Alternatives Development and Screening Process

Mid-1980s

Alternatives for a major transportation facility in the Study Area were proposed.

Draft EIS

Previous proposals and alignments were incorporated into the current Draft EIS process.

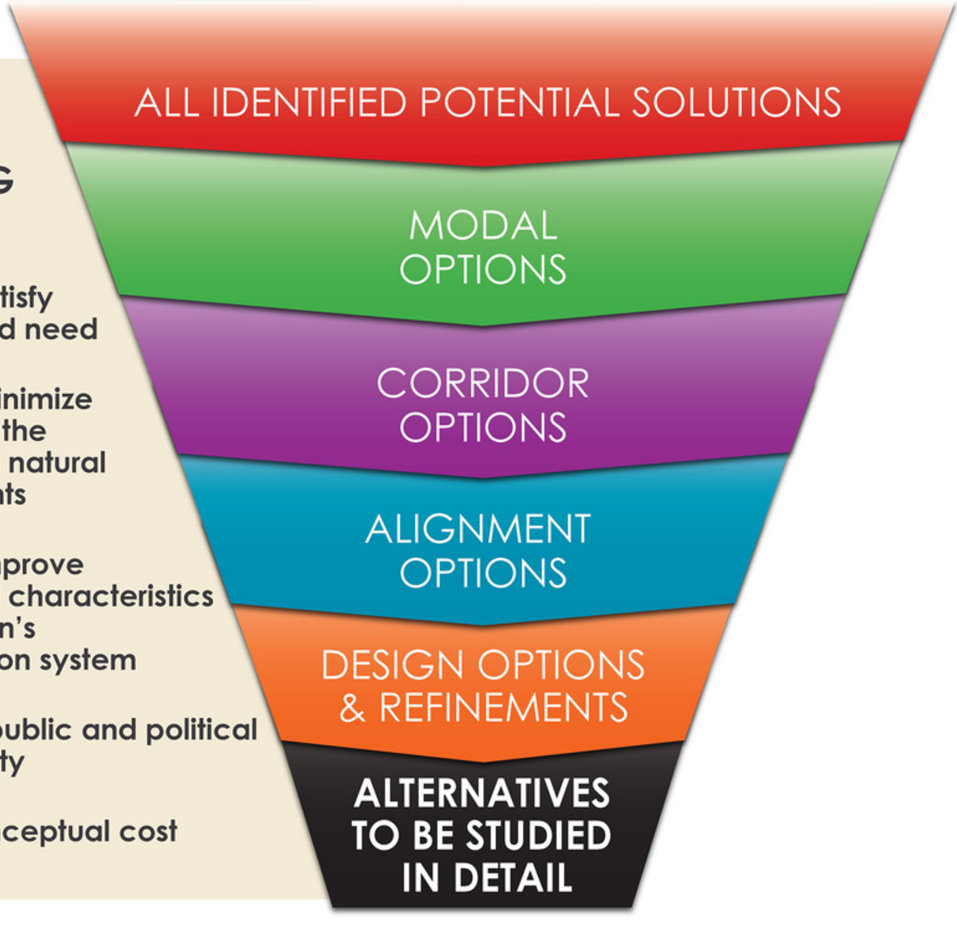
A range of reasonable alternatives were developed and screened using a multidisciplinary set of criteria.

What does "a range of reasonable alternatives" mean?

Federal regulations stipulate that an EIS shall rigorously explore and objectively evaluate all reasonable alternatives. Reasonable alternatives are practical or feasible from a technical, economic, and community standpoint.

SCREENING CRITERIA

- **Ability to satisfy purpose and need**
- **Ability to minimize impacts on the human and natural environments**
- **Ability to improve operational characteristics of the region's transportation system**
- **Degree of public and political acceptability**
- **Overall conceptual cost estimates**



LOOP 202 South Mountain Freeway Study

azdot.gov/SouthMountainFreeway

ADOT

U.S. Department of Transportation Federal Highway Administration

ON THE MOVE PARTNERS IN PROGRESS

CHAPTER 3

ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

Modal Screening

Alternatives to the Freeway Mode

"Modes" refer to types of transportation, such as light rail, buses, and freeways.

Alternative	Element		Reasons for elimination
Transportation System Management	Examples: Overhead message boards and auxiliary lanes		**WOULD NOT meet projected travel needs of the region.** Note that elimination of these alternatives does not preclude using them in combination with the freeway mode, nor does it preclude them from being implemented in the future.
Transportation Demand Management	Examples: Telecommuting and reverse commuting		
Transit	Light rail		
	Commuter rail		
	Bus routes		
	Van pools		
Street network expansion	• Add more lanes • Improve intersections • New streets		
Land use	• Increase residential densities • Redistribute employment centers		**NO additional modifications are feasible** to land uses, beyond those already identified in the RTP.

CONCLUSION: The **FREEWAY MODE was determined to meet the purpose and need** for the project while minimizing impacts. Where appropriate, the freeway would incorporate aspects of nonfreeway alternatives to optimize travel, such as carpool lanes and electronic message signs.

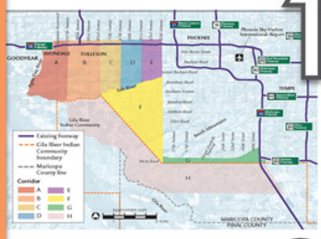
ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

Freeway Alignment Screening

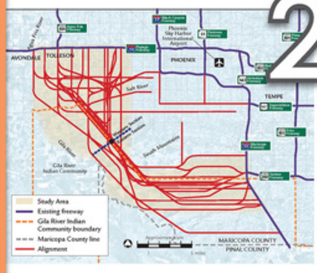
Development of Alternatives

Evaluation of Alternatives

Steps



1 Identified 8 broad corridors



2 Identified numerous alignments from previous studies and public/agency input

3 Compared alternatives

4 Eliminated Western Section Alternatives

5 Eliminated Eastern Section Alternatives

6 Action Alternatives to be Studied in Detail

Results

Eliminated Corridor A

A

Reason for elimination

- It would not serve as many travelers as other corridors

Created specific alignment alternatives that:

- best met the need for the project.
- met design standards.
- avoided environmental conflicts to the extent possible.

Eliminated Alignments on GRIC (51st Avenue/ Beltline Road/Riggs Road alignment) because the Community had not granted permission to study alternatives on its land at that time.

Eliminated SR 85/Interstate 8 Alternative because it would not complete the loop system and would cause substantial out-of-direction travel.

Eliminated alternatives that generated greater operational, environmental, and/or economic impacts.

Eliminated Alternatives

T05 T08
T07 T09

Reasons for elimination

- Operational failures on I-10 (Papago Freeway)
- Substantial construction and right-of-way costs
- Substantial impacts to existing and planned residential and commercial developments

Eliminated Ray Road and Chandler Boulevard Alternatives

- Required hundreds of residential displacements
- Split Ahwatukee Foothills Village
- Adversely impacted local traffic circulation

Eliminated US 60 extension because it did not address travel demand and capacity needs.

Eliminated I-10 spur

- Caused poor traffic operations on I-10, US 60, and Loop 101 (Price Freeway)
- Required thousands of residential displacements

Eliminated Central Avenue Extension Tunnel

- Created minimal traffic operational improvements
- Cost-prohibitive, undesirable for safety and emergency response

Western Section Action Alternatives

W55 (later revised to W59)
W71
W101 Western, W101 Central, and W101 Eastern

Eastern Section Action Alternative

E1 Alternative, also known as the Pecos Road Alignment

LOOP 202
South Mountain
Freeway Study

azdot.gov/SouthMountainFreeway

ADOT

U.S. Department of Transportation Federal Highway Administration

ON THE MOVE PARTNERS IN PROGRESS

CHAPTER 3

ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

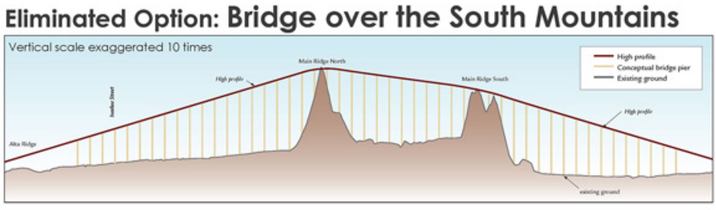
Design Options and Refinements

Options for Reducing Impacts to the South Mountains

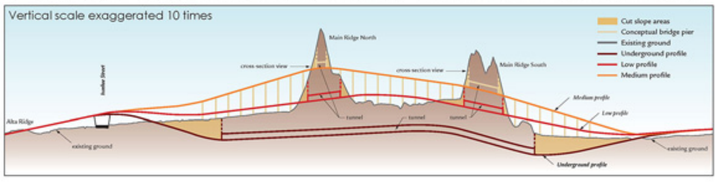
Bridge and tunnel options were **eliminated** because of:

- safety and accident-management concerns.
- homeland-security concerns.
- construction and maintenance issues.
- future expansion limitations.
- substantially higher estimated costs.
- inability to eliminate impacts to the South Mountains.

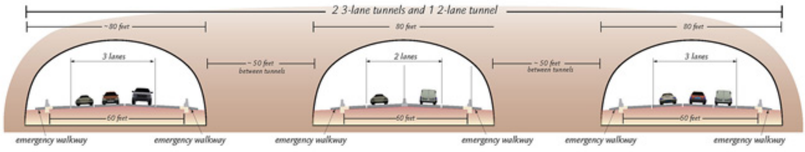
Eliminated Option: Bridge over the South Mountains



Eliminated Option: Tunnel under the South Mountains



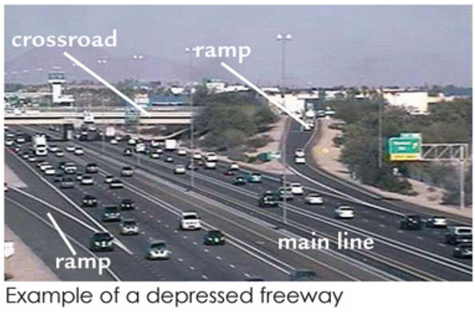
Constructible Cross Section for Tunnel (total width is approximately 340 feet)



Options for Reducing Impacts on Ahwatukee Foothills Village

Options to **depress the Pecos Road alignment** below the current ground level were **eliminated** because of:

- operational and maintenance issues.
- greater right-of-way requirements.
- increased costs.
- increased residential displacements.



Example of a depressed freeway

Constructing the proposed freeway within the utility easement south of Pecos Road to provide additional separation of the freeway from the neighborhoods was **eliminated** because:

- additional right-of-way for the utility easement would still be required.
- the existing lines could not be relocated underground because of the ancillary equipment required (e.g., cooling facilities) and associated costs.
- relocating the overhead power lines immediately adjacent to residences would cost approximately $15 million.

ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

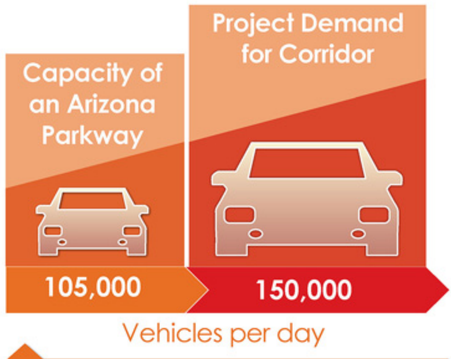
Design Adjustments

Arizona Parkway* Concept

Was considered, but **eliminated** from further consideration because it:

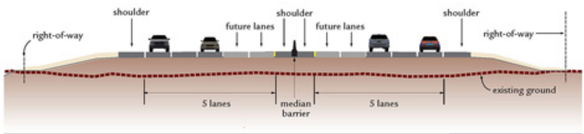
- would not help improve congestion.
- would not remove a sufficient amount of traffic from the arterial street network.
- would not meet the proposed project's stated purpose and need.

* For more information see: www.bqaz.org/azparkway



This analysis reinforced that a freeway was the appropriate mode.

Reducing the Freeway and Freeway Right-of-Way



Original 10-lane concept

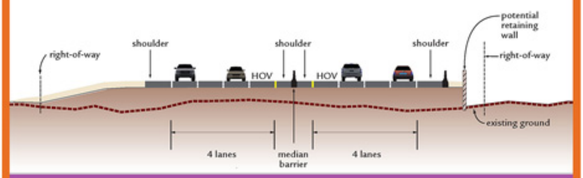
6 lanes

4 future lanes in median

Use **SIDESLOPES** in all areas

317 total residential displacements along the E1 Alternative**

LONG TERM provides more capacity and better level of service



Revised 8-lane concept

8 lanes all constructed at once*

Use **RETAINING WALLS** as cost-effective measure to reduce right-of-way impacts

138 total residential displacements along the E1 Alternative**

INITIALLY provides more capacity and better level of service

CONCLUSION: The **10-LANE FREEWAY** was **eliminated** from further consideration. The **8-LANE FREEWAY** was **carried forward**; it would **address the purpose and need** for the project and require **less right-of-way acquisition**.

** Notes: The 8-lane concept would not preclude further widening. Both the 10-lane and the 8-lane concepts would impact the community church at 24th Street and Pecos Road. The residential displacements along the W59 Alternative would be relatively the same for both concepts.

LOOP 202
South Mountain
Freeway Study

azdot.gov/SouthMountainFreeway

ADOT

U.S. Department of Transportation Federal Highway Administration

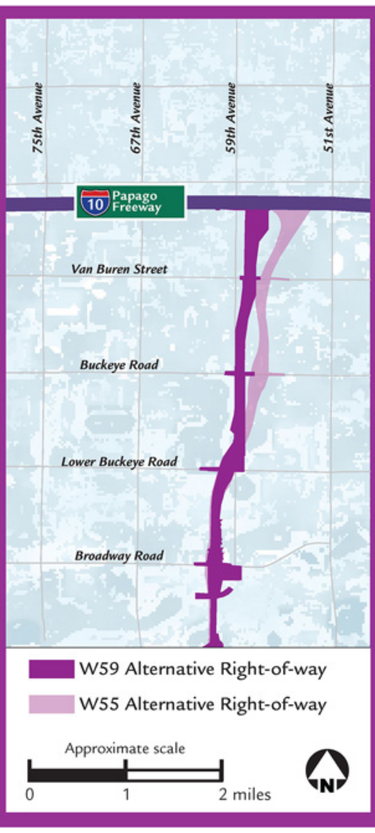
ON THE MOVE PARTNERS IN PROGRESS

CHAPTER 3

ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

Design Adjustments

Alignment Adjustments to W59 Alternative



W55 Alternative Shifts to 59th Avenue at I-10 (Papago Freeway)

The W59 Alternative offers the following characteristics compared to the W55 Alternative:

Advantages

- Would take advantage of right-of-way owned by the City of Phoenix.
- Would reduce business displacements.
- Would allow I-10 traffic to perform better.
- Would be preferable from a security perspective (farther from the petroleum storage facilities at 51st Avenue and Van Buren Street).
- Would eliminate the need to reconstruct the 51st Avenue Bridge at I-10.

Disadvantages

- Would require the relocation of utilities along 59th Avenue.
- Would cause increased disruption of traffic during construction along 59th Avenue.
- Would eliminate direct access from 59th Avenue to and from I-10 (indirect access would be provided by access roads connecting to 51st and 67th avenues).
- Would require the relocation of more single-family residences and two apartment complexes.

CONCLUSION: Because of these factors, the **W59 ALTERNATIVE** was **carried forward** and the **W55 ALTERNATIVE** was **eliminated** from further consideration.

W59 Alternative Shifts to 62nd Avenue in Laveen

- In response to the City of Phoenix request, the study team reexamined the alignment of the W59 Alternative near Dobbins Road in Laveen Village.
- An alignment along 62nd Avenue would avoid historic properties in the area and would minimize conflicts with City-approved zoning activities in Laveen Village.

CONCLUSION: After extensive discussions with the City of Phoenix and MAG, FHWA and ADOT **SUPPORTED** the shift of the W59 Alternative to **62nd Avenue near Dobbins Road.**

LOOP 202
South Mountain
Freeway Study

azdot.gov/SouthMountainFreeway

ADOT

U.S. Department of Transportation Federal Highway Administration

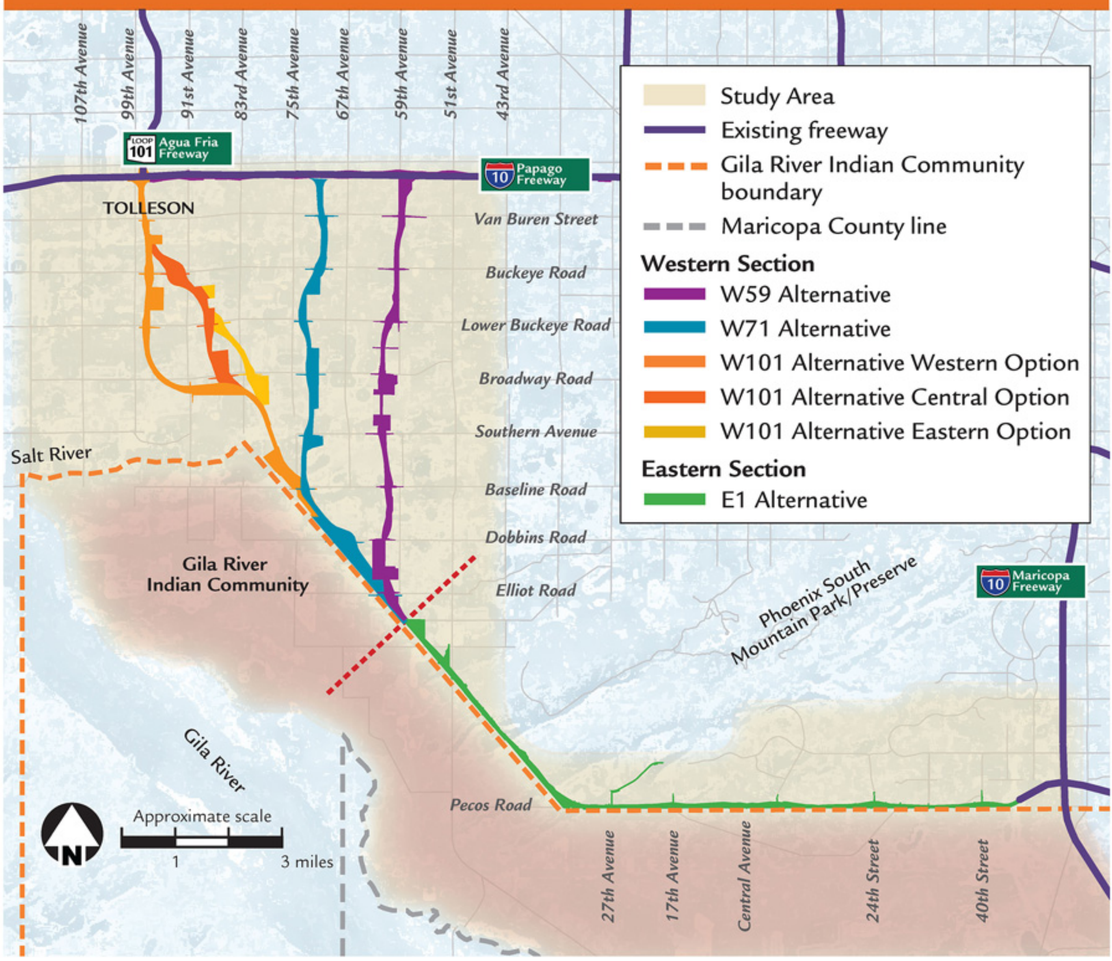
ON THE MOVE PARTNERS IN PROGRESS

CHAPTER 3

ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

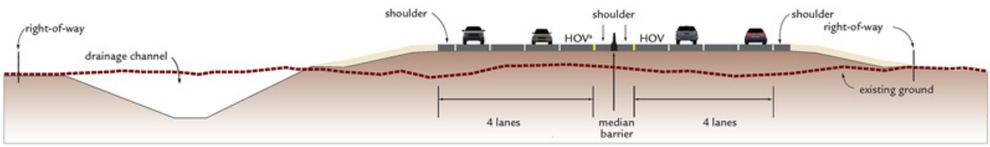
Screening Process Results

As a result of the screening process, **five alternatives** in the **Western Section** and **one alternative** in the **Eastern Section** were **carried forward** for detailed study in the Draft EIS.



Typical 8-Lane Freeway Configuration

The action alternatives would have three 12-foot-wide general-purpose lanes and one HOV lane in each direction, separated by a median barrier.



What other elements would be associated with all of the action alternatives?

- **Auxiliary lanes** between entrance and exit ramps would be used where warranted.
- **Rubberized asphalt** would be applied according to ADOT policy.
- **Signs, lighting, traffic signals and pavement markings** would be designed to meet current guidelines and standards.
- **Drainage structures** (basins, pipes, culverts, bridges) would be designed to meet standards and guidelines.
- **Noise walls** would be located adjacent to properties such as homes, schools, and churches as warranted.

LOOP 202
South Mountain
Freeway Study

azdot.gov/SouthMountainFreeway

ADOT

U.S. Department of Transportation Federal Highway Administration

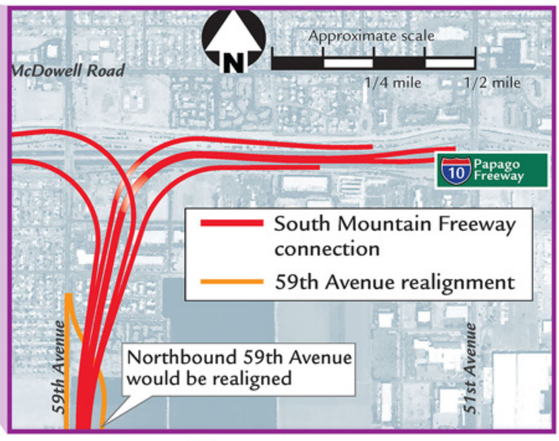
ON THE MOVE PARTNERS IN PROGRESS

CHAPTER 3

ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

Preferred Alternative

W59 Alternative



Note: Additional detail related to the plan and profile views of the preferred alternatives can be found on the roll plot maps.

E1 Alternative

LOOP 202
South Mountain
Freeway Study

azdot.gov/SouthMountainFreeway

ADOT

U.S. Department of Transportation Federal Highway Administration

ON THE MOVE

CHAPTER 3

ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

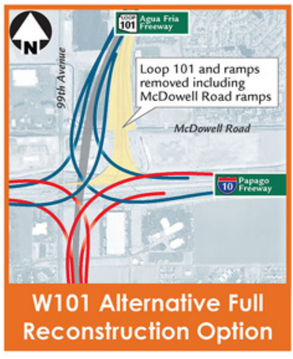
Other Alternatives Studied in Detail

W101 Alternatives

Western Option

Central Option

Eastern Option

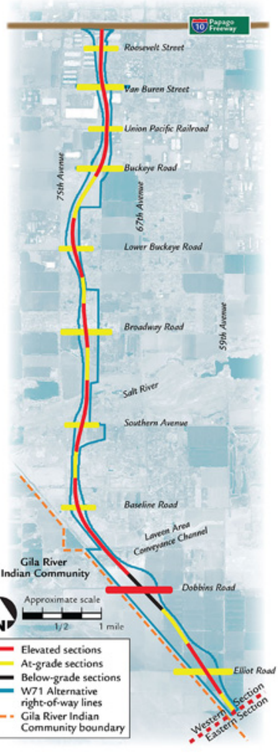


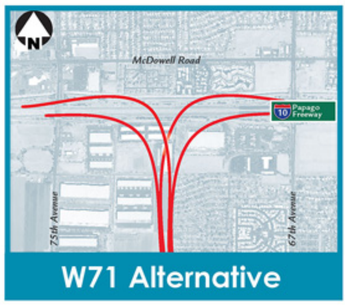
W101 Alternative Full Reconstruction Option

W101 Alternative Partial Reconstruction Option

South Mountain Freeway connection
Reconfigured freeway ramps
Loop 101/Loop 202 direct connection

W71 Alternative





W71 Alternative

South Mountain Freeway connection

LOOP 202
South Mountain
Freeway Study

azdot.gov/SouthMountainFreeway

ADOT

U.S. Department of Transportation Federal Highway Administration

ON THE MOVE PARTNERS IN PROGRESS

CHAPTER 3

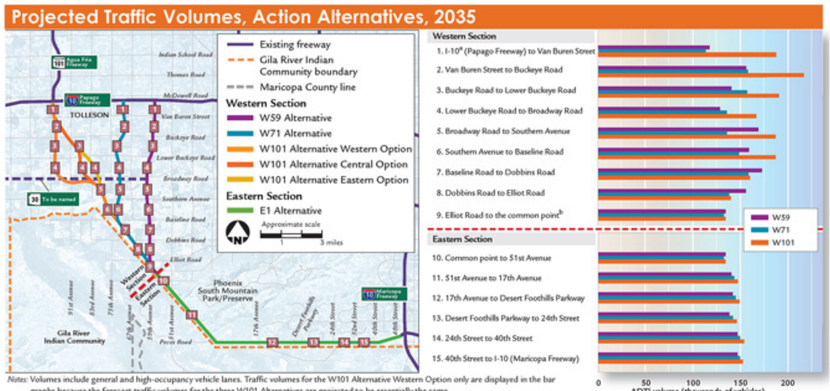
ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

Traffic Analysis of the Action Alternatives

Assessing future traffic conditions provided the study team a basis to **compare the action alternatives studied in detail**.

How would traffic on the proposed freeway vary by alternative?

Projected Traffic Volumes, Action Alternatives, 2035



Notes: Volumes include general and high-occupancy vehicle lanes. Traffic volumes for the W101 Alternative Western Option only are displayed in the bar graphs because the forecast traffic volumes for the three W101 Alternatives are projected to be essentially the same.

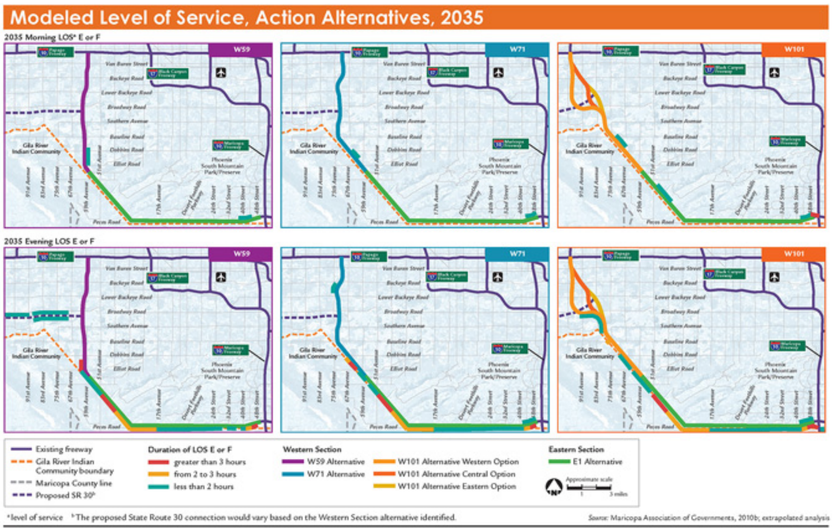
[a] Interstate 10 [b] See text box, *Creation of Western and Eastern Sections for the DEIS*, on page 3-8. [c] average daily traffic

Source: Maricopa Association of Governments, 2010b; extrapolated analysis

Future daily traffic volumes on **the action alternatives would be similar to those of other freeways in the region.**

What would the LOS be on the proposed freeway by alternative?

Modeled Level of Service, Action Alternatives, 2035



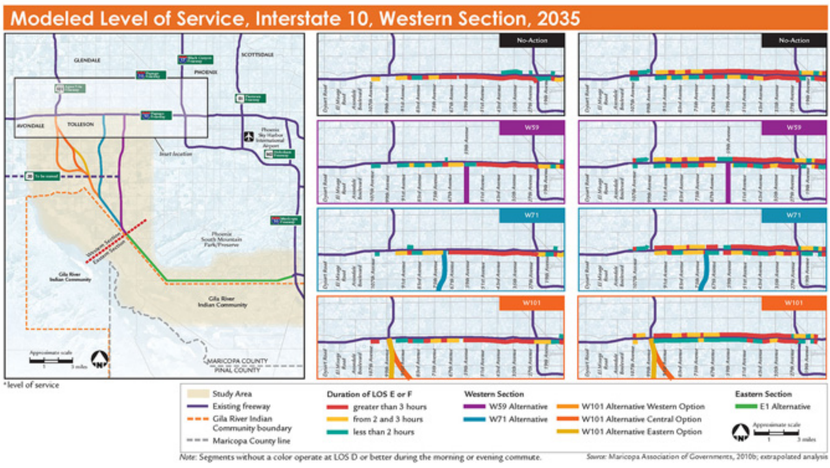
[a] level of service [b] The proposed State Route 30 connection would vary based on the Western Section alternative identified.

Source: Maricopa Association of Governments, 2010b; extrapolated analysis

The action alternatives would **perform well during the morning commute**. Traffic on short segments of the action alternatives would operate at LOS E or F during the evening commute in the Western and Eastern Sections.

What would the LOS be on I-10 (Papago) by alternative?

Modeled Level of Service, Interstate 10, Western Section, 2035



Note: Segments without a color operate at LOS D or better during the morning or evening commute.

Source: Maricopa Association of Governments, 2010b; extrapolated analysis

The W59, W71, and W101 Alternatives would meet the purpose and need criteria and would provide similar advantages when compared to the No-Build Alternative.

LOOP 202
South Mountain
Freeway Study

azdot.gov/SouthMountainFreeway

ADOT

U.S. Department of Transportation Federal Highway Administration

ON THE MOVE PARTNERS IN PROGRESS

CHAPTER 3

ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

No-Build vs. Build

The **No-Build Alternative** is included for detailed study in accordance with NEPA requirements. Evaluation of the No-Build Alternative concluded that it **WOULD NOT satisfy the purpose and need**.

Percentage of trips in the Study Area

	WITH a freeway in 2035		WITHOUT a freeway in 2035
Less traffic on streets	26%	on arterial streets	35%
	74%	on freeways	66%

CONCLUSION: With the proposed freeway, traffic WOULD BE distributed appropriately based on travel needs. **Without the freeway**, major travel **delays WOULD BE experienced** on the local arterial street system.

Travel time to downtown

Faster travel times	23 min	from Laveen	32 min
	26 min	from Ahwatukee	32 min

CONCLUSION: With the proposed freeway, annual travel time costs savings would be approximately **$200 million** when compared to conditions without the freeway.

Miles of I-10 with 3+ hours of congestion

Fewer traffic jams	13 mi	morning	20 mi
	21 mi	evening	33 mi

CONCLUSION: The **proposed freeway WOULD provide relief** by **eliminating congested freeway segments** and **reducing the duration of congested conditions**.

LOOP 202
South Mountain
Freeway Study

azdot.gov/SouthMountainFreeway

ADOT

U.S. Department of Transportation Federal Highway Administration

ON THE MOVE PARTNERS IN PROGRESS

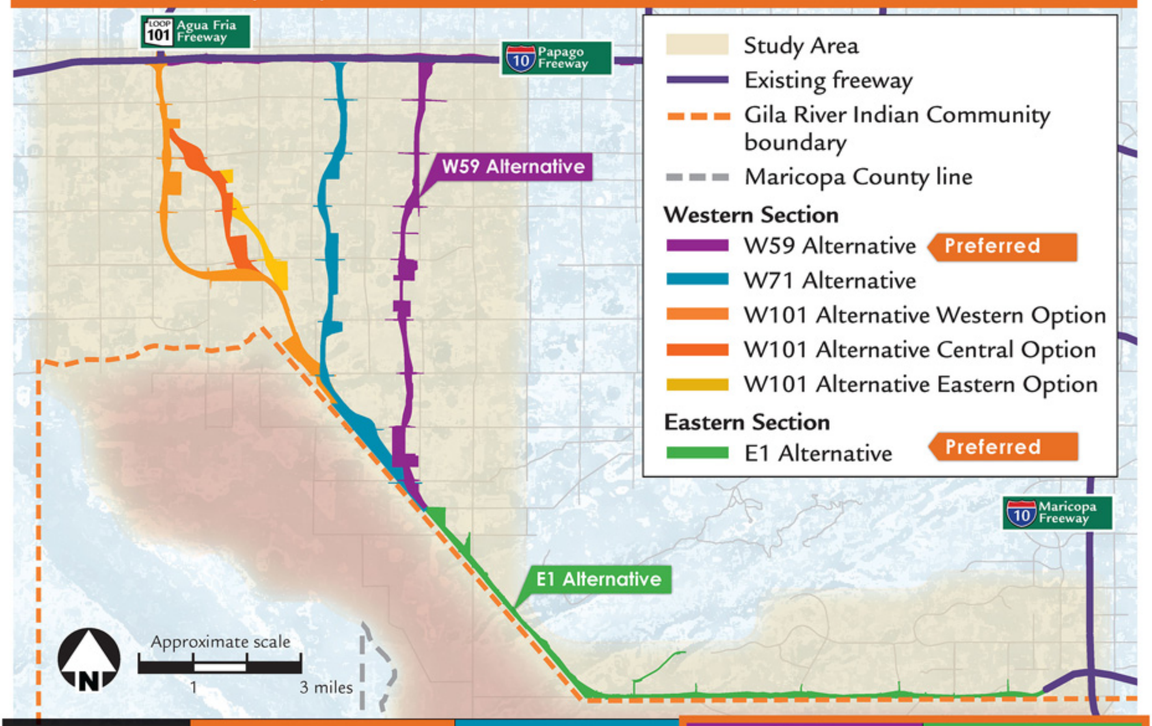
CHAPTER 3

ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

Identification of the Preferred Alternative

Based on the alternatives screening process, environmental impacts assessment, and stakeholder input, **ADOT, with concurrence from FHWA, identified the W59 Alternative as its Preferred Alternative in the Western Section and the E1 Alternative in the Eastern Section.**

In reaching its determination, ADOT sought to balance its responsibilities to address regional mobility needs, while being fiscally and environmentally responsible and sensitive to local communities.



Elements	W101	W71	W59	E1
Total costs*	$1.72–$1.87 billion	$1.54 billion	$1.23 billion	$762 million
Total number of residential displacements	940–1334 displacements	847 displacements	774 displacements	138 displacements
Reduction in total tax revenues	Inconsequential reduction in Phoenix and Avondale revenue. Adverse impact (14 to 17 percent reduction) on Tolleson revenue.	Inconsequential reduction in Phoenix revenue. No reduction in Tolleson and Avondale revenue.	Inconsequential reduction in Phoenix revenue. No reduction in Tolleson and Avondale revenue.	Inconsequential reduction in Phoenix revenue. No reduction in Tolleson and Avondale revenue.
Traffic operations	Provides direct connection to Loop 101 and better access to area west and north of study.	Provides traffic benefits when compared to the No-Action Alternative. Does not provide level of benefits as W59 or W101 Alternatives.	Shifts motorists from arterials to freeway for commuting trips. Provides best access to downtown. Maximizes performance of future SR 30 and Avenida Rio Salado projects.	Provides a direct connection to Loop 202. Reduces pass-through traffic on 51st Avenue in the Community. Reduces traffic on Chandler Boulevard in Ahwatukee.
Regional support from Cities and Towns.	Not consistent with local plans.	Not consistent with local plans.	7 resolutions passed supporting an alignment near 55th Avenue and opposing Loop 101.	Consistent with local plans.
				PREFERRED ALTERNATIVE

* including right-of-way, construction, and design

LOOP 202
South Mountain
Freeway Study

azdot.gov/SouthMountainFreeway

ADOT

U.S. Department of Transportation Federal Highway Administration

ON THE MOVE PARTNERS IN PROGRESS

CHAPTER 3

ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)