I-11 and Intermountain West Corridor Study

Technical Memorandum: Level 1 Evaluation Results Summary

Prepared for

Nevada DOT and ADOT

June 2, 2014

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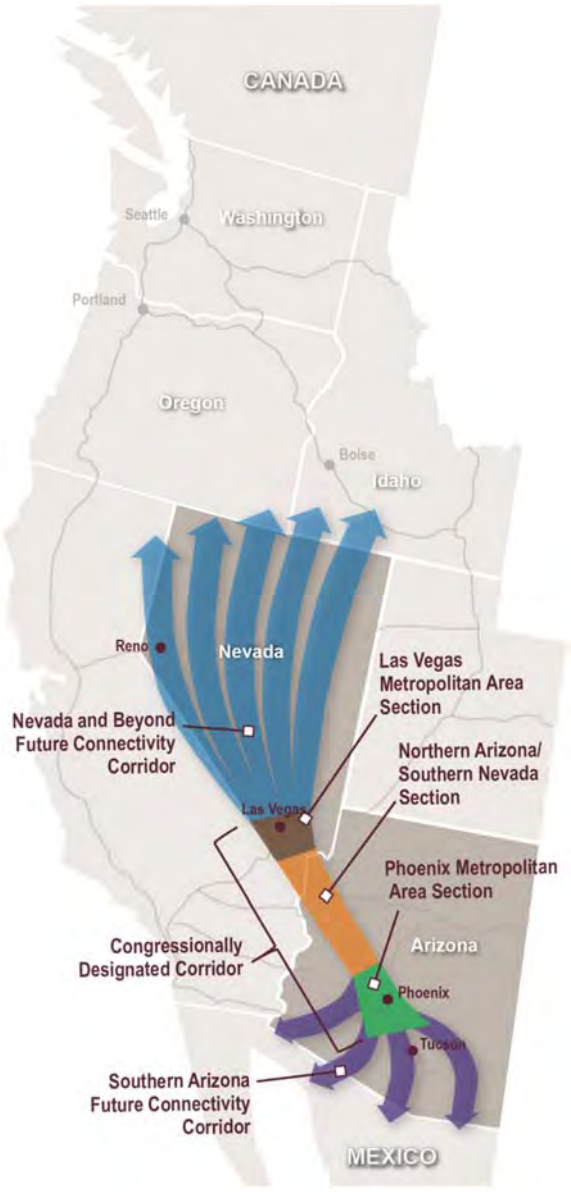
Evaluation Process, Criteria and Summary Results

The Arizona Department of Transportation (ADOT) and Nevada Department of Transportation (NDOT), in consultation with the Federal Highway Administration (FHWA) and the Federal Railroad Administration (FRA), and in partnership with the Maricopa Association of Governments (MAG) and the Regional Transportation Commission of Southern Nevada (RTC) referred to as Core Agency Partners, are conducting the Interstate 11 (I-11) and Intermountain West Corridor Study. The study is the latest action in a decades-long effort by Arizona, Nevada, and other Intermountain West states and the federal government to develop a transportation corridor between the Rocky Mountains and the Cascade Range/Sierra Nevada Mountains linking Mexico and Canada. The two-year study includes detailed corridor planning of a possible high-capacity transportation link connecting Phoenix and Las Vegas and high-level visioning for extending the corridor north of Las Vegas to Canada and south of Phoenix to Mexico.

This document presents the procedure and results for evaluating alternatives in the *I-11 and Intermountain West Corridor Study*. **Figure 1** illustrates the corridor study area. The central segment, extending between the greater Phoenix and Las Vegas metropolitan areas, is known as the Congressionally Designated Corridor because Congress designated this segment as future I-11 in the Moving Ahead for Progress in the 21st Century Act (MAP-21) legislation. This Congressionally Designated Corridor, in turn, consists of three sections, designated from south to north as Phoenix Metropolitan Area, Northern Arizona/Southern Nevada, and Las Vegas Metropolitan Area. To the south of the Congressionally Designated Corridor lies the Southern Arizona Future Connectivity Segment, extending from the southern fringe of metropolitan Phoenix to the Mexican border. Similarly, the Northern Future Connectivity Segment extends from the north edge of metropolitan Las Vegas to the northern border of Nevada and beyond.

Figure 1. Study Area Segmentation



Corridor-wide Goals and Objectives

The corridor's Goals and Objectives Statement aims to provide a big-picture explanation of the potential benefits of the I-11 and Intermountain West Corridor, particularly the segments in Arizona and Nevada. The Goals and Objectives Statement (provided in Appendix A) was prepared through input received from project stakeholders and will be used in the development of a Purpose and Need Statement for the Congressionally Designated Corridor as the study progresses.

As each segment of the I-11 and Intermountain West Corridor moves from the planning stage to the National Environmental Policy Act (NEPA) phase, a separate Purpose and Need Statement will be developed that focuses on the unique transportation deficiencies in that segment that must be addressed.

The need for the proposed action is anticipated to be a combination of factors that include legislation, system linkage, trade corridor, modal interrelationships, capacity/congestion, economics, and project status/public policy. The remainder of this document discusses those factors. Together, the goals and objectives shape the range of corridor alternatives developed and evaluated for the project.

- **Legislation** – Is there a federal, state, or local governmental mandate for the action?
- **System Linkage** – Is the proposed project a "connecting link"? How does it fit in the transportation system?
- **Trade Corridor** – How will the proposed facility enhance the efficient movement of freight in the study corridor?
- **Modal Interrelationships** – How will the proposed facility interface with and serve to complement airports, rail and port facilities, mass transit services, etc.?
- **Capacity** – Is the capacity of the present facility inadequate for the present traffic? Projected traffic? What capacity is needed? What is the level(s) of service for existing and proposed facilities?
- **Economics** – Projected economic development/land use changes indicating the need to improve or add to the highway capacity.
- **Project Status** – Project history, including actions taken to date, other agencies and governmental units involved, action spending, schedules, etc.

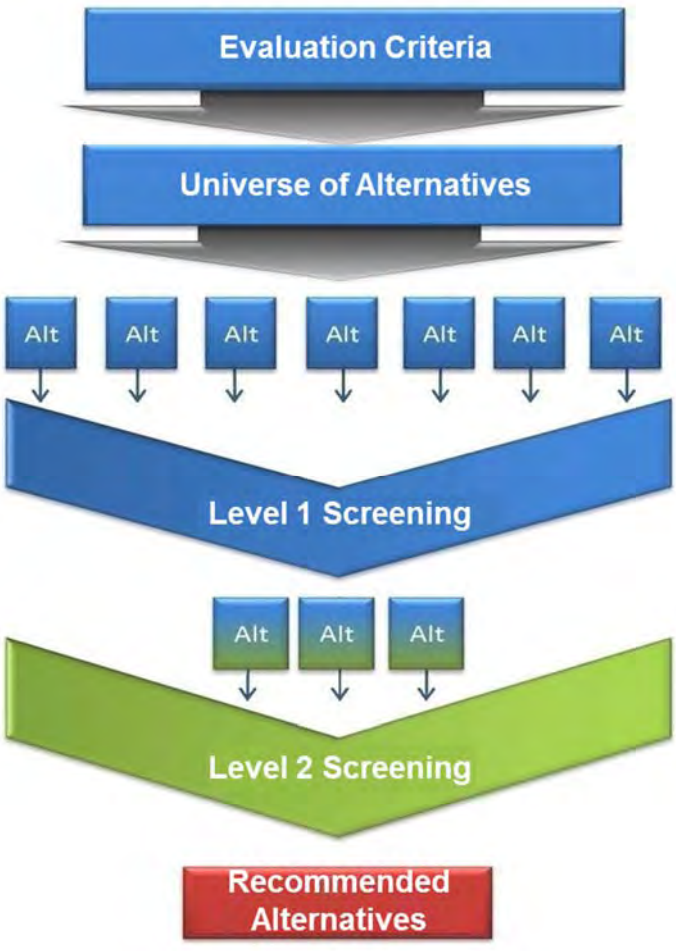
Evaluation Process

For purposes of this study, an alternative is defined as a planning-level corridor that could contain one or more modes (e.g., highway, rail, utilities) within one or more of the study area segments. Part or all of a corridor may consist of, or contain, an existing transportation facility as well as other infrastructure, such as utilities. The evaluation process consists of two levels of evaluation (**Figure 2**). Stakeholder input was received at each stage of the evaluation process, as shown in **Table 1,** and will continue to be solicited throughout the study process.

Level 1 applies to the entire corridor including the three Congressionally Designated Corridor Sections and the Southern and Northern Future Connectivity Segments. The Level 1 evaluation applies a small number of qualitative criteria to a comprehensive universe of alternatives. The purpose of this first level is to identify fatal flaws and assess whether an alternative meets the Goals and Objectives (see Appendix A) of the project in order to:

- Determine which corridors within the Congressionally Designated Corridor Sections are most feasible to achieve the Goals and Objectives of this project, and
- Help identify which corridor options (routes and modes) in the Future Connectivity Segments are the most promising candidates for long-term connections to the Congressionally Designated Corridor.

Figure 2. Evaluation Process



The Level 2 evaluation will utilize many of the same categories as those used for the Level 1 screening, but the measures will be quantitative where possible (depending on available data).

Those for which suitable numerical data are not available will be assessed subjectively by professional planning or engineering judgment. Specific Level 2 measures will be developed after the conclusion of Level 1 screenings with input from the Stakeholder Partners.

The study team will use the Level 2 criteria to further evaluate alternatives that have been shown in Level 1 to be potentially beneficial to the two states. The Level 2 evaluation will apply only to the three Congressionally Designated Corridor Sections. Depending on the initial screening results, some of the original alternatives may be modified or even hybridized at this time. The purpose of this evaluation is to identify the range of feasible alternatives, including No-Build, for further planning and environmental work as part of the I-11 and Intermountain West Corridor development process.

In both the Level 1 and Level 2 evaluations, either written explanations or numerical results for each alternative will be translated into a simple comparative rating scale. For quantitative criteria used in Level 2, the numerical range that corresponds to each rating will be shown.

The Level 1 evaluation was conducted by a multidisciplinary consultant team, with input from the Project Sponsors (NDOT and ADOT), Core Agency Partners, Stakeholder Partners, and the general public. Additionally, the AGFD and The Nature Conservancy completed their own analyses (included in Appendix B and Appendix C, respectively) using GIS data layers to provide input on which alternatives and/or corridor segments had significant environmental impact to habitat areas and/or wildlife linkages, specifically noting those where mitigation was feasible (or not).

Table 1. Stakeholder Evaluation Process Input Meetings

Date	Meeting	Purpose
June 27, 2013	Core Agency Partners	Discuss the Goals and Objectives, and Evaluation process and criteria
July 16, 17, 22, 2013	Stakeholder Partner meetings with all 5 geographic segments (175 participants)	Discuss the Goals and Objectives, and Evaluation process and criteria
July 30, 2013	Core Agency Partners	Discuss the Universe of Alternatives
August 12-15, 2013	Stakeholder Partner meetings with all 5 geographic segments (193 participants)	Discuss the Universe of Alternatives
September 24, 2013	Core Agency Partners	Discuss Level 1 screening results and Level 2 screening criteria
October 8-10 and 16-17, 2013	Stakeholder Partner meetings with all 5 geographic segments (166 participants)	Discuss Level 1 screening results and Level 2 screening criteria
October 8-10 and 16-17, 2013	Public meetings in all 5 geographic segments (274 participants)	Discuss Level 1 screening results and Level 2 screening criteria
January 15, 2014	Core Agency Partners	Discuss Level 2 Screening for 3 Sections
January 21-23, 2014	3 separate Congressionally Designated Corridor Section Geographic Stakeholder Partner meetings	Discuss Level 2 Screening for 3 Sections
February 2014	Virtual public meeting session for all 5 segments (over 2,000 participants)	Discuss Level 2 Screening for 3 Sections
March 12, 2014	Core Agency Partners	Discuss Recommended Alternatives, Business Case, Implementation Plan, and Purpose and Need
March 19, 2014	Joint Stakeholder Partner Meeting	Discuss Recommended Alternatives, Business Case, Implementation Plan, and Purpose and Need

Level 1 Evaluation Criteria

The study team conducted the Level 1 evaluation of all alternatives (to see a description of each alternative, please refer to "Draft Candidate Corridor Alternatives for Level 1 Screening" memorandum). The criteria used to measure the alternatives were grouped into categories, as shown in **Table 2**.

Table 2. Level 1 Evaluation Criteria

For use in all corridor segments.

Each criterion was rated on a qualitative scale of "least favorable" to "most favorable."

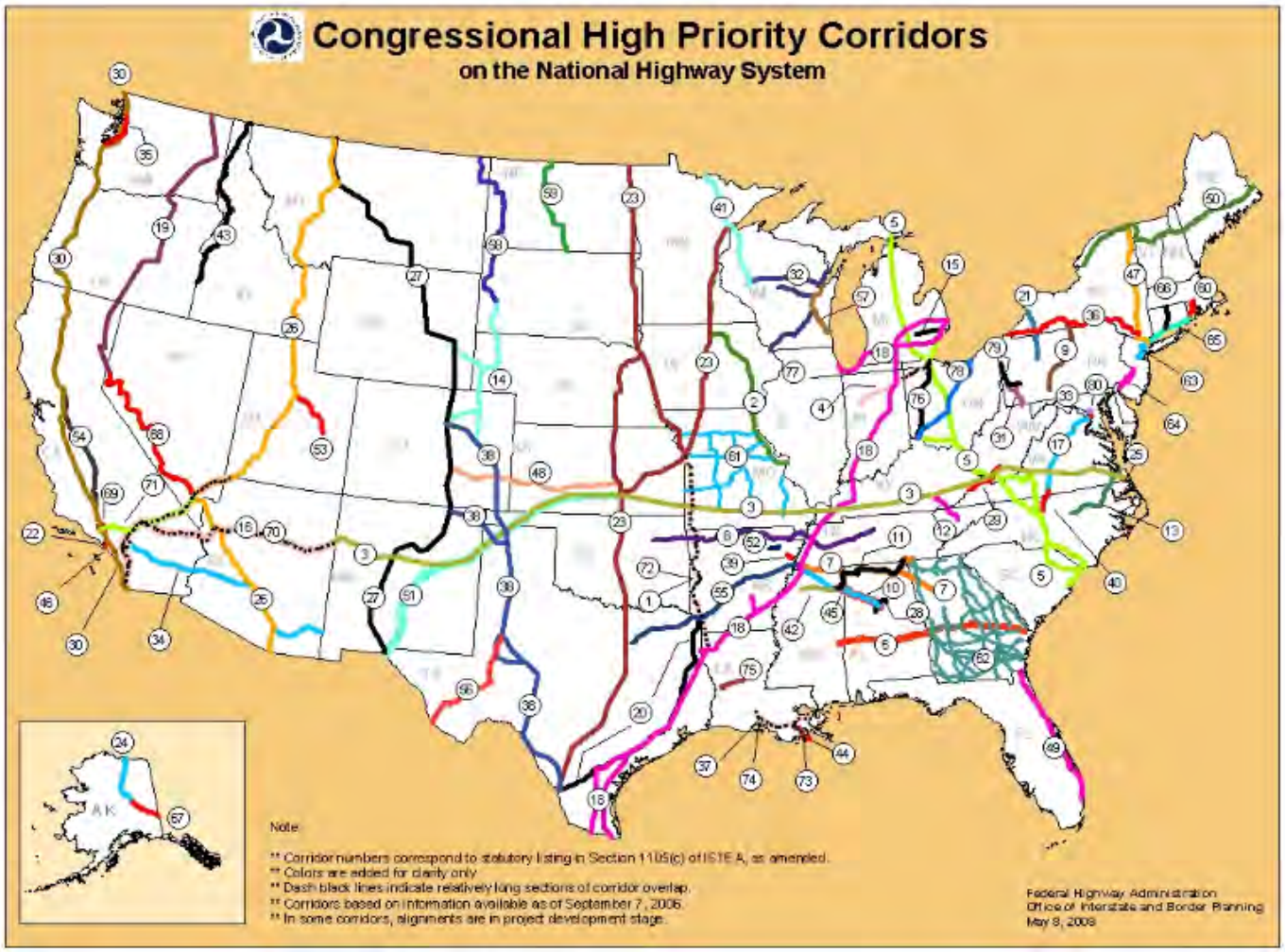
Evaluation Category		Criteria
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?
	4	How well does this alternative connect with adjacent segments/sections?
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?
	12	How well does this alternative conform to locally adopted transportation plans?
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?
	16	How compatible is this alternative with major land ownership patterns?
Community Acceptance	17	How well is this alternative accepted by the local communities?
Cost	18	What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?

Each alternative was rated with respect to each of the evaluation criteria. The rating system consisted of a qualitative scale (from least to most favorable), with "most favorable" representing the best performance, and "least favorable" representing the worst performance. Connectivity-related criteria were rated based on connectivity with *adjacent* segments. General guidance on how the criteria were evaluated in relationship to the project's Goals and Objectives follows:

- **Criterion 1: How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?**
  - Alternatives were evaluated based on their compliance with Congressionally designated high priority corridors, including (see **Figure 3**):

- CANAMEX: I-19 from Nogales to Tucson, I-10 from Tucson to Phoenix, United States (US) 93 in the vicinity of Phoenix to the Nevada border, US-93 from the Arizona border to Las Vegas, and I-15 from Las Vegas to the Utah Border
- I-11: US-93 in the vicinity of Phoenix to the Nevada border, and US-93 from the Arizona border to Las Vegas (as part of CANAMEX)
- The Washoe County corridor, along Interstate Route 580/United States Route 95/United States Route 95A, from Reno, Nevada, to Las Vegas, Nevada.
- United States Route 395 Corridor from the United States-Canadian border to Reno, Nevada.
- United States Route 95 Corridor from the Canadian border at Eastport, Idaho, to the Oregon state border.

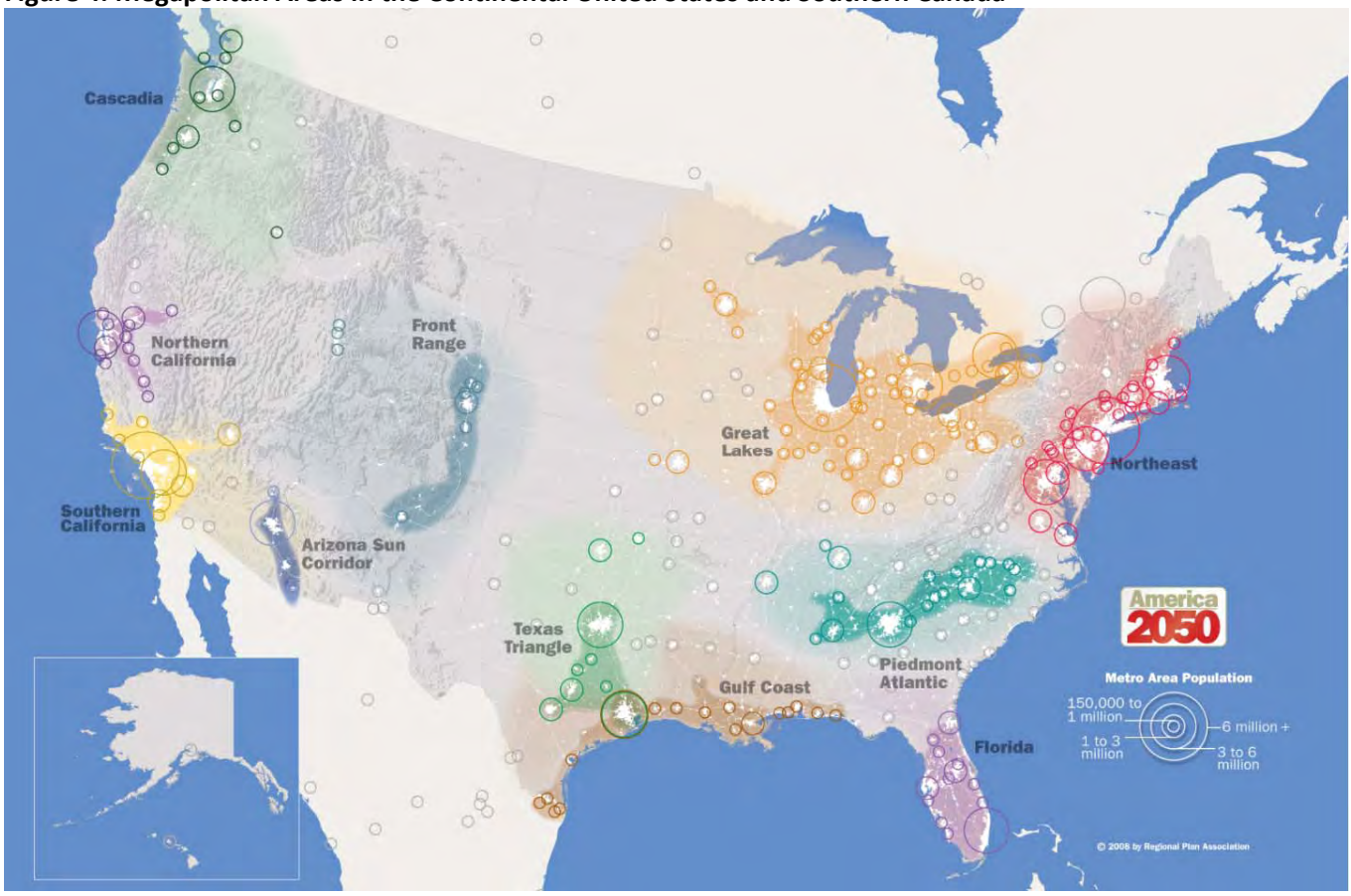
Figure 3. Congressional High Priority Corridors



Source: FHWA http://www.fhwa.dot.gov/planning/national_highway_system/high_priority_corridors/hiprimap.cfm

- **Criterion 2: How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?**
  - Alternatives were evaluated based on their connectivity to primary centers of population and commerce, at segment termini and along the corridor. This analysis was conducted at a macro scale using the megapolitan areas identified by America 2050 and the Regional Plan Association, shown in **Figure 4** and introduced in the "Corridor Justification Report", as major economic activity centers.

Figure 4. Megapolitan Areas in the Continental United States and Southern Canada



Source: America 2050

- **Criterion 3: How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?**
  - This criterion was applied to all segments to understand gaps or links in the regional transportation network that can be filled (or a route made more efficient) with the construction of this corridor.
- **Criterion 4: How well does this alternative connect with adjacent segments/sections?**
  - Alternatives were evaluated based on the ability to make a connection with an alternative in the adjacent segment/section. Alternatives that connected with two adjacent segments rated "most favorable"; alternatives that connected with one adjacent segment rated "moderately favorable"; and alternatives that did not connect with any adjacent segments rated "least favorable."
- **Criterion 5: How well does this alternative connect major freight hubs and high capacity transportation corridors?**
  - Alternatives were evaluated based on how many freight hubs and/or high capacity transportation corridors they traversed (directly crossed or in close proximity).
- **Criterion 6: How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?**
  - Alternatives were evaluated based on the number of east-west high-capacity roadway and railroad corridors traversed, and proximate airports and intermodal yard facilities. Those with connectivity to higher numbers of facilities provide greater opportunity for intermodal connectivity.

- **Criterion 7: How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?**
  - Alternatives were evaluated qualitatively, based on the percent of the corridor that could accommodate multiple modes and uses (highway, rail, utilities, etc.) in one corridor footprint, generally reviewing slopes and available right-of-way. While the alternative descriptions cite the feasibility for highway and rail opportunities, the potential exists for co-location of major utility corridors as well. If the alternative can accommodate highway and rail, it is generally assumed (from a right-of-way and slopes perspective) to have the additional ability to accommodate major utilities.
  - It is recognized that a small section of a corridor that is incompatible with multiple uses could have a large negative effect on the entire corridor's ability to accommodate multiple uses. This was not considered in this early analysis, but will be during the Level 2 evaluation.
- **Criterion 8: How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?**
  - Alternatives were evaluated using existing and projected future level of service conditions identified in the "Corridor Justification Report". Where an alternative has the opportunity to relieve congestion between major activity centers (generally, between large metropolitan areas, or in the case of the Phoenix and Las Vegas sections, providing relief to congestion within the metropolitan area), it was rated higher. Although many alternatives serve as bypasses or loop corridors around metropolitan cores, they are expected to perform as part of the regional transportation system. Therefore, by forming junctions with existing corridors that may traverse the metropolitan core, the alternative may serve both for congestion relief and as local access.
- **Criterion 9: How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?**
  - This criterion primarily related to Southern Arizona and the ability of alternative corridors to effectively cross the Arizona-Sonora international border in an efficient manner. Existing and proposed improvements at land ports of entry (LPOEs) were taken from the recently completed ADOT *Arizona-Sonora Border Master Plan*.
- **Criterion 10: How well does this alternative support regional, state and national economic development goals?**
  - Alternatives were evaluated based on their ability to support economic development initiatives that rely on transportation connections. State economic development priorities, elaborated in the "Corridor Justification Report", are summarized in **Table 3** and include such items as renewable energy development, tourism, transportation logistics, and aerospace/aviation/defense.

Table 3. Arizona and Nevada Industry Targets and Clusters

Industry Targets	Arizona	Nevada	Requires Regional Transportation Network
Advanced Manufacturing	•		•
Aerospace, Aviation, Defense	•	•	•
Agriculture	•	•	•
Optics	•		•
Biotechnology	•		•
Healthcare	•	•	
Information and Computer Technology	•	•	
Life Sciences	•		•
Mining, Materials, and Manufacturing		•	•
Renewable Energy	•	•	•

Table 3. Arizona and Nevada Industry Targets and Clusters

Industry Targets	Arizona	Nevada	Requires Regional Transportation Network
Science and Technology	•		•
Tourism, Gaming, and Entertainment		•	•
Transportation and Logistics	•	•	•

Sources: Arizona Commerce Authority, Brookings Institution, Greater Phoenix Economic Council, Tucson Regional Economic Opportunities, Nevada Governor's Office of Economic Development (Full reference provided in the "Corridor Justification Report")

- **Criterion 11: How well does this alternative comply with corridor-related actions taken to date?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a corridor-related action. A corridor-related action was defined as a federal, state or regional action or designation in place that plans for a high-capacity transportation corridor.
- **Criterion 12: How well does this alternative conform to locally adopted transportation plans?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a plan adopted by a local community, such as a General/Comprehensive Plan or Transportation Master Plan.
- **Criterion 13: How compatible is this alternative with regional open space, conservation, and land management agency planning?**
  - Alternatives were evaluated based on the amount of the alternative that traverses a protected open space, identified from various sources which include, but are not limited to: national conservation areas, existing parks, wilderness areas, wildlife refuges, and local/regional open space management plans.
- **Criterion 14: How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?**
  - Alternatives were evaluated based on the amount of the corridor traversing various environmental features (as presented in the "Existing Natural and Built Environment" technical memorandum).
  - Additionally, the Arizona Game and Fish Department (AGFD) and The Nature Conservancy completed their own analyses using geographic information systems (GIS) data layers to provide input on which alternatives and/or corridor segments had significant environmental impact to habitat areas and/or wildlife linkages, specifically noting those where mitigation was feasible (or not). These analyses also noted alternatives that provided opportunities to improve wildlife linkages.
- **Criterion 15: How consistent is this alternative with regional land use and growth strategies?**
  - Alternatives were evaluated based on the consistency of the corridor with land use or growth strategies identified as part of regional planning efforts (e.g., Regional Transportation Plan [RTP], socioeconomic projections), growth elements of General/comprehensive plans, and/or major land development plans.
- **Criterion 16: How compatible is this alternative with major land ownership patterns?**
  - Alternatives were evaluated based on the compatibility of a major transportation infrastructure facility to traverse land under state or federal ownership, including such land owners as Bureau of Land Management, Bureau of Reclamation, U.S. military, National Park Service, state land departments, state parks, tribal communities, U.S. Fish and Wildlife, and U.S. Forest Service.
- **Criterion 17: How well is this alternative accepted by the local communities?**
  - Input received from Stakeholder Partners and their constituents at the October 2013 stakeholder partner/public meetings, as well as input received via the online comment form, were considered in determining the degree of acceptance of an alternative. Alternatives that received no comments or conflicting comments (supportive and non-supportive) received a "moderately favorable" rating. Alternatives that received mostly supportive comments received the "most favorable" rating, and alternatives that received mostly non-supportive comments received the "least favorable" rating.

- **Criterion 18: What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?**
  - Generalized, comparative planning-level costs were estimated based primarily on length of the alternative, with capital construction cost factors given to (a) existing corridors, (b) existing corridors requiring additional right-of-way or significant upgrades/improvements, and (c) new/green corridor development. Compared to the cost per mile of improving an existing highway, it was assumed that a new highway would cost twice as much, and that an existing highway with significant right-of-way acquisitions or improvements needed would cost 1.5 times as much.

Level 1 Evaluation Summary Results

The evaluation rating scale described above is strictly relative – alternatives were considered in relation to each other in the same project segment. If an alternative receives the highest rating, it may still face issues or obstacles with respect to that criterion.

A summary rating was applied to all of the alternatives to note their overall feasibility. In the Congressionally Designated Corridor Sections, those alternatives rating "somewhat favorable" or "most favorable" will continue on to the more detailed Level 2 analysis, which will evaluate alternatives based on more quantitative-based criterion. The Level 2 evaluation will apply only to the three Congressionally Designated Corridor Sections. Recommended reasonable and feasible alternatives from the Future Connectivity Areas are recommended for further study only, to be further pursued in future planning efforts. Alternatives ranking "moderately favorable," "less favorable," or "least favorable" typically include a fatal flaw or do not support the project's goals and objectives.

A summary of the evaluation results are presented in **Table 4**, listing each alternative evaluated in Level 1, its summary rating for each evaluation category, and its overall rating. The summary rating for each evaluation category is an average of the ratings for each criteria under that category. Detailed evaluation results are presented later in this report. **Figure 5** shows the recommendations from the Level 1 evaluation results. Alternatives in the Congressionally Designated Corridor recommended for Level 2 analysis are anticipated to be carried into a more detailed, and where possible, quantitative-based screening. In the Future Connectivity Areas, those "recommended for further analysis" would undergo more detailed analysis in future studies.

The following sections, divided out by corridor segment/section, contain more detailed information on the Level 1 evaluation, including large maps of each alternative. Each section includes an explanation of the evaluation approach for each criterion for that segment/section, and detailed summary sheets for each alternative, including a map of the alternative, alternative description, summary rating scale, opportunities/constraints, and detailed evaluation notes.

Table 4. Summary of Level 1 Evaluation Results by Category

Alternative	Evaluation Category											
	Legislation	System Linkage	Trade Corridor	Modal Interrelationships	Capacity/ Congestion	Economic Vitality	Project Status/ Transportation Policy	Environmental Sustainability	Land Use and Ownership	Community Acceptance	Cost	Overall
Southern Arizona												
A												
B												
C												
D												
E												
II												
JJ												
Phoenix Metropolitan Area												
F												
G												
H												
I												
J												
K												
L												
KK												
LL												
MM												
NN												
Northern Arizona/Southern Nevada												
M												
N												
O												
P												
Q												
R												
S												

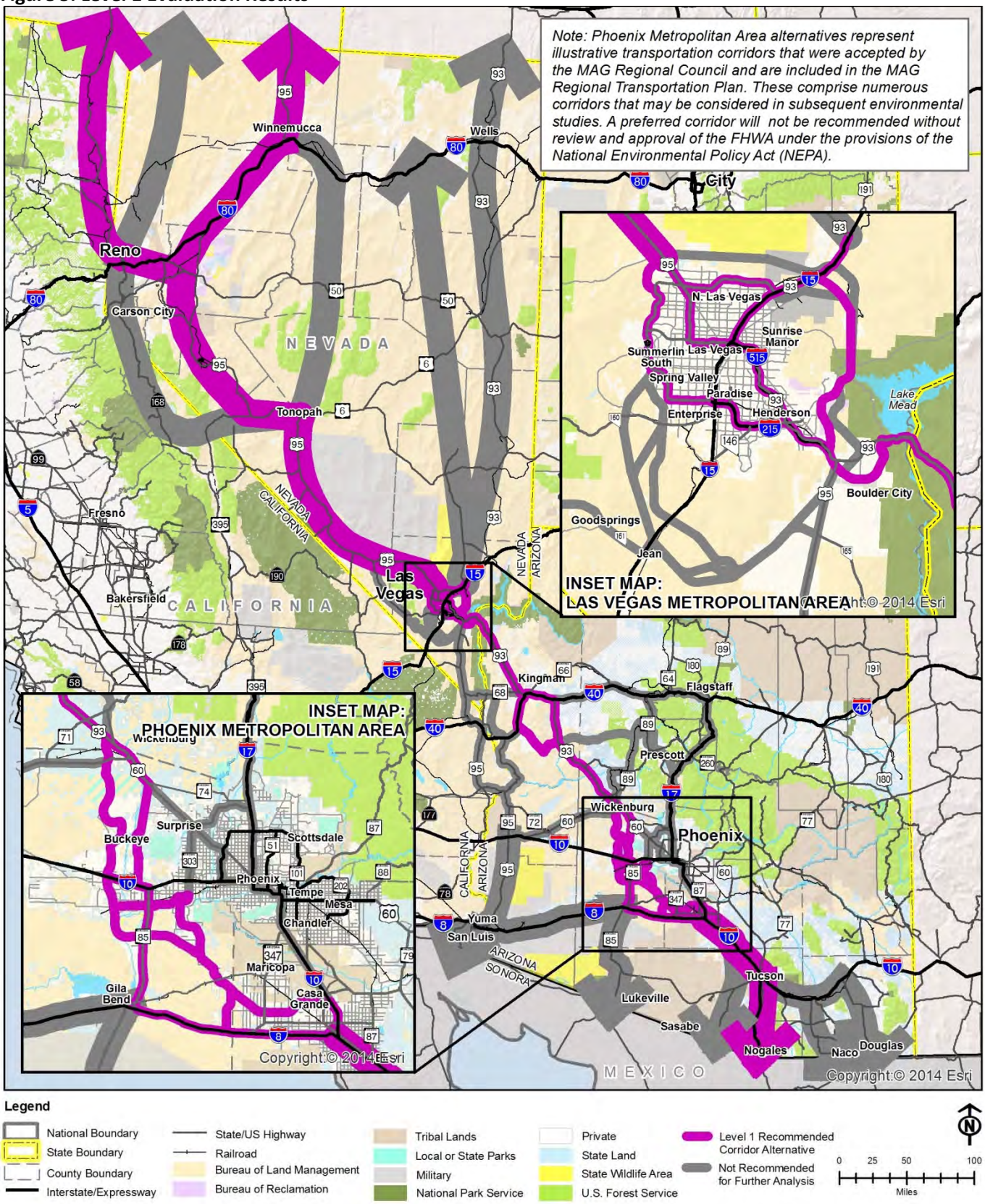
Table 4. Summary of Level 1 Evaluation Results by Category

Alternative	Evaluation Category											
	Legislation	System Linkage	Trade Corridor	Modal Interrelationships	Capacity/ Congestion	Economic Vitality	Project Status/ Transportation Policy	Environmental Sustainability	Land Use and Ownership	Community Acceptance	Cost	Overall
T												
OO												
PP												
UU												
Las Vegas Metropolitan Area												
U												
V												
W												
X												
Y												
Z												
AA												
BB												
CC												
QQ												
RR												
Northern Nevada												
DD												
EE												
FF												
GG												
HH												
SS												
TT												

Legend:

Most Favorable	Somewhat Favorable	Moderately Favorable	Less Favorable	Least Favorable

Figure 5. Level 1 Evaluation Results



Evaluation Results: Southern Arizona Future Connectivity Segment

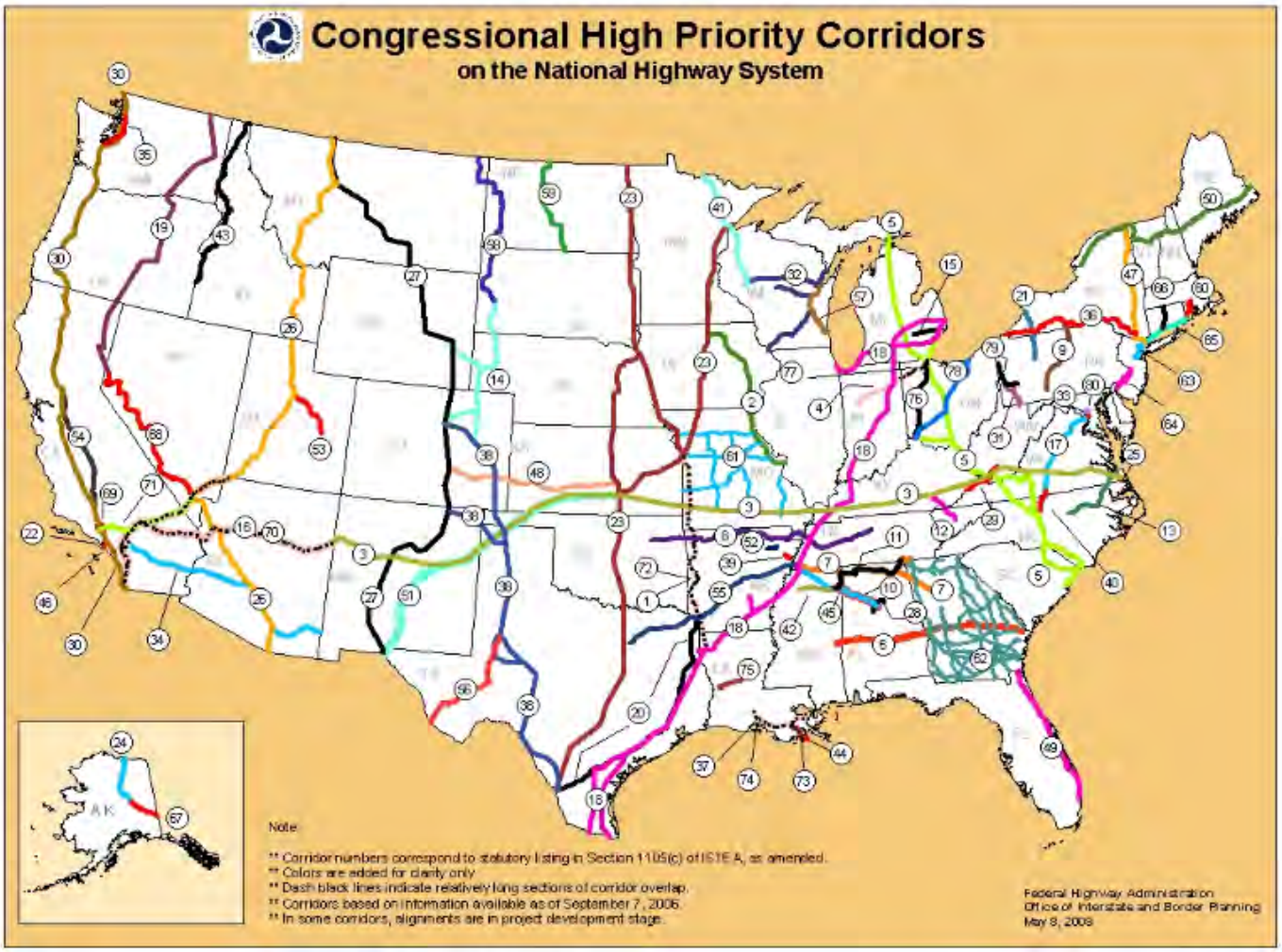
The Southern Arizona Future Connectivity Segment includes the entire southern Arizona border with Mexico. Although the mapping for this segment includes portions of the Phoenix Metropolitan Area, the focus of this study portion spans from the international border with Mexico to the southern limits of the Phoenix Metropolitan Area. The breadth of the future connectivity study segment allows higher-level visioning for this potential extension south of the Phoenix Metropolitan Area.

The study team conducted the Level 1 evaluation of all alternatives (to see a description of each alternative, please refer to "Draft Candidate Corridor Alternatives for Level 1 Screening" memorandum).

Each alternative was rated with respect to each of the evaluation criteria. The rating system consisted of a qualitative scale (from least to most favorable), with "most favorable" representing the best performance and "least favorable" representing the worst performance. Connectivity-related criteria were rated based on connectivity with *adjacent* segments. General guidance on how the criteria were evaluated in relationship to the project's Goals and Objectives follows.

- **Criterion 1: How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?**
  - Alternatives were evaluated based on their compliance with Congressionally designated high priority corridors, including (see **Figure 6**):
    - CANAMEX: I-19 from Nogales to Tucson, I-10 from Tucson to Phoenix, US-93 in the vicinity of Phoenix to the Nevada border, US-93 from the Arizona border to Las Vegas, and I-15 from Las Vegas to the Utah border
    - I-11: US-93 in the vicinity of Phoenix to the Nevada border, and US-93 from the Arizona border to Las Vegas
    - The Washoe County corridor, along Interstate Route 580/United States Route 95/United States Route 95A, from Reno, Nevada, to Las Vegas, Nevada.
    - United States Route 395 Corridor from the United States-Canadian border to Reno, Nevada.
    - United States Route 95 Corridor from the Canadian border at Eastport, Idaho, to the Oregon state border.
  - In this segment, corridors that follow the CANAMEX designation in full (I-19 and I-10) received the "most favorable" rating; those that include portions of the designated corridor received "moderately favorable" ratings.

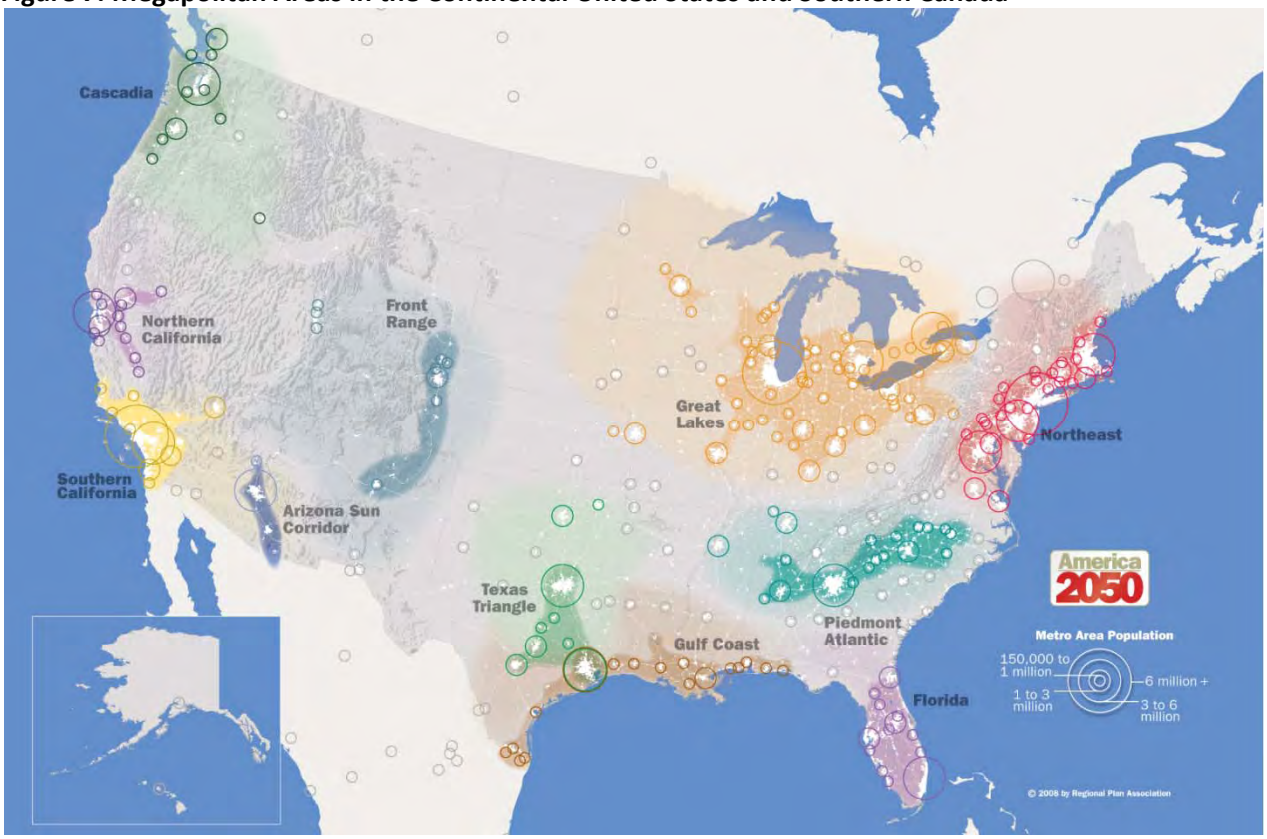
Figure 6. Congressional High Priority Corridors



Source: FHWA http://www.fhwa.dot.gov/planning/national_highway_system/high_priority_corridors/hiprimap.cfm

- **Criterion 2: How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?**
  - Alternatives were evaluated based on their connectivity to primary centers of population and commerce at segment termini and along the corridor. This analysis was conducted at a macro scale using the megapolitan areas identified by America 2050 and the Regional Plan Association, shown in **Figure 7** and introduced in the "Corridor Justification Report", as major economic activity centers.
  - The core of the Sun Corridor megapolitan includes Phoenix and Tucson, with extensions to Nogales to the south and Prescott to the north. In Southern Arizona, the "most favorable" ratings were given to alternatives that provided connections to Phoenix and Tucson and Nogales, with "moderately favorable" ratings given to alternatives connecting only to the core of the megapolitan (Phoenix and Tucson). Unlike other corridor segments, the character of the border cities and communities in Mexico that the alternative would connect was also heavily considered. Major activities in Mexico with an impact on this corridor are located in Nogales, Sonora, home to large maquiladora clusters and the Mexican agri-belt gateway to the U.S. "Moderately favorable" ratings were given to alternatives connecting to major border activity centers.

Figure 7. Megapolitan Areas in the Continental United States and Southern Canada



Source: America 2050

- **Criterion 3: How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?**
  - This criterion was applied to all segments to understand gaps or links in the regional transportation network that can be filled (or a route made more efficient) with the construction of this corridor.
  - In this segment, alternatives were all rated "moderately favorable", as alternative corridors utilize existing transportation routes and therefore do not meet the requirement of closing gaps or developing missing linkages.
- **Criterion 4: How well does this alternative connect with adjacent segments/sections?**
  - Alternatives were evaluated based on the ability to make a connection with an alternative in the adjacent segment/section. Alternatives that connected with two adjacent segments rated "most favorable"; alternatives that connected with one adjacent segment rated "moderately favorable"; and alternatives that did not connect with any adjacent segments rated "least favorable."
  - A maximum of only one connection is possible in this segment, and therefore the maximum rating is "moderately favorable."
- **Criterion 5: How well does this alternative connect major freight hubs and high capacity transportation corridors?**
  - Alternatives were evaluated based on how many freight hubs and/or high capacity transportation corridors they traversed (directly crossed or in close proximity).
  - In this segment, Tucson and Yuma were considered major freight hubs. The ability to connect to a high capacity transportation facility in Mexico (highway or rail), including Highway 15 (an extension of I-19 through Nogales to Mexico City) was considered important.

- **Criterion 6: How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?**
  - Alternatives were evaluated based on the number of east-west high-capacity roadway and railroad corridors traversed, and proximate airports and intermodal yard facilities. Those with connectivity to higher numbers of facilities provide greater opportunity for intermodal connectivity.
  - In this segment, most of the alternatives rated high because of their intersection with east-west high capacity transportation facilities (e.g., I-8, I-10, UPRR Sunset Route and branch lines) that can allow for intermodal connectivity, as well as their potential proximity to intermodal centers/classification yards (Tucson, Yuma, and Red Rock).
- **Criterion 7: How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?**
  - Alternatives were evaluated qualitatively, based on the percent of the corridor that could accommodate multiple modes and uses (highway, rail, utilities, etc.) in one corridor footprint, generally reviewing slopes and available right-of-way. While the alternative descriptions cite the feasibility of highway and rail opportunities, the potential exists for co-location of major utility corridors as well. If the alternative can accommodate highway and rail, it is generally assumed (from a right-of-way and slopes perspective) to have the additional ability to accommodate major utilities.
  - It is recognized that a small section of a corridor that is incompatible with multiple uses could have a large negative effect on the entire corridor's ability to accommodate multiple uses. This was not considered in this early analysis, but will be during the Level 2 evaluation.
  - In this segment, those alternatives with existing rail along the corridor rated highly because of the ability to accommodate multiple modes. Those with the opportunity to accommodate rail (or major utilities) due to the likely availability of right-of-way and feasible grades rated "moderately favorable". Those with major constraints that will make it difficult to accommodate a parallel corridor in a shared footprint rated "least favorable".
- **Criterion 8: How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?**
  - Alternatives were evaluated using existing and projected future level of service conditions identified in the "Corridor Justification Report". Where an alternative has the opportunity to relieve congestion between major activity centers (generally, between large metropolitan areas, or in the case of the Phoenix and Las Vegas sections, providing relief to congestion within the metropolitan area), it was rated higher. Although many alternatives serve as bypasses or loop corridors around metropolitan cores, they are expected to perform as part of the regional transportation system. Therefore, by forming junctions with existing corridors that may traverse the metropolitan core, the alternative may serve both for congestion relief and as local access.
  - In this segment, relieving congestion is not a major concern along any of the alternatives except Alternative C (through Tucson and Nogales).
- **Criterion 9: How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?**
  - This criterion primarily related to Southern Arizona and the ability for alternative corridors to effectively cross the Arizona-Sonora international border in an efficient manner. Existing and proposed improvements at LPOEs were taken from the recently completed ADOT *Arizona-Sonora Border Master Plan*.

- **Criterion 10: How well does this alternative support regional, state and national economic development goals?**
  - Alternatives were evaluated based on their ability to support economic development initiatives that rely on transportation connections. State economic development priorities, elaborated in the "Corridor Justification Report", are summarized in **Table 5** and include such items as renewable energy development, tourism, transportation logistics, and aerospace/aviation/defense.
  - In this segment, alternatives were rated "somewhat favorable", "moderately favorable", or "less favorable" based on their ability to take advantage of industry targets identified in Table 5. Generally speaking, the larger urbanized areas (e.g., Tucson and Yuma) are better situated to take advantage of the industry clusters requiring a larger and/or higher-skilled workforce.

Table 5. Arizona and Nevada Industry Targets and Clusters

Industry Targets	Arizona	Nevada	Requires Regional Transportation Network
Advanced Manufacturing	•		•
Aerospace, Aviation, Defense	•	•	•
Agriculture	•	•	•
Optics	•		•
Biotechnology	•		•
Healthcare	•	•	
Information and Computer Technology	•	•	
Life Sciences	•		•
Mining, Materials, and Manufacturing		•	•
Renewable Energy	•	•	•
Science and Technology	•		•
Tourism, Gaming, and Entertainment		•	•
Transportation and Logistics	•	•	•

Sources: Arizona Commerce Authority, Brookings Institution, Greater Phoenix Economic Council, Tucson Regional Economic Opportunities, Nevada Governor's Office of Economic Development (Full reference provided in the "Corridor Justification Report")

- **Criterion 11: How well does this alternative comply with corridor-related actions taken to date?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a corridor-related action. A corridor-related action was defined as a federal, state or regional action or designation in place that plans for a high-capacity transportation corridor.
  - Beyond planning for maintenance and operations of existing corridors, very few corridor-related actions have been taken in Southern Arizona. Congestion planning in and around Tucson and Nogales has occurred on a statewide scale and was considered. Also, upgrading AZ-85 to a higher capacity transportation facility has been studied in the past, but not recommended due to major constraints.
- **Criterion 12: How well does this alternative conform to locally adopted transportation plans?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a plan adopted by a local community, such as a General/Comprehensive Plan or Transportation Master Plan.
  - As all Southern Arizona segment alternatives include wide corridor swaths, limited local planning has integrated such a major trade corridor into general/comprehensive planning efforts, with the exception of handling congestion at I-10/I-19.
- **Criterion 13: How compatible is this alternative with regional open space, conservation, and land management agency planning?**

  - Alternatives were evaluated based on the amount of the alternative that traverses a protected open space, identified from various sources which include, but are not limited to: national conservation areas, existing parks, wilderness areas, wildlife refuges, and local/regional open space management plans.
  - Because of the widths of the corridor swaths in this segment, most alternatives have the potential to traverse open space areas. Specific features considered for compatibility include wildlife refuge areas, national monuments, national parks, the Tucson Mitigation Corridor, and Pima County Biological Core Management Areas.

- **Criterion 14: How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?**
  - Alternatives were evaluated based on the amount of the corridor traversing various environmental features (as presented in the "Existing Natural and Built Environment" technical memorandum). Additionally, the AGFD and The Nature Conservancy completed their own analyses using GIS data layers to provide input on which alternatives and/or corridor segments had significant environmental impact to habitat areas and/or wildlife linkages, specifically noting those where mitigation was feasible (or not). These analyses also noted alternatives that provided opportunities to improve wildlife linkages.
  - In this segment, the analysis conducted by the AGFD and The Nature Conservancy was considered, as well as major impacts anticipated to watersheds (e.g., San Pedro River valley) or due to topographical constraints.
- **Criterion 15: How consistent is this alternative with regional land use and growth strategies?**
  - Alternatives were evaluated based on the consistency of the corridor with land use or growth strategies identified as part of regional planning efforts (e.g., RTP, socioeconomic projections), growth elements of general/comprehensive plans, and/or major land development plans.
  - Because of the widths of the corridor swaths in this segment, regional land use plans were considered in their accommodation of a high capacity transportation corridor (e.g., county comprehensive plans, federal land management plans).
- **Criterion 16: How compatible is this alternative with major land ownership patterns?**
  - Alternatives were evaluated based on the compatibility of a major transportation infrastructure facility to traverse land under state or federal ownership, including such land owners as BLM, Bureau of Reclamation, U.S. military, National Park Service, state land departments, state parks, tribal communities, U.S. Fish and Wildlife, and U.S. Forest Service.
  - Major land ownership constraints in this segment include military and tribal lands, as well as areas owned by the National Park Service and U.S. Fish and Wildlife.
- **Criterion 17: How well is this alternative accepted by the local communities?**
  - Input received from Stakeholder Partners and their constituents at the October 2013 stakeholder partner/public meetings, as well as input received via the online comment form, was considered in determining the degree of acceptance of an alternative. Alternatives that received no comments or conflicting comments (supportive and non-supportive) received a "moderately favorable" rating. Alternatives that received mostly supportive comments received the "most favorable" rating, and alternatives that received mostly non-supportive comments received the "least favorable" rating.
- **Criterion 18: What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?**
  - Generalized, comparative planning-level costs were estimated based primarily on length of the alternative, with capital construction cost factors given to (a) existing corridors, (b) existing corridors requiring additional right-of-way or significant upgrades/improvements, and (c) new/green corridor

development. Compared to the cost per mile of improving an existing highway, it was assumed that a new highway would cost twice as much, and that an existing highway with significant right-of-way acquisitions or improvements needed would cost 1.5 times as much.

The evaluation rating scale is strictly relative – alternatives were considered in relationship to each other in the same project segment. If an alternative receives the highest rating, it may still face issues or obstacles with respect to that criterion.

A summary rating was applied to each alternative to note its overall feasibility. Those rated “somewhat favorable” or “most favorable” are recommended for further analysis by the state DOTs. Those rated “moderately favorable,” “less favorable,” or “least favorable” typically include a fatal flaw or do not support the project’s goals and objectives.

The following summary sheets provide an overview of the Level 1 evaluation for each alternative in the Southern Arizona Future Connectivity Segment, including a map of the alternative, alternative description, summary rating scale, and opportunities/constraints of the alternative, followed by the detailed evaluation rating scales and notes.

Alternative A

Description

This alternative travels through western Arizona through the Yuma region to connect to Mexico; previously proposed connections include using US/AZ-95 and/or AZ-195 (Area Service Highway)

Recommendation

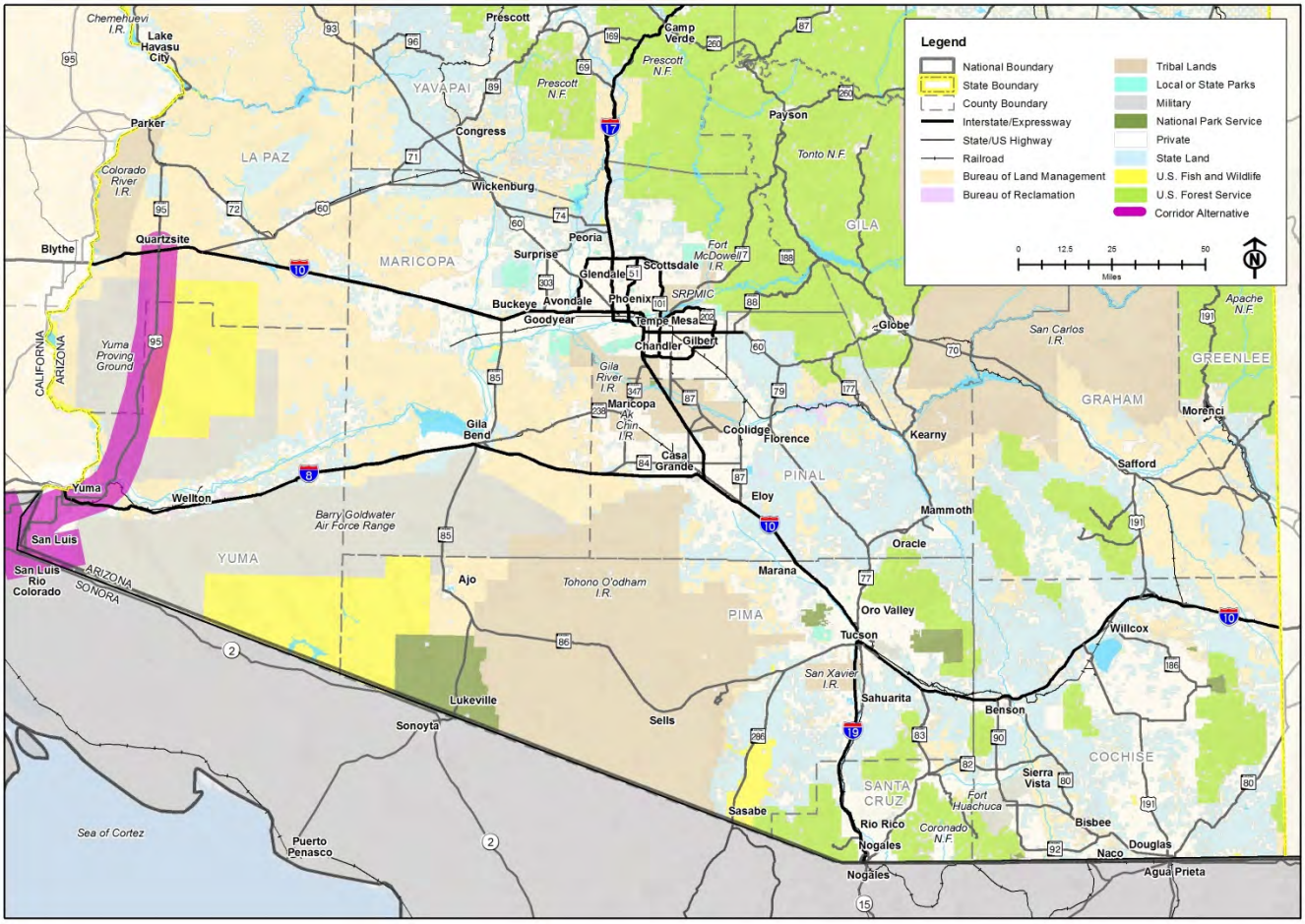
- **Not Recommended for Further Analysis**

Opportunities

- Freight activity and multimodal opportunities in Yuma (e.g., planned Yuma logistics center, planned Yuma County rail corridor, existing intersecting highway/rail/aviation facilities)

Constraints

- Does not connect to Phoenix and Tucson metropolitan area economic activity centers
- Does not connect to high capacity trade corridor in Mexico; no plans for Sonora to implement a high capacity trade corridor connecting to San Luis II POE
- Potential environmental constraints; traverses wildlife connectivity areas identified by the AGFD and The Nature Conservancy
- Not consistent with major land ownership patterns (traverses/proximate to military and U.S. Fish and Wildlife)



Alternative A

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative partially meets the intent of Congressional legislative actions, as it does not follow the high priority designated CANAMEX corridor; although it does follow the proposed "Western Passage" of CANAMEX route along AZ-95.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Does not connect to the core (Phoenix and Tucson) of the Sun Corridor megapolitan, but does connect to Yuma and its major border activity center with San Luis Rio Colorado.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Corridor alternative utilizes existing transportation routes; do not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		This alternative does not make a connection to the adjacent segment (Phoenix Metropolitan Area).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		This alternative connects with one freight hub (Yuma), but does not connect to a high capacity trade corridor in Mexico, and there are no plans for Sonora to implement a high capacity trade corridor connecting to the San Luis II LPOE.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities in the Yuma region (e.g., planned Yuma logistics center), creates junctions with east-west transportation corridors (I-8, UPRR Sunset Route), and includes possible future rail connections from Mexico.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Potential to accommodate new rail corridor; corridor for rail connection from Mexican border at San Luis to UPRR Sunset Route recently studied.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Congestion relief is not required along this corridor.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		Per *Arizona-Sonora Border Master Plan*, significant recent/planned improvements at San Luis I and II LPOEs.
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports regional economic development goals of transitioning Yuma into a larger transportation logistics center.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No regional corridor-related actions documented.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Because of the width of future connectivity segment corridor options, this alternative has the potential to go through regional open space areas and conservation lands, and is proximate to the Kofa National Wildlife Refuge.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Consistent with regional growth strategies in Yuma to expand development and economic interests through investments in high capacity, multimodal transportation facilities.
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; bordered by both military and U.S. Fish and Wildlife Land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative B

Description

This alternative travels through the Tucson region to connect to Mexico at Sasabe; specific alignments could potentially use existing or new transportation corridors

Recommendation

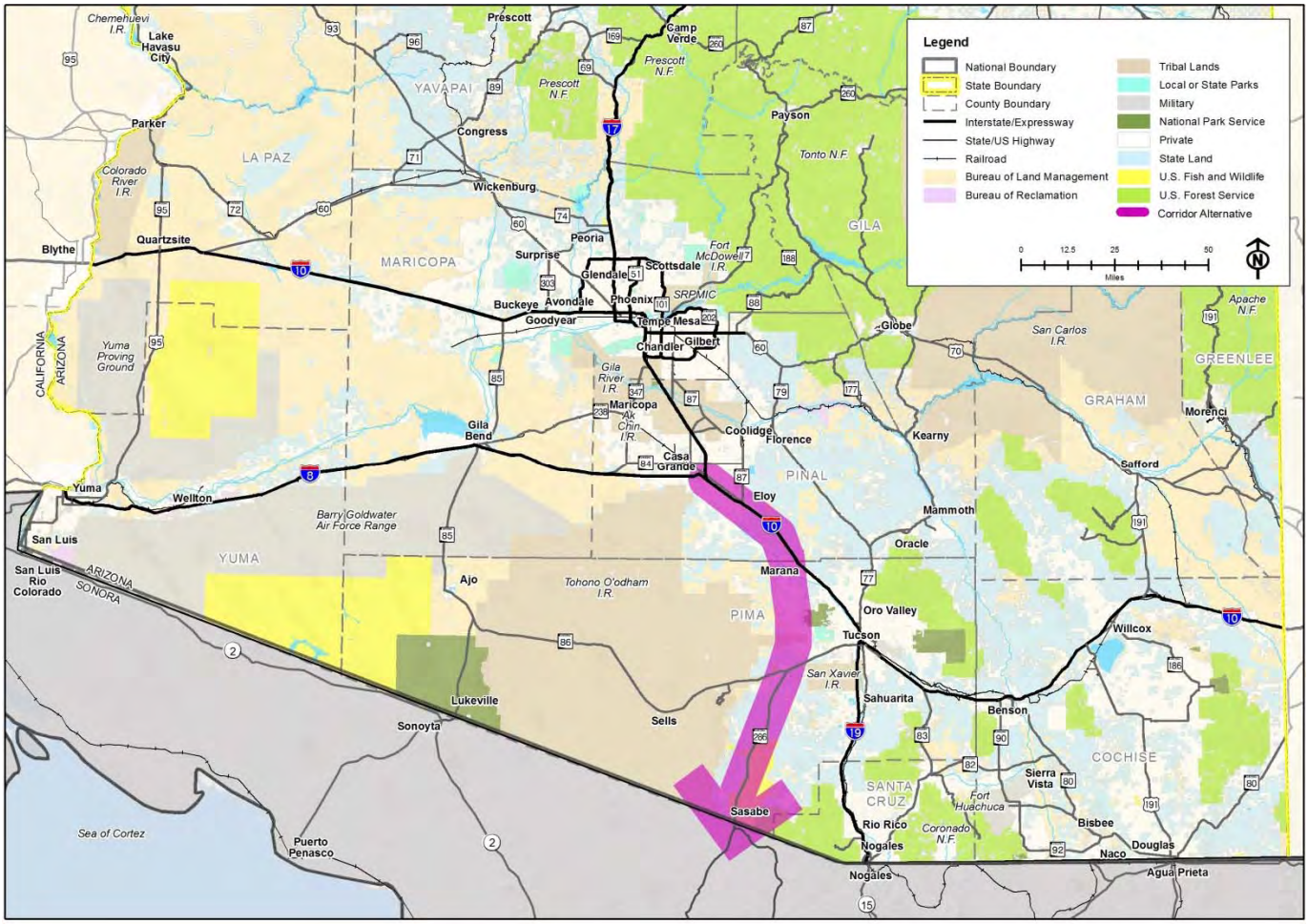
- **Not Recommended for Further Analysis**

Opportunities

- Peripherally serves Tucson economic activity center with some potential to accommodate a new rail corridor

Constraints

- Sasabe LPOE and connecting transportation infrastructure not conducive to major freight traffic
- Limited connectivity to economic activity centers in Mexico
- Significant environmental and land ownership constraints; traverses Buenos Aires National Wildlife Refuge and Ironwood National Monument; potential conflict with Tucson Mitigation Corridor and/or Pima County Biological Core Management Areas



Alternative B

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative only partially meets the intent of Congressional legislative actions, using a section of the high priority designated CANAMEX corridor (I-10 corridor west of Tucson).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Does not connect to the core (Phoenix and Tucson) of the Sun Corridor megapolitan, and does not connect to a major activity center at or beyond the Mexican border.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridors utilize existing transportation routes; do not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		This alternative makes a connection to adjacent segment and corridor option(s).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		This alternative makes connections with potential freight hubs in the Sun Corridor, as identified in the *Freight Transportation Framework Study*, but does not connect to a high capacity trade corridor in Mexico, and there are no plans for Sonora to implement a high capacity trade corridor connecting to the Sasabe LPOE.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities in the Sun Corridor (e.g., proposed UPRR Red Rock classification yard) and creates junctions with east-west transportation corridors (I-10, I-8, UPRR Sunset Route and branch lines); intermodal connections in Mexico are unplanned.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Partial existing railroad corridor (UPRR Sunset Route) with potential to accommodate new rail corridor.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Congestion relief is not required along this corridor.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		Per *Arizona-Sonora Border Master Plan*, minimal planned improvements at Sasabe LPOE.
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative serves few national, state, or regional economic development priorities beyond the I-10 corridor.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No regional corridor-related actions documented.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative traverses the Buenos Aires National Wildlife Refuge; has potential conflicts with the Tucson Mitigation Corridor and Ironwood National Monument; and has the potential to go through Pima County Biological Core Management Areas due to the width of future connectivity segment corridor options.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Not consistent with regional land use or growth strategies through U.S. Fish and Wildlife land.
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; bordered by tribal land, National Park Service, U.S. Forest Service, and U.S. Fish and Wildlife.
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mostly non-supportive comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative C

Description

This alternative travels through the Tucson region to connect to Mexico at Nogales; specific alignments could use existing or new transportation corridors

Recommendation

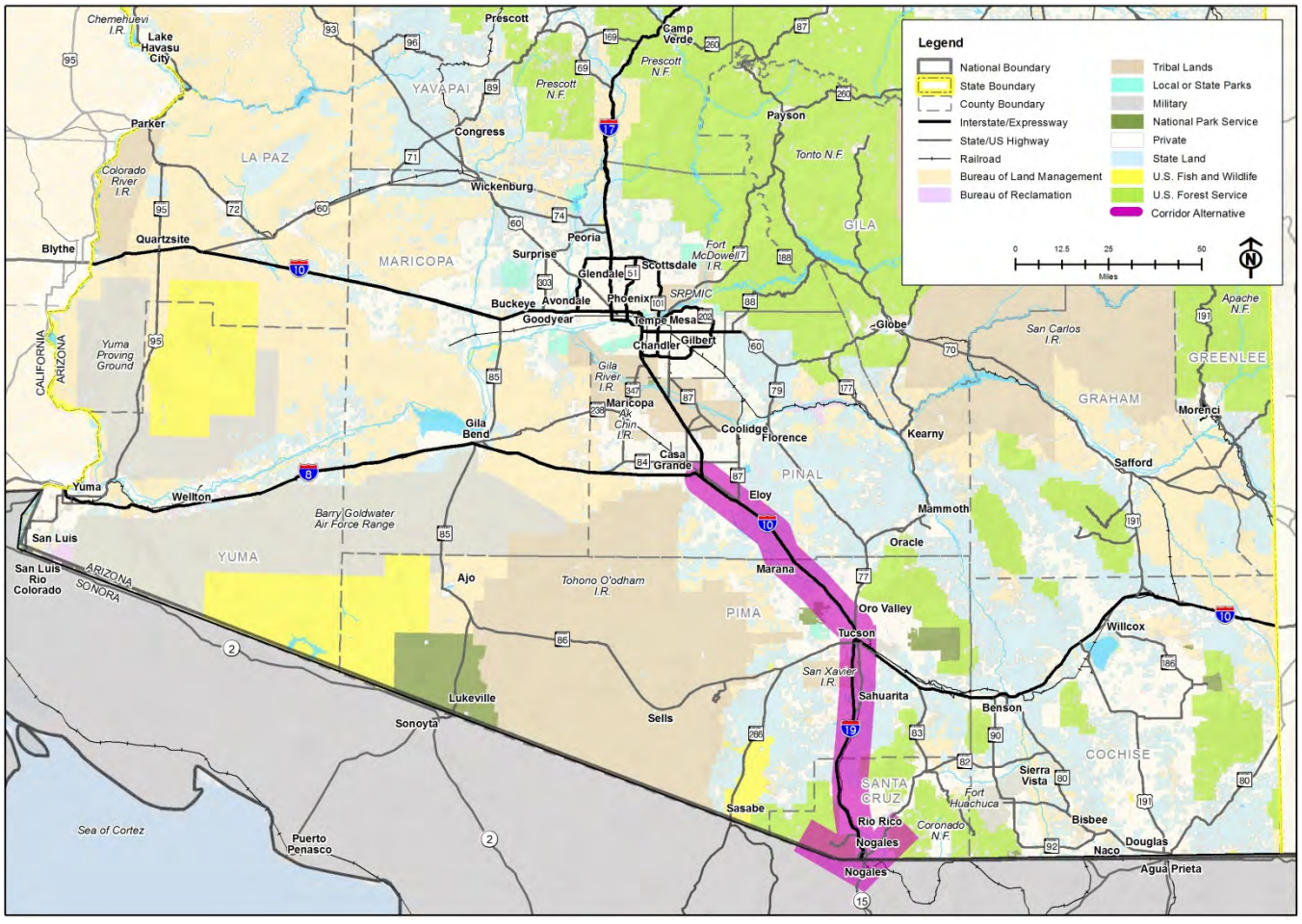
- **Recommended for Further Analysis**

Opportunities

- Connects major freight and economic activity centers within Arizona and Mexico throughout entire corridor (e.g., Phoenix, Tucson, Hermosillo and Mexico City)
- Mariposa and DeConcini LPOEs have capacity or can be expanded to accommodate major passenger and freight traffic (including existing freight rail)
- Strong multimodal and intermodal opportunities

Constraints

- Potential environmental constraints, including potential conflict with Tucson Mitigation Corridor and/or Pima County Biological Core Management Areas



Alternative C

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative fully meets the intent of Congressional legislative actions, as it follows the high priority designated CANAMEX corridor (I-19 and I-10 corridors).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Connects to the core (Phoenix and Tucson) of the Sun Corridor megapolitan and to Nogales, the southern extension of the megapolitan. Also connects to major economic activity centers throughout western Mexico (e.g., Hermosillo, ports along the Sea of Cortez, Mexico City).
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridors utilize existing transportation routes; do not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		This alternative makes a connection to adjacent segment and corridor option(s).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		This alternative makes connections with potential freight hubs in the Sun Corridor, as identified in the *Freight Transportation Framework Study*, as well as to freight hubs in Mexico. This alternative also connects to an existing high capacity trade corridor in Mexico, with anticipated upgrades to the border LPOEs.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities along the whole corridor (e.g., Port of Tucson, proposed UPRR Red Rock classification yard), creates junctions with east-west transportation corridors (I-10, I-8, UPRR Sunset Route and branch lines), and includes potential improvements to high capacity transportation facilities in Mexico.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Strong multimodal opportunities. Existing railroad corridor along most of corridor (UPRR Sunset Route and Nogales Subdivision); rail crossing exists at Mariposa LPOE.
Capacity/ Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Improvements to I-10, I-19 and/or a new parallel corridor could provide congestion relief in and around the Tucson Metropolitan Area.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		Per *Arizona-Sonora Border Master Plan*, significant recent/planned improvements at Mariposa and DeConcini LPOEs.
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports national, state, and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		This alternative is aligned with statewide studies to develop congestion solutions in and around the Tucson Metropolitan Area, paired with efficient transportation connections to the Nogales area.
	12	How well does this alternative conform to locally adopted transportation plans?		Local realignment studies have been conducted to create a more efficient connection from I-10 to I-19 in/around the Tucson Metropolitan Area (e.g., Pima County bypass option).
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Because of the width of future connectivity segment corridor options, this alternative has the potential to go through Pima County Biological Core Management Areas, and has a potential conflict with the Tucson Mitigation Corridor.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes existing corridor(s) with no known fatal flaws.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Consistent with regional growth strategies in Tucson to expand development and economic interests through investments in high capacity, multimodal transportation facilities.
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative generally crosses through state or private land, with potential traversal of tribal, park, or BLM lands.
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mostly supportive comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative D

Description

This alternative travels through the Tucson region to connect to Mexico at Naco.

Recommendation

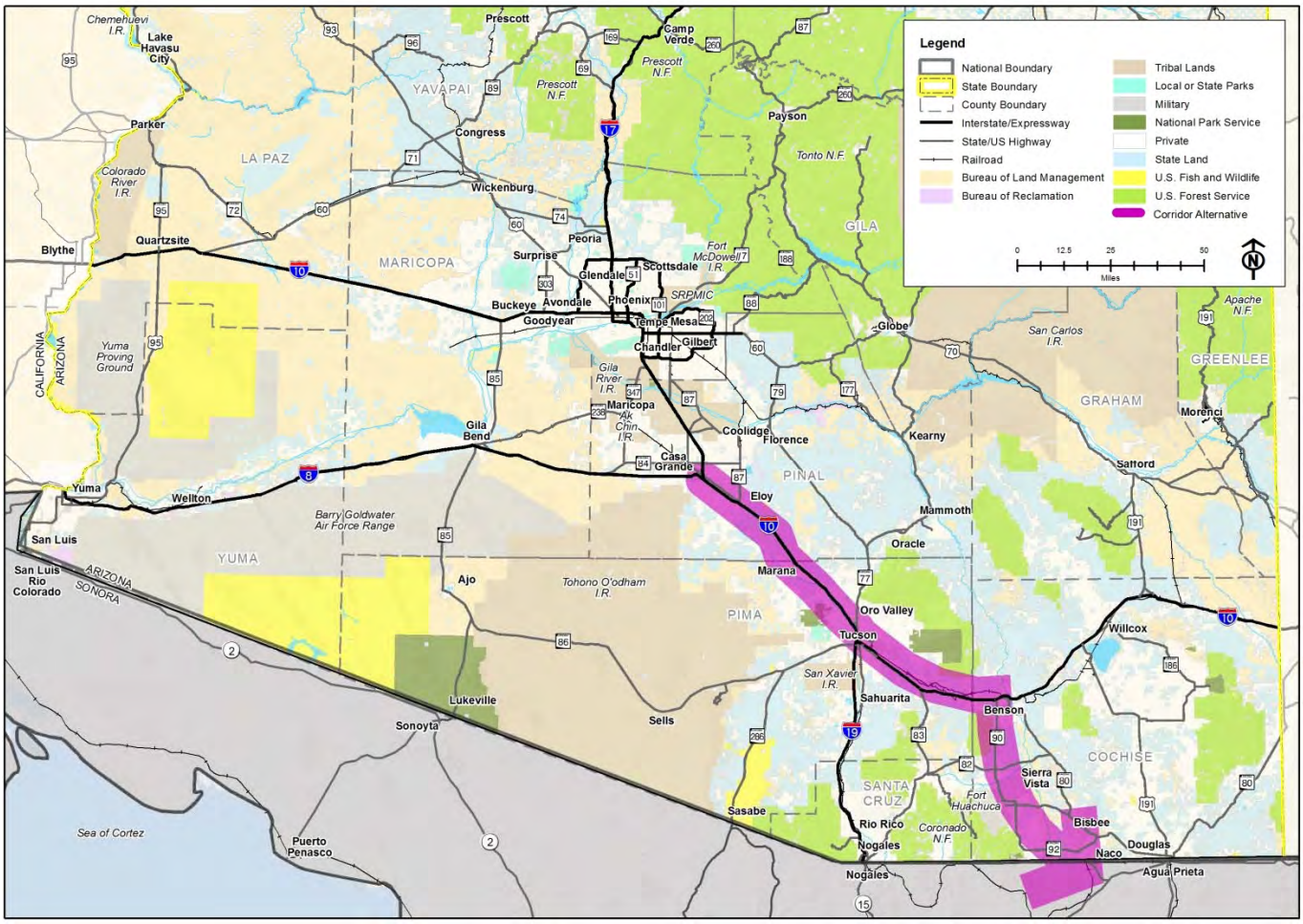
- **Not Recommended for Further Analysis**

Opportunities

- Potential for rehabilitated rail crossing at Naco LPOE

Constraints

- Limited connectivity to economic activity centers in Mexico
- Existing Naco LPOE and connecting transportation infrastructure not conducive to major freight traffic
- Potentially significant watershed, critical habitat, and other environmental constraints



Alternative D

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative only partially meets the intent of Congressional legislative actions, using a section of the high priority designated CANAMEX corridor (I-10 corridor west of Tucson).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Connects to the core (Phoenix and Tucson) of the Sun Corridor megapolitan, but does not connect to a major activity center at or beyond the Mexican border.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridors utilize existing transportation routes; do not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		This alternative makes a connection to adjacent segment and corridor option(s).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		This alternative makes connections with potential freight hubs in the Sun Corridor, as identified in the *Freight Transportation Framework Study*. While not connecting to a major freight hub in Mexico, the Naco LPOE does provide direct access to a Mexican freight railroad corridor and an east-west highway in Mexico.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities in the Sun Corridor (e.g., Port of Tucson, proposed UPRR Red Rock classification yard) and creates junctions with east-west transportation corridors (I-10, I-8, UPRR Sunset Route and branch lines), with additional intermodal opportunities at Naco.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Partial existing railroad corridor (UPRR Sunset Route, abandoned rail corridor to Naco) with potential to accommodate new rail corridor; LPOE used to have a rail crossing.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Congestion relief is not required along this corridor.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		Per *Arizona-Sonora Border Master Plan*, minimal planned improvements at Naco LPOE.
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative serves few national, state, or regional economic development priorities beyond the I-10 corridor.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No regional corridor-related actions documented.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Because of the width of future connectivity segment corridor options, this alternative has the potential to go through regional open space areas, including Pima County Biological Core Management Areas.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy, as well as significant watershed impacts to the San Pedro River valley.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Partially consistent with regional land use or growth strategies in Cochise County; would like some economic growth but overall desire to maintain rural county character and environmental preservation.
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; primarily alternative generally crosses through state or private land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative E

Description

This alternative travels through the Tucson region to connect to Mexico at Douglas.

Recommendation

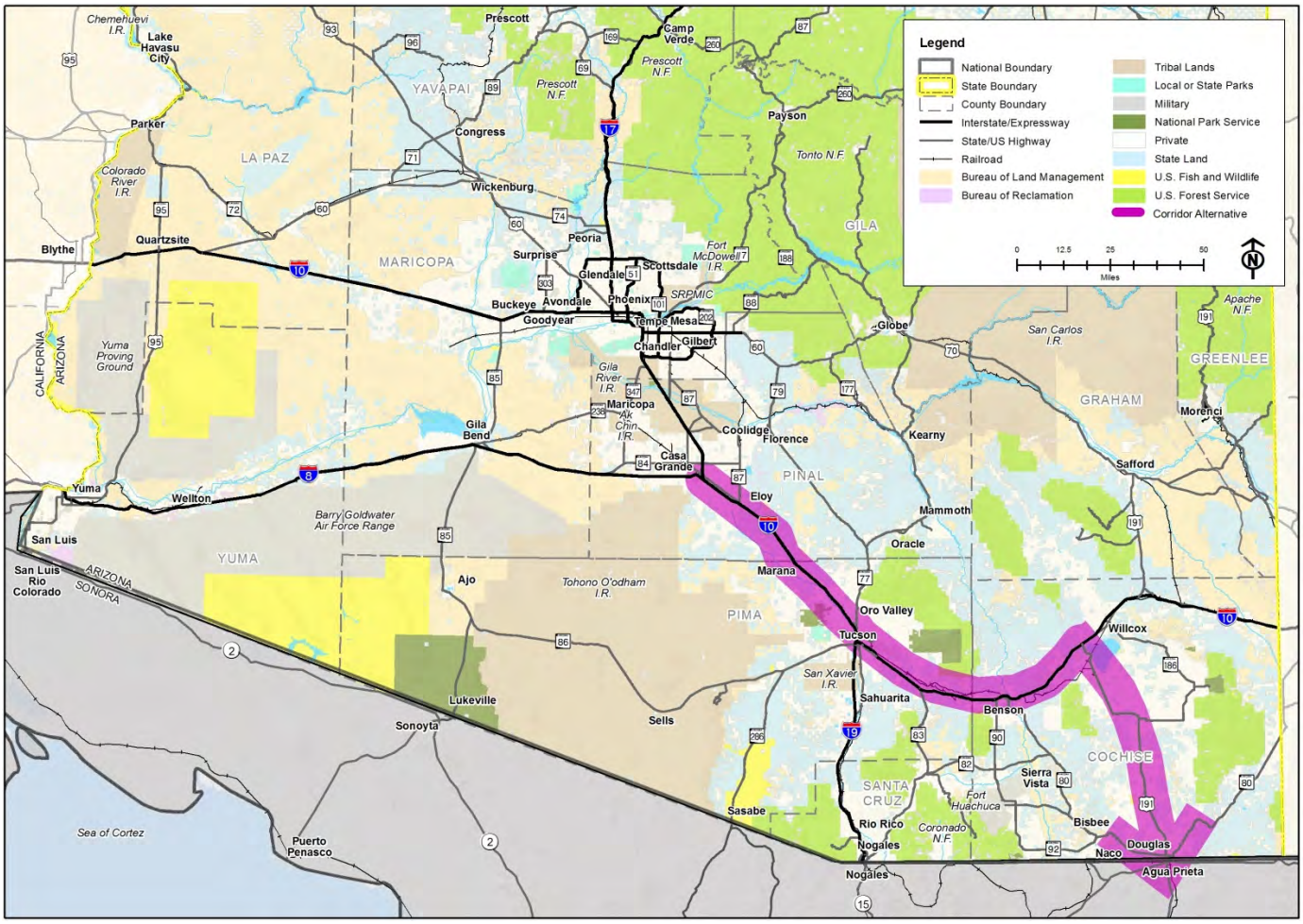
- **Not Recommended for Further Analysis**

Opportunities

- Freight activity/multimodal opportunities in Douglas

Constraints

- Limited connectivity to economic activity centers in Mexico
- Does not connect to high capacity trade corridor in Mexico; no plans for Sonora to implement a high capacity trade corridor connecting to Douglas POE
- Long corridor length could result in highest cost



Alternative E

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative only partially meets the intent of Congressional legislative actions, using a section of the high priority designated CANAMEX corridor (I-10 corridor west of Tucson).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Connects to the core (Phoenix and Tucson) of the Sun Corridor megapolitan, but does not connect to a major activity center at or beyond the Mexican border.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridors utilize existing transportation routes; do not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		This alternative makes a connection to adjacent segment and corridor option(s).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		This alternative makes connections with potential freight hubs in the Sun Corridor, as identified in the *Freight Transportation Framework Study*, but does not connect to a high capacity trade corridor in Mexico.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities in the Sun Corridor (e.g., Port of Tucson, proposed UPRR Red Rock classification yard) and creates junctions with east-west transportation corridors (I-10, I-8, UPRR Sunset Route and branch lines), with additional intermodal opportunities at Douglas.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Partial existing railroad corridor (UPRR Sunset Route) with potential to accommodate new rail corridor.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Congestion relief is not required along this corridor.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		Per *Arizona-Sonora Border Master Plan*, some planned improvements at Douglas LPOE.
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative serves few national, state, or regional economic development priorities beyond the I-10 corridor.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No regional corridor-related actions documented.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Because of the width of future connectivity segment corridor options, this alternative has the potential to go through regional open space areas.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes existing corridor(s) with no known fatal flaws.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Partially consistent with regional land use or growth strategies in Cochise County; would like some economic growth but overall desire to maintain rural county character and environmental preservation.
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; primarily alternative generally crosses through state or private land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative II

Description

This alternative connects the western end of the Phoenix Metropolitan Area to Mexico via the Yuma region, generally utilizing I-8 as the corridor connection.

Recommendation

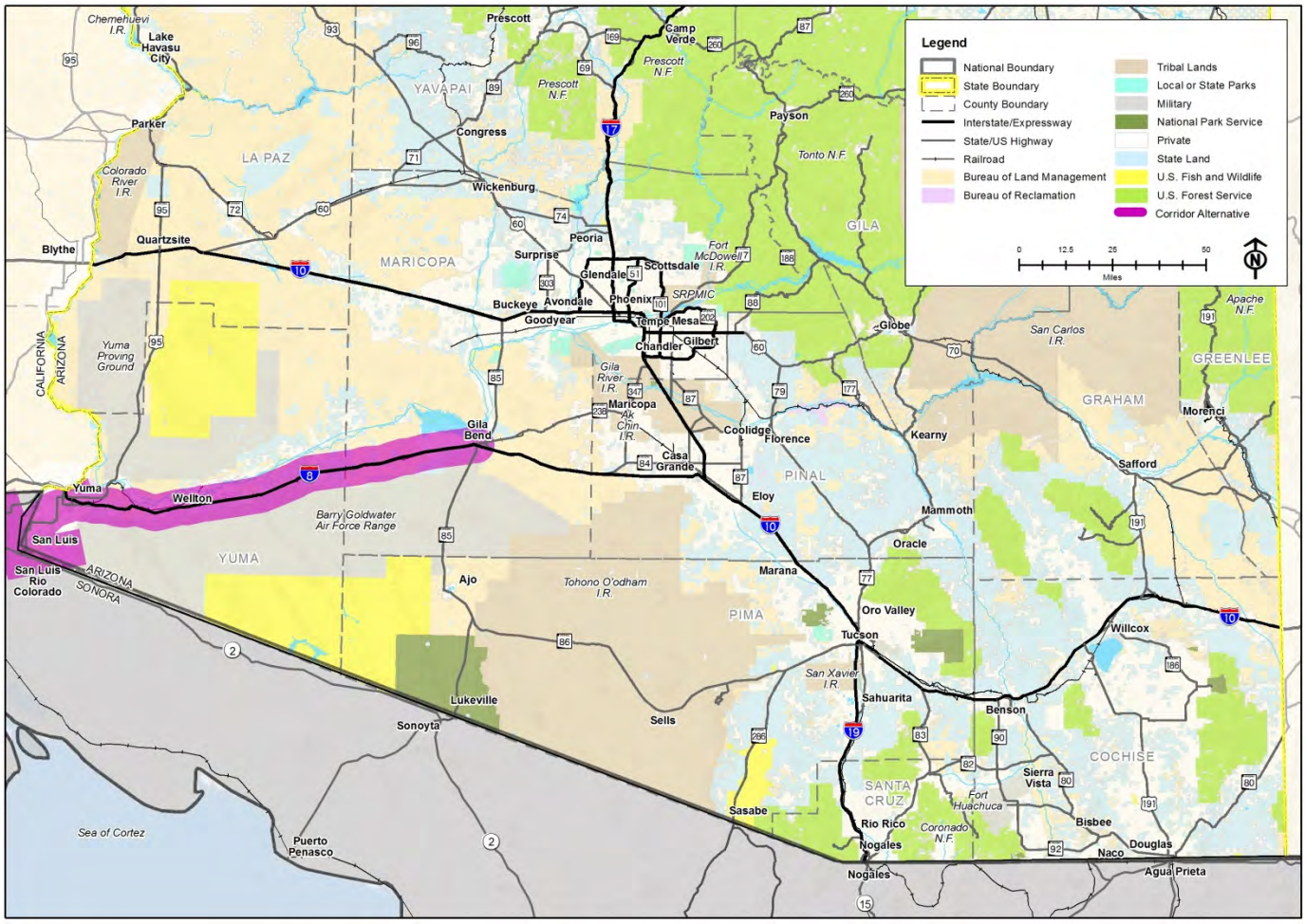
- **Not Recommended for Further Analysis**

Opportunities

- Freight activity and multimodal opportunities in Yuma (e.g., planned Yuma logistics center, planned Yuma County rail corridor, existing intersecting highway/rail/aviation facilities)

Constraints

- Does not connect to high capacity trade corridor in Mexico; no plans for Sonora to implement a high capacity trade corridor connecting to San Luis II POE
- Potential environmental constraints; traverses wildlife connectivity areas identified by the AGFD and The Nature Conservancy



Alternative II

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative does not meet the intent of Congressional legislative actions, as it does not follow the high priority designated CANAMEX corridor.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Does not connect to the core (Phoenix and Tucson) of the Sun Corridor megapolitan, but does connect to Yuma and its major border activity center with San Luis Rio Colorado.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridors utilize existing transportation routes; do not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		This alternative makes a connection to adjacent segment and corridor option(s).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		This alternative makes connections with freight hubs in Yuma and Phoenix, but does not connect to a high capacity trade corridor in Mexico, and there are no plans for Sonora to implement a high capacity trade corridor connecting to the San Luis II LPOE.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities in the Yuma and Phoenix regions (e.g., planned Yuma logistics center), creates junctions with east-west transportation corridors (I-8, UPRR Sunset Route), and includes possible future rail connections from Mexico.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Strong multimodal opportunities. Existing railroad corridor along most of corridor (UPRR Sunset Route).
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Congestion relief is not required along this corridor.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		Per *Arizona-Sonora Border Master Plan*, significant recent/planned improvements at San Luis I and II LPOEs.
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports regional economic development goals of transitioning Yuma into a larger transportation logistics center.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No regional corridor-related actions documented.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Because of the width of future connectivity segment corridor options, this alternative has the potential to go through regional open space areas.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Consistent with regional growth strategies in Yuma and Gila Bend to expand development and economic interests through investments in high capacity, multimodal transportation facilities.
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state or private land, with potential bordering of military land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative JJ

Description

This alternative connects the western end of the Phoenix Metropolitan Area to Mexico at Lukeville, centered on AZ-85.

Recommendation

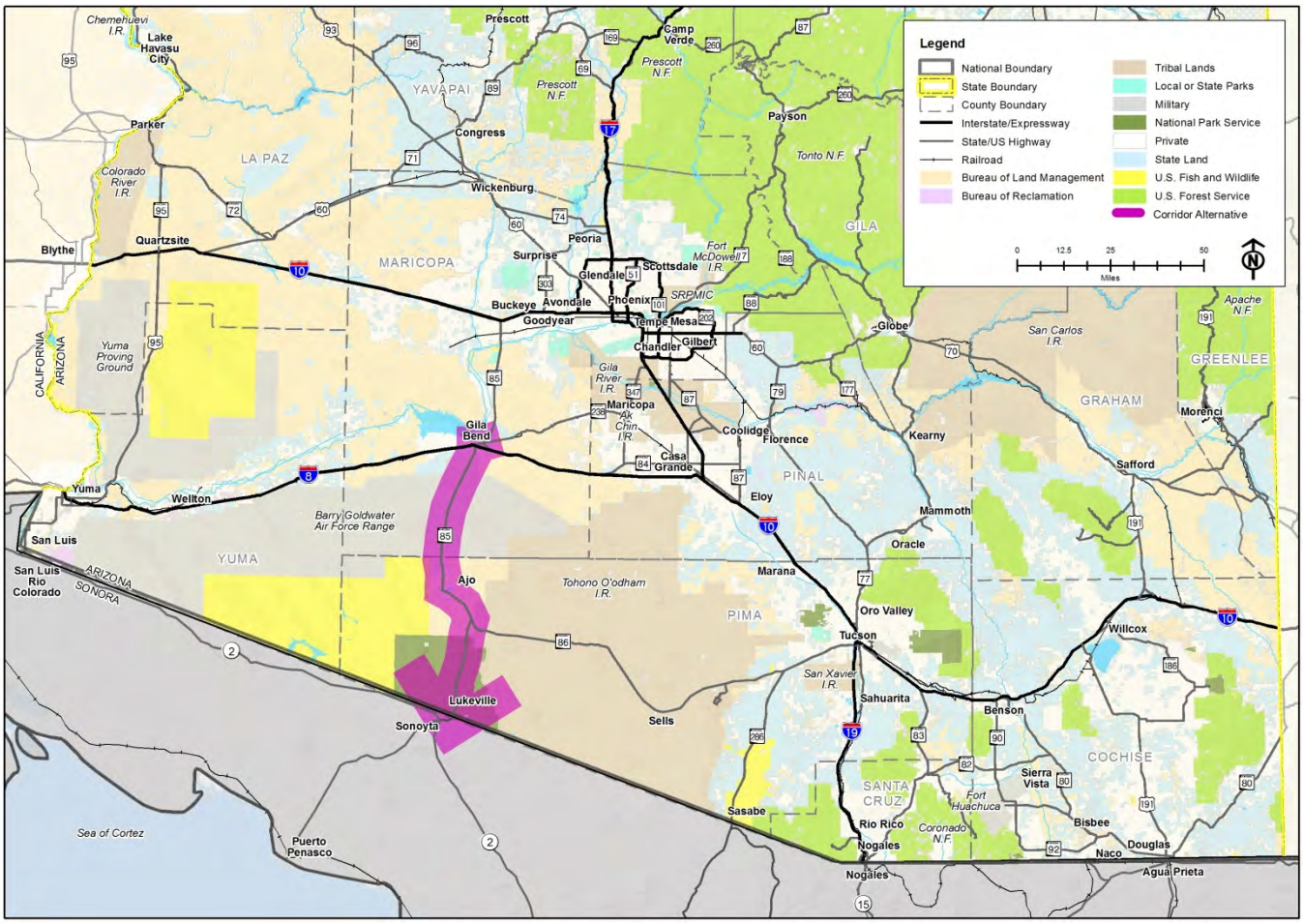
- **Not Recommended for Further Analysis**

Opportunities

- Provides more efficient connection to Lukeville LPOE for passenger travel

Constraints

- Does not connect to high capacity trade corridor in Mexico; no plans for Sonora to implement a high capacity trade corridor connecting to Lukeville
- Lukeville LPOE and connecting transportation infrastructure not conducive to major freight traffic
- Potential environmental constraints; traverses wildlife connectivity areas identified by the AGFD and The Nature Conservancy, including endangered Sonoran pronghorn territory
- Not consistent with major land ownership patterns (traverses/proximate to military, tribal, National Park Service, U.S. Fish and Wildlife)



Alternative JJ

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative does not meet the intent of Congressional legislative actions, as it does not follow the high priority designated CANAMEX corridor.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Does not connect to the core (Phoenix and Tucson) of the Sun Corridor megapolitan, and does not connect to a major activity center at or beyond the Mexican border.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridors utilize existing transportation routes; do not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		This alternative makes a connection to adjacent segment and corridor option(s).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		This alternative makes a connection to Phoenix as a freight hub, but does not connect to a high capacity trade corridor in Mexico, and there are no plans for Sonora to implement a high capacity trade corridor connecting to the Lukeville LPOE.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities in the Sun Corridor and creates junctions with east-west transportation corridors (I-8, UPRR Sunset Route), although intermodal connections in Mexico are currently unplanned.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Limited multimodal opportunities. Abandoned Tucson, Cornelia, and Gila Bend Railroad used to connect Gila Bend and Ajo. Very limited right-of-way restrictions for rail south of Ajo.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Congestion relief is not required along this corridor.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		Per *Arizona-Sonora Border Master Plan*, minimal planned improvements at Lukeville LPOE.
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative serves few national, state, or regional economic development priorities beyond the I-10 corridor.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		This alternative was removed as high-capacity transportation corridor from statewide/regional transportation planning studies due to significant environmental and right-of-way constraints.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative traverses the Cabeza Prieta National Wildlife Refuge, Organ Pipe National Monument, and high integrity conservation lands in the Barry Goldwater Air Force Range.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy, including potential impacts to the endangered Sonoran pronghorn.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Not consistent with regional land use or growth strategies through National Park Service land.
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative is bordered by military, National Park Service and U.S. Fish and Wildlife land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mostly non-supportive comments.
Cost	18	What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Evaluation Results: Phoenix Metropolitan Area Section

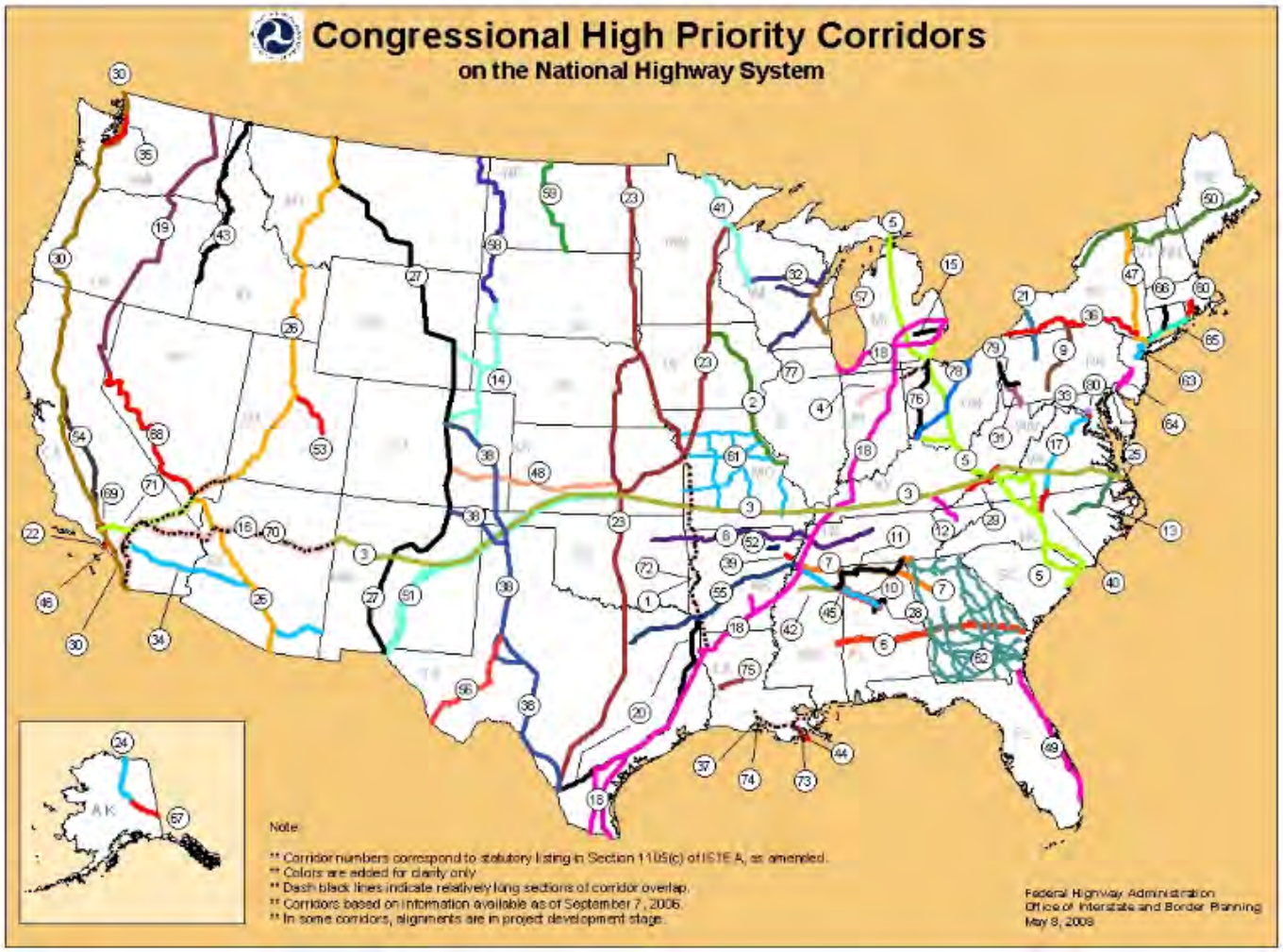
The Phoenix Metropolitan Area Section includes the greater metropolitan Phoenix area, spanning from the northwest at Wickenburg to the southeast near Casa Grande.

The study team conducted the Level 1 evaluation of all alternatives (to see a description of each alternative, please refer to "Draft Candidate Corridor Alternatives for Level 1 Screening" memorandum).

Each alternative was rated with respect to each of the evaluation criteria. The rating system consisted of a qualitative scale (from least to most favorable), with "most favorable" representing the best performance and "least favorable" representing the worst performance. Connectivity-related criteria were rated based on connectivity with *adjacent* segments. General guidance on how the criteria were evaluated in relationship to the project's Goals and Objectives follows:

- **Criterion 1: How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?**
  - Alternatives were evaluated based on their compliance with Congressionally designated high priority corridors, including (see **Figure 8**):
    - CANAMEX: I-19 from Nogales to Tucson, I-10 from Tucson to Phoenix, US-93 in the vicinity of Phoenix to the Nevada border, US-93 from the Arizona border to Las Vegas, and I-15 from Las Vegas to the Utah border
    - I-11: US-93 in the vicinity of Phoenix to the Nevada border, and US-93 from the Arizona border to Las Vegas
    - The Washoe County corridor, along Interstate Route 580/United States Route 95/United States Route 95A, from Reno, Nevada, to Las Vegas, Nevada.
    - United States Route 395 Corridor from the United States-Canadian border to Reno, Nevada.
    - United States Route 95 Corridor from the Canadian border at Eastport, Idaho, to the Oregon state border.
  - In this segment, specific alignments for high priority corridors are not cited in the Congressional legislation. Therefore, those alternatives that connect at both ends to designated corridors (US-93 north of Wickenburg and I-10 south of Casa Grande) rated "most favorable" and those that make one connection rated "moderately favorable".

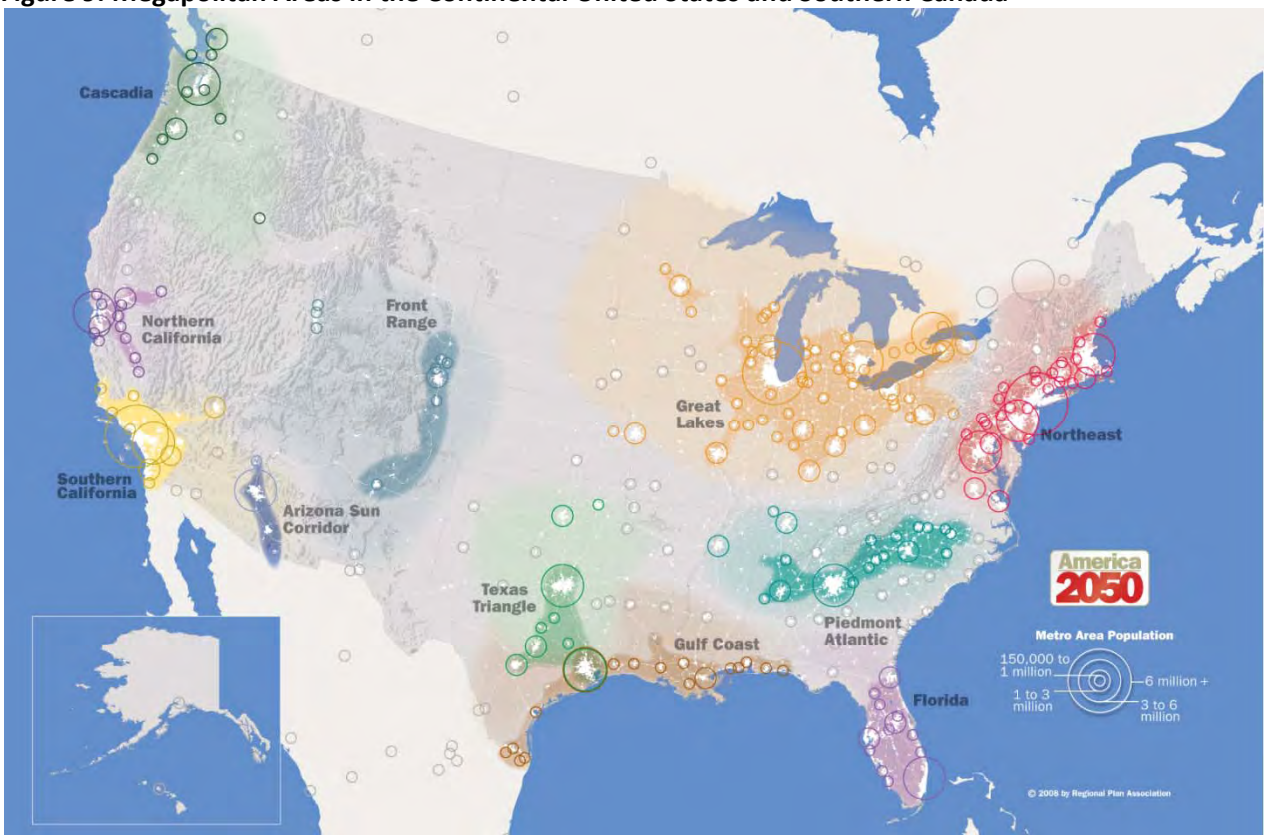
Figure 8. Congressional High Priority Corridors



Source: FHWA http://www.fhwa.dot.gov/planning/national_highway_system/high_priority_corridors/hiprimap.cfm

- **Criterion 2: How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?**
  - Alternatives were evaluated based on their connectivity to primary centers of population and commerce at segment termini and along the corridor. This analysis was conducted at a macro scale using the megapolitan areas identified by America 2050 and the Regional Plan Association, shown in **Figure 9** and introduced in the "Corridor Justification Report" as major economic activity centers.
  - In this segment, alternatives that traverse or connect to the Phoenix Metropolitan Area Section rated "most favorable". Because of the regional transportation system that supports the entire metropolitan area, alternatives do not need to traverse the metropolitan core to support the activity center itself.

Figure 9. Megapolitan Areas in the Continental United States and Southern Canada



Source: America 2050

- **Criterion 3: How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?**
  - This criterion was applied to all segments to understand gaps or links in the regional transportation network that can be filled (or a route made more efficient) with the construction of this corridor.
  - While this criterion was applied to all segments to understand gaps or links in the regional transportation network that can be filled (or a route made more efficient) with the construction of this corridor, the Phoenix Metropolitan Area has the largest identifiable gap. Per the CANAMEX and I-11 legislation, this high priority corridor is noted as connecting to and from Phoenix, but the linkage within the Phoenix Metropolitan Area is never specified. Regional studies have further identified routing, but a gap still exists between I-10 and Wickenburg. Alternatives that filled this gap were rated higher than others.
- **Criterion 4: How well does this alternative connect with adjacent segments/sections?**
  - Alternatives were evaluated based on the ability to make a connection with an alternative in the adjacent segment/section. Alternatives that connected with two adjacent segments rated "most favorable"; alternatives that connected with one adjacent segment rated "moderately favorable"; and alternatives that did not connect with any adjacent segments rated "least favorable."
  - In this segment, those alternatives that form a connection to both adjacent segments were given higher ratings; those that bypassed one segment received a lower rating.
- **Criterion 5: How well does this alternative connect major freight hubs and high capacity transportation corridors?**
  - Alternatives were evaluated based on how many freight hubs and/or high capacity transportation corridors they traversed (directly crossed or in close proximity).

  - In this segment, proximity to freight focus areas identified in the MAG *Freight Transportation Framework Study* was considered. Those alternatives that traverse more than eight focus areas received the "most favorable" rating; those traversing four to five received a "moderately favorable" rating; and those traversing zero or one received the "least favorable" rating. A map of these focus areas appears to the right.

MAG Freight Transportation Framework – Freight Focus Areas

- **Criterion 6: How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?**
  - Alternatives were evaluated based on the number of east-west high-capacity roadway and railroad corridors traversed, and proximate airports and intermodal yard facilities. Those with connectivity to higher numbers of facilities provide greater opportunity for intermodal connectivity.
  - In this segment, alternatives that maximize intermodal opportunities are proximate to some freight focus areas and create junctions with east-west high capacity transportation facilities (e.g., I-8, I-10, BNSF Phoenix Subdivision, UPRR Sunset Route and branch lines). Also, the opportunity to form a connection between the BNSF and UPRR corridors west of Phoenix was considered.
- **Criterion 7: How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?**
  - Alternatives were evaluated qualitatively, based on the percent of the corridor that could accommodate multiple modes and uses (highway, rail, utilities, etc.) in one corridor footprint, generally reviewing slopes and available right-of-way. While the alternative descriptions cite the feasibility for highway and rail opportunities, the potential exists for co-location of major utility corridors as well. If the alternative can accommodate highway and rail, it is generally assumed (from a right-of-way and slopes perspective) to have the ability to accommodate major utilities as well.
  - In this segment, those alternatives with existing rail along the corridor, new corridors with ample right-of-way, or new corridors with documented plans for a multimodal corridor rated "most favorable" because of the ability to accommodate multiple modes. Those with limited opportunities to accommodate rail (or major utilities) due to right-of-way availability were rated "moderately favorable". Those with major constraints that will make it difficult to accommodate a parallel corridor in a shared footprint rated "least favorable".
- **Criterion 8: How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?**
  - Alternatives were evaluated using existing and projected future level of service conditions identified in the "Corridor Justification Report". Where an alternative has the opportunity to relieve congestion between major activity centers (generally, between large metropolitan areas, or in the case of the Phoenix and Las Vegas sections, providing relief to congestion within the metropolitan area), it was rated higher. Although many alternatives serve as bypasses or loop corridors around metropolitan cores, they are expected to perform as part of the regional transportation system. Therefore, by forming junctions with existing corridors that may traverse the metropolitan core, the alternative may serve for both congestion relief and local access.

- In this segment, alternatives were considered as a contributor to the regional transportation system. Those alternatives providing relief to congested corridors via new or underutilized corridors rated "most favorable"; those that provided partial relief but also added to congestion on existing corridors rated "moderately favorable"; and those utilizing already congested corridors, or those with limited expansion opportunities, were rated "least favorable".

- **Criterion 9: How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?**
  - This criterion primarily related to Southern Arizona and the ability for alternative corridors to effectively cross the Arizona-Sonora international border in an efficient manner. Existing and proposed improvements at LPOEs were taken from the recently completed ADOT *Arizona-Sonora Border Master Plan*.
  - Since this criterion was not related to this segment, all of the alternatives were rated equally with a "moderately favorable" rating.

- **Criterion 10: How well does this alternative support regional, state and national economic development goals?**
  - Alternatives were evaluated based on their ability to support economic development initiatives that rely on transportation connections. State economic development priorities, elaborated in the "Corridor Justification Report", are summarized in **Table 6** and include such items as renewable energy development, tourism, transportation logistics, and aerospace/aviation/defense.
  - In this segment, alternatives were rated "moderately favorable" or "less favorable" based on their ability to take advantage of industry targets identified in Table 6. Most alternatives, with the exception of Alternative F, were considered in proximity to the Phoenix Metropolitan Area, and therefore were considered well situated to take advantage of the industry clusters requiring a larger and/or higher-skilled workforce.

Table 6. Arizona and Nevada Industry Targets and Clusters

Industry Targets	Arizona	Nevada	Requires Regional Transportation Network
Advanced Manufacturing	•		•
Aerospace, Aviation, Defense	•	•	•
Agriculture	•	•	•
Optics	•		•
Biotechnology	•		•
Healthcare	•	•	
Information and Computer Technology	•	•	
Life Sciences	•		•
Mining, Materials, and Manufacturing		•	•
Renewable Energy	•	•	•
Science and Technology	•		•
Tourism, Gaming, and Entertainment		•	•
Transportation and Logistics	•	•	•

Sources: Arizona Commerce Authority, Brookings Institution, Greater Phoenix Economic Council, Tucson Regional Economic Opportunities, Nevada Governor's Office of Economic Development (Full reference provided in the "Corridor Justification Report")

- **Criterion 11: How well does this alternative comply with corridor-related actions taken to date?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a corridor-related action. A corridor-related action was defined as a federal, state or regional action or designation in place that plans for a high-capacity transportation corridor.

  - In this segment, the primary corridor-related actions include the ADOT bqAZ Statewide Transportation Planning Framework Program, which established a 40-year multimodal transportation vision for the entire state of Arizona. This study recommended a potential new Interstate corridor west and south of the Phoenix Metropolitan Area. This same corridor was recommended previously as a multimodal high capacity transportation corridor in the MAG I-10/Hassayampa Valley and I-8 and I-10/Hidden Valley Transportation Framework Studies, and is included in the MAG Regional Transportation Plan as an "illustrative corridor" and ADOT's Long-Range Transportation Plan as a "significant transportation infrastructure project." Additionally, prior CANAMEX routing studies looked at feasible locations for locating this major trade route through the metropolitan area and noted that AZ-303L and Sun Valley Parkway had several issues, removing them from consideration for such a facility.

- **Criterion 12: How well does this alternative conform to locally adopted transportation plans?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a plan adopted by a local community, such as a General/Comprehensive Plan or Transportation Master Plan.
  - In this segment, many local communities have built off the statewide and regional transportation planning projects to incorporate the recommendation for implementation of the CANAMEX or I-11 and Intermountain West Corridor into their general plans. Communities with such corridors documented in their local planning documents rated higher than communities without them.
- **Criterion 13: How compatible is this alternative with regional open space, conservation, and land management agency planning?**
  - Alternatives were evaluated based on the amount of the alternative that traverses a protected open space, identified from various sources which include, but are not limited to: national conservation areas, existing parks, wilderness areas, wildlife refuges, and local/regional open space management plans.
  - Because many of the alternatives traverse native lands, the opportunity to impact open space planning is present throughout. Specific to this segment, the main open space features that alternatives might impact include the Vulture Mountain Cooperative Recreation Management Area and Sonoran Desert National Monument.
- **Criterion 14: How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?**
  - Alternatives were evaluated based on the amount of the corridor traversing various environmental features (as presented in the "Existing Natural and Built Environment" technical memorandum). Additionally, the AGFD and The Nature Conservancy completed their own analyses using GIS data layers to provide input on which alternatives and/or corridor segments had significant environmental impact to habitat areas and/or wildlife linkages, specifically noting those where mitigation was feasible (or not). These analyses also noted alternatives that provided opportunities to improve wildlife linkages.
  - In this segment, the detailed analysis conducted by the AGFD and The Nature Conservancy were considered, as well as anticipated or potential impacts to specific wildlife species, wildlife connectivity corridors, topography, and air quality in urbanized non-attainment areas.
- **Criterion 15: How consistent is this alternative with regional land use and growth strategies?**
  - Alternatives were evaluated based on the consistency of the corridor with land use or growth strategies identified as part of regional planning efforts (e.g., RTP, socioeconomic projections), growth elements of general/comprehensive plans, and/or major land development plans.
  - In this segment, regional and local land use plans were considered in their accommodation of a high capacity transportation corridor (e.g., county comprehensive plans, municipal general plans, etc.), as well as site planning for major master planned communities.

- **Criterion 16: How compatible is this alternative with major land ownership patterns?**
  - Alternatives were evaluated based on the compatibility of a major transportation infrastructure facility to traverse land under state or federal ownership, including such land owners as BLM, Bureau of Reclamation, U.S. military, National Park Service, state land departments, state parks, tribal communities, U.S. Fish and Wildlife, and U.S. Forest Service.
  - The majority of corridors traverse private land, State Land, or BLM lands – which are not primarily seen as fatal flaws. Traversing tribal land was seen as the greatest constraint in this segment, although not necessarily a corridor fatal flaw.
- **Criterion 17: How well is this alternative accepted by the local communities?**
  - Input received from Stakeholder Partners and their constituents at the October 2013 stakeholder partner/public meetings, as well as input received via the online comment form, were considered in determining the degree of acceptance of an alternative. Alternatives that received no comments or conflicting comments (supportive and non-supportive) received a "moderately favorable" rating. Alternatives that received mostly supportive comments received the "most favorable" rating and alternatives that received mostly non-supportive comments received the "least favorable" rating.
- **Criterion 18: What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?**
  - Generalized, comparative planning-level costs were estimated based primarily on length of the alternative, with capital construction cost factors given to (a) existing corridors, (b) existing corridors requiring additional right-of-way or significant upgrades/improvements, and (c) new/green corridor development. Compared to the cost per mile of improving an existing highway, it was assumed that a new highway would cost twice as much, and that an existing highway with significant right-of-way acquisitions or improvements needed would cost 1.5 times as much.

The evaluation rating scale is strictly relative – alternatives were considered in relationship to each other in the same project segment. If an alternative receives the highest rating, it may still face issues or obstacles with respect to that criterion.

A summary rating was applied to each alternative to note its overall feasibility. Those rating "somewhat favorable" or "most favorable" will continue on to the more detailed Level 2 analysis, which will evaluate alternatives based on more quantitative-based criterion. Those ranking "moderately favorable," "less favorable," or "least favorable" typically include a fatal flaw or do not support the project's goals and objectives.

The following summary sheets provide an overview of the Level 1 evaluation for each alternative in the Phoenix Metropolitan Area, including a map of the alternative, alternative description, summary rating scale, and opportunities/constraints of the alternative, followed by the detailed evaluation rating scales and notes.

Alternative F

Description

This alternative bypasses the Phoenix Metropolitan Area using a portion of the proposed Hassayampa Freeway and US-60 to form a connection in the Southern Connectivity Segment to the Yuma region

Recommendation

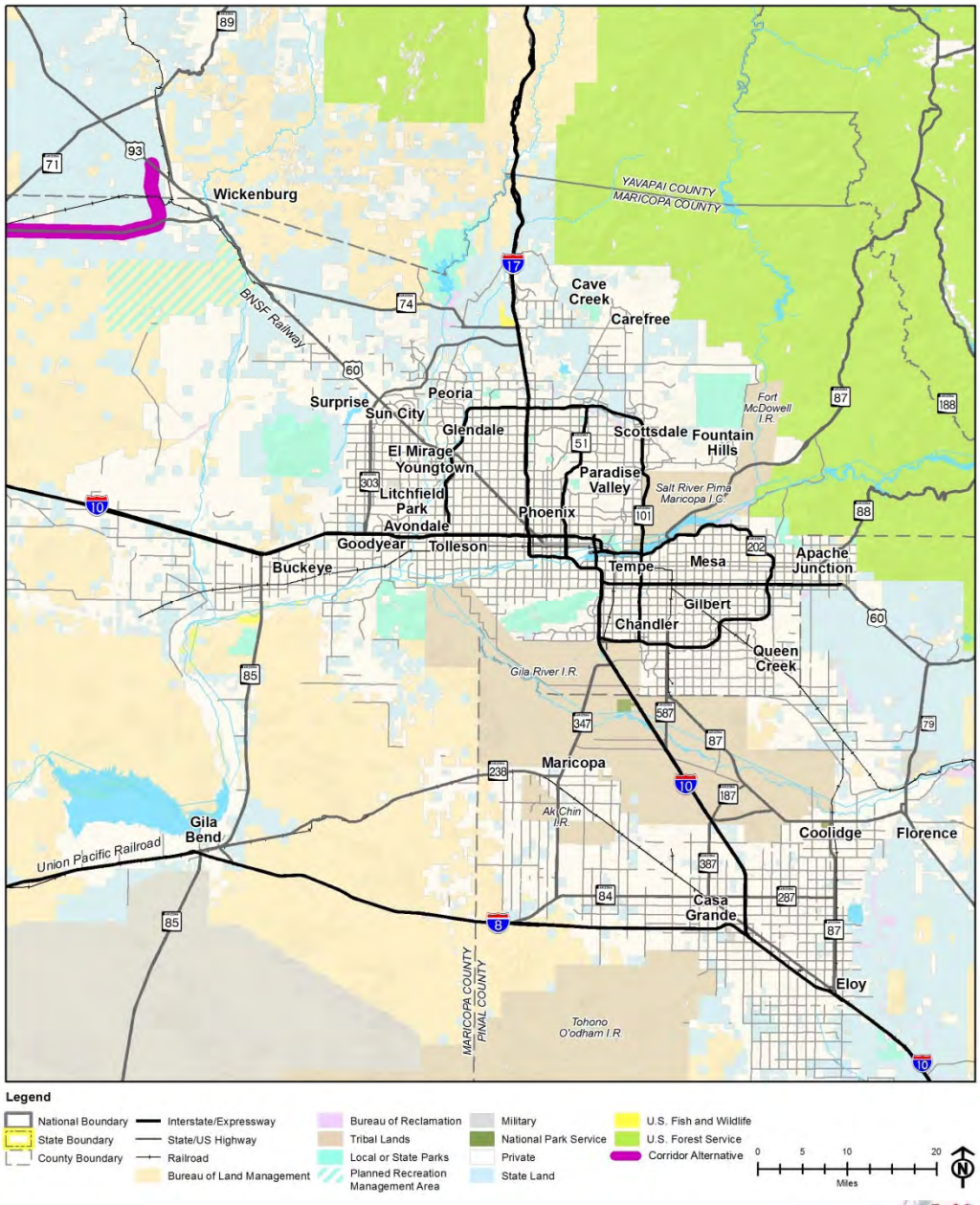
- **Not Recommended for Level 2 Analysis**

Opportunities

- Opportunity to accommodate rail via existing Arizona & California Railroad corridor

Constraints

- Bypasses Phoenix Metropolitan Area as a major economic activity center
- Not consistent with regional growth strategies, economic development, and transportation plans; existing corridors not anticipated to handle capacity of major trade corridor
- Potential environmental constraints; traverses wildlife connectivity areas identified by the AGFD and The Nature Conservancy



Alternative F				
Category		**Criteria**	**Rating**	**Notes**
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative bypasses the state's primary activity centers (center of population of commerce) (e.g., Phoenix), although does connect to the Yuma region in southern Arizona.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Does not connect to the core (Phoenix and Tucson) of the Sun Corridor megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		This alternative does not close a gap/provide a missing link in the CANAMEX high priority corridor definition in this segment.
	4	How well does this alternative connect with adjacent segments/sections?		This alternative makes a connection to the adjacent segment and corridor option(s) to the north only.
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Based on the *Freight Transportation Framework Study*, this alternative connects to 0-1 identified freight focus areas.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes limited intermodal opportunities; does not intersect major east-west roadway corridors; does parallel Arizona & California Railroad.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Existing corridor with possible right-of-way available; partially parallels Arizona & California Railroad corridor.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		As a contributor to the regional transportation system, this alternative provides no congestion relief to corridors within the Phoenix Metropolitan Area.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative serves few national, state, or regional economic development priorities.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No regional corridor-related actions documented.
	12	How well does this alternative conform to locally adopted transportation plans?		Local transportation plans do not include higher capacity transportation facility along proposed alternative.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative is not anticipated to adversely impact regional open space planning.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative primarily uses existing corridors, but could impact wildlife connectivity areas identified by the AGFD and The Nature Conservancy.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Not consistent with land use or growth strategies in Maricopa County; new high capacity transportation facility not currently planned.
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state or private land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mostly non-supportive comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative G

Description

This alternative bypasses the core of the Phoenix Metropolitan Area to the west and south using the proposed Hassayampa Freeway and I-10.

Recommendation

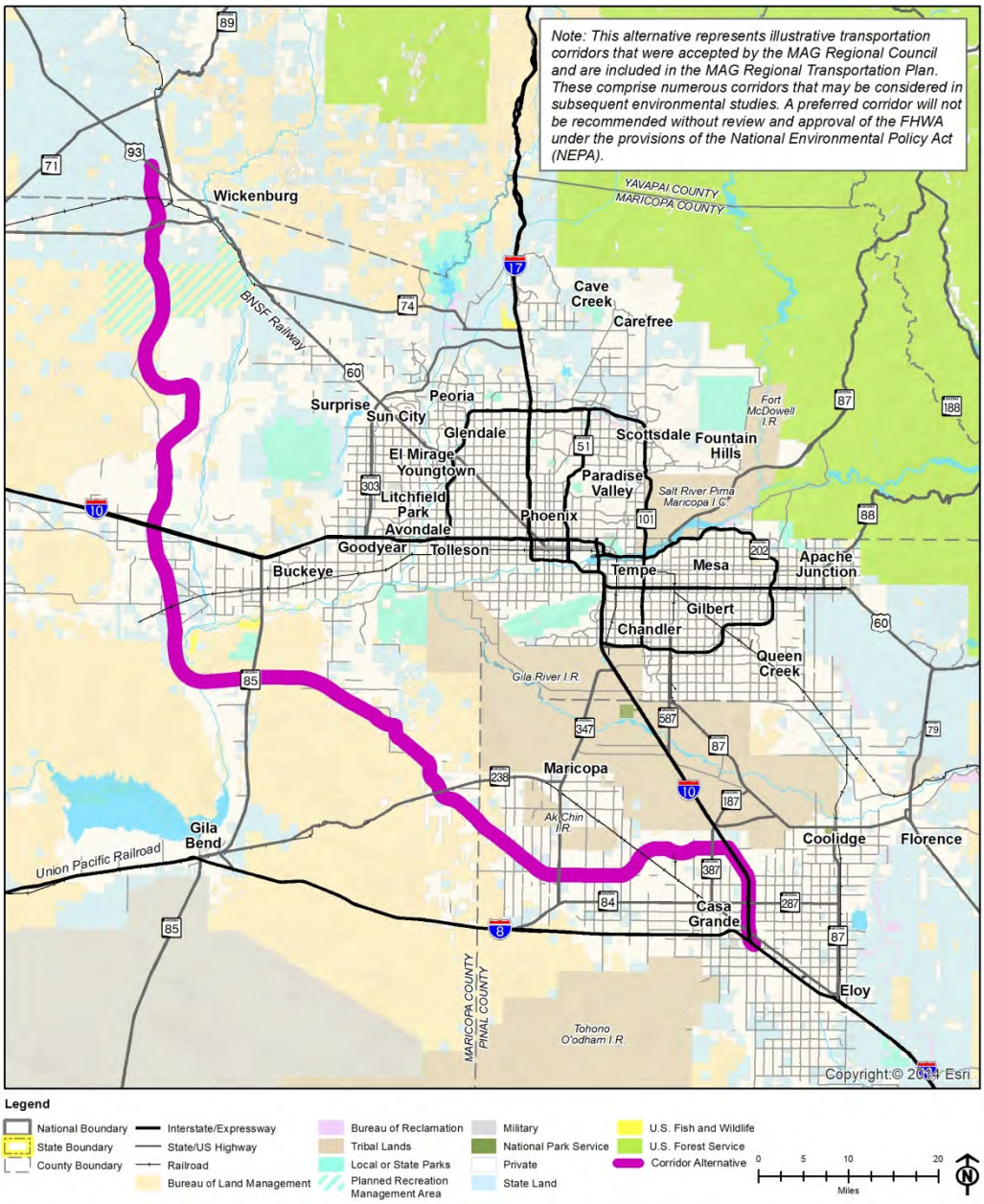
- **Recommended for Level 2 Analysis**

Opportunities

- Creates missing linkage in CANAMEX corridor designation
- Contributor to the regional transportation system that provides relief to congested corridors
- Consistent with documentation of local and regional growth strategies and transportation plans

Constraints

- Potential environmental constraints; traverses wildlife connectivity areas identified by the AGFD and The Nature Conservancy



Alternative G			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative meets the intent of legislative actions by forming connections north to the MAP-21 designated I-11 corridor via US-93, and south to the CANAMEX corridor via I-10.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Sun Corridor megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		The proposed Hassayampa Freeway corridor closes a gap/provides a missing link in the CANAMEX high priority corridor definition in this segment.
	4 How well does this alternative connect with adjacent segments/sections?		This alternative makes connections to both adjacent segments and corridor option(s).
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Based on the *Freight Transportation Framework Study*, this alternative connects to 4-5 identified freight focus areas.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities (e.g., freight focus areas), and creates junctions with east-west transportation corridors (I-10, BNSF Phoenix Subdivision, UPRR Sunset Route and branch lines). An opportunity exists to form a connection between the BNSF and UPRR corridors west of Phoenix.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor; right-of-way available and planned for in Hassayampa Valley master planned communities.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		As a contributor to the regional transportation system, this alternative provides relief to congested corridors through the Phoenix Metropolitan Area via new corridors to the south and west.
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		Entire corridor planned as potential new interstate/multimodal corridor (if designated and determined feasible) by ADOT and MAG in statewide/regional transportation visioning studies.
	12 How well does this alternative conform to locally adopted transportation plans?		Most of the corridor in this alternative is currently documented in local transportation plans (e.g., Town of Buckeye, Pinal County).
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative traverses the planned Vulture Mountain Cooperative Recreation Management Area.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy, with potential specific impact to nesting raptors and desert tortoise wildlife habitat (Vulture Mountains).
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Consistent with majority of regional land use and growth strategies in Maricopa and Pinal counties that are planning for a new high capacity, multimodal transportation facility; documented in many of master planned community site plans.
	16 How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state, private, or BLM land.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mostly supportive comments.
Cost	18 What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative H

Description

This alternative bypasses the core of the Phoenix Metropolitan Area to the west and south using a portion of the proposed Hassayampa Freeway and the original CANAMEX route (I-10, AZ-85, and I-8).

Recommendation

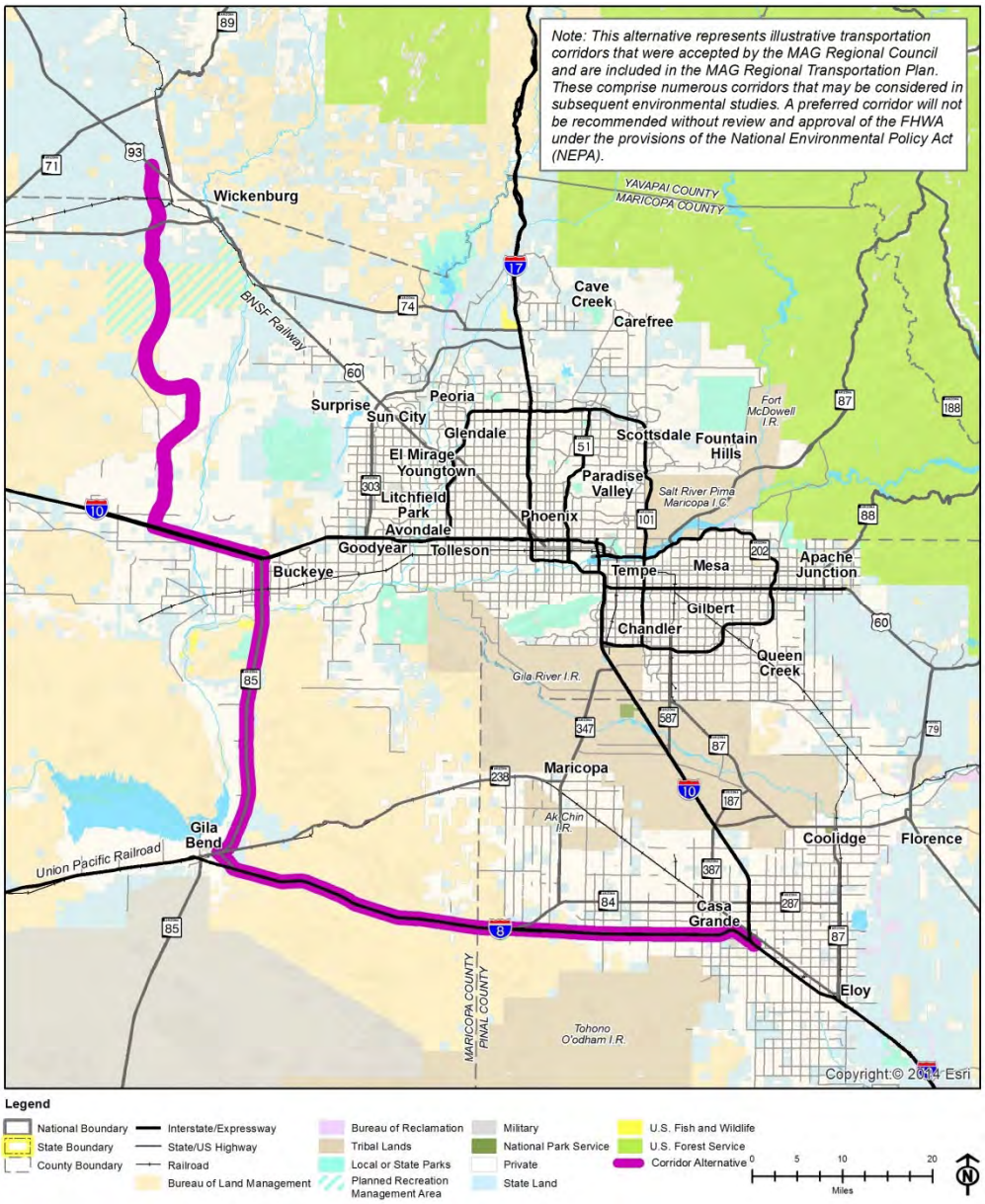
- **Recommended for Level 2 Analysis**

Opportunities

- Creates missing linkage in CANAMEX corridor designation
- Contributor to the regional transportation system that provides relief to congested corridors
- Consistent with documentation of local and regional growth strategies and transportation plans

Constraints

- Potential environmental constraints; traverses wildlife connectivity areas identified by the AGFD and The Nature Conservancy



Alternative H			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative meets the intent of legislative actions by forming connections north to the MAP-21 designated I-11 corridor via US-93, and south to the CANAMEX corridor via I-10.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Sun Corridor megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		The proposed Hassayampa Freeway corridor closes a gap/provides a missing link in the CANAMEX high priority corridor definition in this segment.
	4 How well does this alternative connect with adjacent segments/sections?		This alternative makes connections to both adjacent segments and corridor option(s).
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Based on the *Freight Transportation Framework Study*, this alternative connects to 4-5 identified freight focus areas.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities (e.g., freight focus areas), and creates junctions with east-west transportation corridors (I-10, I-8, BNSF Phoenix Subdivision, UPRR Sunset Route and branch lines). An opportunity exists to form a connection between the BNSF and UPRR corridors west of Phoenix.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with right-of-way available and planned for in Hassayampa Valley master planned communities, but potentially limited right-of-way available along existing corridors.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		As a contributor to the regional transportation system, this alternative provides relief to congested corridors through the Phoenix Metropolitan Area via new corridors to the west; not as direct a connection to the south.
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		Partial corridor planned as potential new interstate/multimodal corridor (if designated and determined feasible) by ADOT and MAG in statewide/regional transportation visioning studies.
	12 How well does this alternative conform to locally adopted transportation plans?		Most of the corridor in this alternative is currently documented in local transportation plans (e.g., Town of Buckeye, Pinal County).
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative traverses the planned Vulture Mountain Cooperative Recreation Management Area, and Sonoran Desert National Monument (via existing I-8 corridor).
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Partially consistent with regional land use and growth strategies in Maricopa and Pinal counties; some portions of corridor are planned to accommodate a new high capacity, multimodal transportation facility and others are not.
	16 How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state, private, or BLM land.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mostly supportive comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative I

Description

This alternative bypasses the core of the Phoenix Metropolitan Area to the west and south using US-60, a new corridor to connect to the north-south leg of Sun Valley Parkway, I-10, AZ-85, and the proposed Hassayampa Freeway.

Recommendation

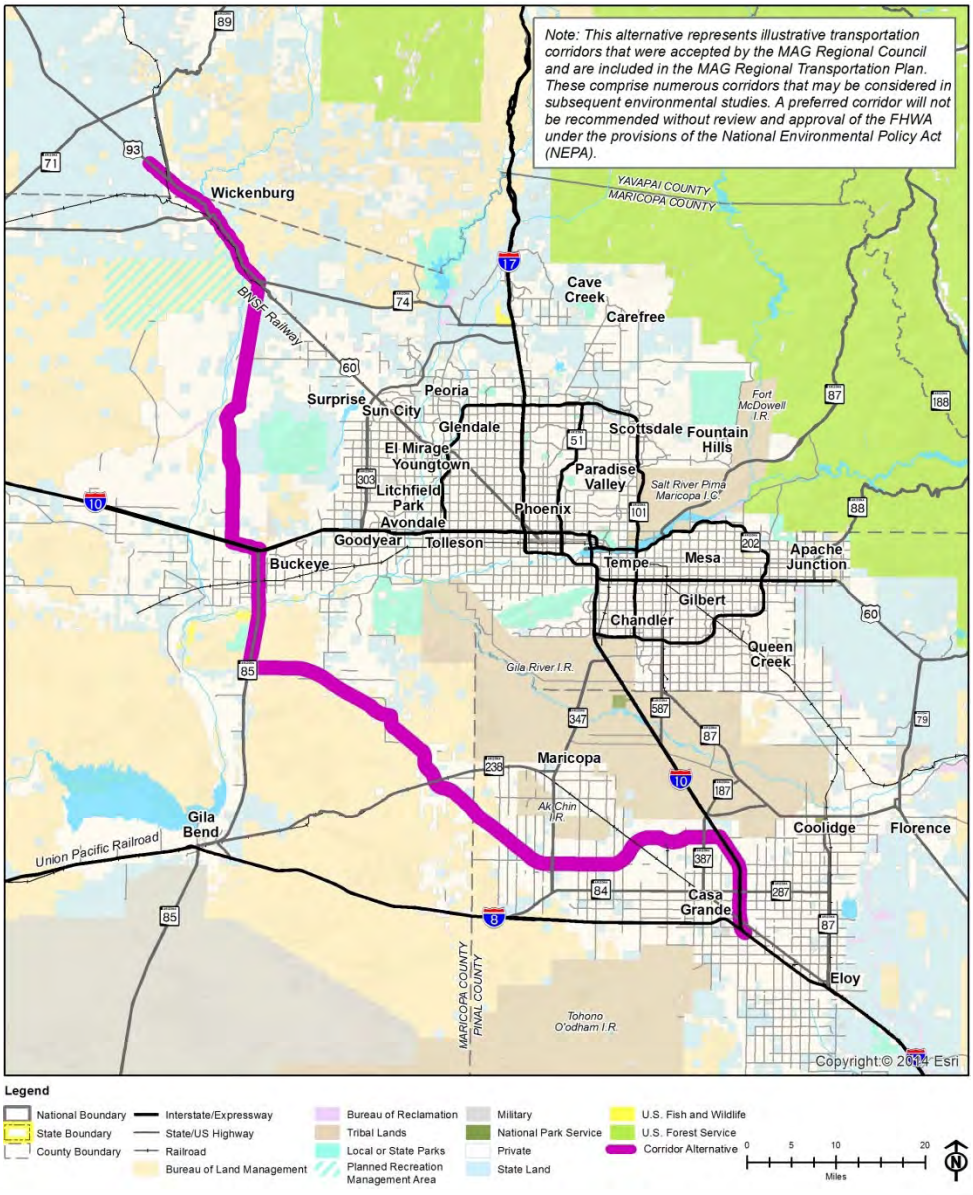
- **Recommended for Level 2 Analysis**

Opportunities

- Creates missing linkage in CANAMEX corridor designation
- Contributor to the regional transportation system that provides relief to congested corridors

Constraints

- Potential environmental constraints; traverses wildlife connectivity areas identified by the AGFD and The Nature Conservancy
- Not fully consistent with local transportation plans



Alternative I			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative meets the intent of legislative actions by forming connections north to the MAP-21 designated I-11 corridor via US-93, and south to the CANAMEX corridor via I-10.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Sun Corridor megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		The Sun Valley Parkway corridor closes a gap/provides a missing link in the CANAMEX high priority corridor definition in this segment.
	4 How well does this alternative connect with adjacent segments/sections?		This alternative makes connections to both adjacent segments and corridor option(s).
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Based on the *Freight Transportation Framework Study*, this alternative connects to 4-5 identified freight focus areas.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities (e.g., freight focus areas), and creates junctions with east-west transportation corridors (I-10, BNSF Phoenix Subdivision, UPRR Sunset Route and branch lines). An opportunity exists to form a connection between the BNSF and UPRR corridors west of Phoenix.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with constrained areas of shared rights-of-way in the Hassayampa Valley, and potentially limited right-of-way available along existing corridors.
Capacity/ Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		As a contributor to the regional transportation system, this alternative provides relief to congested corridors through the Phoenix Metropolitan Area via new corridors to the south and west.
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		Partial corridor planned as potential new interstate/multimodal corridor (if designated and determined feasible) by ADOT and MAG in statewide/regional transportation visioning studies; Sun Valley Parkway segment removed as a feasible high capacity transportation/trade corridor from previous studies.
	12 How well does this alternative conform to locally adopted transportation plans?		Portions of the corridor in this alternative are currently documented in local transportation plans (e.g., Town of Buckeye, Pinal County), while other portions (e.g., Sun Valley Parkway and its extension) are inconsistent with documented transportation plans.
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative is not anticipated to adversely impact regional open space planning.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Not consistent with regional land use and growth strategies through developing Hassayampa Valley area; incongruent with Town of Buckeye and Maricopa County plans, as well as individual master planned community site plans.
	16 How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state, private, or BLM land.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative J

Description

This alternative bypasses the core of the Phoenix Metropolitan Area to the west and south using US-60, AZ-303L, proposed AZ-303L extensions, the proposed Hassayampa Freeway, and I-8.

Recommendation

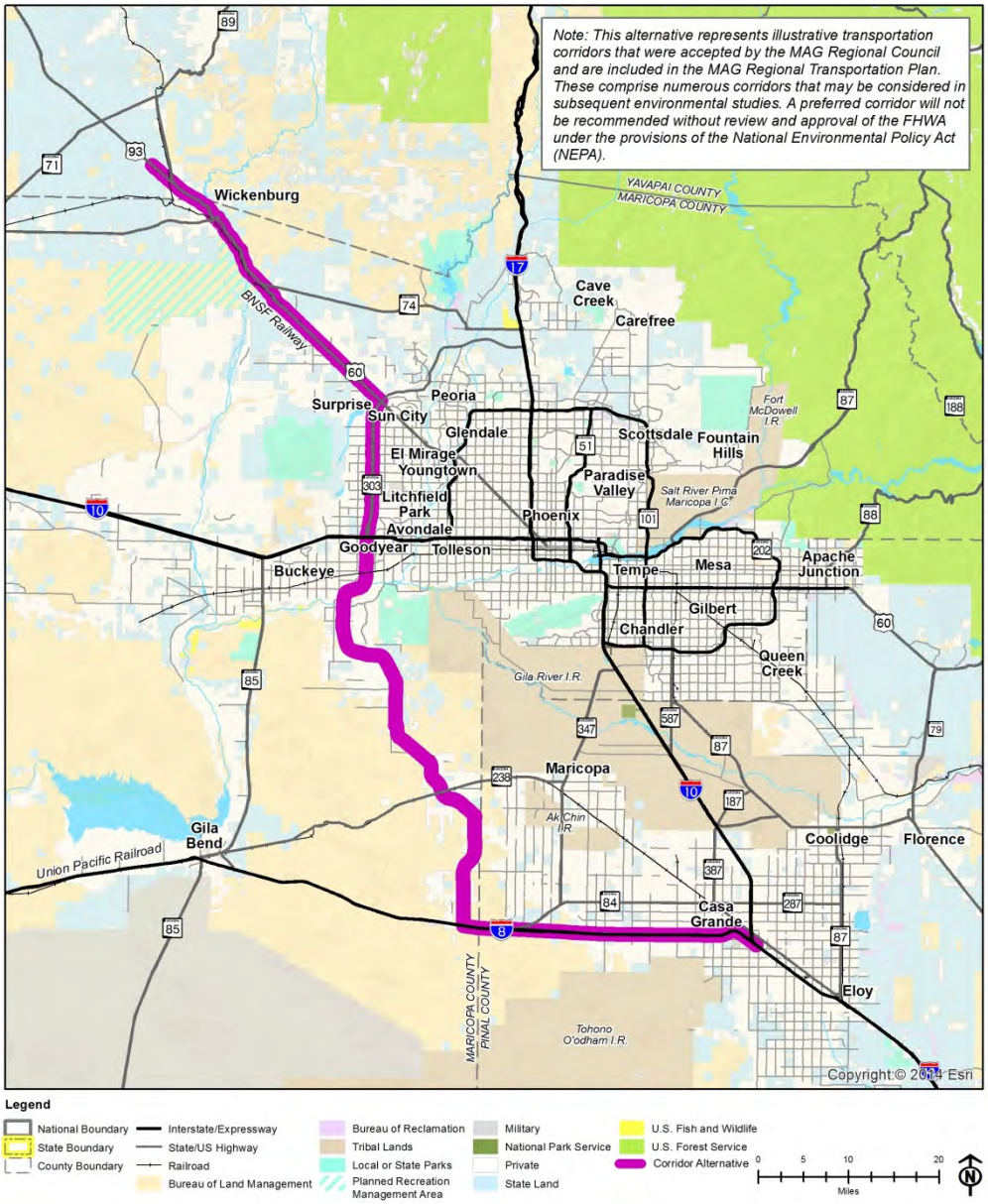
- **Not Recommended for Level 2 Analysis**

Opportunities

- Opportunity to connect several regional freight hubs

Constraints

- Not fully consistent with regional growth strategies and transportation plans; previous studies have noted issues with the AZ-303L corridor as a major trade route
- Widening existing corridors may not be practical; additional trade flows could contribute to congestion



Alternative J			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative meets the intent of legislative actions by forming connections north to the MAP-21 designated I-11 corridor via US-93, and south to the CANAMEX corridor via I-10.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Sun Corridor megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		This alternative does not close a gap/provide a missing link in the CANAMEX high priority corridor definition in this segment.
	4 How well does this alternative connect with adjacent segments/sections?		This alternative makes connections to both adjacent segments and corridor option(s).
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Based on the *Freight Transportation Framework Study*, this alternative connects to 4-5 identified freight focus areas.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities (e.g., freight focus areas), and creates junctions with east-west transportation corridors (I-10, I-8, BNSF Phoenix Subdivision, UPRR Sunset Route and branch lines). An opportunity exists to form a connection between the BNSF and UPRR corridors west of Phoenix.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with constrained areas of shared rights-of-way in the Hidden Valley, and potentially limited right-of-way available along existing corridors.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		As a contributor to the regional transportation system, this alternative provides relief to congested corridors through the Phoenix Metropolitan Area via some new corridors, but adds to congestion on existing corridors.
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, alternative supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		Partial corridor planned as potential new interstate/multimodal corridor (if designated and determined feasible) by ADOT and MAG in statewide/regional transportation visioning studies; AZ-303L segment removed as a feasible high capacity transportation/trade corridor from previous studies.
	12 How well does this alternative conform to locally adopted transportation plans?		Most of the corridor in this alternative is currently documented in local transportation plans, although existing highway corridors are not always anticipated to become a major high capacity trade corridor.
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative is not anticipated to adversely impact regional open space planning.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy, with potential specific impact to desert tortoise wildlife habitat (Vekol Valley).
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Partially consistent with regional land use and growth strategies in Maricopa and Pinal counties; some portions of corridor are planned to accommodate a new high capacity, multimodal transportation facility and others are not.
	16 How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state, private, or BLM land.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18 What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative K

Description

This alternative traverses the core of the Phoenix Metropolitan Area using US-60, AZ-101L, and I-10.

Recommendation

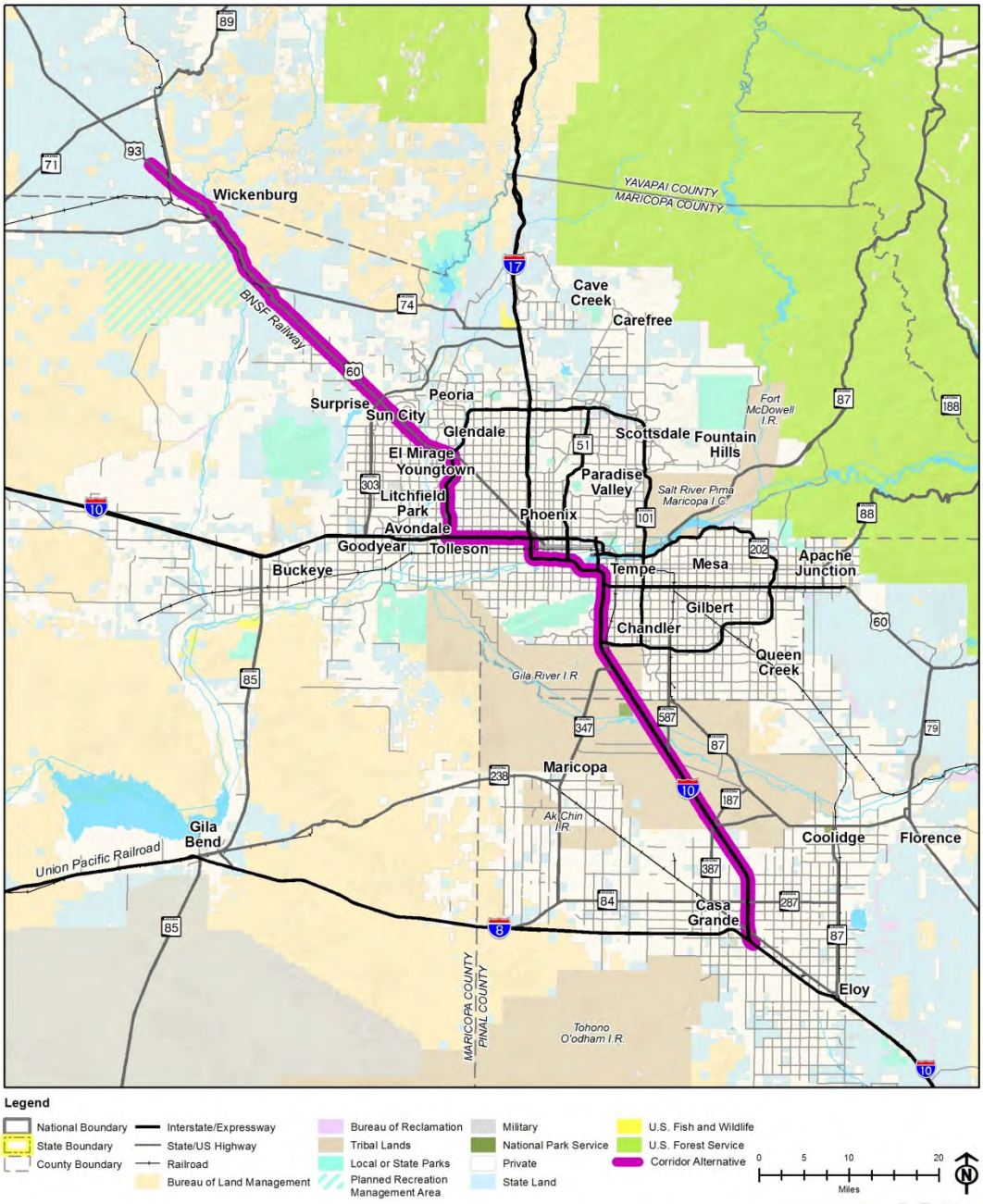
- **Not Recommended for Level 2 Analysis**

Opportunities

- Utilizes existing transportation corridors

Constraints

- Utilizing existing corridors as major trade route not consistent with regional growth strategies and transportation plans; includes potential right-of-way issues
- Widening existing US-60, AZ-101L, and I-10 corridors may not be practical; additional trade flows could contribute to congestion



Alternative K				
Category		**Criteria**	**Rating**	**Notes**
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative meets the intent of legislative actions by forming connections north to the MAP-21 designated I-11 corridor via US-93, and south to the CANAMEX corridor via I-10.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Sun Corridor megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		This alternative does not close a gap/provide a missing link in the CANAMEX high priority corridor definition in this segment.
	4	How well does this alternative connect with adjacent segments/sections?		This alternative makes connections to both adjacent segments and corridor option(s).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Based on the *Freight Transportation Framework Study*, this alternative connects to 8 identified freight focus areas.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities (e.g., freight focus areas), and creates junctions with east-west transportation corridors (I-10, BNSF Phoenix Subdivision, UPRR Sunset Route and branch lines). Intermodal expansion is more limited in the Phoenix metropolitan core.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Existing highway corridors through metropolitan core with very limited right-of-way available for new corridor development; some sections contain existing parallel railroad corridors.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		As a contributor to the regional transportation system, this alternative provides no congestion relief to corridors within the Phoenix Metropolitan Area; adds to already congested corridors.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No regional corridor-related actions documented; existing corridors planned to accommodate regional travel, but not to support a major trade corridor.
	12	How well does this alternative conform to locally adopted transportation plans?		Existing highway corridors may anticipate minor improvements, but widening these corridors to support a major high capacity trade corridor is not planned.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative is not anticipated to adversely impact regional open space planning.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative traverses the core of the metropolitan area, with potential air quality issues.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Not consistent with growth strategies through metropolitan area (mostly built out); land use plans not oriented toward a major high capacity, multimodal transportation facility.
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; traverses tribal land (Gila River Indian Community).
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mostly non-supportive comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative L

Description

This alternative crosses through the core of the Phoenix Metropolitan Area using I-17 and I-10.

Recommendation

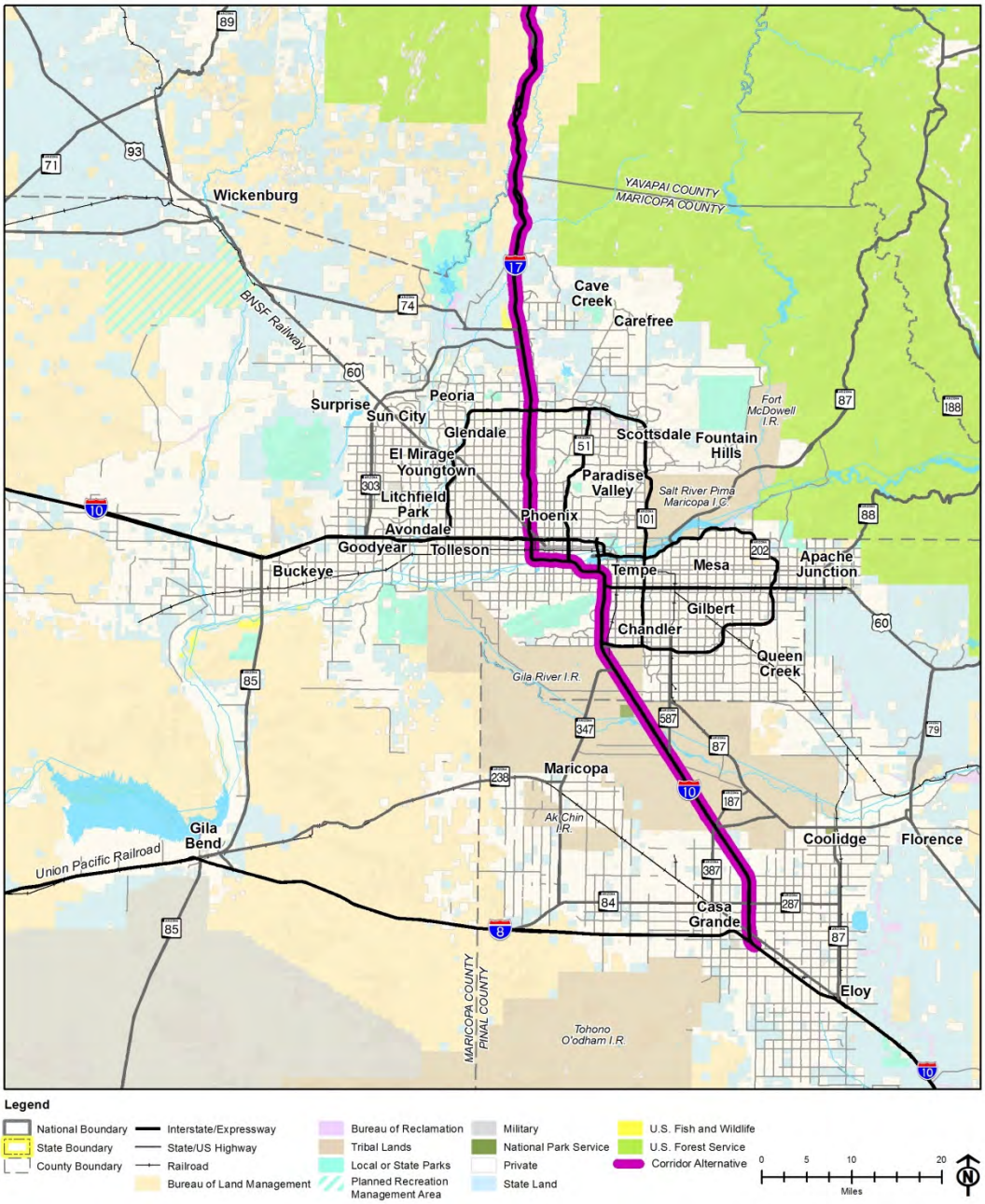
- **Not Recommended for Level 2 Analysis**

Opportunities

- Utilizes existing transportation corridors

Constraints

- Widening the existing I-17 and I-10 corridors to support additional freight traffic may not be practical, therefore additional trade flows would contribute to existing congestion
- Not as direct a connection to Las Vegas Metropolitan Area Section



Alternative L			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative partially meets the intent of legislative actions by forming a connection south to the CANAMEX corridor via I-10.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Sun Corridor megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		This alternative does not close a gap/provide a missing link in the CANAMEX high priority corridor definition in this segment.
	4 How well does this alternative connect with adjacent segments/sections?		This alternative makes connections to both adjacent segments and corridor option(s).
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Based on the *Freight Transportation Framework Study*, this alternative connects to 8 identified freight focus areas.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities (e.g., freight focus areas), and creates junctions with east-west transportation corridors (I-10, BNSF Phoenix Subdivision, UPRR Sunset Route and branch lines). Intermodal expansion is more limited in the Phoenix metropolitan core.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Existing highway corridors through metropolitan core with very limited right-of-way available for new corridor development; some sections contain existing parallel railroad corridors; potential grade issues for railroad corridor development along I-17.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		As a contributor to the regional transportation system, this alternative provides no congestion relief to corridors within the Phoenix Metropolitan Area; adds to already congested corridors.
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		No regional corridor-related actions documented; existing corridors planned to accommodate regional travel, but not to support a major trade corridor.
	12 How well does this alternative conform to locally adopted transportation plans?		Existing highway corridors may anticipate minor improvements, but widening these corridors to support a major high capacity trade corridor is not planned.
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative is not anticipated to adversely impact regional open space planning.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative traverses the core of the metropolitan area, with potential air quality issues.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Not consistent with growth strategies through metropolitan area (mostly built out); land use plans not oriented toward a major high capacity, multimodal transportation facility.
	16 How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; traverses tribal land (Gila River Indian Community).
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mostly non-supportive comments.
Cost	18 What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative KK

Description

This alternative bypasses the core of the Phoenix Metropolitan Area to the west using the proposed Hassayampa Freeway, I-10, and AZ-85.

Recommendation

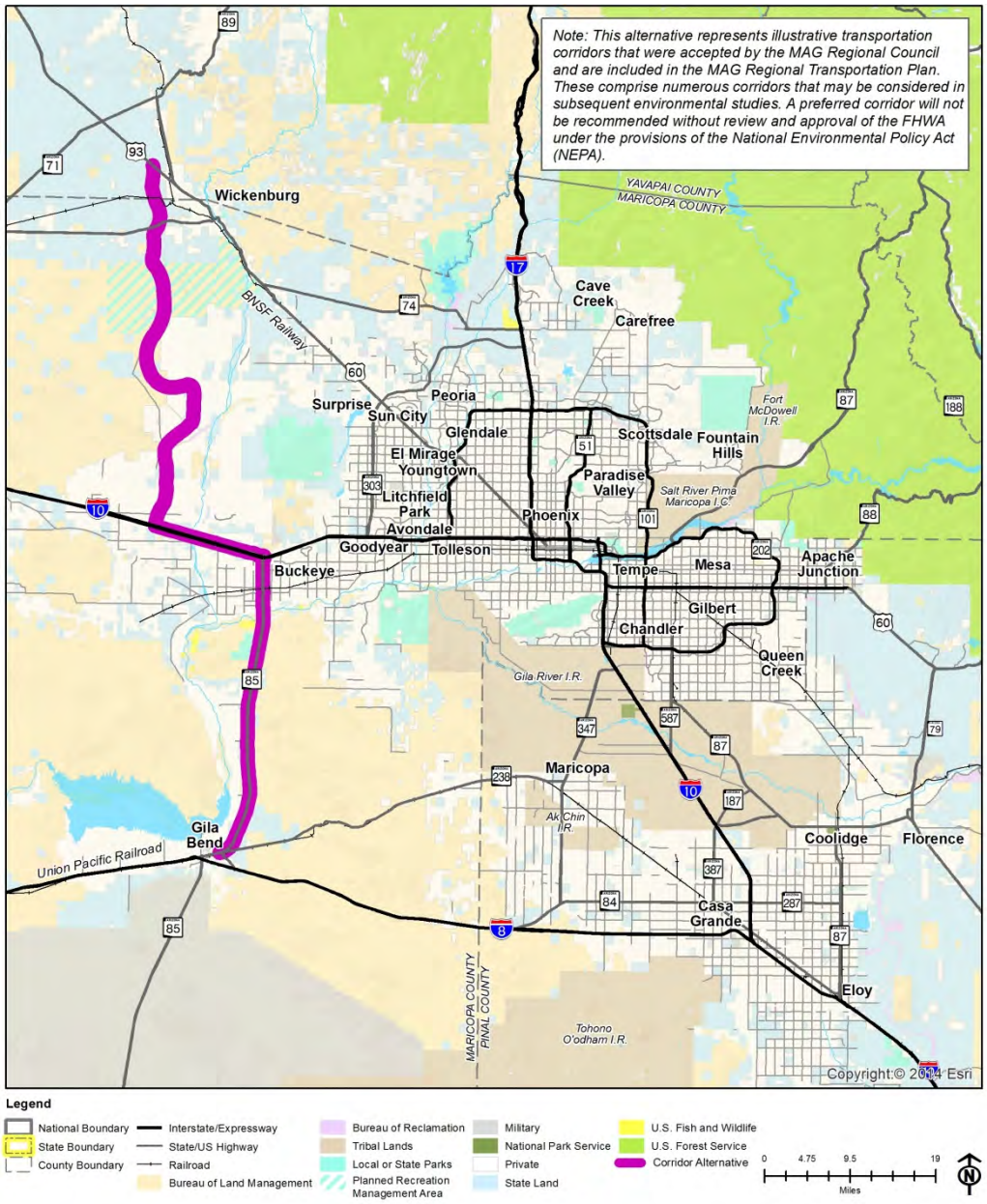
- **Not Recommended for Level 2 Analysis**

Opportunities

- Creates missing linkage in CANAMEX corridor designation

Constraints

- Does not connect to Tucson Metropolitan Area, or major economic hubs in Mexico
- Potential environmental constraints; traverses wildlife connectivity areas identified by the AGFD and The Nature Conservancy



Alternative KK				
Category		**Criteria**	**Rating**	**Notes**
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative partially meets the intent of legislative actions by forming a connection north to the MAP-21 designated I-11 corridor via US-93.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Sun Corridor megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		The proposed Hassayampa Freeway corridor closes a gap/provides a missing link in the CANAMEX high priority corridor definition in this segment.
	4	How well does this alternative connect with adjacent segments/sections?		This alternative makes connections to both adjacent segments and corridor option(s).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Based on the *Freight Transportation Framework Study*, this alternative connects to 0-1 identified freight focus areas.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities (e.g., freight focus areas), and creates junctions with east-west transportation corridors (I-10, I-8, BNSF Phoenix Subdivision, UPRR Sunset Route and branch lines). An opportunity exists to form a connection between the BNSF and UPRR corridors west of Phoenix.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with right-of-way available and planned for in Hassayampa Valley master planned communities, but potentially limited right-of-way available along existing corridors.
Capacity/ Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		As a contributor to the regional transportation system, this alternative provides some relief to congested corridors through the Phoenix Metropolitan Area, but only to the west.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Partial corridor planned as potential new interstate/multimodal corridor (if designated and determined feasible) by ADOT and MAG in statewide/regional transportation visioning studies.
	12	How well does this alternative conform to locally adopted transportation plans?		Most of the corridor in this alternative is currently documented in local transportation plans (e.g., Town of Buckeye, Gila Bend).
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative traverses the planned Vulture Mountain Cooperative Recreation Management Area.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy, with potential specific impact to nesting raptors and desert tortoise wildlife habitat (Vulture Mountains).
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Partially consistent with regional land use and growth strategies in Maricopa and Pinal counties; some portions of corridor are planned to accommodate a new high capacity, multimodal transportation facility and others are not.
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state, private, or BLM land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative LL

Description

This alternative bypasses the core of the Phoenix Metropolitan Area to the west and south using components of the proposed Hassayampa Freeway, proposed AZ-30 corridor and extension, proposed AZ-303 extensions, and I-8.

Recommendation

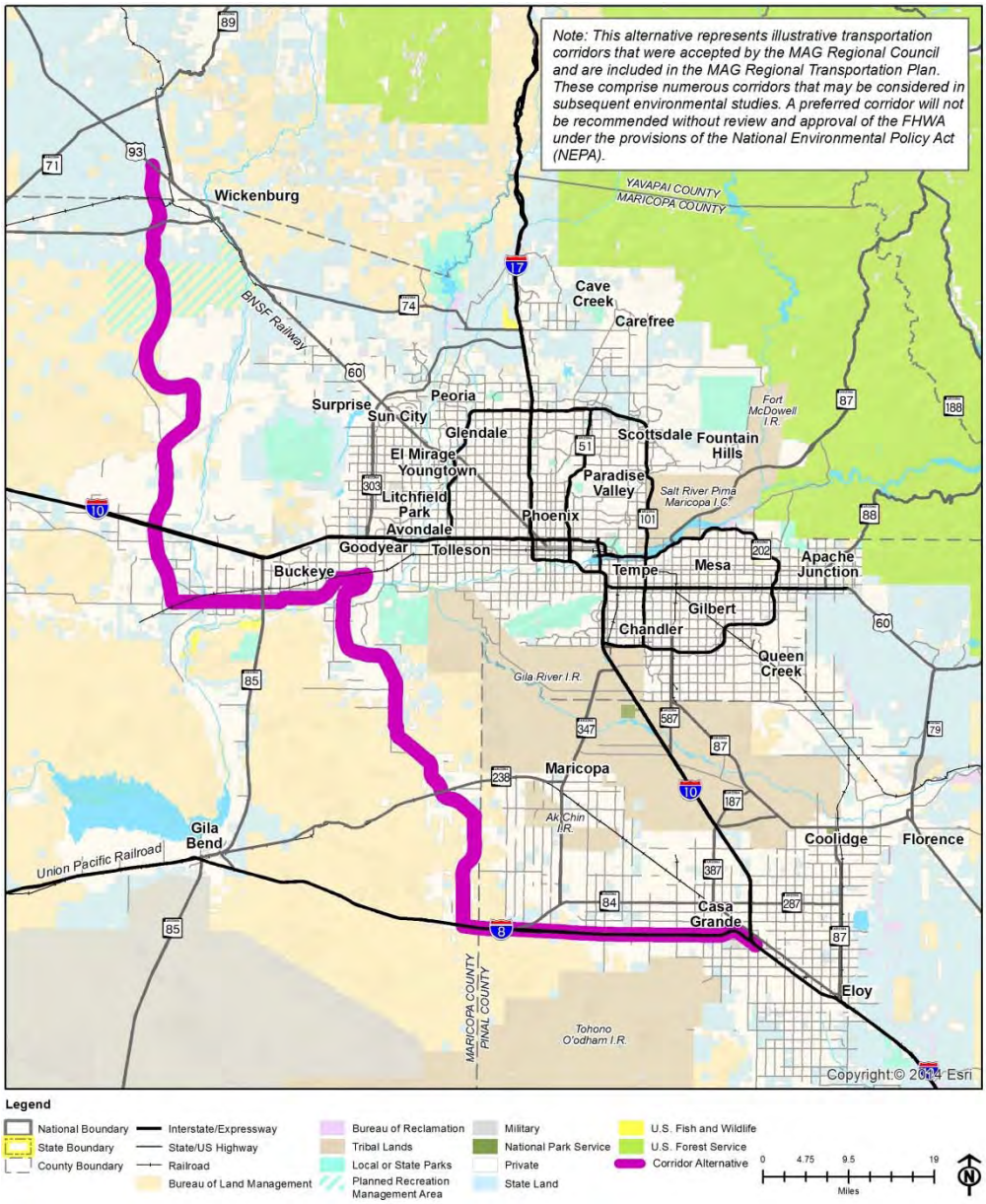
- **Recommended for Level 2 Analysis**

Opportunities

- Creates missing linkage in CANAMEX corridor designation
- Contributor to the regional transportation system that provides relief to congested corridors

Constraints

- Potential environmental constraints; traverses wildlife connectivity areas identified by the AGFD and The Nature Conservancy



Alternative LL			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative meets the intent of legislative actions by forming connections north to the MAP-21 designated I-11 corridor via US-93, and south to the CANAMEX corridor via I-10.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Sun Corridor megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		The proposed Hassayampa Freeway corridor closes a gap/provides a missing link in the CANAMEX high priority corridor definition in this segment.
	4 How well does this alternative connect with adjacent segments/sections?		This alternative makes connections to both adjacent segments and corridor option(s).
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Based on the *Freight Transportation Framework Study*, this alternative connects to 4-5 identified freight focus areas.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities (e.g., freight focus areas), and creates junctions with east-west transportation corridors (I-10, I-8, BNSF Phoenix Subdivision, UPRR Sunset Route and branch lines). An opportunity exists to form a connection between the BNSF and UPRR corridors west of Phoenix.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with right-of-way available and planned for in Hassayampa Valley master planned communities, but potentially limited right-of-way available along existing corridors and through Hidden Valley.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		As a contributor to the regional transportation system, this alternative provides relief to congested corridors through the Phoenix Metropolitan Area via new corridors to the west; not as direct a connection to the south.
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		Partial corridor planned as potential new interstate/multimodal corridor (if designated and determined feasible) by ADOT and MAG in statewide/regional transportation visioning studies.
	12 How well does this alternative conform to locally adopted transportation plans?		Some of the corridor in this alternative is currently documented in local transportation plans (e.g., Town of Buckeye, Pinal County), but not all segments are anticipated to become a major high capacity trade corridor.
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative traverses the planned Vulture Mountain Cooperative Recreation Management Area.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy, with potential specific impact to nesting raptors and desert tortoise wildlife habitat (Vulture Mountains and Vekol Valley).
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Partially consistent with regional land use and growth strategies in Maricopa and Pinal counties; some portions of corridor are planned to accommodate a new high capacity, multimodal transportation facility and others are not.
	16 How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state, private, or BLM land.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18 What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative MM

Description

This alternative bypasses the core of the Phoenix Metropolitan Area to the west and south using the proposed Hassayampa Freeway, AZ-85, and I-8.

Recommendation

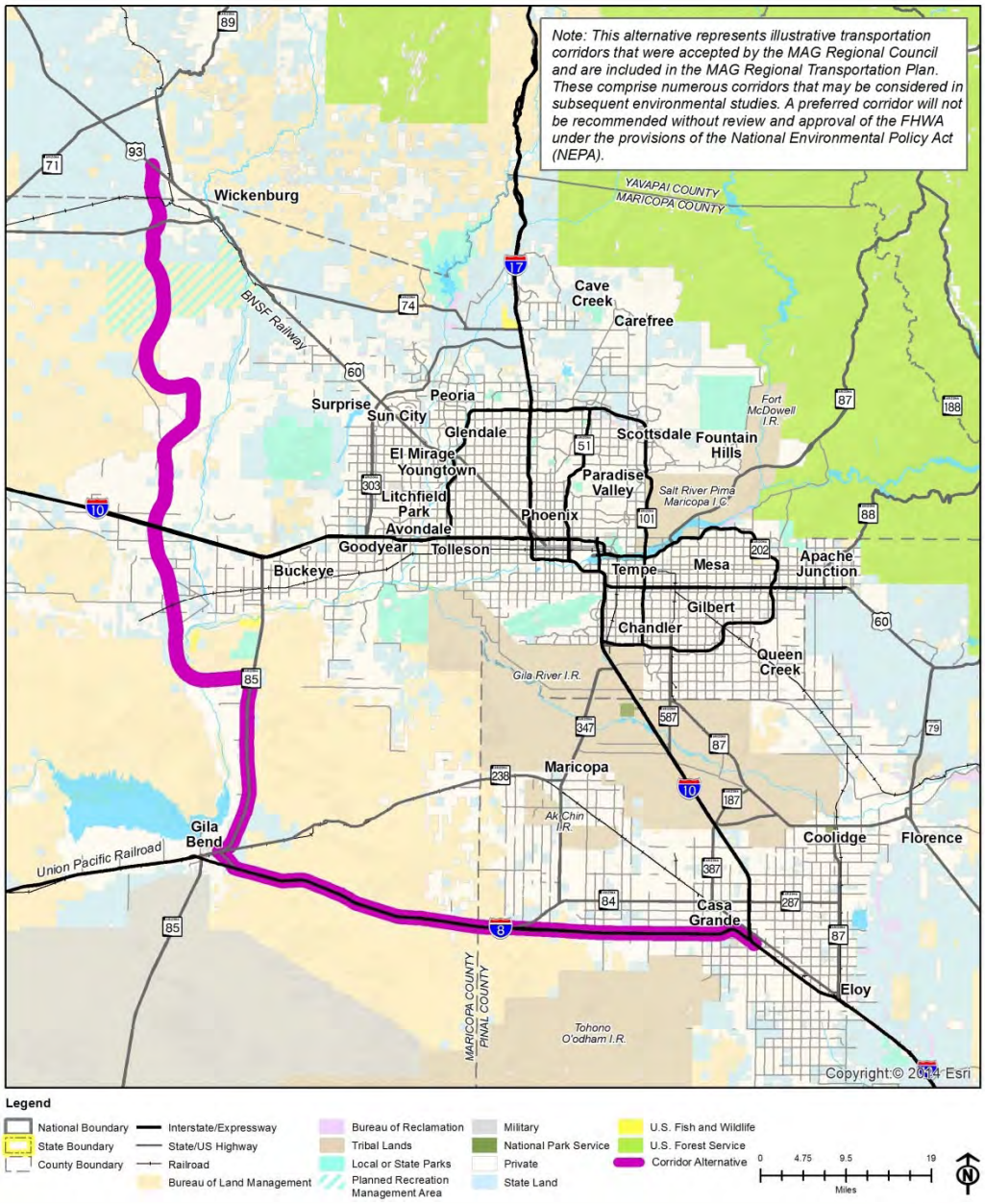
- **Recommended for Level 2 Analysis**

Opportunities

- Creates missing linkage in CANAMEX corridor designation
- Contributor to the regional transportation system that provides relief to congested corridors

Constraints

- Potential environmental constraints; traverses wildlife connectivity areas identified by the AGFD and The Nature Conservancy



Alternative MM			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative meets the intent of legislative actions by forming connections north to the MAP-21 designated I-11 corridor via US-93, and south to the CANAMEX corridor via I-10.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Sun Corridor megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		The proposed Hassayampa Freeway corridor closes a gap/provides a missing link in the CANAMEX high priority corridor definition in this segment.
	4 How well does this alternative connect with adjacent segments/sections?		This alternative makes connections to both adjacent segments and corridor option(s).
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Based on the *Freight Transportation Framework Study*, this alternative connects to 4-5 identified freight focus areas.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities (e.g., freight focus areas), and creates junctions with east-west transportation corridors (I-10, I-8, BNSF Phoenix Subdivision, UPRR Sunset Route and branch lines). An opportunity exists to form a connection between the BNSF and UPRR corridors west of Phoenix.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with right-of-way available and planned for in Hassayampa Valley master planned communities, but potentially limited right-of-way available along existing corridors.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		As a contributor to the regional transportation system, this alternative provides relief to congested corridors through the Phoenix Metropolitan Area via new corridors to the west; not as direct a connection to the south.
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		Partial corridor planned as potential new interstate/multimodal corridor (if designated and determined feasible) by ADOT and MAG in statewide/regional transportation visioning studies.
	12 How well does this alternative conform to locally adopted transportation plans?		Most of the corridor in this alternative is currently documented in local transportation plans (e.g., Town of Buckeye, Pinal County).
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative traverses the planned Vulture Mountain Cooperative Recreation Management Area, and Sonoran Desert National Monument (via existing I-8 corridor).
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy, with potential specific impact to nesting raptors and desert tortoise wildlife habitat (Vulture Mountains).
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Partially consistent with regional land use and growth strategies in Maricopa and Pinal counties; some portions of corridor are planned to accommodate a new high capacity, multimodal transportation facility and others are not.
	16 How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state, private, or BLM land.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative NN

Description

This alternative bypasses the core of the Phoenix Metropolitan Area to the west using I-17, AZ-303L, the proposed AZ-303L extension, the proposed Hassayampa Freeway, and I-10.

Recommendation

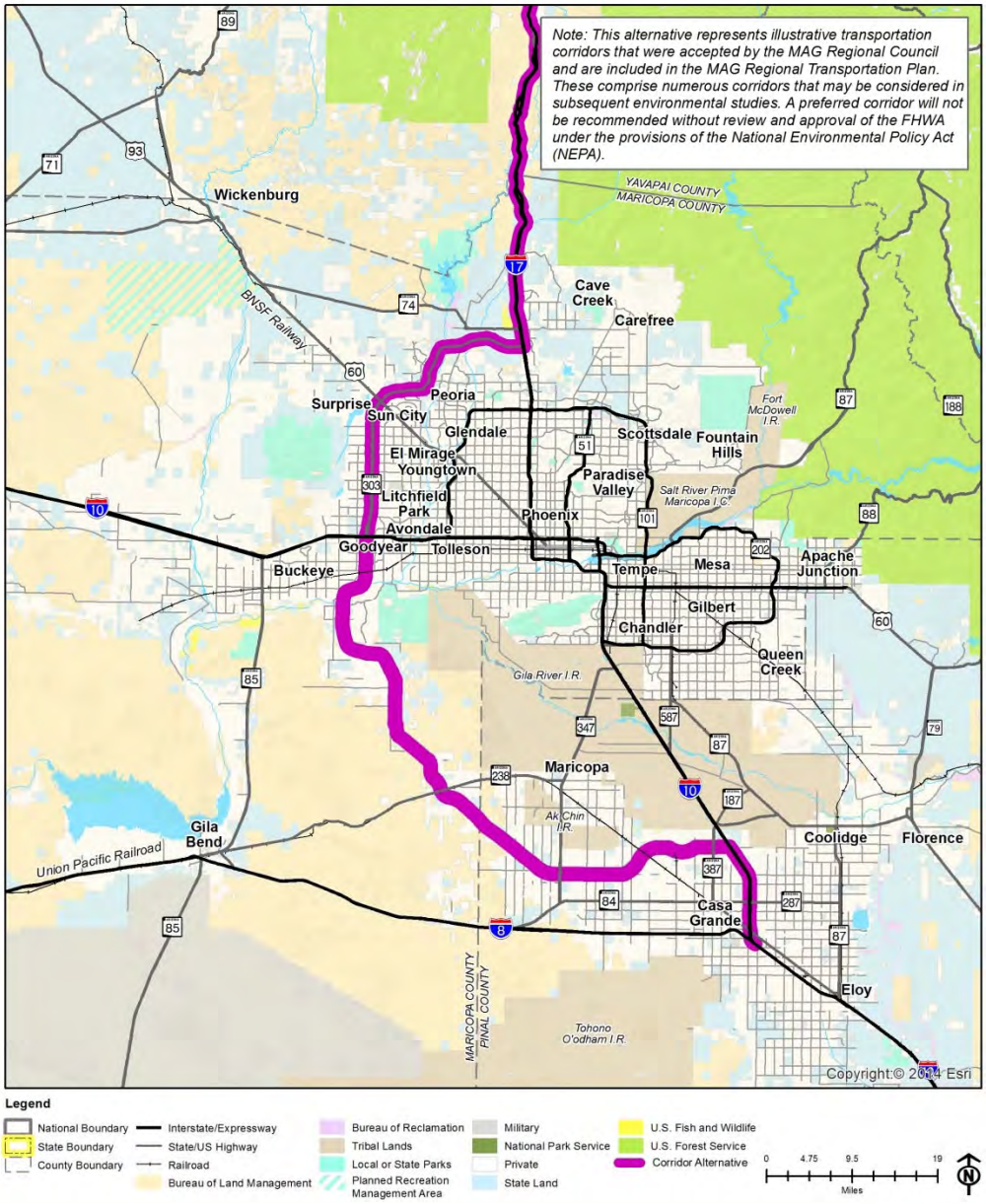
- **Not Recommended for Level 2 Analysis**

Opportunities

- Opportunity to connect several regional freight hubs

Constraints

- Not fully consistent with regional growth strategies and transportation plans; previous studies have noted issues with the AZ-303L corridor as a major trade route
- Widening existing corridors may not be practical; additional trade flows could contribute to congestion



Alternative NN				
Category		**Criteria**	**Rating**	**Notes**
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		This alternative partially meets the intent of legislative actions by forming a connection south to the CANAMEX corridor via I-10.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Sun Corridor megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		This alternative does not close a gap/provide a missing link in the CANAMEX high priority corridor definition in this segment.
	4	How well does this alternative connect with adjacent segments/sections?		This alternative makes connections to both adjacent segments and corridor option(s).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Based on the *Freight Transportation Framework Study*, this alternative connects to 4-5 identified freight focus areas.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		This alternative includes intermodal opportunities (e.g., freight focus areas), and creates junctions with east-west transportation corridors (I-10, BNSF Phoenix Subdivision, UPRR Sunset Route and branch lines). An opportunity exists to form a connection between the BNSF and UPRR corridors west of Phoenix.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Potentially limited right-of-way along existing corridors, as well as grade issues for railroad corridor development along I-17.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		As a contributor to the regional transportation system, this alternative provides relief to congested corridors through the Phoenix Metropolitan Area via some new corridors, but adds to congestion on existing corridors.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Per Arizona economic industry targets and clusters, this alternative supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Partial corridor planned as potential new interstate/multimodal corridor (if designated and determined feasible) by ADOT and MAG in statewide/regional transportation visioning studies; AZ-303L segment removed as a feasible high capacity transportation/trade corridor from previous studies.
	12	How well does this alternative conform to locally adopted transportation plans?		Some of the corridor in this alternative is currently documented in local transportation plans (e.g., Pinal County), although existing highway corridors are not always anticipated to become a major high capacity trade corridor.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		This alternative is not anticipated to adversely impact regional open space planning.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		This alternative includes potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Partially consistent with regional land use and growth strategies in Maricopa and Pinal counties; some portions of corridor are planned to accommodate a new high capacity, multimodal transportation facility and others are not.
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state, private, or BLM land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Evaluation Results: Northern Arizona/Southern Nevada Section

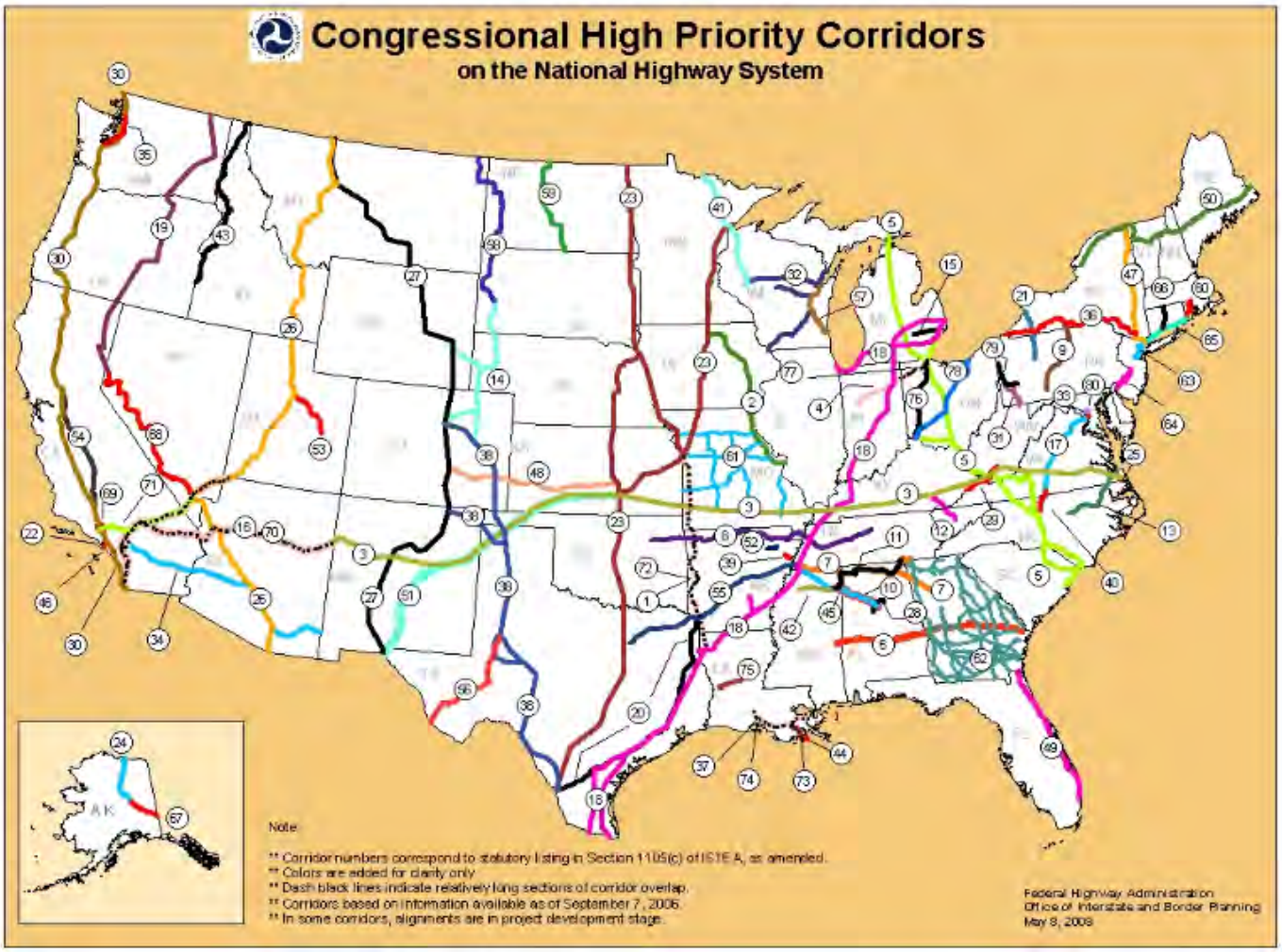
The Northern Arizona/Southern Nevada Section generally includes the area north of Wickenburg, Arizona to just north of Boulder City, Nevada—inclusive of the Boulder City Bypass project.

The study team conducted the Level 1 evaluation of all alternatives (to see a description of each alternative, please refer to "Draft Candidate Corridor Alternatives for Level 1 Screening" memorandum).

Each alternative was rated with respect to each of the evaluation criteria. The rating system consisted of a qualitative scale (from least to most favorable), with "most favorable" representing the best performance and "least favorable" representing the worst performance. Connectivity-related criteria were rated based on connectivity with *adjacent* segments. General guidance on how the criteria were evaluated in relationship to the project's Goals and Objectives follow:

- **Criterion 1: How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?**
  - Alternatives were evaluated based on their compliance with Congressionally designated high priority corridors, including (see **Figure 10**):
    - CANAMEX: I-19 from Nogales to Tucson, I-10 from Tucson to Phoenix, US-93 in the vicinity of Phoenix to the Nevada border, US-93 from the Arizona border to Las Vegas, and I-15 from Las Vegas to the Utah border
    - I-11: US-93 in the vicinity of Phoenix to the Nevada border, and US-93 from the Arizona border to Las Vegas
    - The Washoe County corridor, along Interstate Route 580/United States Route 95/United States Route 95A, from Reno, Nevada, to Las Vegas, Nevada.
    - United States Route 395 Corridor from the United States-Canadian border to Reno, Nevada.
    - United States Route 95 Corridor from the Canadian border at Eastport, Idaho, to the Oregon state border.
  - In this segment, alternatives were evaluated based on what percent of the alternative utilized Congressionally designated high priority corridors, including CANAMEX and I-11. Those alternatives where the entire corridor utilized a high priority corridor received the "most favorable" rating; those where no part of the corridor utilizes high priority corridors received the "least favorable" rating.

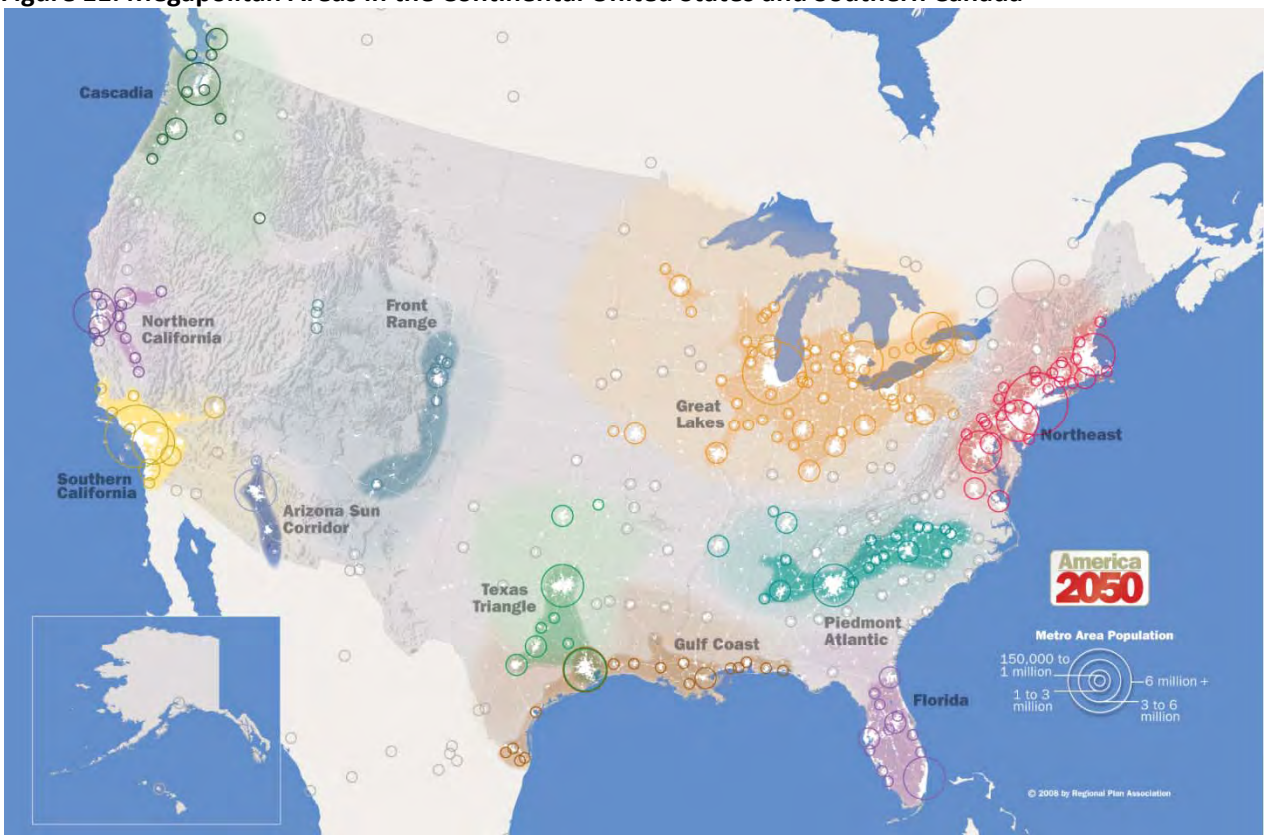
Figure 10. Congressional High Priority Corridors



Source: FHWA http://www.fhwa.dot.gov/planning/national_highway_system/high_priority_corridors/hiprimap.cfm

- **Criterion 2: How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?**
  - Alternatives were evaluated based on their connectivity to primary centers of population and commerce at segment termini and along the corridor. This analysis was conducted at a macro scale using the megapolitan areas identified by America 2050 and the Regional Plan Association, shown in **Figure 11** and introduced in the "Corridor Justification Report" as major economic activity centers.
  - In Northern Arizona/Southern Nevada, primary consideration was given to how directly the alternative connected the Sun Corridor and Southern California (includes Las Vegas) megapolitans.

Figure 11. Megapolitan Areas in the Continental United States and Southern Canada



Source: America 2050

- **Criterion 3: How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?**
  - This criterion was applied to all segments to understand gaps or links in the regional transportation network that can be filled (or a route made more efficient) with the construction of this corridor.
  - In this segment, it is assumed that all of the alternatives rate equally, as none of them close gaps or develop missing linkages in the regional transportation network. All either utilize existing corridors or provide more localized connections.
- **Criterion 4: How well does this alternative connect with adjacent segments/sections?**
  - Alternatives were evaluated based on the ability to make a connection with an alternative in the adjacent segment/section. Alternatives that connected with two adjacent segments rated "most favorable"; alternatives that connected with one adjacent segment rated "moderately favorable"; and alternatives that did not connect with any adjacent segments rated "least favorable."
  - In Northern Arizona/Southern Nevada, segments that connected to both the Phoenix Metropolitan Area and the Las Vegas Metropolitan Area sections rated "most favorable" and segments that only connected to the Las Vegas Metropolitan Area rated "moderately favorable."
- **Criterion 5: How well does this alternative connect major freight hubs and high capacity transportation corridors?**
  - Alternatives were evaluated based on how many freight hubs and/or high capacity transportation corridors they traversed (directly crossed or in close proximity).
  - In this segment, primary consideration was given to how directly the alternative connected to major freight hubs in Las Vegas and Phoenix. Alternatives that provided more circuitous connections between

Las Vegas and Phoenix but connected to other minor freight hubs (e.g., Kingman, Flagstaff) rated "moderately favorable," while alternatives that did not connect to Phoenix rated "least favorable."

- **Criterion 6: How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?**
  - Alternatives were evaluated based on the number of east-west high-capacity roadway and railroad corridors traversed, and proximate airports and intermodal yard facilities. Those with connectivity to higher numbers of facilities provide greater opportunity for intermodal connectivity.
  - In this segment, all of the alternatives have connections to the BNSF mainline and I-40 and therefore rated almost equally. However, those alternatives that also connected to the airport in Kingman rated "moderately favorable," while those that did not have this connection rated "less favorable."
- **Criterion 7: How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?**
  - Alternatives were evaluated qualitatively, based on the percent of the corridor that could accommodate multiple modes and uses (highway, rail, utilities, etc.) in one corridor footprint, generally reviewing slopes and available right-of-way. While the alternative descriptions cite the feasibility for highway and rail opportunities, the potential exists for co-location of major utility corridors as well. If the alternative can accommodate highway and rail, it is generally assumed (from a right-of-way and slopes perspective) to have the additional ability to accommodate major utilities.
- **Criterion 8: How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?**
  - Alternatives were evaluated using existing and projected future level of service conditions identified in the "Corridor Justification Report". Where an alternative has the opportunity to relieve congestion between major activity centers (generally, between large metropolitan areas, or in the case of the Phoenix and Las Vegas sections, providing relief to congestion within the metropolitan area), it was rated higher. Although many alternatives serve as bypasses or loop corridors around metropolitan cores, they are expected to perform as part of the regional transportation system. Therefore, by forming junctions with existing corridors that may traverse the metropolitan core, the alternative may serve for both congestion relief and local access.
  - In this segment, congestion is not projected to be a major issue; therefore, no alternatives received a rating higher than "moderately favorable." Corridors currently or projected to experience moderate to severe congestion include portions of I-17, US-93 and AZ 95. Alternatives that could provide congestion relief to at least two of these corridors rated "moderately favorable" and alternatives that provided no congestion relief rated "least favorable."
- **Criterion 9: How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?**
  - This criterion primarily related to Southern Arizona and the ability of alternative corridors to effectively cross the Arizona-Sonora international border in an efficient manner. Existing and proposed improvements at LPOEs were taken from the recently completed ADOT *Arizona-Sonora Border Master Plan*.
  - Since this criterion was not related to this segment, all of the alternatives were rated equally with a "moderately favorable" rating.

- **Criterion 10: How well does this alternative support regional, state and national economic development goals?**
  - Alternatives were evaluated based on their ability to support economic development initiatives that rely on transportation connections. State economic development priorities, elaborated in the "Corridor Justification Report", are summarized in **Table 7** and include such items as renewable energy development, tourism, transportation logistics, and aerospace/aviation/defense.

Table 7. Arizona and Nevada Industry Targets and Clusters

Industry Targets	Arizona	Nevada	Requires Regional Transportation Network
Advanced Manufacturing	•		•
Aerospace, Aviation, Defense	•	•	•
Agriculture	•	•	•
Optics	•		•
Biotechnology	•		•
Healthcare	•	•	
Information and Computer Technology	•	•	
Life Sciences	•		•
Mining, Materials, and Manufacturing		•	•
Renewable Energy	•	•	•
Science and Technology	•		•
Tourism, Gaming, and Entertainment		•	•
Transportation and Logistics	•	•	•

Sources: Arizona Commerce Authority, Brookings Institution, Greater Phoenix Economic Council, Tucson Regional Economic Opportunities, Nevada Governor's Office of Economic Development (Full reference provided in the "Corridor Justification Report")

- **Criterion 11: How well does this alternative comply with corridor-related actions taken to date?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a corridor-related action. A corridor-related action was defined as a federal, state or regional action or designation in place that plans for a high-capacity transportation corridor.
  - In this segment, alternatives were evaluated based on what percent of the alternative is recognized by a corridor-related action. Corridor-related actions in this segment include completed US-93 and US-95 improvements in Arizona and Nevada, completion of the Mike O'Callaghan-Pat Tillman Memorial Bridge, ADOT's bqAZ designation of US-93 as a "future interstate corridor," and/or the planned Boulder City Bypass. Those alternatives where the entire corridor complies with corridor-related actions rated "most favorable" and those with a low percentage of compliance rated "less favorable."
- **Criterion 12: How well does this alternative conform to locally adopted transportation plans?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a plan adopted by a local community, such as a General/Comprehensive Plan or Transportation Master Plan.
  - In this segment, all alternatives were rated equally with a "moderately favorable" rating, since there are no documented improvements in local transportation plans/general plans
- **Criterion 13: How compatible is this alternative with regional open space, conservation, and land management agency planning?**
  - Alternatives were evaluated based on the amount of the alternative that traverses a protected open space, identified from various sources which include, but are not limited to: national conservation areas, existing parks, wilderness areas, wildlife refuges, and local/regional open space management plans.

  - In this segment, no known open space constraints were identified. Therefore, alternatives that utilized existing corridors for the entire length were rated "somewhat favorable" and alternatives with portions of new corridor and/or that have potential open space constraints (traverse or border National Park Service or U.S. Forest Service land) were rated "less favorable."

- **Criterion 14: How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?**
  - Alternatives were evaluated based on the amount of the corridor traversing various environmental features (as presented in the Existing Natural and Built Environmental technical memorandum). Additionally, the AGFD and The Nature Conservancy completed their own analyses using GIS data layers to provide input on which alternatives and/or corridor segments had significant environmental impact to habitat areas and/or wildlife linkages, specifically noting those where mitigation was feasible (or not). These analyses also noted alternatives that provided opportunities to improve wildlife linkages.
  - In this segment, alternatives were rated based on the Arizona Game and Fish Department and The Nature Conservancy analyses, as well as the percentage of existing corridors utilized (minimizing environmental impacts) versus new corridors.
- **Criterion 15: How consistent is this alternative with regional land use and growth strategies?**
  - Alternatives were evaluated based on the consistency of the corridor with land use or growth strategies identified as part of regional planning efforts (e.g., RTP, socioeconomic projections), growth elements of general/comprehensive plans, and/or major land development plans.
  - In this segment, all alternatives are consistent with local land use planning and rated equally with a "moderately favorable" rating.
- **Criterion 16: How compatible is this alternative with major land ownership patterns?**
  - Alternatives were evaluated based on the compatibility of a major transportation infrastructure facility to traverse land under state or federal ownership, including such land owners as BLM, Bureau of Reclamation, U.S. military, National Park Service, state land departments, state parks, tribal communities, U.S. Fish and Wildlife, and U.S. Forest Service.
  - In this segment, alternatives that traversed the Colorado River Indian Reservation or Prescott National Forest were rated "less favorable" and alternatives that traveled primarily through state, private or Bureau of Land Management land were rated "somewhat favorable."
- **Criterion 17: How well is this alternative accepted by the local communities?**
  - Input received from Stakeholder Partners and their constituents at the October 2013 stakeholder partner/public meetings, as well as input received via the online comment form, were considered in determining the degree of acceptance of an alternative. Alternatives that received no comments or conflicting comments (supportive and non-supportive) received a "moderately favorable" rating. Alternatives that received mostly supportive comments received the "most favorable" ratings and alternatives that received mostly non-supportive comments received the "least favorable" rating.
- **Criterion 18: What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?**
  - Generalized, comparative planning-level costs were estimated based primarily on length of the alternative, with capital construction cost factors given to (a) existing corridors, (b) existing corridors requiring additional right-of-way or significant upgrades/improvements, and (c) new/green corridor development. Compared to the cost per mile of improving an existing highway, it was assumed that a new highway would cost twice as much, and that an existing highway with significant right-of-way acquisitions or improvements needed would cost 1.5 times as much.

The evaluation rating scale is strictly relative – alternatives were considered in relationship to each other in the same project segment. If an alternative receives the highest rating, it may still face issues or obstacles with respect to that criterion.

A summary rating was applied to each alternative to note its overall feasibility. Those rating "somewhat favorable" or "most favorable" will continue on to the more detailed Level 2 analysis, which will evaluate alternatives based on more quantitative-based criterion. Those ranking "moderately favorable," "less favorable," or "least favorable" typically include a fatal flaw or do not support the project's goals and objectives.

The following summary sheets provide an overview of the Level 1 evaluation for each alternative in the Northern Arizona/Southern Nevada Section, including a map of the alternative, alternative description, summary rating scale, and opportunities/constraints of the alternative, followed by the detailed evaluation rating scales and notes.

Alternative M

Description

This alternative connects the Las Vegas and Yuma regions via Parker, centered on the US/AZ-95 corridor.

Recommendation

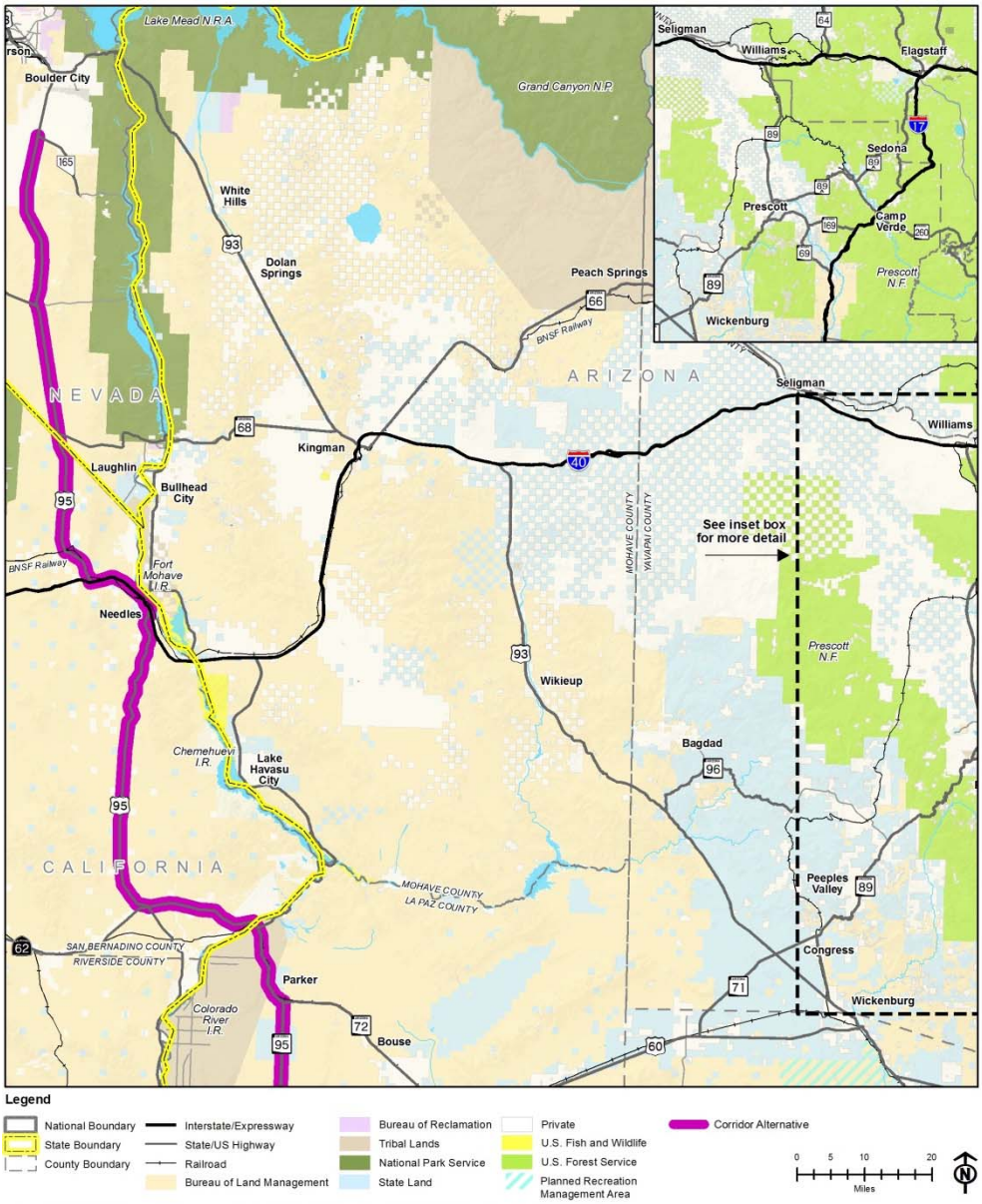
- **Not Recommended for Level 2 Analysis**

Opportunities

- Aligned with US-95 completed improvements in Nevada

Constraints

- Does not utilize existing high capacity crossing of the Colorado River or the planned Boulder City Bypass
- Does not connect to major activity centers or freight hubs in the Phoenix Metropolitan Area
- Potential environmental constraints (traverses and/or borders the Black Mountains – prime habitat for bighorn sheep and Sonoran Desert tortoise; also, traverses areas identified by the AGFD as priority areas for maintaining wildlife connectivity)
- Land ownership constraints - traverses Colorado River Indian Reservation



Alternative M

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Uses none of the Congressionally designated I-11/CANAMEX corridor (US-93).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Does not connect to the Sun Corridor megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridor utilizes existing transportation routes; does not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		Only connects with one adjacent segment (Las Vegas).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Does not connect to major freight hubs in Phoenix or northern Arizona.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		North-south connection to BNSF mainline and I-40 (in CA), but no connection to airport in Kingman.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Existing corridor with possible right-of-way available; high percentage of corridor could share highway and rail but still has constraints.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides congestion relief to AZ-95.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports no economic industry targets for the state/region.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Aligned with US-95 completed improvements in Nevada.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Existing corridors, no known open space constraints.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Uses existing corridors, but could impact wildlife connectivity areas identified by the AGFD and The Nature Conservancy. Potential constraints traversing and/or bordering the Black Mountains – prime habitat for bighorn sheep and Sonoran Desert tortoise, and has potential environmental challenges with improving the existing Colorado River crossing.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative traverses tribal lands - Colorado River Indian Reservation.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative N

Description

This alternative connects the Las Vegas and Yuma regions via the proposed AZ-95 bypass, using US-95, NV-163, AZ-68, the proposed AZ-95 bypass, and SR/AZ-95.

Recommendation

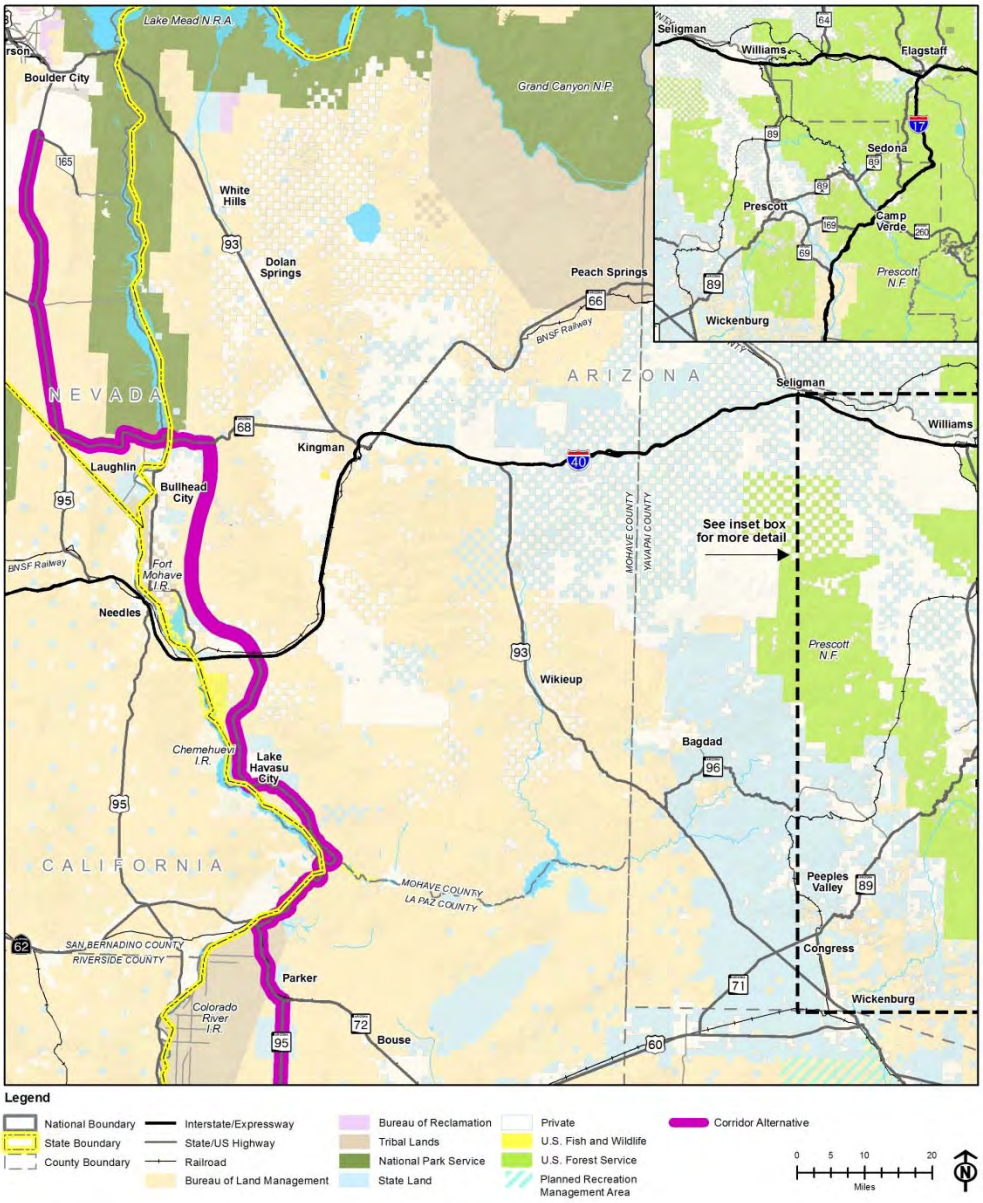
- **Not Recommended for Level 2 Analysis**

Opportunities

- Aligned with US-95 completed improvements in Nevada

Constraints

- Does not utilize existing high capacity crossing of the Colorado River or the planned Boulder City Bypass
- Does not connect to major activity centers or freight hubs in the Phoenix Metropolitan Area
- Potential environmental constraints (traverses and/or borders the Black Mountains – prime habitat for bighorn sheep and Sonoran Desert tortoise; also, traverses areas identified by the AGFD as priority areas for maintaining wildlife connectivity)
- Potential open space constraints through National Park Service land and land ownership constraints - traverses Colorado River Indian Reservation



Alternative N

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Uses none of the Congressionally designated I-11/CANAMEX corridor (US-93).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Does not connect to the Sun Corridor megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridor primarily utilizes existing transportation routes and provides localized connections; does not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		Only connects with one adjacent segment (Las Vegas).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Does not connect to major freight hubs in Phoenix or northern Arizona.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		North-south connection to BNSF mainline and I-40, but no connection to airport in Kingman.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Potentially limited right-of-way along existing corridors; low percentage of corridor could share highway and rail and has more constraints.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides no congestion relief and adds traffic to congested AZ-95.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports no economic industry targets for the state/region.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Aligned with US-95 completed improvements in Nevada.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Partial existing and new corridor; potential open space constraints through National Park Service land.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Primarily uses existing corridors and small portion of new corridor with potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy. Also has potential environmental challenges with improving the existing Colorado River crossing.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative traverses tribal lands - Colorado River Indian Reservation.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative O

Description

This alternative connects the Las Vegas and Yuma regions using the Boulder City Bypass, US-93, I-40, and US/AZ-95.

Recommendation

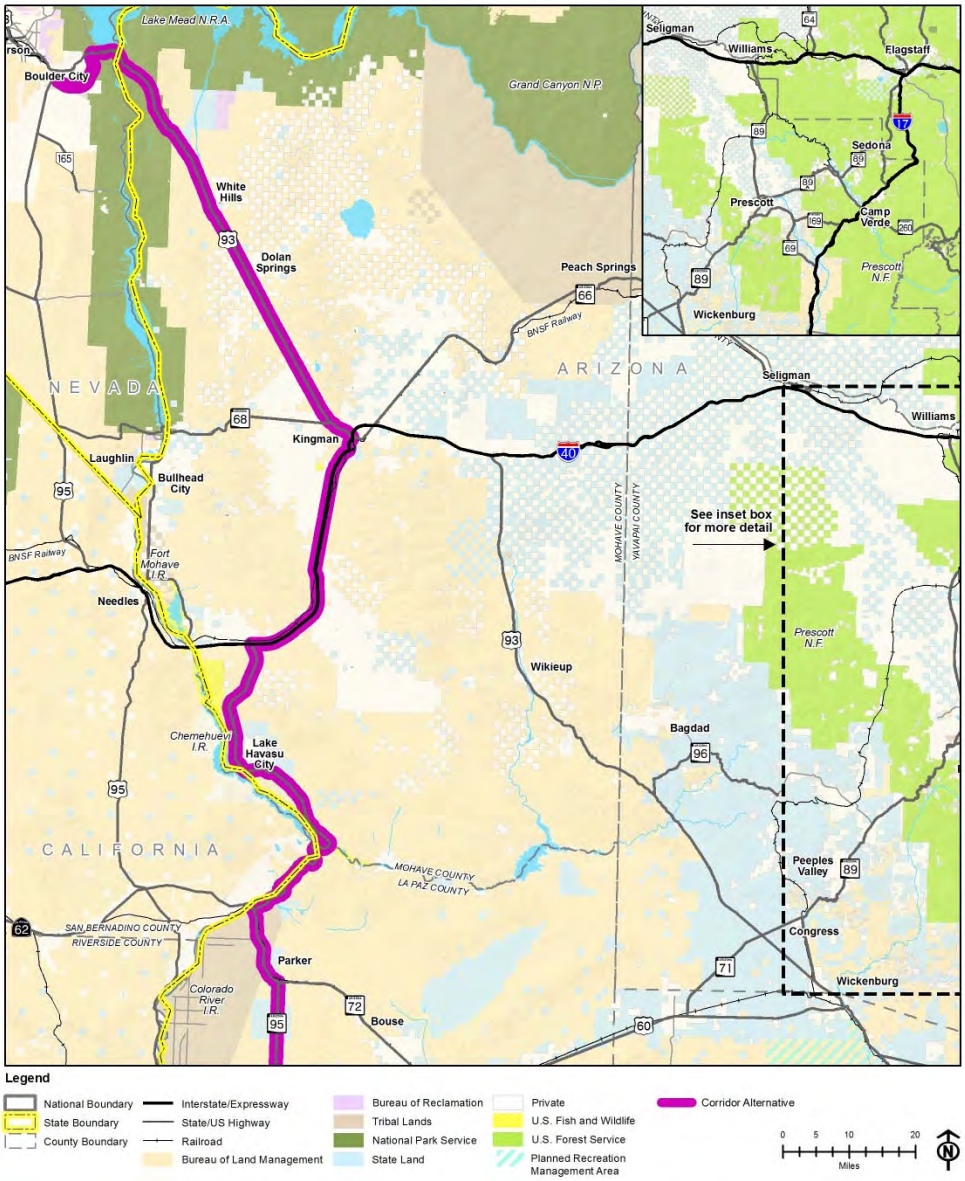
- **Not Recommended for Level 2 Analysis**

Opportunities

- Aligned with US-93 completed improvements and (Kingman to Boulder City), ADOT's bqAZ designation of US-93 as a future interstate, completed high capacity crossing of the Colorado River, and the planned Boulder City Bypass

Constraints

- Does not connect to major activity center or freight hubs in Phoenix Metropolitan Area
- Potential environmental constraints (traverses areas identified by the AGFD as priority areas for maintaining wildlife connectivity)
- Land ownership constraints – traverses Colorado River Indian Reservation



Alternative O

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Portions of corridor uses the Congressionally designated I-11/CANAMEX corridor (US-93).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Does not connect to the Sun Corridor megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridor utilizes existing transportation routes; does not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		Only connects with one adjacent segment (Las Vegas).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Does not connect to major freight hubs in Phoenix or northern Arizona.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		North-south connection to BNSF mainline, I-40 and the airport in Kingman.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Existing corridor with possible right-of-way available for shared highway and rail.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides no congestion relief and adds traffic to congested AZ-95.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports no economic industry targets for the state/region.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Aligned with US-93 completed improvements and (Kingman to Boulder City), ADOT's bqAZ designation of US-93 as a future interstate, completed Mike O'Callaghan-Pat Tillman Memorial Bridge and the planned Boulder City Bypass.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Existing corridors, no known open space constraints.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Uses existing corridors with potentially-significant environmental constraints, including traversing wildlife connectivity areas identified by the AGFD and The Nature Conservancy.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative traverses tribal lands - Colorado River Indian Reservation.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative P

Description

This alternative connects the Las Vegas and Phoenix metropolitan areas via Bullhead City, using US-95, NV-163, AZ-68, I-40 and US-93.

Recommendation

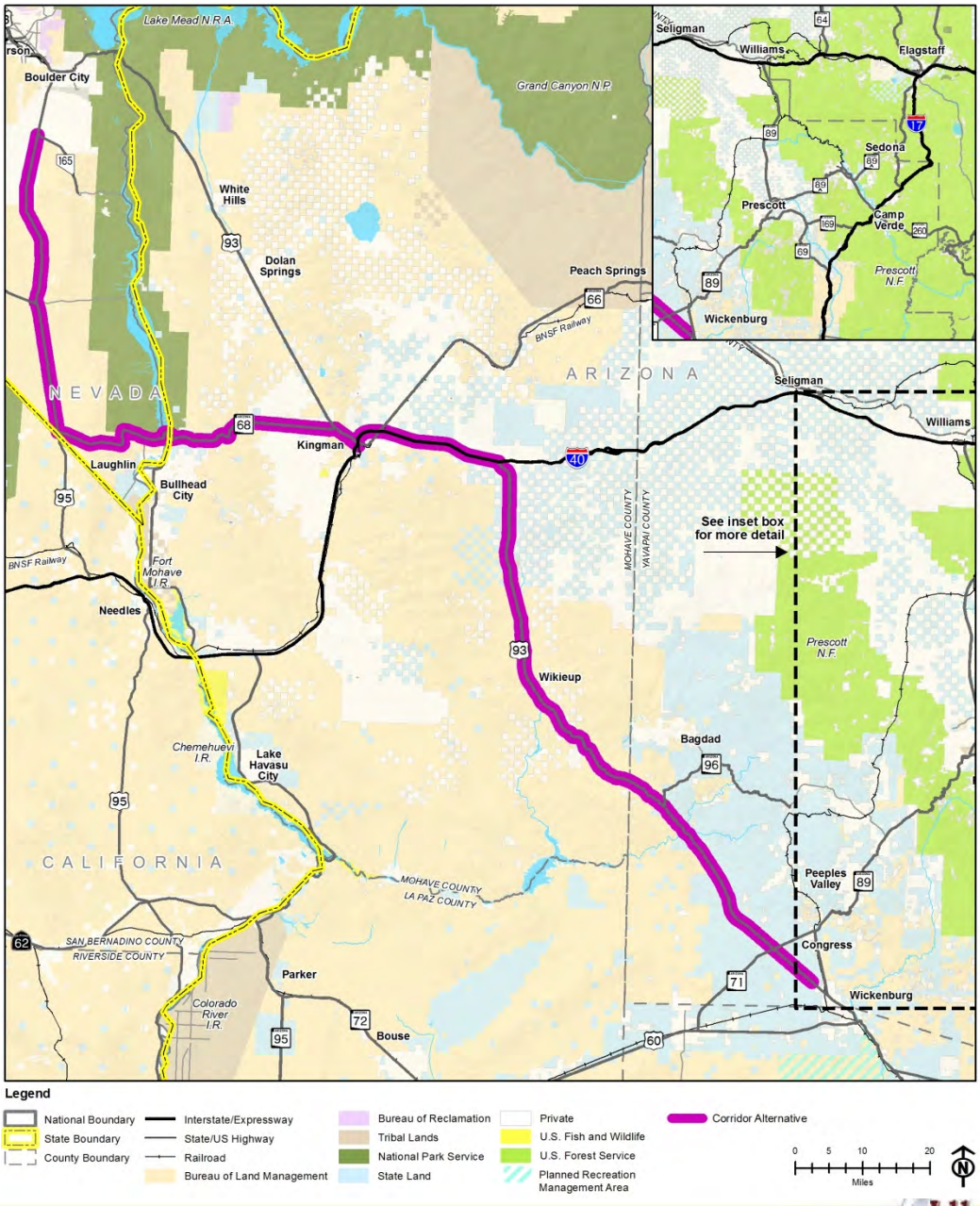
- **Not Recommended for Level 2 Analysis**

Opportunities

- Aligns with US-93 and US-95 completed improvements in Arizona and Nevada

Constraints

- Potential environmental constraints (traverses and/or borders the Black Mountains – prime habitat for bighorn sheep and Sonoran Desert tortoise and areas identified by the AGFD as priority areas for maintaining wildlife connectivity)
- Does not utilize existing high capacity crossing of the Colorado River or the planned Boulder City Bypass



Alternative P

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Majority of corridor uses the Congressionally designated I-11/CANAMEX corridor (US-93).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Directly connects Sun Corridor megapolitan to the Southern California megapolitan (includes Las Vegas).
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridor utilizes existing transportation routes; does not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with both adjacent segments (Las Vegas and Phoenix).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Provides most direct connection to freight hubs in Phoenix and Las Vegas.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		North-south connection to BNSF mainline, I-40 and the airport in Kingman.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Existing corridor with possible right-of-way available; high percentage of corridor could share highway and rail but still has constraints.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides congestion relief to I-17 and AZ-95, but not as direct a route as Alternative Q.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports a moderate number of state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Aligned with US-93 (Wickenburg to Kingman) and US-95 completed improvements in Arizona and Nevada.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Existing corridors, no known open space constraints.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Uses existing corridors, but could impact wildlife connectivity areas identified by the AGFD and The Nature Conservancy. Potential constraints traversing and/or bordering the Black Mountains – prime habitat for bighorn sheep and Sonoran Desert tortoise, and has potential environmental challenges with improving the existing Colorado River crossing.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state, private, or BLM land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative Q

Description

This alternative connects the Las Vegas and Phoenix Metropolitan Areas using the Boulder City Bypass and US-93 (including a portion of I-40).

Recommendation

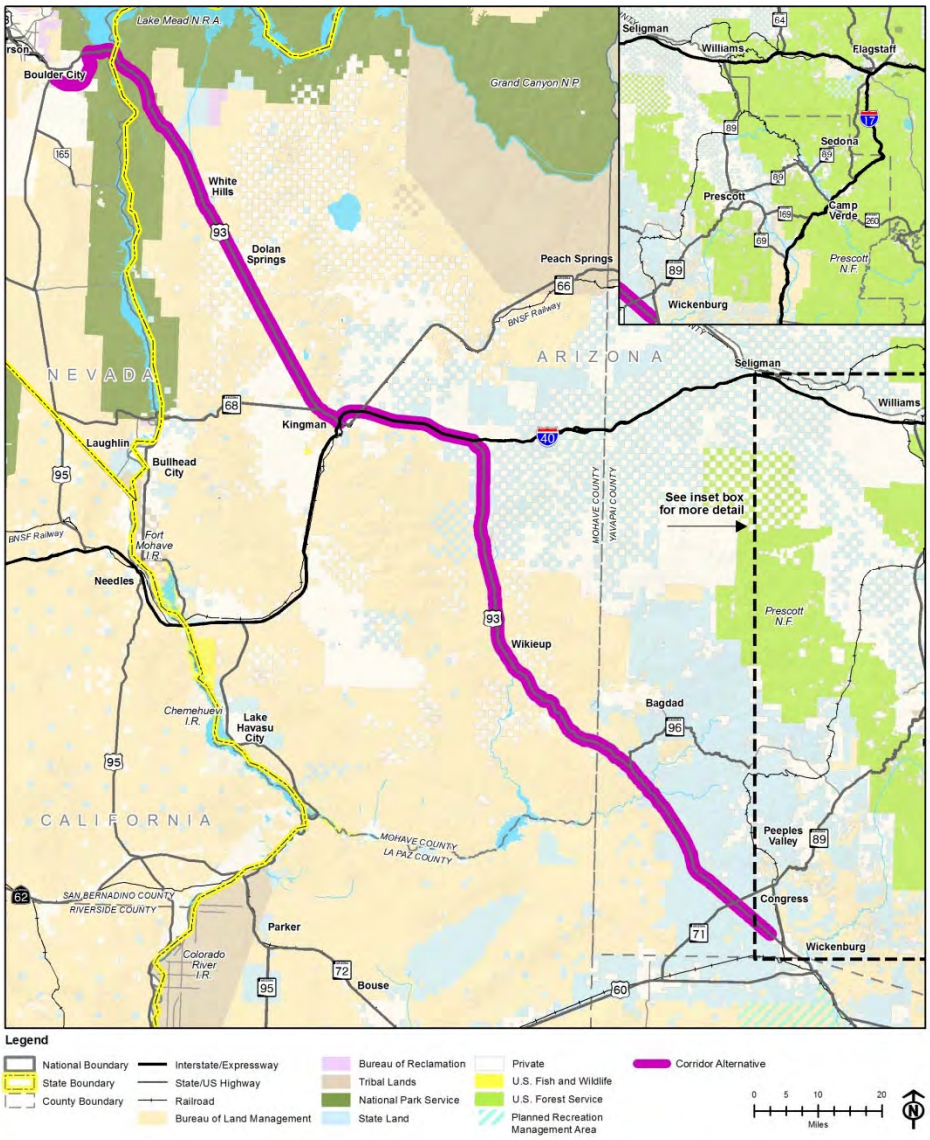
- **Recommended for Level 2 Analysis**

Opportunities

- Utilizes existing high capacity crossing of the Colorado River
- Aligned with US-93 completed improvements, ADOT's bqAZ designation of US-93 as a future interstate, and the planned Boulder City Bypass
- Provides direct connections to major activity centers including Phoenix, Kingman and Wickenburg and major freight hubs in the Phoenix and Las Vegas metropolitan areas
- Supports high number of economic industry cluster targets for the state/region that depend on a robust and connected transportation network

Constraints

- Potential environmental constraints



Alternative Q

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Whole corridor uses the Congressionally designated I-11/CANAMEX corridor (US-93).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Directly connects Sun Corridor megapolitan to the Southern California megapolitan (includes Las Vegas).
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridor utilizes existing transportation routes; does not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with both adjacent segments (Las Vegas and Phoenix).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Provides most direct connection to freight hubs in Phoenix and Las Vegas.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		North-south connection to BNSF mainline, I-40 and the airport in Kingman.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Existing corridor with possible right-of-way available; high percentage of corridor could share highway and rail but still has constraints.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides congestion relief to both I-17 and AZ-95.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Aligned with US-93 completed improvements (Wickenburg to Boulder City), ADOT's bqAZ designation of US-93 as a future interstate, completed Mike O'Callaghan-Pat Tillman Memorial Bridge and the planned Boulder City Bypass.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Existing corridors, no known open space constraints.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Uses existing corridor(s) with minimal environmental constraints and no known fatal flaws.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state, private, or BLM land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mostly supportive comments.
Cost	18	What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative R

Description

This alternative connects the Las Vegas and Phoenix metropolitan areas west of the Prescott region using the Boulder City Bypass, US-93, I-40, and AZ-89.

Recommendation

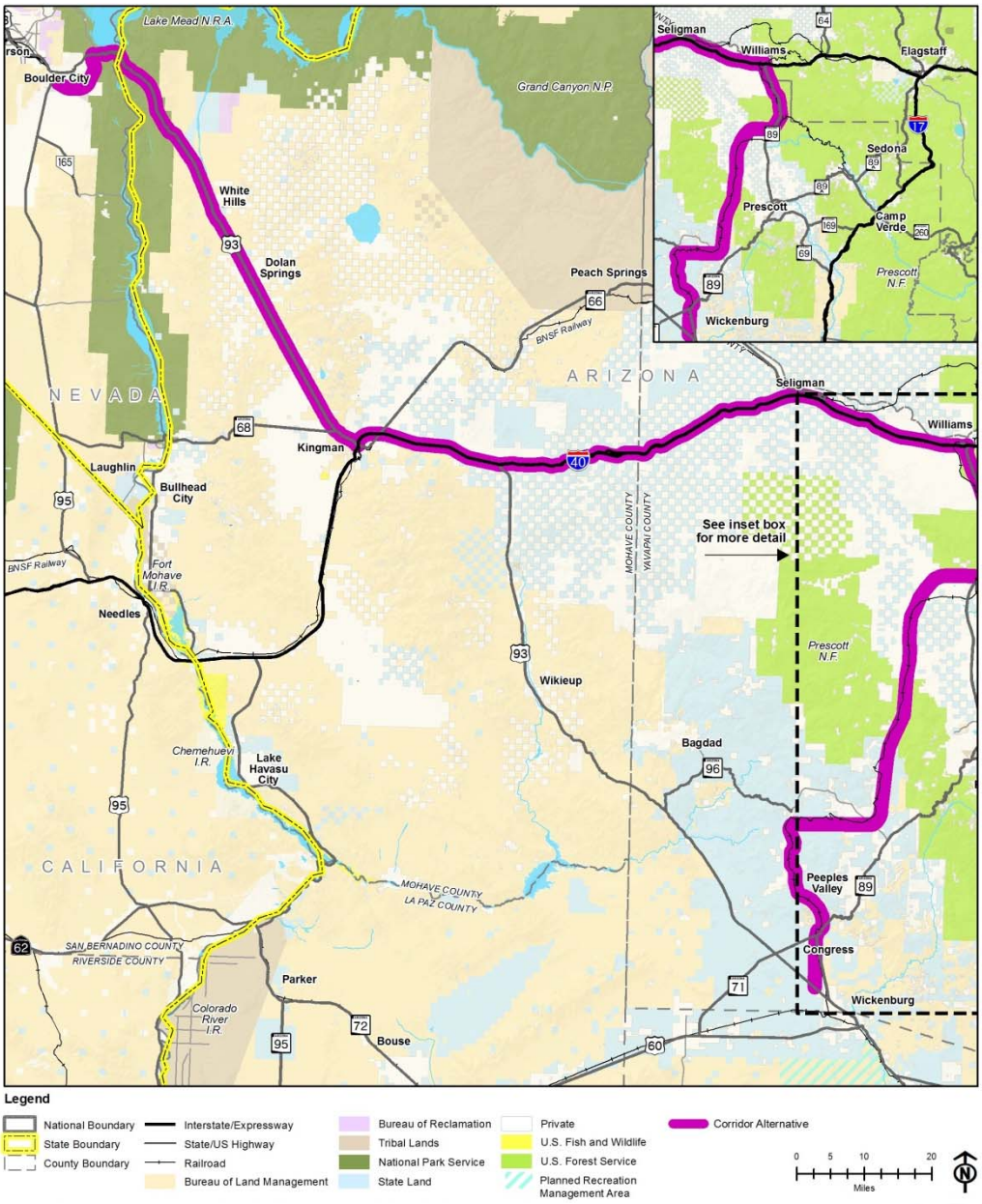
- **Not Recommended for Level 2 Analysis**

Opportunities

- Potential alternative high-capacity corridor to I-17
- Utilizes existing high capacity crossing of the Colorado River and the planned Boulder City Bypass

Constraints

- Significant environmental constraints (passes through mountain ranges with considerable connectivity challenges. Also, bisects Chino Valley – important American pronghorn habitat)
- Potential grade issues for railroad corridor development
- Land ownership and open space constraints traversing Prescott National Forest land



Alternative R

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Portions of corridor uses the Congressionally designated I-11/CANAMEX corridor (US-93).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Circuitously connects Sun Corridor megapolitan to the Southern California megapolitan (includes Las Vegas).
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridor does not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with both adjacent segments (Las Vegas and Phoenix).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Provide circuitous connections to Phoenix and Las Vegas freight hubs and also include minor freight hubs.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		North-south connection to BNSF mainline, I-40 and the airport in Kingman.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with constrained areas of shared rights-of-way as well as potential grade issues for railroad corridor development; low percentage of corridor could share highway and rail.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides congestion relief to both I-17 and US-93.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports minimal state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Aligned with US-93 completed improvements (Kingman to Boulder City), ADOT's bqAZ designation of US-93 as a future interstate, completed Mike O'Callaghan-Pat Tillman Memorial Bridge and the planned Boulder City Bypass.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Partial existing and new corridor; potential open space constraints through U.S. Forest Service land (Prescott National Forest).
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Primarily uses new corridor with potentially-significant environmental constraints passing through mountain ranges with considerable connectivity challenges. Also, bisects Chino Valley – important American pronghorn habitat, as identified by the AGFD.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative traverses U.S. Forest Service land (Prescott National Forest).
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative S

Description

This alternative connects the Las Vegas and Phoenix metropolitan areas via the Prescott region using the Boulder City Bypass, US-93, I-40, AZ-89, proposed Great Western corridor, Fain Road, and the planned Fain Road/I-17 connector.

Recommendation

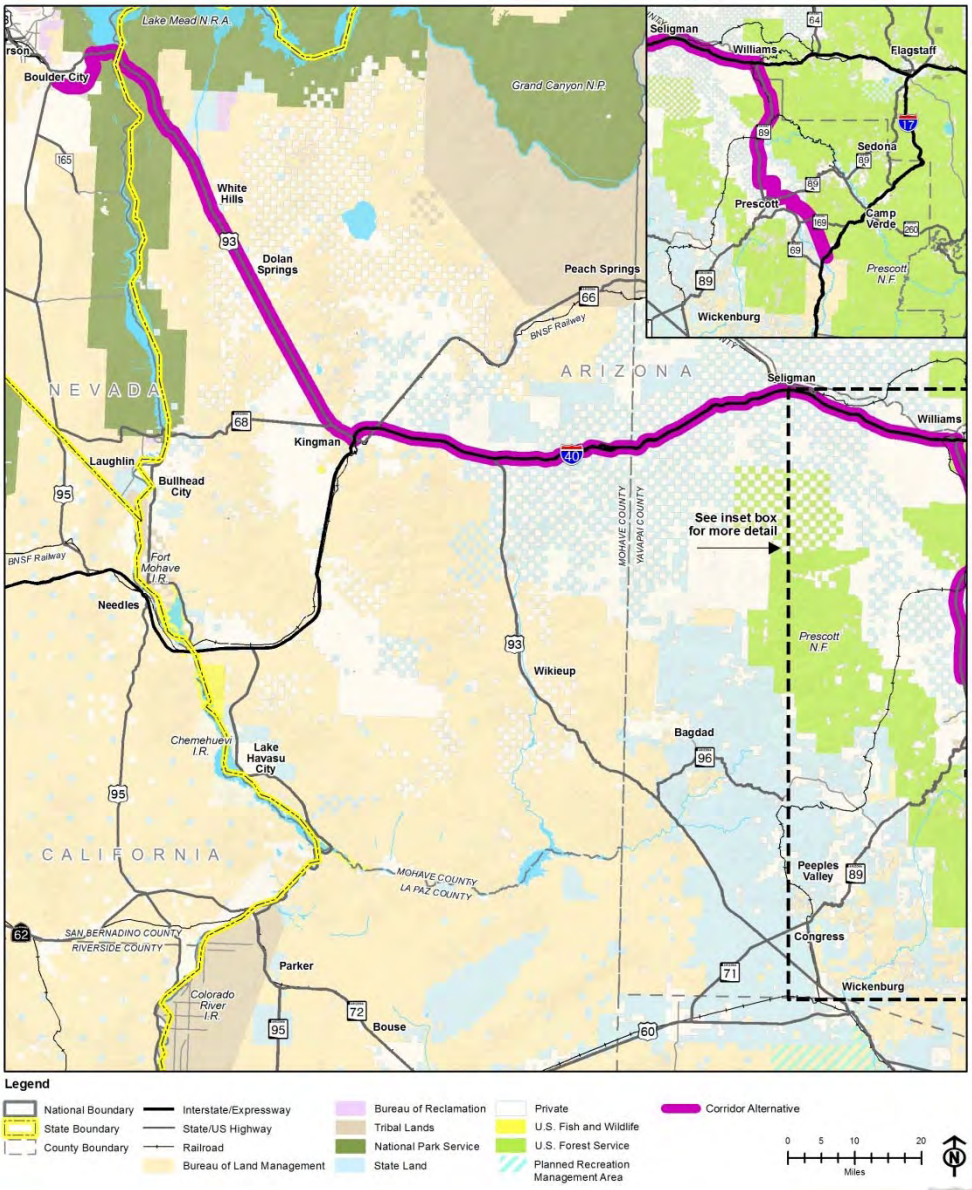
- **Not Recommended for Level 2 Analysis**

Opportunities

- Provides congestion relief to both I-17 and US-93
- Utilizes existing high capacity crossing of the Colorado River and the planned Boulder City Bypass

Constraints

- Significant environmental constraints (passes through mountain ranges with considerable connectivity challenges; also, bisects Chino Valley – important American pronghorn habitat)
- Potential open space and land ownership constraints traversing Prescott National Forest land



Alternative S

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Portions of corridor uses the Congressionally designated I-11/CANAMEX corridor (US-93).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Circuitously connects Sun Corridor megapolitan to the Southern California megapolitan (includes Las Vegas).
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridor does not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with both adjacent segments (Las Vegas and Phoenix).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Provide circuitous connections to Phoenix and Las Vegas freight hubs and also include minor freight hubs.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		North-south connection to BNSF mainline, I-40 and the airport in Kingman.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Existing corridor with possible right-of-way available, but potential grade issues for railroad corridor development; partial existing parallel highway and rail.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides congestion relief to both I-17 and US-93.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports minimal state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Aligned with US-93 completed improvements (Kingman to Boulder City), ADOT's bqAZ designation of US-93 as a future interstate, completed Mike O'Callaghan-Pat Tillman Memorial Bridge and the planned Boulder City Bypass
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Partial existing and new corridor; potential open space constraints through U.S. Forest Service land (Prescott National Forest).
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Primarily uses existing corridors or small portion of new corridor with significant environmental constraints passing through mountain ranges with considerable connectivity challenges. Also, bisects Chino Valley – important American pronghorn habitat, as identified by the AGFD.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership, alternative primarily crosses through state, private, or BLM land along existing corridors, with potential impact to U.S. Forest Service land (Prescott National Forest).
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative T

Description

This alternative connects the Las Vegas and Phoenix metropolitan areas via the Flagstaff region using the Boulder City Bypass, US-93, I-40, and I-17.

Recommendation

- **Not Recommended for Level 2 Analysis**

Opportunities

- Utilizes existing high capacity corridors
- Utilizes existing high capacity crossing of the Colorado River and the planned Boulder City Bypass

Constraints

- Significant environmental constraints and potential right-of-way issues as well as grade issues for railroad corridor development along I-17
- More circuitous connections between major activity centers and freight hubs

Alternative T

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Portions of corridor uses the Congressionally designated I-11/CANAMEX corridor (US-93).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Circuitously connects Sun Corridor megapolitan to the Southern California megapolitan (includes Las Vegas).
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridor utilizes existing transportation routes; does not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with both adjacent segments (Las Vegas and Phoenix).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Provide circuitous connections to Phoenix and Las Vegas freight hubs and also include minor freight hubs.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		North-south connection to BNSF mainline, I-40 and the airport in Kingman.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Potentially limited right-of-way along existing corridors, as well as grade issues for railroad corridor development along I-17.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides congestion relief to US-93.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports minimal state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Aligned with US-93 completed improvements (Kingman to Boulder City), ADOT's bqAZ designation of US-93 as a future interstate, completed Mike O'Callaghan-Pat Tillman Memorial Bridge and the planned Boulder City Bypass.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Existing corridors, no known open space constraints.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Uses existing corridors with significant environmental constraints and right-of-way issues along I-17.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership, alternative primarily crosses through state, private, or BLM land along existing corridors, with potential impact to U.S. Forest Service land (Prescott National Forest).
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative OO

Description

This alternative connects the Las Vegas and Phoenix metropolitan areas using the Boulder City Bypass, US-93, I-40, the proposed Chicken Springs Road corridor, a series of new/planned corridors connecting to and through the Prescott region (including the Great Western corridor, Fain Road, and the Fain Road/I-17 connector), and I-17.

Recommendation

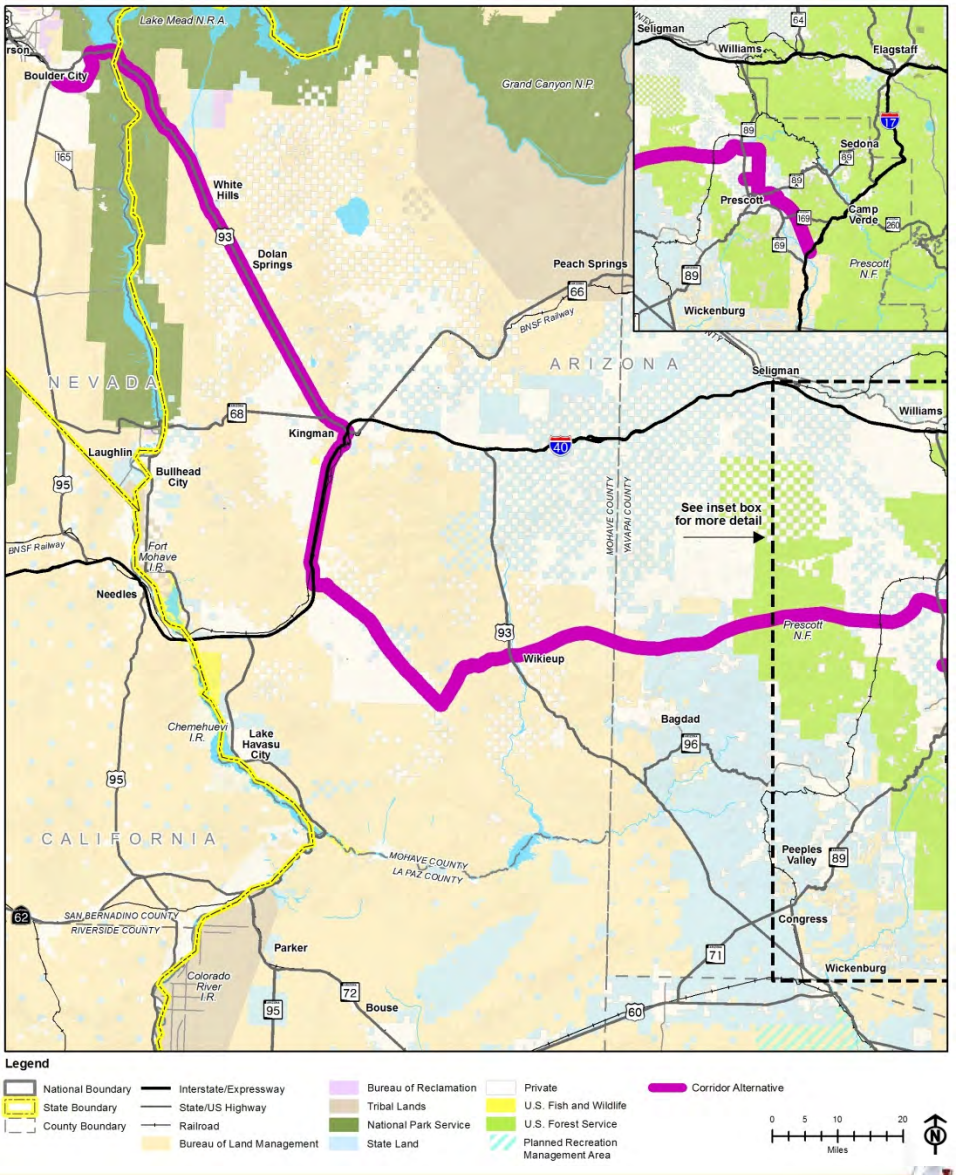
- **Not Recommended for Level 2 Analysis**

Opportunities

- Potential alternative high-capacity corridor to I-40
- Utilizes existing high capacity crossing of the Colorado River and the planned Boulder City Bypass

Constraints

- Significant environmental constraints (passes through mountain ranges with considerable connectivity challenges. Also, bisects Chino Valley – important American pronghorn habitat)
- Potential grade issues for railroad corridor development
- Land ownership and open space constraints traversing Prescott National Forest land



Alternative OO

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Portions of corridor uses the Congressionally designated I-11/CANAMEX corridor (US-93).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Circuitously connects Sun Corridor megapolitan to the Southern California megapolitan (includes Las Vegas).
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridor does not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with both adjacent segments (Las Vegas and Phoenix).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Provide circuitous connections to Phoenix and Las Vegas freight hubs and also include minor freight hubs.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		North-south connection to BNSF mainline, I-40 and the airport in Kingman.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with constrained areas of shared rights-of-way as well as potential grade issues for railroad corridor development; low percentage of corridor could share highway and rail.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides no congestion relief.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports minimal state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Aligned with US-93 completed improvements (Kingman to Boulder City), ADOT's bqAZ designation of US-93 as a future interstate, completed Mike O'Callaghan-Pat Tillman Memorial Bridge and the planned Boulder City Bypass.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Partial existing and new corridor; potential open space constraints through U.S. Forest Service land (Prescott National Forest).
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Primarily uses new corridor with significant environmental constraints passing through mountain ranges with considerable connectivity challenges. Also, bisects Chino Valley – important American pronghorn habitat, as identified by the AGFD.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative traverses U.S. Forest Service land (Prescott National Forest).
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative PP

Description

This alternative connects the Las Vegas and Phoenix metropolitan areas using the Boulder City Bypass, US-93, I-40, a series of new/planned corridors connecting to and through the Prescott region (including the Great Western corridor, Fain Road, and the Fain Road/I-17 connector), and I-17

Recommendation

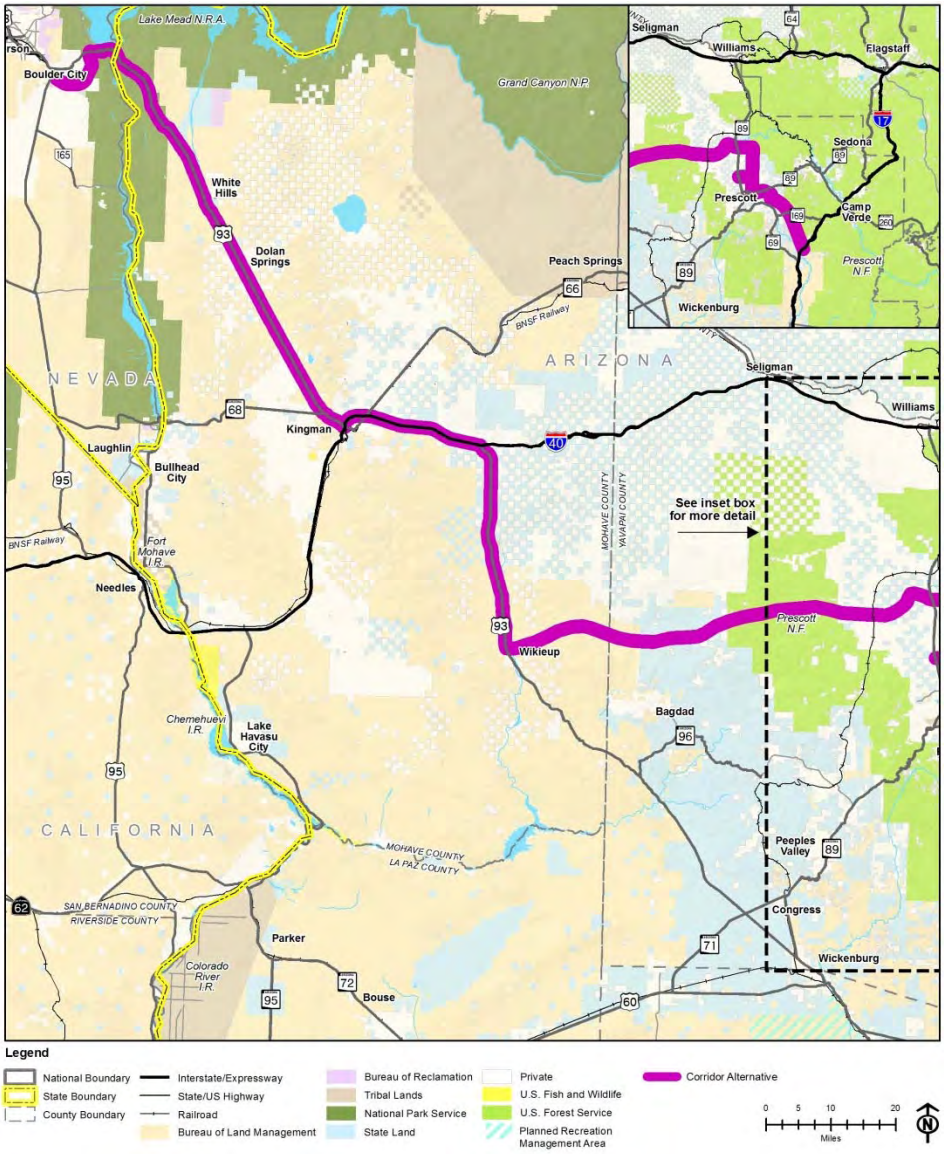
- **Not Recommended for Level 2 Analysis**

Opportunities

- Potential alternative high-capacity corridor to I-40
- Utilizes existing high capacity crossing of the Colorado River and the planned Boulder City Bypass

Constraints

- Significant environmental constraints (passes through mountain ranges with considerable connectivity challenges; also, bisects Chino Valley – important American pronghorn habitat)
- Potential grade issues for railroad corridor development Land ownership and open space constraints traversing Prescott National Forest land



Alternative PP

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Portions of corridor uses the Congressionally designated I-11/CANAMEX corridor (US-93).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Circuitously connects Sun Corridor megapolitan to the Southern California megapolitan (includes Las Vegas).
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridor does not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with both adjacent segments (Las Vegas and Phoenix).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Provide circuitous connections to Phoenix and Las Vegas freight hubs and also include minor freight hubs.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		North-south connection to BNSF mainline, I-40 and the airport in Kingman.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with constrained areas of shared rights-of-way as well as potential grade issues for railroad corridor development; low percentage of corridor could share highway and rail.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides no congestion relief.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports minimal state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Aligned with US-93 completed improvements (Kingman to Boulder City), ADOT's bqAZ designation of US-93 as a future interstate, completed Mike O'Callaghan-Pat Tillman Memorial Bridge and the planned Boulder City Bypass.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Partial existing and new corridor; potential open space constraints through U.S. Forest Service land (Prescott National Forest).
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Primarily uses new corridor with significant environmental constraints passing through mountain ranges with considerable connectivity challenges. Also, bisects Chino Valley – important American pronghorn habitat, as identified by the AGFD.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative traverses U.S. Forest Service land (Prescott National Forest).
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative UU

Description

This alternative connects the Las Vegas and Phoenix metropolitan areas using the Boulder City Bypass, US-93 (including a portion of I-40), and Chicken Springs Road.

Recommendation

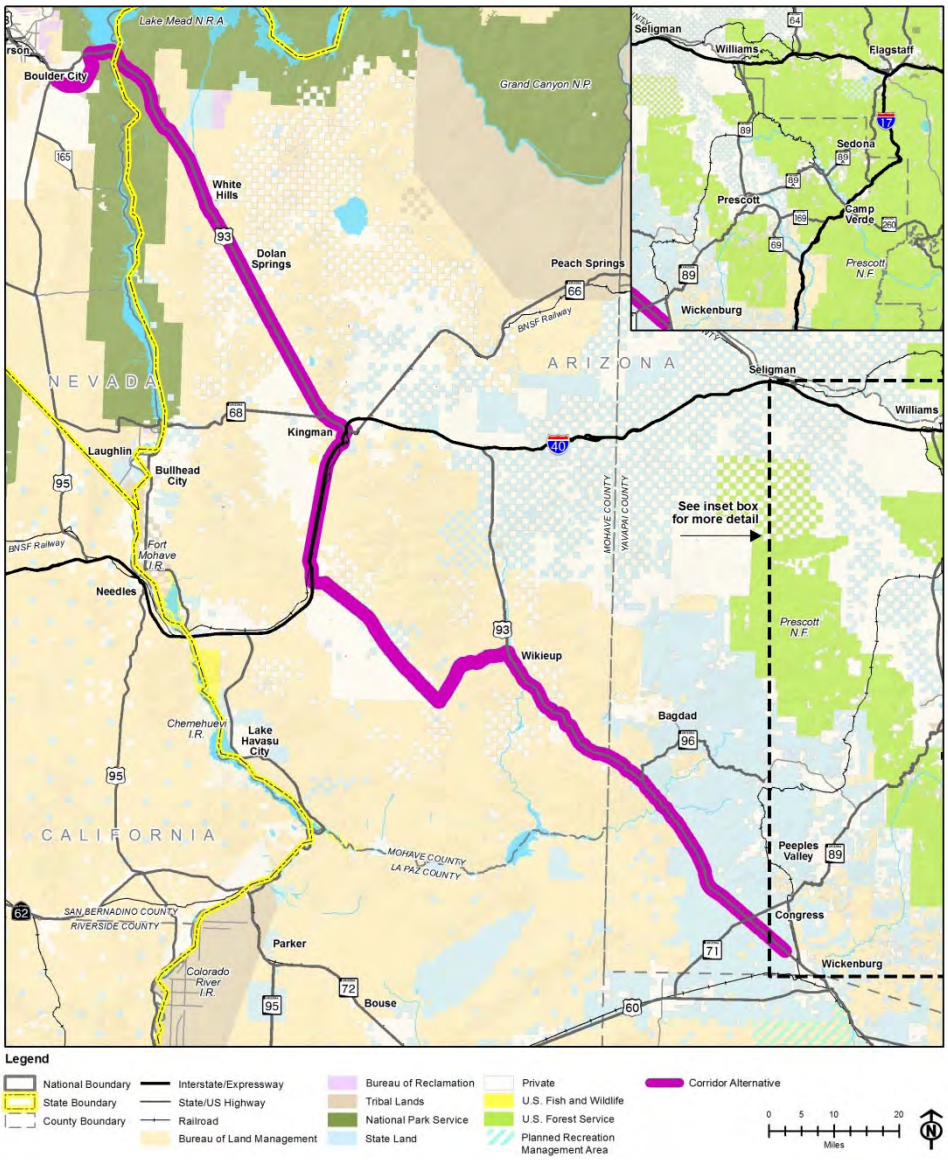
- **Recommended for Level 2 Analysis**

Opportunities

- Utilizes existing high capacity crossing of the Colorado River
- Aligned with US-93 completed improvements, ADOT's bqAZ designation of US-93 as a future interstate, and the planned Boulder City Bypass
- Provides direct connections to major activity centers including Phoenix, Kingman and Wickenburg and major freight hubs in the Phoenix and Las Vegas metropolitan areas
- Supports high number of economic industry cluster targets for the state/region that depend on a robust and connected transportation network

Constraints

- Potential environmental constraints



Alternative UU

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Majority of corridor uses the Congressionally designated I-11/CANAMEX corridor (US-93).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Directly connects Sun Corridor megapolitan to the Southern California megapolitan (includes Las Vegas).
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Alternative corridor utilizes existing transportation routes; does not meet the requirement of closing gaps or developing missing linkages.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with both adjacent segments (Las Vegas and Phoenix).
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Provides most direct connection to freight hubs in Phoenix and Las Vegas.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		North-south connection to BNSF mainline, I-40 and the airport in Kingman.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Existing corridor with possible right-of-way available; high percentage of corridor could share highway and rail but still has constraints.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides congestion relief to both I-17 and AZ-95.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports state and regional economic development priorities that depend on a robust and connected transportation network.
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Aligned with US-93 completed improvements (Wickenburg to Wikieup and Kingman to Boulder City), ADOT's bqAZ designation of US-93 as a future interstate, completed Mike O'Callaghan-Pat Tillman Memorial Bridge and the planned Boulder City Bypass.
	12	How well does this alternative conform to locally adopted transportation plans?		No local corridor-related actions documented.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Existing corridors with major improvements required to dirt road portion, no known open space constraints.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Uses existing corridor(s) with minimal environmental constraints and no known fatal flaws.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through state, private, or BLM land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18	What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Evaluation Results: Las Vegas Metropolitan Area Section

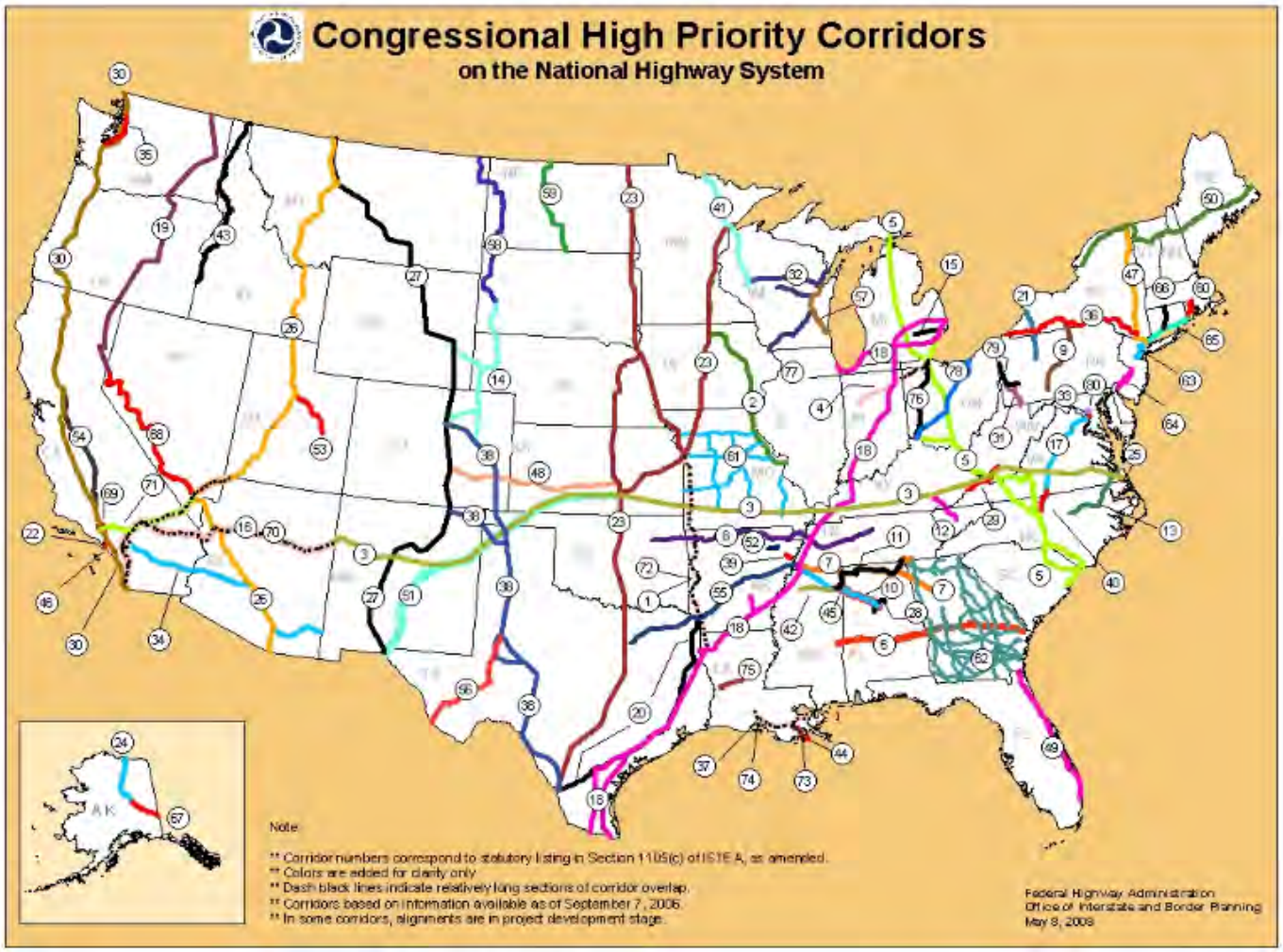
The Las Vegas Metropolitan Area Section encompasses all of Southern Nevada up to the northernmost edge of the Las Vegas Valley (including Pahrump), with the exception of the City of Boulder City. All of the alternatives in this segment share a southern terminus at the junction of US-93/US-95. The Boulder City Bypass is shown on all Las Vegas Metropolitan Area maps for reference only.

The study team conducted the Level 1 evaluation of all alternatives (to see a description of each alternative, please refer to "Draft Candidate Corridor Alternatives for Level 1 Screening" memorandum).

Each alternative was rated with respect to each of the evaluation criteria. The rating system consisted of a qualitative scale (from least to most favorable), with "most favorable" representing the best performance and "least favorable" representing the worst performance. Connectivity-related criteria were rated based on connectivity with *adjacent* segments. General guidance on how the criteria were evaluated in relationship to the project's Goals and Objectives follows:

- **Criterion 1: How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?**
  - Alternatives were evaluated based on their compliance with Congressionally designated high priority corridors, including (see **Figure 12**):
    - CANAMEX: I-19 from Nogales to Tucson, I-10 from Tucson to Phoenix, US-93 in the vicinity of Phoenix to the Nevada border, US-93 from the Arizona border to Las Vegas, and I-15 from Las Vegas to the Utah border
    - I-11: US-93 in the vicinity of Phoenix to the Nevada border, and US-93 from the Arizona border to Las Vegas
    - The Washoe County corridor, along Interstate Route 580/United States Route 95/United States Route 95A, from Reno, Nevada, to Las Vegas, Nevada.
    - United States Route 395 Corridor from the United States-Canadian border to Reno, Nevada.
    - United States Route 95 Corridor from the Canadian border at Eastport, Idaho, to the Oregon state border.
  - In this segment, all of the alternatives meet the intent of legislative action by connecting with the MAP-21 designated I-11 and either CANAMEX or the Washoe County corridor—and therefore received a minimum rating of "moderately favorable." Those alternatives that directly follow one of the Congressionally designated corridors (CANAMEX or Washoe County corridor) received a higher rating.

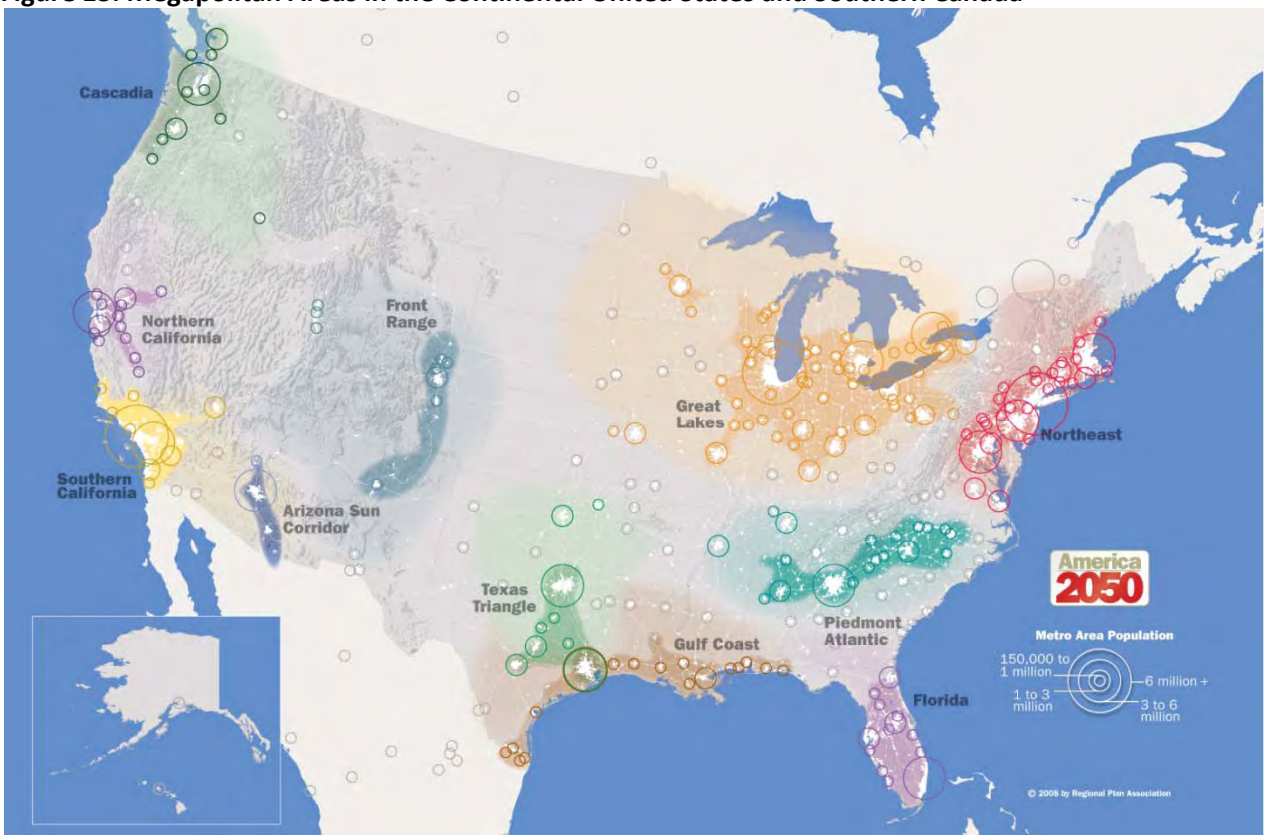
Figure 12. Congressional High Priority Corridors



Source: FHWA http://www.fhwa.dot.gov/planning/national_highway_system/high_priority_corridors/hiprimap.cfm

- **Criterion 2: How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?**
  - Alternatives were evaluated based on their connectivity to primary centers of population and commerce at segment termini and along the corridor. This analysis was conducted at a macro scale using the megapolitan areas identified by America 2050 and the Regional Plan Association, shown in **Figure 13** and introduced in the "Corridor Justification Report" as major economic activity centers.
  - In this segment, primary consideration was given to the extent to which the alternative traversed or connected to Las Vegas (part of the Southern California megapolitan).

Figure 13. Megapolitan Areas in the Continental United States and Southern Canada



Source: America 2050

- **Criterion 3: How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?**
  - This criterion was applied to all segments to understand gaps or links in the regional transportation network that can be filled (or a route made more efficient) with the construction of this corridor.
  - In this segment, alternatives that closed important gaps in the overall transportation network rated higher than those that did not.
- **Criterion 4: How well does this alternative connect with adjacent segments/sections?**
  - Alternatives were evaluated based on the ability to make a connection with an alternative in the adjacent segment/section. Alternatives that connected with two adjacent segments rated "most favorable"; alternatives that connected with one adjacent segment rated "moderately favorable"; and alternatives that did not connect with any adjacent segments rated "least favorable."
  - All of the alternatives in this segment connect with adjacent segments to the north and south. Therefore, all alternative received the maximum rating "most favorable."
- **Criterion 5: How well does this alternative connect major freight hubs and high capacity transportation corridors?**
  - Alternatives were evaluated based on how many freight hubs and/or high capacity transportation corridors they traversed (directly crossed or in close proximity).
  - Major freight hubs in this segment were identified in the RTC's Las Vegas Region Freight Data Collection Study and include hubs in North Las Vegas (near I-15), Apex, the Speedway, an area west of the Strip (south of Tropicana and north of the Beltway), and portions of Henderson south of the Beltway. In addition, the proposed Ivanpah Airport could provide opportunities for freight hubs when constructed.

- **Criterion 6: How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?**
  - Alternatives were evaluated based on the number of east-west high-capacity roadway and railroad corridors traversed, and proximate airports and intermodal yard facilities. Those with connectivity to higher numbers of facilities provide greater opportunity for intermodal connectivity.
  - Intermodal connectivity connections in this segment include highways, UP rail lines, the intermodal yard in North Las Vegas, and to the future Ivanpah airport (with possible intermodal yard).
- **Criterion 7: How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?**
  - Alternatives were evaluated qualitatively, based on the percent of the corridor that could accommodate multiple modes and uses (highway, rail, utilities, etc.) in one corridor footprint, generally reviewing slopes and available right-of-way. While the alternative descriptions cite the feasibility for highway and rail opportunities, the potential exists for co-location of major utility corridors as well. If the alternative can accommodate highway and rail, it is generally assumed (from a right-of-way and slopes perspective) to have the additional ability to accommodate major utilities.
- **Criterion 8: How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?**
  - Alternatives were evaluated using existing and projected future level of service conditions identified in the "Corridor Justification Report". Where an alternative has the opportunity to relieve congestion between major activity centers (generally, between large metropolitan areas, or in the case of the Phoenix and Las Vegas sections, providing relief to congestion within the metropolitan area), it was rated higher. Although many alternatives serve as bypasses or loop corridors around metropolitan cores, they are expected to perform as part of the regional transportation system. Therefore, by forming junctions with existing corridors that may traverse the metropolitan core, the alternative may serve for both congestion relief and local access.
- **Criterion 9: How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?**
  - This criterion primarily related to Southern Arizona and the ability of alternative corridors to effectively cross the Arizona-Sonora international border in an efficient manner. Existing and proposed improvements at LPOEs were taken from the recently completed ADOT *Arizona-Sonora Border Master Plan*.
  - Since this criterion was not related to this segment, all of the alternatives were rated equally with a "moderately favorable" rating.
- **Criterion 10: How well does this alternative support regional, state and national economic development goals?**
  - Alternatives were evaluated based on their ability to support economic development initiatives that rely on transportation connections. State economic development priorities, elaborated in the "Corridor Justification Report", are summarized in **Table 8** and include such items as renewable energy development, tourism, transportation logistics, and aerospace/aviation/defense.

Table 8. Arizona and Nevada Industry Targets and Clusters

Industry Targets	Arizona	Nevada	Requires Regional Transportation Network
Advanced Manufacturing	•		•
Aerospace, Aviation, Defense	•	•	•
Agriculture	•	•	•
Optics	•		•
Biotechnology	•		•
Healthcare	•	•	
Information and Computer Technology	•	•	
Life Sciences	•		•
Mining, Materials, and Manufacturing		•	•
Renewable Energy	•	•	•
Science and Technology	•		•
Tourism, Gaming, and Entertainment		•	•
Transportation and Logistics	•	•	•

Sources: Arizona Commerce Authority, Brookings Institution, Greater Phoenix Economic Council, Tucson Regional Economic Opportunities, Nevada Governor's Office of Economic Development (Full reference provided in the "Corridor Justification Report")

- **Criterion 11: How well does this alternative comply with corridor-related actions taken to date?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a corridor-related action. A corridor-related action was defined as a federal, state or regional action or designation in place that plans for a high-capacity transportation corridor.
  - In this segment, there are no known corridor-related actions taken to date. However, alternatives that did not connect to the planned Boulder City Bypass were rated lower.
- **Criterion 12: How well does this alternative conform to locally adopted transportation plans?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a plan adopted by a local community, such as a General/Comprehensive Plan or Transportation Master Plan.
  - In this segment, the *RTC of Southern Nevada RTP 2013-2035* fiscally constrained plan includes planned improvements to CC-215, US-95, I-515, and I-15. Therefore, alternatives that utilize these corridors rated higher.
- **Criterion 13: How compatible is this alternative with regional open space, conservation, and land management agency planning?**
  - Alternatives were evaluated based on the amount of the alternative that traverses a protected open space, identified from various sources which include, but are not limited to: national conservation areas, existing parks, wilderness areas, wildlife refuges, and local/regional open space management plans.
  - The known areas and plans within this segment that could be impacted include the Lake Mead National Recreation Area and the Desert National Wildlife Refuge.
- **Criterion 14: How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?**
  - Alternatives were evaluated based on the amount of the corridor traversing various environmental features (as presented in the "Existing Natural and Built Environment" technical memorandum).

- **Criterion 15: How consistent is this alternative with regional land use and growth strategies?**
  - Alternatives were evaluated based on the consistency of the corridor with land use or growth strategies identified as part of regional planning efforts (e.g., RTP, socioeconomic projections), growth elements of general/comprehensive plans, and/or major land development plans.
  - Within this segment, there are no known differentiators in this category among the alternatives. Therefore, all are considered to be in compliance with regional land use and growth strategies.
- **Criterion 16: How compatible is this alternative with major land ownership patterns?**
  - Alternatives were evaluated based on the compatibility of a major transportation infrastructure facility to traverse land under state or federal ownership, including such land owners as BLM, Bureau of Reclamation, U.S. military, National Park Service, state land departments, state parks, tribal communities, U.S. Fish and Wildlife, and U.S. Forest Service.
- **Criterion 17: How well is this alternative accepted by the local communities?**
  - Input received from Stakeholder Partners and their constituents at the October 2013 stakeholder partner/public meetings, as well as input received via the online comment form, were considered in determining the degree of acceptance of an alternative. Alternatives that received no comments or conflicting comments (supportive and non-supportive) received a "moderately favorable" rating. Alternatives that received mostly supportive comments received the "most favorable" rating and alternatives that received mostly non-supportive comments received the "least favorable" rating.
- **Criterion 18: What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?**
  - Generalized, comparative planning-level costs were estimated based primarily on length of the alternative, with capital construction cost factors given to (a) existing corridors, (b) existing corridors requiring additional right-of-way or significant upgrades/improvements, and (c) new/green corridor development. Compared to the cost per mile of improving an existing highway, it was assumed that a new highway would cost twice as much, and that an existing highway with significant right-of-way acquisitions or improvements needed would cost 1.5 times as much.

The evaluation rating scale is strictly relative – alternatives were considered in relationship to each other in the same project segment. If an alternative receives the highest rating, it may still face issues or obstacles with respect to that criterion.

A summary rating was applied to each alternative to note its overall feasibility. Those rating "somewhat favorable" or "most favorable" will continue on to the more detailed Level 2 analysis, which will evaluate alternatives based on more quantitative-based criterion. Those ranking "moderately favorable," "less favorable," or "least favorable" typically include a fatal flaw or do not support the project's goals and objectives.

The following summary sheets provide an overview of the Level 1 evaluation for each alternative in the Las Vegas Metropolitan Area Section, including a map of the alternative, alternative description, summary rating scale, and opportunities/constraints of the alternative, followed by the detailed evaluation rating scales and notes.

Alternative U

Description

This alternative bypasses the core of the Las Vegas Metropolitan Area to make a connection to northern Nevada via the Pahrump area, using newly proposed corridors.

Recommendation

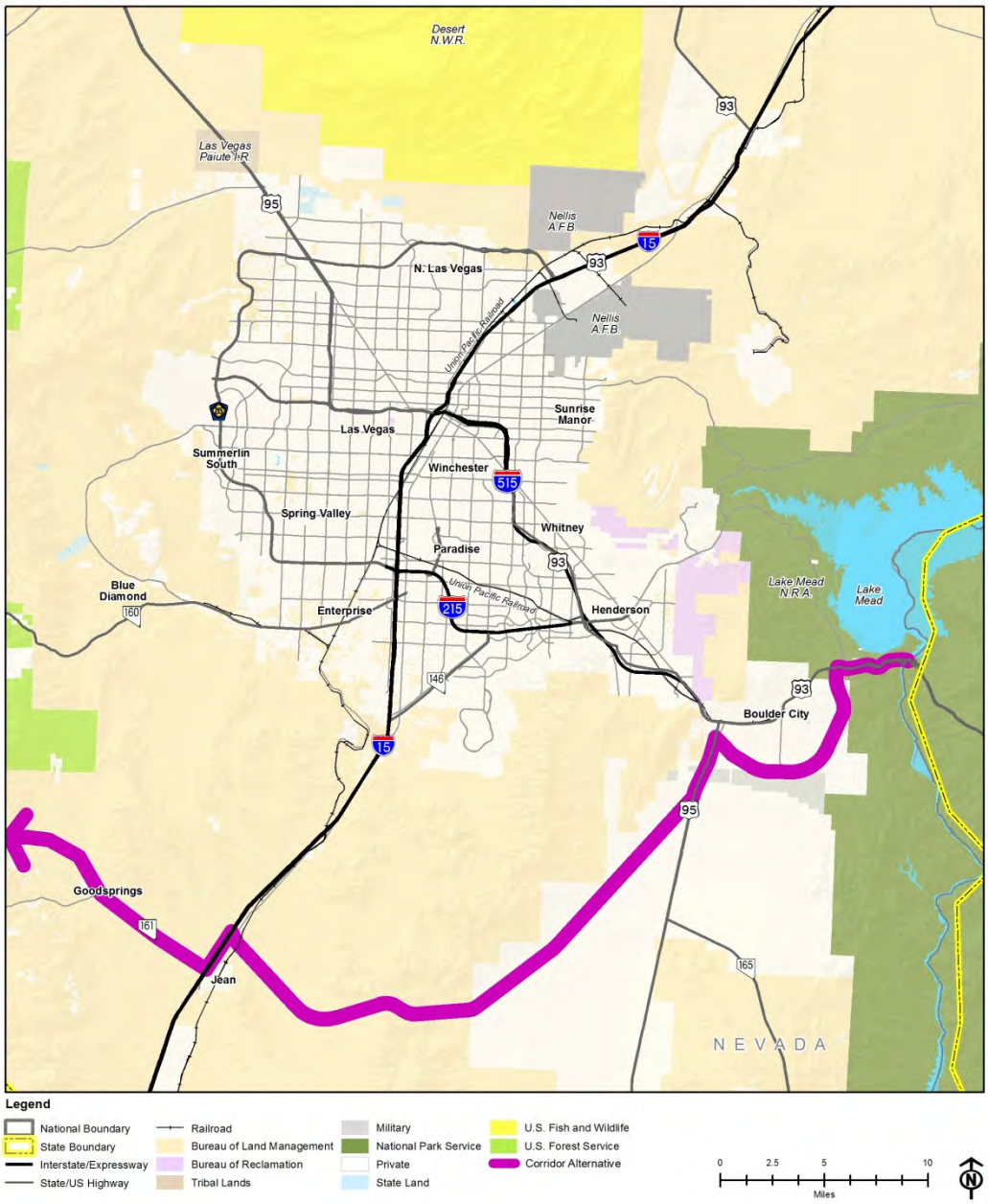
- **Not Recommended for Level 2 Analysis**

Opportunities

- Provides missing link in the system and bypasses the congested Spaghetti Bowl

Constraints

- Does not support (avoids) Las Vegas Metropolitan Area activity center and does not connect to any major existing or planned freight hubs in the Las Vegas Metropolitan Area
- Does not provide congestion relief—too far outside the metropolitan area
- Potential environmental impacts traversing critical habitat area



Alternative U

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Meets the intent of legislative actions by connecting with the MAP-21 designated I-11, CANAMEX, and Washoe County corridor.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Does not connect to the Las Vegas metropolitan area within the Southern California megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Creates new link, but is somewhat out of the way and only moderately important.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the north and south.
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Connection to Ivanpah, but no other major freight hubs in the Las Vegas Metropolitan Area.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Connections to existing highway and rail, and in vicinity of future Ivanpah airport (with possible intermodal yard).
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor, right-of-way available, most feasible alternative for rail. Part of the corridor follows a rail corridor proposed in the study: "Rail Transportation Economic Impact Evaluation and Planning Study for the Caliente and Mina Corridors."
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides no congestion relief. Too far outside the Las Vegas Metropolitan Area to make a difference.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Moderately supports state/regional economic development goals (renewable energy and mining/materials and manufacturing).
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No corridor-related actions taken to date, but does connect to the planned Boulder City Bypass (a high priority project).
	12	How well does this alternative conform to locally adopted transportation plans?		Not currently in any transportation plans.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		New corridor with potential environmental impacts; crosses critical habitat area
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through BLM or private land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18	What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?		

Alternative V

Description

This alternative bypasses the core of the Las Vegas Metropolitan Area to the west and south to make a western connection to northern Nevada using US-95, newly proposed corridors, and CC-215.

Recommendation

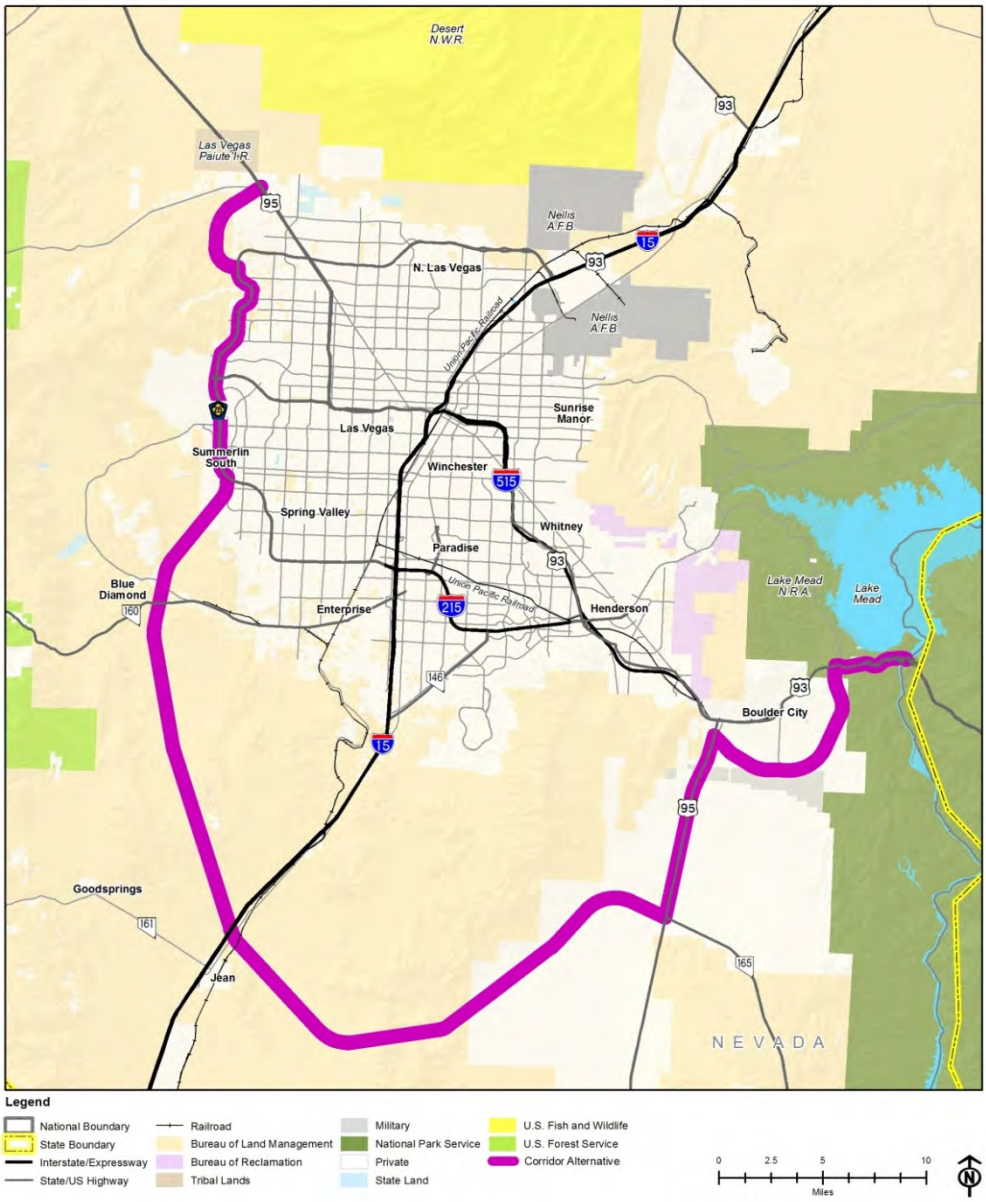
- **Not Recommended for Level 2 Analysis**

Opportunities

- Provides missing link in the system and bypasses the congested Spaghetti Bowl

Constraints

- Limited connectivity to Las Vegas Metropolitan Area activity center and major existing or planned freight hubs
- Potential environmental impacts traversing critical habitat area



Alternative V			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Meets the intent of legislative actions by connecting with the MAP-21 designated I-11, CANAMEX, and Washoe County corridor.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Southern California megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Creates new link, but is somewhat out of the way and only moderately important.
	4 How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the north and south.
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Provides connection in the vicinity of Ivanpah, but no other major freight hubs in the Las Vegas Metropolitan Area.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Connections to existing highway and rail, and in vicinity of future Ivanpah airport (with possible intermodal yard).
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with potential to acquire sufficient right-of-way, but with limited right-of-way available along existing corridors. Grades are compatible for large portion of corridor.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides minimal relief to portions of CC-215 (southern beltway), but the southern portions of the alternative are too far outside the Las Vegas Metropolitan Area to make a difference.
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Moderately supports state/regional economic development goals (renewable energy and mining/materials and manufacturing).
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		No corridor-related actions taken to date, but does connect to the planned Boulder City Bypass (a high priority project).
	12 How well does this alternative conform to locally adopted transportation plans?		A portion of this corridor is planned for improvements in the RTCSNV RTP (CC-215 Western Beltway).
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		New corridor with potential environmental impacts; crosses critical habitat area.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16 How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through BLM or private land.
Community Acceptance	17 How well is this alternative accepted by the local communities?		No comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative W

Description

This alternative bypasses the core of the Las Vegas Metropolitan Area to the west and south to make a western connection to northern Nevada using newly proposed corridors and CC-215.

Recommendation

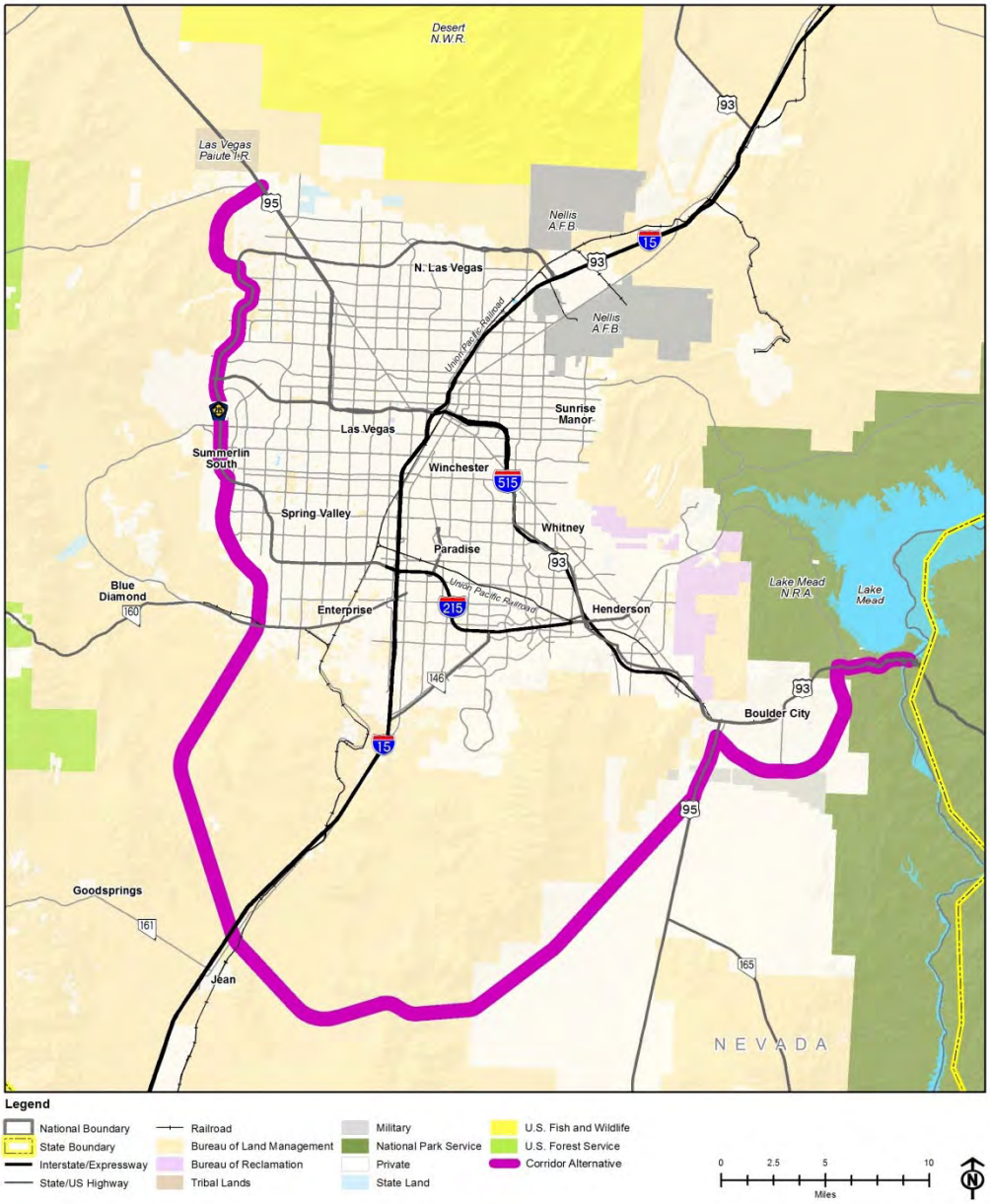
- **Not Recommended for Level 2 Analysis**

Opportunities

- Provides missing link in the system and bypasses the congested Spaghetti Bowl

Constraints

- Limited connectivity to Las Vegas Metropolitan Area activity center and major existing or planned freight hubs
- Potential environmental impacts traversing critical habitat area



Alternative W

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Meets the intent of legislative actions by connecting with the MAP-21 designated I-11, CANAMEX, and Washoe County corridor.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Southern California megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Creates new link, but is somewhat out of the way and only moderately important.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the north and south.
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Provides connection in the vicinity of Ivanpah, but no other major freight hubs in the Las Vegas Metropolitan Area.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Connections to existing highway and rail, and in vicinity of future Ivanpah airport (with possible intermodal yard).
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with potential to acquire sufficient right-of-way, but with limited right-of-way available along existing corridors. Grades are compatible for large portion of corridor.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides minimal relief to portions of CC-215 (southern beltway), but the southern portions of the alternative are too far outside the Las Vegas Metropolitan Area to make a difference.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Moderately supports state/regional economic development goals (renewable energy and mining/materials and manufacturing).
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No corridor-related actions taken to date, but does connect to the planned Boulder City Bypass (a high priority project).
	12	How well does this alternative conform to locally adopted transportation plans?		A portion of this corridor is planned for improvements in the RTCSNV RTP (CC-215 Western Beltway).
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		New corridor with potential environmental impacts; crosses critical habitat area.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through BLM or private land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative X

Description

This alternative bypasses the core of the Las Vegas Metropolitan Area to the west and south to make a western connection to northern Nevada using US-95, newly proposed corridors, and CC-215.

Recommendation

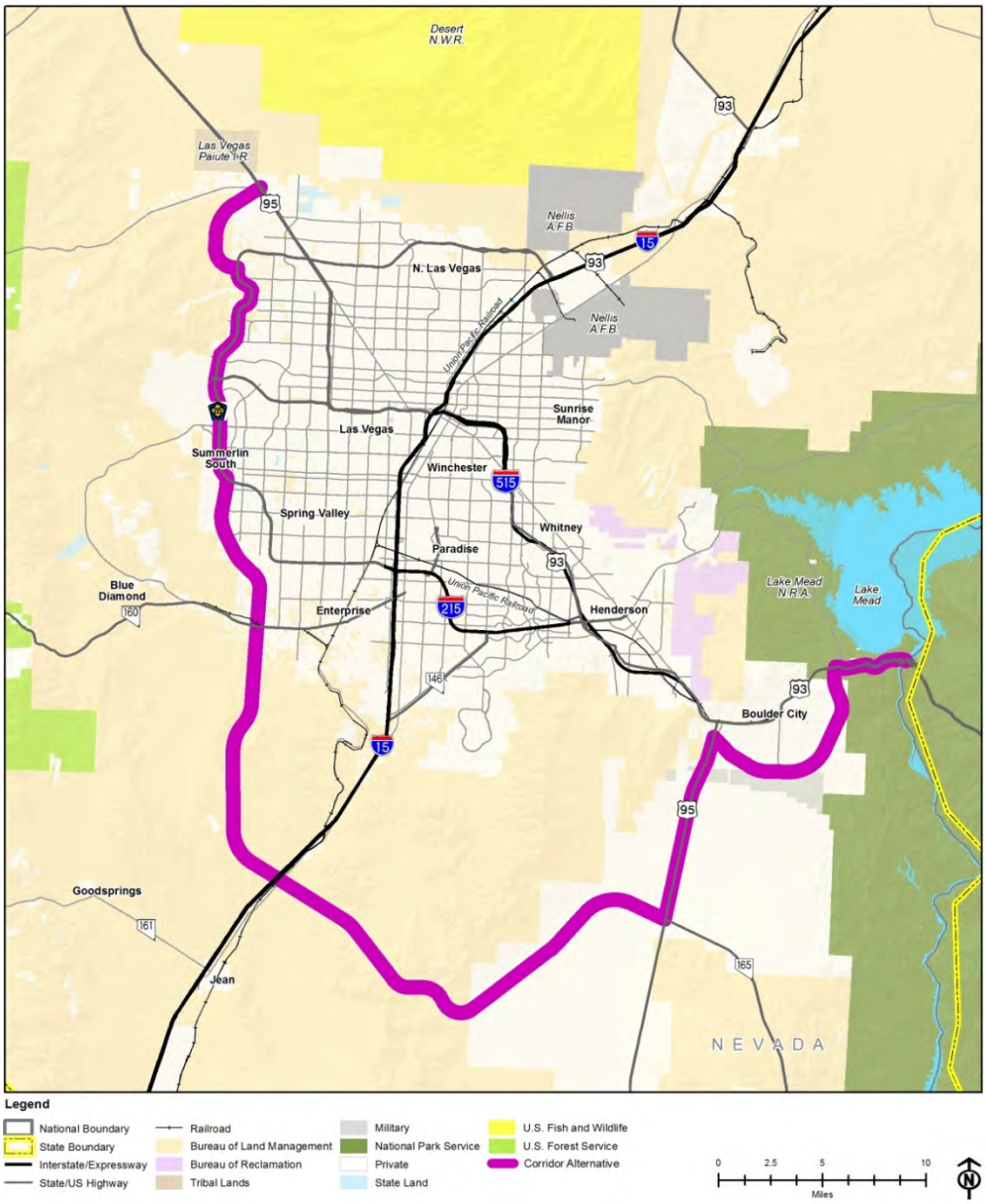
- **Not Recommended for Level 2 Analysis**

Opportunities

- Provides missing link in the system and bypasses the congested Spaghetti Bowl

Constraints

- Limited connectivity to Las Vegas Metropolitan Area activity center and major existing or planned freight hubs
- Potential environmental impacts traversing critical habitat area



Alternative X				
Category		**Criteria**	**Rating**	**Notes**
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Meets the intent of legislative actions by connecting with the MAP-21 designated I-11, CANAMEX, and Washoe County corridor.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Southern California megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Creates new link, but is somewhat out of the way and only moderately important.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the north and south.
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Provides connection in the vicinity of Ivanpah, but no other major freight hubs in the Las Vegas Metropolitan Area.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Connections to existing highway and rail, and in vicinity of future Ivanpah airport (with possible intermodal yard).
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with potential to acquire sufficient right-of-way, but with limited right-of-way available along existing corridors. Grades are compatible for large portion of corridor.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides minimal relief to portions of CC-215 (southern beltway), but the southern portions of the alternative are too far outside the Las Vegas Metropolitan Area to make a difference.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Moderately supports state/regional economic development goals (renewable energy and mining/materials and manufacturing).
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No corridor-related actions taken to date, but does connect to the planned Boulder City Bypass (a high priority project).
	12	How well does this alternative conform to locally adopted transportation plans?		A portion of this corridor is planned for improvements in the RTCSNV RTP (CC-215 Western Beltway).
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		New corridor with potential environmental impacts; crosses critical habitat area.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through BLM or private land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		No comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative Y

Description

This alternative traverses the southern core of the Las Vegas Metropolitan Area to make a western connection to northern Nevada using the proposed Sheep Mountain Parkway, US-93, I-215, and CC-215

Recommendation

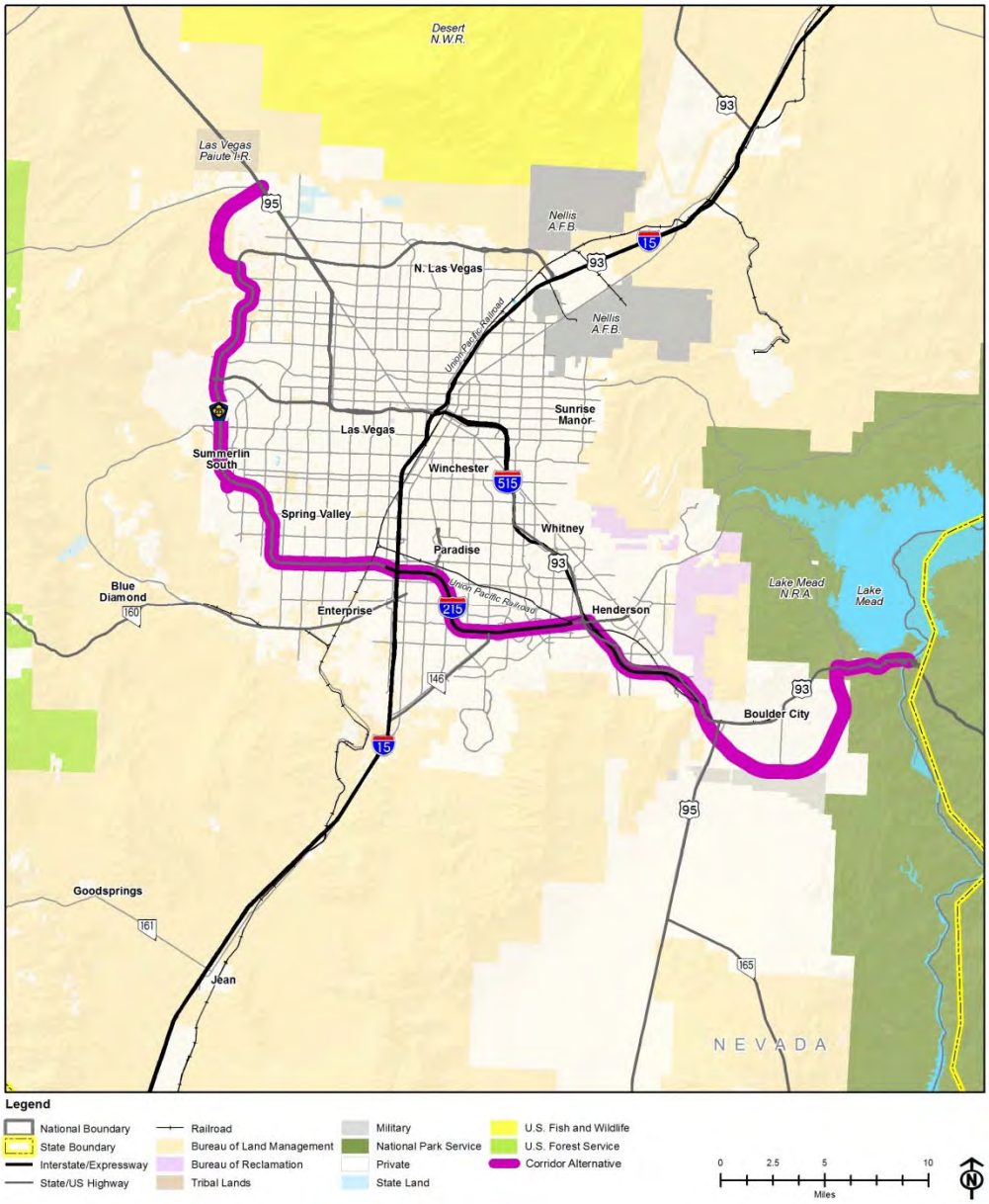
- **Recommended for Level 2 Analysis**

Opportunities

- Directly supports Las Vegas Metropolitan Area activity center
- Supports state/regional economic development goals (including possibly renewable energy and tourism/gaming/entertainment)
- Sufficient right-of-way if widening is needed

Constraints

- Does not provide missing linkages in the transportation network



Alternative Y			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Meets the intent of legislative actions by connecting with the MAP-21 designated I-11, CANAMEX, and Washoe County corridor.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Southern California megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Does not close gap or provide missing link.
	4 How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the north and south.
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Connection to freight hubs in Henderson and area west of the Las Vegas Strip.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Connections to existing highway and rail.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		No right-of-way available for rail.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides some congestion relief; CC-215 is currently a reliever to I-515, but will need to be expanded to continue to act as a reliever.
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Supports state/regional economic development goals (renewable energy and tourism/gaming/ entertainment).
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		No corridor-related actions taken to date, but does connect to the planned Boulder City Bypass (a high priority project).
	12 How well does this alternative conform to locally adopted transportation plans?		Portions of this corridor are planned for improvements in the RTCSNV RTP (CC-215 Western and Southern Beltways).
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Travels through urbanized metropolitan area with potential air quality issues, but minimizes impacts to sensitive lands.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16 How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through private land.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative Z

Description

This alternative traverses the core Las Vegas Metropolitan Area to make a western connection to northern Nevada using US-93, I-515, and US-95.

Recommendation

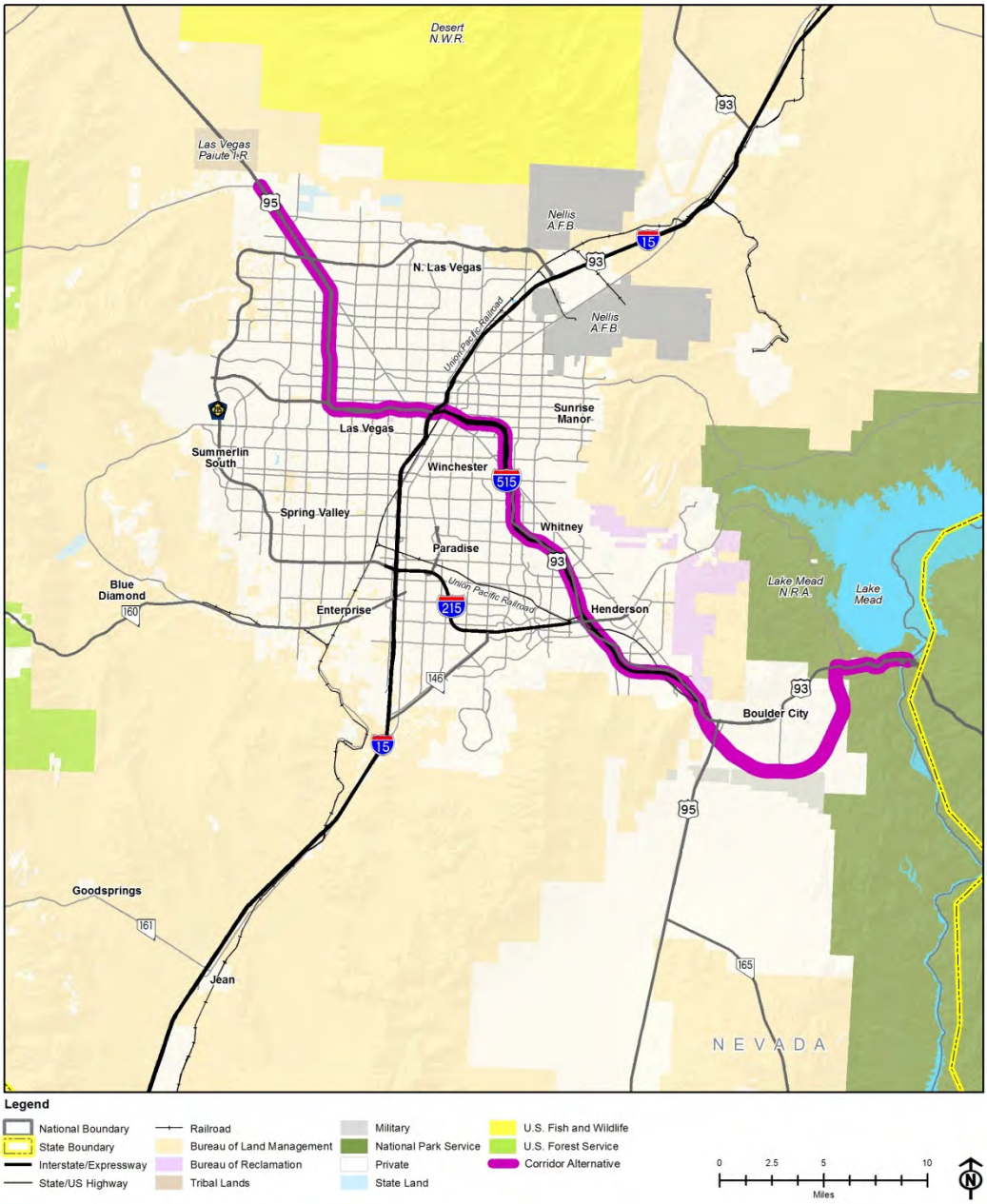
- **Recommended for Level 2 Analysis**

Opportunities

- Supports Las Vegas Metropolitan Area activity center
- Greatly supports state/regional economic development goals (renewable energy and tourism/gaming/entertainment and aerospace/aviation/defense)
- Minimal environmental impacts

Constraints

- Adds traffic to already congested corridors (I-515/US-95) with widening constraints



Alternative Z			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Follows congressionally designated CANAMEX and Washoe County corridors.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Southern California megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Does not close gap or provide missing link.
	4 How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the north and south.
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Connection to freight hub in area west of the Strip, and in close proximity to others in Las Vegas.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Connections to existing highway and rail.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		No right-of-way available for rail.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		No congestion relief; adding to already congested corridors (I-515/US-95).
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Greatly supports state/regional economic development goals (renewable energy and tourism/gaming/ entertainment and aerospace/ aviation/defense).
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		No corridor-related actions taken to date, but does connect to the planned Boulder City Bypass (a high priority project).
	12 How well does this alternative conform to locally adopted transportation plans?		Portions of this corridor are planned for improvements in the RTCSNV RTP (US-95, Spaghetti Bowl improvements and portion of I-515).
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Travels through urbanized metropolitan area with potential air quality issues, but minimizes impacts to sensitive lands.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16 How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through private land.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative AA

Description

This alternative traverses the core Las Vegas Metropolitan Area to make an eastern connection to northern Nevada using US-93, I-515, and I-15.

Recommendation

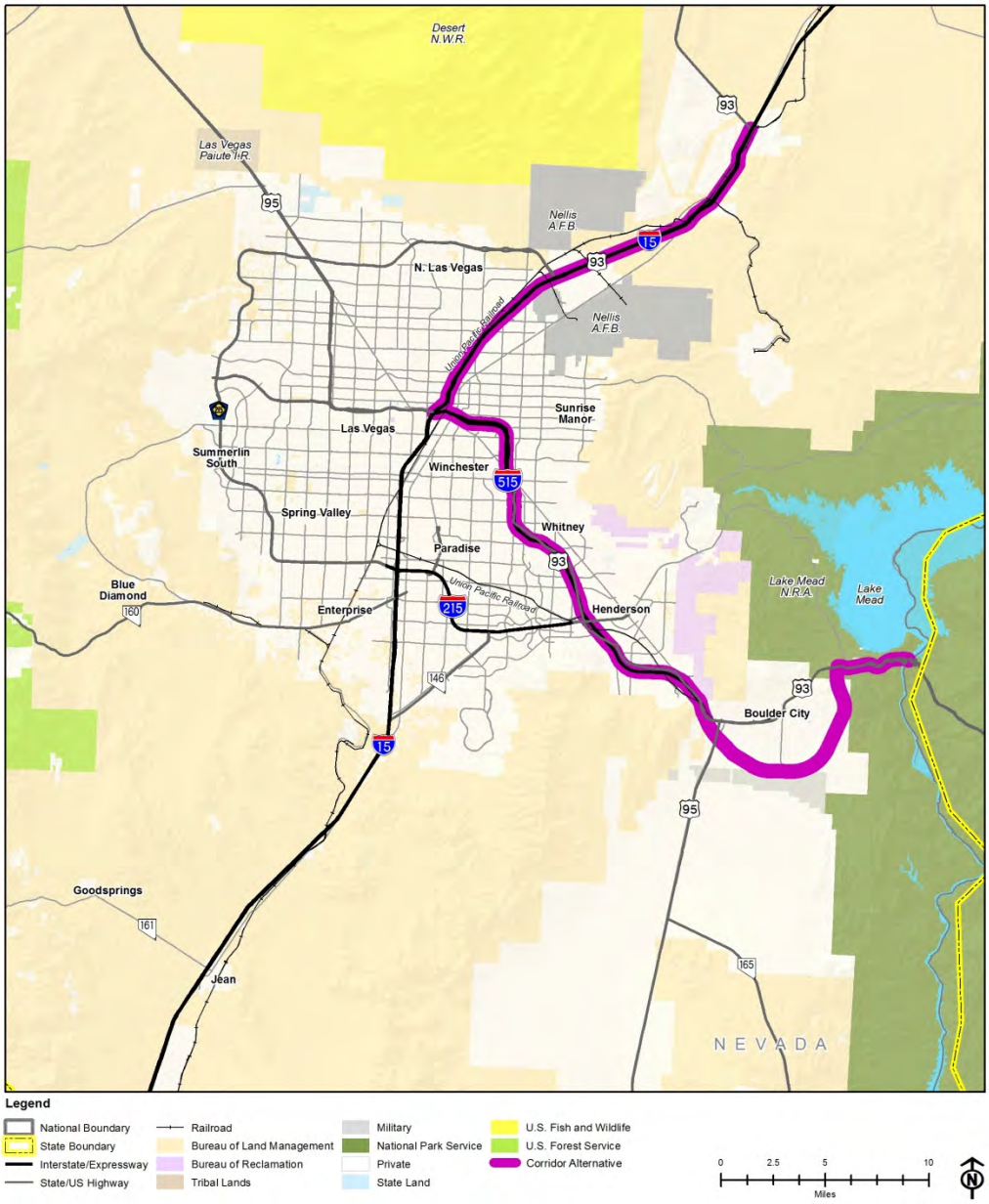
- **Recommended for Level 2 Analysis**

Opportunities

- Directly supports Las Vegas Metropolitan Area activity center and connects three major freight hubs: Speedway, APEX, and North Las Vegas
- Greatly supports state/regional economic development goals (renewable energy and tourism/gaming/entertainment and aerospace/aviation/defense)
- Connections to existing highway, rail and intermodal yard in North Las Vegas

Constraints

- Adds traffic to already congested corridors (I-515/US-95/I-15) with widening constraints



Alternative AA			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Follows congressionally designated CANAMEX corridor.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Southern California megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Does not close gap or provide missing link.
	4 How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the north and south.
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Connection with three major freight hubs: Speedway, APEX, and North Las Vegas.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Connections to existing highway, rail and existing intermodal yard in North Las Vegas.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		No right-of-way available for rail.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		No congestion relief; adding to already congested corridors (I-515/US-95/I-15).
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Greatly supports state/regional economic development goals (renewable energy and tourism/gaming/ entertainment and aerospace/ aviation/defense).
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		No corridor-related actions taken to date, but does connect to the planned Boulder City Bypass (a high priority project).
	12 How well does this alternative conform to locally adopted transportation plans?		Portions of this corridor are planned for improvements in the RTCSNV RTP (I-15 North, Spaghetti Bowl improvements and portion of I-515).
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Travels through urbanized metropolitan area with potential air quality issues, but minimizes impacts to sensitive lands.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16 How compatible is this alternative with major land ownership patterns?		Compatible with major land ownership; alternative primarily crosses through private land.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative BB

Description

This alternative bypasses the core of the Las Vegas Metropolitan Area to the east and north to make a western connection to northern Nevada using a newly proposed corridor connector, US-93, and the proposed Sheep Mountain Parkway.

Recommendation

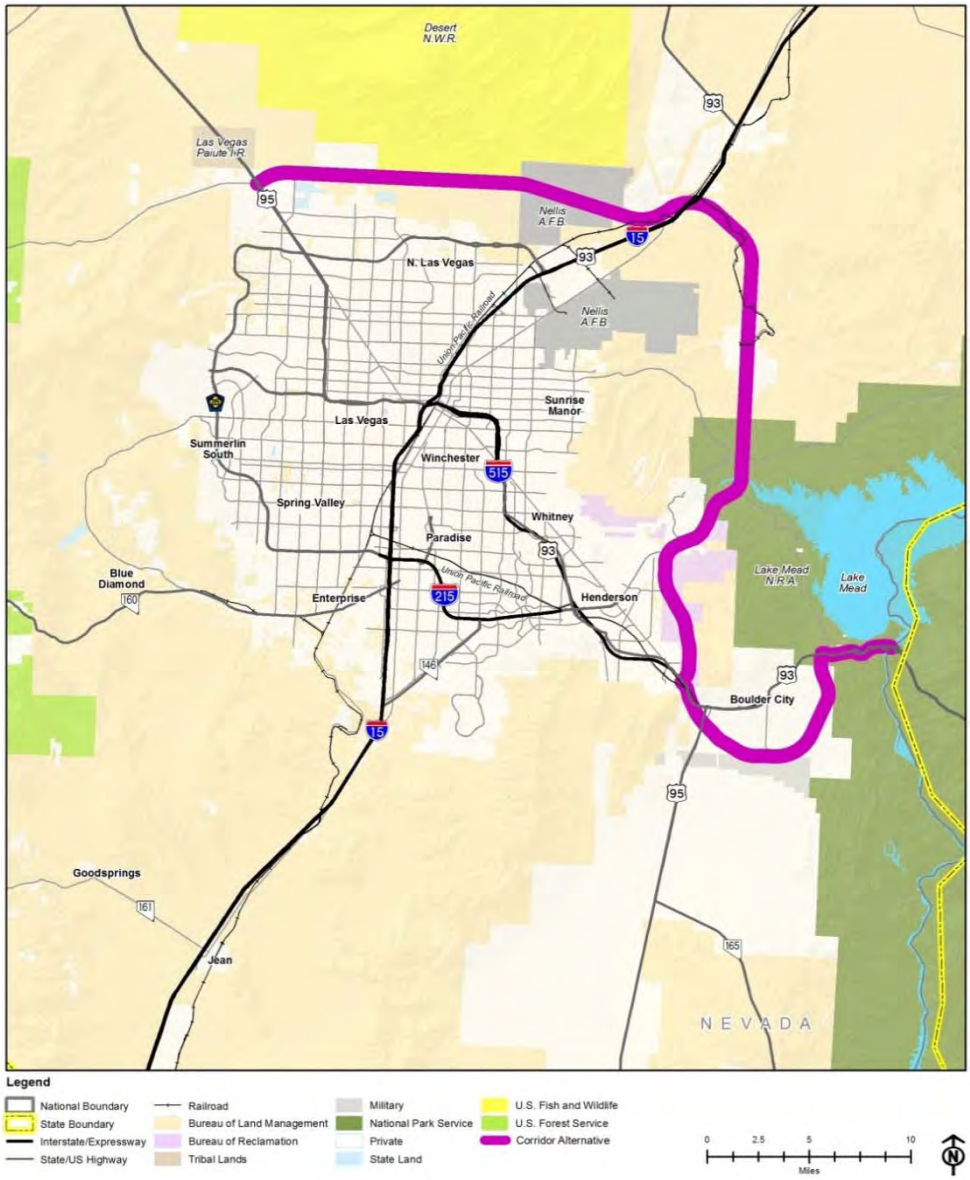
- **Recommended for Level 2 Analysis**

Opportunities

- Provides missing link; completes the system around Las Vegas Metropolitan Area
- Supports Las Vegas Metropolitan Area activity center and connects with two major freight hubs/areas: APEX and North Las Vegas
- Provides relief to congested corridors through the metropolitan area

Constraints

- Traverses environmentally sensitive areas with land ownership constraints



Alternative BB

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Meets the intent of legislative actions by connecting with the MAP-21 designated I-11, CANAMEX, and Washoe County corridor.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Southern California megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Provides missing link; completes the system around Las Vegas Metropolitan Area.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the north and south.
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Connection with two major freight hubs: APEX and North Las Vegas.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Connections to existing highway and rail, and in close proximity to the existing intermodal yard in North Las Vegas.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		New corridor with potential to acquire sufficient right-of-way, with mostly compatible grades.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides relief to congested corridors through the Las Vegas Metropolitan Area via new corridors to the east and north.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports state/regional economic development goals (renewable energy and tourism/gaming/ entertainment).
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No corridor-related actions taken to date, but does connect to the planned Boulder City Bypass (a high priority project).
	12	How well does this alternative conform to locally adopted transportation plans?		Not currently in any transportation plans.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Traverses the Lake Mead National Recreation Area and Desert National Wildlife Refuge.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Crosses areas of critical environmental concern, Lake Mead National Recreation Area and Desert National Wildlife Refuge.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative crosses through National Park Service land (Lake Mead Recreation Area) and Military land (Nellis Air Force Base).
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative CC

Description

This alternative bypasses the core of the Las Vegas Metropolitan Area to the east and north to make a western connection to northern Nevada using a newly proposed corridor and the proposed Sheep Mountain Parkway.

Recommendation

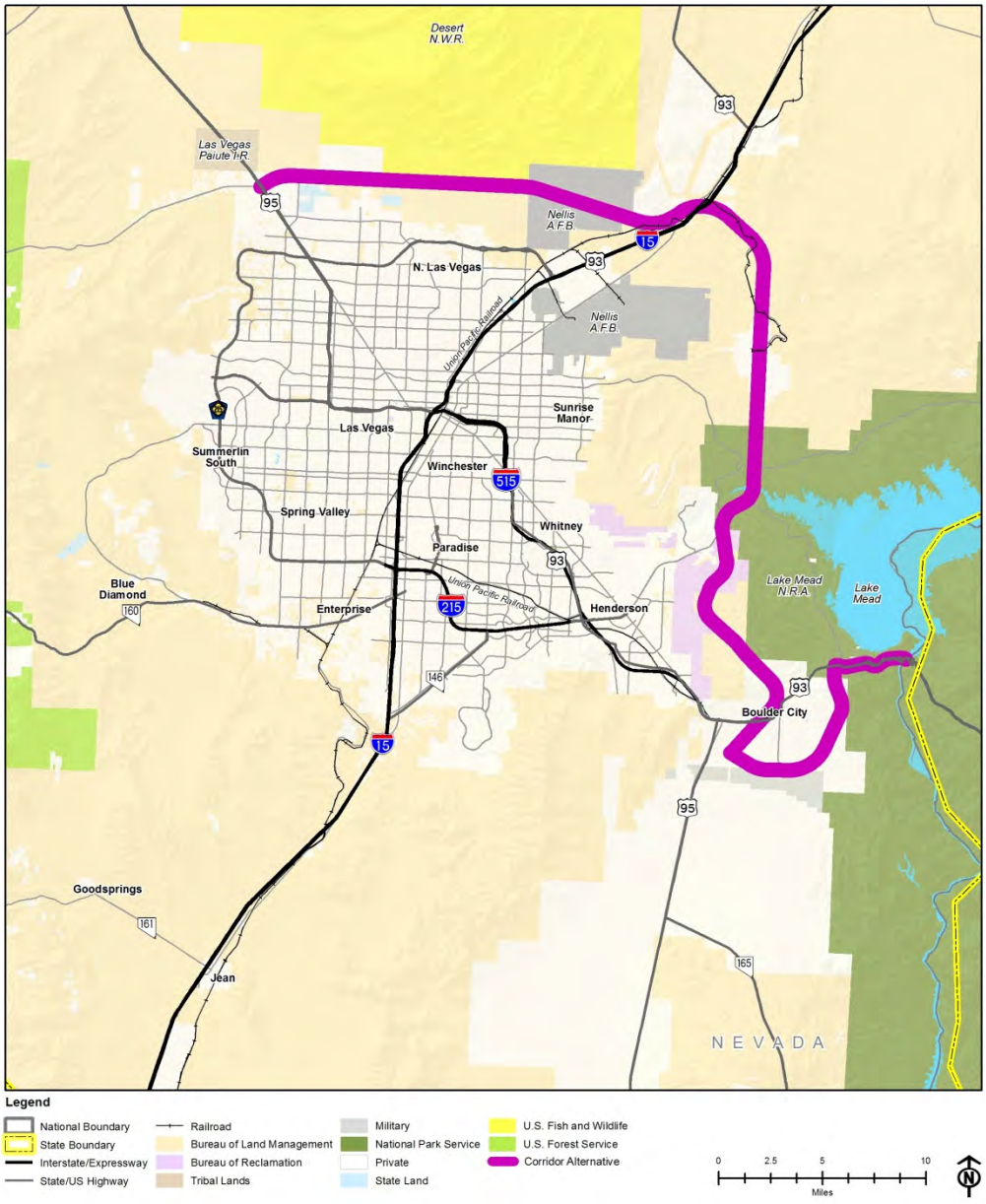
- **Not Recommended for Level 2 Analysis**

Opportunities

- Provides missing link; completes the system around Las Vegas Metropolitan Area
- Provides relief to congested corridors through the metropolitan area

Constraints

- Environmental and land ownership constraints, including traversing the Nellis Air Force Base, Lake Mead National Recreation Area, Desert National Wildlife Refuge, and areas of critical environmental concern
- Accommodation of multiple modes might be difficult due to steep grades on eastern portion of corridor
- Does not efficiently connect to Boulder City Bypass



Alternative CC

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Meets the intent of legislative actions by connecting with the MAP-21 designated I-11, CANAMEX, and Washoe County corridor.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Southern California megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Provides missing link; completes the system around Las Vegas Metropolitan Area.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the north and south.
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Connection with two major freight hubs: APEX and North Las Vegas.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Connections to existing highway and rail, and in close proximity to the existing intermodal yard in North Las Vegas.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Accommodation of multiple modes might be difficult due to steep grades on eastern portion of alternative.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides relief to congested corridors through the Las Vegas Metropolitan Area via new corridors to the east and north.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports state/regional economic development goals (renewable energy and tourism/gaming/ entertainment).
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No corridor-related actions taken to date. Does not fully connect to the planned Boulder City Bypass (a high priority project).
	12	How well does this alternative conform to locally adopted transportation plans?		Not currently in any transportation plans.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Traverses the Lake Mead National Recreation Area and Desert National Wildlife Refuge.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Crosses areas of critical environmental concern, Lake Mead National Recreation Area and Desert National Wildlife Refuge.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative crosses through National Park Service land (Lake Mead Recreation Area) and Military land (Nellis Air Force Base).
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative QQ

Description

This alternative bypasses the core of the Las Vegas Metropolitan Area to the east and north to make a western connection to northern Nevada using newly proposed corridors, CC-215, and US-95.

Recommendation

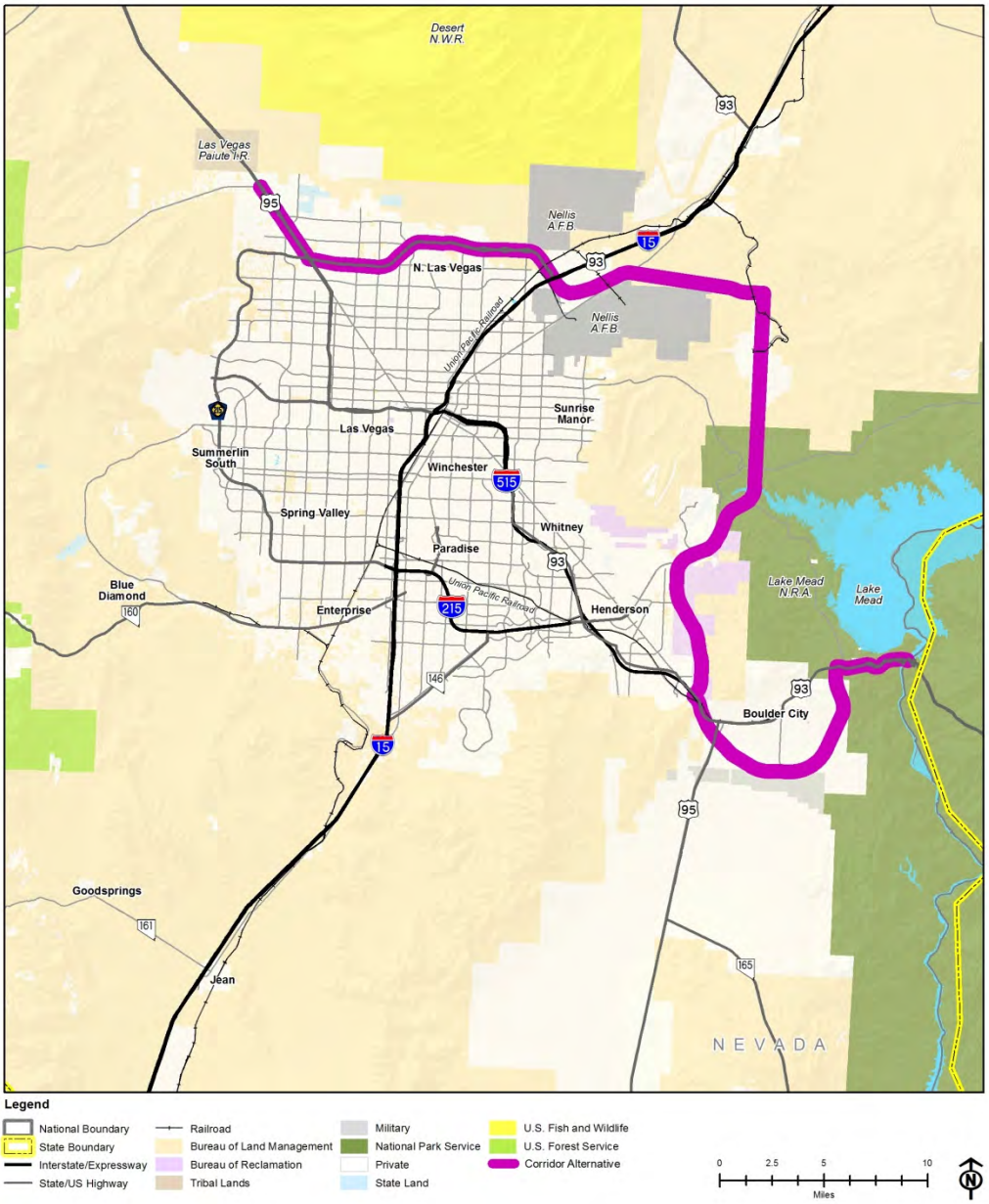
- **Recommended for Level 2 Analysis**

Opportunities

- Provides missing link; completes the system around Las Vegas Metropolitan Area
- Supports Las Vegas Metropolitan Area activity center and connects with two major freight hubs/areas: APEX and North Las Vegas
- Provides relief to congested corridors through the metropolitan area

Constraints

- Traverses areas of critical environmental concern and Lake Mead National Recreation Area, and encroaches Nellis AFB accident potential zone



Alternative QQ

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Meets the intent of legislative actions by connecting with the MAP-21 designated I-11, CANAMEX, and Washoe County corridor.
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Southern California megapolitan.
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Provides missing link; completes the system around Las Vegas Metropolitan Area.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the north and south.
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Connection with two major freight hubs: APEX and North Las Vegas.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Connections to existing highway, rail and existing intermodal yard in North Las Vegas.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Potential to acquire sufficient right-of-way on new portions, but limited right-of-way available along existing portions of the Beltway. Mostly rail compatible grades.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides congestion relief with new corridor to the east, but adds traffic to CC-215 which would require widening.
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports state/regional economic development goals (renewable energy and tourism/gaming/ entertainment).
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		No corridor-related actions taken to date, but does connect to the planned Boulder City Bypass (a high priority project).
	12	How well does this alternative conform to locally adopted transportation plans?		Portions of this corridor are planned for improvements in the RTCSNV RTP (CC-215 Northern Beltway and US-95).
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Traverses the Lake Mead National Recreation Area.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Crosses areas of critical environmental concern and Lake Mead National Recreation Area.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative crosses through National Park Service land (Lake Mead Recreation Area) and portion of alternative encroaches Nellis AFB accident potential zone.
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative RR

Description

This alternative bypasses the core of the Las Vegas Metropolitan Area to the east and north to make an eastern connection to northern Nevada using newly proposed corridors and US-93.

Recommendation

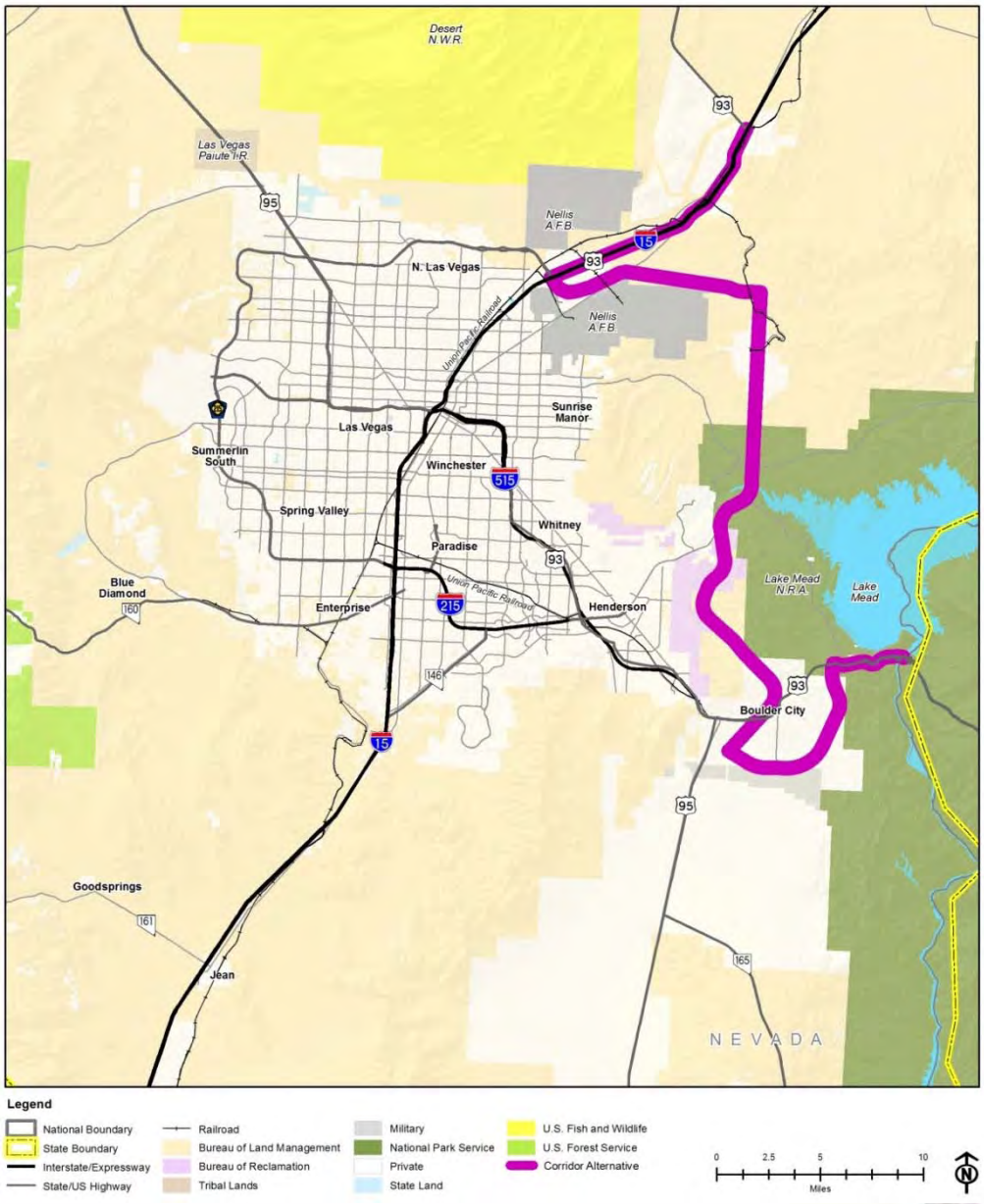
- **Not Recommended for Level 2 Analysis**

Opportunities

- Provides relief to congested corridors through the Metropolitan Area
- Provides connections to three major freight hubs: Speedway, APEX, and North Las Vegas

Constraints

- Out of direction travel
- Accommodation of multiple modes might be difficult due to steep grades on portions of corridor
- Traverses the Lake Mead National Recreation Area and areas of critical environmental concern



Alternative RR			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Meets the intent of legislative actions by connecting with the MAP-21 designated I-11, CANAMEX, and Washoe County corridor.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Alternative located within Southern California megapolitan.
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Creates new link, but is out-of-direction.
	4 How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the north and south.
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Connection with three major freight hubs: Speedway, APEX, and North Las Vegas.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Connections to existing highway, rail and existing intermodal yard in North Las Vegas.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Accommodation of multiple modes might be difficult due to steep grades on eastern portion of corridor.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		Provides congestion relief with new corridor to the east, but adds traffic to future congested I-15 to US-93.
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Supports state/regional economic development goals (renewable energy and tourism/gaming/ entertainment).
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		No corridor-related actions taken to date, but does connect to the planned Boulder City Bypass (a high priority project).
	12 How well does this alternative conform to locally adopted transportation plans?		Not currently in any transportation plans.
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		Traverses the Lake Mead National Recreation Area.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Crosses areas of critical environmental concern, Lake Mead National Recreation Area and Desert National Wildlife Refuge
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		In compliance with local land use planning (no known differentiators exist among alternatives).
	16 How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative crosses through National Park Service land (Lake Mead Recreation Area).
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Evaluation Results: Northern Nevada Future Connectivity Area

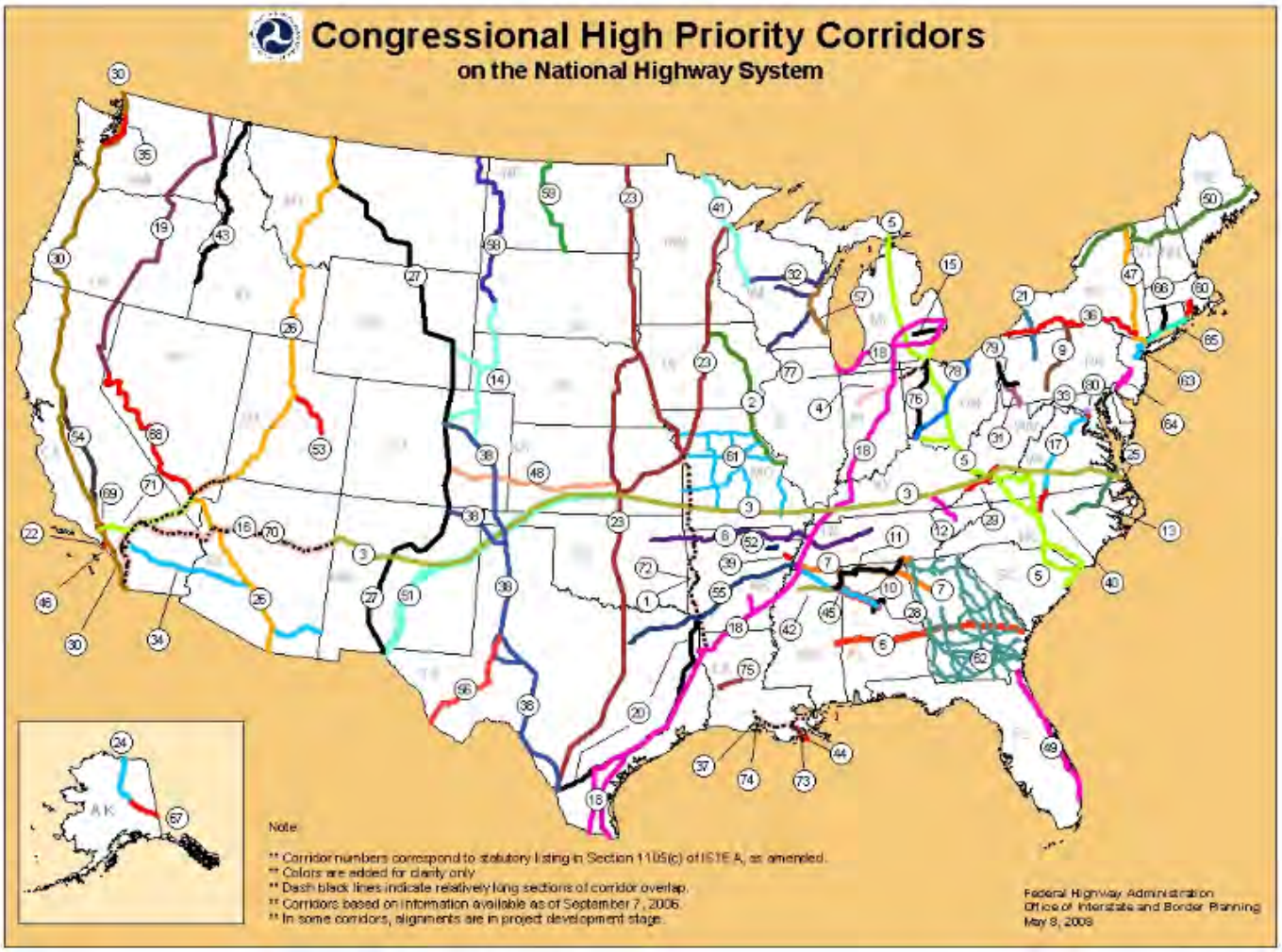
The Northern Nevada Future Connectivity Area encompasses the majority of the state of Nevada, from just north of the Las Vegas Valley to the northern border with Idaho and Oregon.

The study team conducted the Level 1 evaluation of all alternatives (to see a description of each alternative, please refer to "Draft Candidate Corridor Alternatives for Level 1 Screening" memorandum).

Each alternative was rated with respect to each of the evaluation criteria. The rating system consisted of a qualitative scale (from least to most favorable), with "most favorable" representing the best performance and "least favorable" representing the worst performance. Connectivity-related criteria were rated based on connectivity with *adjacent* segments. General guidance on how the criteria were evaluated in relationship to the project's Goals and Objectives follows:

- **Criterion 1: How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?**
  - Alternatives were evaluated based on their compliance with Congressionally designated high priority corridors, including (see **Figure 14**):
    - CANAMEX: I-19 from Nogales to Tucson, I-10 from Tucson to Phoenix, US-93 in the vicinity of Phoenix to the Nevada border, US-93 from the Arizona border to Las Vegas, and I-15 from Las Vegas to the Utah border
    - I-11: US-93 in the vicinity of Phoenix to the Nevada border, and US-93 from the Arizona border to Las Vegas
    - The Washoe County corridor, along Interstate Route 580/United States Route 95/United States Route 95A, from Reno, Nevada, to Las Vegas, Nevada.
    - United States Route 395 Corridor from the United States-Canadian border to Reno, Nevada.
    - United States Route 95 Corridor from the Canadian border at Eastport, Idaho, to the Oregon state border.

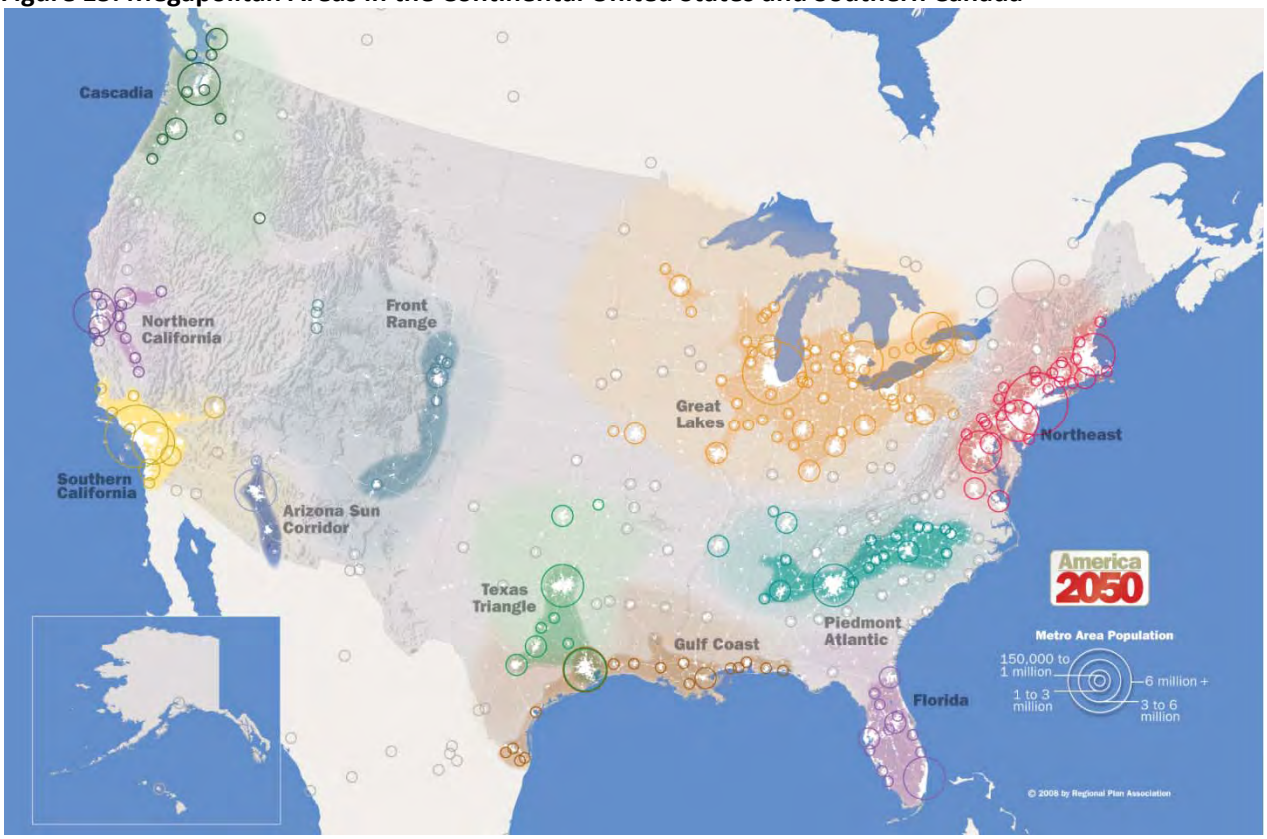
Figure 14. Congressional High Priority Corridors



Source: FHWA http://www.fhwa.dot.gov/planning/national_highway_system/high_priority_corridors/hiprimap.cfm

- **Criterion 2: How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?**
  - Alternatives were evaluated based on their connectivity to primary centers of population and commerce at segment termini and along the corridor. This analysis was conducted at a macro scale using the megapolitan areas identified by America 2050 and the Regional Plan Association, shown in **Figure 15** and introduced in the "Corridor Justification Report" as major economic activity centers.
  - In this segment, primary consideration was given to alternatives that connected to both the Southern California (includes Las Vegas) megapolitan and the Northern California (includes Reno/Fernley) megapolitan. Also, all of the alternatives in this segment could ultimately connect to the Cascadia megapolitan area.

Figure 15. Megapolitan Areas in the Continental United States and Southern Canada



Source: America 2050

- **Criterion 3: How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?**
  - This criterion was applied to all segments to understand gaps or links in the regional transportation network that can be filled (or a route made more efficient) with the construction of this corridor.
  - In this segment, there are gaps in the Congressionally designated Washoe County Corridor (I-580, US-95 and US-95A); therefore, alternatives that closed these gaps and important gaps in the overall transportation network rated higher than those that did not.
- **Criterion 4: How well does this alternative connect with adjacent segments/sections?**
  - Alternatives were evaluated based on the ability to make a connection with an alternative in the adjacent segment/section. Alternatives that connected with two adjacent segments rated "most favorable"; alternatives that connected with one adjacent segment rated "moderately favorable"; and alternatives that did not connect with any adjacent segments rated "least favorable."
  - A maximum of only one connection is possible in this segment, and therefore the maximum rating is "moderately favorable."
- **Criterion 5: How well does this alternative connect major freight hubs and high capacity transportation corridors?**
  - Alternatives were evaluated based on how many freight hubs and/or high capacity transportation corridors they traversed (directly crossed or in close proximity).
  - Major freight hubs in this segment include the Reno Metropolitan Area, Fernley Industrial Park, Elko Regional Railport, and Tahoe-Reno Industrial Center. I-80 is a high capacity transportation corridor.

- **Criterion 6: How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?**
  - Alternatives were evaluated based on the number of east-west high-capacity roadway and railroad corridors traversed, and proximate airports and intermodal yard facilities. Those with connectivity to higher numbers of facilities provide greater opportunity for intermodal connectivity.
  - Intermodal connections in this segment include the UPRR Sparks Intermodal Facility, Elko Rail Yard, Elko Regional Railport, Fernley Industrial Park, Tahoe-Reno Industrial Center, Carlin Rail Yard, Reno-Tahoe International Airport, Amtrak, and the railroad yard that parallels I-80.
- **Criterion 7: How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?**
  - Alternatives were evaluated qualitatively, based on the percent of the corridor that could accommodate multiple modes and uses (highway, rail, utilities, etc.) in one corridor footprint, generally reviewing slopes and available right-of-way. While the alternative descriptions cite the feasibility for highway and rail opportunities, the potential exists for co-location of major utility corridors as well. If the alternative can accommodate highway and rail, it is generally assumed (from a right-of-way and slopes perspective) to have the ability to accommodate major utilities as well.
  - In this segment, alternatives along existing rail lines (e.g., Nevada Northern Railway, South Central Route, and Thorne Branch Line) rated higher. Other alternatives with topographic constraints rated lower.
- **Criterion 8: How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?**
  - Alternatives were evaluated using existing and projected future level of service conditions identified in the "Corridor Justification Report". Where an alternative has the opportunity to relieve congestion between major activity centers (generally, between large metropolitan areas, or in the case of the Phoenix and Las Vegas sections, providing relief to congestion within the metropolitan area), it was rated higher. Although many alternatives serve as bypasses or loop corridors around metropolitan cores, they are expected to perform as part of the regional transportation system. Therefore, by forming junctions with existing corridors that may traverse the metropolitan core, the alternative may serve for both congestion relief and local access.
  - Congestion through Northern Nevada is not anticipated to be a concern, except within the metropolitan areas, and within those areas it is assumed that the corridor would be constructed to sufficient capacity to accommodate the demands. Therefore, all alternatives were rated equally.
- **Criterion 9: How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?**
  - This criterion primarily relates to Southern Arizona and the ability of alternative corridors to effectively cross the Arizona-Sonora international border in an efficient manner. Existing and proposed improvements at LPOEs were taken from the recently completed ADOT *Arizona-Sonora Border Master Plan*.
  - Since this criterion was not related to this segment, all of the alternatives were rated equally with a "moderately favorable" rating.
- **Criterion 10: How well does this alternative support regional, state and national economic development goals?**
  - Alternatives were evaluated based on their ability to support economic development initiatives that rely on transportation connections. State economic development priorities, elaborated in the "Corridor Justification Report", are summarized in **Table 9** and include such items as renewable energy development, tourism, transportation logistics, and aerospace/aviation/defense.

Table 9. Arizona and Nevada Industry Targets and Clusters

Industry Targets	Arizona	Nevada	Requires Regional Transportation Network
Advanced Manufacturing	•		•
Aerospace, Aviation, Defense	•	•	•
Agriculture	•	•	•
Optics	•		•
Biotechnology	•		•
Healthcare	•	•	
Information and Computer Technology	•	•	
Life Sciences	•		•
Mining, Materials, and Manufacturing		•	•
Renewable Energy	•	•	•
Science and Technology	•		•
Tourism, Gaming, and Entertainment		•	•
Transportation and Logistics	•	•	•

Sources: Arizona Commerce Authority, Brookings Institution, Greater Phoenix Economic Council, Tucson Regional Economic Opportunities, Nevada Governor's Office of Economic Development (Full reference provided in the "Corridor Justification Report")

- **Criterion 11: How well does this alternative comply with corridor-related actions taken to date?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a corridor-related action. A corridor-related action was defined as a federal, state or regional action or designation in place that plans for a high-capacity transportation corridor.
  - In this segment, alternatives utilizing USA Parkway, improved US-95 northwest of Las Vegas, and/or the new I-580 were rated higher. There are no other known corridor-related actions taken to date in this segment.
- **Criterion 12: How well does this alternative conform to locally adopted transportation plans?**
  - Alternatives were evaluated based on the percent of the corridor recognized by a plan adopted by a local community, such as a General/Comprehensive Plan or Transportation Master Plan.
  - In this segment, *Connecting Nevada* calls for improved connectivity between Las Vegas and Reno as well as Las Vegas and the eastern part of the state. The *Nevada State Rail Plan* calls for improvements to existing rail lines in northern Nevada. Therefore, alternatives that are consistent with these plans rated higher.
- **Criterion 13: How compatible is this alternative with regional open space, conservation, and land management agency planning?**
  - Alternatives were evaluated based on the amount of the alternative that traverses a protected open space, identified from various sources which include, but are not limited to: national conservation areas, existing parks, wilderness areas, wildlife refuges, and local/regional open space management plans.
- **Criterion 14: How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?**
  - Alternatives were evaluated based on the amount of the corridor traversing various environmental features (as presented in the "Existing Natural and Built Environment" technical memorandum).

- **Criterion 15: How consistent is this alternative with regional land use and growth strategies?**
  - Alternatives were evaluated based on the consistency of the corridor with land use or growth strategies identified as part of regional planning efforts (e.g., RTP, socioeconomic projections), growth elements of general/comprehensive plans, and/or major land development plans.
- **Criterion 16: How compatible is this alternative with major land ownership patterns?**
  - Alternatives were evaluated based on the compatibility of a major transportation infrastructure facility to traverse land under state or federal ownership, including such land owners as BLM, Bureau of Reclamation, U.S. military, National Park Service, state land departments, state parks, tribal communities, U.S. Fish and Wildlife, and U.S. Forest Service.
- **Criterion 17: How well is this alternative accepted by the local communities?**
  - Input received from Stakeholder Partners and their constituents at the October 2013 stakeholder partner/public meetings, as well as input received via the online comment form, were considered in determining the degree of acceptance of an alternative. Alternatives that received no comments or conflicting comments (supportive and non-supportive) received a "moderately favorable" rating. Alternatives that received mostly supportive comments received the "most favorable" rating and alternatives that received mostly non-supportive comments received the "least favorable" rating.
- **Criterion 18: What is the overall relative cost of this alternative, where "least favorable" is the highest relative cost and "most favorable" the lowest?**
  - Generalized, comparative planning-level costs were estimated based primarily on length of the alternative, with capital construction cost factors given to (a) existing corridors, (b) existing corridors requiring additional right-of-way or significant upgrades/improvements, and (c) new/green corridor development. Compared to the cost per mile of improving an existing highway, it was assumed that a new highway would cost twice as much, and that an existing highway with significant right-of-way acquisitions or improvements needed would cost 1.5 times as much.

The evaluation rating scale is strictly relative – alternatives were considered in relationship to each other in the same project segment. If an alternative receives the highest rating, it may still face issues or obstacles with respect to that criterion.

A summary rating was applied to each alternative to note its overall feasibility. Those rated "somewhat favorable" or "most favorable" are recommended for further analysis by the state DOTs. Those rated "moderately favorable," "less favorable," or "least favorable" typically include a fatal flaw or do not support the project's goals and objectives.

The following summary sheets provide an overview of the Level 1 evaluation for each alternative in the Northern Nevada Future Connectivity Area, including a map of the alternative, alternative description, summary rating scale, and opportunities/constraints of the alternative, followed by the detailed evaluation rating scales and notes.

Alternative DD

Description

This alternative travels through western Nevada to make a northerly connection into California and Oregon, diverting west near Reno.

Recommendation

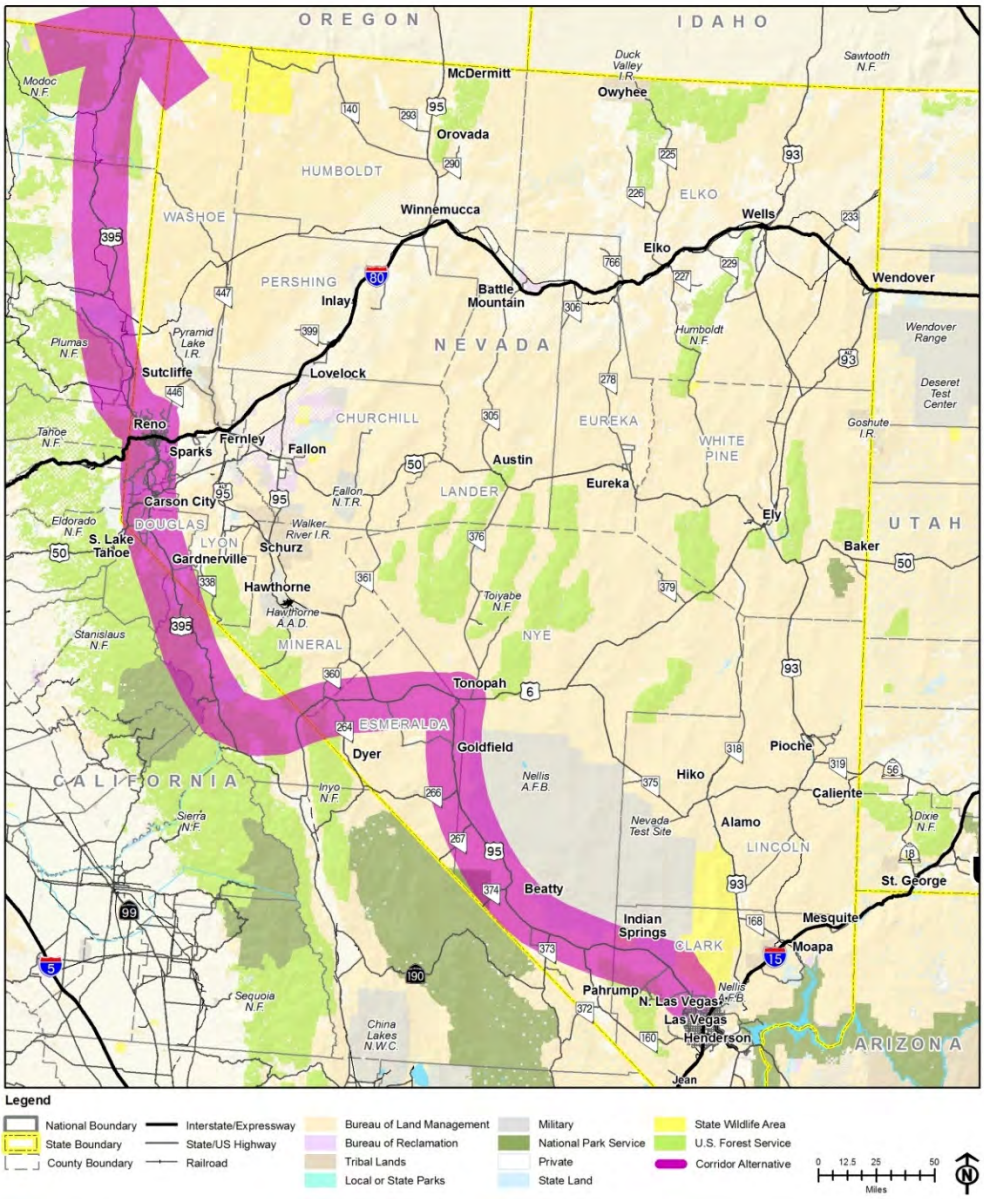
- **Not Recommended for Further Analysis (due to constraints brought forward during Stakeholder / Community input)**

Opportunities

- Connects major freight and economic activity centers within Nevada, with opportunities for intermodal connectivity (with UPRR Sparks rail yard, Reno-Tahoe International Airport, Amtrak and I-80)

Constraints

- Environmental constraints along existing US-395 requiring significant upgrades/improvements
- Steep grades in portions are not suitable for rail and difficult for trucks
- Not compatible with major land ownership; traverses U.S. Forest Service land



Alternative DD			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Two corridor components use federal high priority corridor elements (Washoe County Corridor and US-395).
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Directly connects the Southern California megapolitan (includes Las Vegas) to the Northern California megapolitan (includes Reno).
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Closes gaps between I-580 and US-95.
	4 How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the south.
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Creates connections between Las Vegas and Reno metropolitan areas and between I-15 and I-80, however, steep grades in portions are difficult for rail and truck transport.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Opportunities for intermodal connectivity with UPRR Sparks rail yard, Reno-Tahoe International Airport, Amtrak and I-80.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Accommodation of multiple modes might be difficult due to steep grades on the portion of US-395 south of Reno, and no existence of parallel rail lines.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		N/A
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Supports many industry cluster targets (mining, gaming, transportation logistics, renewable energy, agriculture).
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		Uses improved US-95 northwest of Las Vegas, and new I-580.
	12 How well does this alternative conform to locally adopted transportation plans?		Consistent with Connecting Nevada, improves connectivity between Las Vegas and Reno metropolitan areas.
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Potential environmental constraints along existing highways, requiring upgrades/improvements. Passes through aboriginal roaming areas.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Traverses Reno; most consistent with statewide growth strategies.
	16 How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative traverses U.S. Forest Service land.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mostly non-supportive comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative EE

Description

This alternative travels through western Nevada to make a northerly connection into Oregon through Washoe County.

Recommendation

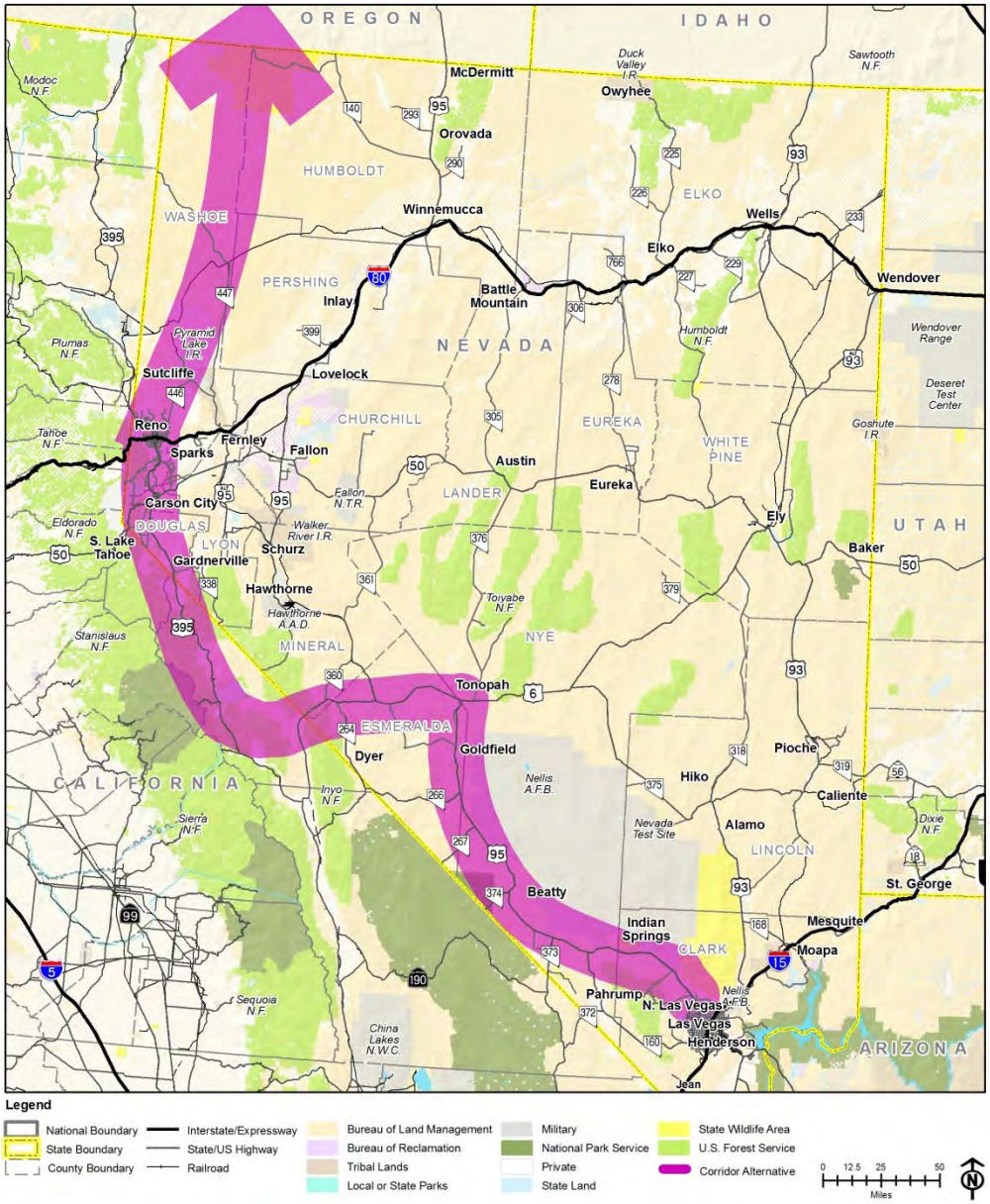
- **Not Recommended for Further Analysis**

Opportunities

- Connects major freight and economic activity centers within Nevada (including Las Vegas and Reno metropolitan areas)
- Closes existing gaps between I-580 and US-95

Constraints

- Traverses National Conservation Area
- Significant environmental constraints (traverses Wilderness Area and does not utilize existing major highways)
- Not consistent with major land ownership patterns (traverses forest service land and Pyramid Lake Paiute tribal lands)



Alternative EE

Category		Criteria	Rating	Notes
Legislation	1	How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		One component uses a federal high priority corridor element (Washoe County Corridor).
System Linkage	2	How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Directly connects the Southern California megapolitan (includes Las Vegas) to the Northern California megapolitan (includes Reno).
	3	How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Closes gaps between I-580 and US-95.
	4	How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the south.
Trade Corridor	5	How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Creates connections between Las Vegas and Reno metropolitan areas and between I-15 and I-80, however, steep grades in portions are difficult for rail and truck transport.
Modal Interrelationships	6	How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Opportunities for intermodal connectivity with UPRR Sparks rail yard, Reno-Tahoe International Airport, Amtrak and I-80.
	7	How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Accommodation of multiple modes might be difficult due to steep grades on the portion of US-395 south of Reno, and no existence of parallel rail lines.
Capacity/Congestion	8	How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		N/A
	9	How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10	How well does this alternative support regional, state and national economic development goals?		Supports many industry cluster targets (mining, gaming, transportation logistics, renewable energy, agriculture).
Project Status/ Transportation Policy	11	How well does this alternative comply with corridor-related actions taken to date?		Uses improved US-95 northwest of Las Vegas, and new I-580.
	12	How well does this alternative conform to locally adopted transportation plans?		Consistent with Connecting Nevada, improves connectivity between Las Vegas and Reno metropolitan areas.
Environmental Sustainability	13	How compatible is this alternative with regional open space, conservation, and land management agency planning?		Traverses through National Conservation Area.
	14	How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Goes through wilderness area in northeastern Nevada and does not follow existing major highways. Passes through aboriginal roaming areas.
Land Use and Ownership	15	How consistent is this alternative with regional land use and growth strategies?		Traverses Reno; most consistent with statewide growth strategies.
	16	How compatible is this alternative with major land ownership patterns?		Not compatible with major land ownership; alternative traverses U.S. Forest Service and tribal land.
Community Acceptance	17	How well is this alternative accepted by the local communities?		Mostly non-supportive comments.
Cost	18	What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative FF

Description

This alternative loosely follows the US 95 Corridor north from Las Vegas through the Fernley/Fallon area, then on to Oregon and Idaho through Winnemucca.

Recommendation

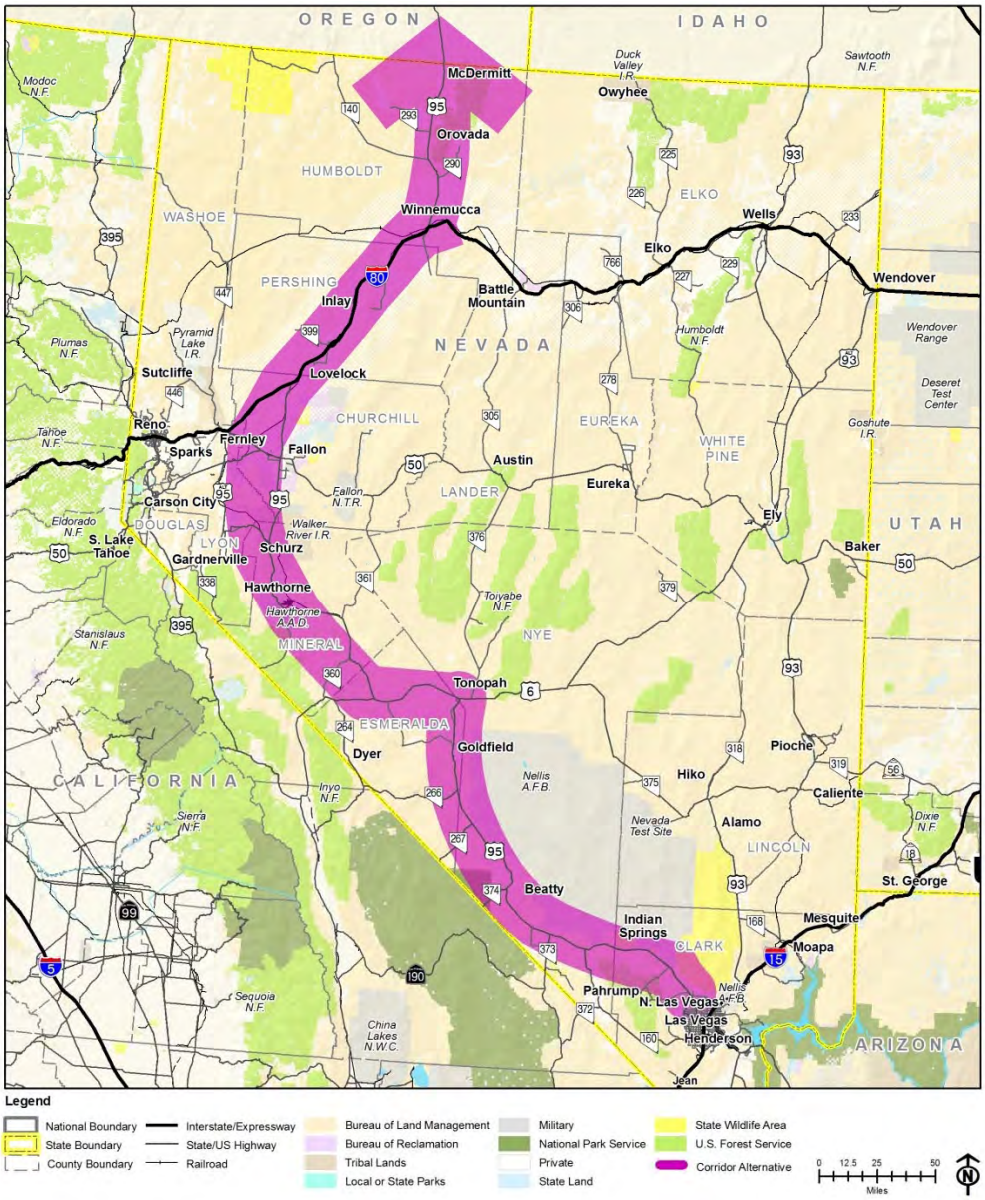
- **Recommended for Further Analysis**

Opportunities

- Connects major freight and economic activity centers within Nevada (including Las Vegas Metropolitan Area, Reno Metropolitan Area through Fernley, and Fernley Industrial Park)
- Potential to accommodate multiple modes in a share corridor with existing rail along the Thorne Branch Line
- Much of corridor follows Congressional high priority corridor (Washoe County Corridor), aligns with US 95 completed improvements northwest of Las Vegas, and provides opportunity to also connect to high priority corridor US-95 from the Oregon state border to the Canadian border

Constraints

- Potential environmental constraints



Alternative FF			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Portions of corridor use a federal high priority corridor element (Washoe County Corridor) and provides opportunity to also connect to high priority corridor (US-95 from the Oregon state border to the Canadian border).
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Directly connects the Southern California megapolitan (includes Las Vegas) to the Northern California megapolitan (includes Reno/Fernley).
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Develops higher capacity linkage.
	4 How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the south.
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Creates connections between Las Vegas and Fernley (including Fernley Industrial Park) and between I-15 and I-80.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Opportunities for intermodal connectivity with Fernley Industrial Park, Amtrak and I-80.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Connection between Tonopah and Fernley is along existing rail line (Thorne Branch Line).
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		N/A
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Supports many industry cluster targets (defense, mining, gaming, transportation logistics, renewable energy, agriculture).
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		Uses improved US-95 northwest of Las Vegas.
	12 How well does this alternative conform to locally adopted transportation plans?		Consistent with Nevada State Rail Plan and Connecting Nevada, improves connectivity between Las Vegas and Reno metropolitan areas.
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Potential environmental constraints along existing highways, requiring fewer upgrades/improvements. Passes through aboriginal roaming areas.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Provides connection to Reno; most consistent with statewide growth strategies.
	16 How compatible is this alternative with major land ownership patterns?		Wide corridor swath; generally compatible with major land ownership.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mostly supportive comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative GG

Description

This alternative travels through central Nevada to make a northerly connection into Oregon through Winnemucca.

Recommendation

- **Not Recommended for Further Analysis**

Opportunities

- Provides opportunity to connect to a high priority corridor (US-95 from the Oregon state border to the Canadian border)

Constraints

- Connects limited number of major freight and economic activity centers and has limited opportunities for intermodal connectivity
- Because of limited connectivity, does not fully support economic development goals
- Not consistent with transportation plans, such as Connecting Nevada (does not improve connections between Las Vegas and Reno metropolitan areas or between Las Vegas and eastern Nevada)

Alternative GG			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		One corridor component uses a federal high priority corridor element (Washoe County Corridor) and provides opportunity to also connect to high priority corridor (US-95 from the Oregon state border to the Canadian border).
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Connects to the Southern California megapolitan (includes Las Vegas).
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Develops higher capacity linkage.
	4 How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the south.
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Creates connections between I-15 and I-80.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Limited opportunities for intermodal connectivity include Amtrak and I-80.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Wide corridor swath; might accommodate highway and rail.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		N/A
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Supports some industry cluster targets (mining, renewable energy, agriculture).
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		Uses improved US-95 northwest of Las Vegas.
	12 How well does this alternative conform to locally adopted transportation plans?		Not consistent with Connecting Nevada.
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Potential traversal of steep slopes, areas of critical environmental concern, wilderness areas, and drainage corridors. Passes through aboriginal roaming areas.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Supports community development; although major trade corridor not in regional land use plans.
	16 How compatible is this alternative with major land ownership patterns?		Wide corridor swath; generally compatible with major land ownership.
Community Acceptance	17 How well is this alternative accepted by the local communities?		No comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative HH

Description

This alternative travels through eastern Nevada to make a northerly connection into Idaho (centered on the existing US-93 corridor).

Recommendation

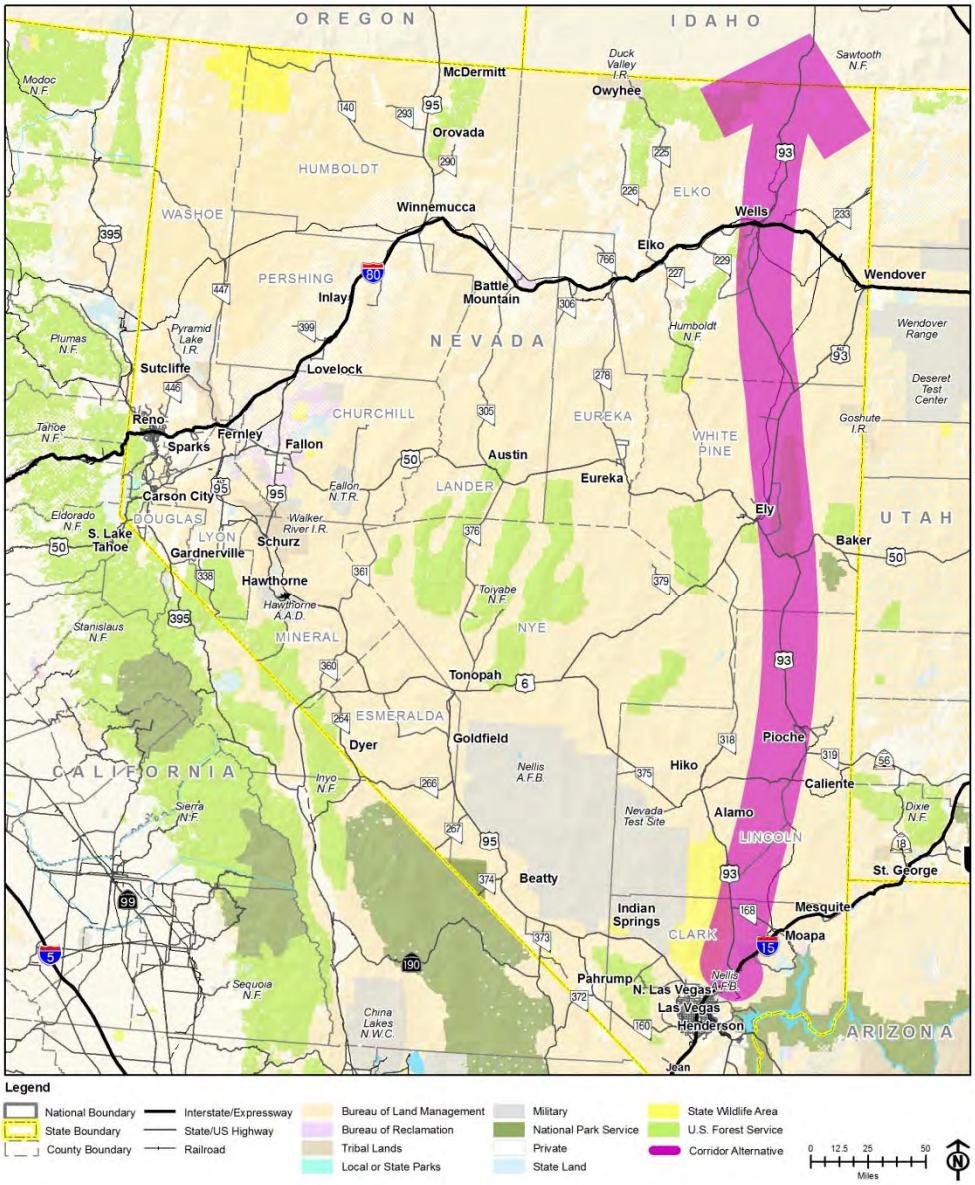
- **Not Recommended for Further Analysis**

Opportunities

- Can accommodate multiple modes; majority of corridor is along existing rail line (South Central Route and Nevada Northern Railway)
- Consistent with several statewide transportation and economic development goals

Constraints

- Does not efficiently connect the Southern California megapolitan (includes Las Vegas) to the Northern California megapolitan (includes Reno)
- Compared to other alternatives, connects a fewer number of major freight and economic activity centers
- Not as consistent with interstate transportation and economic development goals as other alternatives



Alternative HH			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Uses no federal high priority corridor components.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Connects to the Southern California megapolitan (includes Las Vegas), but does not efficiently connect to the Northern California megapolitan (includes Reno).
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Develops higher capacity linkage.
	4 How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the south.
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Creates connections between I-15 and I-80.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Opportunities for intermodal connectivity with Carlin rail yard, Amtrak and I-80.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Majority of corridor is along existing rail line (South Central Route and Nevada Northern Railway).
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		N/A
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Supports some industry cluster targets (mining, renewable energy, agriculture).
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		No known recent corridor-related actions taken to date.
	12 How well does this alternative conform to locally adopted transportation plans?		Consistent with Nevada State Rail Plan and Connecting Nevada, improves connectivity between Las Vegas Metropolitan Area and eastern Nevada.
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Potential environmental constraints along existing highways, requiring fewer upgrades/improvements. Passes through Confederated Tribes of the Goshute Reservation aboriginal roaming area.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Supports community development; consistent with Great Basin Regional Development Authority growth strategies.
	16 How compatible is this alternative with major land ownership patterns?		Wide corridor swath; generally compatible with major land ownership.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative SS

Description

This alternative loosely follows the US 95 Corridor north from Las Vegas to Interstate 80, then west to US 395 in Reno, then makes a northerly connection into California and Oregon.

Recommendation

- **Recommended for Further Analysis**

Opportunities

- Connects major freight and economic activity centers within Nevada (including Las Vegas and Reno metropolitan areas, Tahoe-Reno Industrial Center, and Fernley Industrial Park)
- Closes gaps between two Congressionally designated corridors (Washoe County Corridor and US-395) and aligns with US-95 completed improvements northwest of Las Vegas and potential use of USA Parkway between US-50 and I-80
- Opportunities for intermodal connectivity with UPRR Sparks rail yard, Tahoe-Reno Industrial Center, Fernley Industrial Park, Reno-Tahoe International Airport, Amtrak and I-80

Constraints

- Potential environmental constraints

Alternative SS			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Majority of segments are components of federal high priority corridors (Washoe County Corridor and US-395).
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Directly connects the Southern California megapolitan (includes Las Vegas) to the Northern California megapolitan (includes Reno/Fernley).
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Closes gaps between two Congressionally designated corridors (US-95 and US-395).
	4 How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the south.
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Creates connections between Las Vegas, Reno metropolitan areas (including the Tahoe-Reno Industrial Center), Fernley (including the Fernley Industrial Park) and between I-15 and I-80.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Opportunities for intermodal connectivity with UPRR Sparks rail yard, Tahoe-Reno Industrial Center, Reno-Tahoe International Airport, Fernley Industrial Park, Amtrak and I-80.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Connection between Tonopah and Fernley is along existing rail line (Thorne Branch Line).
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		N/A
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Supports many industry cluster targets (defense, mining, gaming, transportation logistics, renewable energy, agriculture).
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		Uses improved US-95 northwest of Las Vegas and potentially USA Parkway between US-50 and I-80.
	12 How well does this alternative conform to locally adopted transportation plans?		Consistent with Connecting Nevada, improves connectivity between Las Vegas and Reno metropolitan areas.
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Potential environmental constraints along existing highways, requiring fewer upgrades/improvements. Passes through aboriginal roaming areas.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Traverses Reno; most consistent with statewide growth strategies.
	16 How compatible is this alternative with major land ownership patterns?		Wide corridor swath; generally compatible with major land ownership.
Community Acceptance	17 How well is this alternative accepted by the local communities?		Mixed comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Alternative TT

Description

This alternative travels through eastern Nevada to make a connection at Elko with the ability to travel east, west, or north.

Recommendation

- **Not Recommended for Further Analysis**

Opportunities

- Opportunities for intermodal connectivity with Elko Regional Airport, Elko rail yard, Elko Regional Railport, Amtrak and I-80

Constraints

- Does not efficiently connect the Southern California megapolitan (includes Las Vegas) to the Northern California megapolitan (includes Reno)
- Compared to other alternatives, connects a fewer number of major freight and economic activity centers
- Potential environmental constraints

Alternative TT			
Category	**Criteria**	**Rating**	**Notes**
Legislation	1 How well does the alternative meet the intent of legislative actions, including MAP-21 and the 1995 National Highway Systems Designation Act?		Uses no federal high priority corridor components.
System Linkage	2 How well does this alternative connect major national and international activity centers from Mexico to Canada through the Intermountain West?		Connects to the Southern California megapolitan (includes Las Vegas) but does not efficiently connect to the Northern California megapolitan (includes Reno).
	3 How well does this alternative most directly close gaps and/or develop missing linkages in the regional and national transportation network?		Develops higher capacity linkage.
	4 How well does this alternative connect with adjacent segments/sections?		Connects with adjacent segments to the south.
Trade Corridor	5 How well does this alternative connect major freight hubs and high-capacity transportation corridors?		Creates connections between Las Vegas and freight hubs in Elko (Elko Regional Railport) and between I-15 and I-80.
Modal Interrelationships	6 How well does this alternative maximize opportunities for intermodal connectivity (highway, rail/transit, aviation)?		Opportunities for intermodal connectivity with Elko Regional Airport, Elko rail yard, Elko Regional Railport, Amtrak and I-80.
	7 How well does this alternative accommodate multiple modes in a shared corridor footprint (highway and rail)?		Wide corridor swath; might accommodate highway and rail.
Capacity/Congestion	8 How well does this alternative relieve existing and projected congestion between and within the major activity centers in Nevada and Arizona?		N/A
	9 How well does this alternative align with existing conditions or proposed improvements at land ports of entry (as appropriate)?		N/A
Economic Vitality	10 How well does this alternative support regional, state and national economic development goals?		Supports some industry cluster targets (mining, renewable energy, agriculture).
Project Status/ Transportation Policy	11 How well does this alternative comply with corridor-related actions taken to date?		No known recent corridor-related actions taken to date.
	12 How well does this alternative conform to locally adopted transportation plans?		Consistent with Connecting Nevada, improves connectivity between Las Vegas Metropolitan Area and eastern Nevada.
Environmental Sustainability	13 How compatible is this alternative with regional open space, conservation, and land management agency planning?		No known open space constraints.
	14 How well does this alternative minimize environmental impacts (such as drainage, topography, species, and biological connectivity)?		Potential traversal of steep slopes, areas of critical environmental concern, wilderness areas, and drainage corridors. Passes through aboriginal roaming areas.
Land Use and Ownership	15 How consistent is this alternative with regional land use and growth strategies?		Supports community development; consistent with Great Basin Regional Development Authority growth strategies.
	16 How compatible is this alternative with major land ownership patterns?		Wide corridor swath; generally compatible with major land ownership
Community Acceptance	17 How well is this alternative accepted by the local communities?		No comments.
Cost	18 What is the overall relative cost of this alternative, where “least favorable” is the highest relative cost and “most favorable” the lowest?		

Modifications to Level 1 Recommended Alternatives

Upon completion of the Level 1 evaluation process, the universe of alternatives was narrowed down to a focused list that meets the corridor's Goals and Objectives and contains no fatal flaws. These alternatives include the following (see **Figure 16**):

- Southern Arizona Future Connectivity Segment – Alternative C
- Phoenix Metropolitan Area Section – Alternatives G, H, I, LL, and MM
- Northern Arizona/Southern Nevada Section – Alternatives Q and UU
- Las Vegas Metropolitan Area Section – Alternatives Y, Z, AA, BB-QQ
- Northern Nevada Future Connectivity Segment – Alternatives FF and SS

A series of corridor refinements were conducted as a result of input received from the Core Agency Partners, Stakeholder Partners, and general public at the October 2013 project meetings. These include:

Phoenix Metropolitan Area Section

- Alternatives G and I – Proposed Hassayampa Freeway corridor in Pinal County
    - This corridor segment is derived from the MAG I-8 and I-10/Hidden Valley Transportation Framework Study, completed in 2009. Since the completion of the study, Pinal County has pursued an "East-West Corridor Study" to further define the specific alignment of that corridor. It has been determined that the proposed location of the Hassayampa Freeway in the vicinity of Casa Grande provides many challenges, including constraints related to drainageways, FAA-protected air space (Casa Grande Airport), and existing development. A more amenable location for the corridor has been recommended to follow Montgomery Road, connecting to I-8 and then I-10 (rather than meeting I-10 at Val Vista Road). The corridor linkage has been updated to reflect this.

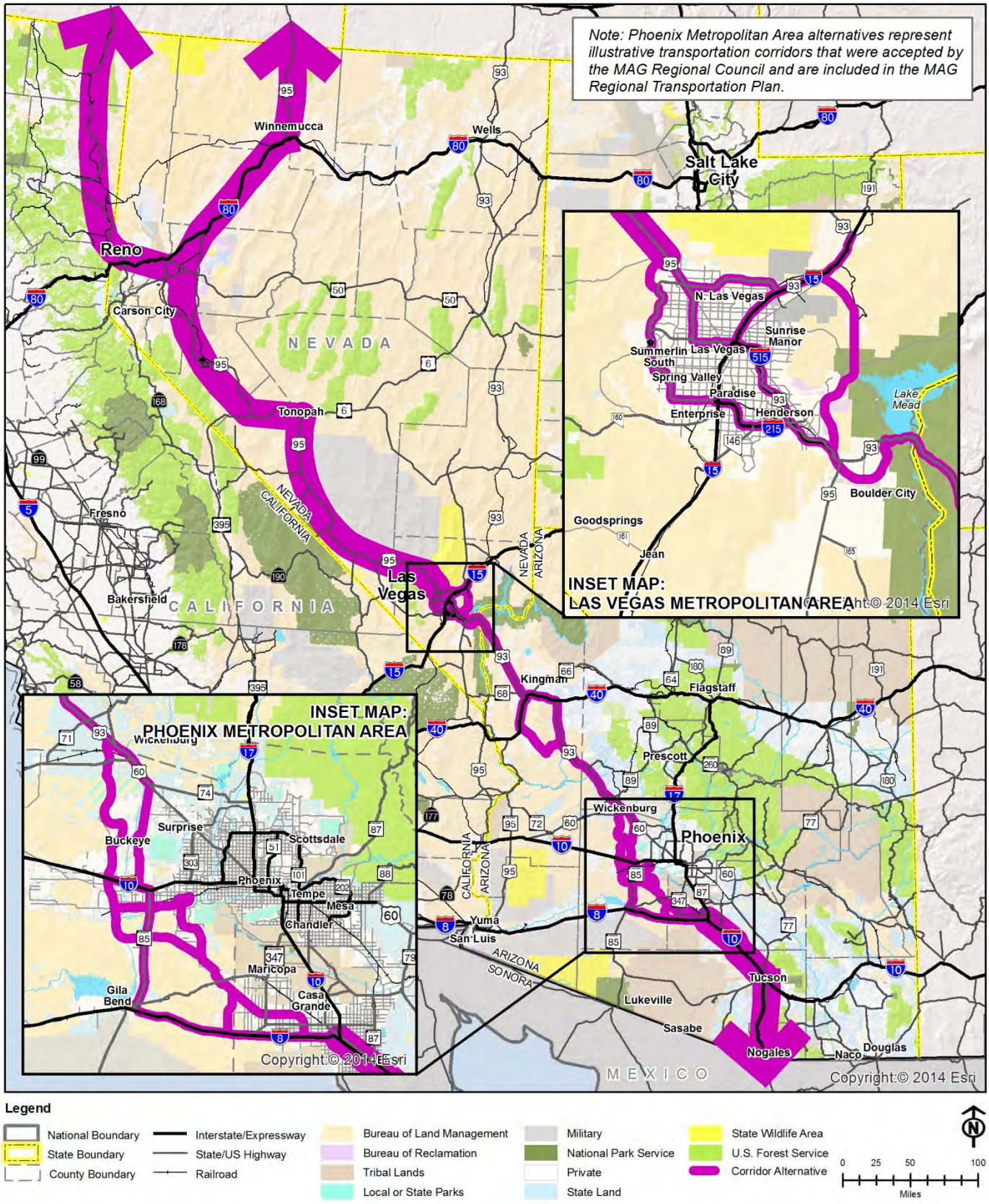
Northern Arizona/Southern Nevada Section

- Alternative UU – Chicken Springs Road corridor
    - Due to topographic constraints where Chicken Springs Road currently meets US-93, the proposed corridor has been realigned slightly to the south. Transition to a multimodal corridor will require reconstruction of the entire corridor however, and grades will need to be further evaluated to understand the best connection point.

Las Vegas Metropolitan Area Section

- Alternatives BB and QQ
    - The east segment of Alternative BB was merged with the west segment of Alternative QQ to create a hybrid corridor for the Level 2 analysis. While both alternatives were planned to move forward into the Level 2 analysis independently, stakeholders identified fatal flaws with the northern most segment of Alternative BB which traverses the Nellis Air Force Base small arms range as well as a National Monument. Representatives from Nellis Air Force Base requested corridor alterations to Alternative QQ to accommodate their accident protection zones (APZs), which could pose as a fatal flaw to siting a major transportation corridor. Alternatives BB and QQ were combined to create a cooperative corridor. Additionally, the eastern connection to I-15 was realigned slightly to put more distance between the corridor and the Nellis APZ.

Figure 16. Level 1 Recommended Alternatives



As shown in **Table 10**, the modifications to the Level 1 recommended alternatives resulted in revisions to the total number of recommended alternatives only for the Las Vegas Metropolitan Area. The modified alternatives are illustrated in **Figure 17** through **Figure 20**. The shaded aeas illustrate segments where the specific alignments may vary from what is shown on these maps. Other recommended alternatives with no corridor modifications remain as presented earlier in this document.

Table 10. Final Level 1 Recommended Alternatives

Segment	Initial Level 1 Recommended Alternatives	Final Level 1 Recommended Alternatives
Southern Arizona Future Connectivity Segment*	1 alternative	1 alternative
Phoenix Metropolitan Area Section	5 alternatives	5 alternatives
Northern Arizona/ Southern Nevada Section	2 alternatives	2 alternatives
Las Vegas Metropolitan Area Section	**5 alternatives**	**4 alternatives**
Northern Nevada Future Connectivity Segment*	2 alternatives	2 alternatives

**Alternatives recommended in Future Connectivity Areas will not undergo Level 2 analysis; the reasonable range of alternatives are recommended for further study in future work efforts.*

Figure 17. Phoenix Metropolitan Area – Alternative G

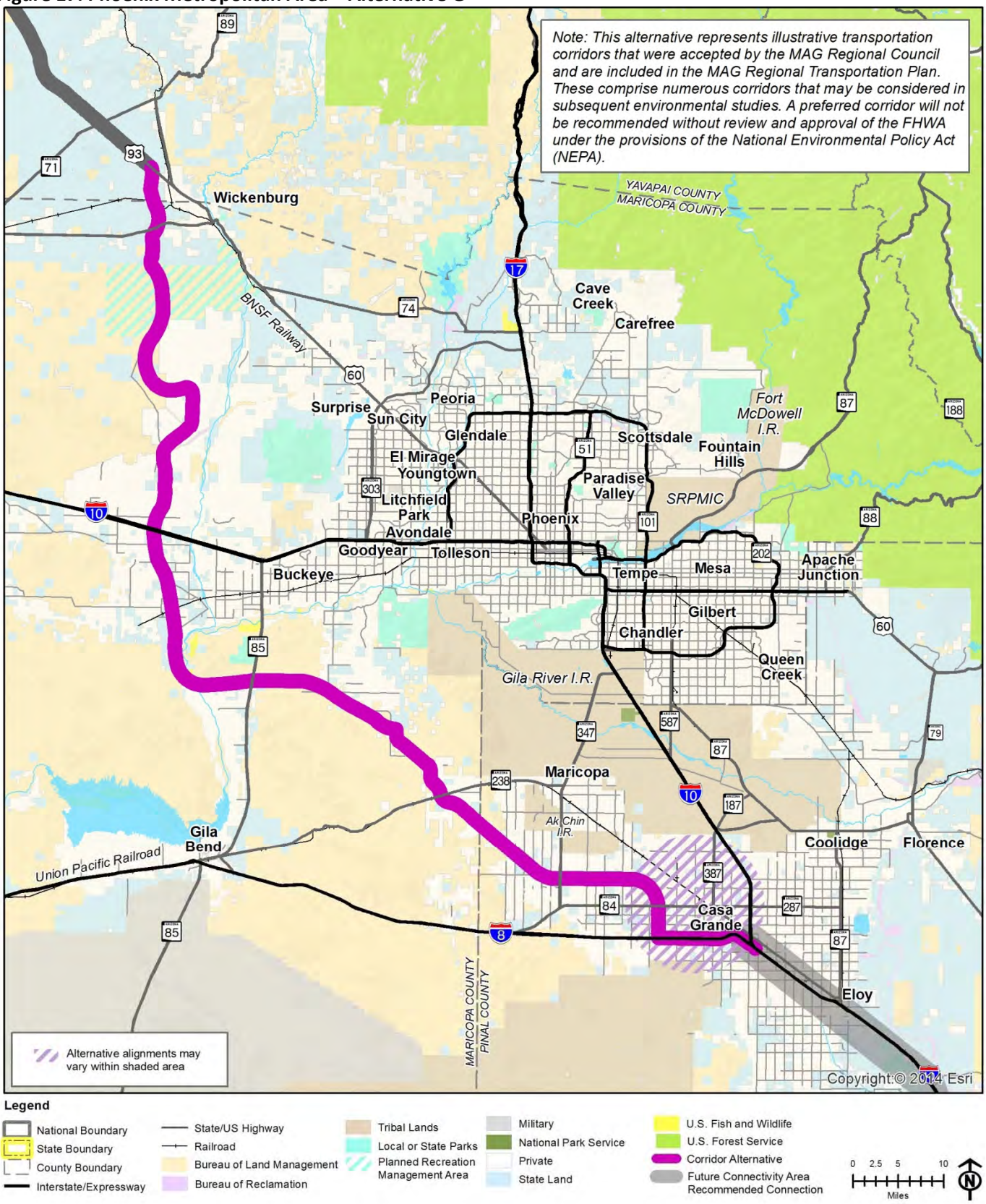


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Figure 18. Phoenix Metropolitan Area – Alternative I

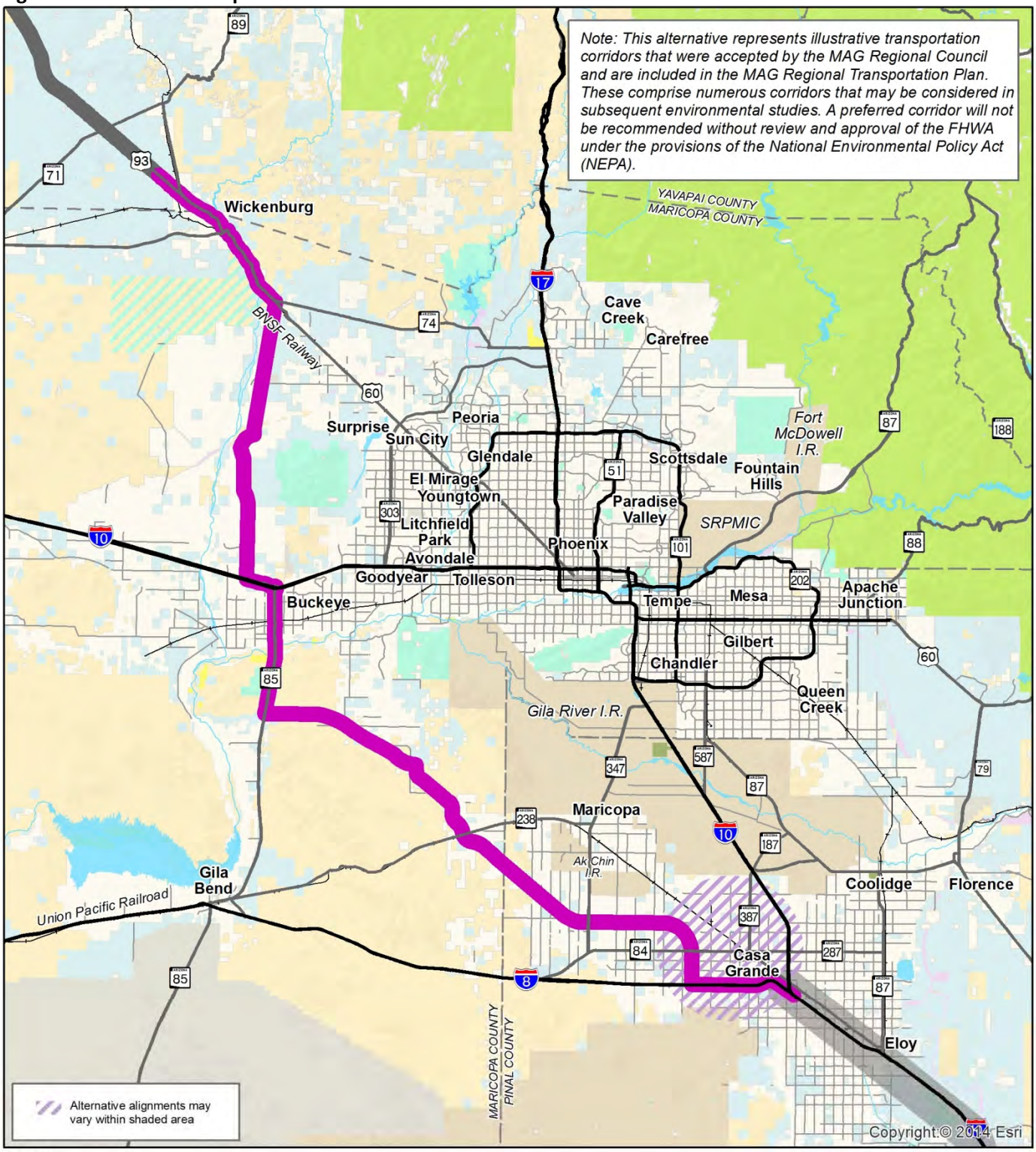

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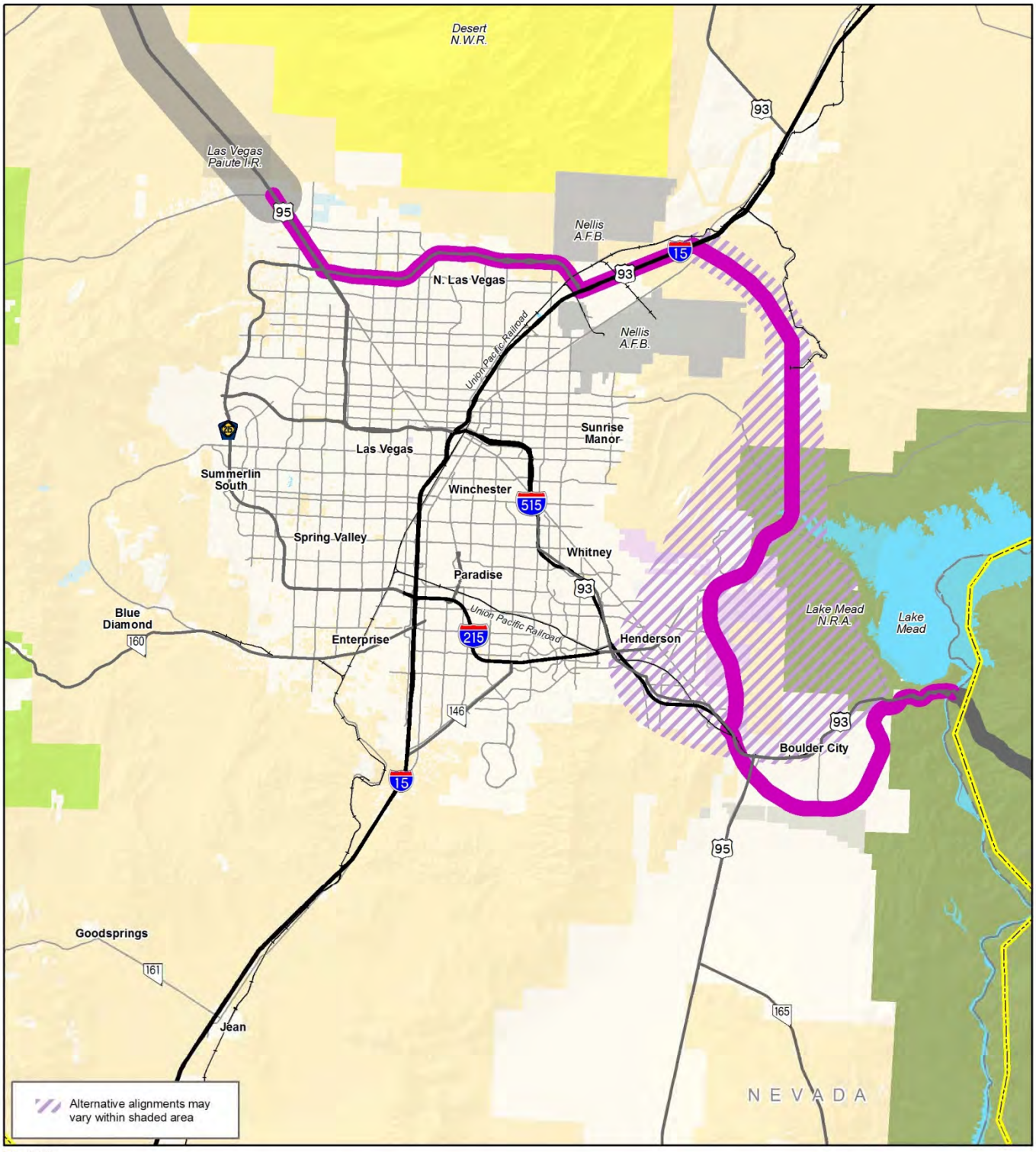
Figure 19. Northern Arizona/Southern Nevada – Alternative UU

ALL INFORMATION IS PRELIMINARY / SUBJECT TO REVISION

Figure 20. Las Vegas Metropolitan Area – Alternative BB/QQ



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Appendix A
Preliminary Goals and Objectives Statement

Interstate 11 and Intermountain West Corridor Study

Preliminary Goals and Objectives Statement

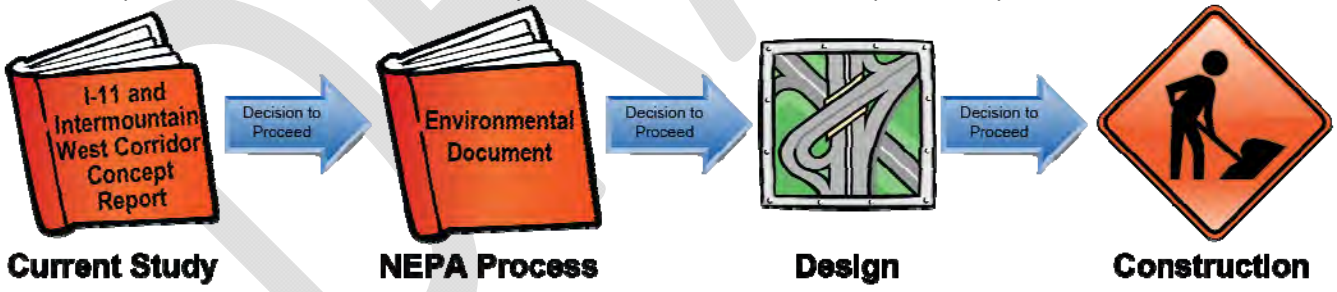
Background

Study Process

The Arizona Department of Transportation (ADOT) and Nevada DOT (NDOT), in consultation with the Federal Highway Administration (FHWA) and the Federal Railroad Administration (FRA), and in partnership with the Maricopa Association of Governments (MAG) and the Regional Transportation Commission of Southern Nevada (RTC) referred to as Core Agency Partners, are conducting the Interstate 11 (I-11) and Intermountain West Corridor Study. The study is the latest action in a decades-long effort by Arizona, Nevada, and other Intermountain West states and the federal government to develop a transportation corridor between the Rocky Mountains and the Cascade Range/Sierra Nevada Mountains linking Mexico and Canada. The 2-year study includes detailed corridor planning of a possible high-capacity transportation link connecting Phoenix and Las Vegas and high-level visioning for extending the corridor north of Las Vegas to Canada and south of Phoenix to Mexico.

This corridor study is a Planning and Environment Linkages (PEL) case study. The PEL process, which is supported by FHWA, is an integrated approach to transportation decision-making that takes into account environmental, community, and economic goals throughout the project life cycle, from the planning stage (current study) through development (National Environmental Policy Act [NEPA] phase), design, and construction/maintenance. PEL promotes greater communication within and among transportation and resource agencies, leading to improved decision-making and project development.[1] ADOT and NDOT have worked with FHWA to adapt the federal guidance into state-led processes, which include a series of checklists to be completed throughout a study's process.

For studies, analyses, or conclusions from the transportation planning process (such as the study at hand) to be used in a future NEPA phase, they must meet certain standards established by NEPA. This is because the information and products coming from the planning process must be sufficiently comprehensive that the federal government may reasonably rely upon them in its NEPA analysis and documentation. A sound planning process is a primary source of a future project purpose and need. It is through the planning process that state and local governments determine an area's transportation needs, which needs they wish to address, and in what period they wish to address them.



Indeed, that is what the law requires from the planning process and actually prevents projects that do not come from the planning process from going forward.[2]

This Goals and Objectives Statement is a first step in the development of this project's Purpose and Need Statement. It begins the process of gathering information to evaluate the need for the I-11 and Intermountain West Corridor that will be shared with agencies and other stakeholders participating in the study. The intent of the Goals and Objectives Statement for this study is to provide a big-picture explanation of the potential benefits of the I-11 and Intermountain West Corridor, particularly the segments in Arizona and Nevada. The input received from project stakeholders on the Goals and Objectives Statement will be used in the development of project's

[1] http://www.environment.fhwa.dot.gov/strmlng/newsletters/apr07nl.asp

[2] http://www.fhwa.dot.gov/hep/guidance/plannepalegal050222.cfm

Purpose and Need Statement as the study progresses. As each segment of the I-11 and Intermountain West Corridor moves from the planning stage to the NEPA phase, a separate Purpose and Need Statement will be developed that focuses on the unique transportation deficiencies in that segment that must be addressed.

The information in this Goals and Objectives Statement was obtained largely from the I-11 and Intermountain West Draft Corridor Study *Corridor Justification Report* (June 2013). The Draft *Corridor Justification Report* is available at http://i11study.com.

Study Area

Although the ultimate vision for the I-11 and Intermountain West Corridor is to link Mexico and Canada, ADOT and NDOT are evaluating and establishing feasible routes and transportation connections for the priority sections of the corridor from Phoenix and Las Vegas, with options for extensions to the north (to Canada) and south (to Mexico). Because of its length and varying characteristics, the study area is divided into the following five segments with three segments that will undergo detailed corridor planning, and two segments (north of the Las Vegas and south of Phoenix metropolitan areas) that will be evaluated using higher-level visioning for potential extensions (Figure 1):

- Southern Arizona Future Connectivity Segment: Mexico to Casa Grande
- Priority Corridor Section: Phoenix Metropolitan Area (Casa Grande to Wickenburg)
- Priority Corridor Section: Northern Arizona/Southern Nevada (Wickenburg to Las Vegas Metropolitan Area)
- Priority Corridor Section: Las Vegas Metropolitan Area
- Northern Nevada Future Connectivity Segment: Beyond Las Vegas Metropolitan Area

ADOT and NDOT will identify a single alignment between Phoenix and Las Vegas. The alignment will be a wide corridor that will be further refined in future phases. The study team will also conduct a higher-level corridor development process to identify potential corridor extension(s) north of Las Vegas and south of Phoenix metropolitan areas. At this planning phase, it is not a requirement to identify precise study termini or to prove that the termini are logical. That examination will take place segment by segment (or project by project), as parts of the I-11 and Intermountain West Corridor will be further examined during future NEPA phases.

Corridor-wide Goals and Objectives

This section discusses a range of factors relevant to the study area that describe state and federal actions that speak to the need for the I-11 and Intermountain West Corridor, as well as transportation problems the corridor has the potential to address. The factors, which are summarized in the bullet points below, are commonly used in FHWA environmental documents. More information can be found in FHWA's Technical Advisory T 6640.8A (*Guidance For Preparing and Processing Environmental and Section 4(f) Documents*). As the Purpose and Need Statement for this study is developed, the factors discussed below may be modified.

- **Legislation –** Is there a federal, state, or local governmental mandates for the action?
- **System Linkage –** Is the proposed project a "connecting link?" How does it fit in the transportation system?
- **Trade Corridor -** How will the proposed facility enhance the efficient movement of freight in the study corridor?
- **Modal Interrelationships –** How will the proposed facility interface with and serve to complement airports, rail and port facilities, mass transit services, etc.?
- **Capacity –** Is the capacity of the present facility inadequate for the present traffic? Projected traffic? What capacity is needed? What is the level(s) of service for existing and proposed facilities?
- **Economics –** Projected economic development/land use changes indicating the need to improve or add to the highway capacity

- **Project Status—**Project history, including actions taken to date, other agencies and governmental units involved, action spending, schedules, etc.

The goal of the proposed action is to establish a high-capacity, limited-access, transportation corridor connecting Mexican ports and manufacturing areas with Arizona's and Nevada's largest regional, national and international manufacturing and economic activity centers to support regional, national and international trade. For Arizona and Nevada, the goal of the proposed action is to assist in diversifying the states' economies to target industry clusters that rely heavily on interconnected and efficient transportation systems to transport goods and facilitate business attraction/retention. The need for the proposed action is based on a combination of factors that include legislation, system linkage, trade corridor, modal interrelationships, capacity/congestion, economics, and project status/public policy. The remainder of this document discusses those factors. Together, the goals and objectives shape the range of corridor alignments developed and evaluated for the project.

Legislation

As noted, various states in the Intermountain West and the federal government have a long history of activities working toward a Mexico-Canada transportation corridor. In the 1995 National Highway Systems Designation Act, Congress defined the CANAMEX Trade Corridor as High Priority Corridor 26 in the National Highway System (NHS) from Nogales, to Las Vegas, to Salt Lake City, to Idaho Falls, to Montana, to the Canadian border. High priority corridors are Congressionally-identified corridors of national significance that are eligible for special discretionary funding from the National Corridor Planning and Development program. The High Priority Corridor designation in the NHS recognizes the importance of the corridor to the nation's economy, defense, and mobility. The CANAMEX Corridor uses Interstate and state highway corridors and generally follows I-19 from Nogales to Tucson, I-10 from Tucson to Phoenix, US 93 from near Phoenix to Las Vegas, and I-15 from Las Vegas through Utah and Montana to the Canadian border. This is not a continuous route because of a gap in designation between I-10 and US 93 in the Phoenix area.

The CANAMEX Corridor Coalition is a group of public and private sector representatives selected by the five governors with the intention of strategically investing in infrastructure and technology to increase competitiveness in global trade, create jobs, and maximize economic potential in the five-state region. Subsequent to Congress' selection of the CANAMEX Trade Corridor as High Priority Corridor 26 in 1995, the current federal surface transportation law, Moving Ahead for Progress in the 21st Century (MAP-21), identified part of the CANAMEX Trade Corridor, the US 93 corridor between Wickenburg, Arizona, and Las Vegas, as an NHS High Priority Corridor designated as future Interstate Highway I-11 (Figure 2) (FHWA 2012). The I-11 designation not only recognizes the economic importance of a more efficient Las Vegas-Phoenix connection to the Southwest's economy, but also it reaffirms the importance to the national economy of the larger CANAMEX Trade Corridor, of which the US 93 corridor is a part. Although US 93 extends from just outside Phoenix to Montana, converting the Phoenix to Las Vegas segment to an Interstate would create a more regionally and nationally recognizable connection between those cities. The "Interstate brand" would enhance the ability of US 93 (the future I-11) to support and expand business and tourism in both states and increase its importance as a segment of the I-11 and Intermountain West Corridor route serving regional and national freight and tourism. While the conversion of US 93 to I-11 would require a separate NEPA action, the fact that the federal transportation law has selected US 93 as an Interstate candidate is recognition of the importance of this one key segment of the I-11 and Intermountain West Corridor to the entire corridor.

It should also be noted that Nevada also has High Priority Corridor 19 connecting Reno to Canada via US 395, and High Priority Corridor 68, the Washoe County corridor that connects Reno and Las Vegas using US 95/I-580. Another High Priority Corridor that could be important to this study is Corridor 43 which includes US 95 from the Idaho/Oregon state border to Canada.

System Linkage

By creating a continuous north-south transportation corridor between Mexico and Canada that intersects the existing network of east-west Interstates in Arizona and Nevada, the priority segments of the I-11 and Intermountain West Corridor would provide important connections in the regional transportation system. South

of Las Vegas, the proposed improvements would provide the missing link between Phoenix and Las Vegas. In Arizona, the proposed corridor would fill in the missing connection between I-10 and US 93, and in Nevada it would complete the planned Boulder City Bypass to provide a limited-access connection to Las Vegas. The new link between Phoenix and Las Vegas would address a major, longstanding deficit in the region's passenger and freight transportation network, allowing Phoenix and Las Vegas to emerge as major logistics centers in the Southwest. This region has weak ground-based transportation connectivity. There is no direct rail service between the two metropolitan areas, and minimal intercity bus service. Providing a safe and efficient connection between Phoenix and Las Vegas has the ability to prolong the need for additional airport expansions in Arizona and Nevada. More than 2.5 million air passengers traveled between Arizona and Nevada in 2011. The Phoenix to Las Vegas air corridor (256 miles) is ranked in the top 100 most traveled air corridors in the nation (Brookings Institution 2009). Many of the more than 2.5 million air passengers that traveled between Arizona and Nevada in 2011 might have used alternative modes of transportation if reliable and safe options existed.

Beyond its ability to strengthen ground-based transportation, the priority segments of the I-11 and Intermountain West Corridor could enhance the economies of Phoenix, Las Vegas and the region by also transporting electricity, fuel, water, commodities (via pipeline) and telecommunication data.

By improving the connection between Phoenix and Las Vegas, which would intersect I-8, I-10, I-40, and I-15 connecting Southern California, Arizona and Nevada, a critical leg of the I-11 and Intermountain West Corridor would be established, as would the missing third leg of what is known as the Southwest Triangle Megaregion (Figure 3). The emerging Southwest Triangle with a population approaching 30 million consists of three main centers of growth:

- Southern California, with more than 20 million residents from San Diego to Santa Barbara
- Arizona's Sun Corridor, which is comprised of the Phoenix, Tucson, Prescott, and Nogales metropolitan areas, with nearly 6 million people
- The Greater Mojave Region centered on Las Vegas with about 2.2 million people

Of the Sun Corridor's four metropolitan areas that extend into Mexico, the Phoenix metropolitan area (population 4,192,887) and the Tucson metropolitan area (population 980,263) are the centers of population. The Sun Corridor is one of the fastest growing in the country and is forecast to double in population by 2040. Completing the missing Phoenix-Las Vegas leg of the Southwest Triangle would strengthen the economic interdependencies the major regions in the Southwest Triangle share in sectors such as logistics, healthcare, entertainment, tourism, and technology. Las Vegas and the Sun Corridor are also actively engaged in wind and solar research and development, equipment manufacturing, and green energy production.

The I-11 and Intermountain West corridor would also provide connectivity to rural areas in both Arizona and Nevada, linking them to economic anchors, providing access to more jobs and needed services, and creating economic opportunities. Demands for freight mobility in rural communities are met by highway, rail, and air transportation, or a combination of these modes. This places a great premium on an efficient regional transportation system with a high level of intermodal connectivity.

North of Las Vegas, the proposed project would facilitate the connections envisioned in the CANAMEX Trade Corridor linking Nevada with other Intermountain West states and ultimately connecting to Canada. More information about the linkages created by the priority segments of the I-11 and Intermountain West Corridor is found in the section below.

Trade Corridor

Along with enhancing the mobility of people, enhancing mobility of freight in the region is an important benefit of the I-11 and Intermountain West Corridor. Arizona and Nevada have similar freight flow characteristics:

- Inbound freight is dominated by domestic freight, and a notable percentage of the domestic freight in both states is from California. Specifically, 90 percent of inbound freight to Arizona and 95 percent of inbound

freight to Nevada is domestic freight. In Arizona, 30 percent of domestic inbound freight is from California, while 40 percent of domestic inbound freight to Nevada is from California.

- In each state, there is a strong flow of outbound freight to California. Seventeen percent of total outflows by value from Arizona are destined for California, while 30 percent of total Nevada outflows are bound for California.
- Import freight (by value) is primarily from Mexico and Canada and transferred from California. In Arizona for the import freight, slightly more than 50 percent of imports by value were from Mexico, about 9 percent were from Canada, and slightly more than 20 percent of imported goods were transferred from California. In Nevada, about 40 percent of imported freight by value was from Mexico and Canada.
- Both states are expected to be net importers in the future. In Arizona, inbound freight was about 30 percent more than outbound freight by total value which reflects Arizona's continuing status as a net importer. Like Arizona, but even more pronounced, Nevada is a net importer, with its inbound freight almost doubling the outbound freight by total value.

Given Arizona's and Nevada's strong freight flows to California, Mexico and Canada, the I-11 and Intermountain West Corridor, which would complete the missing leg of the Southwest Triangle, is expected to increase the efficiency of freight movement to and from both states and to enhance the region's economy.

Moreover, development of the I-11 and Intermountain West Corridor positions Arizona and Nevada strategically to benefit from the growing land and water port activity in the region. As transportation costs continue to rise and firms increasingly value the speed to which they can deliver goods to the consumer market, the trend of near-shoring manufacturing facilities to Mexico can be expected to continue. Currently, the largest land ports of entry with Mexico are located in California and Texas, and those ports are well-connected to the National Highway System. However, these routes are growing increasingly congested, particularly in California as the Ports of Los Angeles and Long Beach handle the bulk of freight flows from East Asia which utilize portions of the same network as northbound flows from Mexico. Specifically, the major trade corridors I-5 and I-10 have grown more congested and less efficient, which will stimulate demand for additional north-south routes like the I-11 and Intermountain West Corridor to accommodate trade flows.

A reliable infrastructure investment in the Intermountain West has the potential to attract north-south freight flows both from California and Texas. These freight flows create a crossroad of opportunities for the region's economies, as the freight flows increase demand for commercial activity centers, distribution and logistics centers, and inland ports and reloading facilities.

Modal Interrelationships

The priority segments of the I-11 and Intermountain West Corridor have established multimodal connections and a commitment from Arizona and Nevada, at the planning level, to continue promoting multimodal opportunities in the study area. A small sample of multimodal connections in the study area includes:

- The BNSF Railroad has a north-south branch line that connects one of their major east-west lines in northern Arizona to the Mobest Yard, Glendale Intermodal Facility, and other transloading (rail-to-truck) facilities.
- Tucson, with its connections to I-10 and I-8, is an inland port rail facility that is also a foreign trade zone bonded warehouse district that serves NAFTA and CANAMEX Corridor markets. The UPRR operates a north-south branch route from Tucson to Nogales, the Nogales Branch, which connects to Ferrocarril Mexicano (Ferromex) in Mexico, heavily used for accessing numerous auto assembly plants and industries in Hermosillo, Mexico.
- Nevada has two freight intermodal facilities where trailer on flat car or container on flat car can be transferred between railcars and/or trucks, the UPRR Sparks Intermodal Facility in northern Nevada and the UPRR Las Vegas Intermodal Facility.

- Arizona and Nevada have airports with cargo facilities that are considered inland ports of entry. Complete customs services allow foreign goods to clear customs. These air cargo facilities have positioned Phoenix Sky Harbor and Las Vegas McCarran airports as major West Coast air-truck distribution centers.

Examples of transportation planning studies that have set the stage for development of a multimodal I-11 and Intermountain West Corridor include:

- **Statewide Transportation Plans.** bqAZ established the 40-year multimodal transportation vision for the State of Arizona. Connecting Nevada is setting the same type of vision for Nevada. Both states include the proposed Phoenix-Las Vegas corridor as a critical element of their transportation systems and both envision the corridor to include multimodal facilities.
- **State Rail Plans in Nevada and Arizona** recommend similar outcomes, including passenger rail systems that offer a reliable alternative to automobile and air travel, as well as economically competitive freight transportation that accommodates interstate and intrastate shipping modes, helping to relieve highway congestion and improve traveler safety.
- **Passenger Rail.** ADOT is planning for intercity/commuter passenger rail service between Phoenix and Tucson. The XpressWest (formerly known as the DesertXpress) is a planned high-speed rail connection between the Las Vegas and Los Angeles metropolitan areas. The Federal Railroad Administration is completing the Southwest Rail Study to establish a near-term vision for higher-speed passenger rail in the Southwest. A passenger rail connection between Las Vegas and Phoenix is a key recommendation under study.
- **International Border Crossings.** ADOT is completing the Arizona-Sonora Border Master Plan, recommending transportation solutions to increase border crossing efficiency and safety. This will be done in coordination with the federal governments of the U.S. and Mexico, which are determining a logical location for a future freight rail crossing between Baja California and the Southwest U.S.

The proposed north-south transportation corridor connecting Mexico, Phoenix and Las Vegas would enhance highway connections with ports, rail intermodal facilities, and the region's airports. Possibly the most notable intermodal improvement that could result from the proposed improvements between Phoenix and Las Vegas would be the region's ability to efficiently accommodate freight from the Ports of Los Angeles and Long Beach by rail and/or highway. As noted, the improved Phoenix-Las Vegas corridor, with its connections to I-8 and I-10, would provide the missing leg for the Southwest Triangle connecting the I-11 and Intermountain West Corridor with Southern California. The Southwest Triangle is on a trajectory to be the only American region that maintains links to the world's fastest emerging economies in Asia (through the Ports of Los Angeles and Long Beach) and Latin America (through Arizona's connection to Mexico). International trade through Los Angeles and Long Beach is the largest in the country, with the Port of Long Beach alone handling more than $140 billion worth of goods each year (POLB 2013). Most goods from the Ports of Los Angeles and Long Beach destined for cities to the north and east are shipped on congested California freeways, including I-5. Shifting trade trends from Asia to Latin America may increase demand for corridors like the I-11 and Intermountain West Corridor that not only have the ability to provide efficient north-south freight movement, but also provide connections to east-west Interstates serving markets east of the Intermountain West. The West, in general, and the Southwest Triangle are underserved by efficient north-south capacity.

About half of the bilateral trade flows by value and volume through Arizona's border crossings with Mexico were multimodal, and by 2040, imports from Mexico through Arizona are expected to more than double to more than 13.4 million tons (FHWA 2012). In spite of that, the lack of connections and transportation infrastructure linking Mexico, Phoenix and Las Vegas and the Southwest Triangle, in general, make freight flows from and to Latin American/Mexico more attractive through Texas border crossings than through Arizona border crossings such as Nogales. Texas trade with Mexico is roughly 10 times greater than that between Arizona and Mexico. Less than 10 percent of land freight between the U.S. and Mexico flowed through Arizona, and approximately 90 percent of goods that flowed through Arizona crossed at Nogales. Providing an alternate north-south connection in the western U.S. is crucial to ensure timely, efficient, and competitive trade. The I-11 and Intermountain West

Corridor provides an opportunity to fill this transportation gap in terms of efficient high-speed, domestic north-south travel. It would also provide multimodal linkages between existing and future foreign ports and critical east-west, high-speed transportation corridors in the U.S., the junctions of which can provide significant regional economic development opportunities.

Capacity/Congestion

As noted in the *Corridor Justification Report*, congestion has impacts on commuters and truckers, affecting businesses, suppliers, manufacturers, and the overall economy. If congestion affects truck productivity and delivery times, costs are passed on to consumers, affecting areas far from the region where the congestion occurs. Congestion can result in unreliable trip times and missed deliveries. If the infrastructure supporting freight traffic is reliable, manufacturing and retail firms can carry fewer inventories because they can rely on goods being delivered on time.

In 2012, the U.S. Conference of Mayors published a report on the outlook of U.S. metropolitan economies and the critical role of transportation infrastructure. The metropolitan areas of Las Vegas and Phoenix rank in the top 50 cities for congestion costs per auto commuter, with Las Vegas ranked 41st and Phoenix 16th. In 2010, the annual congestion cost per auto commuter was $532 in Las Vegas and $821 in Phoenix. Focusing on specific congestion locations, five locations in Arizona and Nevada appear in FHWA's annual report on congestion at freight-significant highway locations. The majority of locations currently monitored are urban Interstate interchanges, and they are ranked according to congestion's impact on freight (American Transportation Research Institute 2011):

- I-15 at I-515 in Las Vegas
- I-10 at I-19 in Tucson
- I-10 at SR 51/SR 202 in Phoenix
- I-17 at I-40 in Flagstaff
- I-80 at US 395 in Reno

Currently, there is congestion through the project area's urban areas (Tucson, Phoenix, Las Vegas, and Reno) and the segment of US 93 near Wickenburg is approaching capacity. Figure 4 shows existing congestion on the major highways in Arizona and Nevada.

While existing highly congested areas in the Arizona and Nevada study area tend to be found along segments of urban Interstates and associated interchanges, traffic modeling suggests that, without improvements such as the I-11 and Intermountain West Corridor, higher congestion levels would also be experienced on rural highway segments. As part of the *Corridor Justification Report*, the project team went beyond the traditional comparison of existing roadway capacity to future traffic volumes in determining congestion levels. The project team evaluated potential congestion levels in the project area associated with three trade/economic scenarios. These scenarios are based on important current trends that, should they continue, will alter the needs for transportation, levels of trade, and overall development in the region. Each scenario was defined by comparison to a baseline scenario, which assumes that trade and freight flows, both international and domestic, grow as forecast by the USDOT. To assess the impact of each trade scenario on regional highway congestion, truck traffic volumes for each scenario were compared to the forecast values for the Baseline Scenario. For each route considered, the baseline traffic volumes were determined by:

- Adding the change in average annual daily traffic for the scenario using the scenario population growth rate
- Computing the scenario truck volume increment by using the scenario percentage increase of truck origins or destinations in the study area
- Adding the scenario truck volume increment to the baseline value on each segment evaluated.

This analysis provided an estimated average annual daily traffic volume for each scenario for each roadway segment analyzed. Then, the level of service (LOS) was determined using the thresholds for rural routes. LOS, which is a measure of a highway's ability to handle traffic demand, is influenced by factors such as average daily traffic volumes, truck percentages and number of driving lanes. LOS ranges from "A" to "F" in order of decreasing operational quality. The percentage of these segments demonstrating congestion (LOS D to F) was then determined. The baseline and three trade scenarios are described below.

- **Baseline Scenario** reflects a continuation of recent background growth in the region and of current trends, without major structural changes. It is presented as the highly probable economic future of the region, in the absence of significant changes from the recent past. It assumes that transport and trade continue as forecast. This includes international trade forecasts, continuation of the trends in balance of trade, continuation of the distribution of trade between major trading partners, and continuation of existing trade route distribution.
- **Growth in Asia-Pacific Trade Scenario** is based on the continued growth of the trade flows with Asia that have characterized West Coast trade during recent decades. This scenario is predicated on the continued growth in U.S. imports of a wide array of low-cost consumer goods from China and other low-cost Asian sources. It assumes that trends in manufacturing in the Asia-Pacific region continue and that the U.S. continues to receive a growing volume of goods from Asia.
- **Expanded Trade with Mexico Scenario** assumes that Asia-Pacific manufacturing for the U.S. market flattens, and that significant production growth occurs in Mexico. The trend of moving manufactured goods production to Mexico, much previously done in Asia, is known as nearshoring. Since the enactment of NAFTA, bilateral trade between Mexico and the U.S. has grown exponentially.
- **Fully Realized State Economic Development Plans Scenario** assumes that Arizona and Nevada are able to realize their major economic development goals, including growing their economies through an industry cluster-based strategy and increasing trade with Mexico and Canada.

Each scenario could make a major contribution to the economic well-being of the region's residents, bringing up to 500,000 people and 240,000 employees to the region. Table 1 summarizes the modeled increases in economic output, population, employment, and congested highways.

TABLE 1
Key Modeled Results Corresponding to Each Trade Scenario

Scenario	Economic Output ($ billions)	Population Increase (high range)	Employment Increase (high range)	Unacceptably Congested Highways (%)
Baseline	911	15,078,114 (base)	6,934,707 (base)	28 (base)
Growth in Asia-Pacific Trade	924 to 937	320,574 (2.1%)	147,342 (2.1%)	34
Expanded Trade with Mexico	928 to 953	521,435 (3.5%)	239,464 (3.5%)	Up to 43
Fully Realized State Economic Development Plans	919 to 927	186,587 (1.2%)	85,700 (1.2%)	34

The range of current and anticipated trends in U.S. trade, together with the natural geographic advantages of the Intermountain West region, suggests that under the entire range of alternative trade scenarios considered, the region will experience significant sustained growth in the regional economy, accompanied by corresponding growth in travel demand. The level of highway congestion associated with some of these economic futures suggests that additional investment in transportation infrastructure is likely required to realize the full extent of these benefits. The percentage of unacceptably congested highways ranges from 28 percent with the Baseline Scenario to up to 43 percent with the Expanded Trade with Mexico Scenario (Figure 5). Note that in each trade scenario, California's

primary north-south route, I-5, and the primary connection to Nevada, I-15, are highly congested. By strategically enhancing regional transportation infrastructure, particularly efficient north-south routes, the I-11 and Intermountain West Corridor, with its connections to east-west Interstates in Arizona, Nevada and throughout the Intermountain West, has the opportunity to attract freight shipments from less efficient travel corridors and experience economic growth, particularly at the transportation hubs that develop around the intersection of the north-south and east-west routes.

Economics

The population growth of the Intermountain West states—particularly Arizona and Nevada—is outpacing growth of the U.S. and the capacity of the regional transportation network. In addition, regional economic development trends are creating demands for new transportation links. Between 2000 and 2010, the rate of growth for the Intermountain West states was 19.6 percent—double that of the U.S. as a whole, which grew at a rate of 9.8 percent. According to the U.S. Census Bureau, between 2010 and 2030, the Intermountain West is projected to grow by 28.5 percent, to 32.1 million people, which exceeds the forecasted U.S. growth rate of 17.7 percent over the same time frame. By the middle of the century, the Intermountain West's population is expected to nearly double from 22 million to 40 million (Arizona Republic, 2010). Of the Intermountain West states, the highest growth rate is expected in Arizona. In the next 30 years, the Conference of Mayors projects that the Phoenix metropolitan area will see the greatest proportionate population growth in the country – with an anticipated 88 percent increase from 2012 to 2042. Las Vegas also ranks high, with a 67 percent increase expected (IHS Global Insight 2012).

Economic growth is strongly and positively correlated with overall transportation demand, both for freight and personal vehicles. Development trends in Arizona and Nevada indicate that the economies of both states are expected to continue to outpace the U.S. average. Gross domestic product (GDP) is a principal indicator of the health of an economy or industry. GDP measures the value of final goods and services produced during a given period. According to the U.S. Bureau of Economic Analysis, the GDP for Arizona is $258.4 million and for Nevada is $130.3 million. The Phoenix ($194.7 million) and Las Vegas ($92.7 million) metropolitan areas are the largest contributors to each state's economy, followed by Tucson and Reno. An Interstate highway (I-10) connects Tucson and Phoenix, yet there is not a continuous high-speed limited access corridor between Phoenix and Las Vegas.

Fifty-one percent of employees in Nevada and 43 percent of employees in Arizona work in industries that depend on a reliable regional transportation network for transporting goods and tourists. While manufacturing jobs represent only 5.0 percent of all jobs in Arizona and 2.8 percent of all jobs in Nevada, the growth of manufacturing in both states exceeded the U.S. GDP of 1.5 percent, with Arizona at 8.9 percent and Nevada at 3.7 percent. When examining employment projections by industry, Arizona is expected to see gains in transportation and logistics, manufacturing, healthcare, and professional services. Likewise, Nevada is projecting job growth in mining, transportation and logistics, and manufacturing—most of which rely on an efficient regional transportation network.

To enhance the region's competitiveness, a robust transportation system is needed to facilitate the growth of business and its attraction to the area and to offer a means to connect to other markets. Industry targets such as aerospace, aviation, and defense; advanced manufacturing; mining, materials, and manufacturing; transportation and logistics; and tourism, gaming, and entertainment are critically dependent upon their supply chain and the regional movement of people and finished goods. Both states recognize that to be successful in their economic development endeavors, many simultaneous strategies−including developing the transportation systems that these industry clusters require−must be implemented.

Project Status/Public Policy

From the CANAMEX Trade Corridor designation in the 1990s through ADOT's current capacity expansion project on US 93 between I-40/US 93 Interchange in Flagstaff and Vista Royale in Wickenburg, numerous studies and construction projects have furthered the development of the I-11 and Intermountain West Corridor. Critical to the creation of the priority segments of the I-11 and Intermountain West Corridor has been Nevada's and Arizona's cooperation since the early 1990s, planning for improved access from Las Vegas south to Phoenix and a potential

northern extension to Reno, creating a better connected Intermountain West with greater economic opportunities. Listed below are brief descriptions of key ADOT and NDOT activities that will lead to a limited access, 4-lane divided roadway between Phoenix and Las Vegas. Appendix A (Past Planning Studies and Strategies) of the May 2013 *Corridor Justification Report* lists the full range of construction projects, multi-state planning studies and statewide planning studies conducted in Arizona and Nevada that have a connection to the I-11 and Intermountain West Corridor. The entire Draft *Corridor Justification Report* is attached as an appendix to this document.

Contributing Arizona Improvements

ADOT has invested nearly $500,000,000 to upgrade the US 93 corridor to a 4-lane divided highway, seeking to expand the 200-mile stretch between Wickenburg and the Hoover Dam to a safer and more efficient facility for commercial trucks and passenger vehicles. The segment between the Mike O'Callaghan–Pat Tillman Memorial Bridge and I-40 is complete, as are many segment improvements south of I-40. Only 5 highway improvement projects remain, leaving about 45 miles of highway to be widened to at least 4 lanes.

In Arizona's most recent update of the *Long Range Transportation Plan* (2011), the Hassayampa Freeway, from I-10 to US 93, is designated as an "example of a significant transportation infrastructure project," a facility that could qualify as a new roadway under the recommended funding scheme. Completion of the Hassayampa Freeway would close the I-10 to US 93 gap in the CANAMEX Trade Corridor, creating a continuous route.

Several ideas have been advanced for a southern extension to Mexico, including using the I-10 and I-19 corridors, although many capacity and environmental constraints are present in the Tucson metropolitan area and near the Arizona-Sonora border. Passenger rail and freight rail have been recommended as components of the new corridor, either within the same right-of-way, closely parallel, or diverging to connect to alternate destinations (for example, rail and highway may cross the international border at different locations).

Additionally, the *Arizona-Sonora Border Master Plan*, led by ADOT and in coordination with the Arizona-Mexico Commission, is studying the border transportation network to improve connectivity and efficiency.

Contributing Nevada Improvements

NDOT is continuing the Connecting Nevada process, a statewide, long-range transportation plan that will guide Nevada's transportation investments for the next 40 years and establish policies for preserving transportation corridors. This effort initiated multimodal transportation discussions among stakeholders and could be the catalyst to unite I-15, I-80, and the proposed I-11 into one transportation triangle serving the state.

NDOT recently completed a multi-state planning effort for the I-15 corridor. The *I-15 Corridor System Master Plan* defines a long-range, multimodal transportation system vision, governance, and implementation strategy, and provides a prioritized program of projects needed to serve all modes of transportation. Defining that vision involved a unique regional partnership among government and private interests in Nevada, California, Arizona, and Utah–the I-15 Mobility Alliance.

NDOT and ADOT worked together to construct the Hoover Dam Bypass and to conduct US 93 corridor improvements on both sides of the bridge. When the Mike O'Callaghan–Pat Tillman Memorial Bridge opened to traffic in late 2010, it attracted many vehicles that had previously avoided, or had been prohibited from, crossing over the Hoover Dam. This resulted in significant congestion through Boulder City, especially on weekends when tourist travel to Las Vegas peaks. NDOT fast-tracked the design and construction of a project to widen US 93 to 2 lanes in each direction, including some operational and safety improvements, between the bridge and Boulder City. The ultimate solution in this area is a new alignment around Boulder City (referred to as the Boulder City Bypass), connecting US 95 to the Hoover Dam Bypass. The Boulder City Bypass Phases 1 and 2 (Figure 6) are two segments of a future 4-lane limited access freeway that will reduce traffic congestion along US 93 and intersecting streets in Boulder City, Nevada.

Phase 1 is roughly 3 miles long and will extend from I-515 at Foothills Drive to US 95. Phase 1 is being developed by the NDOT. Phase 2 is roughly 12 miles long and will extend from US 95 to the recently completed Nevada Interchange at SR 172 (the road to Hoover Dam). Phase 2 is being developed by the RTC.

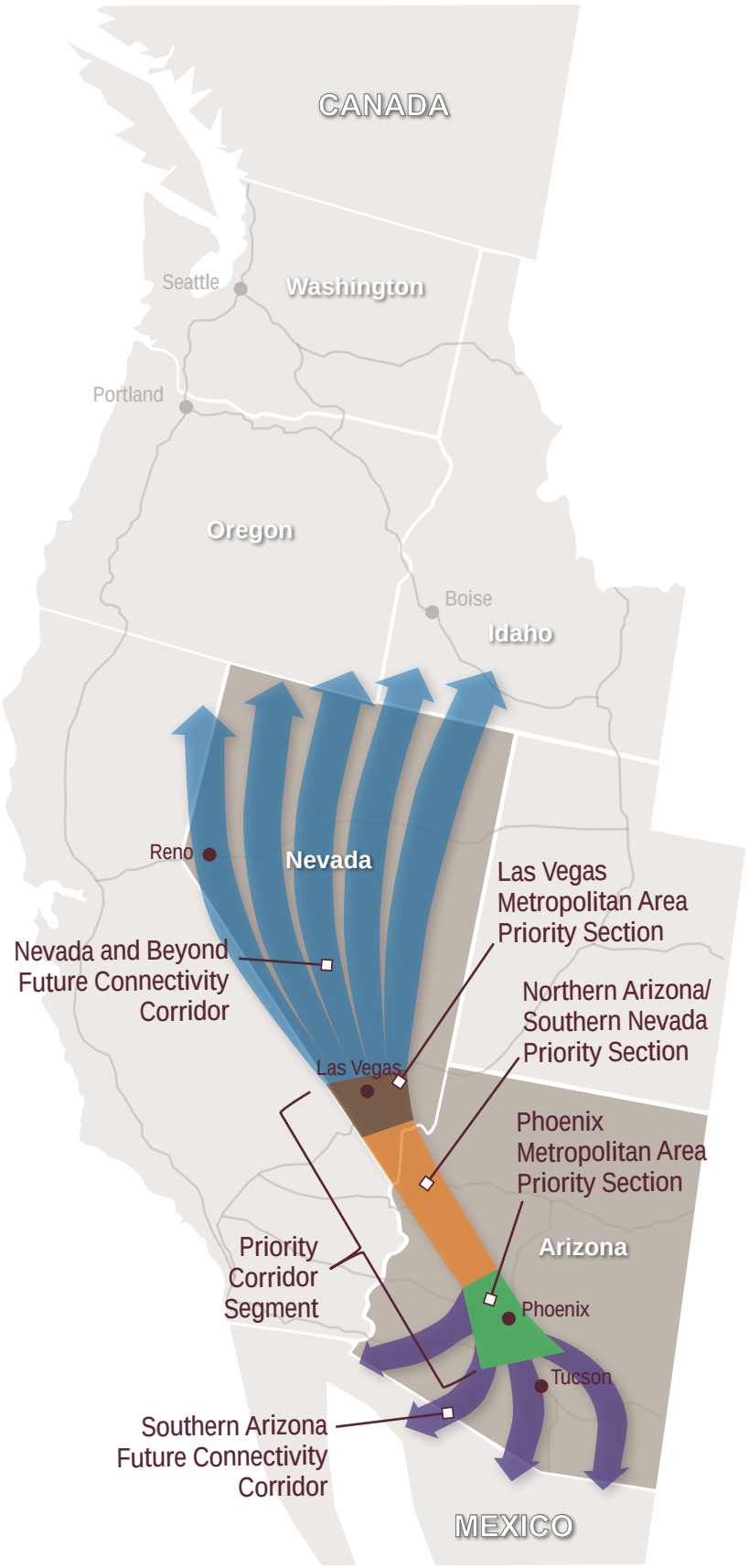


Figure 1
Study Area Segments

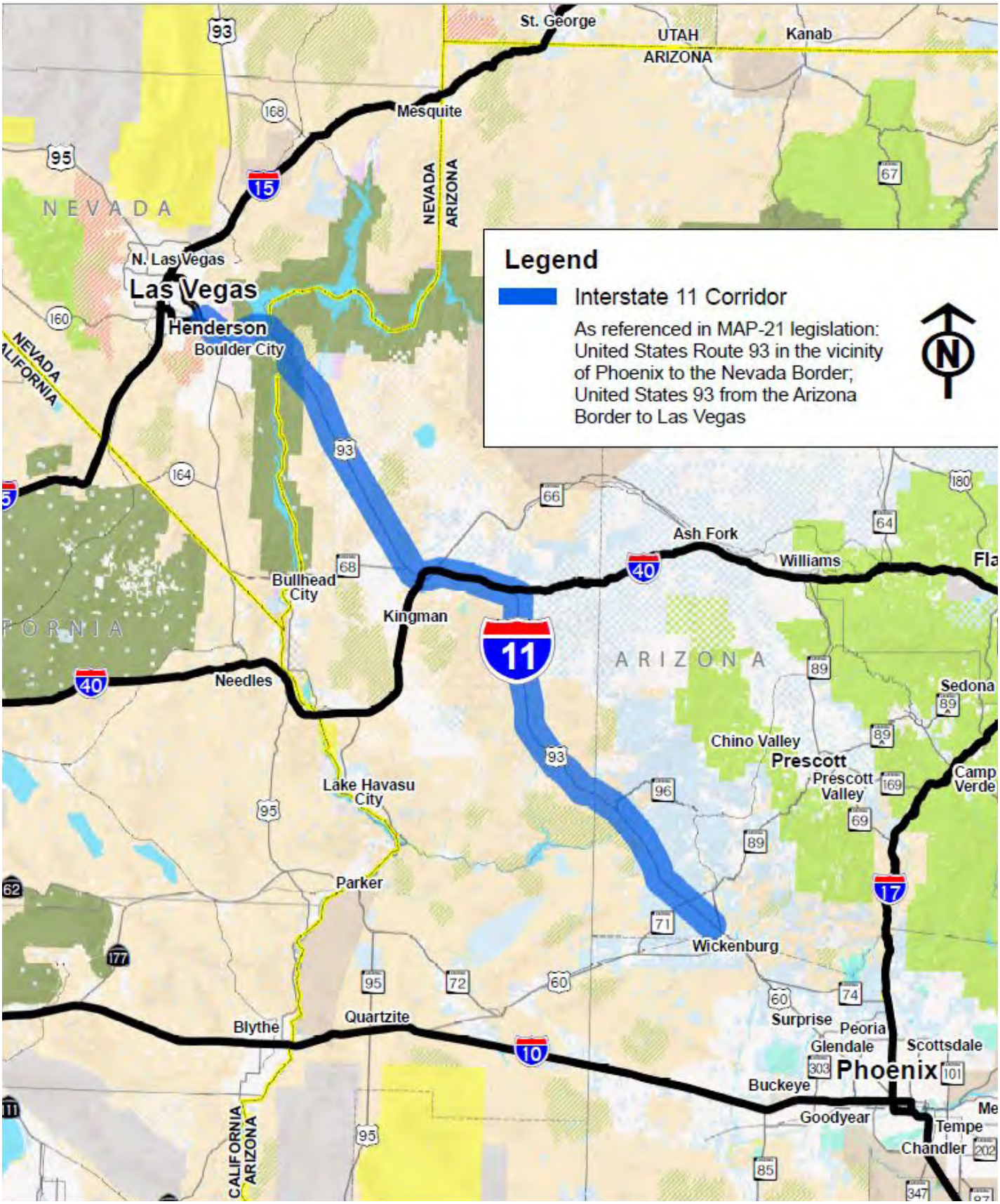


Figure 2
I-11 Corridor as Identified in MAP-21 Legislation

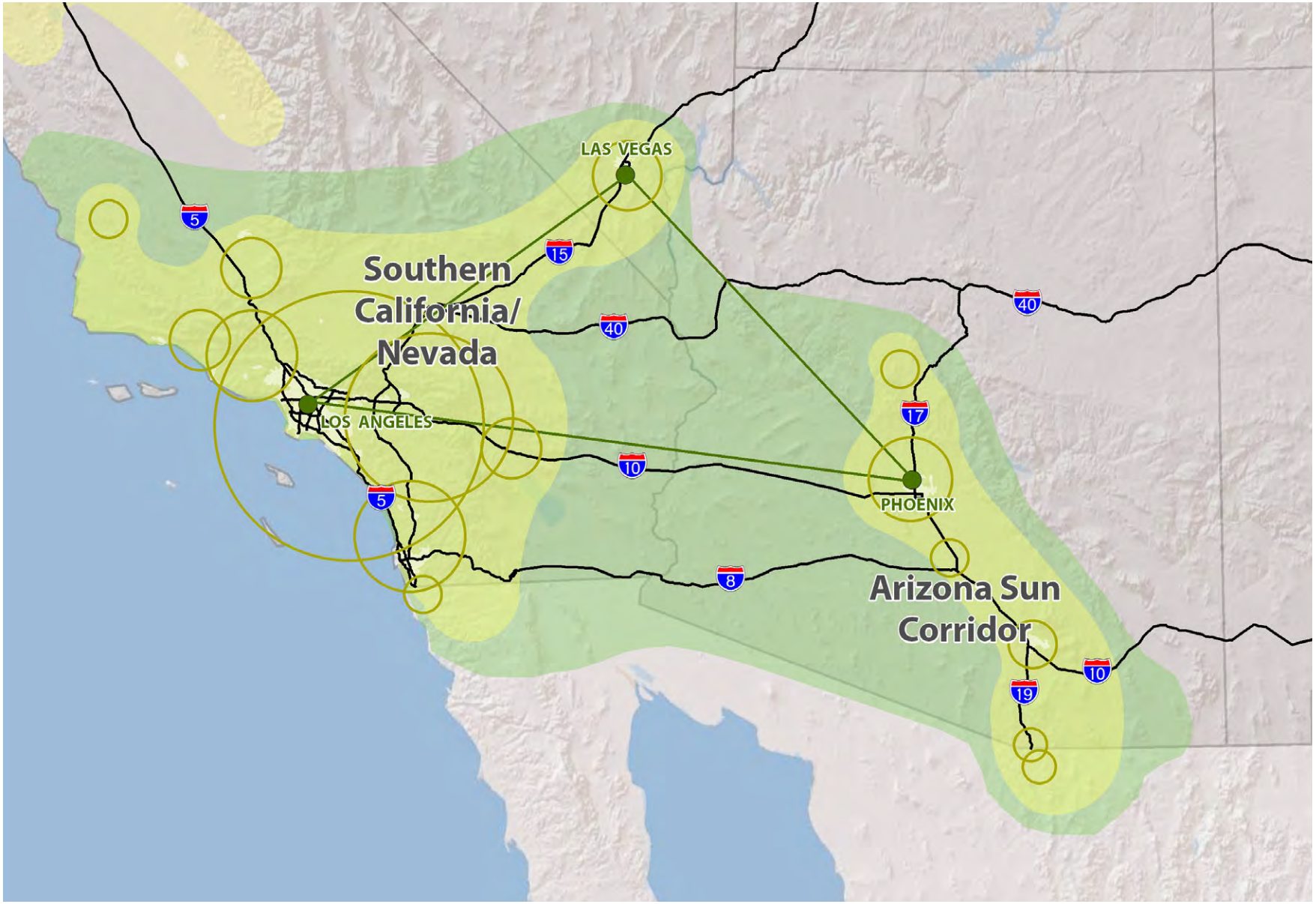


Figure 3
The Southwest Triangle: Expanding Megapolitans

Legend

- State Boundary
- Interstate/Expressway
- State/US Highway

Level of Service

- LOS C or better
- LOS D
- LOS E
- LOS F

Notes:

1. LOS in rural areas is based on Generalized Annual Average Daily Volumes from Florida's 2012 FDOT Quality/Level of Service Handbook Tables
2. Existing LOS shown for urbanized areas are estimated using existing traffic counts and existing number of thru lanes
3. Future LOS shown for urbanized areas are from 2030 Nevada Statewide Travel Demand Model and MAG Projections
4. LOS for US 395 corridor, from SR 178 to California/Nevada State Line and California/Nevada State Line to California/Oregon State Line are based on estimated AADT that are based on future growth of affected counties
5. Future LOS in rural areas is based on existing capacity and future traffic projections
6. State/US highways are only illustrated for those showing LOS

Figure 4
Existing Congestion on Major Highways in Arizona and Nevada

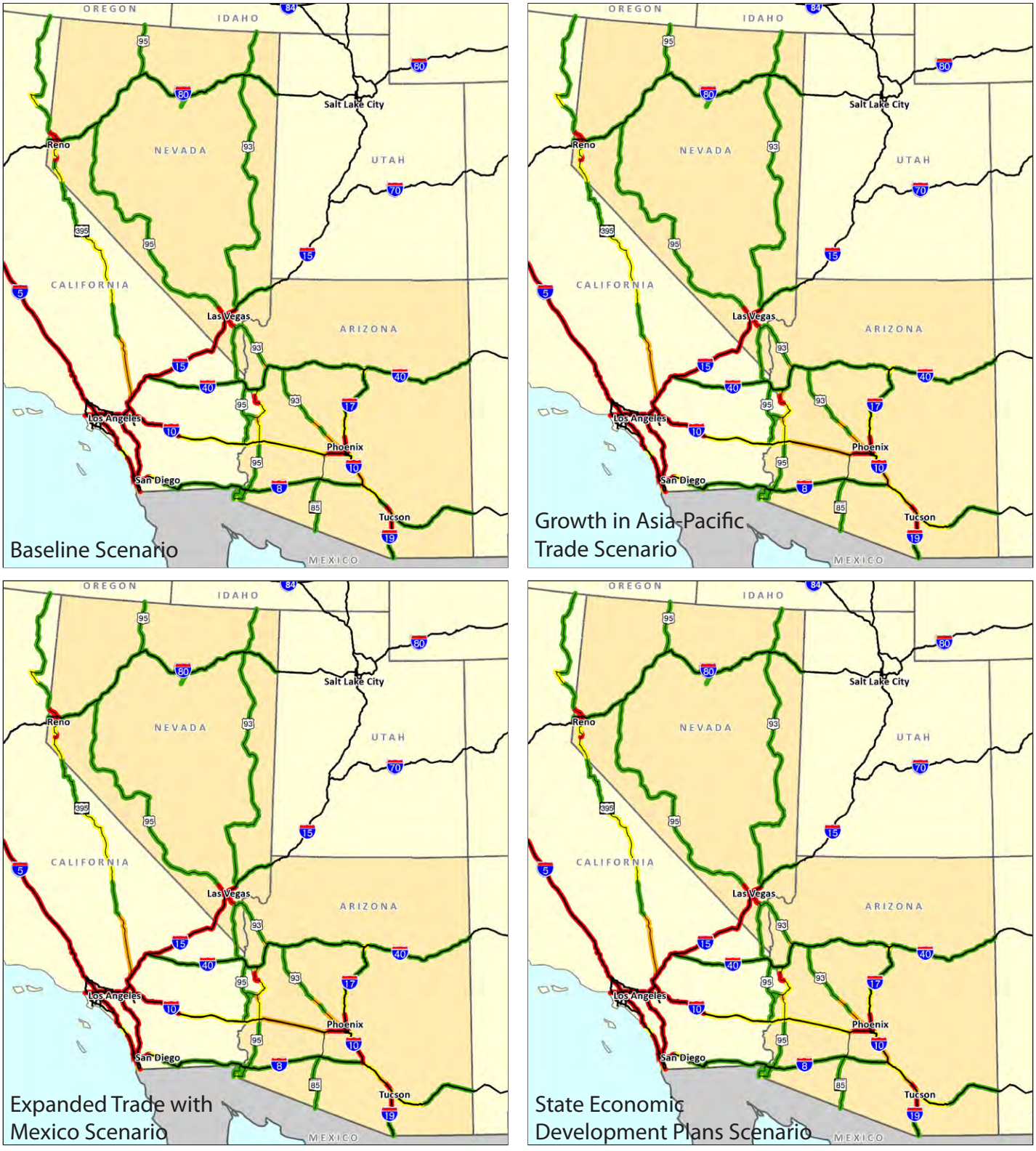
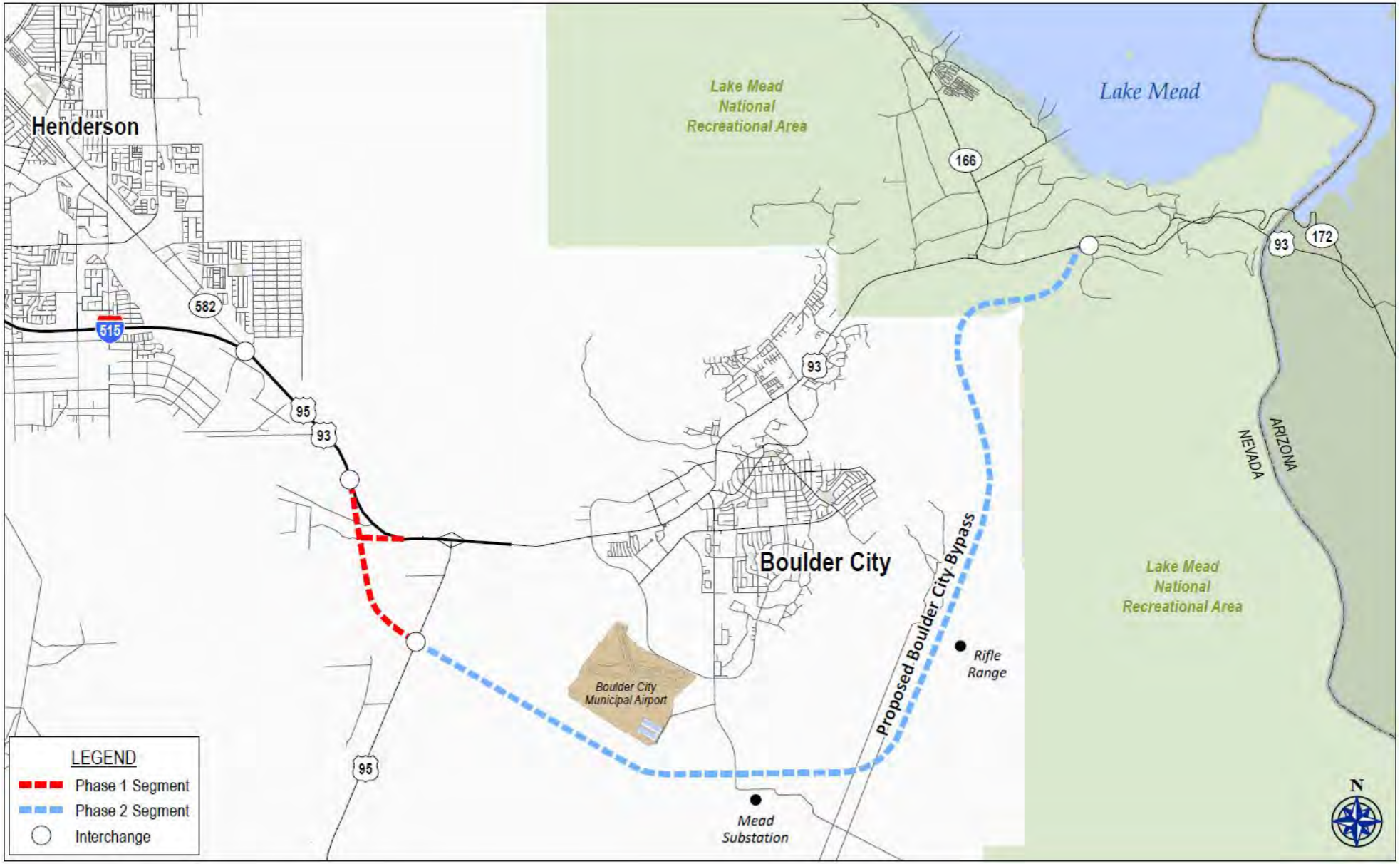


Figure 5
Regional Highway Congestion Levels With Four Trade Scenarios



Source: RTC of Southern Nevada, Boulder City Bypass Sketch Level Traffic and Revenue Study, CDM Smith, November 2012

Figure 6
Boulder City Bypass Phases 1 and 2

Appendix B
Arizona Game and Fish Department Level 1 Analysis for Interstate 11 and Intermountain West Corridor in Arizona

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
5000 W. CAREFREE HIGHWAY
PHOENIX, AZ 85086-5000
(602) 942-3000 • WWW.AZGFD.GOV

September 13, 2013

Michael Kies, P.E.
Project Manager
Arizona Department of Transportation
206 S. 17th Avenue
Phoenix, AZ 85007

RE: Arizona Game and Fish Department Level 1 Analysis for Interstate 11 and Intermountain West Corridor in Arizona

Dear Mr. Kies:

The Arizona Game and Fish Department (AGFD) appreciates the opportunity to partner with the Arizona Department of Transportation (ADOT) on the Interstate 11 and Intermountain West Corridor Study (Study). AGFD's analysis and input early in the study process will assist ADOT in analyzing the potential impacts to wildlife and wildlife-dependent recreation from the alternatives under consideration. The result can assist ADOT in designing a north-south multi-modal transportation corridor that minimizes impacts to Arizona's environment and natural resources.

AGFD understands that the first goal of the Level 1 Analysis is to reduce the number of alternatives by identifying those with fatal flaws or significant issues that may be incompatible with the objectives of the Study in Priority Sections 1, 2, 3 and Southern Arizona. The second goal is to identify promising candidates for long term connections in Priority Section 1 (Phoenix). We are restricting our comments to segments and alternatives located in Arizona.

AGFD has identified three segments with fatal flaws and six segments with significant concerns.

Segment 7, Alternative B bisects Buenos Aires National Wildlife Refuge. The Department believes that an interstate/multi-modal corridor is incompatible with a wildlife refuge. We also note that Alternative B has the potential to impact the Tucson Mitigation Corridor. The Corridor is Bureau of Reclamation mitigation for impacts to wildlife from the Tucson Aqueduct Project.

The Arizona Game and Fish Commission in a resolution dated December 14, 2007 passed a resolution opposing a proposed I-10 bypass route in an area included within Alternative B.

Segment 17 is included in alternatives G, H, KK, LL, MM. Segment 17 bisects the proposed Vulture Mountains County Park. The Department believes that an interstate/multi-modal corridor is incompatible with a county park. The Vulture Mountains are a popular area for outdoor recreation, including hunting and wildlife viewing. It is expected that recreational use of the area will increase as the population in the surrounding area grows. As a result the value of the Vulture Mountains as a location for outdoor recreational opportunities will increase. An interstate will significantly decrease recreational opportunities in the proposed park and the region. The Vulture Mountains are also important wildlife habitat, including for nesting raptors.

Segment 81, Alternative JJ bisects Organ Pipe Cactus National Monument and habitat for the endangered Sonoran pronghorn. AGFD believes an interstate-multi-modal corridor is incompatible with both a monument and endangered species habitat.

AGFD has significant concerns with Segments 34, 44 and 45 which are part of alternatives N and P. All three of these segments pass through and in close proximity to the Black Mountains. The Black Mountains are prime habitat for bighorn sheep and Sonoran Desert tortoise. An interstate/multi-modal corridor will have significant impacts to these species and other wildlife species in the Black Mountains. AGFD recommends the study carefully examine the balance between the transportation benefits from these segments with the wildlife impacts and potential mitigation costs.

AGFD has significant concerns with Segments 37 and 38 which are parts Alternative R and OO. These segments follow narrow valleys between and through mountain ranges. These segments also bisect Chino Valley, important American pronghorn habitat. These segments will result in significant loss of quality wildlife habitat and present considerable connectivity challenges. AGFD recommends the study carefully examine the balance between the transportation benefits from these segments with the wildlife impacts and potential mitigation costs.

AGFD has significant concerns with Segment 91 part of Alternative OO and Segment 94 part of Alternative PP. Both segments bisect large blocks of quality, unfragmented wildlife habitat. Large blocks of unfragmented habitat are of great value to wildlife and, as Arizona's population grows, are becoming increasingly rare. AGFD recommends the study carefully examine the balance between the transportation benefits from these segments with the wildlife impacts and potential mitigation costs.

AGFD would also like to note that Segment 86 is in the vicinity of Powers Butte and Arlington Wildlife Areas. Depending on the exact location of the interstate alignment, this segment could have significant impacts to AGFD properties.

All potential locations of Interstate 11 will create a barrier to wildlife movement. It is not possible to analyze wildlife connectivity at this scale of analysis. However, we would like to note that Segments 9, 14, 15, 17, 22, 27, 30, 33, 84 and 87 traverse areas identified by AGFD as priority areas for maintaining connectivity.

At his level of analysis it is difficult for AGFD to identify promising candidates for long term connections. However, because a newly developed road results in significant habitat loss,

fragments unfragmented habitat and encourages new development in undeveloped areas, we will generally prefer the expansion of existing roads over the development of new roads.

Thank you for the opportunity to provide comments for the Level 1 Analysis. AGFD looks forward to continuing to partner with ADOT on this important Study. If you have any questions, please contact me at 928-341-4047 or bknowles@azgfd.gov.

Sincerely

William Knowles

cc: Pat Barber, Regional Supervisor, Region IV
Joyce Francis, Chief, Habitat Branch
Laura Canaca, PEP Supervisor, Habitat Branch

AGFD # M13-08164151

Appendix C
The Nature Conservancy in Arizona—Comments on the Proposed Interstate 11 Corridor-Wide Alignment Alternatives

The Nature Conservancy
Protecting nature. Preserving life.™

Center for Science & Public Policy
1510 E. Fort Lowell Road
Tucson, Arizona 85719

tel [520] 622-3861
fax [520] 620-1799
nature.org/Arizona
azconservation.org

September 18, 2013

Michael Keis
Director of Planning and Programming
Arizona Department of Transportation
206 S. 17th Avenue, Mail Drop: 310B
Phoenix, AZ 85719

Dear Mr. Kies:

On behalf of The Nature Conservancy in Arizona, thank you for the opportunity to provide comments on the proposed *Interstate 11 Corridor-Wide Alignment Alternatives*. Our analysis and comments are focused on assisting with the Level 1 Planning and Environment Linkage review (PEL). Use of the PEL process represents a significant advancement towards more integrated infrastructure planning, which should yield better planning tools and improvement in project delivery times while avoiding and minimizing impacts to natural resources.

Detailed comments and our evaluation for each alignment as well as supporting materials, such as analytical methods, criteria, and datasets are provided in **Appendices A-D** (attached). Below is a brief summary of our findings.

We systematically evaluated 61 proposed alignment segments for the Arizona portion of I-11. Of those, we concluded that 39% have either limited impacts to wildlife and water resources or impacts that could be offset through mitigation measures. For 49% of the segments we concluded that there is an opportunity to improve both passage of wildlife around existing roadways and motorist safety using practices already adopted by the Arizona Department of Transportation.

Only 12% of the segments were identified as having significant impacts to wildlife or water resources important to wildlife that would not be offset by mitigation options. In these cases, proposed alignments would result in significant habitat loss or fragmentation and have adverse impacts to wildlife in areas acquired, designated, and managed for conservation purposes (ex. National Wildlife Refuges), would adversely impact wildlife and habitat not well represented elsewhere in the state or needed to ensure that wildlife populations are sustainable into the future, or have adverse impacts to Threatened and Endangered or special status species.

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tel [520] 622-3861
fax [520] 620-1799
nature.org/Arizona
azconservation.org

The areas of most concern from a conservation standpoint and for which we are recommending they not be carried forth to the Level II Review, include alignments through Organ Pipe Cactus National Monument and the Buenos Aires National Wildlife Refuge in southern Arizona, and those proposed to enter and traverse the Williamson and Big Chino Valleys and Burro Creek area in north, central Arizona. For some alignments, such as those that would cross the Upper San Pedro River Valley, the potential to offset impacts would depend upon more specific details of the alignment including access points.

If you have questions regarding our recommendations or the background information, please do not hesitate to contact me. I can be reached at rmarshall@tnc.org or 520-237-8778.

Sincerely,

Rob Marshall
Director, Center for Science & Public Policy

Cc:
Governor Jan Brewer
Congressman Paul Gosar
Larry Voyles, Director, Arizona Game & Fish Department
Scott Higginson, Executive Director Interstate 11 Coalition

Appendix A. Methods and Criteria

We designed our analysis to facilitate one of the primary purposes of the Level 1 PEL review, to distinguish infrastructure alignment alternatives that may be incompatible with the long-term sustainability of important natural resources from those alternatives that may have limited impacts or impacts that otherwise may be avoided, minimized, or offset. At this level of analysis two primary factors were used to distinguish the scope and magnitude of potential impacts. The first is the change in baseline infrastructure conditions for the proposed alignment area, which is used to determine the scope of change and magnitude of impacts such as habitat loss or fragmentation. An example would be the conversion of an existing paved, two-lane undivided road into a four-lane divided highway. The second is the regional importance of wildlife resources in the area, including core habitat needed to sustain wildlife populations into the future as well as movement corridors.

To facilitate our analysis we compiled 22 datasets covering transportation, land management status, including lands designated and managed expressly for conservation purposes, the distribution of important habitats for wildlife, wildlife movement corridors, threatened and endangered species, and areas with important surface waters (see **Appendix B**).

To standardize our assessment, we identified ten types of direct and indirect impacts to wildlife and four assessment categories. The assessment categories indicate the level of impact and whether or not impacts can be offset through mitigation (see **Appendix C**). They include:

1. Segments with limited impacts to wildlife
2. Segments with significant impacts to wildlife but mitigation to offset impacts is feasible
3. Segments with significant impacts to wildlife likely, but mitigation options unlikely to offset impacts
4. Opportunity to improve wildlife linkages

Our transportation system was not originally designed to facilitate daily, seasonal, or annual movement patterns by wildlife. We added a fourth assessment category – opportunity to improve wildlife linkages – to indicate where proposed improvements to existing roadways present an opportunity to improve wildlife passage over existing conditions. This assessment was made using data from the Arizona Game and Fish Department on wildlife linkages. We compared that data to existing roadways for which improvements have been proposed and noted in **Appendix D** the alignments where improvements to wildlife passage and motorist safety should be evaluated. Identification of these opportunities early in the process enables ADOT to evaluate wildlife crossing needs and incorporate design features early in the planning process. Where this has been done elsewhere in the state there have been substantial benefits both to motorist safety and wildlife passage.

We assessed each alignment segment by systematically evaluating wildlife and related resource data layers against the alignment location and change in baseline infrastructure conditions to

determine the importance of the wildlife resource and nature of potential impacts. **Appendix C** shows how the impact criteria relate to the assessment categories. For example, proposed alignments that would have limited direct or indirect impacts to wildlife were indicated as such. In the cases where wildlife habitat loss would result in significant impacts, there are two potential assessments: (1) impacts may be offset through mitigation measures or (2) mitigation measures are unlikely to offset impacts. Significant impacts do not categorically rule out a particular alignment. It's the regional significance of the wildlife resources and the importance of the habitat for the long-term sustainability of wildlife populations that determines whether impacts can be offset.

Finally, **Appendix D** provides our assessment for each proposed alignment along with descriptive information on the nature of impacts and the specific resources that would be impacted.

Appendix B. List of Datasets Used

Transportation
- Proposed Segments
  - Provided by ADOT
- Existing Highways and Roads
  - TIGER Rds
  - USGS Topo
- 2009 State Framework

Ownership/Conservation Lands:
- Military Lands
  - ALRIS, ownership data
- Tribal Lands
  - ALRIS, ownership data
- Protected Areas
  - Protected Areas Database v2 (PAD-US), Conservation Biology Institute http://consbio.org/products/projects/pad-us-cbi-edition

Important Habitats:
- USFWS Designated Critical Habitat
  - http://criticalhabitat.fws.gov/crithab/, latest update from USFWS, Feb, 2013
- Important Grasslands
  - TNC Grasslands Assessment http://azconservation.org/downloads/category/grassland_assessment
- BLM Tortoise Habitat
  - Tortoise habitat identified by BLM policy to avoid development or mitigate for losses
  - Final Report on "Compensation for the Desert Tortoise" Instructional Memorandum, 1991.
- TNC Habitat Conservation Priorities
  - TNC Ecoregional Assessments Roll-up, Dec. 2007 http://azconservation.org/downloads/category/ecoregional_assessment
- Pima County Habitat Protection Priorities
  - Pima County 2004 Bond- lands identified in the Sonoran Desert Conservation Plan
- Pinal County Existing Open Spaces
  - Arizona State Office, Engineering & Mapping Sciences Group, 2008
- Flat-tailed Horned Lizard Management Areas
  - Flat-tailed Horned Lizard Interagency Coordinating Committee. 2003. Flat-tailed horned lizard rangewide management strategy, 2003 revision. 78 pp. plus appendices.

Wildlife Linkages:
- Arizona Missing Linkages (modeled)
  - NAU Study 2007-2008

Detailed Linkage Designs (modeled)
AGFD 2012
Pinal Linkages Workshop
AGFD 2013
Arizona Wildlife Linkages Workshop
2006
Black Bear Connectivity Study in the Sky Islands (modeled)
Atwood, Todd C.; Young, Julie K.; Beckmann, Jon P.; Breck, Stewart W.; Fike, Jennifer A.; Rhodes, Jr., Olin; and Bristow, Kirby D., "Modeling Connectivity of Black Bears in a Desert Sky Island Archipelago" (2011). USDA National Wildlife Research Center – Staff Publications. Paper 1013. http://digitalcommons.unl.edu/icwdm_usdanwrc/1013

Important Hydrological Features:
Cienegas
TNC Freshwater Assessment, http://azconservation.org/downloads/category/freshwater_assessment
Perennial Flows
TNC Freshwater Assessment
http://azconservation.org/downloads/category/freshwater_assessment
Groundwater basins connected to surface water flow
Anning, D.W., and Konieczki, A.D., 2005. Classification of Hydrogeologic Areas and Hydrogeologic Flow Systems in the Basin and Range Physiographic Province, Southwestern United States. U.S. Geological Survey Professional Paper #1702, 37p.

Appendix C. Criteria Used to Assess Impacts to Wildlife and Assessment Categories for Proposed Alignments

		Assessment Categories			
		Significant Impacts to Wildlife Likely - Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely – Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**
Direct Impacts to Wildlife and Wildlife Habitat					
1.	Habitat loss or fragmentation for Threatened and Endangered or special status species	X	X		
2.	Habitat loss or fragmentation for core wildlife habitat not represented or limited elsewhere in state	X	X		
3.	Habitat loss or fragmentation for area acquired and/or managed for conservation purposes	X	X		
4.	Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept.	X	X	X	
5.	Direct impacts limited			X	X
Indirect Impacts to Wildlife and Wildlife Habitat					
6.	Adverse impacts to wildlife and habitat from incompatible activities (e.g., development, groundwater pumping)	X	X		
7.	Adverse impact to habitat acquired or identified for mitigation purposes	X	X		
8.	Adverse impacts to surface waters designated as “Outstanding Waters/Wild or Scenic Rivers”	X	X		
9.	Limits or precludes habitat management options such as use of controlled fire	X	X		
10.	Indirect impacts limited				X

Appendix D. Detailed Evaluation of Proposed I-11 Alignments, Including Overall Assessment and Supporting Information, Organized by Assessment Category and Location of Proposed Alignments

I. Segments with Limited Impacts to Wildlife

Proposed Segment	**Proposed Change in Infrastructure**	***Assessment***				**Description**
		Significant Impacts to Wildlife Likely-Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely-Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Phoenix Alignments						
Segment 24 & 21 – South Mtn Freeway/I10/SR101 and I-10	State highways and U.S. interstate to U.S. interstate				X	Direct impacts limited
Segments 25 & 26 – US 60	State highways to U.S. interstate				x	Direct impacts limited
Segment 85 – SR 30	State highway to U.S. interstate				X	Direct impacts limited

II. Segments where there are Opportunities to Improve Wildlife Linkages

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely- Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely- Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Northern Arizona Alignments						
Segment 35 & 90 – I-40	U.S. highway to U.S. interstate			X		Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Warm Springs- Hualapai Mtns, Warm Springs – Aubrey Peak, Hualapai – Cerbat)
Segment 36 – US 93	U.S. highway to U.S. interstate			X		Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Hualapai Mtns – Bagdad; Tres Alamos Wilderness – Prescott National Forest)
Segment 39 – SR 89	State highway to U.S. interstate			X		Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Big Black Mesa – Hell Canyon)
Segment 40 – I-17	U.S. interstate to U.S. interstate			X	X	Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Northern I17 Corridor)

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely- Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely- Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Segments 41,42,43 – I-40	U.S. interstate to U.S. interstate			X	X	Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (I40- 93 – Kingman; Grand Canyon – Prescott National Forest; Garland – Arizona Divide; Hualapai - Cerbat)
Segments 44 & 45 -SR 68	State highway to U.S. interstate			X		Habitat loss or fragmentation for area acquired and/or managed for conservation purposes (Black Mountains ACEC) Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Hualapai-Cerbat; Mount Perkins – Warm Springs)
Segment 46 – US 93	U.S. highway to U.S. interstate			X		Habitat loss or fragmentation for wildlife linkage (Mount Tipton – Mount Perkins; Black Mts - Cerbat)
Segment 95 – US 93	U.S. highway to U.S. interstate			X		Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Hualapai Mtns – Bagdad; I-40-US 93- Kingman)
Phoenix Alignments						

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely- Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely- Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Segments 10 & 83 - I-8	U.S. interstate to U.S. interstate			X	X	Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Vekol Wash, Estrella Mtns- Vekol Wash, Table Top Mtns – Little Table Top Mtns, Maricopa Mtns- Table Top Mtns; South Maricopa Mtns – Sand Tanks; Gila River – Lake Saint Claire; Greene Wash and Reservoir)
Segments 11 & 12 - I10	U.S. interstate to U.S. interstate			X	X	Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Gila River; Queen Creek to Gila River Indian Community)
Segment 13 I10/I17	U.S. interstate to U.S. interstate			X	X	Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Gila – Salt River Corridor Granite Reef Dam)
Segments 19,20 – SR-85	State highway to U.S. interstate			X	X	Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Gila Bend – Sierra Estrella)
Segment 27 – US 60	State highway to U.S. interstate			X	X	Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Harcuvar Mtns – Harquahala Mtns; Granite Wash – Little Harquahala Mtns; Ranegras Plain; Wickenburg-Hassayampa)

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely-Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely-Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Segment 28 & 89 – I17	U.S. interstate to U.S. interstate			X	X	Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Bradshaw Mtns – Agua Fria National Monument)
Segment 29 – US93	State highway to U.S. interstate			X	x	Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Chino Valley; Wickenburg-Hassayampa; White Tanks – Belmonts – Vultures - Hieroglyphics)
Southern Arizona Alignments						
Segment 1 – SR 191 Douglas Connection	U.S. highway to U.S. interstate			X		Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Black Bear Linkage Study)
Segments 2,4,6,8 - I-10	U.S. interstate to U.S. interstate			X	X	Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept.
Segment 5 – I-19 Nogales Connection	U.S. interstate to U.S. interstate			X		Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Tumacacori-Santa Rita; Santa Rita-Sierrita, Black Bear Linkage Study)
Segment 79 – I-8	U.S. interstate to U.S. interstate			X		Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept (for Bighorn Sheep and Sonoran Pronghorn; Sentinel Plain)

III. Segments where Significant Impacts to Wildlife are Likely but Mitigation to Offset Impacts is Feasible

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely-Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely-Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Northern Arizona Alignments						
Segments 30 & 33 – SR 95	State highway to U.S. interstate		X			Habitat loss or fragmentation for area acquired and/or managed for conservation purposes (Bill Williams National Wildlife Refuge) Habitat loss or fragmentation for Threatened and Endangered or special status species (direct impact to Southwestern Willow Flycatcher; indirect impact to critical aquatic and breeding habitat for Bonytail Chub, Razorback Sucker) Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (for bighorn sheep; Bill Williams – Aubrey Hills; The Needles – Mohave Mtns)
Segment 34 – SR 95 Realignment	Rural roads to U.S. interstate		X			Adverse impact to habitat acquired or identified for mitigation purposes (BLM habitat designated for desert tortoise management, mitigation required if impacted) Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Mount Perkins – Warm Springs)

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely-Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely-Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Segment 91 – Chicken Springs Rd	Minor road to U.S. interstate		X			Adverse impact to habitat acquired or identified for mitigation purposes (BLM habitat designated for desert tortoise management, mitigation required if impacted) Adverse impacts to wildlife and habitat from incompatible activities (e.g., development, groundwater pumping; impacts to Big Sandy River, Lower Bill Williams River Basins where groundwater is connected to surface flows)
Phoenix Alignments						
Segments 14,15,16,17,18, 84, 86 – Hassayampa Freeway	New construction & minor roads to U.S. interstate		X	X		Adverse impact to habitat acquired or identified for mitigation purposes (BLM habitat designated for desert tortoise management, mitigation required if impacted) Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (White Tanks – Belmonts – Vultures – Hieroglyphics; Wickenburg – Hassayampa; Gila Bend – Sierra Estrella) Indirect effects possible to the Vulture Mountains Recreational Area, a planned regional park in Maricopa County, that would include TNC's Hassayampa River Preserve

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely-Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely-Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Segment 22 – Sun Valley Pkwy	New construction & minor roads to U.S. interstate		X			Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (White Tanks – Belmonts – Hieroglyphics)
Segment 23,87,88– SR 303	New construction & state highway to U.S. interstate		X	X		Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept.(in Rainbow Valley for bighorn sheep; Gila/Salt River Corridor Granite Reef Dam; Gila River; North Maricopa Mtns – Sierra Estrella Mtns)
Segment 82 – SR 303 Ext – Vekol Valley	New construction & minor roads to U.S. interstate		X	X		Adverse impact to habitat acquired or identified for mitigation purposes (BLM habitat designated for desert tortoise management, mitigation required if impacted) Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Vekol Wash, Estrella Mtns- Vekol Wash, Sonoran Desert National Monument-Palo Verde Hills, Maricopa Mtns- Table Top Mtns)

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely-Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely-Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Southern Arizona Alignments						

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely-Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely-Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Segment 3 – Naco Connection	State highway to U.S. interstate; possible new construction		X			Adverse impacts depend upon the specific alignment and access points and range from impacts that could be offset by mitigation to those that are unlikely to be offset by mitigation. Adverse impacts to areas acquired and/or managed for conservation purposes (San Pedro River NCA; properties owned by The Nature Conservancy); Habitat loss or fragmentation for Threatened and Endangered or special status species (indirect impact to critical aquatic habitat for Huachuca water umbel) Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Ft. Huachuca, Whetstones –San Pedro, Black Bear Linkage Study) ***Note:*** New development and associated groundwater pumping facilitated by a new transportation corridor *within the Upper San Pedro River Basin* would have adverse impacts to wildlife and habitat on the San Pedro River. Given the current status of groundwater and surface flows and efforts to mitigate for existing conditions in the Upper San Pedro, we believe that mitigation would not be feasible to offset impacts associated with a new transportation corridor.

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely-Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely-Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Segments 9, 80 – I-95 & San Luis Connection	State highway to U.S. interstate		X	X		Habitat loss or fragmentation for Threatened and Endangered or special status species (Yuma desert management area for flat-tailed horn lizard, a special status species) Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (for bighorn sheep and mule deer, Trigo Mtns – Kofa Mtns)

IV. Segments where Significant Impacts to Wildlife are Likely but Mitigation Unlikely to Offset Impacts

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely-Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely-Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Northern Arizona Alignments						
Segment 37 – Chino Valley	New construction	X				Habitat loss or fragmentation for core wildlife habitat not represented or limited elsewhere in state (GMU 19b is core habitat for one of largest state populations of pronghorn and intact grasslands) Adverse impacts to wildlife and habitat from incompatible activities (e.g., development, groundwater pumping; impacts to Big Chino and Kirkland Creek Basins where groundwater is connected to surface flows linked to Williamson Valley Wash and the Verde River) Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Granite Mts – Black Hills)

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely-Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely-Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Segments 38,92,93– I17 Fain Road Connector	New construction & state highway to U.S. interstate	X				Habitat loss or fragmentation for core wildlife habitat not represented or limited elsewhere in state (GMU 19b is core habitat for one of largest state populations of pronghorn and intact grasslands) Adverse impacts to wildlife and habitat from incompatible activities (e.g., development, groundwater pumping; impacts the Little Chino Basin where groundwater is connected to surface flows linked to the Verde River) Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Granite Mtns – Black Hills)

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely- Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely- Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Segment 94	New construction	X				Habitat loss or fragmentation for area acquired and/or managed for conservation purposes (Burro Creek Riparian and Cultural ACEC, Upper Burro Creek wilderness BLM) Adverse impacts to wildlife and habitat from incompatible activities (e.g., development, groundwater pumping; impacts the Burro Creek, Big Sandy River, Big Chino and Kirkland Creek Basins where groundwater is connected to surface flows linked to the Williamson Valley Wash and the Verde River) Habitat loss or fragmentation for core wildlife habitat not represented or limited elsewhere in state (grasslands, perennial surface waters- Burro Creek, Frances Creek- home to 5-6 native fish species)
Southern Arizona Alignments						

Proposed Segment	Proposed Change in Infrastructure	*Assessment*				Description
		Significant Impacts to Wildlife Likely-Mitigation Unlikely to Offset Impacts	**Significant Impacts to Wildlife Likely-Mitigation Feasible**	**Opportunity to Improve Wildlife Linkages**	**Limited Impacts to Wildlife**	
Segment 7 – Sasabe Connection	State highway to U.S. interstate	X				Habitat loss or fragmentation for area acquired and/or managed for conservation purposes (Buenos Aires NWR, Pima Co. Conservation Areas, Ironwood National Monument) Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (Mexico – Tumacacori – Baboquivari, Coyote – Ironwood – Tucson) Adverse impact to habitat acquired or identified for mitigation purposes (Central Arizona Project mitigation corridor)
Segment 81 – SR-85	State highway to U.S. interstate	X				Habitat loss or fragmentation for area acquired and/or managed for conservation purposes (Organ Pipe National Monument, Cabeza Prieta National Wildlife Refuge; military land with high integrity conservation lands in the Barry Goldwater Range) Habitat loss or fragmentation for wildlife linkage area identified by AZ Game & Fish Dept. (SR85 – Sonoran Pronghorn) Habitat loss or fragmentation for Threatened and Endangered or special status species (Sonoran Pronghorn)