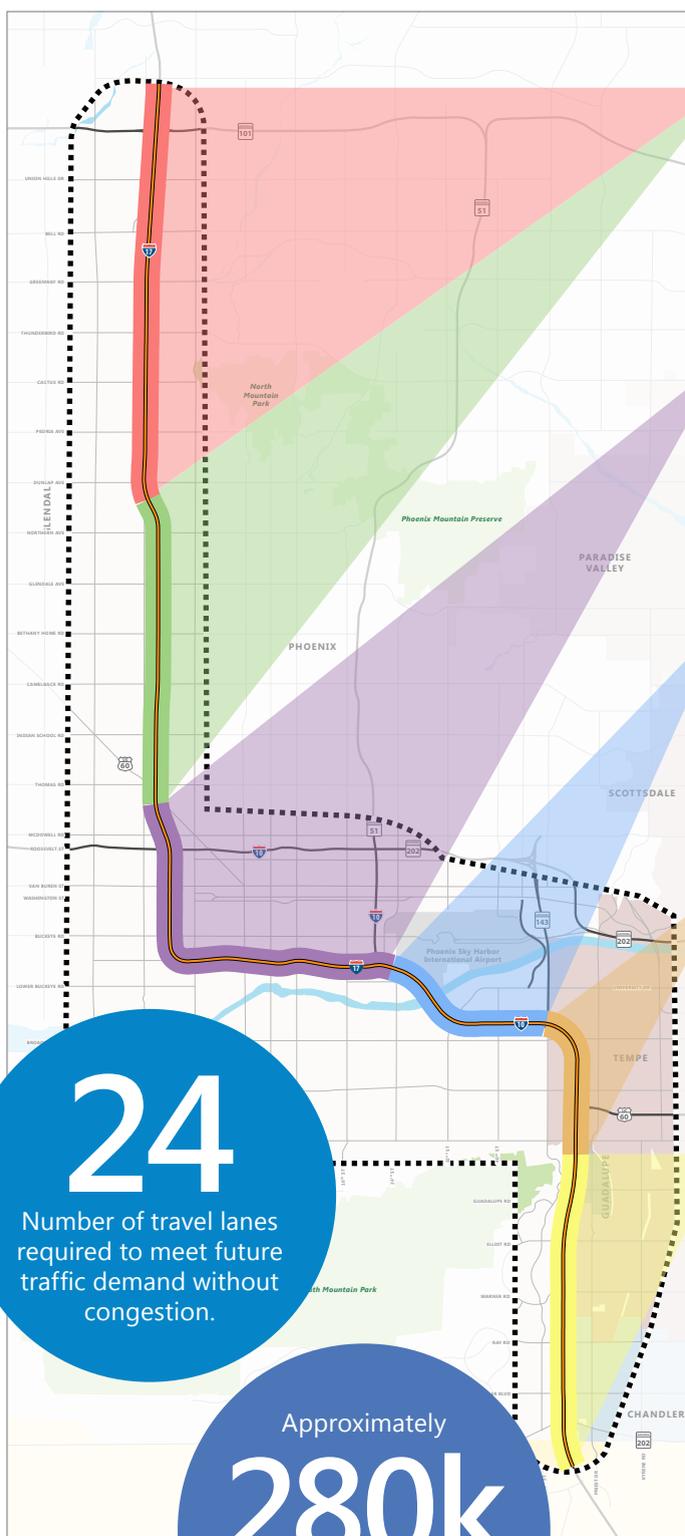
Did You Know?

In 2040 Northbound I-17 traffic will travel **30 miles per hour slower** during peak hours than today.



In 2040, how many hours of congestion can we expect if we do nothing?

One of the challenges for the future will be finding the best time of day to avoid congestion. Today, roadways are congested during the morning and evening rush hours, but in the future it is predicted that similar conditions will occur for much longer periods throughout the day. The map below provides an estimate of the amount of time congestion is expected to last in the future.



CONGESTION WILL LAST:

12+ HOURS EACH DAY
NORTHBOUND AND SOUTHBOUND

9.5 HOURS EACH DAY NORTHBOUND
7.5 HOURS EACH DAY SOUTHBOUND

12+ HOURS EACH DAY WESTBOUND
5.5 HOURS EACH DAY EASTBOUND

12+ HOURS EACH DAY WESTBOUND
11 HOURS EACH DAY EASTBOUND

7 HOURS EACH DAY
NORTHBOUND AND SOUTHBOUND

24
Number of travel lanes required to meet future traffic demand without congestion.

Approximately
280k
vehicles pass through the Broadway Curve each day.

Did You Know? 
On average, congestion costs commuters **\$16 per hour** and businesses **\$86 per hour**.

Source: Phoenix Mesa Mobility Data, Annual Urban Mobility Report, Texas Transportation Institute, 2012.



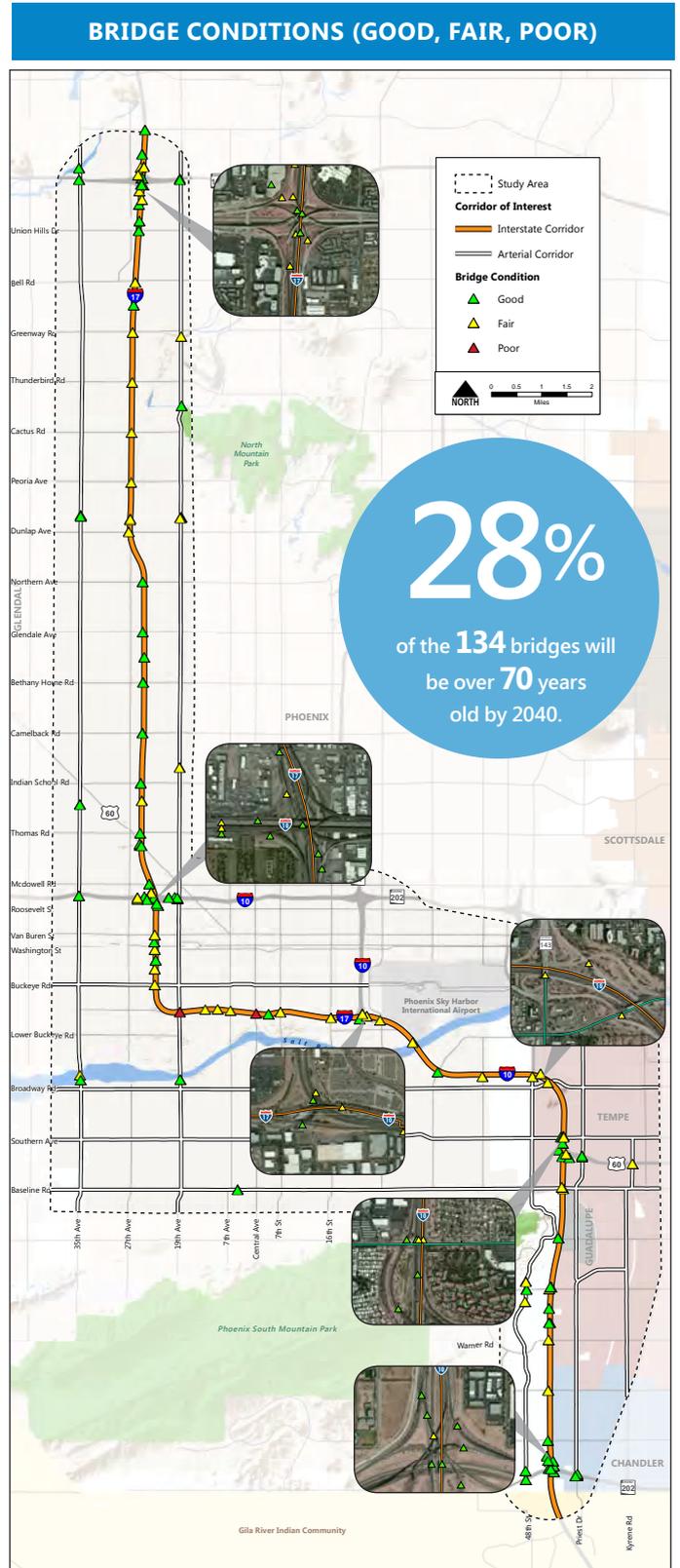
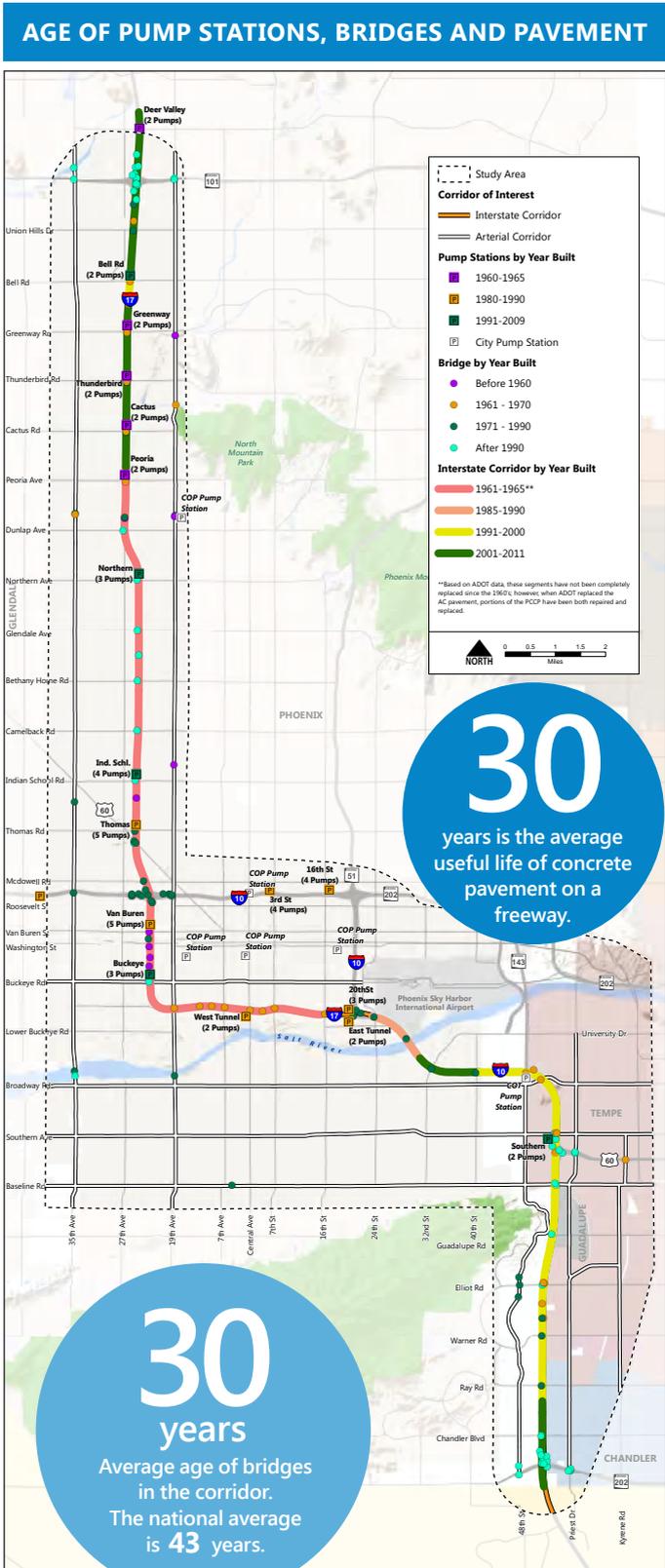
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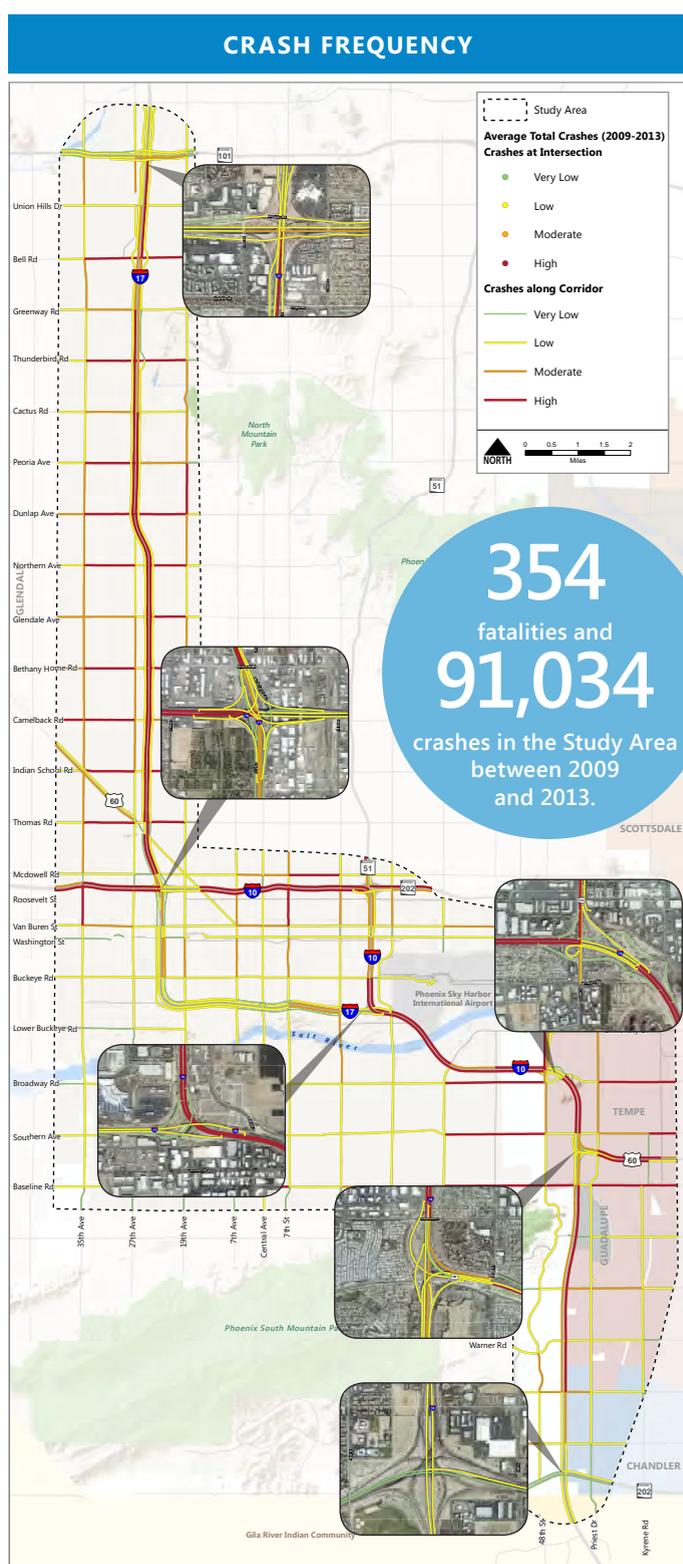
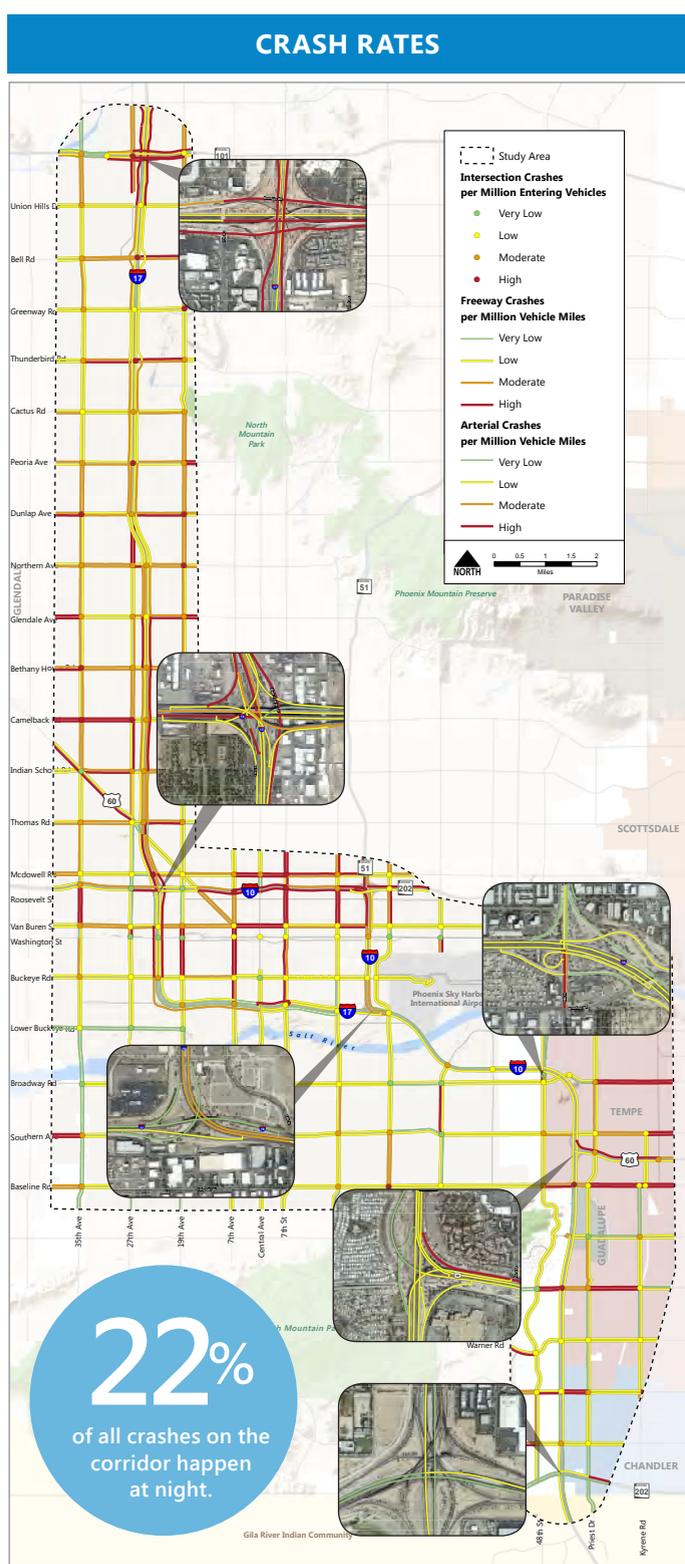
What is the condition of the infrastructure?

Bridges, pavement, drainage facilities, traffic signals, and road signs are all elements of the Spine corridor's infrastructure. Good infrastructure provides drivers more reliable service and a better user experience. As infrastructure ages, maintenance needs increase. By identifying the infrastructure's current condition and age, areas to be maintained, repaired or replaced can be determined.



Where have crashes occurred and how often?

Researching the frequency and rate of crashes throughout the corridor helps identify current and future problem areas. Crashes generally increase in areas where there are more vehicles. Crash rates identify areas with an unusually high number of crashes compared to the number of vehicles traveling on the road. This information helps identify the location of potential improvements.



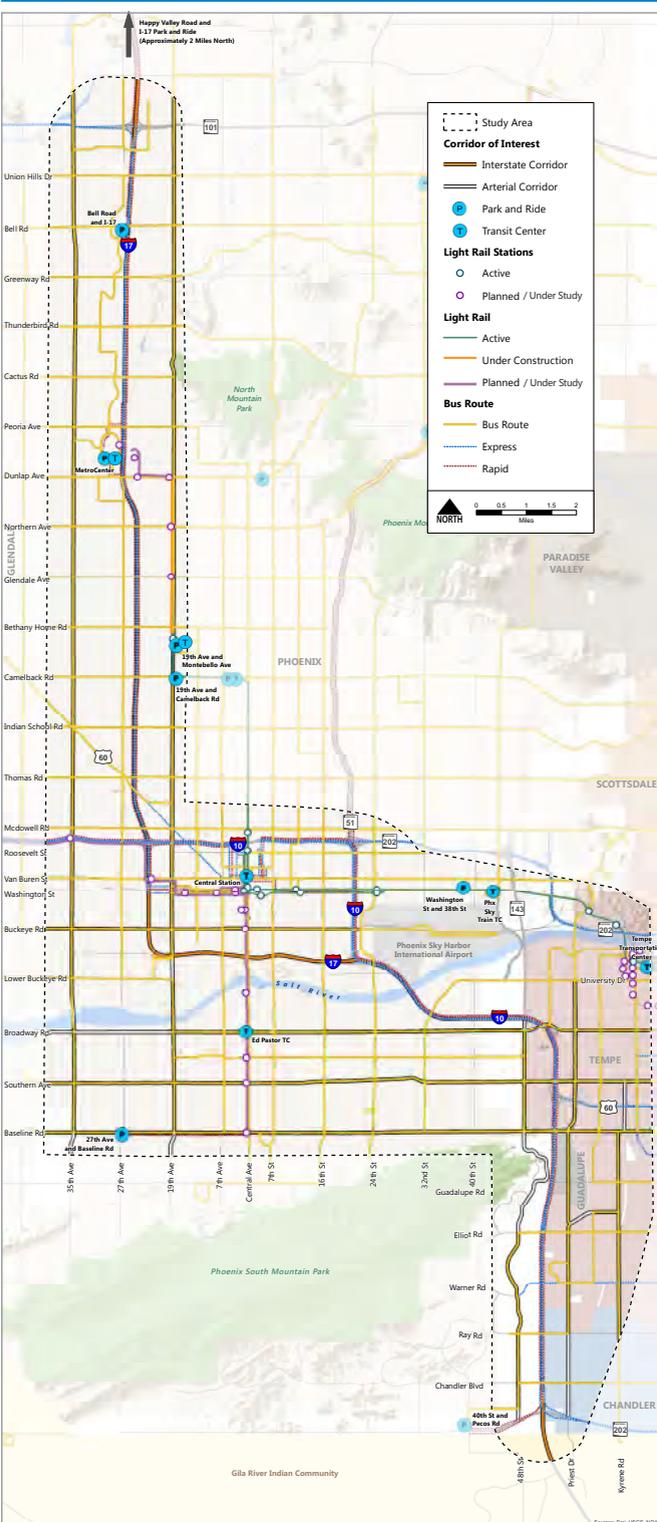
Did You Know?

- 26% of the region's crashes and 22% of the region's fatalities happened within the Study Area.
- Historically, on average, 1 person dies every 5 days within the corridor due to a traffic crash.

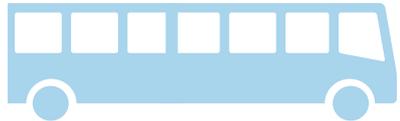
What transit services are available?

Transit services currently provided in the study area include express bus service, fixed route local bus service, and light rail transit (LRT). Express bus service, which includes the City of Phoenix RAPID bus service and Valley Metro Express bus service, is the only service that directly operates on Interstates 10 and 17. Express bus service is designed to serve commuters traveling between suburban communities located throughout the region and downtown Phoenix.

EXISTING AND PLANNED TRANSIT SYSTEM MAP ALONG CORRIDOR OF INTEREST



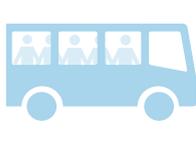
TRANSIT FAST FACTS

551k 

Number of express bus passengers that travel through the Broadway Curve each year.

423k 

Number of bus passengers that travel I-17 each year.

P+  1,312

Total number of cars parked each day in the four public park-and-rides serving the freeway corridor.

62% 

of all express bus passenger trips in the region take place on I-10 East and I-17.

Did You Know?

On average, Valley Metro's on-time performance exceeds **93%**.



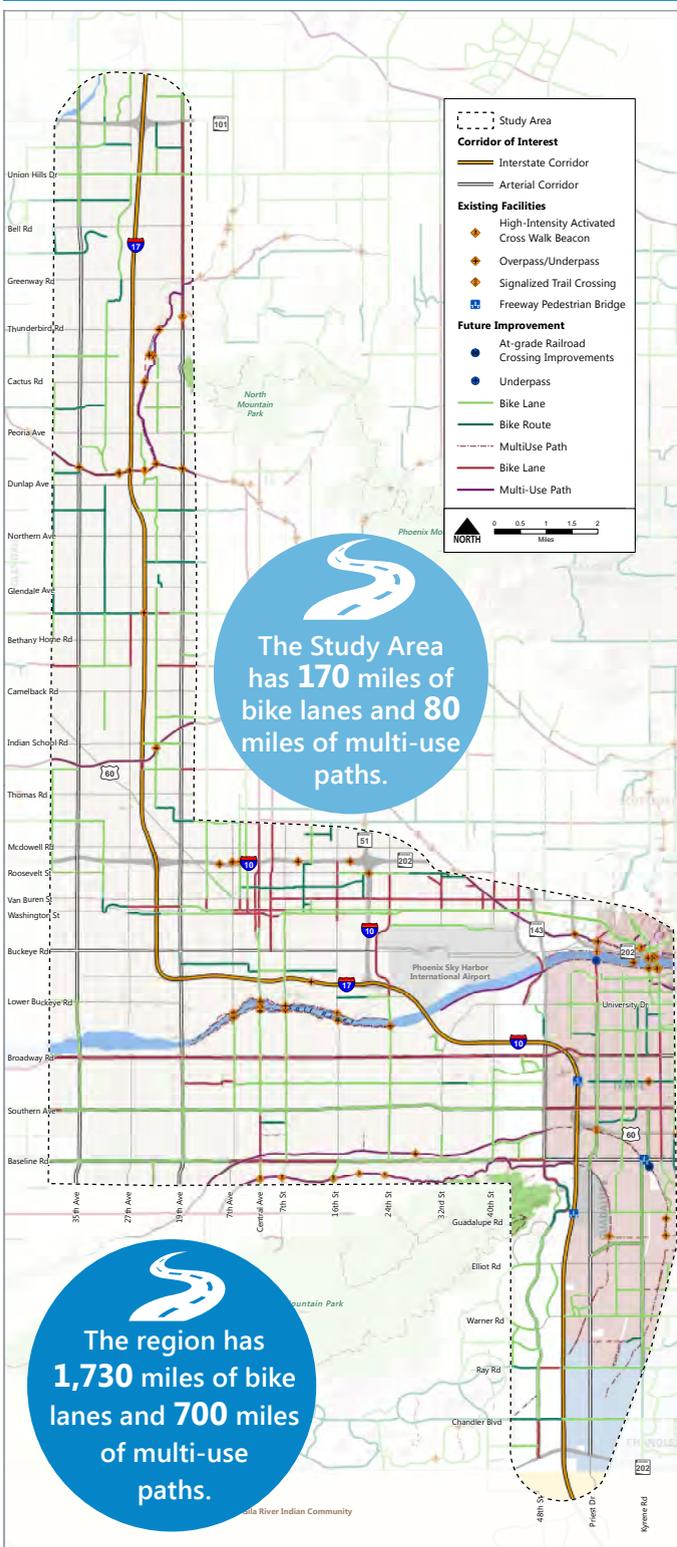
Where are bike and pedestrian amenities and how many crashes occur?

Bicycle and pedestrian infrastructure is essential to a multimodal corridor. As part of this study, problem areas in the current transportation network and potential opportunities for expansion will be identified.

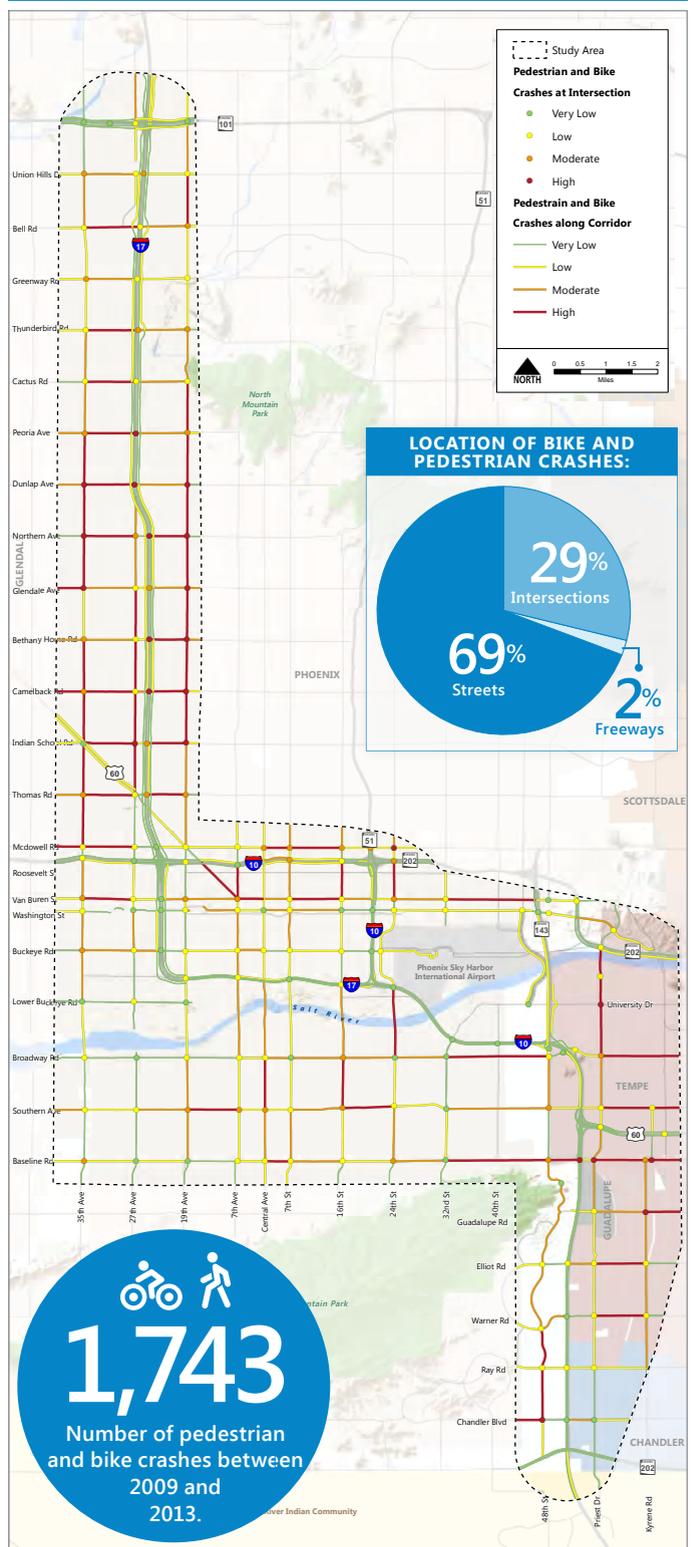
Did You Know?

- 12 pedestrians are killed each year by a vehicle in the Spine Study Area.
- Phoenix, Tempe, Chandler, and Guadalupe all have pedestrian crash rates that are higher than the national average.

BIKE AND PEDESTRIAN ROUTES



BIKE AND PEDESTRIAN CRASH FREQUENCY



What would you like to see related to bike and pedestrian improvements?



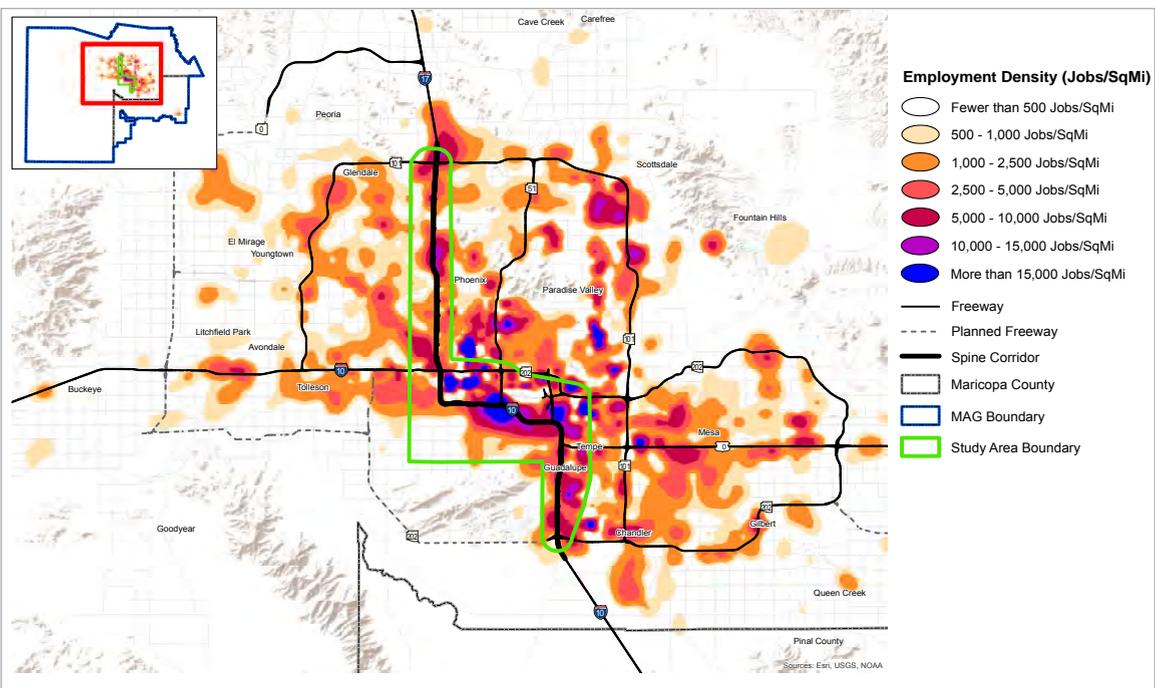
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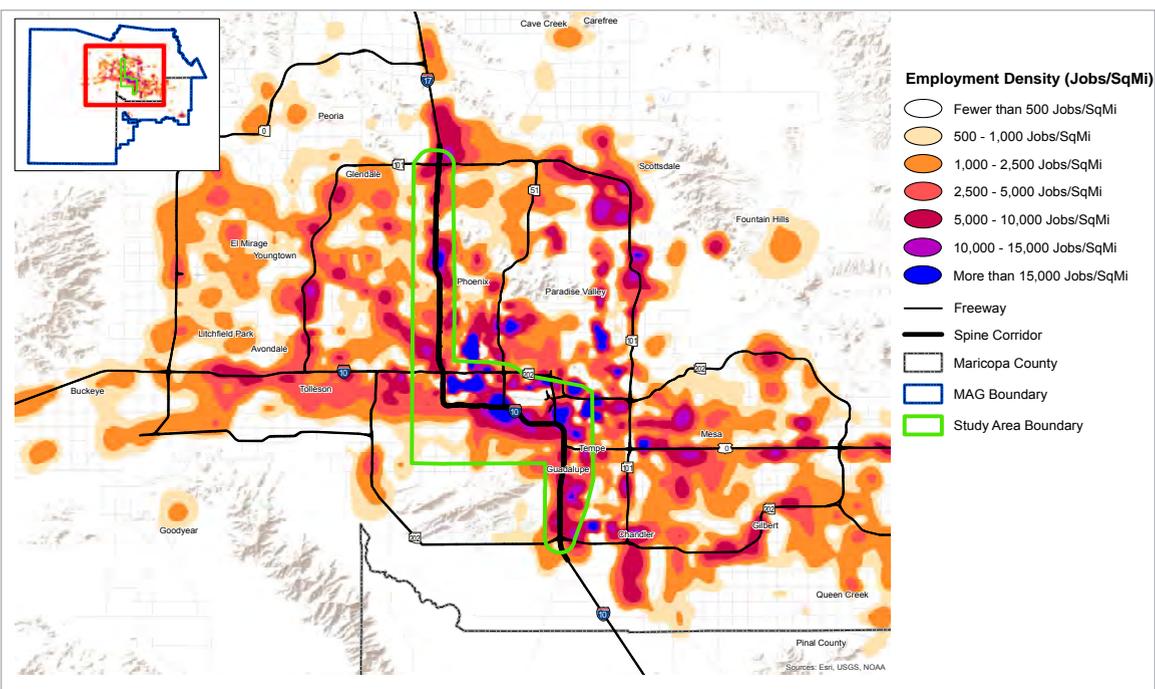
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How important are jobs within the Study Area?

2014 EMPLOYMENT DENSITY PER SQUARE MILE



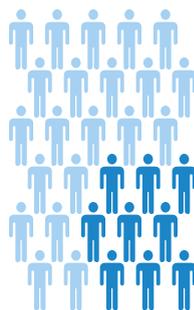
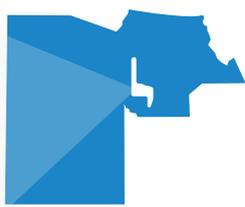
2040 EMPLOYMENT DENSITY PER SQUARE MILE



Study Area represents

2%

of Maricopa County land.



30%

of Maricopa County jobs are located in the Study Area today and in the future.

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10 17

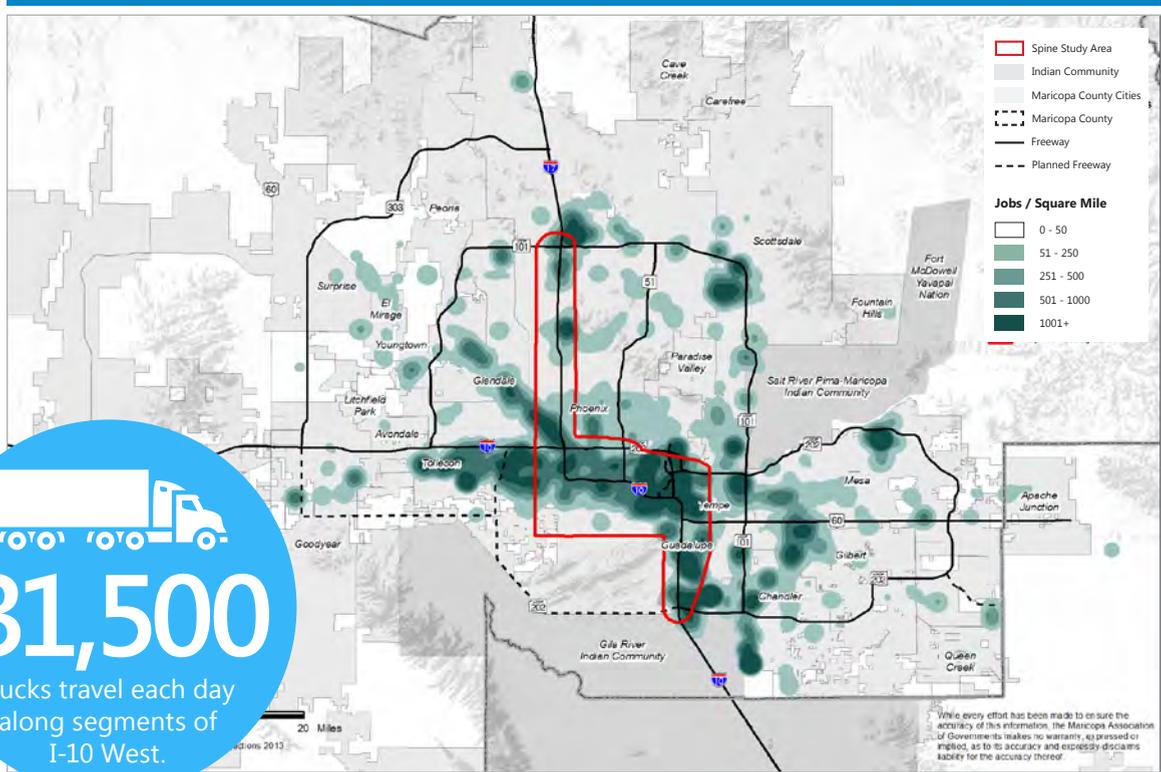
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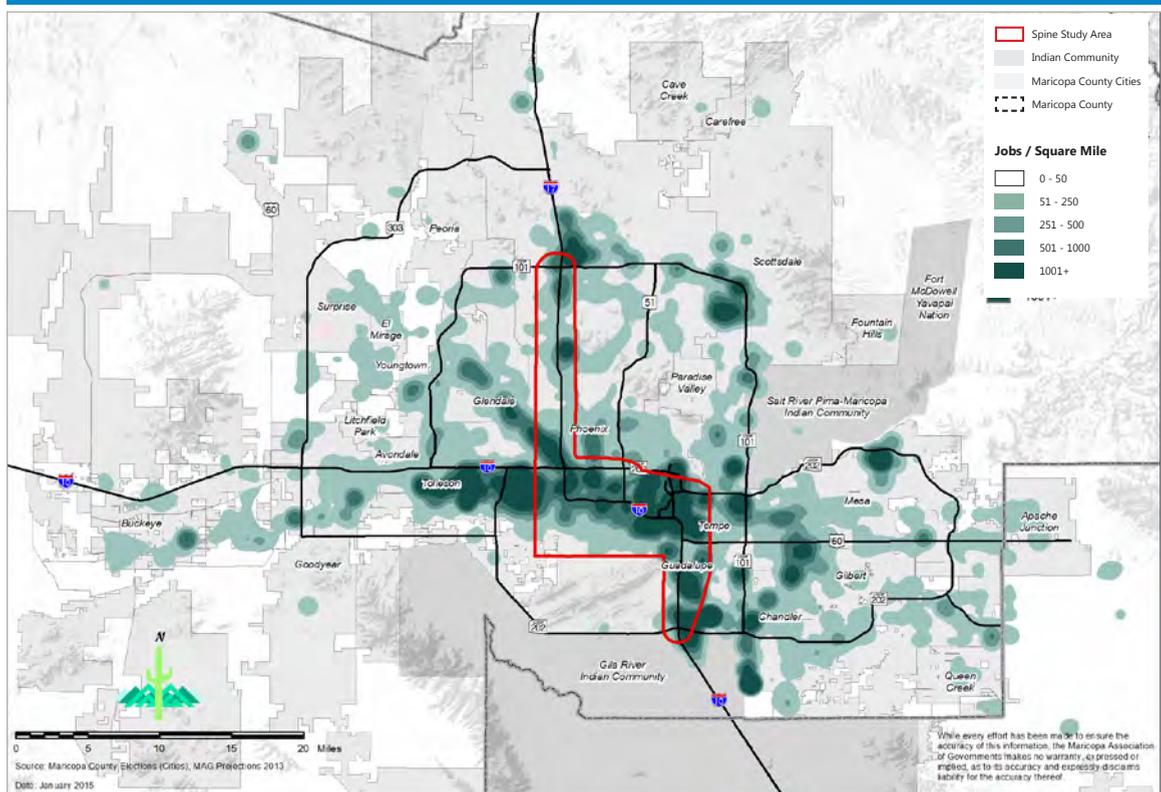
Where is commercial traffic generated?

Businesses and industry generate a significant amount of traffic, including large commercial, delivery, construction vehicles, and taxis. The maps below depict the intensity of land uses in and around the Study Area associated with businesses that generate this type of traffic. Businesses need to move people and products in a safe and efficient manner, and the Interstate 10 and Interstate 17 transportation corridor plays an important role in moving the region's economy.

2014 COMMERCIAL TRAFFIC GENERATORS

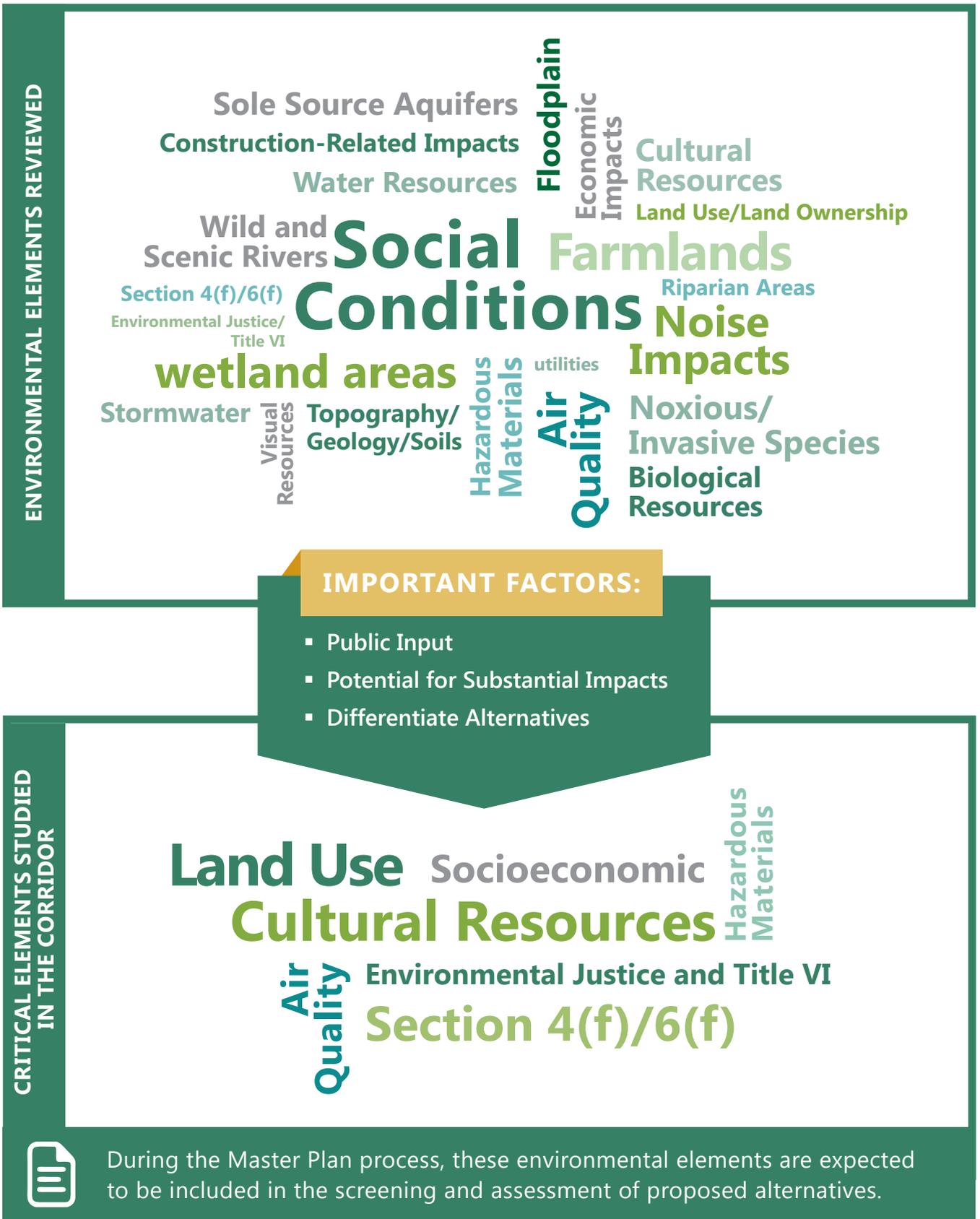


2040 COMMERCIAL TRAFFIC GENERATORS



What environmental factors are studied?

Corridor improvements can have potential impacts on a variety of environmental, socioeconomic, and cultural resources. These factors are evaluated in the study process to find the best “mix” of improvements while minimizing potential impacts to these resources.



What environmental issues are important to you?



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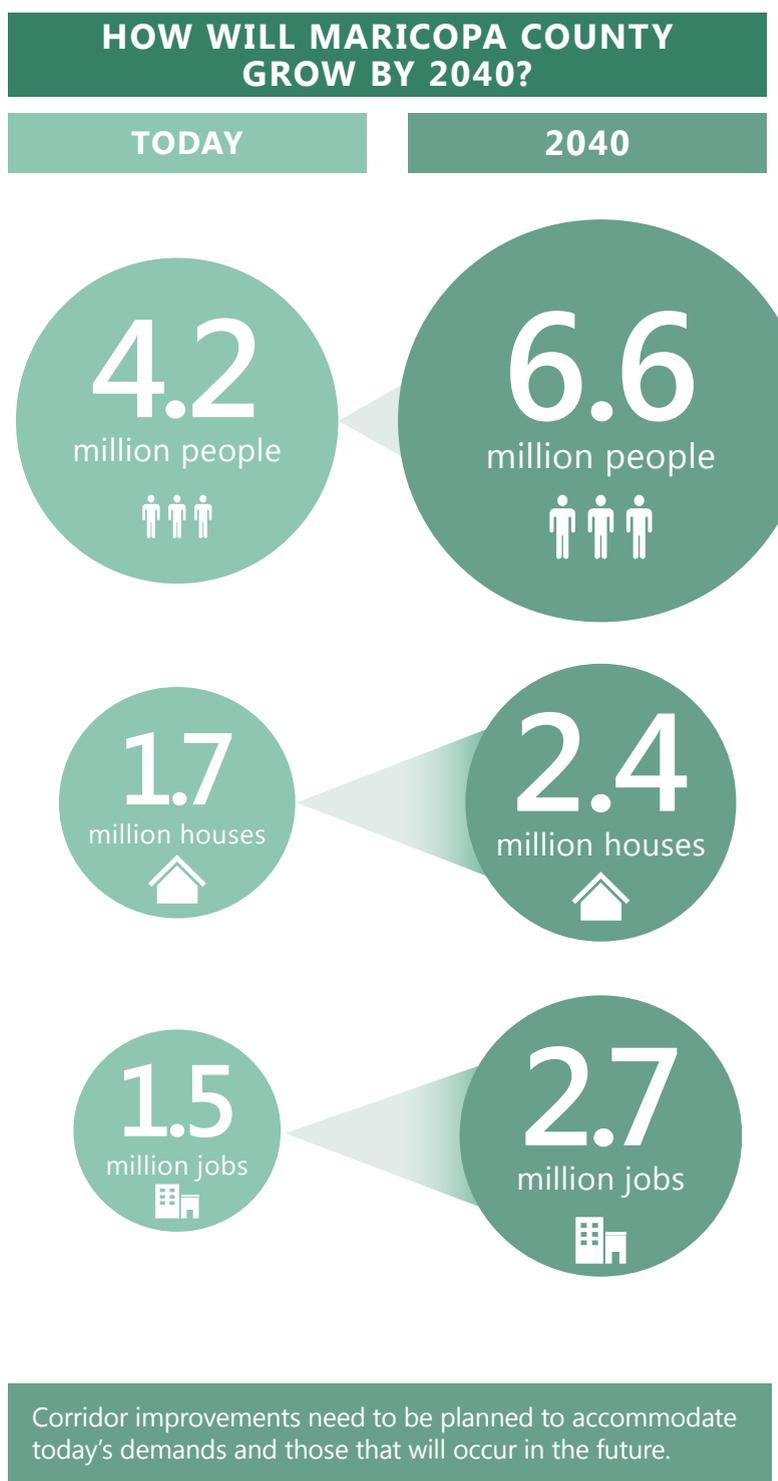
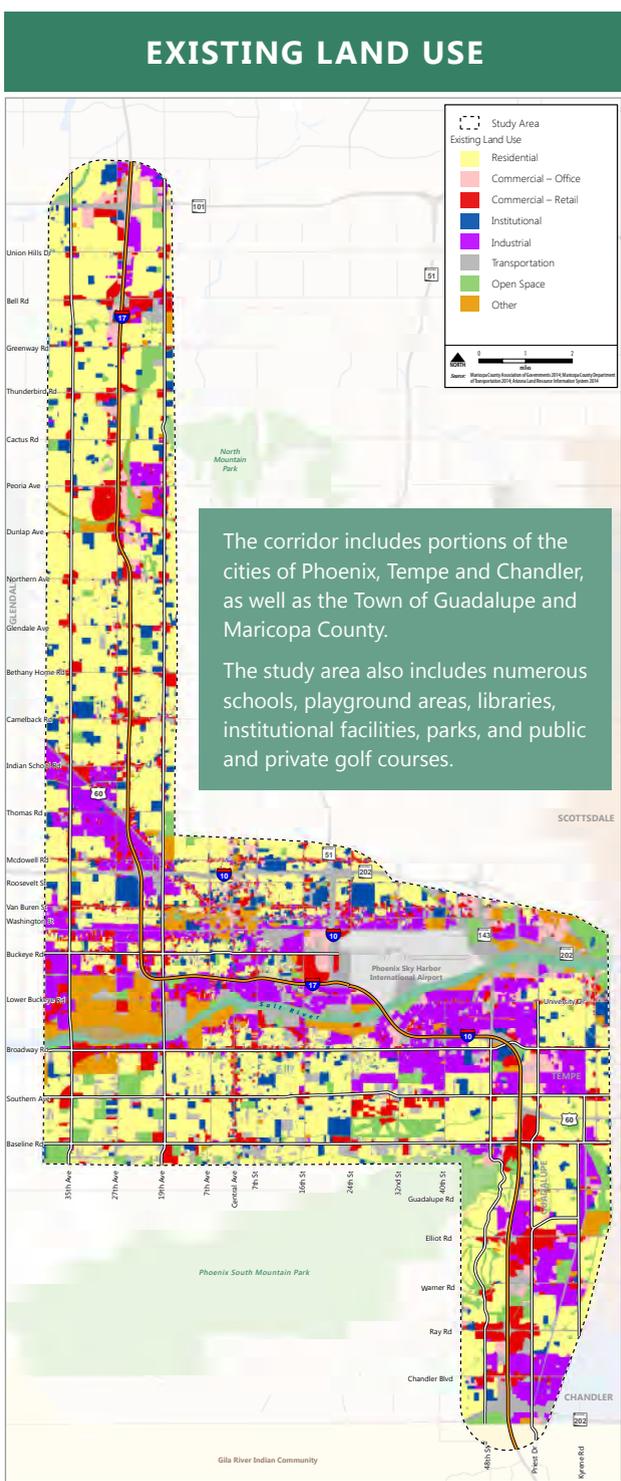
10 17

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What are the social conditions of the corridor?

The relationship between land use, transportation, and other infrastructure is a critical consideration in the Corridor Master Plan process. For example, how people use and access parks, churches, schools, and grocery stores can be altered by where transportation services are placed. This can have a positive or negative impact on neighborhoods and quality of life.



Did You Know?

- Historic districts are examples of distinct communities in the Study Area.
- The Town of Guadalupe is an example of a strong community with a unique identity.

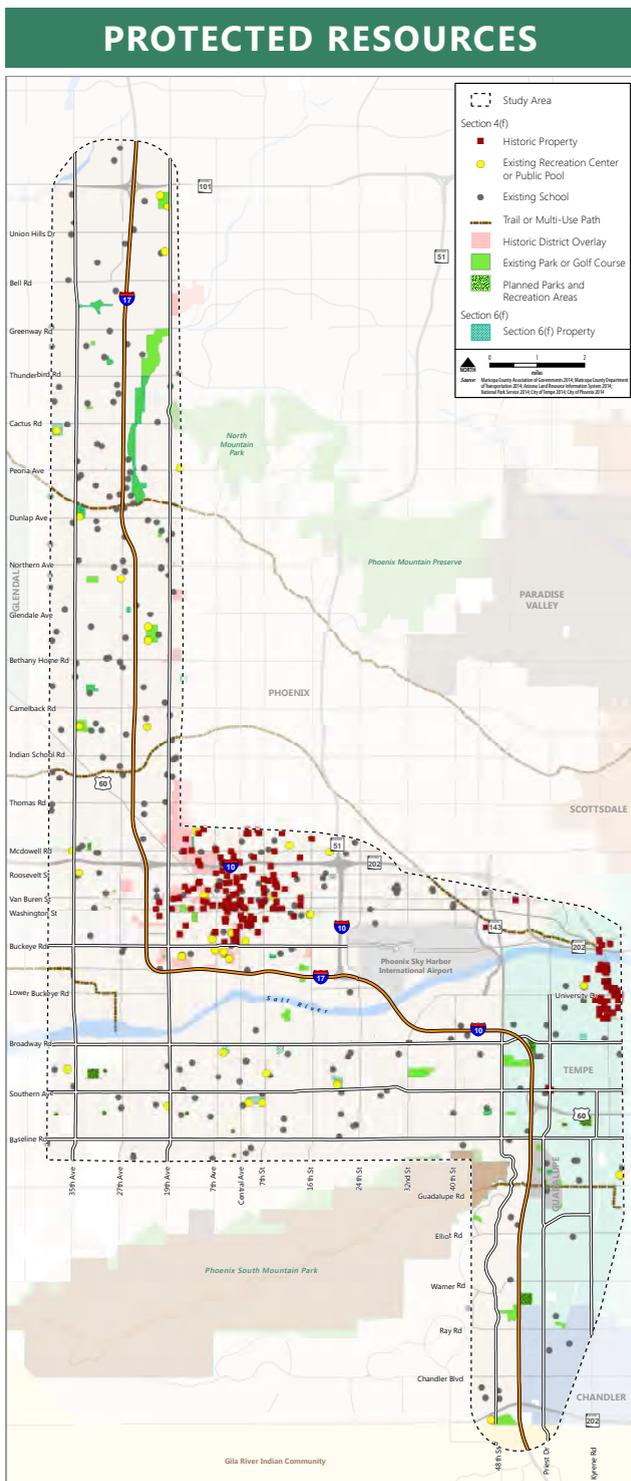


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What protected resources exist?



Many public parks, recreational areas, trails, wildlife and waterfowl refuges, and historic properties are afforded federal protection.* Protected resources in the Study Area include:

21
Public Recreation Areas

53
Public Parks

65
Schools with recreational areas (athletic fields, trails, recreation centers, golf courses, stadiums, and swimming pools).

92
Historic Properties (buildings, historic districts, cemeteries, and linear structures such as canals).

CULTURAL RESOURCES IN THE STUDY AREA:

- 2 historic roads
- 3 historic railroads
- 2 prehistoric and 6 historic canals
- 16 historic bridges
- 175 historic structures/buildings/districts/features
- 4 prehistoric and 4 historic artifact scatters
- 1 historic shrine
- 2 prehistoric petroglyphs
- 9 artifact scatters
- 8 prehistoric villages
- 9 multi-component sites
- 22 sites of unknown age and affiliation
- at least 6 modern/historic cemeteries

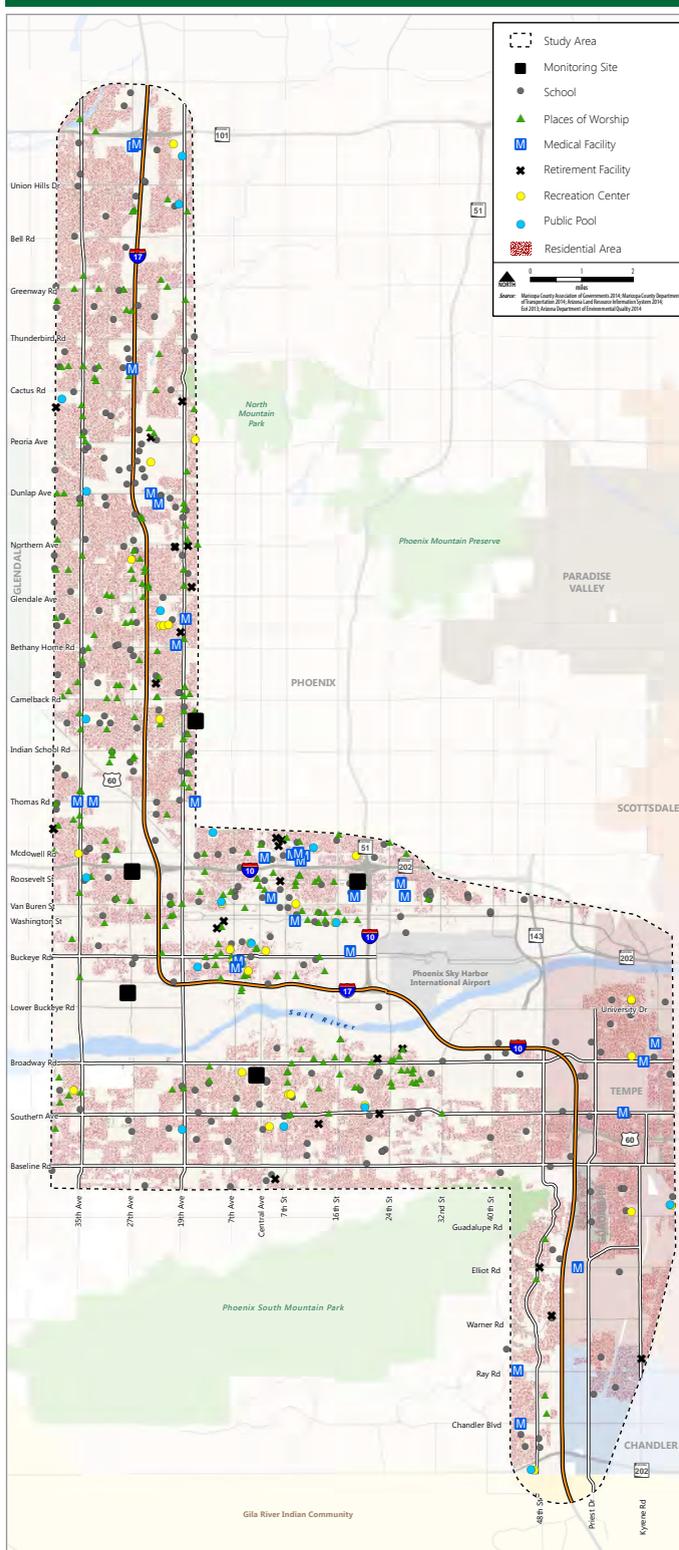
Approximately 47,000 potentially historic structures are located in the Study Area.

* Federal regulations providing protection include the Department of Transportation Act of 1966, the Land and Water Conservation Fund Act, and the National Historic Preservation Act.

How is air quality addressed?

Air quality is an important factor when considering potential transportation improvements. It is important to account for how a project or set of projects will improve or potentially impact air quality conditions in the region.

SENSITIVE AIR QUALITY RECEPTORS



Did You Know?

Under the Clean Air Act, the Environmental Protection Agency sets limits, also known as air quality standards, on how much pollution can be in the air. Health standards are set for "criteria" pollutants associated with traffic including:

- carbon monoxide
- ozone
- nitrogen dioxides
- particulate matter (PM_{2.5} and PM₁₀)

Did You Know?

The Clean Air Act restricts the funding or approval of plans and programs that do not conform to the State's Implementation Plan for staying within the National Ambient Air Quality Standards. MAG is responsible for analyzing transportation plans to ensure that they conform to air quality standards (known as conformity analysis). Currently, conformity status for the study area is:

- nonattainment area for ozone
- attainment/maintenance area for PM₁₀
- maintenance area for carbon monoxide



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Why are improvements needed?

During the process, a "Purpose and Need" is developed as a "mission statement" to help guide study recommendations for future improvements.

Purpose



The purpose of the Spine Study is to identify and budget for a project, or series of projects, that would address the transportation needs of the corridor.

Need



I-10 and I-17 are at capacity during rush hour and are unable to handle future traffic levels.



I-10 and I-17 experience lengthy periods of congestion. The lengths of congestion, both in time and distance, are projected to worsen over time.



Travel times on the two freeways will worsen as the average travel speeds decrease.



Projected growth will continue to put stress on the two freeways.



Degradation of the two freeways will adversely affect the operations of HOV and transit modes like freeway bus rapid transit, express buses, and local bus routes.



Aging infrastructure of the two freeways could limit economic growth opportunities in the region.



Timely and efficient delivery of freight is vital to the region's economic health.



Poor operations on I-10 and I-17 adversely affect local streets, especially at intersections.



What types of improvement strategies are possible?

Part of this study includes evaluating how commonly used transportation improvement strategies would work within the Spine Corridor. The following 5 strategies are under consideration:



Freeway Lanes - Focuses on adding general use lanes to the freeway for everybody's use.

Other examples of potential improvements include:

- Integration of the latest technology for freeway monitoring.
- Accident response.
- Driver information.

Did You Know?

At least three new lanes in each direction would be required by 2040 to notice a reduction in traffic congestion.



Street Lanes - Focuses on adding lanes to the parallel and crossing streets around the freeway corridor.

These types of improvements frequently include:

- Signal coordination and communication.
- Emergency vehicle priority technologies.
- Traffic surveillance.

Did You Know?

New lanes could help relieve some freeway traffic congestion by shifting a small percentage to the street network.



Special Lanes - Focuses on adding new "managed" lanes and/or redefining how current ones are used.

Typically, managed lane systems integrate monitoring technology to actively control these lanes to maintain efficient and reliable operations.

Did You Know?

Managed lanes refer to a wide variety of special lane types including carpool (known as HOV lanes), price-controlled (known as HOT lanes), transit only, truck only and others.



Travel Modes - Focuses on expanding other modes of public transportation within the study area. This may include more bus and rail lines, bike paths and lanes, and pedestrian paths. This expansion could include more frequent buses and trains within existing routes, or adding new routes in areas that currently lack public transit service.

Did You Know?

Tracking technology is used on public transit vehicles to monitor and adapt operations in real-time in response to accidents or other problems.



Access - Focuses on improving access onto and across the interstate, using the most modern and appropriate designs and technology available to maximize efficiency and safety.



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How do the potential strategies compare?

The table below compares how the five potential strategies perform against eight community priorities. The arrows presented are relative to the “do-nothing” alternative, which is defined as only building currently approved projects.



Note: Scores based on an average corridor user.

		POTENTIAL STRATEGIES				
		Freeway Lanes	Street Lanes	Special Lanes	Travel Modes	Access
COMMUNITY STRATEGIES	IMPROVE COMMUTE 	→	→	→	→	→
	ADD TRAVEL CHOICES 	→	→	→	→	→
	PROTECT ENVIRONMENT 	←	→	←	→	→
	INCREASE CONNECTIONS 	→	→	→	→	→
	MINIMIZE COST 	←	←	←	←	←
	PROMOTE NEIGHBORHOODS 	←	→	→	→	→
	EMPHASIZE JOBS 	→	→	→	→	→
	IMPROVE COMMERCE 	→	→	→	←	→

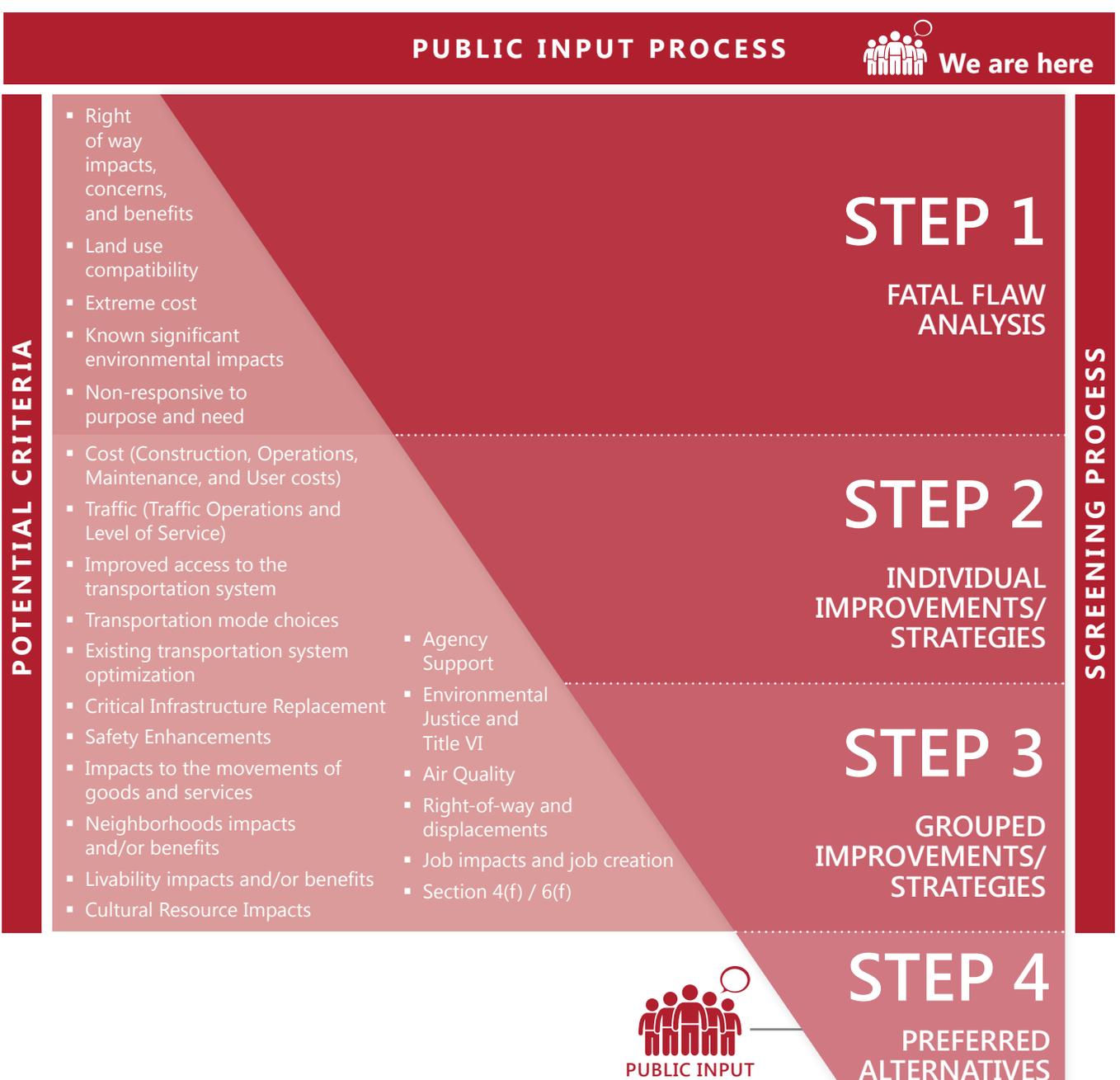


Note: Scores based on an average corridor user.

How will potential solutions be evaluated?

This study will use a tiered screening process to systematically reduce the number of potential alternatives down to a preferred alternative.

STEP 1	STEP 2	STEP 3	STEP 4
Eliminate alternatives that have major flaws or hurdles using some of the potential criteria noted below.	Perform a detailed study of specific improvements or strategies using a wide range of possible criteria.	Group high performing alternatives from step 2 into packages and evaluates those packages using similar criteria used in step 2.	Advise transportation officials to select the preferred alternative using the findings from step 3, coupled with input from agency stakeholders and the public.



How will technology shape the future transportation network?



By 2040, nearly all vehicles will be able to “talk” to traffic signals and other cars on the road.



By 2040, it will be common to see self-driving vehicles on the road.



Mobile technology makes information easily accessible for travelers, and travelers can contribute to real-time information.



Systems are being developed that can “predict” what traffic conditions will be so travelers can better plan their trips.

looking ahead...

Using technology to actively manage freeway, street and transit networks can:

- Improve freeway capacity by up to 23%.
- Reduce primary crashes by 30%.
- Reduce secondary crashes by 40-50%.
- Reduce delay on arterials by 10-30%.
- Improve transit on-time performance.

POTENTIAL FUTURE SYSTEMS



Temporary shoulder use and variable speeds.



Next generation in-vehicle and mobile technologies.



Integrated and seamless transit and traffic management.

Did You Know?

Over the last 10 years, enormous innovations in transportation technology and advanced traffic management techniques have occurred. Numerous cities and regions around the world have adopted these strategies as a means of enhancing the capacity and efficiency of the existing transportation system without adding new expensive infrastructure. Depending on the strategies and technology used, it has been estimated that the capacity of an existing roadway can improve by **5%** to **25%**. This means that on an existing four-lane freeway, these strategies can have the same effect as adding a new lane.



How can you provide feedback?

One of the key goals of the Master Plan is to obtain public input to develop a unified vision for the corridor.

There are several opportunities for the public to provide comments.

Please use any of the following methods to provide your valuable input:



MetroQuest Online Survey:
May be accessed from study
webpage at spine.azmag.gov



Fill out a public comment
form today or send in by mail
(postmarked by **Wednesday,
March 18, 2015**)

Spine Study Team

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✉ spine@azmag.gov



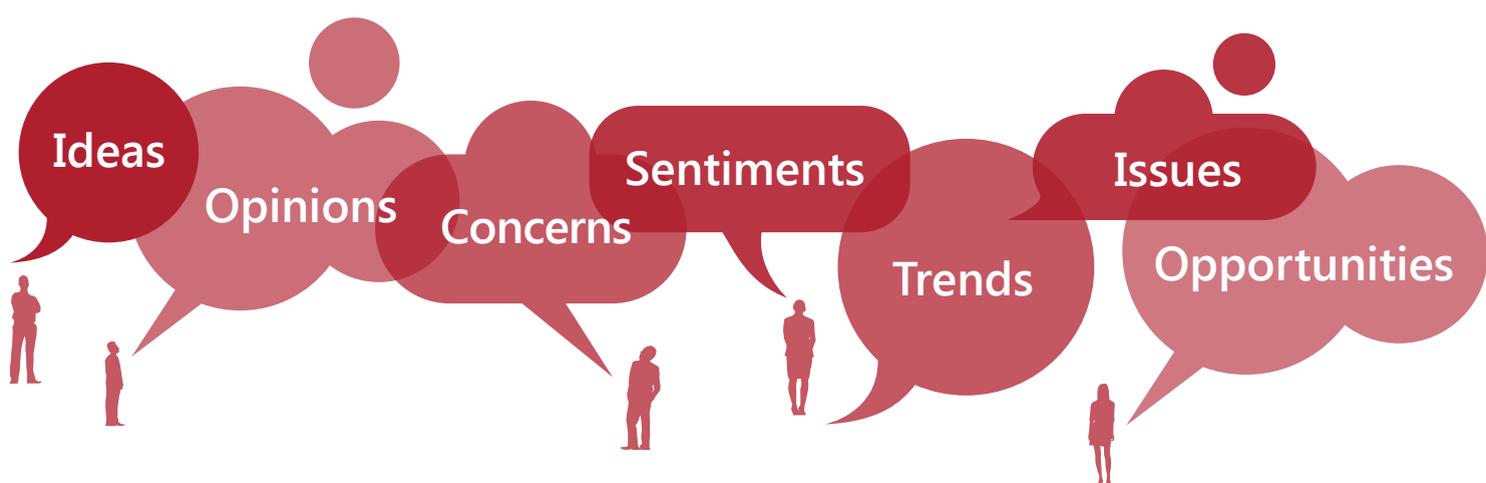
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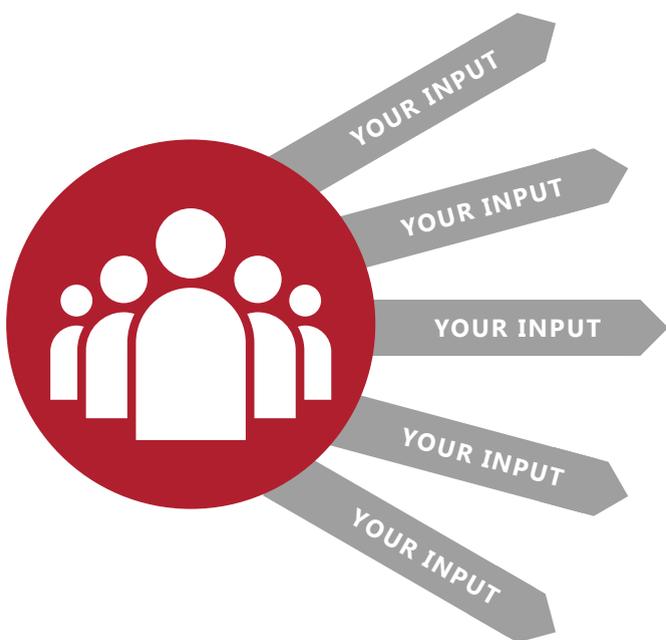
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How is your feedback incorporated into the study?

Public comments obtained throughout the study will be analyzed to identify:



EXAMPLE COMMENTS:



- Add more transit options
- Add extra lanes to streets
- Add or remove a freeway exit / entrance ramp
- Consider important local issues
- Add carpool lane



All public comments received during the study will be considered and included in the Corridor Master Plan.

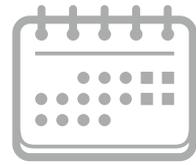
What are the next steps?



Complete Corridor Needs Assessment



Finalize Goals and Objectives of Study



Spring 2015



Generate Improvement Alternatives

Early 2015 - Summer 2015



Conduct Screening of Alternatives

Summer 2015 - Summer 2016



Prepare Alternatives Screening Report

Spring 2016



Conduct Second Round of Public Meetings

Spring 2016



Select Recommended Alternative

Summer 2016



Complete Corridor Master Plan

- Priority Resource Impact Evaluation
- Mitigation Strategy
- Implementation Plan
- Design Exceptions

End of 2016

