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Draft Tier 1 Environmental Impact Statement and Preliminary Section 4(f) Evaluation

Chapter 6, Recommended Alternative

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U.S. Department of Transportation Federal Highway Administration

ADOT

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6 RECOMMENDED ALTERNATIVE

The Federal Highway Administration (FHWA) and Arizona Department of Transportation (ADOT) evaluated alternatives to determine a recommendation for the Interstate 11 (I-11) Corridor Study Area (Study Area) between Nogales and Wickenburg by considering the following:

- How effectively does each alternative meet the I-11 Purpose and Need?
- What are the differentiating and substantive impacts?
- Can the impacts be avoided, minimized, or mitigated?

The Recommended Alternative represents the preliminary findings of FHWA and ADOT based on the Draft Tier 1 Environmental Impact Statement and Preliminary Section 4(f) Evaluation (Draft Tier 1 EIS) resource analyses and agency, Tribal, and public input to date. As illustrated on **Figure 6-1** (Tier 1 EIS Decision Steps), the Recommended Alternative is presented for public review and comment as part of the Draft Tier 1 EIS. The subsequent Final Tier 1 EIS will consider input received and will affirm or modify the Recommended Alternative in identifying a Preferred Alternative. Ultimately, the Record of Decision (ROD) will affirm a Selected Alternative.

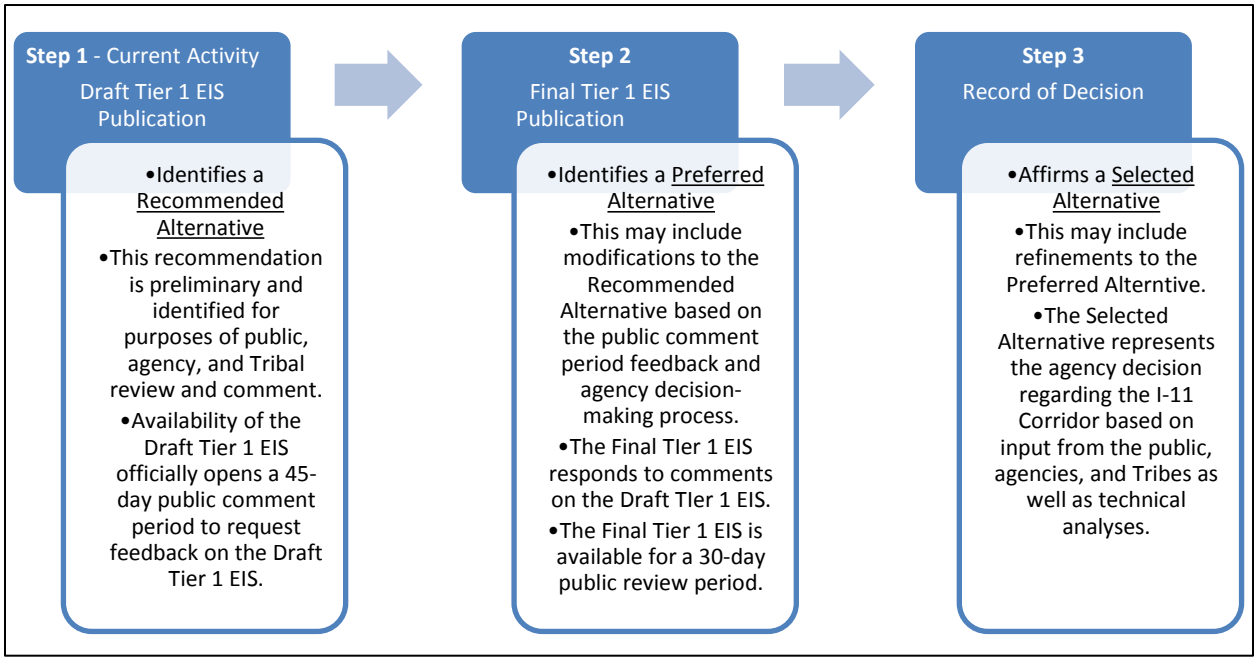

Figure 6-1 Tier 1 EIS Decision Steps

6.1 Purpose and Need

The Project Team developed metrics for each of the five key elements of the I-11 Purpose and Need, introduced in **Table 1-6** (Purpose and Need Metrics). The alternatives were evaluated using these metrics to determine how effectively they address the transportation needs in the Study Area. The results of this evaluation are described below and summarized in **Table 6-1** (Considerations in Meeting the I-11 Purpose and Need).

6.1.1 Population and Employment Growth

The highest absolute and percentage growth in the Study Area is forecasted to occur by 2040 in western Maricopa County (population growth of 259 percent, employment growth of 248 percent) and Pinal County (population growth of 80 percent, employment growth of 234 percent). The three Build Corridor Alternatives would improve infrastructure capacity in those areas. The Purple and Green Alternatives would best serve areas of concentrated growth (Casa Grande, Goodyear, Buckeye, and Wickenburg), whereas the No Build Alternative would not appreciably expand service to meet projected demand. Under the No Build Alternative, the rate of growth may contribute to increasing congestion and travel time reliability issues, and exacerbate lack of connectivity as employment and commerce patterns shift, especially in the Phoenix and Tucson metropolitan areas.

6.1.2 Traffic Growth and Travel Time Reliability

Both the Purple and Green Alternatives reduce 2040 travel time from Nogales to Wickenburg compared to the No Build Alternative by an estimated 54 and 60 minutes, respectively. These routes would attract or divert traffic from existing roadways. This traffic diversion to the Purple and Green Alternatives would reduce congestion and improve travel time reliability on existing roadways. The Orange Alternative reduces 2040 travel time from Nogales to Wickenburg by 31 minutes. The Orange Alternative provides the longest end-to-end 2040 travel time primarily due to the fact that it has the longest travel distance of the three Build Corridor Alternatives.

Under both the Purple and Green Alternatives, I-11 would achieve level of service (LOS) C or better throughout the corridor. For Option B, co-locating I-11 with existing facilities would require additional capacity on the following highway segments in order to achieve LOS C in rural areas and LOS D in urban areas (see **Appendix E1** [Conceptual Drawings]):

- I-19 from Sahuarita to I-10
- I-10 from I-19 to the Pima/Pinal county line
- SR 85 from the Gila River to I-10
- I-10 from SR 85 to 355th Avenue

Through the urban Tucson area, this translates to a need for two to three additional lanes in each direction under the Orange Alternative.

Table 6-1 Considerations in Meeting the I-11 Purpose and Need

Key Metrics		Alternatives			
Purpose and Need	**Metric**	**No Build**	**Purple**	**Green**	**Orange**
How effectively does each alternative meet the I-11 Purpose and Need?					
• **Need: Population and Employment Growth** High-growth areas need access to the high-capacity, access-controlled transportation network. • **Purpose**: Provide a high-priority, high-capacity, access-controlled transportation corridor to serve population and employment growth.	Provides access to planned growth areas.	Does not serve highest growth area (western Maricopa County, within the Study Area)	The greatest areas of population and employment growth within the Study Area are expected in Pinal and western Maricopa counties, which the Purple Alternative serves best (Casa Grande, Goodyear, Buckeye, and Wickenburg).	The Green Alternative serves anticipated growth well, but does not provide as much access to the Goodyear/State Route (SR) 303L area as the Purple Alternative.	The Orange Alternative best responds to continued population and employment growth in the South Section; however, less growth is anticipated in the Tucson urbanized area compared to other portions of the Study Area.
• **Need: Traffic Growth and Travel Time Reliability** Increased traffic growth reduces travel time reliability due to unpredictable freeway conditions that impede travel flows, hindering the ability to efficiently move people and goods around and between metropolitan areas. • **Purpose**: Support improved regional mobility for people and goods to reduce congestion and improve travel efficiency.	Reduces travel time for long-distance traffic (2040 travel time from Nogales to Wickenburg in minutes).	297 minutes	243 (54-minute savings)	237 (60-minute savings)	266 (31 minute savings)
	Achieves level of service (LOS) C or better in in rural areas, and LOS D or better in urban areas (Tucson) on I-11.	LOS F on existing roads in some areas	LOS C or better on I-11	LOS C or better on I-11	LOS C in rural areas outside of Tucson LOS D on I-11 in urban areas (Tucson)
• **Need: System Linkages and Regional Mobility** The lack of a north-south interstate freeway link in the Intermountain West constrains trade, reduces access for economic development, and inhibits efficient mobility. • **Purpose**: Connect metropolitan areas and markets in the Intermountain West with Mexico and Canada through a continuous, high-capacity transportation corridor.	Effectively attracts/diverts traffic from existing roadways, as measured by: Percent increase in vehicle miles traveled (VMT) in the study area compared to the No Build Alternative Percent Increase in truck VMT in the study area compared to the No Build Alternative	No diversion of passenger vehicles or trucks.	5.4% increase in combined passenger vehicles and truck VMT; 21.3% increase in truck VMT versus No Build Alternative.	4.0% increase in combined passenger vehicles and truck VMT; 15.9% increase in truck VMT versus No Build Alternative.	1.5% increase in combined passenger vehicles and truck VMT; 2.2% increase in truck VMT versus No Build
• **Need: Access to Economic Activity Centers** Efficient freeway access and connectivity to major economic activity centers are required to operate in a competitive economic market. • **Purpose**: Enhance access to the high-capacity transportation network to support economic vitality.	Serves key economic centers (number of economic activity centers).	Serves 8 existing centers in the Study Area	14, including 7 existing centers (primarily located along I-10) and 7 emerging centers	10, including 6 existing centers (primarily located along I-10) and 4 emerging centers	15, including 8 existing centers (primarily located along I-10) and 7 emerging centers
• **Need: Homeland Security and National Defense** Alternate interstate freeway routes help alleviate congestion and prevent bottlenecks during emergency situations. These routes may be parallel or may generally serve the same major origin and destination points, with local or regional roads connecting the freeway routes in various places. • **Purpose**: Provide alternate regional routes to facilitate efficient mobility for emergency evacuation and defense access.	Provides an alternate regional route to an existing interstate route.	No	Yes for 7 out of 9 segments	Yes for 8 out of 9 segments	Yes for 1 out of 9 segments

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6.1.3 System Linkages and Regional Mobility

A key purpose of the I-11 system linkage is to support efficient commercial and trade traffic. The three Build Corridor Alternatives would create a high-capacity transportation connection from Mexico to the I-11 improvements north of Wickenburg along United States (US) 93 and into Nevada. Under the No Build Alternative, there would be no continuous high-capacity transportation connection between I-10 in Buckeye and US 93 in Wickenburg. Modeling for 2040 conditions suggests that the Purple Alternative could attract the highest increase in automobile and truck (trade-related) VMT over the No Build Alternative.

6.1.4 Access to Economic Activity Centers

The interstate highway system plays a critical role in connecting and providing access to employment hubs within the broader population base. The Purple and Orange Alternatives best serve existing and emerging economic activity centers within the Study Area. Most existing and several emerging centers are located along the I-10 corridor, as good transportation access is a key asset to major industries. However, continued growth and congestion on existing interstate facilities could eventually hinder accessibility.

6.1.5 Homeland Security and National Defense

Congestion on I-10 and existing interstate freeways and state routes may prevent efficient and safe emergency evacuation and defense access. Regional route redundancy, including alternate interstate freeway routes, would facilitate efficient mobility, alleviate congestion, and prevent bottlenecks during emergencies and incidents. The metric for evaluating this element of the I-11 Purpose and Need is whether the alternative provides an alternate high-capacity interstate route where one does not existing already. Both the Purple and Green Alternatives respond to this need best in the South and Central Sections, where these alternatives are composed primarily of new corridors. The primary difference between the Purple and Green Alternatives is in Pinal County, where the Green Alternative includes a new corridor (Option F), while the Purple Alternative calls for co-location with I-10 (Option G).

None of the Build Corridor Alternatives performs well according to this metric in southern Santa Cruz County, where use of I-19 is the only Build Corridor Alternative. In the North Section, all Build Corridor Alternatives represent a new interstate transportation corridor where there is currently no high-capacity transportation facility.

The No Build Alternative would not provide an alternative regional route. This alternative would not address homeland security, national defense, or incident management needs.

6.2 Differentiating and Substantive Impacts

The three Build Corridor Alternatives were developed to address the transportation needs in the Study Area. As detailed in the previous section, each alternative performs differently in relation to the metrics used to evaluate the I-11 Purpose and Need. In determining a recommendation for this Draft Tier 1 EIS, the next layer of evaluation considers the impacts described in **Chapter 3** (Affected Environment and Environmental Consequences) and identifies the differences between the alternatives. Section 6.2 is organized based on the key decision points

that emerged from the detailed EIS analysis. Each subsection below details the adverse impacts and beneficial effects considered in identifying the Recommended Alternative.

6.2.1 I-19: Nogales to Sahuarita

The Recommended Alternative uses Option A, which is included in all three Build Corridor Alternatives and follows the existing I-19 corridor. During the *I-11 and Intermountain West Corridor Study*, it was determined that Nogales formed the best connection point into Mexico along the southern Arizona border. Current and projected travel demand modeling suggests that existing I-19 will continue to operate at an acceptable level of service through 2040. If needed, future capacity improvements could be accommodated within the existing ADOT right-of-way (ROW), avoiding or minimizing impacts.

The existing I-10 corridor provides access to the economic activity centers and high-growth areas in Santa Cruz County. It will serve long-distance truck traffic moving to and from the Mariposa Port of Entry. Due to steep terrain and lands designated as roadless or protected open space, an alternate corridor is not feasible in the vicinity.

As part of the preliminary Section 4(f) evaluation, properties that would be afforded protection under Section 4(f) were identified within the 2,000-foot-wide Project Area along I-19. FHWA has identified the opportunity to accommodate the I-11 facility without incorporating land from any Section 4(f) properties. These properties are included in the Recommended Alternative as a committed "4(f) avoidance areas," and the specific alignment and design of I-11 would be developed to avoid them. See **Chapter 4** (Preliminary Draft Section 4(f) Evaluation) for more information.

Option A (Recommended) provides access to high-growth areas, achieves LOS C throughout the I-11 Corridor, and serves key economic centers while avoiding impacts to sensitive environmental resources.

6.2.2 Sahuarita to Marana

One of the decision points for the Recommended Alternative is to pursue the use of existing facilities (Orange Alternative, Option B) or a new corridor (Purple and Green Alternatives, Options C or D) between Sahuarita and Marana in Pima County. The Recommended Alternative uses new corridor Option D (Green Alternative) between Sahuarita and Marana. The new corridor provides an alternate regional route to facilitate efficient mobility for emergency evacuation and defense access compared to the congested I-19/I-10 corridor through Tucson. Option D is part of the end-to-end alternative that reduces travel time for long-distance traffic between Nogales and Wickenburg and achieves LOS C or better throughout the I-11 Corridor. It will serve planned growth areas and key economic centers as well as attract and divert traffic, including trucks, from existing roadways. The Orange Alternative would serve a higher number of economic activity centers.

All of the Build Corridor Alternatives considered in this Draft Tier 1 EIS would result in adverse impacts, so potential mitigation strategies were considered in identifying the recommendation for this Draft Tier 1 EIS. While use of existing corridors would minimize new disturbances to environmental resources, all of the Build Corridor Alternatives would still require additional capacity on I-10 to accommodate the I-11 facility. This would result in unmitigable impacts on historic districts, archaeological resources, and the communities in Downtown Tucson.

The new Corridor Options provide an alternate route for emergency and incident management, but would further fragment wildlife habitat and impact the endangered Pima pineapple cactus (PPC) (*Coryphantha scheeri* var. *robustispina*) and several other protected species. The Purple and Green Alternatives also are located closer to Tucson Mountain Park, the Tucson Mitigation Corridor (TMC), and Saguaro National Park (SNP) –West and designated wilderness within the park). A new interstate in this area would result in varying degrees of change in noise, light, air quality, and visual character for SNP-West, Tucson Mountain Park, and the TMC. After careful consideration, FHWA and ADOT determined Orange Alternative impacts are unmitigable, whereas impacts under the Purple and Green Alternatives could be mitigated. This Draft Tier 1 EIS identifies effective mitigation strategies to avoid, minimize, and mitigate these impacts, and if a Build Corridor Alternative is selected, it will be included in the ROD for the Tier 1 EIS. As future projects move I-11 forward into more detailed design, those efforts would continue in a more detailed manner when the specific alignment of I-11 is developed.

Community Impacts: Option D would avoid impacts in downtown Tucson, but would impact the rural communities of Avra Valley and Picture Rocks. downtown Tucson is an urban area with a high concentration of low-income and minority individuals, and the Orange Alternative would impact these communities. The adverse effects on the low-income and minority populations in Tucson have the potential to exceed those borne by non-environmental justice populations. By contrast, demographic data indicate that Avra Valley and Picture Rocks communities do not contain low-income or minority populations. While Option D is located in close proximity to the Tohono O'odham Nation, it is not located on Tribal land and would not require any relocations or displacements on Tribal land. Section 3.5 (Communities, Community Resources, and Environmental Justice) provides more detail on the effects to communities and environmental justice populations.

Historic Districts and Archaeological Resources: Option D through the Avra Valley area generally has a low potential for direct impacts on archaeological sites, historic structures, and historic districts and buildings; however, there are a few spot locations that have a moderate potential for direct impacts. Based on known surveys, Option B in Downtown Tucson has a high potential for direct impacts on archeological sites and historic districts and buildings due to the greater density of historic properties in downtown Tucson, and there are a few spot locations with low to moderate potential. FHWA anticipates, and the State Historic Preservation Office concurs, that the Orange Alternative would result in findings of adverse effect under Section 106 for multiple historic properties in downtown Tucson. These adverse effects would be unmitigable. Section 3.7 (Cultural Resources) provides more detail on the assessment of the potential to affect cultural resources.

Economic Development Benefits: The connection of Option D with I-19 in the Sahuarita area would serve key southern Arizona economic activity centers. This connection would serve the aerospace, defense, manufacturing, and logistics industries in the region's two largest employment areas: Tucson International Airport and the University of Arizona Tech Park. Both are located within the Sonoran Corridor economic development zone. This zone, which stretches from I-19 to I-10 south of the Tucson metropolitan core, is expected to continue to evolve into a dense cluster of industrial uses. In past studies ADOT identified this zone as a major freight focus area. As an import center, this is where products entering the country from Mexico are prepared for inland distribution. As freight-related industries continue to locate here, the volume of truck traffic leaving the area for points east or west on I-10 will continue to grow. Option D may attract some freight traffic to the new corridor, possibly improving travel time reliability due to less daily congestion.

Option D also offers an opportunity for the Sonoran Corridor transportation study to evaluate alternatives that connect to an I-11 Build Corridor Alternative. The Sonoran Corridor is currently under analysis in a separate Tier 1 EIS study effort and is looking at alternatives that provide a high-capacity transportation facility connecting I-19 and I-10 through this economic activity area. A seamless connection of the Sonoran Corridor and I-11 would enhance regional mobility and the functionality of both transportation facilities. Option D is consistent with some of the Sonoran Corridor alternatives still under development. The Sonoran Corridor Tier 1 EIS is considering the I-11 connection as part of its process.

Separation from Tribal Lands: Compared to Option B and Option C, Option D provides the largest separation between I-11 and Tribal lands. The need for I-11 to stay off Tribal lands is a key theme in the input from Tribal stakeholders, who have expressed a preference for Build Corridor Alternatives that stay as far as possible away from Tribal lands. **Chapter 5** (Coordination and Outreach) documents Tribal input in more detail. Option B along I-19 extends through a permanent transportation easement within the San Xavier District of the Tohono O'odham Nation (see **Appendix I** (I-19 through San Xavier [Tohono O'odham Nation]). Option C of the Purple Alternative is located along the western boundary of the San Xavier District, putting I-11 immediately adjacent to Tribal lands. The Central Arizona Project (CAP) Design Option would provide a greater separation from the Schuk Toak District of the Tohono O'odham Nation than the original alignments of Options C and D along Sandario Road.

Section 4(f) Analysis – Tucson Mitigation Corridor: The purpose and function of the TMC is protection of wildlife movement. The TMC facilitates east-west wildlife movement between large habitat blocks to the east (SNP- West, Tucson Mountain Park) and west (Ironwood Forest National Monument). Option D would introduce a new linear facility onto the TMC. The Purple and Green Alternatives would directly impact the TMC, which would be a permanent use under Section 4(f), and mitigation strategies to address the effects to wildlife connectivity will be incorporated into the Recommended Alternative. The mitigation strategies reflect and expand upon those outlined in input received from the Bureau of Reclamation (Reclamation), see Reclamation's letter dated June 8, 2018, in **Appendix F**. FHWA and ADOT will continue coordination with Reclamation, with the goal of reaching a net benefit finding in which the existing function of the TMC is maintained and enhanced.

In order to design effective mitigation, studies to better understand wildlife movement needs in Avra Valley would be conducted. These studies will be developed and completed prior to the Tier 2 analysis to ensure adequate data are available for that process.

Section 4(f) Analysis – Downtown Tucson: Historic districts in downtown Tucson are partially or entirely within the 2,000-foot-wide Project Area for Option B, with buildings immediately abutting both sides of I-10. Option B will require construction of additional capacity on I-10, which will impact historic districts, historic structures, and parks. The adverse impacts to the historic districts and structures in downtown Tucson are unmitigable. The avoidance analysis considered alignment shifts and design changes (including an elevated structure and tunneling below I-10). No feasible and prudent avoidance alternative to the permanent use of these historic districts could be identified. See **Chapter 4** (Preliminary Draft Section 4(f) Evaluation) for more detail on the Section 4(f) analysis.

Option D (Recommended) is part of an end-to-end alternative that reduces travel time between Nogales and Wickenburg compared to the No Build Alternative and achieves LOS C or better throughout the I-11 Corridor. It attracts and diverts traffic from existing roadways. Option D provides an alternate regional route to I-10, facilitating efficient

mobility for emergency evacuation and defense access. It avoids unmitigable impacts to communities as well as historic districts and structures (Section 4(f) resources) in Downtown Tucson). The CAP Design Option and a number of additional mitigation strategies were developed to address impacts to the TMC.

6.2.3 Marana to Casa Grande

The Recommended Alternative uses Option F west of I-10 (Green Alternative), which continues the northwest trajectory of Option D, crossing I-8 in the vicinity of Chuichu Road. Option F provides an alternate regional route to alleviate congestion and prevent bottlenecks during emergency situations where there currently is no alternative route to I-10. It will attract and divert traffic from existing roadways, and is part of the end-to-end alternative that will reduce travel time between Nogales and Wickenburg compared to the No Build Alternative.

Option G would use the existing I-10 corridor, which has sufficient capacity for projected future traffic volumes with I-11. However, Option G but would not supply the alternate route that Option F would in an area where incidents and closures often occur and where there is a limited transportation network off the interstate.

I-10 is a transcontinental corridor, and it is the only high-capacity transportation connection between Arizona's two largest population centers—Phoenix and Tucson. This is a high volume highway that frequently experiences crashes and other incidents that delay travel. Events that cause highway closures generally happen at random and with very little or no warning. In the event of a full highway closure, mobility delays are not only inconvenient, they present safety hazards for first responders and can have economic impacts to the trucking and freight industry.

Building redundancy into the transportation network is a key response strategy to facilitate efficient mobility for emergency evacuation and defense access. Alternate routes provide the opportunity to manage traffic demand during weather events and incidents and can serve as an evacuation route during natural disasters.

Option F provides access to planned growth areas in Marana, Eloy, and Casa Grande. It extends through areas that are vacant or agricultural today but that contain planned growth areas around Marana and Eloy. The development of a new high-capacity transportation facility connecting these growth areas is consistent with local and county-level planning. Option F also serves several key economic activity centers that span the area between Pinal Airpark (a transportation logistics zone) in the south end and Casa Grande in the north end.

Sensitive Environmental Resources: Option F is parallel to the Santa Cruz River and extends through sensitive environmental resources, notably the river's floodplains and riparian habitat. Throughout the remainder of Option F, land use is generally undeveloped and agricultural. Impacts to these resources would be minimized and mitigated through Tier 2 design considerations, such as conveyance structures for floodwaters, wildlife connectivity, and habitat impacts.

Connection to I-10: The Marana area offers an opportunity to connect the new corridor formed by Options D and F. The Recommended Alternative includes this connector. The connector uses a portion of the Purple Alternative, where Option C connects to I-10. The connection benefits long-distance traffic as well as provides a crossover point between I-11 and I-10 during incident management and emergency response.

Option F (Recommended) is part of an end-to-end alternative that reduces travel time between Nogales and Wickenburg compared to the No Build Alternative and achieves LOS C or better throughout I-11. As an alternate regional route, Option F (Recommended) will provide access to planned growth areas and serve key economic centers in Marana, Eloy, and Casa Grande. Option F will attract and divert traffic away from existing roadways. It is consistent with local and county-level planning and commits to mitigation measures to minimize the impacts of the new alignment on floodplains.

6.2.4 Casa Grande to Buckeye

The Recommended Alternative uses Options I2, L, N, and R (Green and Purple Alternatives) to form a new corridor in western Maricopa County. The new corridor provides an alternate regional route, reduces travel time for long-distance traffic between Nogales and Wickenburg, provides access to planned growth areas, and serves key economic activity centers.

There is currently no direct connection between western Pinal and Maricopa counties. Current route options between these areas require travel on I-8 and SR 85 or travel on I-10 through Phoenix. The new corridor extends between Casa Grande in western Pinal County and Buckeye in western Maricopa County, providing a transportation facility directly connecting those areas. Travel distance between Casa Grande and Buckeye would be shorter, which would reduce end-to-end travel time between Nogales and Wickenburg.

While use of existing I-8 and SR 85 (Options H, K, and Q) would minimize disturbance to environmental resources, the traffic analysis indicates this route is underutilized. Under the No Build Alternative, traffic heading northwest of Phoenix (Wickenburg, Kingman, and Las Vegas) generally stays on I-10 through Phoenix, diverting northwest via various regional connections (e.g., US 60, SR 101L, and SR 303L) rather than using I-8 and SR 85, which is the defined (by roadway signage) “Phoenix Bypass Route.” The Recommended Alternative is a more direct route between western Pinal County and western Maricopa County, and offers long-distance travelers an opportunity to avoid the congestion in Phoenix. Based on an analysis of VMT for this new corridor, it effectively attracts and diverts long distance truck traffic away from existing roadways, whereas the Orange Alternative, which co-locates I-11 with I-8 and SR 85, does not.

The community of Mobile is a growth area located along SR 238 near the Pinal-Maricopa county line. While rural in nature today, Mobile is planned to evolve into a large economic activity center in the future (Amaranth). This growth is dependent on north-south transportation access to the rest of the City of Goodyear in western Maricopa County. The Recommended Alternative would provide this connectivity and, as a high-capacity interstate corridor, would enhance opportunities for intermodal development to take advantage of the community’s location along the Union Pacific Railroad mainline corridor.

The Sun Corridor Metropolitan Planning Organization and Pinal County have formally supported the West Pinal Freeway, a proposed regional high-capacity transportation facility for this region that would provide a direct connection to Maricopa County. Options I1 and I2 comprise the proposed West Pinal Freeway. Transportation framework studies conducted by the Maricopa Association of Governments also propose a high-capacity transportation facility (the Hassayampa Freeway) in the general location of Option L.

Option L is partially adjacent to the Sonoran Desert National Monument within a Bureau of Land Management (BLM)-designated multi-use corridor. The new Option L corridor is consistent with BLM’s infrastructure planning in the vicinity of the Sonoran Desert National Monument (SDNM).

The BLM has identified a series of multi-use utility corridors, which are defined corridor ROWs for transportation and energy transmission facilities and which represent BLM's preferred routing of such facilities through their lands. One such route exists on portions of the north and east side of the SDNM where major power and underground pipeline infrastructure already exists. Developers have proposed the Sonoran Valley Parkway facility within this utility corridor as well. The primary purpose of the parkway is to connect the main portion of the City of Goodyear with newly annexed lands in Mobile. BLM was the lead agency in completing an EIS for the establishment of the parkway's ROW. While the general location is similar to Option L, the parkway is intended for local travel and emergency response services. Consolidating both the parkway and I-11 within the same BLM multi-use corridor would be compatible with its intended use and would minimize the number of new linear transportation facilities through this environmentally sensitive area.

Further north, the Recommended Alternative traverses the Goodyear in a manner that is generally consistent with proposed high-capacity transportation facilities: SR 303L south extension and SR 30. The location of Option N is a key system linkage in a new regional transportation facility, providing access and linking planned communities and economic activity centers.

The Recommended Alternative would further fragment wildlife habitat within the Gila Bend-Sierra Estrella Linkage, which connects two large wildland blocks located on the Gila River Indian Community and the SDNM. Through coordination with the Arizona Game and Fish Department (AGFD), BLM, and other stakeholders to determine data needs and study design in advance of Tier 2 studies, ADOT will fund and facilitate wildlife connectivity studies to identify effective mitigation strategies during Tier 2 studies to avoid, minimize, or mitigate the impacts on wildlife connectivity. If a Build Corridor Alternative is selected, these mitigation strategies will be included in the ROD for the Tier 1 EIS. As future projects move the I-11 corridor forward into more detailed design, those efforts would continue in a more detailed manner as the specific alignment of I-11 is developed.

Current I-11 planning has identified environmental constraints regarding a crossing of the Gila River in this vicinity. These constraints include sensitive riparian and wildlife resources, higher potential for cultural resources to be present, and proposed critical habitat for the western yellow-billed cuckoo (*Coccyzus americanus*). East of SR 85, Option N would require a new crossing of the Gila River. West of SR 85, the general location of Option R west of SR 85 was placed north of the Gila River in order to avoid and minimize impacts to the river. Mitigation strategies are identified to avoid or minimize the potential for impacts along Option R. If a Build Corridor Alternative is selected, these mitigation strategies also would be included in the Record of Decision for the Tier 1 EIS. All mitigation strategies identified in this Draft Tier 1 EIS would be further explored in the Tier 2 environmental review as the specific alignment and design are developed.

Options I2, L, N, and R (Recommended) comprise a new corridor that is an alternate regional route in an area where there are no high-capacity transportation facilities. This corridor would provide access to planned growth areas and serve key economic centers in western Maricopa and Pinal counties. The new corridor would reduce travel time for long-distance traffic from Nogales to Wickenburg, achieve LOS C throughout I-11, and effectively attract and divert traffic from existing roadways. It also is consistent with local and county plans. The Recommended Alternative includes mitigation strategies developed to address the impacts of a new Gila River crossing.

6.2.5 Buckeye to Wickenburg

The Recommended Alternative uses a hybrid combination of Options U (Green Alternative) and X (Purple Alternative). Extending north from I-10, the Recommended Alternative follows Option U for approximately 15 miles. Option U provides the most direct route north in this area.

Approximately 5 miles south of the Vulture Mountains Recreation Area (VMRA), the Recommended Alternative transitions to Option X. This segment of Option X generally follows an existing transmission line corridor within a BLM-designated multi-use utility corridor through the VMRA. The area within the BLM multi-use corridor is already disturbed from the overhead power transmission line and off-highway vehicle use. Use of the multi-use corridor would consolidate the number of linear facilities through the VMRA.

FHWA has determined that the use of the multi-use corridor through the VMRA would satisfy the Joint Development criteria of 23 Code of Federal Regulations 774.11 (Applicability), and thus Section 4(f) requirements would not apply. See **Chapter 4** (Preliminary Draft Section 4(f) Evaluation) for more information. FHWA and ADOT would continue to work with BLM and Maricopa County throughout the Tier 2 environmental review process to identify appropriate, site-specific mitigation.

North of the VMRA, Option X crosses US 60 west of Wickenburg Municipal Airport. This corridor location provides access to both the planned Forepaugh development area and Wickenburg Municipal Airport. From there, the Recommended Alternative follows relatively flat terrain to connect with US 93 west of the developed areas surrounding Wickenburg. The general location of the connection on point with US 93 was placed to provide distance from existing residential development.

Hybrid Option U/X provides an alternate regional route and access to planned growth areas, reduces travel time for long-distance traffic between Nogales and Wickenburg, and meets LOS C on I-11. It will effectively attract and divert traffic from existing roadways and serve key economic centers in the Hassayampa Valley and western Maricopa County. It is consistent with local land use and transportation plans and includes measures to mitigate impacts to VMRA.

6.2.6 Additional Areas of Analysis

The Recommended Alternative includes 3 areas that were not part of the 2,000-foot-wide Project Area for the Build Alternatives evaluated in Chapter 3. These areas are shown on **Figure 6-2** (Recommended Alternative) and described below.

- Anamax Park: Required to avoid a Section 4(f) resource. This area lies outside of the evaluated Project Area for the Green and Orange Alternatives.
- Proposed Palo Verde Regional Park: Required to avoid a Section 4(f) resource. This area lies outside of the evaluated Project Area for the Purple Alternative
- U/X Connector: The Hybrid Option U/X requires a 1.25-mile-long connection between the Green Alternative (Option U) and the Purple Alternative (Option X). This connection lies outside of the evaluated Project Area for the Purple and Green Alternatives.

The Project Team conducted a preliminary evaluation of the potential for the corridor shifts to change the impact analysis documented in Chapter 3. The results are summarized in **Table 6-2**

(Potential for Change in Impact Analysis from Corridor Shifts). A detailed evaluation of the revised will be documented in the Final Tier 1 EIS.

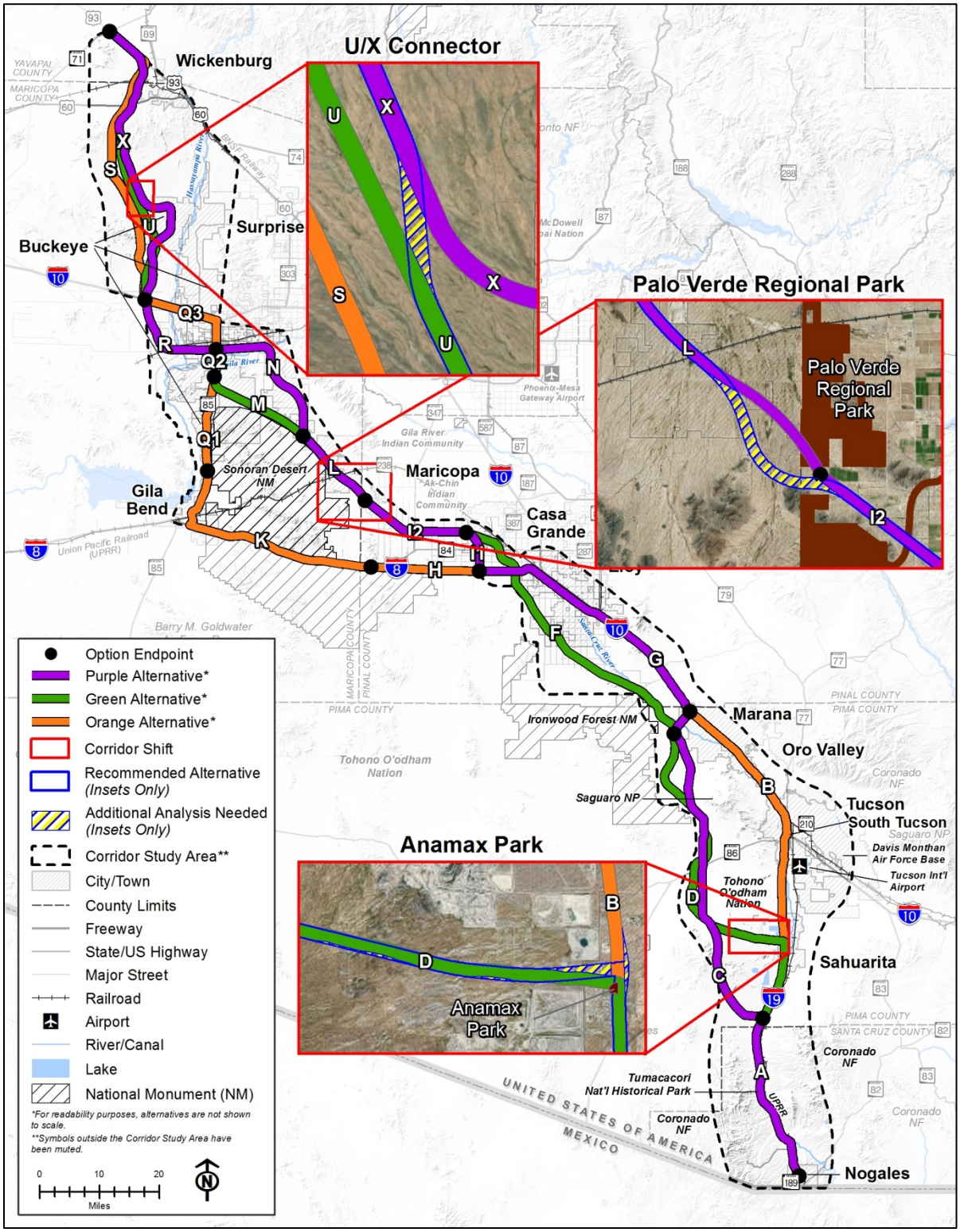

Figure 6-2 Corridor Shifts

Table 6-2 Potential for Change in Impact Analysis from Corridor Shifts

Land Use	*Land Ownership:* Avoids Anamax Park, eliminating the potential for impacts to local/state park lands. No other changes in potential impacts to land ownership are expected.	*Land Ownership:* Avoids impacts to the Palo Verde Park, but would increase the potential impacts to BLM lands.	*Land Ownership:* Avoids impacts to the adjacent State Trust Lands, and keep the corridor on BLM lands.
	Existing Land Use: Marginally reduces residential and mixed uses and adds vacant lands.	*Existing Land Use*: Marginally reduces recreational/open space and adds vacant lands.	*Existing Land Use*: No change.
	Future Land Use: No change.	*Future Land Use:* Marginally reduces potential for impacts to commercial land uses.	*Future Land Use:* No change.
Recreation	Avoids the Anamax Park. No other changes in potential for impacts to recreational areas.	Avoids Palo Verde Regional Park. The portion of Palo Verde Regional Park that remains in the Project Area is part of a recreation trail and is planned to be grade separated from the I-11 corridor. No other changes in potential impacts to recreational areas.	No change.
Community Resources, Title VI and Environmental Justice	• Avoids Anamax Park, a community resource. • Transfers potential for impacts from one residential neighborhood to another that is closer to El Toro Rd. • Reduces community fragmentation by shifting the corridor closer to the northern limits of the neighborhood. No change to EJ or Title VI.	• Limited number of residences at this location. Potential for impacts are similar to original analysis. • Avoids 2 farms. • Avoids an electrical substation. No change to EJ or Title VI.	No change. No community resources or residences at this location.
Economics	No change.	No change.	No change.

Table 6-2 Potential for Change in Impact Analysis from Corridor Shifts (Continued)

Cultural Resources	*Archaeological Sites:* • 1 recorded archaeological site: Indian Kitchen [AZ DD:4:123(ASM)] is no longer in the Project Area • Added 3 archaeological sites: AZ EE:1:5, 220, and 227(ASM) (1 determined to be NRHP ineligible, 1 recommended ineligible, and 1 unevaluated) No change. Potential for impacts remains low to moderate.	*Archaeological Sites:* • Added 1 site: AZ T:16:159(ASM) (NRHP eligibility unevaluated) No change. Potential for impacts remains low.	*Archaeological Sites:* • No prior surveys No change. Potential for impacts remains low.
	Historic Districts and Buildings: • No NRHP-listed or previously determined eligible historic districts and buildings. • 4 unrecorded historic-period properties (3 preliminarily evaluated as possibly NRHP eligible and 1 as not eligible) are no longer in the Project Area. • Added 6 unrecorded historic-period properties preliminarily evaluated as possibly NRHP eligible.	*Historic Districts and Buildings:* No change. There are no buildings in shifted corridor or modified portion of original corridor.	*Historic Districts and Buildings:* No change. There are no buildings in the additional analysis area.
	Traditional Cultural Resources: No change. None identified in the vicinity.	*Traditional Cultural Resources:* No change. None identified in the vicinity.	*Traditional Cultural Resources:* No change. None identified in the vicinity.
Visual Resources	No change.	No change.	No change.
Hazardous Materials	No Change. The shifted corridor crosses some scattered residential properties, undeveloped/vacant land, and railroad ROW. It is unlikely there would be additional major hazardous materials sites or facilities. The potential impact is low.	No change. The shifted corridor crosses undeveloped and vacant land. It is unlikely there would be additional major hazardous materials sites or facilities. The potential impact is low.	No change. The additional analysis area crosses undeveloped and vacant land. It is unlikely there would be additional major hazardous materials sites or facilities. The potential impact is low.
Geo/Soils/ Farmland	No change.	No change.	No change.

Table 6-2 Potential for Change in Impact Analysis from Corridor Shifts (Continued)

Water	• No additional sensitive waters, impaired waters, streams, or floodplains in the shifted corridor. • 1 additional groundwater well in the shifted corridor. • Approximately 19 additional acres of NWI-mapped Riverine area in the shifted corridor	• No additional sensitive waters, impaired waters, or wells in the shifted corridor. • Approximately 3,106 additional linear feet of Waterman Wash in the shifted corridor. • Approximately 14 additional acres of NWI-mapped Riverine area in the shifted corridor. • Approximately 174 additional acres of FEMA-mapped ZONE A floodplains in the shifted corridor.	• No additional sensitive waters, impaired waters, or wells in the additional analysis area. • Approximately 702 additional linear feet of Powerline Wash in the additional analysis area. • Approximately 2 additional acres of NWI-mapped Riverine area in the additional analysis area. • Approximately 21 additional acres of FEMA-mapped floodplains (15 acres of Zone A and 6 acres of Zone AE) and one Regulatory Floodway in the additional analysis.
Biological Resources	*Biotic Communities:* No change.	*Biotic Communities:* No change.	*Biotic Communities:* No change.
	Riparian Areas: No change.	*Riparian Areas:* No change.	*Riparian Areas:* No change.
	SERI: No change.	*SERI:* No change.	*SERI:* No change.
	Invasive Species: No change.	*Invasive Species:* No change.	*Invasive Species:* No change.
	Threatened and Endangered Species: Adds a small amount semidesert grassland east of I-19 that is potentially occupied by Pima pineapple cactus.	*Threatened and Endangered Species:* No change.	*Threatened and Endangered Species:* No change.

Based on the preliminary analysis, the corridor shift to avoid Anamax Park is the only location where there is the potential for differentiating impacts. The results indicate the presence of 6 unrecorded, historic-period properties that are possibly NRHP eligible in adjusted corridor. There is no indication of a possible historic district at this location. If at Tier 2 determines the identified properties are protected under Section 4(f) a highway could still be placed in the northern portion of the east-west corridor, where there is 310-foot gap between the properties (see **Figure 6-3**).

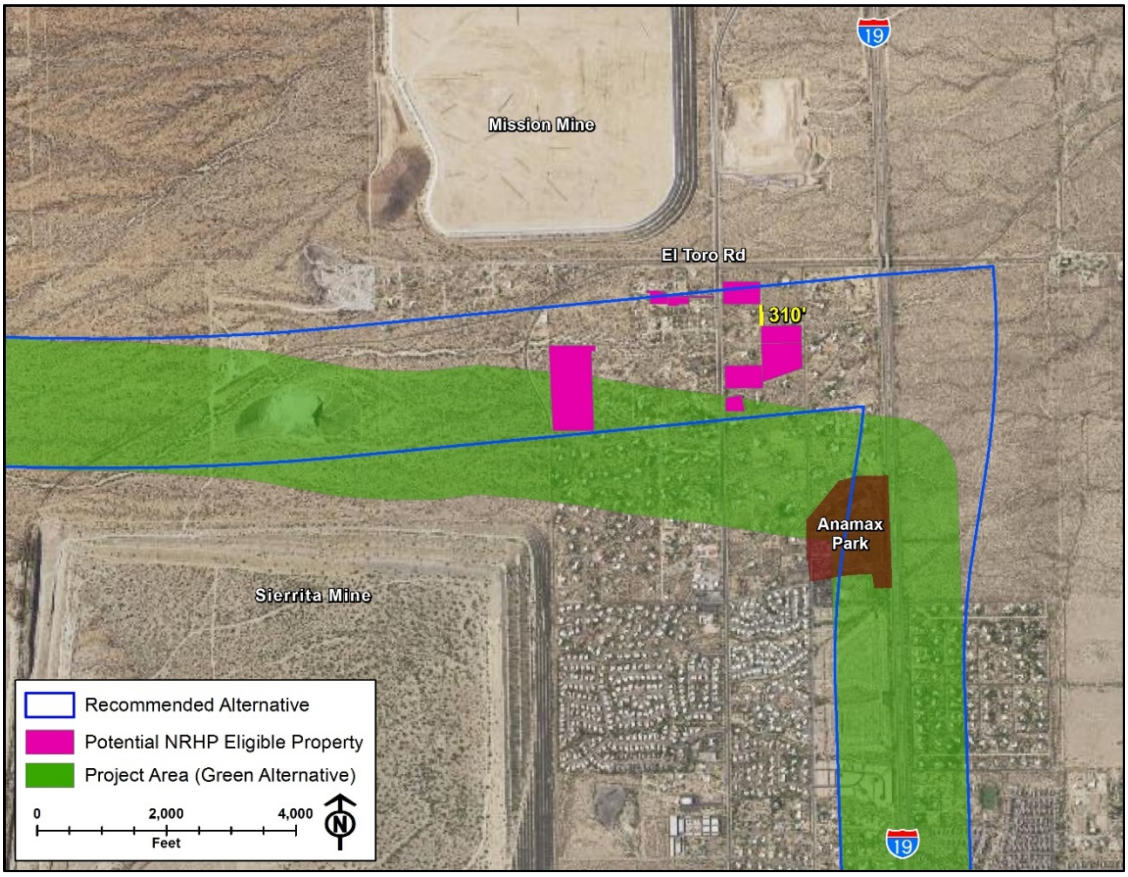

Figure 6-3 Anamax Corridor Shift

There are no other potential impacts within the shifted Project Area that would prompt FHWA and ADOT to modify the Recommended Alternative.

6.3 Recommended Alternative

FHWA and ADOT identified a Recommended Alternative that best meets the I-11 Purpose and Need while minimizing the potential for adverse impacts. The Recommended Alternative is based primarily on the Purple and Green Alternatives, but it is a hybrid alignment (i.e., a combination of Corridor Options from the Build Corridor Alternatives) to reduce or avoid adverse effects. **Table 6-3** (Recommended Alternative) lists the Corridor Options that comprise the Recommended Alternative, which is illustrated on **Figure 6-4** (Recommended Alternative).

Table 6-3 Recommended Alternative

Option	Build Corridor Alternative	Description
A	Common to All Build Corridor Alternatives	Co-located with Interstate 10 (I-10) and I-19.
D, with CAP Design Option	Green Alternative	Uses the CAP Design Option parallel to the CAP canal, which was a design option for both the Purple and Green Alternatives. Includes connection between I-10 and Marana.
F	Green Alternative	New corridor west of I-10, connects to I-8 and extends north along Chuichu Road.
I2	Common to Purple and Green Alternatives	Extends west along Barnes Road, then northwest towards Goodyear.
L	Common to Purple and Green Alternatives	New corridor parallel to the SDNM; co-located with a portion of the proposed Hassayampa Freeway in prior studies.
N	Purple Alternative	New corridor follows proposed State Route (SR) 303L south extension and proposed SR 30 west (from SR 303L to SR 85).
R	Common to Purple and Green Alternatives	New corridor crosses SR 85 and veers north to intersect I-10 at 363rd Avenue.
U	Green Alternative	Option U from I-10 to a point just south of the VMRA.
X	Purple Alternative	Follows an existing transmission line corridor through the VMRA to US 93

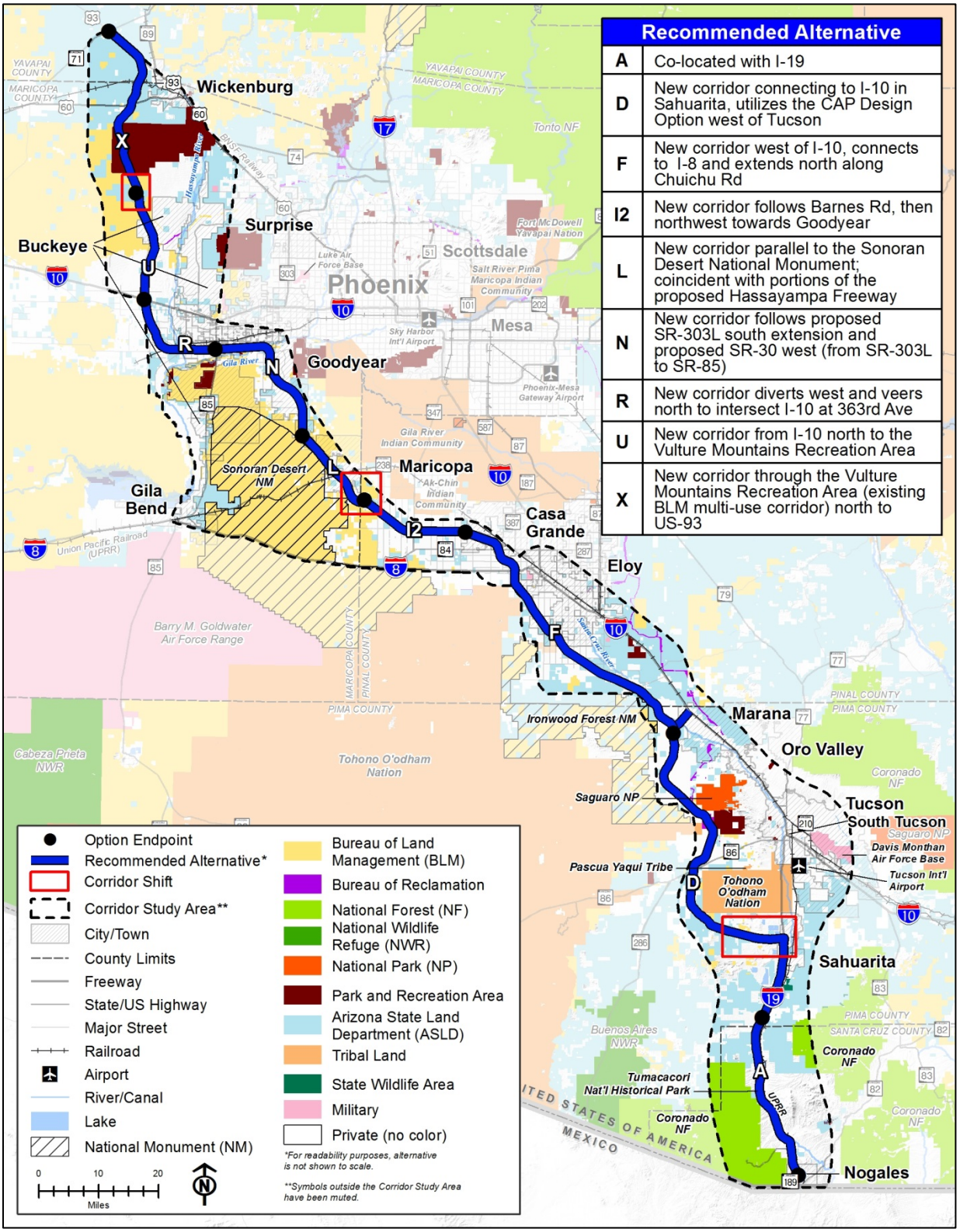

Figure 6-4 Recommended Alternative

6.4 Impact Avoidance, Minimization, and Mitigation

During the alternatives development and screening process, the alternatives were placed with the intent of avoiding major environmental impacts, including designated national monuments, national parks, and wilderness areas. This Draft Tier 1 EIS includes a detailed analysis of the beneficial transportation effects and adverse environmental impacts on a wide variety of resources. Section 3.2 (Summary of Key Environmental Impacts) provides a high-level summary of the key differentiating and substantive impacts by Corridor Option. These factors contributed to the identification of the Recommended Alternative by identifying opportunities to avoid, minimize, or mitigate potential adverse impacts.

The No Build Alternative and all the Build Corridor Alternatives have sensitive resource areas. Throughout **Chapter 3** (Affected Environment and Environmental Consequences) and **Chapter 4** (Preliminary Draft Section 4(f) Evaluation) of this Draft Tier 1 EIS, strategies are recommended that could be implemented in the development of I-11 that would avoid, minimize, and mitigate adverse effects. This section compiles the strategies that apply to the Recommended Alternative. The mitigation strategy discussion for this Draft Tier 1 EIS focuses on planning-level efforts. As I-11 moves forward, Tier 2 studies will identify project-level mitigation measures, including those necessary to minimize the short-term and temporary effects of construction activities.

Table 6-4 (Corridor-Wide Mitigation Strategies) outlines the general mitigation strategies that would be implemented throughout I-11 by type of resource. **Table 6-5** (Location-Specific Mitigation Strategies) identifies more location-specific mitigation strategies.

Table 6-4 Corridor Wide Mitigation Strategies

Resource Area	Corridor-Wide Mitigation Strategies
All	• Each Build Corridor Alternative is 2,000 feet wide, and the assumed cross section for the future alignment would be a maximum of 400 feet wide. The use of a broad, 2,000-foot-wide Project Area in the Tier 1 analysis gives FHWA and ADOT the flexibility to identify and refine the specific roadway alignment within the corridor if a Build Corridor Alternative is ultimately selected. At that time, development of the specific alignment and more detailed design would provide an opportunity to avoid or minimize impacts to the natural and human environment.
Transportation	• Beneficial effects on the transportation system have been identified, and no mitigation strategies are proposed for this Tier 1 level analysis. • *Tier 2 studies would address more specific considerations, such as continued coordination with local and county transportation agencies and development of a traffic management plan and the effects.*
Land Use and Section 6(f)	• Participate in coordination with local government entities as appropriate to minimize the potential for land use conflicts. • *Tier 2 studies would address more specific mitigation considerations, such as the acquisition of properties and conversion of land to transportation uses.*
Recreation	• Design the specific alignment of I-11 to allow for maintenance of access to recreation areas and to provide connectivity between recreation areas, which will connect divided recreation areas • Evaluate access route considerations for Saguaro National Park- West and Tucson Mountain Park due to the closure of Sandario Road. • Consider providing connectivity between the two segments of the proposed Palo Verde Regional Park to minimize permanent impacts. • *Tier 2 studies would address more specific mitigation considerations, such as construction timing, construction phasing, and pedestrian trail crossings.*
Community Impacts and Environmental Justice	• Throughout the Tier 1 EIS process, FHWA and ADOT worked to engage diverse populations in public participation efforts. Prior to the release of this Draft Tier 1 EIS, two rounds of focused public engagement were held during the scoping and alternatives analysis phases to facilitate public understanding of the study process, key milestones, and decision points. • In addition to public engagement efforts, the Project Team has continuously accepted input from the public via mail, e-mail, and a bilingual telephone hotline. • *Tier 2 studies would address more specific mitigation considerations, such as placing the alignment to avoid and minimize impacts to communities, consideration of features such as pedestrian overpasses to maintain neighborhood connections, and continued characterization of community demographics in order to identify environmental justice populations.*

Table 6-4 Corridor Wide Mitigation Strategies (Continued)

Economics	• Mitigation measures related to coordinated land use planning and the prohibition of interchanges in the Avra Valley area also address and mitigate economic impacts (see Section 4(f) mitigation strategies). • *Tier 2 studies would address more specific impacts and mitigation considerations, including use of an updated travel demand model with current population and employment projections, addressing the spacing and number of interchanges, and a more detailed analysis of the impacts to businesses, including loss of access.*
Cultural Resources	• FHWA will execute a Programmatic Agreement (PA) pursuant to Section 106 of National Historic Preservation Act to stipulate procedures for assessing effects of Tier 2 projects on properties listed in or eligible for the NRHP. The PA will stipulate procedures for developing and implementing measures to avoid or minimize adverse effects or mitigate any unavoidable adverse effects as each Tier 2 project is planned. The stipulations of the current draft PA (see **Appendix E7.2**) address specific requirements for further studies of cultural resources, which would occur during Tier 2. FHWA is continuing to work with the Section 106 consulting parties and will execute the PA prior to issuing a ROD for the Tier 1 EIS process. • *Tier 2 studies would continue to execute the stipulations of the PA, which includes further detailed study to identify cultural resources in the Study Area.*
Noise	• Undeveloped lands within the Study Area have been identified and categorized based on zoning, and are documented in Appendix E8 of this Draft Tier 1 EIS. This information is available to local and regional jurisdictions for their use in planning for noise-compatible land uses and buffer areas in the vicinity of the I-11 Project Area. • *Tier 2 studies would address more specific mitigation considerations, such as a traffic noise impact and abatement analysis based upon the alignment and design of I-11. Mitigation measures considered during Tier 2 studies include noise walls, earthen berms, acquisition of a buffer zone, traffic management measures, and refinement of the horizontal and/or vertical alignment.*
Visual and Aesthetics	• ADOT will comply with applicable local and county ordinances related to dark skies and employ best management practices in minimizing the impact of fugitive light on the night sky along I-11. • *Tier 2 studies would address more specific mitigation considerations, such as the minimization of earthwork and grading and development of landscape design plans for visually sensitive areas.*
Air Quality	• Mitigation measures related to the prohibition of interchanges in the Avra Valley area also mitigate air quality impacts (see Section 4(f) mitigation strategies). • *Tier 2 studies would include project-level air quality analyses and address more specific mitigation considerations, including methods to minimize the impact of construction activities on air quality.*

Table 6-4 Corridor Wide Mitigation Strategies (Continued)

Hazardous Materials	• Mitigation measures related to the prohibition of interchanges in the Avra Valley area also mitigate hazardous materials impacts (see Section 4(f) mitigation strategies). • *Tier 2 studies would conduct updated searches of regulatory databases to reflect most recent records and address more specific avoidance and mitigation concerns, such as Phase 1 Site Assessments and development of a health and safety plan during construction.*
Geology, Soils, and Prime and Unique Farmlands: Geology	• Topography was considered during the alternatives development process to minimize the potential need for cut (excavation) and fill (building up embankments). • *Tier 2 studies would include formal coordination with the Natural Resources Conservation Service as part of compliance with the Farmland Protection Policy Act, as appropriate, and address site-specific mitigation measures, such as avoidance of land subsidence areas, earth fissures, slope design, geotechnical considerations, erosion control, and development of a reclamation and revegetation plan.*
Water Resources	• Alternatives were developed to have a more perpendicular crossing of major watercourses and floodplains. Known wetlands were avoided to the extent possible. • *Tier 2 studies would address more specific mitigation considerations, such as designing the future construction footprint to minimize its impact on sensitive water resources to the extent possible, obtain Clean Water Act Section 401, 402, and 404 permits and certifications, as needed, and development of stormwater pollution prevention plans employing best management practices which minimize impacts to water quality.*
Biological Resources	• ADOT will participate, support and commit to long-term noxious weed management efforts. To effectively combat noxious and invasive weeds, a coordinated effort across federal, state and local levels is required. Noxious and invasive weed control on BLM or US Forest Service (USFS) lands would occur in accordance with previously approved Environmental Assessments. Long-term management of noxious and invasive weeds would be necessary to minimize indirect and cumulative effects to the Pima pineapple cactus and its habitat. • Designated Critical Habitat were considered during the alternatives development phase of the Tier 1 EIS and avoided to the extent possible. • Structures designed to enhance wildlife connectivity, such as wildlife overpasses and underpasses, and fencing to funnel wildlife to these structures, would be implemented as determined by wildlife studies and agency coordination. • ADOT will conduct a thorough habitat assessment in all areas which have potential habitat for Endangered Species Act-listed species and avoid, minimize, and mitigate impacts. ADOT will conduct consultation with the US Fish and Wildlife Service (USFWS), as appropriate. • Efforts will be made to avoid impacts to the Pima pineapple cactus by minimizing the construction footprint through quality Pima pineapple cactus habitat, survey suitable habitat, translocating individuals, implementing long-term control of noxious

Table 6-4 Corridor Wide Mitigation Strategies (Continued)

	and invasive weeds; and negotiating compensatory mitigation with USFWS, as needed. • Additional components of the strategy to mitigate biological resources and wildlife connectivity impacts are location-specific in nature and are listed in **Table 6-4** (Location-Specific Mitigation Strategies). • *Tier 2 studies would address more specific mitigation considerations, such as habitat assessments, species-specific field surveys, vegetation removal, and control of noxious and invasive species during construction.*
Section 4(f) Resources	• Avoid Section 4(f) properties in the Recommended Alternative Corridor (unless new properties are discovered during Tier 2 that would impact this decision), with the exception of the TMC discussed in **6-4** (Location-Specific Mitigation Strategies). An inventory of known Section 4(f) resources are listed in **Table 4-5**. Specifically, shift the 2,000-foot-wide corridor to avoid Anamax Park and Palo Verde Regional Park. • *As set forth in 23 CFR 774.7(e)(1), FHWA would complete a Final Section 4(f) Evaluation during future Tier 2 studies. At that time, FHWA would focus on making final determinations of use, assessing avoidance and least harm as warranted, and identifying specific measures to minimize harm. The results of the detailed Tier 2 cultural resources studies and surveys would be assessed to determine if there are any additional Section 4(f) properties.*

Table 6-5 Location-Specific Mitigation Strategies

Corridor Location	Location-Specific Mitigation Strategies
Option A: I-19 Nogales to Sahuarita	• Avoid widening I-19 to the east along the Santa Cruz River and impacting Southwestern willow flycatcher, yellow-billed cuckoo and their critical habitat; Gila topminnow; and Northern Mexican gartersnake habitat; conduct pre-construction surveys where appropriate; and consult with USFWS, as needed. (Section 3.14 [Biological Resources]) • Minimize the construction footprint to the extent possible and improve or construct wildlife crossings which jaguar and ocelots will use. (Section 3.14 [Biological Resources]) • Minimize construction footprint through quality PPC habitat, survey suitable habitat one year prior to Tier 2 process to inform design, implement long-term control of noxious weeds; and negotiate compensatory mitigation with USFWS, as needed. (Section 3.14 [Biological Resources]) • Avoid or minimize impacts to riparian corridor along the Santa Cruz River. Assess the need for potential additional wildlife crossings and implement where warranted to preserve wildlife movement. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement. (Section 3.14 [Biological Resources]) • Avoid or minimize impacts to the Tumacacori-Santa Rita and Santa Rita-Sierrita Linkages. Assess whether recommendations provided in the specific or county linkage reports can be used to improve or construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement. (Section 3.14 [Biological Resources])
Option D with CAP Design Option: Sahuarita to Marana	• Minimize construction footprint through quality PPC habitat, survey suitable habitat one year prior to Tier 2 process to inform design, implement long-term control of noxious weeds; and negotiate compensatory mitigation with USFWS, as needed. (Section 3.14 [Biological Resources]) • Avoid critical and occupied habitat of the Chiricahua leopard frog, which occurs adjacent to the southern end of Option D. (Section 3.14 [Biological Resources]) • Avoid or minimize impacts to the Santa Rita-Sierrita and Coyote-Ironwood-Tucson Linkages. Assess whether recommendations provided in the specific or county linkage reports can be used to improve or construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement. (Section 3.14 [Biological Resources])

Table 6-5 Location-Specific Mitigation Strategies (Continued)

Option D with CAP Design Option: Sahuarita to Marana (continued)	• Coordinate with Reclamation to achieve a net benefit for wildlife connectivity for the TMC, a Section 4(f) resource. Preliminary mitigation actions and strategies to achieve a net benefit include: 1. Wildlife Studies Prior to Tier 2 Process. FHWA and ADOT will coordinate with AGFD and USFWS, as recognized wildlife authorities, on what studies are needed to understand east-west wildlife movement needs (both on and off the TMC) within Avra Valley. These studies will gather baseline wildlife data, including evaluation of historic and current movement data, and surveys of existing populations. Using the baseline data, the studies will identify the extent, location, requirements, target species, and expected benefits of additional wildlife movement areas, supporting structures, and other mitigation measures. Finally, the studies will identify an approach for perpetual management and protection of any acquired lands, as well as any adaptive management thresholds and likely actions. Identification of the entity responsible for management and agreements with that entity would occur during the Tier 2 process. FHWA and ADOT will fund and facilitate the implementation of the identified wildlife studies prior to the initiation of the Tier 2 process so that the results inform project design. 2. Mitigation Recommended in Wildlife Studies Including Additional Wildlife Corridor. As part of the Tier 2 design FHWA and ADOT would use the results of the wildlife studies, in consultation with AGFD, USFWS, and the TMC Working Group, to identify wildlife movement areas, supporting structures, and other mitigation measures to incorporate into the I-11 project. Mitigation measures may be located outside the TMC, but will be located between the Tucson Mountains and the Roskruge Mountains to the west and will support the purpose of the TMC. 3. Land Replacement. FHWA and ADOT would transfer any lands acquired for TMC mitigation to an entity that would protect the lands for wildlife and wildlife movement purposes. FHWA and ADOT would consult with the TMC partners to jointly identify and agree on the appropriate entity. 4. Relocate and Reclaim Sandario Road. ADOT would relocate Sandario Road to coincide with the new I-11 alignment. ADOT would remove and reclaim about a 2-mile section of the old road with native vegetation. The design would remove barriers for wildlife (including the road and associated roadway fencing) while maintaining any necessary local access. 5. Wildlife Crossings Concurrent with CAP Canal Wildlife Crossings. ADOT would place wildlife crossings on I-11 that align with CAP siphon crossings in the TMC and one immediately north of the TMC (a total of seven crossings). The purpose of the I-11 wildlife crossings is to provide continuity to the existing CAP wildlife crossings (siphons) and minimize impacts to wildlife movements between the Tucson Mountains and Roskruge Mountains. 6. Design Standards. The Reclamation and the Central Arizona Water Conservation District have design standards for facilities that encroach on CAP lands. ADOT would comply with these standards where I-11 crosses CAP lands or is adjacent to the CAP facility.

Table 6-5 Location-Specific Mitigation Strategies (Continued)

Option D with CAP Design Option: Sahuarita to Marana (continued)	7. No Interchanges in the TMC. ADOT would prohibit exits and interchanges on I-11 within the TMC. 8. No Interchanges. Between West Snyder Hill Road and West Manville Road. To maximize the effectiveness of the TMC mitigation measures, ADOT would not build exits or interchanges on I-11 between West Snyder Hill Road and West Manville Road. The direct distance between these two roads is approximately 9 miles. 9. Minimize Width of I-11 in TMC. Within appropriate interstate design standards, ADOT would minimize the width of I-11 through the TMC. The design would occur during Tier 2. 10. Land Use Planning. Understanding the potential for indirect and cumulative land use effects from the I-11 project, ADOT would be an active partner in a broader effort with Metropolitan Planning Organizations, local jurisdictions, resource agencies, and private stakeholders to cooperatively plan development in the I-11 Project Area. The effort would coordinate wildlife connectivity, local land use planning, and context sensitive design for the I-11 facility. The White Tanks Conservancy may be a model for this type of effort. Coordination with Pima County on the implementation of the Sonoran Desert Conservation Plan also could be part of the effort.
Option F: Marana to Casa Grande	• Avoid or minimize impacts to the Santa Cruz River along Option F; conduct two breeding seasons of pre-construction surveys for the yellow-billed cuckoo; implement seasonal restrictions, and consult with USFWS, as needed. • Avoid or minimize impacts to the Coyote-Ironwood-Tucson and Ironwood-Picacho Linkages. Assess whether recommendations provided in the specific or county linkage reports can be used to improve or construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement.
Options I2, L, N, and R: Casa Grande to Buckeye	• Avoid or minimize impacts to the Gila Bend-Sierra Estrella Linkage. Assess whether recommendations provided in the specific or county linkage reports can be used to improve or construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement. • Minimize the footprint of the bridge crossing the Gila River to the extent possible; conduct two breeding seasons of pre-construction surveys for the yellow-billed cuckoo, southwestern willow flycatcher, and Yuma Ridgeway's rail in suitable habitat; implement seasonal restrictions and consult with the USFWS, as needed. • Avoid or minimize impacts to the riparian corridor along the Gila River and within the Gila River floodplain. The need for potential additional wildlife crossings would be assessed to preserve wildlife movement, Coordination with relevant agencies would occur to implement modifications that will enhance wildlife movement.

Table 6-5 Location-Specific Mitigation Strategies (Continued)

Corridor Location	Location-Specific Mitigation Strategies
Options U and X: Buckeye to Wickenburg	• Avoid or minimize impacts to the White Tanks-Belmonts-Vultures-Hieroglyphics and Wickenburg-Hassayampa Linkages. Assess whether recommendations provided in the specific or county linkage reports can be used to improve and construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement. • Maintain corridor permeability for OHV race course in VMRA.

6.5 Implementation and Phasing

At this time, no funding has been identified to construct I-11. If FHWA and ADOT select a build alternative in the ROD, the build alternative would be implemented in segments as funding is available. A preliminary phased implementation plan will be included in the Final Tier 1 EIS.

In order to advance a segment of a Selected Alternative to Tier 2 analysis, logical termini and independent utility must be demonstrated. Segments of independent utility are portions of a project that may be constructed without other construction projects or linkages; are not dependent upon other segments of the project to demonstrate improvements to the transportation system; and would be considered complete and separate projects. Project segments may be prioritized according to:

- Stakeholder collaboration and feedback.
- Integration into the current network and addressing areas with the greatest transportation and redundancy needs.
- Leveraging current and planned investments.
- Availability of funding.
- Ability to accommodate the full I-11 build configuration, by acquiring ROW and preserving access control.

In addition, phasing may refer to the type of roadway project or improvement. Initial segments may entail intersection improvements, additional access controls, or construction of a two-lane or four-lane divided roadway that is later upgraded to interstate standards.

6.5.1 Funding and Financing Considerations

The implementation of the corridor could entail federal, state, or local funding, tolling, or private-public partnerships.

From the perspective of federal funding, the 2015 Fixing America's Surface Transportation Act or "FAST Act" authorizes money each year for all the state highway programs combined. That amount is divided among the states, and then each state's allocation is divided among different regions of the state.

The Transportation Infrastructure Finance and Innovation Act is a federal credit program, not a grant program, requiring projects to generate their own revenue streams through user charges or other dedicated funding sources. Grant Anticipation Revenue Vehicles Bonds are debt financing instruments that permit an issuer to pledge future federal highway funds to repay investors.

Public-Private Partnerships assist transportation and other government agencies through collaborative funding and financing techniques that share risks and rewards for infrastructure investments. Many Public-Private Partnership projects apply alternative delivery techniques such as design/build strategies to reduce costs and accelerate schedules. Public-Private Partnerships project also may apply managed lane or toll road methods to provide funding for the project.

Federal discretionary grants, such as the Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grants Program and the Infrastructure for Rebuilding America Grant Program, are competitive and use established criteria to select the best possible projects for this funding.

State Infrastructure Banks are infrastructure investment funds that are established and administered by states. State Infrastructure Banks operate in a similar manner to a private bank, and have the ability to offer loans and credit assistance to public and private sponsors of Title 23 highway construction projects. Loans and credit assistance must be repaid to the State Infrastructure Bank.

6.5.2 Next Steps

Next steps are:

Solicit Input on Draft Tier 1 EIS

This Draft Tier 1 EIS was issued to solicit input on the Build Corridor Alternatives and the Recommended Alternative from agencies, Tribes, and the public. Comments received on this Draft Tier 1 EIS during the public review period will be used to inform a Preferred Alternative and prepare a Final Tier 1 EIS. All responses to comments will be documented in the Final Tier 1 EIS.

Evaluate Public Feedback, Identify Preferred Alternative, and Publish Final Tier 1 EIS

The next step in the I-11 Corridor NEPA process is the development of a Final Tier 1 EIS (**Figure 6-1**). After considering all of the comments received, FHWA and ADOT will identify a Preferred Alternative in the Final Tier 1 EIS that may affirm or modify the Recommended Alternative. The public issuance of the Final Tier 1 EIS with a Preferred Alternative will initiate a 30-day public review period.

Record of Decision

Following the public review period for the Final Tier 1 EIS, FHWA and ADOT will publish a ROD that affirms a Selected Alternative. Because this is a Tier 1 NEPA document, mitigation measures in the ROD represent commitments that shall be implemented in Tier 2 projects within the I-11 corridor.

Tier 2 Studies

If a Build Corridor is selected, it would be further evaluated and refined during future Tier 2 analysis. Preliminary design would be conducted at that time, and the higher level of detail would enable more site-specific environmental analyses and development of site-specific mitigation measures. The specific class of NEPA analysis for a logical Tier 2 segment would be defined based on the nature of the project and as determined by the lead agency. Continuing coordination with the Tribes, public, and agencies would occur prior to and during Tier 2, project-level analysis.

If the No Build is selected, no project would occur.