



# Tier 1 Environmental Impact Statement Annotated Outline and Methodology

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## Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
AGFD	Arizona Game and Fish Department
AOI	Area of Influence
APE	Area of Potential Effect
ARS	Arizona Revised Statutes
ASP	Arizona State Parks
ASR	Alternatives Selection Report
ASTM	American Society of Testing and Materials
AZTDM	Arizona Statewide Travel Demand Model
BLM	Bureau of Land Management
BMP	Best Management Practices
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	Cumulative Effects Study Area
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COG	Council of Governments
CNF	Coronado National Forest
CWA	Clean Water Act
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAST	Fixing America's Surface Transportation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FPPA	Farmlands Protection Policy Act
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FY	Fiscal Year
GIS	Geographic Information System
HPT	Historic Preservation Team
I	Interstate
INVEST	Infrastructure Voluntary Evaluation Sustainability Tool
IWCS	I-11 and Intermountain West Corridor Study
LOS	Level of Service
LRTP	Long Range Transportation Plan
LWCFA	Land and Water Conservation Fund Act
MAG	Maricopa Association of Governments
MBTA	Migratory Bird Treaty Act
MPO	Metropolitan Planning Organization
MTIP	Metropolitan Transportation Improvement Program
NAAQS	National Ambient Air Quality Standards
NAR	Noise Abatement Requirements



NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PA	Programmatic Agreement
PAG	Pima Association of Governments
RCRA	Resource Conservation & Recovery Act
Reclamation	United States Bureau of Reclamation
ROD	Record of Decision
ROW	right-of-way
RTC	Regional Transportation Commission of Southern Nevada
SAFETEA-LU	Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users
SARA	Superfund Amendments and Reauthorization Act
Section 4(f)	Section 4(f) of the Department of Transportation Act of 1966
SCMPO	Sun Corridor Metropolitan Planning Organization
SEAGO	SouthEastern Arizona Governments Organization
SHPO	State Historic Preservation Office
SIU	Segments of Independent Utility
SROI	sustainable return on investment
STIP	State Transportation Improvement Program
TEA-21	Transportation Equity Act for the 21st Century
TES	Threatened or Endangered Species
TIP	Transportation Improvement Program
TSCA	Toxic Substances Control Act
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
UPRR	Union Pacific Railroad
U.S.	United States
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USDOI	United States Department of Interior
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VASR	Visual and Aesthetics Scenic Resources
VAU	Visual Assessment Unit
VHT	Vehicle Hours Traveled
VMT	Vehicle Miles Traveled
VRM	Visual Resource Management



## PURPOSE OF ANNOTATED OUTLINE AND METHODOLOGY

The Federal Highway Administration (FHWA) and Arizona Department of Transportation (ADOT) are conducting the environmental review process for the Interstate 11 (I-11) Corridor from Nogales to Wickenburg, Arizona (Project). An Alternatives Selection Report (ASR) and Tier 1 Environmental Impact Statement (EIS) will be prepared as part of this process in accordance with the National Environmental Policy Act (NEPA) and other regulatory requirements. The FHWA is the federal lead agency and ADOT is the Local Project Sponsor under NEPA.

The purpose of this Annotated Outline and Methodology is to describe the content and organization of the Draft Tier 1 EIS so the researchers, section writers, and reviewers understand what information and level of detail to include in the document. It also provides key information and activities associated with the environmental review process, including mapping, graphics, and other data needs. The *Tier 1 EIS Annotated Outline and Methodology* contributes to the transparency of the NEPA process and provides a clear roadmap for concise development of the Draft Tier 1 EIS.

The Draft Tier 1 EIS will be prepared in a reader-friendly format that the public can readily follow and understand. It will present a summary of the technical analysis that will be conducted at a programmatic level. The intent is to prepare a concise document, focusing on the environmental resources of greatest concern and those that differentiate corridor alternatives, with supportive technical reports or appendices as appropriate. It is anticipated that the main text in the body of the document will be approximately 230 to 300 pages, depending on the extent of analysis and coordination required for some sensitive resources within the I-11 Corridor Study Area. Other supporting documentation will be included in the appendices or incorporated by reference. This *Tier 1 EIS Annotated Outline and Methodology* reflects comments received during the approximate 45-day scoping period that was held from May 23, 2016 to July 8, 2016, and agency reviews of the *Tier 1 EIS Purpose and Need Memorandum*, and *Tier 1 EIS Alternative Selection Report Evaluation Methodology and Criteria Report*.

## ORGANIZATION OF THE DRAFT TIER 1 EIS

The Draft Tier 1 EIS will be organized in the following chapters and appendices, with the targets for number of pages as shown:

### **Volume I – Main Text**

- Cover Page and Abstract – 2 pages
- Table of Contents – 5 to 10 pages
- Executive Summary – 15 to 20 pages
- Chapter 1: Purpose and Need – 30 to 35 pages
- Chapter 2: Alternatives Considered – 40 to 45 pages
- Chapter 3: Affected Environment and Environmental Consequences – 125 to 150 pages
- Chapter 4: Consultation and Coordination – 15 to 20 pages
- Chapter 5: Evaluation of Alternatives – 15 to 20 pages



## **Volume II – Appendix**

- Appendix A: Glossary
- Appendix B: References
- Appendix C: List of Preparers
- Appendix D: List of Recipients
- Appendix E: Section 106 Consultation
- Appendix F: Agency Coordination and Public Involvement Materials
- Appendix G: Drawings and Typical Sections

The following discussion describes each chapter and section in more detail.

## **COVER AND ABSTRACT**

The cover is the title page of the document, which will include the title of the document, study name, United States (U.S.) Environmental Protection Agency (USEPA) reference number, project numbers, lead agency names, and date. A signature page for the FHWA as the federal lead agency and ADOT as the Local Project Sponsor will follow, along with an abstract that will briefly describe the I-11 Project (Project), alternatives considered, and potential sensitive environmental resources. Contact information for the FHWA and ADOT also will be provided.

## **TABLE OF CONTENTS**

The Table of Contents is the list of chapters and sections in the document with page number references. It also will include lists of figures, tables, appendices, and acronyms/abbreviations.

## **EXECUTIVE SUMMARY**

The Executive Summary will state the Purpose and Need and highlight the contents and findings of the Draft Tier 1 EIS document. The Executive Summary will be written in a question and answer format that corresponds with the chapters of the Draft Tier 1 EIS as follows:

- What are the Opportunities and Challenges?
- What Corridor Alternatives are considered in this Draft Tier 1 EIS?
- What are the Benefits and Impacts to the Environment?
- How are the Agencies and Public Involved?
- Which Corridor Alternative is Recommended?
- What are the Next Steps?

## **1 PURPOSE AND NEED**

Chapter 1 (Purpose and Need) will provide background information on the Project and establish the Purpose and Need for the Proposed Action.





## 1.1 Introduction

The Introduction will state the intent of the Draft Tier 1 EIS, including the regulatory context of the document. It also will include the following:

- Background
- Study area
- Planning context
- Multimodal considerations
- Document organization and content of the Tier 1 EIS

## 1.2 Purpose and Need Statement

The overall purpose of the Project is to:

- Provide a high priority, high-capacity, access-controlled transportation corridor;
- Support improved regional mobility for people, goods, and homeland security;
- Connect major metropolitan areas and markets in the Intermountain West with Mexico and Canada; and
- Enhance access to the high-capacity transportation network to support economic vitality.

The problems, issues, and opportunities that support the need for a proposed transportation facility are:

- Population and employment growth
- Congestion and travel time reliability
- System linkages and regional and interstate mobility
- Access to economic activity centers
- Homeland security and national defense.

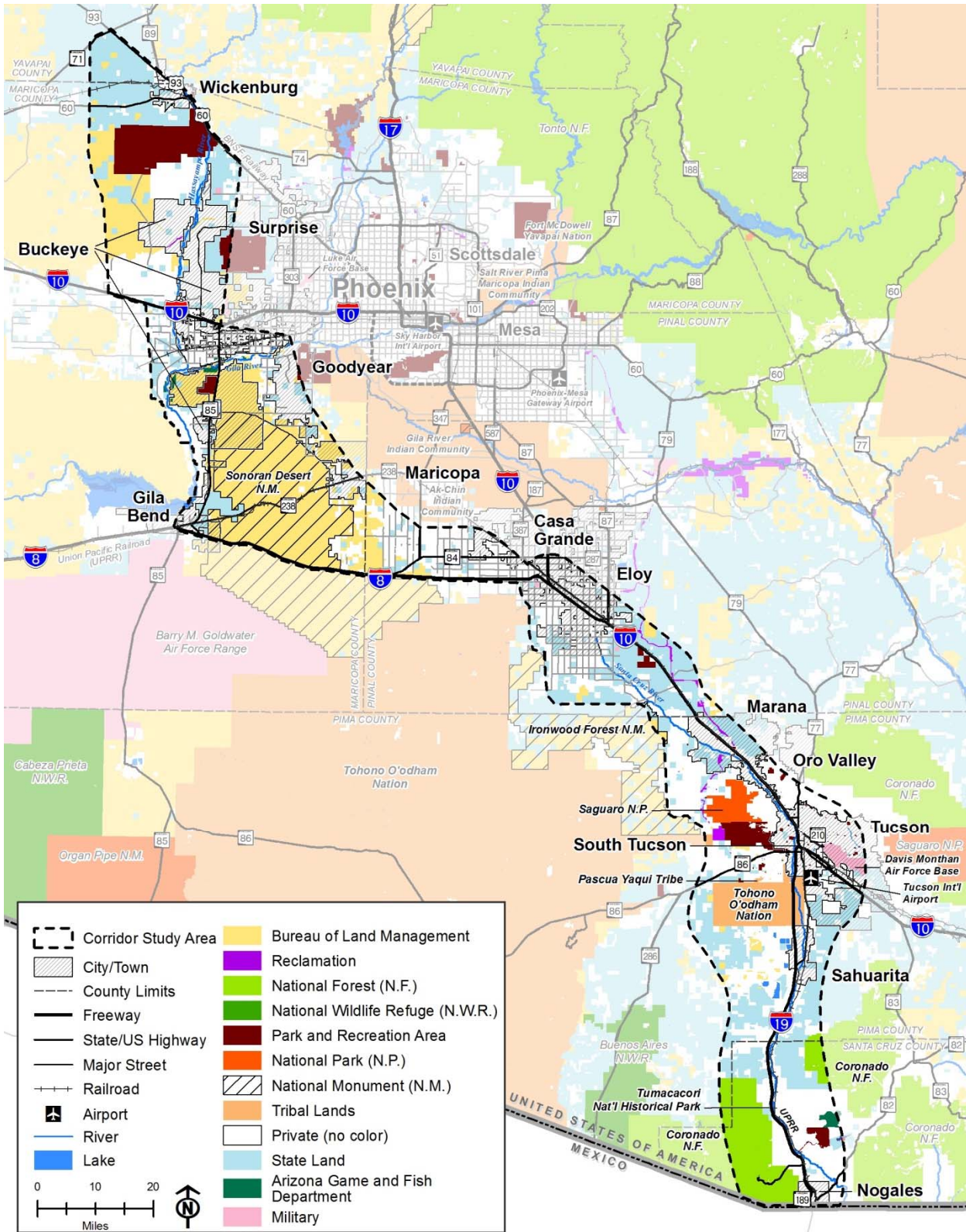


Figure 1-1 I-11 Corridor Study Area (Nogales to Wickenburg)

## 2 ALTERNATIVES CONSIDERED

Chapter 2 (Alternatives Considered) will describe the process that was used to screen and evaluate the corridor alternatives in prior studies, as well as the No Build and Build Corridor Alternatives assessed as part of the Draft Tier 1 EIS. The Recommended Corridor Alternative could be disclosed in this chapter.

### 2.1 Corridor Alternatives Development Process

This section will describe previous planning efforts to develop, screen, and evaluate Corridor Alternatives. It also will present the methodology and results of the Alternatives Selection Report (ASR).

### 2.2 Relevant Plans and Projects

This section will include proposed or planned projects in the I-11 Corridor Study Area that could affect the configuration, layout, costs, or potential impacts of the Proposed Action. The documents developed as part of the previous I-11 IWCS are the baseline material for the current Tier 1 EIS. The proposed or planned projects will include the committed transportation improvements through the planning horizon year 2040. Information also will be obtained from the counties, cities, towns, tribes, and other agencies in the I-11 Corridor Study Area, as appropriate.

### 2.3 Definition of Corridor Alternatives in the Draft Tier 1 EIS

#### 2.3.1 No Build Alternative

This section will describe the “No Build” Alternative (i.e., do nothing option) to be analyzed as part of the Draft Tier 1 EIS. The No Build Alternative serves as the benchmark against which the Build Corridor Alternatives for the I-11 Corridor will be evaluated. In addition to representing the existing transportation system, the No Build Alternative includes committed improvement projects that are programmed for funding through the planning horizon year 2040. These projects are documented in the ADOT 5-Year State Transportation Improvement Program (STIP), the most recent of which is for Fiscal Years (FY) 2018 through 2022. The STIP identifies statewide priorities for transportation projects in the cities, counties, and state highway systems, as well as projects in the National Parks, U.S. Forest Service (USFS), and Indian Reservation Roads. This 5-year project list is compiled in cooperation with the FHWA, Federal Transit Administration (FTA), Councils of Government (COGs), and Metropolitan Planning Organizations (MPOs) (23 Code of Federal Regulations [CFR] §450.216).

Similarly, the various COGs and MPOs develop their own Transportation Improvement Programs (TIPs), with input from their member agencies, which include counties, tribes, and municipalities in their planning areas. In addition to the TIP, each MPO is responsible for developing its federally required Long Range Transportation (LRTP) that addresses no less than a 20-year planning horizon. The intent and purpose of the LRTP is to identify priority transportation projects and anticipated funding for those projects in a fiscally constrained process. Regional projects must be identified in the LRTP in order for member agencies to have access to federal dollars. The I-11 Corridor Study Area falls within the following COG and MPOs: South Eastern Arizona Governments Organization (SEAGO), Pima Association of Governments (PAG), Sun Corridor Metropolitan Planning Organization (SCMPO), and Maricopa

Association of Governments (MAG). County and local municipality priorities are developed based upon public input into county comprehensive plans and local municipal general plans, both of which include transportation components.

### 2.3.2 Build Corridor Alternatives

This section will describe the Build Corridor Alternatives and could identify a Recommended Corridor Alternative. The width of the Build Corridor Alternatives is expected to be generally 2,000 feet wide and will utilize various cross-sections. The typical cross section for a new alignment will be approximately 400 feet wide (or 200 feet from centerline). In general, it will be assumed that the typical cross section could occur anywhere within the 2000-foot-wide corridor. However, there will be a menu of cross-sections proposed in locations where I-11 could be co-located with existing transportation corridors that consider the existing ADOT right-of-way conditions.

## 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter 3 (Affected Environment and Environmental Consequences) will summarize the existing human and natural environment within the I-11 Corridor Project Area, as well as provide an analysis of the potential impacts on the environment as a result of implementing the No Build and Build Corridor Alternatives. The narrative will describe the relevant laws, regulations, guidelines, and methodology used to assess impacts for each resource area. Each section will broadly describe the potential direct impacts of the Proposed Action and whether the impacts are beneficial or adverse. Supporting technical information will be provided in the Appendix for resource areas where appropriate and/or incorporated by reference in the Draft Tier 1 EIS.

Each section of Chapter 3 will be generally organized in a similar format for each environmental resource as follows:

- **Regulatory Setting:** Provides a brief description of regulatory requirements relating to the resource being analyzed;
- **Methodology:** Describes the methodology, resource analysis area, and data sources used to ascertain the resource and analyze potential impacts;
- **Affected Environment:** Identifies the existing conditions of the resource within the resource analysis area;
- **Environmental Consequences:** Broadly describes the potential impacts that may result from the alternatives resource analysis area and whether the impacts are beneficial or adverse;
- **Potential Mitigation Strategies:** Recommends mitigation strategies and best practices for potential impacts associated with the Proposed Action, where applicable; and
- **Future Tier 2 Analysis:** Describes where additional and more detailed analyses will be needed during the Tier 2 project-level NEPA review.

Temporary Construction-Related Impacts, Unavoidable Adverse Impacts, and Indirect and Cumulative Effects will be addressed in sections 3.15 to 3.17 of Chapter 3, with a summary of information provided on each applicable resource. The following sections describe each resource that will be covered in the Draft Tier 1 EIS under Chapter 3.

### 3.1 Introduction

An introductory overview will be provided for Chapter 3, including a list of the resources covered in the chapter. It also will describe the general methodologies such as the planning horizon year 2040, assumptions used in all resource analyses, and common key data sources.

A definition of the terms is described below. They will be used throughout the Tier 1 EIS to describe the following geographies.

- **Project:** I-11 Corridor from Nogales to Wickenburg, Arizona.
- **I-11 Corridor Study Area:** The study area is shown in Figure 1-1 and was refined during the ASR process. It is largely based on the results of the previous *I-11 and Intermountain West Corridor Study*, in combination with public and agency input received during the scoping period, as documented in the *Purpose and Need Statement*. Build Corridor Alternatives within the study area were evaluated to identify the Project Area(s) for further study.
- **Build Corridor Alternatives:** Build Corridor Alternatives refer to the potential routes for I-11 that extend from Nogales to Wickenburg, generally 2000-foot-wide corridors.
- **Project Area or Project Limits:** The Project Area is the 2,000-foot-wide area associated with each of the Build Corridor Alternatives studied in the Draft Tier 1 EIS. This 2,000-foot corridor is intended to allow sufficient space for infrastructure improvements associated with each Build Corridor Alternative. The anticipated cross section(s) for the Build Alternatives would represent the anticipated project footprint within the Project Area.
- **Project Vicinity:** The general area or region surrounding the Project.
- **Analysis Area:** The analysis area is the area under evaluation for direct effects. It will vary by resource. For example, the transportation analysis area would extend to a larger transportation system, whereas the analysis area for soils may be limited to the project footprint. For portions of a Project Area where no facility currently exists, a future facility, including service and system interchanges could potentially be placed anywhere within the 2,000-foot-wide corridor; therefore, the analysis would consider the potential for direct effects throughout the Project Area. Where there is an existing facility, I-11 would be co-located with that facility and may require widening or modification, as described in Chapter 2 of the Tier 1 EIS. The footprint for determining potential direct environmental consequences would be tied to the existing corridor and proposed typical section.
- **Area of Influence (AOI):** The AOI is the area for which indirect effects will be evaluated. It could include areas of induced growth or where changes in traffic patterns are anticipated. Each Build Corridor Alternative will have a different AOI.
- **Cumulative Effects Study Area (CESA):** The CESA is the area for which cumulative effects will be evaluated for a particular resource or notable feature, such a National Monument. It is the area for which direct or indirect effects may result from the No-Build or the Build Corridor Alternatives, as well as effects resulting from past, present, or reasonably foreseeable activities not related to those alternatives.

**Note, each resource section in the Tier 1 EIS would follow the format described above on pages 6 and 7. For purposes of this document, the Methodology and anticipated Future Tier 2 activities are addressed for each resource area.**



## 3.2 Transportation

This section will characterize the existing conditions of the multimodal transportation system and effects of the Proposed Action on the transportation network. The effects of the alternatives on all modes of transportation, including both passenger and freight movements, will be evaluated at the local, regional, national, and international (e.g., North American Free Trade Agreement) level. The discussion will address vehicular traffic congestion impacts over the long term following completion of the Project. For each of the subsections presented below, a range of possible mitigation strategies will be identified to inform future Tier 2 analyses.

The assessment of transportation effects in the Draft Tier 1 EIS also will identify areas to be carried forward for more detailed analysis in Tier 2. Future Tier 2 analyses would further refine specific and/or local impacts based on a more detailed design and defined interchange locations. Additionally, ADOT and FHWA will identify ways in which agency coordination during the Tier 1 process could create efficiencies and help streamline future Tier 2 processes.

### 3.2.1 Tier 1 EIS Methodology

**Traffic:** The existing and future 2040 traffic conditions will be described. The Arizona Statewide Travel Demand Model (AZTDM) will be utilized for modeling to determine the potential traffic conditions. This section also will describe coordination with MPOs and COGs on the travel demand analysis. The description of the Affected Environment will describe the traffic conditions and potential impacts of the No Build and Build Corridor Alternatives using the following metrics:

- Vehicle Miles Traveled (VMT) / Vehicle Hours Traveled (VHT)
- Travel patterns
- Travel times
- Level of service (LOS)
- Safety data.

**Freight:** Using the most recent data that are available, this section will describe the freight services and operations, including the freight routes, frequency, and volume of movements. This section also will describe the potential opportunities or constraints to future freight growth for each of the Build Corridor Alternatives with respect to existing conditions and 2040 forecast conditions under the No Build Alternative. Coordination with freight service operators and the Federal Railroad Administration (FRA) will be described, as well as potential mitigation strategies for any identified impacts.

**Transit:** The existing transit services, and characteristics of those services, will be described in this section. The environmental consequences analysis will evaluate the effects of the No Build and Build Corridor Alternatives on the existing transit network with a particular focus on potential connectivity considerations. The No Build Alternative will represent a 2040 forecast condition to be used as a basis for comparison with the Build Corridor Alternatives. The section will describe the potential effects of the Build Corridor Alternatives with regards to changes in transit connectivity, accessibility, and travel time.

**Airports:** This section will provide a general description of the airports, and the potential impacts the Build Corridor Alternatives would have on airport operations. Coordination with airport



operators and the Federal Aviation Administration (FAA) also will be described. Potential mitigation strategies will be provided that could address any potential impacts.

Homeland Security and National Defense: This section will provide a general description of emergency and defense transportation operations, and the potential impacts the No-Build and Build Corridor Alternatives would have on incident management. In addition, the effects on emergency evacuation options would be considered.

### **3.2.2 Future Tier 2 Environmental Reviews**

Future Tier 2 project-level reviews will involve a more detailed analysis of traffic, freight, transit, and airport conditions based on a more detailed design and defined interchange locations. When a future Tier 2 effort is initiated, it would use contemporaneous traffic counts and future population and employment estimates, the appropriate regional travel demand model will be used in Tier 2 to determine future traffic volumes on the proposed I-11 interstate and arterial roadways. The model outputs will help determine trip distribution, LOS, and delay on the freeways at a regional scale. The outputs of the regional model will then be used in a more precise corridor analysis using VISSIM and SYNCHRO software packages, or currently accepted methods.

VISSIM is a widely used behavior-based traffic simulation program. It uses existing and predicted traffic counts, roadway geometry, vehicle classification, and speed distribution to determine the likely traffic behavior of given alternatives. SYNCHRO is a traffic analysis tool applied to localized intersections for signal optimization.

## **3.3 Land Use, Recreation, and Section 6(f)**

### **3.3.1 Land Use**

This section will document existing and planned land uses from existing data and information provided by local governments and stakeholders. No formal agency approvals will be requested for the Tier 1 EIS. The requirements for subsequent Tier 2 evaluation, including compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), will be described in the Draft Tier 1 EIS.

#### **3.3.1.1 Tier 1 EIS Methodology**

The affected environment section will document existing and planned land uses, land use trends, goals and objectives of relevant state and regional plans, and special land management designations. The section also will document the potential for impacts on recreational uses and opportunities, and access to those resources. Sources will include, but not be limited to, aerial photography, Bureau of Land Management (BLM) Resource Management Plans, relevant state and regional plans, local general or comprehensive plans, and other applicable information. While extensive field investigations are not anticipated, windshield surveys may be necessary to confirm the conditions on the ground as needed for the Tier 1 EIS analysis.

The environmental consequences section will focus on changes in land use patterns and recreation opportunities, potential to impact the viability of a land use, compatibility with existing and planned land uses, and special land management. Areas of potential concern, such as concentrations of residential land uses, ecologically-sensitive areas, tribal lands, etc., will be

illustrated on maps. The types of potential acquisitions and displacements will be broadly identified on a county-by-county basis and land use type (e.g., residential, commercial, etc.). Because the level of design would not enable the identification of impacts on specific properties or requirements to relocate businesses and/or residences, the FHWA and ADOT are not expected to initiate requirements with the *Uniform Act* during the Tier 1 EIS. Compliance with the Uniform Act ensures that property owners (residential and business) receive fair market value for their property and relocation services, and that displaced persons receive fair and equitable treatment and do not suffer disproportionate injuries because of programs designed for overall public benefit.

A menu of potential mitigation strategies for potential land use impacts will be developed on a programmatic scale. An example of a programmatic mitigation strategy for potential land cover conversions (i.e., changes from undeveloped to developed land) would be to provide buffers or screening between proposed new transportation uses and nearby land covers that may be sensitive to transportation uses.

### 3.3.1.2 Future Tier 2 Environmental Reviews

Future Tier 2 environmental review would address specific effects to property, zoning regulations, neighborhoods, or community facilities. The approach to determining acquisitions, easements and displacements including ownership (public or private) will be determined as part of project specific Tier 2 evaluations. Tier 2 environmental review also will address compliance with the Uniform Act.

### 3.3.2 Section 6(f)

This section will consist of a preliminary evaluation of properties protected by Section 6(f) of the Land and Water Conservation Fund Act (LWCFA), such as parks and open space. Section 6(f) requires that the conversion of lands or facilities acquired with LWCFA funds is coordinated with the U.S. Department of the Interior (USDOI). Conversion of a Section 6(f) property to a non-recreational use typically requires replacement in kind.

#### 3.3.2.1 Tier 1 EIS Methodology

Existing Section 6(f) properties within the analysis area will be identified using the USDOI LWCFA grant database and mapped using GIS. The properties will be documented by type (publicly owned parks, recreation areas, etc.) and the total acres of each Section 6(f) property within the project study area will be quantified and reported in tabular format.

For each alternative considered in the Draft Tier 1 EIS, the preliminary 6(f) evaluation will identify the number of 6(f) properties that would potentially result in a conversion to a transportation use of Section 6(f) lands. Coordination will be initiated with owners and/or managers of potentially impacted protected properties as well as the NPS, who is the federal agency responsible for approval of Section 6(f) land conversions. The purpose of coordination will be to exchange information about the project and the properties, and have an initial discussion about the potential for project effects on protected properties. A summary of coordination activities will be documented in the Draft Tier 1 EIS.

A menu of potential mitigation strategies for Section 6(f) property impacts will be developed on a programmatic scale. An example of a programmatic mitigation strategy would be a commitment to consider design refinements as the project advances to avoid or minimize impacts to such



properties. Another example would be a commitment to consider potential enhancements to properties such as improvements in multimodal accessibility. In addition, the preliminary Section 6(f) Evaluation in the Tier 1 EIS will include a commitment to continue coordination with owners and managers of potentially affected properties.

### **3.3.2.2 Future Tier 2 Environmental Reviews**

The evaluation in Tier 2 would define at a project level if conversion of a Section 6(f) land potentially would occur, as well as include the development of avoidance or minimization and mitigation measures and designs that would avoid or minimize effects on Section 6(f) properties.

## **3.4 Social Resources, Title VI, and Environmental Justice**

The regulatory setting governing social conditions is similar to that for land use, as described in Section 3.3. Several comprehensive and general plan elements of jurisdictions in region relate to social conditions, including:

- Socioeconomic characteristics
- Community character and cohesion
- Community facilities and services

In the environmental planning process, a special set of regulatory requirements is designed to ensure that members of minority, low-income and disadvantaged groups do not suffer disproportionate impacts from federally funded transportation projects. These requirements are collectively known as Title VI and Environmental Justice.

The Council on Environmental Quality's (CEQ) regulations for implementing the procedural provisions of NEPA (40 CFR § 1500-1508) state that the "Human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment."

The following Executive Orders (EO), U.S. Department of Transportation (USDOT) Order, and guidance documents pertain to the assessment of effects on Environmental Justice (EJ) populations:

Title VI of the Civil Rights Act of 1964

- EO 12898 – Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (1994)
- USDOT Order 5610.2 (a) – Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1997) and Final DOT Environmental Justice Order (2012)
- Environmental Justice: Guidance Under the National Environmental Policy Act (1997)
- FHWA Order 6640.23A – FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (2016)

### **3.4.1 Tier 1 EIS Methodology**

General socioeconomic characteristics, population and employment, community characteristics, and major public services and amenities will be described. Population and employment will be tabulated on a county-by-county basis using the most current U.S. Census data and readily available MPO regional projections.

For each Build Corridor Alternative, all minority and low-income populations will be identified using the most current U.S. Census data. The identification of Census Tracts will be based on criteria provided in the CEQ's 1997 guidance on EJ analysis in NEPA documents. The CEQ's 1997 guidance recommends finding that a "minority population" is present if:

- The minority or low-income population exceeds 50 percent in the analysis area; or
- The minority or low-income population percentage in the analysis area is "meaningfully/greater than the minority or low-income population in the county in which the Census Tract is located." For this Tier 1 EIS, a Census Tract in the analysis area will meet the "meaningfully greater" threshold if the percentage of minority or low-income residents is at least 10 percentage points higher than the percentage in the corresponding county.

The description of the analysis area will include the percent of the total population that can be described as part of a protected population, the total number Census Tracts, and the total protected population within the analysis area. Maps also will be developed in GIS to illustrate the Census Tracts with minority and/or low-income populations.

The primary method for determining direct and indirect impacts will be qualitative and address the potential for disproportionate impacts on protected populations associated with changes to social conditions (business/residential relocations based on land use type) and economic conditions (employment), aesthetic impacts, land use change/compatibility, social disruption, housing availability (based on land use type), and accessibility.

The requirements of Title VI of the Civil Rights Act of 1964 and EO 12898 will be addressed. The basis of analysis will be readily available U.S. Census data, utilizing a GIS-based analysis. The FHWA and ADOT will identify differences among Build Corridor Alternatives with regard to their potential to either benefit or adversely affect projected populations. Potential concerns will be "flagged" for further analysis in Tier 2 (e.g., Build Corridor Alternatives that have greater impacts on protected populations). Determinations required under EO 12898 and USDOT Order 5610.2(a) regarding disproportionately high and adverse effects will be made in subsequent Tier 2 analyses.

A menu of potential mitigation measures will be developed on a programmatic scale for further consideration in Tier 2. Examples of programmatic mitigation measures could include potential installation of noise barriers. Mitigation measures would be determined in consultation with the affected populations during subsequent Tier 2 evaluations.

### **3.4.2 Future Tier 2 Environmental Reviews**

The Tier 1 EIS will determine areas of concern for that would require more in-depth analysis at the Tier 2 project-level. The Tier 2 EJ analysis would include additional data collection and utilize more detailed Census information to evaluate effects at the community or neighborhood level. A more detailed impact analysis, including a community cohesion assessment, would be completed to assess localized project effects at the community or neighborhood level during

both operations and construction. While the outcomes of the Tier 1 EIS analysis will not produce a specific list of community and neighborhood names, those Census Tracts having protected populations could be used as a starting part for outreach and focused community impact assessments.

### 3.5 Economic Resources

This section will describe potential economic impacts – positive and adverse – based on a cost-benefit analysis of the proposed Build Corridor Alternatives compared with the No Build Alternative. Utilizing the Business Case developed as part of the I-11 IWCS as a baseline, available data and analysis will be used to perform an appropriate cost-benefit analysis.

#### 3.5.1 Tier 1 EIS Methodology

Data collection will involve the compilation and review of the following:

- Recent traffic data generated by the travel demand models developed by ADOT, MAG, and PAG, including delay cost and travel time savings;
- Economic and land development projections;
- Capital cost estimates for the Build Corridor Alternatives;
- Operations and maintenance cost estimates for the Build Corridor Alternatives;
- ADOT and MPO short and long-range transportation plans; and
- Investment studies for the corridor.
- USFWS, AGFD, and other applicable data on Arizona's outdoor recreation economy.

For each Build Corridor Alternative, the economic analysis will:

- Evaluate the effects both during construction and post-construction (note: the effects of construction will be presented in Section 3.15 [Temporary Construction-Related Impacts]);
- Determine the current, formally identified and informally used, truck routes; including significant freight origins and destinations;
- Identify existing and projected effects to traffic and business resulting from tourism;
- Address the potential economic effects to existing businesses both during and after construction;
- Provide a sustainable return on investment (SROI) analysis that would adequately capture and analyze the total investment, not just the financial impacts but the benefits and costs associated with environmental and social impacts.
- Address economic impacts related to outdoor recreation on public lands.

On a macroeconomic level, the analysis will determine the changing patterns of development or industrial composition that are not readily found by historical trends. It will provide qualitative assessments and quantitative estimates of potential changes in economic output, employment, and income as a result of the Project. The macroeconomic impacts analysis also will address how the facility's linkage of moving goods (freight) will affect the State of Arizona as a whole, as well as how the Project will affect the economy at a national and international level.

FHWA and ADOT will develop a menu of potential mitigation measures on a programmatic scale for further consideration in Tier 2.

### 3.5.2 Future Tier 2 Environmental Reviews

The Tier 1 EIS analysis will identify those component projects and issues most likely to be carried forward for more detailed analysis at a Tier 2 project-level, as well as potential mitigation strategies to be further identified during Tier 2 and subsequent studies, when the specifics of particular sites are known. The more detailed alignment information would allow for more specific discussion of potential local impacts or mitigation opportunities.

## 3.6 Archaeological, Historical, Architectural, Cultural Resources

NEPA established a policy for the federal government to use all practicable means, consistent with other essential considerations, to preserve historic, cultural, and natural aspects of our national heritage. Regulations implementing NEPA direct federal agencies to assess impacts on historic and cultural resources and the degree to which their actions “may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP) or may cause loss or destruction of significant scientific, cultural, or historical resources” (40 CFR part 1508.27[b][8]). Section 106 of the National Historic Preservation Act (NHPA), as amended (54 United States Code [U.S.C.] § 100101) and implementing regulations (36 CFR part 800) also require federal agencies to consider the effects of their undertakings on any district, site, building, structure, or object listed in the National Register or eligible for listing.

### 3.6.1 Tier 1 EIS Methodology

This section of the Draft Tier 1 EIS will characterize the cultural resources that could be affected by the proposed I-11 between Nogales and Wickenburg, including archaeological sites; the historic built environment (historic districts, buildings and structures) and traditional cultural resources. The potential impacts of the Build Corridor Alternatives will be modeled and rated in three levels reflecting the potential effort that might be required to avoid or mitigate adverse impacts. The potential impacts of the Build Corridor Alternatives will be compared to those of the No Build Alternative. The cultural resource study methods for the Tier 1 EIS will include:

- Using information mapped for the ASR of NRHP-listed properties in the Build Corridor Alternatives.
- Collecting information about prior cultural resource studies that overlapped the Build Corridor Alternatives and cultural resources recorded in those corridors. The primary source of data will be the AZSITE Cultural Resource Inventory, a GIS database that incorporates records of the AZSITE Consortium (Arizona State Museum, Arizona State University, Museum of Northern Arizona, and State Historic Preservation Office [SHPO]), and other participating agencies such as the BLM. Other relevant information in the ADOT Historic Preservation Team (HPT) Portal database or provided by the SHPO and other consulting parties also would be considered.
- Using collected information about recorded archaeological sites within the Build Corridor Alternatives to model archaeological site densities and potential level of impact on those resources.

- Identify the percentage of land within the corridor that has been surveyed, or would require new survey to current standards.
- Using county assessor digital data to identify parcels within or overlapping the Build Corridor Alternatives that might have unrecorded historic-age buildings (defined for this analysis as built before 1971), reviewing those parcels with aerial imagery and, if warranted, limited field reconnaissance, and modeling potential levels of direct and indirect impacts on those resources.
- Using information obtained from the ongoing FHWA and ADOT tribal consultation to consider levels of potential direct and indirect impacts of the Build Corridor Alternative on traditional cultural resources.
- Considering the information and requests from consulting parties.
- Developing a Programmatic Agreement (PA) to define procedures for continued consideration of effects on cultural resources during planning and NEPA review of Tier 2 projects, which will involve conducting cultural resource surveys, evaluating the National Register eligibility of identified cultural resources, and implementing treatment measures to avoid or minimize any identified adverse effects and mitigate unavoidable adverse effects.
- Preparing a Cultural Technical Report for review and comment by the NHPA Section 106 consulting parties.

FHWA and ADOT initiated the NHPA Section 106 process during scoping and consultation continued through the preparation of the ASR, by inviting the SHPO and 88 other potentially interested parties to participate in the consultation. Eleven of those parties declined to participate. FHWA and ADOT will continue to consult with the consulting parties as the Tier 1 EIS is prepared. The cultural resource study will be documented in a technical report that FHWA and ADOT will distribute to NHPA Section 106 consulting parties for review and comment.

Section 106 consultation will be briefly summarized in this section of the Draft Tier 1 EIS and be fully documented in Appendix F (Section 106 Consultation). During Tier 2, FHWA and ADOT will complete NHPA Section 106 consultation on subsequent specific improvement projects per the PA executed during the Tier 1 EIS process.

### **3.6.2 Future Tier 2 Environmental Reviews**

In conjunction with Tier 2 environmental reviews, FHWA and ADOT will assess effects on cultural resources in accordance with procedures stipulated by the PA. As noted above, the PA will be executed prior to the Tier 1 EIS ROD.

## **3.7 Preliminary Section 4(f) Evaluation**

Section 4(f) of the USDOT Act of 1966 [Section 4(f)] was enacted as a means of protecting the following resources from conversion to transportation uses: public parks (owned by a local, state or federal government entity), recreation areas, and wildlife/waterfowl refuges, as well as historic sites of local, state or national significance (NRHP-eligible or listed). Section 4(f) only applies to USDOT actions, including actions taken by FHWA. As the lead federal agency, FHWA will be responsible for administration of Section 4(f) for the Project.



### 3.7.1 Tier 1 EIS Methodology

A desktop review of available aerial photography, local land use plans, landowner identification, and other applicable plans will provide the baseline information needed to map and list all parks, recreation areas, wildlife/waterfowl refuges. Historic sites listed or eligible for listing on the NRHP will be identified through consultation under Section 106 of the NHPA as described in Section 3.6. Existing Section 4(f) properties in the project study area will be mapped using GIS and documented by type (i.e., historic sites, parks, recreation areas, and wildlife and waterfowl refuges, etc.). To comply with the Section 4(f) requirement to assess the potential for use of protected properties within corridor alternatives, potentially impacted Section 4(f) properties will be identified, including the approximate acres and types of amenities affected.

In correspondence received by ADOT and FHWA during the scoping and alternatives development process, the U.S. Environmental Protection Agency (USEPA), Arizona Game and Fish Department (AGFD), Reclamation, Maricopa County, National Park Service (NPS), BLM, and Arizona States Parks (ASP) noted that the following parks, preserves/refuges, and recreation areas are located within or adjacent to the proposed project. They include, but are not limited to the following:

- Buckeye Hills Regional Park
- Hassayampa Preserve
- Ironwood National Monument
- North Maricopa Mountains Wilderness
- Patagonia Lake State Park
- Picacho Peak State Park
- Saguaro National Park and Saguaro Wilderness
- Skyline Regional Park
- Sonoita Creek Natural Area
- Sonoran Desert National Monument
- State Wildlife Areas
- Tubac Presidio State Historic Park
- Tucson Mountain Park
- Tumacacori National Historic Park
- Vulture Mountain Recreation Area (County Park)
- White Tank Mountains Regional Park

Pursuant to Section 4(f) regulations for projects in a tiered NEPA process, the Tier 1 EIS will “address the potential impacts to Section 4(f) properties and whether those impacts could have a bearing on the decision being made.” In addition, the Tier 1 EIS may include a preliminary Section 4(f) approval for the I-11 Corridor. The preliminary Section 4(f) approval, if made in the Tier 1 EIS, also would include “all possible planning to minimize harm to the extent that the level of detail available allows,” while recognizing that “such planning at this stage may be limited to

ensuring that opportunities to minimize harm at subsequent stages would not be precluded by decisions made at the Tier 1 EIS stage.”

As required by Section 4(f), the Tier 1 EIS will document coordination among ADOT, FHWA, and the officials with jurisdiction over each potentially impacted property in order to exchange information about the project and the properties, and begin discussion about the potential for project effects on protected properties, avoidance, and measures to minimize harm. The Tier 1 Final EIS will identify the Preferred Alternative, and a Final Preliminary Section 4(f) Evaluation will be part of the ROD. FHWA will make its Preliminary Section 4(f) determination as part of the ROD.

At this Tier 1 EIS level of environmental review, a menu of potential mitigation measures will be developed on a programmatic scale for consideration in Tier 2. Potential examples of minimization and mitigation measures may include design refinements as the project advances to avoid or minimize impacts to such properties. Another example would be a commitment to consider potential enhancements to properties such as improvements in multimodal accessibility and amenities. In addition, the preliminary Section 4(f) Evaluation in the Tier 1 EIS will include a commitment to continue coordination with officials with jurisdiction over Section 4(f) properties as the project advances. A summary of coordination activities will be documented in the Draft Tier 1 EIS.

### 3.7.2 Future Tier 2 Environmental Reviews

As set forth in 23 CFR 774.7(e)(1), FHWA will complete a Final Section 4(f) Evaluation during future Tier 2 study. At that time, FHWA will on focus making final determinations of use, assessing avoidance and least harm as warranted, and identifying specific measures to minimize harm. As warranted, this activity will include the evaluation and determination of specific design elements. Continued consultation with the officials with jurisdiction over Section 4(f) properties would continue as part of Tier 2 activities and be reported in the Tier 2 NEPA documents.

## 3.8 Noise

The FHWA has issued regulations for noise evaluation in 23 CFR Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, which require all state departments of transportation to have an approved policy to identify and address freeway traffic noise impacts. ADOT has developed the *Noise Abatement Requirements* (NAR) in coordination with the FHWA, Arizona Division, in compliance to the noise regulations in CFR Part 772. As per Appendix G – *FHWA Analysis and Abatement Guidance*, there are no federal requirements directed specifically to freeway traffic-induced vibration.

### 3.8.1 Tier 1 EIS Methodology

Existing GIS land use data, ecological, demographics, EJ, cultural and Section 4(f)/6(f) resources will be used to qualitatively identify noise and construction vibration sensitive receptors. The documentation of existing conditions in the Tier 1 EIS will include a qualitative description of the noise sensitive land use categories, as categorized in Table 1 to Part 772 – Noise Abatement Criteria, and existing highway traffic noise sources, including alternative noise sources such as nearby railroads, within the analysis area.

A menu of potential mitigation measures will be developed on a programmatic scale for further consideration in Tier 2. The potential strategies will focus on minimizing the impacts, in line with 4.1 Noise Abatement Measures, Chapter 4 – Analysis of Noise Abatement Measures, ADOT NAR.

### **3.8.2 Future Tier 2 Environmental Reviews**

The Tier 2 analyses will predict the existing and future levels of ambient noise, address construction vibration, and identify the actual numbers of residences, types of land uses, and locations of sensitive receptors. Tier 2 analyses also will include a quantitative evaluation of potential noise effects on wildlife and natural parks. The development of mitigation measures and designs that would avoid or minimize noise and vibration effects would be included in the Tier 2 analyses. The subsequent Tier 2 NEPA studies will implement ADOT NAR with regards to site-specific impacts in more detail.

## **3.9 Visual and Aesthetics**

Visual and aesthetic resources are subject to regulation by the FHWA, BLM, USFS, and NPS.

- FHWA's National Scenic Byways (23 U.S.C. 162, Transportation Equity Act for the 21st Century (TEA-21), SAFETEA-LU) preserves and enhances identified roadways that possess certain cultural, historic, scenic, natural or recreational qualities.
- The Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976 (16 U.S.C. 1601), as well as other laws and regulations require that the USFS include requirements for consideration, treatment, and protection of scenery and aesthetics. USFS is required to inventory and manage visual resources on USFS lands, and to assess the aesthetic impacts of timber sales and other activities.
- NPS' regulation 36 CFR Parts 1 to 199 – Parks, Forests, and Public Property provides for the proper use, management, government, and protection of persons, property, and natural and cultural resources within areas under the jurisdiction of the NPS.
- The BLM's Visual Resource Management (VRM) system provides a framework for managing visual resources on BLM-administered lands. Included in this system is a mechanism for identifying visual resource values on BLM-administered lands, minimizing the impacts of surface-disturbing activities on visual resources, and maintaining the scenic value of tracts of land for the future.

The FHWA has published a guidance document titled: *Visual Impact Assessment for Highway Projects*, Pub # FHWA-HI-88-054. This guidance presents an approach used to identify the importance of visual resources and to assess the impact of effects to these resources.

### **3.9.1 Tier 1 EIS Methodology**

This section will document the visually-sensitive and aesthetic resources that are important to the local communities such as parklands, water resources, historic districts, etc. The visual and aesthetics scenic resources (VASR) will be identified and defined an analysis of the effects will be conducted. The visual impact assessment will:

- Assess the land uses along the entire corridor to identify the existing VASR;



- Define the existing VASR by landscape unit, and its scenic quality;
- Identify the viewer sensitivity and their views that are likely to be affected by the Project;
- Identify night sky infrastructure and viewing opportunities that may be affected by the Project;
- Identify community goals for scenic quality;
- Identify visual landmarks or vistas of regional importance seen from within the Project Area;
- Determine if the proposed project would degrade existing VASR by introducing new, incompatible elements into the visual character of the landscape;
- Coordinate with the appropriate land managing agencies (e.g., Bureau of Land Management) to determine if there are existing Visual Resource Management Plans and what requirements would be needed for NEPA documents following the Tier 1 EIS; and
- Identify mitigation measures to alleviate negative effects of the Build Corridor Alternatives on visual resources, including measures developed for other environmental resources, such as cultural or natural biological resources, that could improve the scenic quality of the Proposed Action.

The visual resource inventory and photo documentation will be conducted through a 5-day site reconnaissance; an in-office review of internet sources, maps and aerial photographs; and through coordination with other resource specialists. Key viewer groups and community values for VASR will be identified through a review of appropriate land use plans and issues identified during the scoping and public involvement processes.

Long term effects on VASR will be considered. The effect of each Build Corridor Alternative will be evaluated based on the alternative's conformance with community values for visual resources, anticipated response from the viewing public, and degradation of existing visual quality.

### **3.9.2 Future Tier 2 Environmental Reviews**

The Tier 1 EIS will identify areas where there is potential for visual effects. More detailed visual effects assessment based on design plans and profiles will be performed as part of subsequent Tier 2 evaluations. The Tier 2 assessment will likely characterize resources based on vividness, intactness, and unity; refine the potential effects on visual resources; assess the viewers and the viewer's sensitivity to change; and address specific mitigation measures for those site-specific effects.

Additionally, the FHWA and ADOT will identify ways in which agency coordination during the Tier 1 EIS process could create efficiencies and help streamline subsequent Tier 2 reviews and approvals. For example, if a particular portion or element of a Build Corridor Alternative avoids visual and aesthetic resources or any other impact on visual and aesthetic resources, the FHWA and ADOT may coordinate with the NPS to determine whether or not those portions need further evaluation during the Tier 2 environmental review process.

### 3.10 Air Quality

The *Clean Air Act of 1990 (CAA)* as amended establishes primary and secondary National Ambient Air Quality Standards (NAAQS). Motor vehicles also are contributors to mobile source air toxics (MSAT) and greenhouse gas (GHG) emissions.

#### 3.10.1 Tier 1 EIS Methodology

This section will evaluate the potential effects of the Proposed Action on air quality, including NAAQS-related, MSAT and GHG emissions. Projected changes in traffic volumes, truck volumes and vehicle travel time will be assessed to qualitatively evaluate the possible changes in these emissions. The section also will summarize available information about the health risks associated with the emissions, and will discuss types of sensitive receptors in the vicinity of the project area. Coordination will be maintained with the Arizona Department of Environmental Quality (ADEQ) and managers of Class I airshed areas to address applicable air quality requirements at the Tier 1 stage. Consistency with the ADOT Long Range Transportation Plan (LRTP) and applicable Metropolitan Transportation Improvement Programs (MTIP) will be assessed. The section will include general information on the possible effects on climate change related to the Build Corridor Alternatives, as well as a qualitative discussion of potential impacts to designated Class I airsheds in study vicinity. Existing ambient air quality will be evaluated based on existing local ambient air quality data sources. The Tier 1 EIS analysis will not require a regional or project-level conformity analysis for nonattainment areas in Maricopa, Pinal, Pima, or Santa Cruz counties.

A menu of potential mitigation measures will be developed on a programmatic scale for further consideration in Tier 2. Examples of programmatic mitigation measure for air quality include the incorporation of Environmental Performance Measures in Tier 2 Alternatives, voluntary emission reduction agreements, or use of energy efficient or low-emissions construction equipment.

#### 3.10.2 Future Tier 2 Environmental Reviews

Project-level Tier 2 analyses will include more detailed evaluation of site-specific air quality impacts, where appropriate, including potential microscale dispersion modeling to compare local air quality levels to applicable NAAQS and emissions analysis for MSAT. Required transportation or general conformity analyses and any necessary determinations would be completed during Tier 2.

### 3.11 Hazardous Materials

Contamination refers to areas where hazardous materials or contaminants release into the environment and pollute air quality, soils, and waterways. Of concern are those properties where hazardous or contaminated materials are used, handled, stored, or disposed and have the potential to be released into the environment. The USEPA is the primary federal agency that both oversees the protection of human health and the environment and has regulatory authority over hazardous wastes and contaminated material sites through the following:

- Toxic Substances Control Act (TSCA)
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended

- Resource Conservation and Recovery Act (RCRA)
- Superfund Amendments and Reauthorization Act (SARA).

Hazardous wastes and contaminated material also are subject to regulation at the state level.

### 3.11.1 Tier 1 EIS Methodology

This section will identify and assess the existing contaminated materials and potential impacts resulting from the implementation of the alternatives and the movement of hazardous materials along the proposed corridor. A regulatory database search will be conducted for the Project Area to determine the presence of hazardous material sites. This search will be supplemented by a review of available reports for the Project Area. Publicly available federal, state, local, and facility records will be evaluated for environmental information about documented facilities or incidents within the approximate minimum search distance established by the environmental professional, in accordance with the ASTM E 1527-05 standard.

A menu of potential mitigation measures will be developed on a programmatic scale for further consideration in Tier 2. An example of programmatic mitigation measures for hazardous wastes and contaminated materials would be contaminant management to prevent any existing contamination from migrating to adjacent sites, and providing a safe working environment to protect both the workers and the public.

### 3.11.2 Future Tier 2 Environmental Reviews

Tier 2 analyses would include site-specific evaluations of potential impacts to public health and the environment. This could include an evaluation of past and current uses of the site, inspection of the site and adjacent properties, interviews with persons knowledgeable about site activities, discussion with regulatory agencies regarding known issues at the site and an analysis of all known information to provide an environmental assessment of the site. Tier 2 evaluations also could include sampling of the soils and groundwater on, or adjacent to, the site to assess the risk posed by contamination.

The ADOT and FHWA will identify ways in which agency coordination during the Tier 1 EIS process could create efficiencies and help streamline subsequent Tier 2 reviews and approvals. For example, if a particular portion or element of a Build Corridor Alternative avoids the physical encroachment or any other impact on hazardous waste and contaminated material sites, ADOT and FHWA may coordinate with USEPA to determine if those portions need further evaluation during the Tier 2 environmental review process.

## 3.12 Geology, Soils, and Prime Farmlands

Geologic resources are subject to regulation by the USEPA and Occupational Safety and Health Administration. The Safe Drinking Water Act of 1974 regulates the nation's public drinking water supply. The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) identifies, maintains inventories and monitors the use and development of soil. The NRCS does not have regulatory authority to approve or deny development affecting soil. The U.S. Geological Survey (USGS) is a non-regulatory agency under the USDOJ responsible for providing information pertaining to groundwater resources, topographic, and seismic data.

Agricultural lands are subject to regulation by the USDA. The *Farmland Protection Policy Act* (FPPA) – (7 U.S.C. §4201 or 7 U.S.C. Chapter 73) directs federal agencies to minimize the extent to which their federal programs contribute to the unnecessary and irreversible conversion of Prime and Unique farmland, and to an extent, land of statewide or local importance, to nonagricultural uses.

### **3.12.1 Tier 1 EIS Methodology**

Soils and geologic resources that will be considered include underlying geologic conditions, unique geologic formations, primary soil types, and topography. This section will include a brief description of the existing topography (i.e., elevations and grades), geology, and primary soil types and characteristics. It also will briefly describe the potential effects on soils and geologic conditions and consider suitability of soils to support proposed construction and operational requirements.

The geology, soils, and prime farmland will be identified, evaluated, and documented. Existing geological information and soil maps will be collected to develop a description of existing conditions for a comparison of impacts. Information will include published data from the USGS. Prime and unique farmlands as defined under the FPPA will be identified using NRCS information. Completion and submission of AD-1006 Forms (i.e., Farmland Conversion Impact Rating) to convert farmland to nonagricultural uses in compliance with the FPPA will not be part of the Tier I EIS and will be deferred to future NEPA documentation.

A menu of potential mitigation measures will be developed on a programmatic scale for further consideration in Tier 2.

### **3.12.2 Future Tier 2 Environmental Reviews**

Tier 2 environmental review will further determine the presence of geologic resources, as well as identify mitigation measures and design and construction methods that would avoid or minimize effects. It also will define the actual acreage of agriculture lands that could be converted to transportation uses, as well as include the development of mitigation measures and designs that would avoid or minimize effects on agricultural lands.

Additionally, FHWA and ADOT will identify ways in which agency coordination during the Tier 1 EIS process could create efficiencies and help streamline subsequent Tier 2 reviews and approvals. For example, if a particular portion or element of a Tier 1 EIS Build Corridor Alternative avoids conversion or any other impact on agricultural lands, FHWA and ADOT would coordinate with USDA to determine whether or not those portions need further evaluation during the Tier 2 environmental review process.

## **3.13 Water Resources**

### **3.13.1 Wetlands and Waters of the U.S.**

Wetlands and other jurisdictional waters of the U.S. are subject to regulation by multiple federal agencies, including the U.S. Army Corps of Engineers (USACE), USEPA, and U.S. Coast Guard (USCG). The USACE jurisdiction is limited to those wetlands considered waters of the U.S., as defined in 33 CFR Part 328.3. Applicable legislation and regulations, listed in below will

be considered, consistent with a Tier 1 EIS level of assessment, in the evaluation of waters of the U.S.:

- Clean Water Act (CWA)
- Rivers and Harbors Act of 1899, Section 9 and Section 10

Other applicable legislation and regulation for wetlands to be considered in the Tier 1 EIS include:

- EO 11990, Protection of Wetlands
- USDOT Order 5660.1A, Order on Preservation of the Nation's Wetlands
- Presidential Wetland Policy, 1993; Reaffirmation of the Presidential Wetland Policy, 1995

### **3.13.1.1 Tier 1 EIS Methodology**

This section will describe the effects of the alternatives on potential waters of the U.S. Potential waters of the U.S. will be identified using GIS data relative to soils, water resources, natural vegetation, etc., and current aerial photography. Highly sensitive features will be identified through scoping, agency coordination, and publicly available data including Wild and Scenic Rivers, if applicable. If field work and photographic documentation is required for biology, this information may be utilized in review of potential waters of the U.S. as well.

Impacts on ephemeral and perennial surface water will be evaluated based upon the possible crossings for each alternative. The analysis will consider hydrologic data to determine the number of watercourse crossings and the category of crossing (i.e., perennial, ephemeral, intermittent, and potential wetland). Potential mitigation strategies and avoidance opportunities will be included in this section.

### **3.13.1.2 Future Tier 2 Environmental Reviews**

The Tier 2 analysis will refine the impact assessment based on advanced design and site-specific mapping and delineation of existing mapped features. Further assessments during Tier 2 environmental review will include identification of ecologically significant locations including wetland delineations. This assessment will include further evaluation of avoidance, minimization, or mitigation measures and identification of design refinements needed in these locations. The Tier 2 analysis also will define and map waters of the U.S. that may require special consideration.

The FHWA and ADOT will identify ways in which agency coordination during the Tier 1 EIS process could create efficiencies and help streamline subsequent Tier 2 approvals. For example, if a particular portion or element of a Build Corridor Alternative avoids direct and/or indirect effects on waters of the U.S., the FHWA would coordinate with USACE, USEPA, and USCG to determine if those portions need further evaluation in regards to waters of the U.S. at a Tier 2 level, as applicable.

## **3.13.2 Water Quality**

This section will discuss the potential effects of sediment erosion, increased impervious surface areas, and pollution on surface and groundwater resources.

### **3.13.2.1 Tier 1 EIS Methodology**

This section will identify and evaluate watercourse crossings, river networks, adjacent major waterbodies, watershed basins, and groundwater zones, including Aquifer Management Areas, for the purposes of water quality management. This section would “characterize the functional condition of waters and adjacent riparian areas.” A review of state water quality inventories will determine if the proposed project would discharge to known unique or impaired waters and unlisted tributaries within 5 miles upstream of listed waters. If discharges are possible, a list of the waterway segment number and name will be prepared. Pollutant(s) in the discharge for which the waterbody is listed will be identified and mitigation strategies will be identified for consideration during Tier 2 analyses, particularly at the discharge point to the waterbody, to meet water quality regulations.

The discussion will address the following: legal and regulatory context related to the water quality certification as part of Section 401 of the CWA; a discussion of Section 402 of the CWA and Pollutant Discharge Elimination System requirements; a discussion of Section 1424(e) of the Safe Drinking Water Act and sole source aquifers; existing conditions; long-term effects from construction associated with water quality; and a discussion of potential mitigation strategies required as a result of construction. Coordination with the USACE and other appropriate agencies will be conducted and documented in the Draft Tier 1 EIS.

### **3.13.2.2 Future Tier 2 Environmental Reviews**

During the Tier 2 analysis, program impact assessments based on design and site-specific mapping will be prepared. Projects must meet existing federal requirements regarding water quality, as well as state requirements.

### **3.13.3 Flood Hazards and Floodplains**

Floodplains are subject to regulation by Federal Emergency Management Agency (FEMA). Approvals or permits are issued by at the state or local level. National Flood Insurance Program (NFIP) identifies flood hazard areas throughout the U.S. and its territories and produces Flood Hazard Boundary Maps and flood insurance rate maps (FIRMs). These maps are used for floodplain management and to determine risk-based flood insurance premiums for the NFIP. Additionally, the EO 11988: Floodplain Management and Floodplain Management Department of Transportation Order 5650.2 “Floodplain Management and Protection pertain to floodplains. This section will include consideration for potential freeway crossings of existing flood control structures.

#### **3.13.3.1 Tier 1 EIS Methodology**

This section will identify and describe the potential effects of the Proposed Action on floodplains. Documentation of the analysis in this section will:

- Identify the presence and nature of any FEMA mapped floodplains (e.g., zone A, zone AE, zone AE with floodway);
- Identify where an alternative would encroach on the base (100-year) floodplain and assess the extent of potential impact or avoidance opportunities based on a percentage of floodplain that might be encroached; and
- Include a list of all jurisdictions having control over floodplains for each Build Corridor Alternative.

For each Build Corridor Alternative that would encroach on a designated or proposed regulatory floodplain, a preliminary indication of whether the encroachment would be consistent with or require a revision to the regulatory floodplain will be provided. Coordination with FEMA and local floodplain administrators would be initiated to discuss the encroachments and if a revision might be required. The potential need for revisions will be documented; however, revisions will be completed during the Tier 2 environmental review and project level analysis.

### **Future Tier 2 Environmental Reviews**

The Tier 2 analysis will further define the effects on floodplains and determine the actual results of encroaching/filling identified floodplains at specific locations, as well as include the development of mitigation measures and designs that would avoid or minimize the effects on floodplains.

## **3.14 Biological Resources**

The Biological Resources section will describe and discuss the biological communities, both flora and fauna, within the Project Area. This section is divided into three subsections: Biotic Communities, Special Status Species, and Wildlife Connectivity. Although the discussion is broken into these topic areas, the components are interrelated.

### **3.14.1 Biotic Communities (Vegetation and Wildlife)**

Wildlife and wildlife habitats are protected under several laws and regulatory programs at the federal and state level. One of the principal laws protecting both plants and wildlife is the Endangered Species Act of 1973 (ESA). The ESA provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend. Protection of migratory birds is administered by the U.S. Fish and Wildlife Service (USFWS) under the Migratory Bird Treaty Act of 1918 (MBTA), which prohibits, unless permitted by regulations, the “take” of any migratory bird. The Federal Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) provides for the protection of bald and golden eagles. The National Wildlife Refuge System Administration Act of 1966 provides for the administration and management of the national wildlife refuge system by USFWS, as well as areas for the protection and conservation of fish and wildlife threatened with extinction, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas.

Under Title 17 of the Arizona Revised Statutes (ARS), the AGFD by and through the Arizona Game and Fish Commission, has jurisdictional authority and public trust responsibilities for the management of state fish and wildlife resources. Based on the authorities in ARS 17, AGFD has developed a 2012 State Wildlife Action Plan that identifies wildlife of conservation priority (i.e., Species of Greatest Conservation Need [SGCN]) and state Species of Economic and Recreation Importance (SERI). Commission Policy A2.11 directs the AGFD to maintain the natural biological diversity of Arizona, develop and implement conservation programs for SGCN to improve their status and to preclude federal listing.

The Arizona Game and Fish Department owns or manages more than 266,870 acres of land statewide, including wildlife areas, fish hatcheries, and shooting ranges. Most wildlife areas are available for public use, generally including wildlife viewing, fishing, hunting, camping, hiking, and birding. These wildlife areas are managed by AGFD and also will be addressed in Section 3.7 (Section 4(f)).

### 3.14.1.1 Tier 1 EIS Methodology

This section will describe landscape-level (i.e., large-scale) biotic communities and the wildlife and wildlife habitat within the Project Area. Regional vegetation communities, habitat blocks, riparian areas, and site-specific dominant vegetation will be identified using available literature and aerial photography. The potential of the spread of invasive plant species will be considered. The section also will identify and consider project effects on federal and state wildlife refuges, special management areas, and habitat conservation plans within the Project Area. Coordination with AGFD, USFWS, BLM, and other pertinent agencies and stakeholders will continue throughout the development of the Draft Tier 1 EIS.

Potential mitigation strategies or measures will be developed for further consideration in Tier 2. Examples of mitigation measures for ecological resources include wetland mitigation banks, tree conservation plantings, and habitat restoration/enhancement.

### 3.14.1.2 Future Tier 2 Environmental Reviews

The Tier 2 analysis will quantify potential impacts such as habitat conversion or habitat degradation. If impacts are anticipated, mitigation measures would be developed and implemented.

## 3.14.2 Special Status Species

Special status species, which include plant and animal species that have received special designation by federal, state, or local government agencies, will be analyzed to identify potential impacts. Special status species include:

- **Species Protected Under ESA.** The ESA, as amended, provides protection for federally-listed species and their habitats, and delisted species require post-delisting monitoring. All federal agencies are mandated to conserve endangered and threatened species and utilize applicable authorities in furtherance of the purposes of the ESA (Section 1531[c][1], Policy). The USFWS has primary administrative responsibility under the ESA.
- **Other Federally Protected Species.** Other federally listed species will include species protected under the MBTA, Bald and Golden Eagle Protection Act, Candidate Conservation Agreement, Candidate Conservation Agreement with assurances, and BLM Sensitive Species policies. The MBTA prohibits harm to all migratory birds, their nests, eggs, and nestlings. EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, directs each federal agency taking actions having or likely to have a negative impact on migratory bird populations to work with the USFWS to develop an agreement to conserve those birds under the MBTA. The Bald and Golden Eagle Protection Act further provides protection for Bald Eagles (*Haliaeetus leucocephalus*) and Golden Eagles (*Aquila chrysaetos*). The National Bald Eagle Management Guidelines (USFWS 2007) provide additional information to minimize or prevent violations of these federal laws governing bald eagles. BLM Manual 6840 Special Status Species Management provides policy and guidance for the conservation of BLM special status species and the ecosystems upon which they depend on BLM-managed lands. BLM special status species are: (1) species listed or proposed for listing under the ESA, and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA.



- **Arizona State Species.** AGFD has developed a 2012 State Wildlife Action Plan that identifies wildlife of conservation priority. These include SGCN Tier 1A and 2A species and SERI species.
- **Protected Native Plants.** The Arizona Native Plant Law of 1993 (ARS 7, 3-901 et seq.) is administered by the Plant Industries Division of the Arizona Department of Agriculture. There are four protected Native Plant categories: highly safeguarded, salvage restricted, salvage assessed, and harvest restricted.

### 3.14.2.1 Tier 1 EIS Methodology

County occurrence and specific locality occurrence data within the Project Area will be acquired from the USFWS and AGFD databases. These data will be reviewed to identify any previously documented occurrences for species or their preferred or critical habitats. Available literature, aerial photography, and other data as provided by others will be reviewed to determine the presence of suitable habitat for potentially occurring threatened or endangered species (TES). Presence/absence surveys and species-specific protocol surveys for TES will not be conducted for the Tier 1 EIS. ESA Section 7 consultation or other permitting for threatened and endangered species will be conducted during the Tier 2 environmental review and project level analysis. The identification of critical habitat will be based on designated critical habitat as established by USFWS. Other important habitat will be determined based upon the literature, desktop reviews, and coordination with AGFD, USFWS, BLM, USFS, and other pertinent organizations and agencies.

Assessments for protected species or for critical habitat of protected species will include:

- All species listed by the USFWS as threatened or endangered or proposed for listing as threatened or endangered (50 CFR 17.11-12);
- All species that are candidates for review for listing by USFWS as threatened or endangered (per most recently updated list in Federal Register);
- Species protected by the MBTA (50 CFR 10.13).
- Bald and Golden Eagles protected by the Bald and Golden Eagle Protection Act of 1940 as amended (16 U.S.C. § 668–668d).

Potential effects on species, designated critical habitats, or specified habitat requirements will be evaluated by reviewing the habitat requirements for each listed species and determining if that habitat exists within the Project Area based on the GIS data. An effect on TES will be based on the potential for each species' habitat to be physically disturbed or the quality of that habitat affected by presence of the facility, and the potential to effect the implementation of a species' recovery plan/action or Candidate Conservation Agreement within the Project Area. If habitat that supports a specific species is found within the Project Area and that habitat could be physically or otherwise adversely affected, the species and habitat will be identified as a "*species/area of concern*." If no habitat that supports the species is found within the Project Area, the species and habitat will be identified as a "*species/area that needs no further evaluation*."

A menu of potential mitigation measures will be developed on a programmatic scale for further consideration in Tier 2.

### **3.14.2.2 Future Tier 2 Environmental Reviews**

The Tier 2 analysis will refine the impact assessment based on design and site-specific areas of potential impact. Surveys would be conducted as appropriate, and ESA Section 7 consultation would be concluded as part of the Tier 2 environmental review.

### **3.14.3 Wildlife Connectivity**

The ability for wildlife to move between habitats and across landscapes is critical. Many large mammal species can move tens or even hundreds of miles during seasonal migration or in search of food. Conversely, some wildlife move small distances to certain resources that roads may fragment within habitat areas. In 2006 an interagency working group in Arizona published Arizona's Wildlife Linkages Assessment (source: The Arizona Wildlife Linkages Working Group (WLWG), 2006). ADOT and AGFD maintain data and information relevant to wildlife movement within the state of Arizona. The work done by WLWG and subsequently by ADOT and AGFD focuses on wildlife movements between habitat blocks. Work by WLWG and AGFD has identified large contiguous undeveloped or minimally developed areas and wildlife corridors that connect these areas. During the scoping process AGFD expressed its concerns for the potential of habitat fragmentation and desire to preserve these large habitat blocks and the corridors that connect them.

#### **3.14.3.1 Tier 1 EIS Methodology**

This section will identify major wildlife corridors within the Project Area, using data that will come from the previous work by WLWG as well as through coordination with the AGFD, other federal and state agencies, local jurisdictions, and conservation organizations. This information, along with the evaluations related to vegetation, wildlife, and wildlife habitat will be used to evaluate the potential impacts of the Build Corridor Alternatives on wildlife movement and connectivity.

Potential mitigation measures will be developed on a programmatic scale for further consideration in Tier 2. Examples of a programmatic mitigation measures for wildlife connectivity include potential research on wildlife movements within the analysis area or Area of Influence to address and enhance wildlife connectivity and identifying the most appropriate location for wildlife crossing structures, fencing, and wildlife habitat enhancements such as vegetation plantings. Additional research or data collection efforts prior to Tier 2 environmental review could augment the available data in areas where impacts might occur and provide additional baseline information to identify wildlife connectivity priorities and effective mitigation approaches during the future Tier 2.

#### **3.14.3.2 Future Tier 2 Environmental Reviews**

The Tier 2 analysis of potential impacts to vegetation and wildlife habitat will examine whether the Project would result in impacts such as habitat fragmentation, reduced wildlife connectivity between habitats, and wildlife vehicle collisions and associated wildlife mortality. The potential impacts would be quantified where applicable. If impacts are anticipated, mitigation measures to offset these impacts must be developed.

### 3.15 Temporary Construction-Related Impacts

This section will describe the general construction methods that would be used to implement the Build Corridor Alternatives and assess the potential temporary, short-term impacts that could result during construction.

#### 3.15.1 Tier 1 EIS Methodology

Specific environmental resource areas that will be analyzed for temporary, short-term construction impacts are listed below. Examples of temporary construction-related effects associated with the Build Corridor Alternatives that will be qualitatively described include:

- **Transportation:** potential for disruptions to operations of existing transportation services; potential for disruption to transit services and operations; changes in access as a result of roadway closures and detours; and roadway closures, detours and loss of parking and loading zones in the vicinity of construction sites;
- **Air Quality:** potential for increases in fugitive dust and emissions from mobile and stationary construction-related equipment;
- **Noise and Vibration:** increased noise levels and potential for structural damage from vibration related to equipment and trucks or construction operations such as blasting;
- **Water Resources:** potential for erosion, sedimentation, increase in flooding and wetland disturbance due to construction activities, as well as anticipated water to be used for construction activities;
- **Biological Resources:** temporary displacement of species as result of construction noise, direct mortality from construction activity, exposure to hazardous materials or physical hazards, potential mobilization and off-site transport of sedimentation and/or construction related contaminants to adjacent habitats, and disruption of normal diet or nocturnal activity patterns such as foraging and reproductive activities; transport of invasive, non-native plant species as a result of construction activities.
- **Land Use:** potential for changes in land cover and use from temporary easements needed for construction staging areas or access;
- **Safety and Security:** potential impacts to construction workers, the general public and emergency services from construction activities;
- **Hazardous Materials:** general discussion of state requirements for transport and disposal of hazardous materials, as well as health and safety plans;
- **Visual and Aesthetics:** temporary changes to the visual environment in the vicinity of construction sites due to the introduction of trucks, fencing, equipment, lighting, etc.;
- **Environmental Justice:** potential for disproportionate and adverse impacts to EJ populations
- **Cultural Resource and Historic Properties:** potential for direct or indirect physical effects to built historic properties and archaeological resources from construction activities;
- **Parklands:** potential for temporary use of park property for construction purposes and proximity effects from construction activities (i.e., noise, visual, etc.);

- Economic Effects: potential for effects to business in the vicinity of construction sites and employment opportunities; and
- Utilities: potential for utility disruptions during construction.

At the Tier 1 EIS stage, some potential mitigation strategies could be identified at a programmatic level that could be used during the Tier 2 phase to address temporary, short-term construction impacts.

### **3.15.2 Future Tier 2 Environmental Reviews**

The future Tier 2 environmental review would consider a defined alignment and construction laydown areas, and so would identify site-specific impacts related to construction activities as well as site-specific mitigation.

## **3.16 Unavoidable Adverse Impacts**

This section will include a summary of potential unavoidable adverse impacts for each Build Corridor Alternative and a description of potential mitigation strategies to minimize those adverse impacts.

### **3.16.1 Tier 1 EIS Methodology**

Potential unavoidable adverse impacts will be analyzed in accordance with NEPA (42 U.S.C. § 4321-4347), regulations published by CEQ on implementing NEPA (40 CFR 1502.16), and the USDOT's Environmental Impact and Related Procedures (23 CFR Part 771). The evaluation will be based on data gathered from review of applicable resources and will assess:

- Construction period impacts;
- Short-term impacts;
- Long-term impacts;
- Potential mitigation strategies;
- Summary of any irreversible or irretrievable commitment of resources; and
- Identification of any future options that may be precluded by the selection of one of the Build Corridor Alternatives.

### **3.16.2 Future Tier 2 Environmental Reviews**

During the future Tier 2 process, a more site-specific discussion of unavoidable adverse impacts would be provided, commensurate with the increased level of detail for an alignment.

## **3.17 Indirect and Cumulative Effects**

The CEQ regulations (40 CFR Parts 1500-1508) require consideration of cumulative effects in an EIS, regardless of whether it is a Tier 1 or Tier 2 document. In addition, the following policies, guidance documents, and reference materials relate to the evaluation of cumulative effects of projects:

- FHWA Interim Guidance: Indirect and Cumulative Impacts in NEPA (2003)
- Considering Cumulative Effects under the National Environmental Policy Act (1997)
- Guidance on the Consideration of Past Actions in Cumulative Effects Analysis (2005)
- Consideration of Cumulative Impacts in EPA Review of NEPA Documents (1999)
- American Association of State Highway and Transportation Officials (AASHTO) Practitioner's Handbook on Indirect and Cumulative Impacts (2011)
- Indirect and Cumulative Impact Analysis (National Cooperative Highway Research Program 2006).

### 3.17.1 Tier 1 EIS Methodology

This section will identify and assess the potential indirect and cumulative effects the alternatives could have on the surrounding social, built, and natural environment. Indirect effects are defined as those that are caused by an action and are later in time or farther removed in distance, and may include growth-inducing effects and other effects related to induced changes in the patterns of land use, population density or growth rate, and related effects the environment. An assessment of indirect effects will broadly consider the growth inducing impacts that could result from the Proposed Action, including potential redevelopment or secondary development that could generate additional traffic, population/job growth, economic benefits, or other impacts. Methods proposed for determining where induced growth will be as follows:

**Step 1.** Identify the areas that may experience indirect effects (areas of influence).

- A. Identify areas where project-induced growth could potentially occur by comparing projected 2040 trip origin and destination data for the No Build Alternative to each Build Corridor Alternative.
- B. Identify areas where changes in future patterns could occur by comparing projected 2040 travel patterns for the No Build Alternative to each Build Corridor Alternative.
- C. Review local agency land-use plans and coordinate with stakeholders, as necessary, to determine land management policies and development potential in areas identified in Step 1A and 1B (e.g., cities, economic development professionals, and federal landholders).

**Step 2.** Estimate contribution of induced economic growth and changes in accessibility.

- A. Calculate change in regional economic activity. Improvements in travel efficiency may lead to transportation cost savings and economic growth in the region. A regional economic impact model (e.g., REMI) will be used to estimate the increase in regional economic activity due to transportation cost savings for each alternative. These cost savings will be estimated by scenario using output from the travel demand model.
- B. Estimate potential land resource impact. The economic growth will be allocated to the corridor through input from land-use modeling, stakeholders, professional judgment, and interviews. This allocation will consider the location and magnitude of the economic growth and be converted into land needs using standard professional sources.
- C. Estimate employment growth adjacent to major interchanges due to changes in accessibility. The potential location of major interchanges and the need for services will

be estimated using professional judgment. New interchanges provide new access, which increases the developability of nearby land, and provide locations for services (e.g., restaurants, gas stations, and accommodations) to serve traffic on and along the new corridor. Other business also may move to take advantage of the new location. Potential business and industries that may consider new locations will be identified through interviews with agencies' economic development professionals.

**Step 3.** Identify indirect effects and potential mitigation strategies.

- A. Review the areas of influence along with the resources areas identified during scoping to determine if it reflects an accurate and useful area of influence for the indirect effects assessment.
- B. Consider whether the sensitive resource areas may be indirectly affected by changes in land use, transportation patterns, or economic activity within the areas of influence identified in Step 1. Changes in the landscape, including development, could indirectly affect sensitive land uses, such as wildlife habitat and movement. For example, changes in the number of people recreating in an area could have a short-term indirect effect on biological resources such as wildlife relocating to a less used area. This analysis will reflect professional judgment and input from stakeholders.
- C. Identify and describe potential indirect effects. The discussion of indirect effects will be qualitative and should identify the types of indirect effects that could occur. For example, consider if a change in land use could result in a change in tax base. Indirect effects may be positive or negative and differ by resource, meaning an indirect effect may be positive for one resource and negative for another. In the example of a change in tax base, it may be positive for the economy and negative for the opportunities for primitive recreation or solitude.
- D. Identify potential mitigation strategies that could be employed to offset negative indirect impacts. At a Tier 1 EIS level, this is a high-level discussion of the type of strategies that could be employed and the agency that would be responsible for their implementation. For example, local agencies have an opportunity to implement local ordinances to guide new developments in a fashion which is consistent with local objectives. These strategies would be used to inform the Tier 2 studies and mitigation commitment made in those decision documents.

While the I-11 Corridor has the potential to influence changes in land development patterns and uses associated with growth, decisions related to proposed development and the approval of development would occur at the local level. Therefore potential mitigation strategies proposed in the Tier 1 EIS will be limited to those within the purview of the project sponsor. However, the EIS will include a discussion of the larger mitigation efforts underway by others, in concert with ADOT's proposed strategies.

Cumulative effects are defined as the impact on the environment, which would result from the incremental impact of the Project when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. Cumulative effects for the Proposed Action will be qualitatively assessed in conjunction with the related plans and projects included in Chapter 2 (Alternatives Considered). The qualitative assessment will focus on trends for the resources' health and how the Proposed Action may or may not contribute to these trends. At a Tier 1 EIS level, most of the discussion will be at a planning level and not delve into specific parcels of land with



additional detail being provided for sensitive resources as identified through scoping, agency coordination, and research.

Cumulative effects include the additive effects on notable resources of the No-Build Alternative and each Build Corridor Alternative on the effects of actions taken by others. A key component of the indirect and cumulative effects analysis is identification of planned developments. Data collection, including interviews with planners and development experts, will identify reasonably foreseeable future developments. These projects will be analyzed with respect to location, type and purpose, scale, stage of development, setting, and notable design features.

Mitigation for cumulative effects is generally the same as the mitigation for direct impacts that contribute to the cumulative impacts in the Draft Tier 1 EIS. The cumulative impacts analysis may aid local governments in managing potential induced development in their jurisdiction.

### 3.17.2 Future Tier 2 Environmental Reviews

As part of Tier 2 environmental review, the analysis of indirect and cumulative effects would be undertaken in more detail, and focus on a project-specific study area. Refining where and how a Build Corridor has the potential to result in indirect effects and where it has the potential to contribute to cumulative effects, as well as examining additive impacts of actions over a larger corridor-wide scale, allows for proactive planning by jurisdictional agencies to potentially minimize or avoid adverse effects as implementation of a Build Corridor Alternative progresses.

## 4 CONSULTATION AND COORDINATION

Chapter 4 (Consultation and Coordination) will provide a summary of the public, agency, and tribal government involvement activities conducted for the environmental review process, including the stakeholders involved, meeting dates, outreach methods, and materials developed. It also will summarize major comments and themes that emerged through the public, agency, and tribal government involvement process, including a discussion of the public outreach activities for EJ communities. Agency correspondence and outreach materials will be included in Appendix F and a detailed compilation of public comments will be incorporated by reference to other study documents (e.g., *Summary Scoping Report*).

Comment letters were received from agencies and the public during the scoping period in May 2016 and from cooperating and participating agencies at various milestones throughout the corridor alternatives development process. Stakeholder and public comments from the scoping process are documented in the *Scoping Summary Report- Final* (December 2016) for the project. Comment letters containing additional input relevant to the environmental resources within the study area also were received since the scoping period, and would be reviewed by the appropriate technical resource specialists for consideration during the development of the Tier 1 EIS.

## 5 EVALUATION OF ALTERNATIVES

Chapter 5 (Evaluation of Alternatives) will provide decision-makers with summary-level comparative information to select a Recommended Corridor Alternative for the I-11 Corridor. A summary matrix of the evaluation of the No-Build and Build Corridor Alternatives will be provided. Chapter 5 also will discuss next steps in the environmental review process, including the response to comments on the Draft EIS and preparation of the Final Tier 1 EIS and ROD



document. This section is dependent on the completion of the technical analysis for Chapter 3 (Affected Environment and Environmental Consequences) and thus, will be one of the last chapters written before the Draft Tier 1 EIS is published.





## **APPENDIX A: GLOSSARY**

Appendix A (Glossary) will provide a glossary of terms used in the Draft Tier 1 EIS.

## **APPENDIX B: REFERENCES**

Appendix B (References) will include a bibliography and list of references used in the Draft Tier 1 EIS.

## **APPENDIX C: LIST OF PREPARERS**

Appendix C (List of Preparers) will list the preparers of the Draft Tier 1 EIS, including the names, credentials, and technical qualifications of each individual.

## **APPENDIX D: LIST OF RECIPIENTS**

Appendix D (List of Recipients) will list the agencies that chose to be Cooperating and Participating Agencies in the NEPA process.

## **APPENDIX E: SECTION 106 CONSULTATION**

Appendix E (Section 106 Consultation) will document the Section 106 consultation process, including correspondence with all the Consulting Parties.

## **APPENDIX F: PUBLIC AND AGENCY INVOLVEMENT MATERIALS**

Appendix F (Public and Agency Involvement Materials) will contain the public and agency involvement materials produced during the Draft Tier 1 EIS process.

## **APPENDIX G: DRAWINGS AND TYPICAL SECTIONS**

Appendix G (Drawings and Typical Sections) will contain preliminary typical cross-section drawings showing locations and dimensions of transportation and other facilities within the proposed footprint for the No-Build and Build Corridor Alternatives.