

# Appendix A

Contents of an EA and EIS

April 2019

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## Abbreviations and Acronyms

ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
AGFD	Arizona Game and Fish Department
APE	area of potential effects
ASR	alternatives selection report
ASTM	ASTM International
AZPDES	Arizona Pollutant Discharge Elimination System
BA	biological assessment
BE	biological evaluation
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CWA	Clean Water Act
DCR	design concept report
EA	environmental assessment
EIS	environmental impact statement
EP	Environmental Planning
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	finding of no significant impact
FPPA	Farmland Protection Policy Act
GIS	geographic information system
HMC	Hazardous Materials Coordinator
ISA	Initial Site Assessment
JD	jurisdictional delineation
LEDPA	least environmentally damaging practicable alternative
LEP	limited English proficient
LOS	level of service
LPA	local public agency
LWCF	Land and Water Conservation Fund
LWCFA	Land and Water Conservation Fund Act
MOU	memorandum of understanding
MPO	metropolitan planning organization
MSAT	mobile source air toxic
MS4	municipal separate storm sewer system
NAAQS	National Ambient Air Quality Standards
National Register	National Register of Historic Places

**Appendix A**  
**Contents of an EA and EIS**

NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NNL	National Natural Landmark
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
OHWM	ordinary high water mark
PISA	Preliminary Initial Site Assessment
PM <sub>10</sub>	particulate matter
PM <sub>2.5</sub>	fine particulate matter
PSI	Preliminary Site Assessment
QA	quality assurance
QC	quality control
ROD	record of decision
ROW	right-of-way
SHPO	State Historic Preservation Office
STIP	State Transportation Improvement Program
TIP	Transportation Improvement Program
Title VI	Title VI of the Civil Rights Act of 1964
TNM	Traffic Noise Model
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
Waters	waters of the United States

## Overview

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This appendix is meant to be used by National Environmental Policy Act (NEPA) practitioners and subject matter experts from the Arizona Department of Transportation (ADOT) or its consultants on federal-aid highway and roadway projects in Arizona that have been assumed by ADOT under the NEPA Assignment program. Local public agencies (LPAs) are also required to follow the ADOT environmental assessment (EA)/environmental impact statement (EIS) guidance and this appendix in preparing EAs and EISs. The appendix briefly discusses the preparation of chapters in ADOT EAs and EISs and provides the following:

- a description of the topic
- required boilerplate text
- tips and procedural notes
- links to more in-depth ADOT and Federal Highway Administration (FHWA) guidance, where available

The basic function of an EA, according to NEPA regulations, is to help ADOT determine whether the environmental impacts resulting from a proposed action are significant and whether further analysis and documentation are needed. An EA is a concise document that briefly provides sufficient evidence and analysis for determining whether to prepare an EIS or a finding of no significant impact (FONSI) (40 Code of Federal Regulations [CFR] 1508.9). If it is determined that the proposed action would result in significant adverse environmental impacts during the preparation of the EA, ADOT would need to reconsider the proposed action and prepare an EIS, if applicable. A FONSI means that ADOT has determined that the proposed action would not result in significant adverse impacts and the action may proceed without additional NEPA evaluation.

An EA should focus on the resources affected by the proposed action and should be concise—not containing long descriptions or detailed information that may have been gathered or analyzed. To minimize its length, an EA should use quality maps, graphics, exhibits, tables, references, and summaries of background data and technical analyses that support concise discussions of the alternatives and their impacts (incorporate technical documents/data in appendices or the project file by reference).

The basic function of the EIS is to document and assess proposed actions that ADOT has determined through its project planning, development, and scoping process would result in significant environmental impacts. An EIS describes the purpose of and need for the proposed action, a range of reasonable alternatives that would address the purpose and need, the affected environment, impacts on the affected environment, and measures to avoid, minimize, or mitigate adverse impacts resulting from each reasonable alternative. The EIS also documents the project's compliance with other applicable environmental laws, regulations, and executive orders. A record of decision (ROD) is prepared at the conclusion of the EIS process to document ADOT's decision regarding the alternative selected and approved, and the basis for that decision.

## General Directions

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- Include all tracking numbers—for example, full TRACs number, federal-aid number. These numbers are generally presented on the cover page, signature page, FONSI, ROD, and in the footer of the environmental documents.
- Make sure the environmental study area—which is referred to as the study area—is large enough to encompass the entire proposed action and formulate realistic expectations regarding the size and location of the project footprint. Present this as a map to the study team early in the project development process. Seek updates from the study team on a regular basis to verify environmental studies are adequately addressing the area and scope of each alternative of the proposed action.
- Confirm that the proposed project is in the Arizona Regional Transportation Plan, State Transportation Improvement Program (STIP) and/or Transportation Improvement Program (TIP) phase, and the ADOT Five-Year Transportation Facilities Construction Program. Be sure to disclose this because a FONSI for an EA and a ROD for an EIS cannot be issued unless the project is in the STIP and the Five-Year Program.
- Use color maps and graphics in an EA and EIS; the text, maps, and graphics should be clear and readable.
- Verify that maps such as state and vicinity maps and any additional maps such as land use or Section 4(f) resources maps convey pertinent information, such as roads and other features discussed or referenced in the document. Maps are particularly useful for presenting complex and/or detailed information concisely. Maps should adhere to basic cartography and geographic information system (GIS) standards and include a north arrow, scale, legend, and data source, as applicable.
- Provide sufficient detail for the reader to follow the discussion and understand the decisions made. Do not, however, provide excessive detail that would lengthen the document, confuse readers, or lead to a tangential discussion that does not help explain the project purpose and need, alternatives, impacts, and measures to avoid, minimize, or mitigate adverse impacts. Be as clear and concise as possible.
- Write the EAs and EISs in clear, concise, simple language (layman's terms) because these documents are reviewed by the general public. If technical terms are unavoidable, explain them as they appear. Do not rely on a glossary.
- Do not use consultant logos or names. When citing a reference, cite only the author and month and year the report was completed, or the agency that sponsored the report if the specific author is unknown.
- Consultants shall complete quality assurance (QA)/quality control (QC) on all documents prior to submittal to ADOT. Fact-check all documents and ensure information is consistent throughout all sections of the document. ADOT will complete QA/QC on all documents prior to submittal for approval.
- Consultants complete the QA/QC Review Form, which can be found on ADOT Environmental Planning's (EP's) website

at <https://www.azdot.gov/business/environmental-planning>, and indicate the review process followed for each submittal. Include signatures of those responsible for reviewing and approving the document for submittal.

- Do not bind EA or EIS documents in any way until they are ready for public review. (Use binder clips only—no three-ring binders for submittal to ADOT).
- Verify that administrative drafts of EAs and EISs submitted to ADOT EP are double-spaced with line numbers. Line numbering starts anew at the top of each page.

Provide draft submittals electronically. Submittals may be posted to the ADOT Share File website (<https://adot.sharefile.com/>). The components of EA and EIS documents are discussed in the following sections.

## Draft EA Format

ADOT uses the following general format of main headings and subheadings for a draft EA in addition to a table of contents and lists of tables, figures, and appendices. Additional subheadings can be used depending on the size and complexity of the proposed action.

ADOT Draft EA Signature Page

Acronyms and Abbreviations

Mitigation Measures

I. Introduction

- A. Explanation of an Environmental Assessment
- B. Project Location
- C. Project Background and Overview

II. Project Purpose and Need

- A. Summary
- B. Purpose
- C. Need
- D. Conformance with Regulations, Land Use Plans, and Other Plans

III. Alternatives

- A. Alternatives Considered but not Carried Forward
- B. Alternatives Considered (build alternative[s], no-build, and, if appropriate, a Preferred Alternative)
- C. General Project Schedule (if known)

IV. Affected Environment, Environmental Consequences, and Mitigation

For each alternative under consideration in the EA, discuss the natural, social, economic, and cultural resources in the project area that are likely to be affected by the project, with particular focus on resources where the significance of impacts is uncertain. Based on the results of analyses undertaken—such as supporting environmental technical reports—describe the impacts and proposed mitigation of each alternative. The level of analysis should be sufficient to identify

the impacts, both adverse and beneficial; assess their type, intensity, and duration; propose appropriate mitigation measures; and respond to and address any public and agency comments or concerns.

Note that temporary impacts resulting from construction should be evaluated in each section, as appropriate, along with proposed mitigation measures and any other commitments.

The same resource categories used in the EIS outline (below) may be used for an EA, but include only those resources that are likely to be affected by the proposed action. Environmental resource categories that do not exist in the project study area or that do not have a reasonable potential of experiencing direct or secondary impacts should not be discussed. Instead, include these in a list entitled “Environmental Issues Eliminated from Detailed Study” at the beginning of this section.

V. Public Involvement and Coordination

VI. Bibliography

## Final EA Format

After ADOT has determined that the proposed action will not result in significant adverse impacts and a FONSI is the appropriate decision, ADOT prepares a final EA and FONSI.

ADOT typically prepares the final EA in errata format—see the following general format:

ADOT FONSI Statement and Signature Page

ADOT Final EA Signature Page

FHWA Transportation Conformity Finding (when applicable)

Section 4(f) Evaluation (when applicable)

I. Introduction

A. Project Description

B. Summary of the Environmental Assessment

C. Selected Alternative

II. Mitigation Measures (Final)

III. Errata from Draft Environmental Assessment

Use this introductory text:

*This part of the Final EA contains additions or alterations to the Draft EA to clarify, further discuss, or make corrections to the text. These changes are the result of public and agency comments and are provided below with reference to the page numbers of the original text in the Draft EA. Deleted text is identified with strikethrough (~~strikethrough~~) and new or substituted text appears in red italics (*italics*). Where applicable, the entire paragraph from the Draft EA has been included to provide context for the changes. If no changes were made for a Draft EA chapter, it will stated as such.*

*The following global changes to the Draft EA text are not shown in these errata:*

- *“Proposed project” and “proposed action” have been changed to “project.”*

- *“Preferred Alternative” has been changed to “Selected Alternative.”*
- A. Mitigation Measures
- B. Introduction
- C. Purpose and Need
- D. Alternatives
- E. Affected Environment, Environmental Consequences, and Mitigation
- F. Public Involvement and Coordination
- G. Bibliography
- IV. Public Comments (Identify, discuss, and describe the primary focus and types of public, agency, and stakeholder comments, along with how ADOT responded, managed, and made decisions on them.)
- V. Bibliography
- Appendices – including comments received on the draft EA
- Acronyms and Abbreviations

## Draft and Final EIS Format

The formats for the draft and final EIS are basically the same. If the final EIS requires substantial revisions based on public and agency comment or changes to the project, use the same format for the final as was used for the draft. If changes are minor, an errata format may be used. All of the decision information, ADOT’s rationale for the decision, and the environmentally preferred alternative are discussed in the ROD.

EIS Cover and Signature Page

EIS Fact Sheet

Executive Summary

1. Introduction
2. Purpose and Need
3. Alternatives Considered
4. Affected Environment, Environmental Consequences, and Mitigation
  - A. Land Ownership, Jurisdiction, and Land Use
  - B. Social and Economic Considerations, including Title VI of the Civil Rights Act of 1964 (Title VI), Environmental Justice, Displacements, and Relocations
  - C. Cultural Resources
  - D. Section 4(f) Resources
  - E. Section 6(f) Resources
  - F. Traffic and Transportation
  - G. Air Quality Analysis
  - H. Noise Analysis
  - I. Utilities
  - J. Visual Resources

- K. Energy
  - L. Drainage and Floodplain Considerations
  - M. Sections 404 and 401 of the Clean Water Act and National Pollutant Discharge Elimination System
  - N. Sole Source Aquifers
  - O. Biological Resources
  - P. Prime and Unique Farmlands
  - Q. Wild and Scenic Rivers
  - R. National Natural Landmarks
  - S. Hazardous Materials
  - T. Material Sources and Waste Materials
  - U. Secondary Impacts
  - V. Cumulative Impacts
  - W. Irreversible and Irretrievable Commitment of Resources
  - X. Relationship Between Short-term Uses of the Environment and Long-term Productivity
5. Public and Agency Coordination, including responses to comments received on the draft EIS in the final EIS and where revisions were made in the final EIS based on any public or agency comments

## Record of Decision Format

The format for a ROD is as follows (also see the *Record of Decision* section in the *Decision Documents* section).

### Administrative ROD Statement and Signature Page

1. Introduction
2. NEPA Process
3. Purpose and Need
4. Alternatives Considered
5. Selection of the Preferred Alternative (the Selected Alternative)
6. Measures to Minimize Harm
7. Project Commitments and Mitigation Measures
8. Permits and Approvals
9. FHWA Transportation Conformity Finding (when applicable)
10. Public and Agency Coordination

11. Environmentally Preferable Alternative – Council on Environmental Quality (CEQ) Regulations at 40 CFR 1505.2(b)

Discuss the applicable environmental statutes and regulations to which this alternative applies: Section 4(f), Section 6(f), Clean Water Act, National Historic Preservation Act, Endangered Species Act, Clean Air Act, etc.

12. Conclusion

13. Bibliography

Appendices

## Combined Final EIS and Record of Decision

A combined final EIS and ROD includes both the final EIS and ROD in a single final NEPA document. The ROD is presented at the beginning of the document in the format shown above. When substantial revisions are required, the final EIS is to be a full revision of the draft EIS and would be in the same format as the draft EIS. When substantial revisions are not required, it is advisable to prepare the final EIS in an errata format similar to a final EA, as described above.

## Cover Page

For NEPA Assignment projects, the following statement is required to appear on the cover page of the EA or EIS:

*The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by ADOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 16, 2019, and executed by FHWA and ADOT.*

## Signature Pages

- For draft and final EA signature pages and FONSI statement and signature, see the ADOT templates under the *Decision Documents* section in this appendix.
- For EISs, the signature page should include:
  - project name
  - stage of the EIS (draft or final)
  - a statement that the document is submitted by ADOT, with any cooperating agencies listed
  - abstract describing the project
  - Americans with Disabilities Act information indicating who to call (normally at the consultant's office) for individuals requiring reasonable accommodation of any type
  - Title VI statement, using the following language (verify contact information):

The Arizona Department of Transportation ensures full compliance with Title VI of the Civil Rights Act of 1964 by prohibiting discrimination based

on race, color, national origin, and sex in the provision of benefits and services. For language interpretation services or information about the Department's Title VI Program, please contact the Civil Rights Office, ADOT, 206 S. 17th Avenue, MD 154A, Phoenix, AZ 85007; phone 602.712.7761; fax 602.712.8429.

- draft and final EIS availability (website address and addresses and hours of operation for hardcopy versions)
- signature line for the ADOT Environmental Planning Administrator
- Provide original signed draft EA signature page for inclusion in the draft EA. For a final EA, include signed final EA signature page and signed FONSI statement. For a final EIS, include signed final EIS signature page and signed ROD signature page. A combined ROD/final EIS requires only one signature page.

## Draft EIS Fact Sheet

- The draft EIS fact sheet should be placed after the signature page and contain the following information:
  - project title
  - state route or highway description
  - ADOT project number
  - federal-aid number
  - cooperating agencies
  - public hearing information
  - how to provide comments on the draft EIS
  - where comments on the draft and final EIS should be sent
  - document availability (addresses and hours)
  - instructions regarding how to get a hard copy and the cost

## EIS Executive Summary

- EAs do not require an executive summary.
- EISs contain a summary with brief, condensed versions of the information presented in the main body of the EIS. At a minimum, the following shall be included:
  - project background information
  - description of the proposed action
  - purpose and need
  - alternatives
  - impacts and measures to minimize impacts (in table format)
  - identification of the preferred alternative

- permits, permissions, and memoranda of agreement or memoranda of understanding (MOUs) required
- communication and coordination
- independent evaluation of the draft EIS (that is, cooperating agencies)

## Table of Contents

- Include a table of contents, to include each of the bold headings shown from this point forward in these guidelines, with the exception of issues eliminated from study (see that section below for further explanation).
- Include lists of tables, figures, and appendices.
- For an EA, list only the major headings in bold using two tiers that include a Roman numeral for the chapter number and uppercase letter for the required sections in each chapter. Do not number additional subsections; use bold letters to identify them.
- For an EIS, list each chapter with Arabic numerals. Include numbers for subsections up to the third level (for example, *4.1.1 Regulatory Context*).

## Abbreviations and Acronyms

- List all abbreviations and acronyms used in the document.
- Spell out all abbreviations and acronyms the first time they are used in the document.
- Do not use abbreviations or acronyms in mitigation measures. Avoid their use in headings, when possible. They can be spelled out in the text for a second time to clarify the discussion.
- Do not use an abbreviation or acronym if the term is used only once or twice. A general rule is that if the term appears five or more times in the document, use the abbreviation or acronym.

## Mitigation Measures and Other Environmental Commitments

- For an EA, all mitigation measures included in the document should be listed verbatim at the beginning of the document right before *Chapter I. Introduction* and in the *Mitigation* section for each individual section in *Chapter IV. Affected Environment, Environmental Consequences, and Mitigation*, as applicable, in the draft and final EA.
- For an EIS where design and construction for a project would be undertaken, all mitigation measures should be listed verbatim in a table in the *Executive Summary* and in the *Mitigation* section for each individual section in *Chapter 3. Affected Environment, Environmental Consequences, and Mitigation*, as applicable, in the draft and final EIS.

- Note that for a Tier I EIS, actual design and construction for a project shall not be undertaken until a Tier II EIS is completed, mitigation measures should be referred to as *potential mitigation measures* and do not need to be listed verbatim in a table in the *Executive Summary* and in the *Mitigation* section for each individual section in Chapter 3.
- When writing mitigation measures, be sure to answer the “who, what, when, and where” of the action. Mitigation must be clear and enforceable. When appropriate, include a performance specification as a means of verifying the contractor has met the obligations in the measure—the item should be biddable.
- List all mitigations in a bulleted list under the proper responsibility subheading.
- For each mitigation measure listed, include the page number where the measure can be found in the EA or EIS in parentheses at the end of the measure.
- No abbreviations or acronyms should be used in the mitigation measures section.
- Standard specifications should *not* be included as mitigation measures.

## Introduction

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### What is an Environmental Assessment?

Established template text:

This environmental assessment (EA) for the [name of project] was prepared in accordance with the National Environmental Policy Act (NEPA), as amended (42 United States Code [USC] 4321 et seq.) and Council on Environmental Quality (CEQ) regulations that implement NEPA (40 Code of Regulations [CFR] 1500–1508). The Arizona Department of Transportation (ADOT) is the lead agency in the planning, preparation, and review of all technical and environmental documents associated with this EA. [List any agencies that are cooperating agencies, why they accepted ADOT’s invitation to be a cooperating agency, and note their connection to the proposed action.]

According to CEQ regulations (40 CFR 1508.9), the basic function of an EA is to describe the need for a proposed action, alternatives for implementing or constructing a proposed action, and the environmental impacts of a proposed action and alternatives. The EA also provides a list of agencies and persons consulted. This document serves as a tool for ADOT to identify potentially significant impacts on social, economic, natural, and cultural resources and measures to avoid, minimize, and mitigate such impacts.

Note that the list of those consulted should be included in an appendix to the EA.

### What is an Environmental Impact Statement?

An EIS is a NEPA document for actions that significantly affect the environment. The EIS is a decision-making tool. There is much more flexibility when writing EISs than EAs

because of their complexity and the need to be more comprehensive; therefore, text is recommended as opposed to required.

Established template text:

This environmental impact statement (EIS) for the [name of project] was prepared in accordance with the National Environmental Policy Act (NEPA), as amended (42 United States Code [USC] 4321 et seq.) and Council on Environmental Quality (CEQ) regulations that implement NEPA (40 Code of Regulations [CFR] 1500–1508). The Arizona Department of Transportation (ADOT) is the lead agency in the planning, preparation, and review of all technical and environmental documents associated with this EIS. [List any agencies that are cooperating or participating agencies, why they accepted ADOT’s invitation to be a cooperating or participating agency, and note their connection to the proposed action.]

According to CEQ regulations (40 CFR 1502.1), the primary purpose of an EIS is to provide the need for the proposed action, all reasonable alternatives for implementing or constructing the proposed action, analysis of environmental impacts (with an emphasis on significant impacts), and mitigation measures to minimize or eliminate impacts from alternatives. The EIS also provides a list of agencies and persons consulted. This document serves as a tool for ADOT to understand reasonable alternatives that would avoid, minimize, or mitigate significant adverse impacts or enhance the human and natural environment.

## Where is the Proposed Action Located?

- Describe the location(s) of the proposed action.
- Include the specific limits of the project, including the route, mileposts, and length in miles from the beginning to the end of the project termini for actions being undertaken on existing Arizona roadways. If the project is on an existing road, but not on the highway system (that is, mileposts not available), describe the project limits using start and end distances from the nearest intersection or landmark. For proposed actions on a new corridor, include a detailed, yet concise description, length, and proposed termini of the corridor with defined limits for the alternatives under consideration.
- Define terms to be used throughout the document, such as environmental study area, project limits, or project vicinity. Be consistent with the use of these terms throughout the document (including consistent capitalization).
- Include state and vicinity maps. Map templates can be found at: [http://apps.azdot.gov/files/EPG/Interactive\\_Map/MapIndex.asp](http://apps.azdot.gov/files/EPG/Interactive_Map/MapIndex.asp).
  - For state maps: Insert a map of Arizona showing the project location and, at a minimum, all major cities, counties, and highways. The map must include a scale, legend, north arrow, source, and be easily reproducible.
  - For vicinity maps: Insert a map showing the location and surroundings of the project. The project limits must be clearly marked (or, if more than one alternative is being considered, the area that encompasses the range of alternatives).

Include all streets and features referenced in the document. The map must include a north arrow and scale, legend, and source.

## What is the Background of the Proposed Action?

- Provide an overview about the background of the project. Include a concise discussion about how the study area was established; existing conditions such as local jurisdictions, land use, development, and urban versus rural; key features such as water bodies and other physical features; general topography; and other features that are present in the vicinity.
- This section is to provide details regarding the studies and policy that have led to the sponsorship of the proposed project. Most projects take years of “studying” and can have political issues, so a project history should be described. Because of parallel and overlapping planning efforts, some project backgrounds will be complex and their history will need to be organized chronologically from several different sources or agencies. Focus on background information that will help support the purpose and need that follows this section.
- Be mindful of what background information is useful and what is appropriate and complementary for the purpose and need section.
- Identify and summarize ADOT or other studies by state, regional, or local transportation or planning organizations, such as feasibility or corridor studies, or the metropolitan planning organization (MPO) or local council of government’s planning efforts for this project.

## Purpose and Need

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The adoption of the purpose and need statement is one of the most important decisions that ADOT makes in the NEPA process because the purpose and need statement provides the foundation and framework for determining which alternatives to consider and for selecting the preferred alternative (note that alternatives, especially a preferred alternative, are not discussed in the purpose and need statement; it serves as the basis for their identification, development, and analysis). Refer to Section 3, *Purpose and Need*, of ADOT's *NEPA EA and EIS Guidance* for a more detailed discussion of the process by which the purpose and need statement is established. The purpose and need is developed and used in alternatives selection in the same way in an EA or an EIS; however, the purpose and need statement in an EA is typically more concise than in an EIS.

The project's need is the transportation problem, while the purpose is the intent to solve the problem. The purpose is a statement of the action to be taken and the goals and objectives that ADOT intends to fulfill by taking action. The purpose defines action to address the particular problem to be solved and outlines the goals and objectives that should be included as part of a successful solution to the problem. The need provides data to support the stated problem and should include a discussion of existing conditions that need to be changed, problems remedied, deficiencies improved, decisions made, and policies or mandates implemented.

FHWA Technical Advisory T 6640.8A and 40 CFR 1502.13 direct state departments of transportation to "identify and describe the proposed action and the transportation problem(s) or other needs which it is intended to address." The FHWA Technical Advisory lists nine factors that may be helpful in establishing the need for a proposed action: system linkage, capacity, transportation demand, legislation, social demands or economic development, modal interrelationships, safety, roadway deficiencies, and project status.

It is important to understand FHWA terminology when preparing purpose and need statements. The terms "proposed action," "preferred alternative," "purpose," and "need" are used frequently in FHWA guidance and NEPA regulations. These terms can lead to confusion if not understood. Definitions of these terms are provided below:

- **Proposed action:** A general proposal in its initial form, usually prior to NEPA evaluation, that is intended to satisfy current or expected transportation needs.
- **Preferred alternative:** The specific alternative, which ADOT has determined through the NEPA process would best fulfill its mission and responsibilities, giving consideration to economic, environmental, technical, and other factors.
- **Purpose:**
  - The purpose is analogous to the problem solution. It is the "why" and "what" of the proposal: why the action is being proposed and what it includes.
  - The purpose is stated in a concise manner.
  - The purpose is analogous to how the problem is to be addressed and is stated as a positive outcome that is expected as a result of the proposed action. For

example, the purpose is to reduce congestion and improve travel times in the Interstate corridor.

- The purpose addresses ADOT's objectives:
  - taking care of what we have
  - making the highway system work better
  - increasing capacity where warranted
  - improving safety, efficiency, operability, and level of service (LOS)
- The purpose avoids stating a specific solution, for example: "The purpose of the project is to build a bypass."
- Where appropriate, the purpose is stated broadly enough so that more than one mode can be considered and multimodal solutions are not dismissed prematurely.
- Similarly, the purpose is stated broadly enough so that more than one alternative can be considered and alternatives are not dismissed prematurely.
- The purpose focuses on the transportation system of Arizona.
- The purpose addresses other important goals and objectives:
  - Goals could include broad elements such as improving air quality; creating uncongested, pedestrian-friendly downtown business centers; enhancing livability; avoiding and minimizing environmental impacts; providing enhancement opportunities; enhancing landscaping; or adding sidewalks and bikeways.
  - Goals could also include specific elements such as protecting wetland areas, avoiding impacts on nesting migratory birds, and improving riparian and wildlife habitat beyond what is required for project mitigation.
  - Project goals and objectives should balance environmental and transportation values. They should support early and effective interagency involvement in environmental issues to improve the outcome of each natural and cultural resource agency's mission while minimizing costs and delays.
- **Need:**
  - The need identifies the transportation problem that the proposed action intends to address. It presents the evidence that a problem exists, or will exist if projected population growth and planned land use changes are realized.
  - The need is factual and numerically based.
  - The need supports the assertion made in the purpose statement. For example, if the purpose statement is based on safety improvements, the need statement should establish that a safety problem needs to be corrected and support that assertion.

## What Purpose and Need Questions Should Be Considered?

The questions listed in the following sections can be helpful (but not required to answer all questions) in establishing the purpose and need for an ADOT project.

### Considering Relevant Legislation, Regulations, and Planning Decisions

- Is any legislation (federal, state, or local) relevant to defining the purpose for this project?
- Are any policies of Arizona MPO long-range transportation plans or other transportation plans relevant to defining the purpose?
- Did the transportation planning process produce a preliminary purpose and need statement for this project, such as a Planning and Environmental Linkages document or other planning document?
- Has the transportation planning process produced relevant data that can be used to support the purpose and need, such traffic, safety, or operational data?
- Have the conditions been met for adopting planning-level decisions or analyses for use in the NEPA process, such as the Planning and Environmental Linkages process?

### Determining and Documenting the Need for the Project

- What is the problem ADOT trying to solve and what conditions are meant to be prevented in the future by undertaking this project?
- What data are available to evaluate transportation needs in the study area?
- Are there any data gaps? If so, how will those gaps be addressed?
- Have any of the data become too outdated or have conditions changed and need to be updated?
- How will the supporting information for the purpose and need be presented and documented?
- What are the key assumptions underlying the travel demand forecasts, and are they realistic?
- If concerns have been raised regarding the travel forecasting model, how have they been addressed?
- What visual aids would help convey the key elements of the purpose and need?

### Defining the Project Purpose

- Is there a single purpose of the project, or does the project serve multiple purposes?

- If there are multiple purposes, are some more important than others? What are the true “drivers” of the project?
- What criteria will be used to determine whether an alternative meets the project purposes?
- Have the project purposes changed over time? If so, how will this change be explained?
- Is the project purpose stated clearly, succinctly, and consistently throughout the NEPA document?

## What Purpose and Need Information is Needed?

After asking the key questions about what is needed to establish the purpose and need for the project in order to identify and describe the proposed action and the transportation problem or other needs that it is intended to address, it is necessary to include an adequate level of detail for preparing the chapter in the EA or EIS. The level of detail may vary depending on the size, complexity, and type of project. The information provided below is considered the minimum level of detail expected to adequately describe and document the project purpose and need:

- **Project purpose:** Describe improvements that would result by undertaking the proposed action.
- **Proposed action:** Describe the proposed project and study area.
  - location – maps
  - environmental study area boundary – environmental clearance area
  - project length – including mileposts, when available
  - project limits – verify that these are logical termini
  - conformance to the design concept and scope identified in the long-range transportation plan, STIP, TIP, other plans
- **Current and future needs:** Discuss specific needs (problems) identified from planning and transit studies and ADOT’s overall goals and objectives.
  - Take care of what we have.
  - Make the system work better.
  - Increase capacity.
  - Improve safety, efficiency, operability, and LOS.
- **Current capacity:** Describe existing levels of congestion.
  - delay time
  - LOS or other measures
  - peak hour traffic, including trucks
  - daily volumes, including trucks

- truck traffic
- speed
- intersections
- tables and other visual aids
- **Future demand:** Describe and provide the projected demand in the design year.
  - LOS or other measure
  - vehicles per day forecast, including trucks
  - vehicles per hour forecast, including trucks
  - peak hour forecast
  - daily volumes with truck traffic
  - speed
  - tables and other visual aids
- **Safety:** Describe and provide data for all current safety deficiencies.
  - vertical and horizontal roadway geometrics
  - structural inadequacies
  - results from annual operational safety reports or accident reports
  - pedestrian and bicycle safety data
  - tables and other visual aids
- **Roadway deficiencies:** Describe and provide data regarding current roadway deficiencies.
  - pavement, structure, intersection, turning lane, and drainage conditions
  - LOS
  - access
  - mobility
  - travel times
  - circulation
  - driver expectancy
  - tables and other visual aids

## Does the Project Conform to Regulations, Land Use Plans, and Other Plans?

This section of the purpose and need chapter should discuss federal, state, regional, and local plans, such as those prepared by Arizona MPOs and councils of government; regional, county, and local municipalities; tribes; and land management agencies. Such plans may include the current Arizona long-range transportation plan, STIP, TIP, and

ADOT Five-year Transportation Facilities Construction Program. Discuss any applicable federal, state, or local legislation; MOUs; memoranda of agreement; or operating agreements. Do not include a list of all the environmental regulations or a list of required permits in this section.

The discussion should focus on whether ADOT has determined that the project would conflict with any such legislation, plans, or agreements—and whether the project conforms to such documents. If the project is determined to be in conformance, discuss how it would benefit such plans. If it is not in conformance, discuss what steps ADOT would take with plan stakeholders to reach a workable solution, negotiation, or settlement agreement.

# Alternatives

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The identification, consideration, and analysis of alternatives are integral to the NEPA process and goal of objective decision-making. Consideration of alternatives leads to a solution that satisfies the transportation purpose and need and protects environmental and community resources. Refer also to Section 4, *Development of Alternatives*, of ADOT's *NEPA EA and EIS Guidance* for a more detailed discussion of the process by which alternatives are identified, screened, and evaluated, and a preferred alternative is selected.

## Can Alternatives Be Identified During the Transportation Planning Process?

The development and screening of alternatives does not necessarily begin with the NEPA process. ADOT has the authority to adopt alternatives identification decisions made in the planning process, such as through the Planning and Environmental Linkages process or the long-range transportation plan. To take advantage of this flexibility, the ADOT NEPA team should carefully review prior planning studies before the NEPA process begins and make a preliminary assessment of all decisions identified and analyses of alternatives that may be appropriate for adoption. The scoping stage of the NEPA process can then be used to solicit public and agency input on the proposed adoption of decisions or analyses from those planning studies.

## How Many Alternatives are Required in an EIS or EA?

The requirements under NEPA for an alternatives analysis in an EA are less rigorous than an EIS, often requiring the evaluation and analysis of a single build alternative and the no-build alternative. If the EA reveals that the project, as a whole, would not result in a significant impact, then a FONSI can be made. If the EA reveals that the project would result in a significant impact, then an EIS must be prepared.

The alternatives analysis is considered the heart of the EIS and must present a range of alternatives, including all reasonable alternatives. CEQ regulations (40 CFR 1502.14) require that an EIS:

- Rigorously explore and objectively evaluate all reasonable alternatives and, for alternatives that were eliminated from detailed study, briefly discuss the reasons for their elimination.
- Devote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits.
- Include reasonable alternatives not within the jurisdiction of the lead agency.
- Include the no-action alternative (referred to as the “no-build” alternative at ADOT)
- Identify the agency’s preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.

- Include appropriate mitigation measures not already included in the proposed action or alternatives.

Table 1 describes the alternatives required for an EA and an EIS.

**Table 1.** Alternatives required, by type of NEPA document

Type of document	Alternatives required
EA	One build alternative is allowable, but for a large, complex, or controversial project, more than one build alternative may be considered. The no-build alternative must be considered.
EIS	A range of reasonable alternatives is required to be considered, including the no-build alternative. Each alternative must be evaluated at a comparable level of detail.

For many EIS projects, ADOT prepares an alternatives selection report (ASR). For EA projects, an ASR is prepared in some cases, depending on the size and complexity of the project, as part of the design, engineering, and environmental study process. An ASR is prepared early-on as part of ADOT’s project planning and scoping process and prior to the preparation of the NEPA document. An ASR is completed as a development step in the location/design concept report (DCR) process when there is a need to screen or refine multiple alternatives. An ASR may be prepared when there is a need to screen a wide range of alternatives down to a reasonable number of alternatives for detailed study to better inform the DCR and NEPA process. Some examples include screening a number of highway alignments within a selected corridor or study area, screening alternatives with multiple access management options, or screening a number of interchange configurations. The ASR identifies a large number of alternatives, screens the alternatives using consistent criteria, and selects a reasonable range of alternatives to advance to the NEPA document and the DCR. The ASR should be used in the NEPA process to begin a more detailed and refined alternatives evaluation and screening process, leading to the selection of a preferred alternative.

## How are Preliminary Alternatives Developed?

The scoping process, which is required for an EIS and is optional for an EA, typically produces a wide range of alternatives that are shared with agencies and the public for their feedback. Additional alternative concepts can also emerge from the scoping process. Public and agency input may be used in further development of alternatives and may lead to additional alternatives screening. The following suggestions are intended to promote development of a workable set of preliminary alternatives:

- Take agency and public comments into consideration during the scoping process and seek to develop preliminary alternatives that reflect the underlying issues, concerns, and objectives of agencies and the public.
- Develop preliminary alternatives that incorporate a combination of purpose elements, not just alternatives that are based on a single element or concept. This could

include relieving congestion, improving safety, and promoting economic development, as examples.

- Develop preliminary alternatives that can provide transportation benefits at lower cost and/or impact than other alternatives previously studied.
- Do not exclude preliminary alternatives simply because they may be undesirable.

The approach is to seek to develop a range of preliminary alternatives that reflects the full range of possible approaches to meeting the purpose and need. The more comprehensive the set of preliminary alternatives, the lower the risk of finding disconnects or a fatal flaw that requires reopening the screening analysis at a later stage of the NEPA process.

### What is a Reasonable Range of Alternatives?

Under NEPA, “reasonable” is generally understood to mean those technically and economically feasible project alternatives that would satisfy the primary objectives of the project defined in the purpose and need statement. CEQ recognized, however, that, when the number of reasonable alternatives is very large, it may not be feasible to study literally all reasonable alternatives. Therefore, agencies can carry forward for detailed study “a reasonable number of examples, covering the full spectrum of alternatives”—in other words, a “reasonable range” of alternatives (CEQ: Forty Most Asked Questions Concerning CEQ’s NEPA Regulations, 1981).

### What is the No-Action Alternative?

The No-Action Alternative is one of the alternatives required to be evaluated in an EA and EIS. At ADOT, this is referred to in practice as the No-Build Alternative. CEQ regulations (40 CFR 1502.14) require the consideration of the “alternative of no action.” The No-Build Alternative can include other programmed activities already in the STIP or TIP, other nearby projects that have been constructed or approved, or long-term operations and maintenance activities that would occur even if the No-Build Alternative is selected. For example, if a new highway is the project proposed by ADOT, and the local jurisdiction has a plan in place to build a local arterial roadway in the event the new highway is not built, the local jurisdiction’s arterial roadway would be included in the No-Build Alternative in the ADOT NEPA document.

The No-Build Alternative is fully assessed in the same manner as the build alternative(s) and is used as a baseline for comparison against the impacts of all other build alternatives. The No-Build Alternative cannot be removed from analysis because it does not meet the purpose and need.

### Should All Alternatives Be Developed at the Same Level of Detail?

Under NEPA, alternatives must be developed, considered and discussed to a comparable level of detail. CEQ states that agencies shall “Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits (40 CFR 1502.14).”

Under specific circumstances, 23 USC 139 (f)(4)(D) allows lead agencies to develop the officially identified preferred alternative to a higher level of detail than the others in an EIS. The Act permits this: (1) to facilitate the development of mitigation measures or (2) to facilitate concurrent review and compliance with other applicable environmental laws. The lead agency must determine that developing a higher level of detail for the preferred alternative will not prevent it from making an impartial decision regarding alternative selection in the NEPA process.

## What is an Alternatives Screening Process?

The alternatives analysis should clearly indicate why and how the particular range of project alternatives was developed, including what kind of public and agency input was used. In addition, the alternatives analysis should explain why and how alternatives were eliminated from consideration. It must be made clear what criteria were used to eliminate alternatives, at what point in the process the alternatives were removed, who was involved in establishing the criteria for assessing alternatives, and the measures for assessing the alternatives' effectiveness.

The criteria used to screen alternatives should be comprehensive enough to include all of the factors that are relevant to evaluating the reasonableness of alternatives for a specific project. All alternatives carried forward need to meet the core of the purpose and need. Additional potential screening criteria may include:

- environmental impacts
- technical factors (design, engineering, topography)
- safety factors
- cost or economic feasibility
- community support

Important questions to ask in developing and applying the alternatives screening process include:

- What criteria will be used to determine whether an alternative meets the purpose and need?
- Aside from the purpose and need, what other factors will be considered in the screening process?
- How will the alternatives screening process be documented?
- Are there any circumstances that warrant reconsideration of previous screening decisions (for example, new data)?

## How Should the Screening Process Be Documented?

The alternatives chapter of the EA or EIS should summarize decisions made in the alternatives screening process and the reasons for those decisions; a more detailed screening document is often prepared in a separate ADOT ASR. Some important issues to cover in the ASR or other screening documentation include:

- description of each alternative considered in the screening process
- overall methodology used for screening, including screening criteria
- data used in the screening process, including any important limitations of that data
- agency and public input into the screening process
- explanations of the reasons for eliminating each alternative in the screening process
- results of any additional screening-level analysis completed after the initial screening of alternatives

## How are Alternatives Eliminated and Do They Need to Be Discussed?

Alternatives that are not reasonable or feasible or that do not meet the purpose and need of the project may be eliminated from further consideration. As previously noted, *reasonable* alternatives are those that can be practicably and feasibly carried out based on technical, economic, environmental, and other factors.

Alternatives eliminated prior to public review of the draft EA or EIS should be briefly discussed in the environmental document. It is recommended that a section in the alternatives chapter be titled “Alternatives Considered but Eliminated from Further Discussion,” along with the reason for eliminating them during the scoping or NEPA process. For example, if an alternative was explored during the planning process, but eliminated because it did not meet the purpose and need of the project, it should be included with a description and the reasons why. Alternatives that were eliminated because of adverse environmental impacts, technical issues, or cost factors should also be discussed. For example, if widening a highway to the outside was determined to have more adverse environmental effects (amount of right-of-way [ROW] needed, biological impacts, aesthetic impacts, etc.) than widening to the inside (reducing the width of the median), the outside widening alternative could be discussed as an alternative considered but eliminated from further discussion.

Alternatives that are fully considered in the draft EA or EIS should not be placed in this section because they remain viable alternatives for analysis.

## When is the Preferred Alternative Identified?

A preferred alternative may be identified in the draft EIS prior to agency and public comment if it is clear based on the analyses developed during the alternatives evaluation process. When a preferred alternative is identified by ADOT before public review of the draft EIS, it must be disclosed in the draft EIS. Note that in order to take advantage of the 23 USC 139(n)(2) opportunity to combine the final EIS and ROD, the preferred alternative must be identified in the draft EIS.

For an EA, ADOT may identify a preferred alternative from among the alternatives under consideration or as compared with the No-Build Alternative, prior to releasing the draft EA for agency and public review. It should be explained in some detail why the alternative has been identified as the preferred alternative. When identifying a preferred alternative in the draft EA or EIS, it is suggested that the following language be used:

After comparing and weighing the benefits and impacts of all of the practicable and feasible alternatives, [include examples as appropriate], ADOT has identified Alternative [X] as the preferred alternative, subject to agency and public review, comment, and input. Final selection of the preferred alternative will occur after the public review and comment period when the final EIS [or EA] is prepared.

The preferred alternative is selected in the ROD or the FONSI.

The ROD also must identify the “environmentally preferable alternative” in accordance with CEQ Section 1505.2(b). The environmentally preferable alternative is the alternative that best promotes NEPA goals and objectives, which means it is the alternative that causes the least damage to the natural and physical environment and best protects, preserves, and enhances historic, cultural, and natural resources. If the environmentally preferable alternative is not the selected alternative, the ROD must explain why a different alternative was selected as the preferred alternative.

If a local government, community organization, or key stakeholder has a preference for a particular alternative, it should be identified in the alternatives chapter as part of the discussion and consideration of that alternative.

## Should Any Other Alternative Development Factors Be Considered?

Another important factor that should be evaluated during the alternatives evaluation, screening, and selection process is whether any alternative would be considered an “avoidance alternative” under another federal environmental requirement. CEQ regulation 40 CFR 1500.2 states that “Federal agencies shall to the fullest extent possible ... Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment.” Similarly, FHWA NEPA policy states that “to the fullest extent possible, all environmental investigations, review, and consultations be coordinated as a single process and compliance with all applicable environmental requirements be reflected in the environmental review document ...” (23 CFR 771.105(a). FHWA refers to this as the “NEPA umbrella.”

In addition to NEPA and CEQ regulations, other federal requirements, including Section 4(f), the Executive Orders on wetlands and floodplains, and Clean Water Act Section 404(b)(1) address the development of project alternatives:

**Section 4(f) and Related Requirements:** The intent of Section 4(f) of the Department of Transportation Act of 1966 is to avoid the use of significant public parks, recreation areas, wildlife and waterfowl refuges, and historic sites for transportation projects. Section 4(f) mandates the consideration of alternatives that will avoid Section 4(f) resources [see the *Section 4(f) Resources* section later in this appendix for additional information].

**NEPA and Section 404:** Section 404 allows the discharge of dredged or fill material into waters of the United States (Waters) only if there is no practicable alternative that would have less adverse effects. The NEPA document for any project that requires an individual Section 404 permit from the U.S. Army Corps of Engineers (USACE), including a Letter of Permission, must include an alternatives analysis that identifies the “least

environmentally damaging practicable alternative” (LEDPA). This is true regardless of whether there is 1 or more acres of permanent impacts and an EIS.

**Executive Order 11990, Protection of Wetlands:** This Executive Order requires federal agencies to avoid new construction in wetlands unless there is no practicable alternative to such construction. The agency must ensure that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. A “Wetlands Only Practicable Alternative Finding” must be included in the final EA or EIS and should take into account economic, environmental, and other pertinent factors in reaching that determination.

**Executive Order 11988, Floodplain Management:** This Executive Order requires that federal agencies avoid impacts associated with the modifications of floodplains and avoid the direct or indirect support of floodplain development wherever there is a practicable alternative. If a project will result in a significant floodplain encroachment, that significant encroachment would require approval by ADOT and FHWA in consultation with the local flood control district. In this situation, an “Only Practicable Alternative Finding” must be prepared and included in the final EA or EIS.

**Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.** This Executive Order directs that regulations, programs, policies, facilities, and activities not have a disproportionately high and adverse human health and environmental effect on minority and low-income populations and achieve an equitable distribution of benefits and burdens from, in this case, federally funded facilities. ADOT undertakes efforts to identify potential minority and low-income populations and provides these populations opportunities to participate in and offer input into the alternatives development process, as well as review and comment on proposed alternatives during scoping (see the *Social and Economic Considerations* section later in this appendix for additional information).

## What is the Format of the Alternatives Chapter?

The following outline should be used as a starting point for the alternatives chapter of the draft and final EA or EIS—note, however, that the number of sections and subsections may increase based on the project’s size and complexity, the number and type of alternatives evaluated, and the number of screenings needed to determine a range of alternatives and identify a preferred alternative:

- Introduction
- Alternatives Considered but Eliminated from Further Study
  - Preliminary Alternatives
  - Screening Process (synopsis of the alternatives screening process from the ASR, Planning and Environmental Linkages document, public and agency scoping and input process, and/or ADOT decision-making process)
  - Eliminated Alternatives
- Alternatives Under Consideration
  - No-Build Alternative

- Build Alternative(s) (a single build alternative is sufficient for an EA; a reasonable range of alternatives is required for an EIS)
- Screening Process (if further screening was conducted later in the NEPA process)
- Eliminated Alternatives (if applicable)
- Preferred Alternative (if applicable)
- General Project Schedule (generally for an EA)

When construction would be undertaken as part of the proposed action, the project schedule should include estimated dates for the environmental phase, design phase, start of construction (if known), and construction duration. Discuss whether phasing will be needed for construction.

Include a discussion regarding when the project is programmed for construction in the STIP/TIP and the ADOT Five-Year Transportation Facilities Construction Program.

Cost estimates should include costs for ROW, design, and construction.

Established template text:

On (date), the State Transportation Board adopted the (dates) Five-Year Transportation Facilities Construction Program. The proposed action is currently identified in the ADOT Five-Year Transportation Facilities Construction Program for environmental work in fiscal year (date) and design in fiscal year (date). The proposed action is considered fiscally constrained. On (date), ADOT completed the process of screening the (number, type) build alternatives. The result of this evaluation was consistent with public and stakeholder input regarding the preferred alternative, and the (name of alternative) was selected as the preferred alternative. It will be the basis for evaluating and assessing potential impacts in this EA (or EIS), along with the No-Build Alternative.

# Affected Environment, Environmental Consequences, and Mitigation Measures

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## What Environmental Issues Were Eliminated from Detailed Study?

List any environmental resource or regulatory concerns not discussed in the document because the resource does not exist in the area. Examples can include U.S. Coast Guard permits, sole source aquifers, Section 6(f) resources, etc.

Established template text:

Based on early coordination and a review of the study area, the proposed project would have no impact on [list the resources that will not be evaluated in the EA or evaluated in detail in the EIS] because these resources do not exist in the study area.

For each environmental resource or technical analysis area that is evaluated and discussed, the following subsections are typically included in an EIS:

- Regulatory Requirements (if applicable)
- Methodology
- Existing Conditions
- Environmental Consequences or Impacts (each listed below should have individual analyses):
  - Build Alternative (or Build Alternatives)
  - No-Build Alternative (when construction would be part of the proposed action)
- Mitigation Measures (if no impacts, briefly state that no mitigation measures for this resource are needed)

For an EA, not all of these subsections may be required for the affected resources. In accordance with CEQ regulations to prepare a concise EA, include sections such as *Regulatory Requirements* and *Methodology* only when a resource discussion must be extensive. Only the truly affected resources should receive detailed evaluation in an EA, to support a conclusion that a FONSI is the correct determination or that an EIS may be required.

## What Resources Require Analysis?

### Land Ownership, Jurisdiction, and Land Use

Land ownership, jurisdiction, and land use are important considerations in transportation planning, design, and construction. Roads, transit, and other transportation elements shape land development, while the distribution and types of land uses affect travel patterns and transportation facilities. Land ownership, jurisdiction, and land use analyses are not governed by federal regulations; however, FHWA published guidance in 2010 for

the application of travel and land use forecasting in the NEPA process (*Instructions for Reviewing Travel and Land Use Forecasting Analysis in NEPA Documents*, February 2018).

### *What Is an Appropriate Study Area for Land Ownership, Jurisdiction, and Land Use?*

It is important that the forecasting is extensive enough in its geographic reach to reasonably estimate the transportation and land development impacts (FHWA 2010). Typically, this area is consistent with the environmental study area; however, the area within which transportation impacts can be measured may be substantially larger than the area within which direct environmental impacts are measured. Examples include detours, which may necessitate expanding the study area to analyze potentially affected adjacent land.

### *How Are Land Ownership, Jurisdiction, and Land Use Resources Identified?*

Typically land ownership, jurisdiction, and land use resources are identified using GIS data requested from various sources, including the affected jurisdictions, resource agencies, and the County Assessor for the respective counties. Much of this information may be available online, but analysts should contact the affected jurisdictions to confirm that the latest information is being considered because this information frequently changes.

### *How Are Land Ownership, Jurisdiction, and Land Use Analyzed, Mitigated, and Documented?*

Land ownership, jurisdiction, and land use are documented in the affected environment and environmental consequences section of the EA or EIS. Both existing and planned land use are considered. Existing land use may be characterized through aerial imagery, County Assessor data, affected jurisdiction's zoning ordinance and map, and field investigations. Planned land use is based on the affected jurisdictions' adopted land use plans. These policy documents include figures showing the jurisdictions' planning area and the future land use. Additionally, development plans in the area should also be considered. When evaluating development plans, their stage in the development process (conceptual, platted, or in progress) should be noted. Include a list of expected building permits to be issued prior to final action on the EA or EIS.

Much of this information can be obtained using desktop resources, but communication with local planning agencies is advised to obtain the most current information.

An analysis of adjacent landowners and land use should be included, even if the land or land use would not be affected by the proposed action. If the land or land use wouldn't be affected, this should be stated.

ROW needs (if known and/or anticipated) should be presented with a short discussion and map (including whether the ROW is coming from a private or public source).

The discussion should include maps that depict jurisdiction, ownership, existing and planned future use by jurisdiction, and tables that provide data such as acreage by existing and planned future use. Identify the number of parcels, owners—residential, business, and public—and acreage affected, if available. ADOT Right-of-Way should be

able to provide this information, and parcel maps from the various County Assessor offices may be used also, if needed.

Mitigation measures for land acquired by a transportation project are usually discussed in the *Social and Economic Considerations* section regarding residential and business displacements and any land required from a public land owner, unless mitigation must be applied to a specific type of land use issue, such as making future arrangements for leases held on public lands affected by the proposed action as an example.

#### *What Coordination Is Required for Land Ownership, Jurisdiction, and Land Use?*

While much of this information may be available online, analysts should contact and closely coordinate with the affected jurisdictions to confirm that the latest information is being considered because this information frequently changes.

#### *Where Are Land Ownership, Jurisdiction, and Land Use Laws, Regulations, and Guidance Found?*

- FHWA Technical Advisory T 6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents (1987)  
[https://www.environment.fhwa.dot.gov/legislation/nepa/guidance\\_preparing\\_env\\_documents.aspx](https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx)
- CEQ Regulations for Implementing the Procedural Provisions of NEPA, 40 CFR 1500–1508 (2005)  
<https://www.gpo.gov/fdsys/granule/CFR-2011-title40-vol33/CFR-2011-title40-vol33-part-id1102/content-detail.html>
- Instructions for Reviewing Travel and Land Use Forecasting Analysis in NEPA Documents, February 2018  
[https://www.environment.fhwa.dot.gov/nepa/Travel\\_LandUse/forecasting\\_reviewer\\_guidance.pdf](https://www.environment.fhwa.dot.gov/nepa/Travel_LandUse/forecasting_reviewer_guidance.pdf)

#### *How Is the Land Ownership, Jurisdiction, and Land Use Analysis Different in an EA Versus an EIS?*

There are no differences in how land ownership, jurisdiction, and land use are analyzed in an EA versus an EIS.

## Social and Economic Considerations

Transportation projects can have a major influence on society, with notable social and economic consequences. The social and economic effects of transportation projects should be fully considered because the effects may be substantial and they often affect the quality of people's lives. Considering social and economic impacts alerts transportation and socioeconomic planners, decision makers, and stakeholders to the likely consequences of a project, and ensures that concerns receive proper attention during project development.

Social and economic considerations should consider the following factors:

- population
- housing
- income and employment
- business and tax base
- community resources
- community cohesion
- environmental justice

### *What Is an Appropriate Study Area for Social and Economic Considerations?*

The study area may extend beyond the immediate project area, depending on the nature of the project, affected communities, and issues. Consider that community cohesion and neighborhood continuity could span a single neighborhood, multiple neighborhoods, or even a small town. An understanding of the community's characteristics will assist in determining the extent of the study area.

When establishing the study area boundaries, the area should be large enough to include the area likely to experience effects and neither artificially dilute or inflate an affected minority population and/or low-income population. The study area should initially include the potentially underrepresented populations adjacent to the project and should not be adjusted to exclude these communities.

### *How Are Social and Economic Considerations Identified?*

Community information describing the socioeconomic context of the project area includes community facilities/services, the presence of certain population groups, and indications of community values, concerns, and preferences. Sources for this information may include:

- most recent U.S. Census Bureau data (for example, American Community Survey)
- Arizona State Data Center
- Maricopa Association of Governments' State Demographics Map Viewer
- city/county/regional planners with government planning, transit, economic development, housing, and other departments
- County property assessor (for example, parcel locations and data)
- Bureau of Economic and Business Research

- commercially available data sources (for example, employment data)
- ADOT study team

*How Are Social and Economic Considerations Analyzed, Mitigated, and Documented?*

The most recent demographic information available from the U.S. Census Bureau and other sources noted above should be analyzed to identify:

- demographic characteristics of the county where the project is located as compared with local jurisdictions and communities in the study area
- percentage of each population group relative to the total population of the study area and the county and municipality where the project is located
- population groups that may be underrepresented in the project development process based on race, color, national origin, age, gender, religion, economic status, and disability (see discussion of environmental justice below)
- number of census blocks adjacent to the project with proportionately large potentially underrepresented populations
- any of the potentially underrepresented population groups representing a small proportion of the census block group population but having a concentrated presence in a smaller geographical unit (that is, census block)

The area’s economic condition, ongoing or planned economic development efforts, and the project’s potential involvement should be described, considering the effect of the project on commercial and industrial enterprises (include business types and distribution), employment, local tax bases, etc. The potential project effects on business and employment activity in the study area should be documented, including industries with special needs (for example, freight distributor) or significance (for example, regional employer). Economic-oriented land uses/designations, economic development plans/goals, and community development priorities in the study area should be identified. Changes to routes, access, parking, or visibility that could benefit or impair businesses, employment centers, or community facilities should also be identified.

In addition, the potential for effects on community groups and community resources should be determined. It is important to consider the effects the project may have on neighborhood continuity and community cohesion. The discussion should include an inventory of places that are important to the community (activity centers), such as:

- |                              |  |
|------------------------------|--|
| • schools                    | • civic centers                        |
| • religious facilities       | • social service facilities            |
| • community centers          | • intermodal facilities                |
| • parks                      | • business districts                   |
| • fire stations              | • theme parks                          |
| • law enforcement facilities | • major attractors/multiuse facilities |

- government buildings
- healthcare facilities
- cultural facilities
- cemeteries
- historic places
- other significant quality-of-life features

Another important consideration throughout the environmental evaluation process is the potential for project effects on underrepresented population groups protected under Title VI, Executive Order 12898 on Environmental Justice, Executive Order 13166 on Limited English Proficiency and related antidiscrimination statutes and regulations under the FHWA Title VI Program.

Title VI ensures that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of race, color, or national origin.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs that regulations, programs, policies, facilities, and activities not have a disproportionately high and adverse human health and environmental effect on minority and low-income populations and to achieve an equitable distribution of benefits and burdens from, in this case, federally funded facilities.

Although the nondiscrimination principles of the Title VI statute and the environmental effects on minority and low-income population provisions of Executive Order 12898 overlap as a protection basis for minorities, they are two separate mandates with each having unique impact evaluation requirements. The term “minority” refers to black or African American, Hispanic, Asian American, American Indian/Alaskan Native, and Native Hawaiian or Pacific Islander. The U.S. Department of Transportation and FHWA environmental justice orders define low income as, “a person whose household income is at or below the Department of Health and Human Services poverty guidelines. Environmental justice principles, however, also apply to low-income populations, which are not covered under the Title VI statute.

The following are social and economic considerations that will be analyzed based on the FHWA Title VI Program:

- **Disabled/handicapped:** Any person who has a physical or mental impairment that substantially limits one or more major life activities.
- **Minority:** Black or African American, Hispanic, Asian American, American Indian/Alaskan Native, and Native Hawaiian or Pacific Islander.
- **Limited English proficient (LEP):** Persons for whom English is not their primary language and who have a limited ability to read, write, speak, or understand English.
- **Low-income:** A person whose median household income is at or below the U.S. Department of Health and Human Services poverty guidelines (updated annually).
- **Elderly:** Elderly populations consist of people who are age 65 and older.

- **Female Head-of-Household:** Female head-of-household populations consist of households headed by a female with no husband present and with her own children under the age of 18.

An important area for Title VI compliance as part of the NEPA process for an ADOT project is public involvement and outreach. Example compliance measures include ensuring Limited English Proficient persons have the ability to read and understand the public outreach and NEPA documentation and persons with disabilities can adequately gain access to public meeting locations and project information. Additionally, that all outreach efforts will seek out and consider the needs of those traditionally underserved, especially low-income and minority communities.

CEQ's environmental justice guidance under NEPA states: "Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority percentage in the general population or other appropriate unit of geographic analysis" (CEQ 1997). Environmental justice determinations are based on effects determined by the environmental justice analysis, not population size; therefore, it is necessary to consider the comparative impact of an action among minority and/or low-income groups. A small minority or low-income population in the project study area does not eliminate the possibility of a disproportionately high and adverse effect on these populations.

The goals of environmental justice, as articulated in the U.S. Department of Transportation's Environmental Justice Strategy (2016), include:

1. Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
2. Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

The demographic data should be reviewed to identify where potentially underrepresented populations are located in relation to the proposed project alternative(s). To support an environmental justice assessment of disproportionate effects, the analyst should make reasonable efforts to identify the presence of distinct minority and/or low-income communities residing both within and close to the proposed project area. Minority and/or low-income groups that use or depend on the natural and community resources in the project area should be identified. Additionally, public involvement activities for the project should be used to identify potential environmental justice populations through various means, including scoping meetings, public information meetings, minority and low-income community meetings, as applicable, and other public outreach activities to provide such populations and communities the opportunity to participate and offer input into the project development process.

Note that potential Title VI and environmental justice impacts should be evaluated separately, although they have similarities. They should not be each defined separately

then blended together in the impact analysis to the extent the reader cannot determine which regulation is being discussed.

A typical mitigation measure when ROW acquisition is involved is as follows: “Residential and business property acquisition would be compensated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Public Law 91-646; 49 CFR Part 24).” Mitigation measures should be discussed with ADOT EP.

#### *What Coordination Is Required for Social and Economic Considerations?*

While much of this information may be available online, information gained through scoping and public outreach is helpful in identifying community resources and activity centers in the study area. The only way to adequately determine which effects are important is to consult early, often, and continuously with those who would be affected by a proposed project. Analysts should give the highest priority to effects that are of greatest local interest.

#### *Where Are Social and Economic Laws, Regulations, and Guidance Found?*

- FHWA Technical Advisory T 6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents (1987)  
[https://www.environment.fhwa.dot.gov/legislation/nepa/guidance\\_preparing\\_env\\_documents.aspx](https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx)
- US Department of Health & Human Services: U.S. Federal Poverty Guidelines Used to Determine Financial Eligibility for Certain Federal Programs [https://www.environment.fhwa.dot.gov/env\\_topics/ej/guidance\\_ejustice-nepa.aspx](https://www.environment.fhwa.dot.gov/env_topics/ej/guidance_ejustice-nepa.aspx)
- FHWA Guidance on Environmental Justice [https://www.environment.fhwa.dot.gov/env\\_topics/ej/guidance\\_ejustice-nepa.aspx](https://www.environment.fhwa.dot.gov/env_topics/ej/guidance_ejustice-nepa.aspx)
- CEQ Regulations for Implementing the Procedural Provisions of NEPA, 40 CFR 1500–1508 (2005)  
<https://www.gpo.gov/fdsys/granule/CFR-2011-title40-vol33/CFR-2011-title40-vol33-part-id1102/content-detail.html>
- NEPA  
<https://www.epa.gov/nepa/what-national-environmental-policy-act>
- Civil Rights Act of 1964 (as amended)  
<https://www.ourdocuments.gov/doc.php?flash=false&doc=97>
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994)  
<https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf>
- [FHWA Environmental Justice Reference Guide](https://www.fhwa.dot.gov/environment/environmental_justice/publications/reference_guide_2015/)  
[https://www.fhwa.dot.gov/environment/environmental\\_justice/publications/reference\\_guide\\_2015/](https://www.fhwa.dot.gov/environment/environmental_justice/publications/reference_guide_2015/)

- FHWA Title VI Guidance  
<https://www.fhwa.dot.gov/civilrights/programs/tvi.cfm>
- U.S. Department of Justice Title VI Manual  
<http://www.justice.gov/crt/about/cor/coord/vimanual.pdf>
- FHWA Policy and Guidance Center  
<https://www.fhwa.dot.gov/pgc/index.cfm?ddisc=121&dsub=1547>

*How Is the Social and Economic Analysis Different in an EA Versus an EIS?*

There are no differences in how social and economic considerations are analyzed in an EA versus an EIS.

## Cultural Resources

The National Historic Preservation Act (NHPA) of 1966 sets forth government policy and procedures regarding “historic properties,” defined as districts, sites, buildings, structures, and objects listed in or eligible for listing in the National Register of Historic Places (National Register). Section 106 of the NHPA requires that federal agencies consider the effects of their actions on such properties, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). The term “cultural resource” is a general term that refers to archaeological sites; historic buildings, structures, and districts; and artifacts. etc., regardless of their National Register status.

### *What Is an Appropriate Study Area for Cultural Resources?*

An appropriate study area for cultural resource assessment is one that encompasses all the cultural resources that could potentially be affected by an undertaking. This is known as the area of potential effects (APE), the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist [36 CFR 800.16(d)]. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking, such as direct, indirect, and cumulative effects.

The APE for direct effects typically includes the project footprint, including all areas expected to be subject to ground disturbance during the construction, operation, and maintenance of the project. The APE for indirect effects includes those areas outside of the direct effects APE that may contain historic properties that could be affected by the proposed project; for example, through alterations of visual, auditory, and atmospheric settings that are contributing qualities to a property’s National Register eligibility [36 CFR 800.5(a)(1)]. The APE for the consideration of cumulative effects is typically the combination of the direct and indirect APEs.

### *How Are Cultural Resources Identified?*

Cultural resources can be identified through a variety of research and fieldwork methods and, for most projects, includes a combination of the two in accordance with the project’s scope, location, and the type of resources involved. Identification methods can include, but are not limited to, record searches, archival research, archaeological surveys and excavations, built environment inventories, remote sensing and aerial imagery, oral interviews and ethnographic research, and consultation with public agencies, Native American communities, and other organizations interested in the project.

### *How Are Cultural Resources Analyzed, Mitigated, and Documented?*

Projects with a federal nexus qualify as undertakings subject to compliance with Section 106 of the NHPA, as amended (54 USC 300101 et seq.) and its implementing regulations (36 CFR 800).

Section 106 of the NHPA requires federal agencies to take into account the effect of their undertakings on historic properties, defined as “any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places” [36 CFR 800.16(l)(1)]. To be determined eligible for inclusion in the National Register, properties must be important in American history, architecture,

archaeology, engineering, or culture. They also must possess sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey their historical significance and meet at least one of four criteria:

Criterion A: are associated with events that have made a significant contribution to the broad patterns of our history

Criterion B: are associated with the lives of persons significant in our past

Criterion C: embody the distinctive characteristics of a type, period, or method of construction; or represent the work of a master; or possess high artistic values; or represent a significant distinguishable entity whose components may lack individual distinction

Criterion D: have yielded, or may be likely to yield, information important in prehistory or history

Properties can be of local, state, or national importance. Typically, historic properties are at least 50 years old, but younger properties can be considered for listing if they are of exceptional importance.

Once the historic properties in the APE have been identified, they are assessed for potential project effects. Adverse effects occur when an undertaking may directly or indirectly alter characteristics of a historic property that qualify it for inclusion in the National Register [36 CFR 800.5(a)(1)]. Reasonably foreseeable effects caused by the undertaking that may occur later in time or are farther removed in distance (secondary or indirect effects) and cumulative effects also need to be considered.

If a historic property will be adversely affected by an undertaking, the lead agency consults with the State Historic Preservation Officer (SHPO)/Tribal Historic Preservation Officer and other consulting parties to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties.

The results of cultural resources assessments and mitigation efforts are documented in technical reports and in the EA or EIS. Confidential information regarding cultural resources may be redacted from public documents to protect the resource and be made available on a need-to-know basis.

### *What Coordination Is Required for Cultural Resources?*

Consult with the ADOT EP Historic Preservation Specialist and environmental planner if a cultural resources assessment is needed, and consult the ADOT Historic Preservation Handbook and Programmatic Agreement regarding Implementation of Federal-Aid Transportation Projects in the State of Arizona:

<https://www.azdot.gov/business/environmental-planning/cultural-resources.com>

### *Where Are Cultural Resources Laws, Regulations, and Guidance Found?*

The following resources provide additional information regarding cultural resource assessments:

- federal cultural resource laws  
<https://www.nps.gov/subjects/historicpreservation/laws.htm>
- National Park Service (NPS) and historic preservation  
<https://www.nps.gov/subjects/historicpreservation/index.htm>
- Advisory Council on Historic Preservation  
<http://www.achp.gov/>
- FHWA Environmental Review Toolkit  
[https://www.environment.fhwa.dot.gov/env\\_topics/historic\\_preservation.aspx](https://www.environment.fhwa.dot.gov/env_topics/historic_preservation.aspx)
- NHPA  
<http://www.achp.gov/nhpa.pdf>
- Arizona state statutes  
<http://www.statemuseum.arizona.edu/services/state-statutes>
- Arizona SHPO  
<https://azstateparks.com//shpo-consultation-on-historic-preservation-compliance>

### *How Is a Cultural Resources Analysis Different in an EA Versus an EIS?*

No differences exist in how cultural resources are analyzed in an EA or EIS.

## Section 4(f) Resources

Section 4(f) refers to a section in the Department of Transportation Act of 1966 that requires FHWA and other U.S. Department of Transportation agencies to consider publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public or privately owned historic sites when planning and approving federally funded transportation projects. Section 4(f) stipulates that FHWA cannot approve the use of land from a Section 4(f) property unless there is no prudent and feasible alternative to the use of land and the action includes all possible measures to minimize harm to the property; or the Administration has determined that the use of the property will have a *de minimis* impact. The law is now codified in 49 USC 303 and 23 USC 138 and is implemented by FHWA through regulations at 23 CFR 774.

Use of a Section 4(f) property, as defined in 23 CFR 774.17, occurs under three conditions:

- permanent incorporation of land into a transportation facility
- temporary occupancy of land that is adverse in terms of Section 4(f)'s preservation purpose
- constructive use, meaning that the proximity impacts of the transportation project on the Section 4(f) property substantially impair the activities, features, and attributes of the property that qualify it for protection under Section 4(f)

### *What Is an Appropriate Study Area for Section 4(f)?*

Section 4(f) properties located within 0.25 mile of the project are identified. This study area should be expanded if the project involves road closures or detours.

### *How Are Section 4(f) Properties Identified?*

Section 4(f) properties include publicly owned parks, recreational areas (these may include trails, recreational water bodies [for example, portions of the Colorado River, Tempe Town Lake], school playgrounds that are available for walk-on use by the public after school hours, publicly owned golf courses), wildlife and waterfowl refuges (for example, Base and Meridian Wildlife Area, Bill Williams National Wildlife Refuge), and historic sites, regardless of ownership, which are generally defined as cultural resources that are eligible for listing in the National Register. Archaeological sites eligible under Criterion D are generally excepted from the requirement of Section 4(f) approval unless they warrant preservation in place. Planned facilities that have yet to be developed or constructed but are officially adopted in the land manager's plan or other similar planning document receive the same consideration as existing Section 4(f) properties.

Typically, Section 4(f) properties are identified using aerial mapping, County Assessors' websites, general plans, U.S. Fish and Wildlife Service (USFWS) National Wildlife Refuge Locator and Waterfowl Production Areas, County trails plans, etc. Cultural resources information is obtained through coordination with the study team's archaeologists and historians.

### *How Are Section 4(f) Resources Analyzed, Mitigated, and Documented?*

**No use of Section 4(f) resources:** If there is no use under Section 4(f), then the results are documented in the EA or EIS. Each Section 4(f) property is described, followed by a discussion of why there is no direct use or constructive use. A graphic showing the Section 4(f) properties relative to the build alternative(s) is required.

**De minimis:** For parks, recreational areas, and wildlife and waterfowl refuges, a *de minimis* impact is one that—after taking into account avoidance, minimization, mitigation, and enhancement measures—would not adversely affect the features, attributes, or activities that qualify the property for protection under Section 4(f). For historic sites, a *de minimis* impact requires a Section 106 finding of “no adverse effect” or “no historic properties affected.” Where the project would result in *de minimis* impacts, a *de minimis* impact determination is made. This determination does not require an analysis of avoidance alternatives. A *de minimis* impact determination may not be made when there is a constructive use.

*De minimis* impact determinations for parks, recreational areas, and wildlife and waterfowl refuges require written concurrence from the official with jurisdiction over the Section 4(f) property and an opportunity for public review. Public involvement is often accomplished through a public meeting or the public hearing; it can also occur through public review of the environmental document or through other public notification.

Historic sites are identified and evaluated through the Section 106 process; any public involvement occurs through the Section 106 process. For historic sites, 23 CFR 774.5(1)(ii) requires ADOT to inform the SHPO of its intent to make a *de minimis* determination based on SHPO’s concurrence in a “no adverse effect” or “no historic properties affected” finding [SHPO or the Tribal Historic Preservation Officer is the official with jurisdiction for historic Section 4(f) properties].

**Temporary Occupancy:** During construction of a transportation project, a temporary occupancy of a Section 4(f) property may be necessary [for example, right-of-entry, access, or other temporary easements or short-term use of a Section 4(f) property]. The temporary occupancy of the land is minimal and does not constitute a use within the meaning of Section 4(f). A temporary occupancy of a Section 4(f) property does not constitute a use when the following conditions are met:

- The use of land is of short duration (defined as less than the time needed for construction of the project).
- There is no change in ownership of the land.
- The scope of the work is minor.
- There are no temporary or permanent adverse changes to the activities, features, or attributes of the property that qualify it for protection under Section 4(f).
- The land is fully restored to a condition at least as good as prior to the project.
- There is documented agreement from the official(s) with jurisdiction over the property with the above conditions.

There could be situations where, depending on the conditions, some activities, although temporary, may be considered adverse in terms of the Section 4(f) statute’s preservation

purpose, and thus would be considered a Section 4(f) use. For example, contour changes, removal of vegetation, or disruption of activities that contribute to the property's Section 4(f) eligibility. In this case, the appropriate Section 4(f) analysis would be required.

**Programmatic Section 4(f) Evaluations:** Programmatic Section 4(f) evaluations can be used in place of individual evaluations for certain types of highway projects where uses are considered minor. To date, five programmatic evaluations have been approved for use nationwide:

- independent walkway and bikeway construction projects
- historic bridges
- minor involvements with historic sites
- minor involvements with parks, recreation areas, and waterfowl and wildlife refuges
- net benefits to a Section 4(f) property

The primary benefit of the programmatic evaluations is time. Unlike individual evaluations, they do not require a comment period and are generally approved faster.

**Individual Section 4(f) Evaluations:** If a use of a Section 4(f) property would occur, as defined in the Section 4(f) regulation—that is, there is a conversion of land to a transportation use or the proximity impacts are so severe that they constitute a use under Section 4(f) (a constructive use)—then a full or individual Section 4(f) evaluation would be required (that is, if the use does not meet the criteria for a *de minimis* or programmatic evaluation). An individual Section 4(f) evaluation is included as an appendix to the EA or EIS, or as a stand-alone document; it is not summarized in the EA or EIS. The full Section 4(f) evaluation develops avoidance alternatives that would avoid the use of all Section 4(f) properties, or explains why there are no prudent and feasible alternatives to the use of the Section 4(f) property. If the analysis of avoidance alternatives concludes that there is no feasible and prudent avoidance alternative, then ADOT may approve only the alternative that causes the “least overall harm” to the Section 4(f) property. 23 CFR 774.3(c) includes a list of factors to consider in making a determination of least overall harm. These factors include the ability to mitigate adverse impacts on the Section 4(f) property; the relative severity of remaining harm, after mitigation; and the relative significance of each Section 4(f) property. If alternatives are determined to cause “substantially equal” harm to Section 4(f) properties, then ADOT may choose any alternative.

Established template text:

Section 4(f) of the Department of Transportation Act of 1966, as amended, states that ADOT or FHWA [ADOT under NEPA Assignment] “... may approve a transportation program or project ... requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if

- (1) there is no prudent and feasible alternative to using that land; and

(2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use”  
or

(3) the use of the property will have a *de minimis* impact (49 USC 303[c]).

A “use” of a Section 4(f) property, as defined in 23 CFR 774, occurs: (1) when land is permanently incorporated into a transportation facility; (2) when there is a temporary occupancy of land that is adverse in terms of the statute’s preservationist purposes; or (3) when there is a constructive use of the Section 4(f) property. A constructive use of a Section 4(f) property occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project’s proximity impacts are so severe that the protected activities, features, or attributes that qualify a property for protection under Section 4(f) are substantially impaired. For example, a constructive use can occur when:

(a) the projected noise level increase, attributable to the project, substantially interferes with the use and enjoyment of a noise-sensitive facility of a property protected by Section 4(f);

(b) the proximity of the proposed project substantially impairs aesthetic features or attributes of a property protected by Section 4(f), where such features or attributes are considered important contributing elements to the value of the property (an example of such an effect would be the location of a proposed transportation facility in such proximity that it obstructs or eliminates the primary views of an architecturally significant historical building or substantially detracts from the setting of a park or historic site that derives its value in substantial part due to its setting);

and/or

(c) the project results in a restriction of access that substantially diminishes the utility of a significant publicly owned park, recreation area, or historic site.

### *What Coordination Is Required for Section 4(f)?*

Consult with the ADOT EP NEPA planner regarding a potential use of a Section 4(f) property or other questions or concerns.

Section 4(f) requires coordination with the official with jurisdiction over a Section 4(f) property (23 CFR 774.5). Coordination helps to obtain baseline information and is necessary for discussions of use. Depending on the resources in the study area, coordination could occur with national, state, county, or city recreation departments; national wildlife or waterfowl refuges (USFWS), school districts, and the SHPO (through Section 106). Be sure to obtain written concurrences from the agency with jurisdiction for items such as determinations of significance, *de minimis* impacts, and temporary occupancy, and include it in an appendix to the EA or EIS. Coordinate with the NEPA planner to post any public notices of Section 4(f) use on the ADOT website.

### *Where Are Section 4(f) Laws, Regulations, and Guidance Found?*

The following resources provide additional information regarding Section 4(f) assessments:

- FHWA Section 4(f) regulations (23 CFR 774)  
[https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title23/23cfr774\\_main\\_02.tpl](https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title23/23cfr774_main_02.tpl)
- FHWA's Environmental Review Toolkit  
<https://www.environment.fhwa.dot.gov/legislation/section4f.aspx>
- FHWA Section 4(f) Policy Paper (July 20, 2012)  
<https://www.environment.fhwa.dot.gov/legislation/section4f/4fpolicy.aspx>
- FHWA Technical Advisory T 6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents (1987)  
[https://www.environment.fhwa.dot.gov/legislation/nepa/guidance\\_preparing\\_env\\_documents.aspx](https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx)
- ADOT's Section 4(f) Manual (not currently available on ADOT's website)
- AASHTO Practitioner's Handbook 11 – Complying with Section 4(f) of the U.S. DOT Act (2009)
- AASHTO Section 4(f)/Section 6(f) Key Resources (a website with numerous resources)

*How Is a Section 4(f) Analysis Different in an EA Versus an EIS?*

There is no difference in conducting a Section 4(f) analysis for an EIS or EA. The analysis is based the project's use of Section 4(f) property.

## Section 6(f) Resources

The Land and Water Conservation Fund (LWCF) was established by Congress in 1964. The Land and Water Conservation Fund Act of 1965 established a funding source for both federal acquisition of park and recreational lands and matching grants to state and local governments for recreation planning, acquisition, and development. Section 6(f) of the Act requires that the conversion of lands or facilities acquired with LWCF to nonrecreational uses must be coordinated with the NPS. Usually, conversion of these lands requires replacement in kind. The act is codified in 36 CFR 59.

### *What Is an Appropriate Study Area for Section 6(f)?*

Section 6(f) properties located within 0.25 mile of the project should be disclosed. This study area should be expanded if the project involves a detour.

### *How Are Section 6(f) Resources Identified?*

To determine the presence of Section 6(f) resources in the study area, the Arizona State Parks LWCF grants database showing grants by county and city is searched. The database provides the locations where grant funds were used and general information about the use of such funds (for example, site development, lighting). In many cases, coordination with the Arizona State Parks will be necessary to determine specifics about the project to assess impacts. Note that, in most cases, if a project such as a park received grant monies only for lighting, NPS will consider the entire park a Section 6(f) resource.

### *How Are Section 6(f) Resources Analyzed, Mitigated, and Documented?*

A Section 6(f) analysis should be conducted for properties adjacent to the alignment to determine whether a conversion of land will occur. Conversion may be triggered by a change in use or a change in land ownership, such as when ROW or an easement is acquired for a transportation project.

It should be noted that the NPS LWCF Manual describes some situations that do not trigger a conversion, such as:

- underground utility easements that do not affect the recreational use of the park
- proposals for temporary nonconforming uses

If there is a conversion and the ADOT project is federally funded, or has other federal approvals that involve NEPA, the effects of the conversion can be discussed in the EA or EIS, and NPS will make its conversion decision based on the LWCF assessment in the NEPA document. The NEPA document should discuss the results of the Section 6(f) conversion process, including the land appraisal result, NPS conversion proposal forms and mitigation/conversion proposal, and an NPS-signed amendment to the original LWCF agreement approving conversion. It should be noted that conversions on nonfederally funded projects usually require an NPS EA specific to the Section 6(f) conversion.

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Section 6(f) of the Land and Water Conservation Fund Act (LWCFA), administered by the Interagency Committee for Outdoor Recreation and the National Park Service (NPS), pertains to projects that would cause impacts on or result in the permanent conversion of outdoor recreational property acquired with LWCFA assistance. The LWCFA established the Land and Water Conservation Fund (LWCF), a matching assistance program providing grants paying half the acquisition and development cost of outdoor recreational sites and facilities. Section 6(f) prohibits the conversion of property acquired or developed with these grants to a nonrecreational purpose without approval from the Interagency Committee for Outdoor Recreation and NPS. NPS must ensure replacement lands of equal value, location, and usefulness are provided as conditions of approval for land conversions (16 USC 4601-4 through 4601-11).

All Section 6(f) properties in the study area would be avoided and are, therefore, no longer applicable to the process.

#### *What Coordination Is Required for Section 6(f)?*

Consult with the ADOT EP planner early with any questions or concerns about Section 6(f). If there are unavoidable impacts, Arizona State Parks and NPS involvement will be required. If conversion of land occurs, then ADOT would coordinate with NPS to determine potential mitigation options. Coordination and correspondence with Arizona State Parks regarding Section 6(f) resources should be part of the EA or EIS appendix. This correspondence is sufficient if there is no conversion under Section 6(f).

#### *Where Are Section 6(f) Laws, Regulations, and Guidance Found?*

The following resources provide additional information regarding Section 6(f) assessments:

- Land and Water Conservation Fund Act of 1965 (Public Law 88-578, 54 USC 2003)  
<https://www.nps.gov/subjects/lwcf/upload/Public-Law-88-578.pdf>
- Land and Water Conservation Fund Act regulations (36 CFR 59)  
<https://www.ecfr.gov/cgi-bin/text-idx?SID=049f1f9562e072c158ad6e4a47d076a2&node=pt36.1.59&rgn=div5>
- NPS Land and Water Conservation Fund State Assistance Program manual  
[https://www.nps.gov/subjects/lwcf/upload/lwcf\\_manual.pdf](https://www.nps.gov/subjects/lwcf/upload/lwcf_manual.pdf)
- NPS Land and Water Conservation Fund Program Forms  
<https://www.nps.gov/subjects/lwcf/lwcf-forms.htm>
- FHWA Environmental Review Toolkit  
[https://www.environment.fhwa.dot.gov/env\\_topics/other.aspx#6f](https://www.environment.fhwa.dot.gov/env_topics/other.aspx#6f)

#### *How Is a Section 6(f) Analysis Different in an EA Versus an EIS?*

There is no difference in conducting a Section 6(f) resource analysis for an EIS or EA. The analysis is based on the project's potential to result in adverse impacts to a Section 6(f) resource.

## Traffic and Transportation

The analysis of traffic conditions is important to identify existing traffic and safety deficiencies and to forecast future traffic conditions. Impacts on traffic and transportation may occur during construction (construction impacts) and after completion of the project (long-term or operational impacts). Traffic information is used to help define the needs assessment for the project purpose and need. It may also be used in determining the performance of alternatives and in estimating environmental impacts, such as noise and air pollutant emissions.

### *What Is an Appropriate Study Area for Traffic and Transportation?*

While the study area is typically based on the logical geographic termini, the project purpose and need, and the expected limits of potential impacts, the study area for traffic and transportation can be substantially larger than the area within which direct environmental impacts are analyzed.

Where transportation modeling is used, it is important to ensure that the forecasting is extensive enough in its geographic reach to reasonably estimate the transportation and land development impacts.

### *How Are Traffic and Transportation Resources Identified?*

As part of the project scoping, a brief history describing the tools that have been used for transportation forecasts in the corridor and region should be developed. This information will help in determining what data and tools may be appropriate to the traffic study.

A traffic noise analysis is required for all ADOT projects that increase capacity or move an alignment closer to sensitive receivers. When noise and/or air quality analysis is performed as part of the NEPA process, traffic information used for these analyses needs to be consistent with that used for the traffic and transportation elements of the study. In instances where traffic information is updated through the normal course of discovery in the NEPA process, it is necessary to evaluate whether these changes require updates to the air and noise analyses as well.

One challenge to address in this process is that the base and horizon years for existing efforts may not be consistent with the project's base, plan horizon, and design year (project open-to-traffic year plus 20 years). Because land use and transportation forecast information may be readily available from the region or State's long-range plan, it is common for these forecast years to be chosen to correspond to future planning horizons already examined in these plans.

The circulation element of the general or comprehensive plan of the jurisdiction(s) in which the project is located should be consulted. As with other local planning documents, the project must be consistent with the plan(s).

### *How Is Traffic and Transportation Analyzed and Documented?*

Many NEPA documents for highway and transit projects include a separate transportation section. This format provides an efficient way to present information such as the data sources and methods used in traffic modeling, the description of the existing transportation system, the alternatives' effects on the existing transportation system, and

the alternatives' ability to meet the purpose and need. Documentation should also discuss whether transportation demand management strategies have been considered, such as telecommuting, ramp metering, variable work hours, truck/heavy vehicle restrictions, transit service improvements or incentives, ridesharing/carpooling incentives, etc. Generally, a technical traffic report associated with the project would be prepared that documents the existing and forecast traffic conditions in the study area.

It is important to identify a base year and a design year for the project because these represent the existing and future condition years, respectively, for the evaluation of traffic conditions. Depending on the project's implementation timeframe, it may be necessary to consider interim years to evaluate phasing and sequencing considerations if an alternative would be implemented over time.

Travel demand forecasts reflect anticipated regional traffic patterns for a typical day, based on the distribution of population and employment across the region. They are often used as inputs to traffic forecasts, which contain more detailed estimates of traffic characteristics. In evaluating traffic, the following items are often included.

**Travel time comparison (existing and modeled):** Usually expressed as time saved by comparing vehicle miles traveled and vehicle hours traveled, shown as total time saved annually. Compare all build alternatives to the existing conditions and the future No-Build Alternative.

**Peak period performance:** Show modeled top speeds during the period(s) of highest demand. A slower speed during the peak period is a strong indicator of need. Be sure to show all peak periods, including mid-day, if appropriate. A table to show average speeds may also be helpful to the reader. Again, compare all build alternatives to both existing conditions and the future No-Build Alternative.

**Corridor travel time:** Comparisons between travel origin and destination pairs are helpful to the lay reader. Transportation planners can help obtain these data.

**Volume-to-capacity ratio and LOS:** Show density of traffic on the freeway or roadway. The volume-to-capacity ratio is often described as LOS, which corresponds to letter grades (A through F) representing ranges of volume-to-capacity.

**Measures to lessen traffic/circulation impacts:** If these are proposed, provide a table showing the improved volume-to-capacity ratios, modeled for the future year, including a comparison of all build alternatives to the No-Build Alternative.

**Freeway connector volumes:** Compare all build alternatives to the existing and the future No-Build Alternative if the project includes connector improvements.

**Arterial street impacts and intersection impacts (existing and modeled):** If the project would affect local streets and intersections, describe such impacts.

The *Highway Capacity Manual* is a good source of information for understanding and describing traffic characteristics. It is a fundamental reference on concepts, performance measures, and analysis techniques for evaluating the multimodal operation of streets, highways, freeways, and off-street pathways.

The appropriate level of detail for the forecasting analysis is based on the specifics of the study. Performance measures used to evaluate alternatives should consider nonautomobile impacts in addition to traditional vehicular measures such as LOS,

vehicle miles of travel, vehicle hours of travel, and vehicle hours of congestion, to name a few. Performance measures that address the impacts of each alternative and that illustrate the relative merits of each alternative in the context of the project purpose and need should be selected and reported on in the NEPA document.

### *What Coordination Is Required for Traffic and Transportation?*

Interagency coordination is important in preparing traffic and transportation resources for NEPA. In addition to the statewide travel demand modeling that is prepared and maintained by ADOT's Multimodal Planning Division, MPOs and local jurisdictions may maintain their own transportation models for forecasting traffic.

The typical practice in forecasting for NEPA studies is to use the adopted land use forecasts, which are developed by ADOT, the MPOs, and/or other regional planning agency, as a basis for estimating travel demand. It is not uncommon to adjust the land use forecasts within a corridor based on a more thorough and focused review.

### *Where Are Traffic and Transportation Laws, Regulations, and Guidance Found?*

Congress has directed that federally funded highway and transit projects must originate from metropolitan and statewide transportation planning processes (23 USC 135). Over the years, Congress has refined and strengthened the transportation planning process as the foundation for project decisions, emphasizing public involvement and consideration of environmental and other factors.

FHWA has worked to help agencies use analyses completed as part of planning studies in the NEPA process, referred to as "linking planning and NEPA." These efforts have culminated in revisions to 23 CFR 450 (the FHWA and FTA regulations for statewide and metropolitan transportation planning process) and 23 CFR 771. These regulatory provisions offer new authority to FHWA, FTA, state departments of transportation, and MPOs to use decisions and analyses conducted in transportation planning in the NEPA process.

The procedures used to identify and estimate noise impacts are found in 23 CFR Part 772. This regulation establishes methodologies for conducting a traffic noise analysis, and guidelines and requirements for the consideration of noise abatement measures.

Available resources include:

- FHWA's Instructions for Reviewing Travel and Land Use Forecasting Analysis in NEPA Documents, February 2018  
[https://www.environment.fhwa.dot.gov/nepa/Travel\\_LandUse/forecasting\\_reviewer\\_guidance.aspx](https://www.environment.fhwa.dot.gov/nepa/Travel_LandUse/forecasting_reviewer_guidance.aspx)
- FHWA's Interim Guidance on the Application of Travel and Land Use Forecasting in NEPA, March 2010  
[https://www.environment.fhwa.dot.gov/nepa/Travel\\_LandUse/faqs.aspx](https://www.environment.fhwa.dot.gov/nepa/Travel_LandUse/faqs.aspx)
- American Association of State and Highway Transportation Officials' Practitioner's Handbook #7: Defining the Purpose and Need, and Determining the Range of

Alternatives for Transportation Projects, August 2016

<https://environment.transportation.org/pdf/programs/ph07-2.pdf>

- Transportation Research Board's Highway Capacity Manual (Special Report 209)

*How Is a Traffic and Transportation Analysis Different in an EA Versus an EIS?*

There are no differences in how traffic and transportation considerations are analyzed in an EA versus an EIS. If, in the course of study for an EA, it is determined that it is not possible to mitigate traffic impacts to less than significant levels, then an EIS must be prepared.

## Air Quality Analysis

Air quality is regulated by the Clean Air Act of 1990 and its amendments, which establish National Ambient Air Quality Standards (NAAQS) for six criteria pollutants to protect the public from the health hazards associated with air pollution. The six criteria pollutants are carbon monoxide (CO), nitrogen dioxide, ozone, particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), sulfur dioxide, and lead. The NAAQS for these criteria pollutants were established based on known human health effects and measurable, health-related threshold values.

Arizona's nonattainment and maintenance areas can be found on the U.S. Environmental Protection Agency's (EPA's) "green book" website (Arizona Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants, [https://www3.epa.gov/airquality/greenbook/anayo\\_az.html](https://www3.epa.gov/airquality/greenbook/anayo_az.html)) or at the Arizona Department of Environmental Quality (ADEQ) air quality website (<http://www.azdeq.gov/AQ>).

The federal NAAQS have been adopted by the State of Arizona as the ambient air quality standards for the state (Table 2).

**Table 2.** National Ambient Air Quality Standards

Pollutant	Averaging period	National standard	
		Primary	Secondary
Carbon monoxide	1-hour	35 ppm	No standard
	8-hour	9 ppm	No standard
Nitrogen dioxide	1-hour	100 ppb	No standard
	Annual	0.053 ppm	0.053 ppm
Ozone	8-hour	0.070 ppm	0.07 ppm
Particulate matter (PM <sub>10</sub> )	24-hour	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
Fine particulate matter (PM <sub>2.5</sub> )	Annual	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
	24-hour	35 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>
Sulfur dioxide	3-hour	—	0.5 ppm
	1-hour	75 ppb	—
Lead	Rolling 3-month average	150 µg/m <sup>3</sup>	0.15 µg/m <sup>3</sup>

Notes: ppb = parts per billion, ppm = parts per million, µg/m<sup>3</sup> = micrograms per cubic meter

In addition to NAAQS, there are other pollutants generated by a wide variety of sources that enter the air, water, and soil through different media. Toxic air pollutants, also known as Hazardous Air Pollutants, are those that are known to cause or suspected of causing cancer or other serious health problems.

In 2001, EPA issued its first Mobile Source Air Toxics Rule, which identified 21 mobile source air toxic (MSAT) compounds as being Hazardous Air Pollutants that required

regulation. A subset of six of these MSAT compounds were identified as having the greatest influence on health and included:

- benzene
- 1,3-butadiene
- formaldehyde
- acrolein
- acetaldehyde
- diesel particulate matter

EPA issued a second MSAT Rule in February 2007, which generally supported the findings in the first rule and provided additional recommendations of compounds having the greatest impact on health from transportation facilities. Unlike the criteria pollutants, no NAAQS exist for MSAT compounds, making evaluation of their impacts more subjective.

In 2012, FHWA developed guidance regarding how projects should address concerns regarding MSAT emissions during project development and NEPA alternatives analysis. FHWA recently updated the MSAT guidance on October 18, 2016. The Updated Interim Guidance on Air Toxic Analysis in NEPA Documents provides a tiered approach for assessing MSAT impacts in NEPA documents. Depending on the specific project circumstances, FHWA has identified three levels of analysis:

- no analysis for projects with no potential for meaningful MSAT effects
- qualitative analysis for projects with low potential MSAT effects
- quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects

It is very important to closely coordinate with the ADOT EP Air Quality Team as early as possible in the project scoping and NEPA process to determine the appropriate level of analysis for MSATs and to evaluate criteria pollutants that require transportation conformity.

For new construction, design year traffic is derived from future year traffic projections adopted by the local regional council of governments, MPO, or as established by ADOT's Multimodal Planning Division. Once established in the approved project scoping document, traffic design data shall not be changed without the approval of the Assistant State Engineer, Roadway Engineering Group, or designee. In other words, the latest traffic report available at the time of the air quality analysis and coordination with the MPO is the basis of air quality conformity. Unless a NEPA re-evaluation is needed at some point in the future, there should be no need to constantly update traffic and air quality.

#### *What Is an Appropriate Study Area for Air Quality?*

The study area for an individual project can be highly variable depending on the project. For example, the study area could focus on one specific location (for example, an

intersection) being evaluated for project-level impacts or an area-wide evaluation (for example, an emissions inventory that could include many roads and intersections potentially affected by the project).

### *How Are Air Quality Resources Identified?*

Depending on the project, air quality evaluations can range from relatively uncomplicated to very detailed project-level quantitative hot-spot analyses. For example, a project in a rural area that is in attainment for all criteria pollutants and has little associated traffic could be evaluated qualitatively. On the other hand, a project in a nonattainment area that has been identified as a “project of air quality concern” could require detailed modeling at the project level to demonstrate transportation conformity.

### *How Is Air Quality Analyzed, Mitigated, and Documented?*

ADOT has developed a formal process to identify when a quantitative PM hot-spot analysis is required at the project level (Revised Project Level Hot-spot Consultation in CO/PM<sub>10</sub>/PM<sub>2.5</sub> nonattainment or maintenance areas, January 3, 2018).

ADOT uses the Project Level PM Quantitative Hot-Spot Analysis – Project of Air Quality Concern Questionnaire to meet the interagency consultation requirements for all federally funded projects in PM<sub>10</sub> and PM<sub>2.5</sub> nonattainment areas. ADOT uses the Project Level CO Hot-Spot Analysis Questionnaire to determine whether CO analysis is required in CO maintenance areas (both available from ADOT’s website or the ADOT Air Quality Team).

If the project requires a quantitative hot-spot analysis, the Project Level PM Quantitative Hot-Spot Analysis Consultation Document for Project of Air Quality Concern and/or the Project Level CO Quantitative Hot-Spot Analysis Consultation Document is completed and circulated for interagency review by the ADOT Air Quality Team to obtain consensus from all parties on the modeling assumptions and inputs required to complete the analysis.

Attachments A and B to the ADOT memorandum provide useful guidance on the types of projects that may require quantitative evaluation (Attachment A) and a flow chart showing the process for those evaluations (Attachment B). In addition to a hot-spot analysis in nonattainment areas, ADOT may need to conduct such an analysis for CO or MSATs for NEPA purposes. A hot-spot analysis for CO or MSATs is more commonly conducted for a project in a highly urbanized area where there are high traffic volumes and congestion that have the potential to adversely affect pedestrians and adjacent parks or recreational areas for example.

A useful resource for this purpose is the American Association of State Highway Transportation Officials Practitioner’s Handbook: Addressing Air Quality Issues in the NEPA Process for Highway Projects (June 18, 2017).

### *What Coordination Is Required for Air Quality?*

ADOT’s Air Quality Team should be consulted before initiating the air quality analysis to determine the level of analysis necessary and any required interagency consultation. Coordination with ADOT’s Air Quality Team is also important to determine how air quality will be evaluated based on the project’s location (for example, attainment or

nonattainment/maintenance area), the potential for air quality impacts, and necessary planning assumptions and traffic data needed for the air quality analysis (traffic volumes, number of diesel-fueled trucks, etc.).

In addition to conducting an air quality analysis to determine whether a proposed action would result in adverse impacts at the project study area level, ADOT must also provide a determination of whether the project is consistent with plans that are in place to improve and/or maintain air quality in a designated area in accordance with the Arizona State Implementation Plan. This is known as demonstrating transportation conformity. This ensures federal funding and approval goes to those transportation activities that are consistent with an area's air quality goals.

Transportation conformity ensures that transportation plans, programs, and projects do not produce new air-quality violations, worsen existing violations, or delay timely attainment of the NAAQS. A project-level conformity determination is required for all non-exempt federal projects before they receive NEPA approval. A transportation project may be found in conformity if:

- the project comes from a conforming plan and TIP
- the project design concept and scope are consistent with those presented in the current Regional Transportation Plan and TIP
- less than 3 years have elapsed since the most recent major step to advance the project

The ADOT Air Quality Team is responsible for implementing and developing the statutory and regulatory requirements for conformity state implementation plans. A conformity state implementation plan includes a state's specific criteria and procedures for certain aspects of the transportation conformity process. Clean Air Act Section 176(c) is the statutory authority for transportation conformity [42 USC. 7506(c)]. The regulations that explain the requirements for a conformity state implementation plan are found at 40 CFR 51.390, which was updated on January 24, 2008 (73 *Federal Register* 4420).

#### *Where Are Air Quality Laws, Regulations, and Guidance Found?*

- Clean Air Act of 1970, as amended (42 USC 7401 et seq.)  
<https://www.gpo.gov/fdsys/pkg/USCODE-2010-title42/html/USCODE-2010-title42-chap85.htm>
- federal transportation conformity regulations (40 CFR 93, Subpart A)  
[https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr93\\_main\\_02.tpl](https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr93_main_02.tpl)
- federal on-road and nonroad motor vehicle emissions standards (40 CFR 85–92)  
<https://www.gpo.gov/fdsys/granule/CFR-2012-title40-vol19/CFR-2012-title40-vol19-part85>
- Requirements for Preparation, Adoption, and Submittal of Implementation Plans (40 CFR 51)  
[https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr51\\_main\\_02.tpl](https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr51_main_02.tpl)
- FHWA Updated Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents (October 18, 2016)

[https://www.fhwa.dot.gov/Environment/air\\_quality/air\\_toxics/policy\\_and\\_guidance/msat/index.cfm](https://www.fhwa.dot.gov/Environment/air_quality/air_toxics/policy_and_guidance/msat/index.cfm)

- Instructions for Reviewing Travel and Land Use Forecasting Analysis in NEPA Documents (February 21, 2018) [https://www.environment.fhwa.dot.gov/nepa/Travel\\_LandUse/forecasting\\_reviewer\\_guidance.aspx](https://www.environment.fhwa.dot.gov/nepa/Travel_LandUse/forecasting_reviewer_guidance.aspx)
- EPA and DOT Joint Guidance for the Use of Latest Planning Assumptions in Transportation Conformity Determinations (December 2008) <https://nepis.epa.gov/Exe/ZyPDF.cgi/P1002RFG.PDF?Dockey=P1002RFG.PDF>
- EPA PM Hot-spot Analyses: Guidance <https://www.epa.gov/state-and-local-transportation/project-level-conformity-and-hot-spot-analyses#pmguidance>
- EPA CO Hot-spot Analyses: Guidance <https://www.epa.gov/state-and-local-transportation/project-level-conformity-and-hot-spot-analyses#coguidance>
- ADOT Air Quality Technical Guidance webpage <https://azdot.gov/business/environmental-planning/air-quality/project-development>
- ADOT Air Quality Management Guidebook: Suggested Approaches and Case Study <https://azdot.gov/docs/default-source/planning/mpd002-13.pdf?sfvrsn=6>
- ADOT Updated Guidance on: Project-level hot-spot consultation in CO, PM<sub>10</sub>/PM<sub>2.5</sub> nonattainment or maintenance areas <https://azdot.gov/docs/default-source/environmental-planning-library/requirements-for-projects-of-air-quality-concern.pdf?sfvrsn=4>
- American Association of State Highway Transportation Officials Practitioner's Handbook: Addressing Air Quality Issues in the NEPA Process for Highway Projects (June 18, 2017) <https://environment.transportation.org/pdf/programs/ph18-1-ol.pdf>
- ADOT Roadway Design Guidelines (May 2012) <https://azdot.gov/docs/default-source/business/roadway-design-guidelines.pdf?sfvrsn=8>

### *How is An Air Quality Analysis Different in an EA Versus an EIS?*

There is no difference in conducting an air quality analysis for an EIS or EA. The analysis is based on the size and complexity of the project and on its potential to result in adverse air quality impacts that exceed the NAAQS or other air quality analysis parameters.

## Noise Analysis

This section discusses traffic and construction noise and vibration, how they are assessed, what overall noise levels are acceptable, how impacts are determined, and the appropriate level of noise analysis for an EA and an EIS. FHWA regulations governing traffic noise are found at 23 CFR 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise. ADOT implements those procedures for projects in Arizona. The regulations define terms used in traffic noise assessments, the types of projects required to comply with these regulations, fundamental components of traffic noise analyses, guidance related to abating traffic noise impacts, guidelines for federal participation in the noise assessment and abatement process, information for local officials (for noise-compatible land use planning), and guidelines for traffic noise modeling and construction noise assessments.

### *What Is an Appropriate Study Area for Noise?*

Typically, the study area for a traffic noise analysis is delineated using a 500-foot buffer around the project limits, and the project limits often extend 500 feet beyond the limits of construction to account for activities that occur in staging areas.

### *How Are Noise Levels Identified?*

ADOT uses the FHWA Noise Abatement Criteria, which identify the traffic noise levels at which noise abatement must be considered for seven land use categories. These categories are shown in Table 3.

Noise-sensitive land uses are typically identified using aerial mapping, GIS parcel data from County Assessors' web sites, general plans, etc. Windshield surveys often supplement the publicly available land use data.

### *How is Noise Analyzed, Mitigated, and Documented?*

FHWA and ADOT guidelines explain what activities are conducted for traffic and construction noise assessments. Traffic noise assessments are more thorough than construction noise assessments. The first step in a traffic noise analysis is to measure existing noise levels. Results of these measurements are used to validate the traffic noise model; sometimes they are also used to identify the loudest hour of traffic noise, which is used in the FHWA Traffic Noise Model (TNM) to calculate traffic noise levels.

Project planners and engineers develop estimates of future traffic volume, mix, and speed associated with the project's "design year," which is can sometimes be 20 years in the future. Analysts enter the coordinates for existing roadways into FHWA's TNM. Existing traffic data are also entered into TNM. This process is repeated using the future roadway coordinates and future traffic data for the design year (under the build alternative). Using TNM, traffic noise analysts determine whether traffic noise levels under the build alternative (in the design year) would approach (be within 1 A-weighted decibel) or exceed the FHWA Noise Abatement Criteria, or whether they would substantially (15 decibels or more) increase above existing traffic noise levels.

**Table 3.** Noise abatement criteria

Activity category (land use)	FHWA Noise Abatement Criteria (L <sub>eq</sub> ) <sup>a</sup>	ADOT noise impact threshold (L <sub>eq</sub> ) <sup>a</sup>	Evaluation location	Activity description
A	57	56	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where preserving those qualities is essential if the area is to continue to serve its intended purpose
B <sup>b</sup>	67	66	Exterior	Residential
C <sup>b</sup>	67	66	Exterior	Active sports areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52	51	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E <sup>b</sup>	72	71	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A to D or F
F	—	—	—	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	—	—	—	Undeveloped lands that are not permitted

<sup>a</sup> Noise Abatement Criteria values are for impact determination only and are not design standards for noise abatement measures. Noise impact threshold is the decibel level at which predicted noise levels approach the Noise Abatement Criteria.

<sup>b</sup> includes undeveloped lands permitted for this activity category

If TNM results indicate that any of these conditions would occur, they are considered adverse traffic noise impacts. Measures to abate those impacts must be evaluated. If noise barriers are part of the noise abatement evaluation, there are guidelines for the noise reduction performance of noise barriers, and also cost-effectiveness criteria that must be met in order for ADOT to commit to building a noise barrier to abate traffic noise impacts.

### *What Coordination is Required for Noise?*

This process requires substantial coordination with ADOT's Noise Team. A kick-off meeting is typically held to discuss noise-sensitive land uses in the study area, and to determine whether any land uses in the project area are unusually sensitive to noise either by virtue of their land use classification or function, or for other reasons. At this meeting, project planners and noise analysts can also discuss their plans for measuring existing noise levels, modeling the features of the proposed project using TNM, and other aspects of the noise analysis. One important aspect involves soliciting public feedback about noise walls (if noise impacts are projected to occur). FHWA and ADOT have guidelines for the public outreach portion of traffic noise analyses. It is advisable to obtain right-of-entry when measuring traffic noise levels on private property.

### *Where Are Noise Laws, Regulations, and Guidance Found?*

- FHWA regulations (23 CFR 772) <https://www.fhwa.dot.gov/legregs/directives/fapg/cfr0772.htm>
- ADOT webpage on traffic noise <https://www.azdot.gov/business/environmental-planning/noise/project-development>
- ADOT traffic noise abatement requirements <https://www.azdot.gov/business/environmental-planning/noise/noise-abatement>
- ADOT noise analysis flowchart <https://www.azdot.gov/business/environmental-planning/noise/overview>

### *How is A Noise Analysis Different in an EA Versus an EIS?*

There is no difference in conducting a noise analysis for an EIS or EA. There is no one-size-fits-all approach to the level of noise analysis necessary for various levels of environmental documents. One project may result in significant impacts on the natural environment, have no noise impacts, and require an EIS, while another project processed as a categorical exclusion may not have any significant impacts, but numerous noise impacts. The analysis is based on the size and complexity of the project based on its potential to result in adverse noise impacts that exceed the FHWA NAC.

## Utilities

Utilities are aboveground or underground infrastructure for a public service, including water lines, sanitary sewer lines, storm sewer lines, gas pipelines, fuel oil pipelines, electrical transmission or distribution lines, and telecommunication or fiber optic lines. Utility involvement is not uncommon on ADOT projects and may require relocation or amendment of the utility or utility installation within ADOT ROW. ADOT utilities are the responsibility of ADOT's Utility and Railroad Engineering Section.

### *What Is an Appropriate Study Area for Utilities?*

The study area for utilities is generally about 500 feet beyond the proposed ROW for a planned transportation project.

### *How Are Utilities Identified?*

The primary source of utility information is the design concept report that accompanies the EA or EIS. If the design concept report is not complete, coordination with the design engineer is necessary to obtain utility information. Utility information for the design concept report is generally identified using previous utility surveys, information from private utility companies, and, in the case of projects involving existing roadways or bridges, as-built information from ADOT.

### *How Are Utilities Analyzed, Mitigated, and Documented?*

Existing utilities in the study area are identified with their location and a description of the utility (company name, type, below- or aboveground, and aboveground aerial distance). If there are any potential utility conflicts, it should be noted whether ADOT or the utility company has prior rights. Potential impacts on utilities such as relocation or adjustment should be disclosed, who is responsible for the utility relocation or adjustment (ADOT, the contractor, or the utility), and potential impacts on utility customers. If federal funds are used to relocate utilities, it is important to verify that the new utility location is included in the project study area and is environmentally reviewed.

Strategies to reduce utility impacts often include ADOT coordinating with utility companies to minimize the effect of utility relocations and adjustments, developing construction schedules to coincide with scheduled maintenance periods and/or off-peak loads, and notifying customers of any service disruption. Because impacts on utilities are rarely, if ever, adverse, these strategies are not mitigation measures, but standard ADOT practice.

### *What Coordination Is Required for Utilities?*

Primary coordination for NEPA analysts is with the project's design engineer. Utility coordination meetings are the responsibility of ADOT and its design and construction contractors, and would be part of the project development and coordination process and would continue through final design and construction.

### *Where Are Utility Laws, Regulations, and Guidance Found?*

While the guidance and laws cited below offer more detail than the typical NEPA document would require, they provide helpful background information:

- FHWA construction and maintenance regulations (23 CFR 635)  
[https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title23/23cfr635\\_main\\_02.tpl](https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title23/23cfr635_main_02.tpl)
- FHWA utility regulations (23 CFR 645)  
<https://www.gpo.gov/fdsys/granule/CFR-2011-title23-vol1/CFR-2011-title23-vol1-part645>
- ADOT Utilities and Railroad Engineering Section  
<https://www.azdot.gov/business/engineering-and-construction/utility-and-railroad-engineering/utility-coordination>

### *How Is a Utilities Analysis Different in an EA Versus an EIS?*

There is no difference in how utilities are analyzed in an EA or EIS.

## Visual Resources

The assessment of aesthetic impacts of proposed actions is grounded in federal law, policy, and agency regulations. NEPA requires the federal government “to use all practicable means ... [to] ... assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings” [(42 USC 4331); NEPA Section 101(b)(2)]. Additionally, NEPA Section 202 (42 USC 4342) established the CEQ, whose members are “to be conscious of and responsive to the scientific, economic, social, aesthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.”

Visual resources are part of the project’s affected environment. A visual resources analysis studies the relationship between viewers and their visual surroundings, and their reactions to changes in those surroundings. FHWA guidance for visual impact analysis is found in the 2015 *Guidelines for the Visual Impact Assessment of Highway Projects*. These guidelines are not binding, but most states use them. Where needed or desired, however, states may use other visual assessment methodologies.

### *What Is an Appropriate Study Area for Visual Resources?*

Visual resource analysis defines an area of visual effect, which is the area that can be seen by viewers (viewsheds) and is constrained by physical limitations (for example, topography) and the limits of human sight.

### *How Are Visual Resources Identified?*

Viewsheds are identified by developing and analyzing digital terrain models, followed with a field visit. Digital terrain models are limited to topography and do not show features that can obscure views, such as vegetation or buildings, or an area’s atmospheric conditions.

From this research, one or multiple landscape units (landscapes with a particular visual identity) are identified and subsequently described with regard to their geography, biology, and social conditions. For complex projects, key views in each landscape unit are identified and used to develop appropriate visual simulations.

Also inventoried are the existing affected environment and affected population. The visual affected environment is the sum of natural, cultural, and project visual resources. The affected population are people—such as residents, business owners, employees, and customers, recreational and park users, etc.—that have a view of an existing transportation facility or may have a view from a location near a new future corridor (viewers of the project) and travelers (viewers from the project), and what these viewers like and dislike about the existing visual character of the area of visual effects.

### *How Are Visual Resources Analyzed, Mitigated, and Documented?*

Visual resources are analyzed by assessing the compatibility of the impact (do the project components and the existing environment have compatible visual characteristics of scale, form, and material?), the sensitivity to the impact (do viewers see and care about a project’s impacts?), and the degree of impact (is it beneficial, adverse, or neutral;

minor, moderate or severe?). The assessment is described in a narrative and visual simulations are created, if possible.

Mitigation methods for adverse impacts are: avoid the impact, minimize the impact, or compensate for the impact. In the case of visual resources, existing visual quality can be enhanced by improving visual resources or improving viewer experience. Mitigation should be politically and financially feasible to the community, and be possible, practicable, and context-sensitive. Mitigation should not cause additional negative impacts.

#### *What Coordination Is Required for Visual Resources?*

If a project crosses or is near land under the jurisdiction of another federal or tribal agency, that agency's visual impact assessment methodology (if applicable) may need to be used for that portion of the project. Specifically, ADOT is in a Four-Agency Partnership with the Bureau of Land Management, U.S. Forest Service, and FHWA to coordinate their project development processes and how input on projects is shared (<https://www.azdot.gov/business/programs-and-partnerships/partnering/public-partnerships/four-agency-partnership>). Coordination should also be undertaken with affected jurisdictions and the public to obtain their input and preference for potential visual enhancement measures for the proposed action, such as context sensitive solutions if they would be a feasible measure from design and economic perspectives.

#### *Where Are Visual Resources Laws, Regulations, and Guidance Found?*

NEPA and CEQ do not stipulate specific methods to evaluate visual impacts. Over time, federal agencies have developed their own approaches. The 2015 FHWA guidelines (noted below) represent a current effort to create guidelines acceptable to federal and state transportation agencies.

- FHWA Guidelines for the Visual Impact Assessment of Highway Projects (January 2015)  
[https://www.environment.fhwa.dot.gov/env\\_topics/other\\_topics/VIA\\_Guidelines\\_for\\_Highway\\_Projects.aspx](https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx)

#### *How Is a Visual Resources Analysis Different in an EA Versus an EIS?*

The level of visual resource analysis is based on project scope, complexity, and controversy. The FHWA 2015 guidelines offer direction on how to determine whether a visual impact assessment is needed and what type. This process can involve judgment calls and thus may need study team input. The level of the visual impact assessment is independent of the type of NEPA document.

## Energy

Energy use associated with roadway projects is primarily fossil fuel consumption associated with vehicles traveling within and around the study area. Other energy use would be associated with construction and maintenance of the proposed project and, to a lesser degree, electrical energy use for lighting and traffic signals.

### *What Is an Appropriate Study Area for Energy?*

The study area for energy is typically the same as the air quality study area since vehicular energy consumption is closely related to emissions that affect air quality.

### *How Are Energy Resources Identified?*

Energy resources relevant to transportation projects are those expended during construction of the project and subsequent operation of the improved transportation facility. The key metrics needed for the operational energy analysis include vehicle miles traveled per year and fuel expenditure per year. Vehicle miles traveled per year is typically derived from daily vehicle miles traveled data, with such estimates provided by an MPO through its travel demand model. Fuel expenditures are generally derived from vehicle mix as provided by the MPO; the vehicles' average fuel economies (from the Energy Information Administration), adjusted for alternatives based on projected average speed; vehicle miles traveled; and vehicle hours traveled.

Data related to energy use during maintenance may be collected based on the existing roadway or similar roadway if the proposed project is a new facility, on lighting and traffic signals, and on other annual expenditures of energy.

Helpful sources of information include the U.S. Department of Transportation Bureau of Transportation Statistics and the Texas Transportation Institute's Annual Urban Mobility Report.

### *How Are Energy Considerations Analyzed, Mitigated, and Documented?*

For most EIS-level projects, the environmental document should discuss, in general terms, the major direct and indirect operational and construction energy needs and the conservation potential of the alternatives being analyzed. Direct energy impacts are those related to the energy consumed by vehicles using the facility. Indirect impacts include construction energy, and such items as the effects of any changes in types of vehicles used or in the numbers of vehicles (length of facility, vehicle speed, and LOS). The alternative's relationship and consistency with a state and/or regional energy plan, if one exists, should also be indicated.

The final environmental document should identify any energy conservation measures that would be implemented as a part of the preferred alternative. Measures to conserve energy may include the use of high-occupancy vehicle incentives and measures to improve traffic flow.

Types of minimization and mitigation measures (that is, energy commitments) are project-specific; however, they may include such measures as follows:

- using energy-efficient light bulbs in traffic signals and lights

- using materials and staging areas close to project construction sites
- using recycled materials, wherever practicable, to increase energy efficiency

Established template text:

Energy resources would be affected by the proposed project. The primary energy consideration is the use of fossil fuels and other fuels to power vehicles traveling in and around the study area, and those vehicles needed to construct and maintain the proposed project. Other energy considerations include increases in electrical energy use associated with project operational features, such as traffic signals and lights.

Energy impacts are important to this project because energy is closely related to air quality and greenhouse gas emissions. It should be considered throughout the planning, design, construction, and use of a transportation project.

### *What Coordination Is Required for Energy?*

Agency coordination is typically not required for energy considerations. In some cases, it may be necessary to contact agencies, such as MPOs, to obtain information on energy consumption.

### *Where Are Energy-related Laws, Regulations, and Guidance Found?*

- FHWA Technical Advisory T 6640.8A  
[https://www.environment.fhwa.dot.gov/Legislation/NEPA/guidance\\_preparing\\_env\\_documents.aspx#ener](https://www.environment.fhwa.dot.gov/Legislation/NEPA/guidance_preparing_env_documents.aspx#ener)
- Energy Policy Act of 2005 (Public Law 109-58, 42 USC 13201 et seq.)  
<https://www.gpo.gov/fdsys/pkg/PLAW-109publ58/pdf/PLAW-109publ58.pdf>
- Pollution Prevention Act of 1990 (42 USC 13101 et seq.)  
<https://elr.info/sites/default/files/articles/22.10392.htm>
- Executive Order 13693, Planning for Federal Sustainability in the Next Decade  
<https://www.fedcenter.gov/programs/eo13693/>
- Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use  
[https://www.energy.gov/sites/prod/files/nepapub/nepa\\_documents/RedDont/Req-EO13211energyregs.pdf](https://www.energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/Req-EO13211energyregs.pdf)
- Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, Section 1121, HOV Facilities  
<https://www.gpo.gov/fdsys/pkg/PLAW-109publ59/pdf/PLAW-109publ59.pdf>

### *How Is an Energy Analysis Different in an EA Versus an EIS?*

ADOT typically conducts an energy analysis only for large projects requiring an EIS.

## Drainage and Floodplain Considerations

Guidelines and orders that regulate drainage and floodplains do so to avoid or minimize development impacts on surface waters (rivers, lakes, etc.) and on groundwater (below-surface flows and underground wells) in the project area.

### *What Is an Appropriate Study Area for Drainage and Floodplain Considerations?*

The study area encompasses the watersheds that contribute runoff to the project area.

### *How Are Resources Identified for Drainage and Floodplain Considerations?*

Multiple water resources should be researched, including:

- flow patterns, estimated magnitude of runoff, and major watercourses and features
- existing drainage data and reports
- FEMA Flood Insurance Rate Maps, to identify locations and extents of floodplains and to determine the 100-year floodplain boundaries relative to the proposed action
- National Flood Insurance Program status of affected communities
- groundwater wells

### *How Are Drainage and Floodplain Considerations Analyzed, Mitigated, and Documented?*

Research should determine the impacts on 100-year floodplains caused by the proposed project, such as how upstream dams, impoundments, culverts, open channels, and other similar diversions may affect flows and flooding. The amount of increased surface area and runoff the proposed action would generate is calculated to determine whether there would be surface water quality impacts from pollutants. The number of floodplain crossings is determined, and how fill or bridges would affect the floodplain. Groundwater wells, if affected, are determined to be either abandoned or replaced.

Established template text:

This section identifies drainage and floodplain issues to be considered when evaluating impacts resulting from the build and No-Build alternatives. Included in this analysis are applicable drainage patterns, such as surface water and groundwater, and floodplains. Surface water includes water present above the soil surface such as rivers, streams, lakes, pools, and stormwater runoff. Groundwater is water that flows below the soil surface that can be collected by underground wells or other facilities constructed for collecting water or for monitoring.

Executive Order 11988, Floodplain Management, requires that impacts on floodplains be evaluated for all federal actions, and directs agencies to reduce impacts on floodplains, minimize flood risks on human safety and well-being, and restore and preserve floodplain values. Floodplains are delineated and managed by the Federal Emergency Management Agency (FEMA). A floodplain is generally level land subject to periodic flooding from an adjacent body of water.

A 100-year flood is a storm having a 1 percent chance of being exceeded in magnitude in any given year. The 100-year floodplain includes areas adjoining a water body that are inundated by water during a 100-year flood. The floodway is the area within the floodplain where the water is likely to be the deepest and fastest; this area should be kept free of obstructions to allow 100-year floodwaters to move downstream without increasing the water surface elevation more than 1 foot. FEMA Flood Insurance Rate Maps depict the delineated 100-year floodplain. The 100-year floodplain is divided into flood zones, including:

Zone A: areas subject to inundation by 100-year floods that have been identified through qualitative methodologies; no base flood elevations have been determined

Zone AE: areas subject to inundation by 100-year floods that have been identified through quantitative methodologies; base flood elevations have been determined

Zone AH: areas subject to inundation by 100-year shallow floods where ponding occurs and flood depths are between 1 and 3 feet deep; base flood elevations have been determined

Zone AO: areas subject to inundation by 100-year shallow floods typified by sheet flow on sloping terrain with flood depths of between 1 and 3 feet; base flood elevations have been determined

#### *What Coordination Is Required for Drainage and Floodplain Considerations?*

Coordinate with flood control districts (regarding drainage feature design), floodplain managers, municipal storm sewer system agencies, and irrigation districts (regarding their conveyance canals).

#### *Where Are Drainage and Floodplain Considerations Laws, Regulations, and Guidance Found?*

Protection of floodplains and floodways is required by:

- Executive Order 11988, Floodplain Management  
<https://www.archives.gov/federal-register/codification/executive-order/11988.html>
- U.S. Department of Transportation Order 5650.2, Floodplain Management and Protection  
<https://www.fhwa.dot.gov/engineering/hydraulics/policymemo/order56502.pdf>
- Federal-aid Policy Guide (23 CFR 650A)  
<https://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0650a.htm>
- FHWA Technical Advisory T 6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents (1987)  
[https://www.environment.fhwa.dot.gov/legislation/nepa/guidance\\_preparing\\_env\\_documents.aspx](https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx)

*How Is a Drainage and Floodplain Considerations Analysis Different in an EA Versus an EIS?*

For an EA or EIS, a study is prepared that includes a project description, maps delineating where the project encroaches into the floodplain, avoidance alternatives for the encroachments (and whether they are practicable), and minimization or mitigation measures. The level of detail is commensurate with the complexity of the project and can be prepared as a separate technical report that supports the NEPA document.

## Sections 404, 401, and 402 of the Clean Water Act and National Pollutant Discharge Elimination System

The Clean Water Act (CWA) of 1972 was established with the objective of restoring and preserving the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint sources of pollution, providing assistance to publicly owned wastewater treatment plants, and maintaining the integrity of wetlands. Water features—including surface waters, riparian areas, intermittent streams, ephemeral drainages, and wetlands—are subject to regulations defined in Sections 404 and 401 of the CWA, and construction or industrial-related activities potentially affecting these water features are regulated under Section 402.

Section 404 regulations are administered by USACE, with oversight authority from EPA. Compliance with Section 404 is required when there is discharge of dredge or fill material in Waters. Waters are currently defined in 33 CFR 328.3.

Section 401 provides certification for Section 404 permits that applicable water quality standards are not violated. Section 401 certifications are issued by ADEQ, EPA, or tribal agency, depending on the project location.

Section 402 is the National Pollutant Discharge Elimination System (NPDES) program regulated by EPA. Section 402 addresses water pollution by managing, identifying, and potentially eliminating point source discharge pollutants to Waters. EPA has authorized the State of Arizona to operate under a state-level permit program, the Arizona Pollutant Discharge Elimination System (AZPDES) Permit Program, although Section 402 permitting may be provided by ADEQ, EPA, or tribal agency, depending on the project location. As part of compliance with Section 402, ADOT complies with both the Construction General Permit (whether AZPDES or NPDES) and ADOT's municipal separate storm sewer system (MS4) permit. As a regulated MS4, ADOT must implement a stormwater management program and address minimum control measures. ADOT's approach to implement this program and comply with the MS4 permit is documented in the Stormwater Management Plan and supporting documents, listed on ADOT's Water Resources webpage.

### *What Is an Appropriate Study Area for Sections 404, 401, and 402?*

The entire project study area is evaluated for Waters in relation to identified alternatives. The size of the study area determines the approach to identifying Waters; small study areas may allow a relatively accurate delineation of potential Waters and larger areas may focus on larger Waters or estimate the number of Waters. As a preferred alternative is selected in the environmental document, a preliminary or approved jurisdictional delineation (JD) may be prepared for the project corridor or ROW. Section 404 permitting is not typically completed until impacts to Waters are accurately defined, which occurs at the 60 percent design stage. Coordination with the ADOT Environmental Planner, ADOT Water Resources Coordinator, and the ADOT USACE liaison is necessary to ensure the approach and appropriate level of assessment is considered. Section 401 certifications are part of Section 404 permitting and are influenced by the specific Section 404 permit and requirements.

Virtually all transportation projects that require an EA/EIS will be required to follow the Section 402 NPDES or AZPDES programs. During the design of the preferred

alternative, the requirements to control point source discharge pollutants to Waters are addressed.

#### *How Are Waters Under Sections 404, 401, and 402 Identified?*

During the initial stages of an EA/EIS, Waters subject to Section 404 are typically identified from existing data and aerial mapping. Once a preferred alternative is identified for the project, detailed aerial review and a field investigation may be completed within the project corridor or ROW limits. The Corp's jurisdictional limits for most Section 404 Waters in Arizona are identified by an ordinary high water mark (OHWM) defined at 33 CFR 328.3(e): a line on the bank or shore established by the fluctuations of water and indicated by certain physical characteristics. USACE developed *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* and Regulatory Guidance Letter 05-05 – *Ordinary High Water Mark (OHWM) Identification* to assist in determining the OHWM in the arid West, including Arizona. The *Corps of Engineers Wetlands Delineation Manual* (1987) provides guidance in identifying and evaluating the jurisdictional limits of wetlands that are generally “the point on the ground at which a shift from wetlands to non-wetlands or aquatic habitats occurs.”

Section 401 certifications are part of Section 404 permitting and apply to projects with impacts on Waters within the OHWM. Section 401 certificates are determined by the specific Section 404 permit and requirements.

The Section 402 NPDES or AZPDES program requirements are identified generally during EA/EIS development and specifically during the final design of the selected alternative. The primary consideration for identifying Section 402 requirements is the project's construction impacts on the ground surface outside of the Waters and preventing the discharge of pollutants into Waters.

#### *How Are Waters Under Sections 404, 401, and 402 Analyzed, Mitigated, and Documented?*

A Section 404 JD is the process through which the boundaries and other physical characteristics of Waters and wetlands are documented and evaluated for the project. The JD is typically completed after the preferred alternative is identified and may be completed before approval of the final EA or EIS. The JD of potential Waters must clearly differentiate between nonwetland water features and wetlands and follow the respective guidance documents. A JD is the resulting report submitted to USACE for its consideration and approval. Regulatory Guidance Letter 08-02 – *Jurisdictional Determinations* provides guidelines for processing JDs and describes the differences between preliminary and approved JDs.

After approval of the JD, the anticipated type of permit (nationwide permit, regional general permit, or individual permit) that will be required for the project is preliminarily identified. Section 404 permitting occurs after issuance of the FONSI or ROD, during the design of the project (typically after 60 percent design) when the anticipated type (permanent or temporary) and quantity of impacts on Waters that will result from the project are reasonably known. Section 404 permitting requires that all project impacts on Waters be evaluated for avoidance and minimization and selection of the least

environmentally damaging practicable alternative will be given emphasis in relation to impacts on Waters. Mitigation for the loss of Waters (unavoidable, permanent impacts) may include bringing the area back to preconstruction conditions or compensation in the form of in-lieu fees. Alternatively, when an impact is not within the service area of an approved in-lieu fee program, the permittee may be responsible for providing the compensatory mitigation at the discretion of USACE. Mitigation is determined during the permit application and USACE permit approval.

Section 401 certifications are part of Section 404 permitting and any documentation and potential mitigation is determined by the specific Section 404 permit and requirements identified after issuance of the FONSI or ROD.

The Section 402 NPDES or AZPDES program requirements are identified generally during EA/EIS development and specifically during the final design of the selected alternative. Generally, construction activities that disturb more than 1 acre of land require a NPDES or AZPDES permit and the preparation of a stormwater pollution prevention plan that is implemented during construction. Specific best management practices and pollution control devices to mitigate impacts and to comply with Section 402 permits and requirements are identified based on construction impacts, after issuance of the FONSI or ROD. ADOT's MS4 permit should also be considered, if applicable, for identifying mitigating effects that could result from construction activities on stormwater flows into Waters.

Established template text:

The Clean Water Act (CWA) is the primary federal statute governing discharge of pollutants into jurisdictional waters of the United States (Waters), which, in Arizona, include perennial and ephemeral watercourses and their tributaries and adjacent wetlands. The principal goal of the CWA is to establish water quality standards to restore and maintain the chemical, physical, and biological integrity of the nation's Waters by preventing point (concentrated output) and nonpoint (widely scattered output) pollution sources.

Section 404 of the CWA regulates the discharge of earthen fill, concrete, and other construction materials into Waters, and authorizes the U.S. Army Corps of Engineers (USACE) to issue permits regulating the discharge of dredge or fill material into Waters. The limits of Waters are defined through a preliminary or approved jurisdictional delineation (JD) accepted by USACE. A preliminary JD assumes all drainages in a given area are subject to the jurisdiction of USACE. An approved JD requires that all ephemeral drainages display a significant nexus to the downstream traditional navigable water, which for this project is [state location]. The most common types of Section 404 permits for transportation projects are (1) Nationwide Permit 14 (Linear Transportation Projects), which authorizes projects with less than 0.5 acre of permanent loss of Waters with no impacts on special aquatic areas such as wetlands, and (2) individual permits, which are required for projects that affect more than 0.5 acre of Waters or cause impacts on jurisdictional wetlands. An individual permit requires mitigation to minimize or offset the impacts to Waters with no net loss of the functions and values of the water resource.

Section 401 of the CWA requires any applicant requesting a federal permit or license for activities that may result in discharge into Waters to first obtain a Section 401 certification from the state in which the discharge originates. The Section 401

certification verifies that the prospective permits comply with the state's applicable effluent limitations and water quality standards. Federal permits or licenses are not issued until the Section 401 certification is obtained. ADEQ [or EPA/Tribe] is responsible for the Section 401 certification. If a project meets the terms and conditions of a Nationwide Permit and the criteria for conditional Section 401 certification, notification to ADEQ is not required. However, if a project does not meet the criteria for conditional certification, such as projects occurring within 0.25 mile of unique or impaired waters, an individual Section 401 certification application to the ADEQ is required.

Section 402 of the CWA formed the National Pollutant Discharge Elimination System (NPDES), which regulates pollutant discharges, including stormwater, into Waters. A NPDES permit sets specific discharge limits for point-source pollutants into Waters and outlines special conditions and requirements for a particular project to reduce impacts on water quality. In 2002, EPA authorized the Arizona Department of Environmental Quality (ADEQ) to administer the NPDES program at the state level, called the Arizona Pollutant Discharge Elimination System (AZPDES). AZPDES permits require that the project be designed to protect Waters and during construction that the contractor be in compliance with all plans and requirements of the permit.

The Arizona List of Unique Waters [Arizona Administrative Code R18-11-112(E)] and the Arizona 2006/2008 Section 303(d) List of Impaired and Not Attaining Waters were reviewed to determine whether any unique or impaired waters are present. [Describe whether unique waters, EPA Section 303(d) non-attaining impaired waters, or EPA Section 303(d) impaired waters occur in or within 1 mile of the study area.]

#### *What Coordination Is Required for Sections 404, 401, and 402?*

If Waters are located in the project study area, consult the ADOT EP NEPA planner, who consults with the ADOT water resources coordinator to determine the approach to the Section 404 process and to define the appropriate regulatory agency involved. During the Section 404 process, the ADOT water resources coordinator consults with the ADOT USACE liaison. Early coordination with USACE is particularly important on projects likely to require an individual permit, as it is critical that the preferred alternative be consistent with the USACE-identified 404(b)(1) least environmentally damaging practicable alternative.

Coordination for Sections 401 and 402 typically occurs after the EA FONSI or EIS ROD; coordinate with the ADOT EP NEPA planner with any questions.

#### *Where Are Sections 404, 401, and 402 Laws, Regulations, and Guidance Found?*

The following resources provide additional information regarding assessments under Sections 404, 401, and 402:

- Clean Water Act (33 USC 1251 et seq. [1972]), Sections 401, 402, and 404  
<https://www.gpo.gov/fdsys/pkg/USCODE-2011-title33/pdf/USCODE-2011-title33-chap26.pdf>

- ADOT Clean Water Act Section 404/401 Guidance Manual  
[https://www.azdot.gov/docs/default-source/environmental-planning-library/adot404\\_401guidance-manual\\_final\\_october2013.pdf?sfvrsn=2](https://www.azdot.gov/docs/default-source/environmental-planning-library/adot404_401guidance-manual_final_october2013.pdf?sfvrsn=2)
- 33 CFR 328 – Definitions of Waters of United States  
<https://www.gpo.gov/fdsys/granule/CFR-2012-title33-vol3/CFR-2012-title33-vol3-part328>
- Regulatory Guidance Letter 05-05 (December 7, 2005) – Ordinary High Water Mark Identification  
<http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-05.pdf>
- USACE Jurisdictional Determination Form Instructional Guidebook (May 30, 2007)  
[http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/cwa\\_guide/jd\\_guidebook\\_051207final.pdf](http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/jd_guidebook_051207final.pdf)
- A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (August 2008)  
<http://www.dtic.mil/dtic/tr/fulltext/u2/a486603.pdf>
- Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in Rapanos v. United States & Carabell v. United States (December 2, 2008)  
[https://www.epa.gov/sites/production/files/2016-02/documents/cwa\\_jurisdiction\\_following\\_rapanos120208.pdf](https://www.epa.gov/sites/production/files/2016-02/documents/cwa_jurisdiction_following_rapanos120208.pdf)
- 1987 *Corps of Engineers Wetlands Delineation Manual*  
<http://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf>
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)  
[https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb1046489.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046489.pdf)
- 33 CFR 323 – Permits for Discharges of Dredged or Fill Materials into Waters of the United States  
<https://www.gpo.gov/fdsys/granule/CFR-2012-title33-vol3/CFR-2012-title33-vol3-part323>
- ADOT EP – Water Resources – Stormwater Discharge Permit  
<https://www.azdot.gov/business/environmental-planning/water-resources/stormwater-discharge-permit>
- AASHTO Practitioner’s Handbook 14: Applying the Section 404(b)(1) Guidelines in Transportation Project Decision-Making (August 2016)  
<https://environment.transportation.org/pdf/programs/ph14-2.pdf>

*How Is an Analysis for Sections 404, 401, and 402 Different in an EA Versus an EIS?*

There are generally no differences in how Sections 404, 401, and 402 are analyzed in an EA or EIS.

## Sole Source Aquifers

Sole source aquifers are defined by EPA as aquifers that supply at least 50 percent of the drinking water for their service areas and where there is no reasonable available alternative drinking water source if the aquifer becomes contaminated. The sole source aquifer program, authorized by Section 1424(e) of the Safe Drinking Water Act of 1974, allows EPA to designate a sole source aquifer and develop a review area where federally funded projects within that area must consider the potential for contamination of the aquifer. Two sole source aquifers are identified in southern Arizona: the Upper Santa Cruz and Avra Basin Aquifer and the Bisbee-Naco Aquifer.

### *What Is an Appropriate Study Area for Sole Source Aquifers?*

Any project or portion of a project that lies within the boundary of a sole source aquifer must address the sole source aquifer.

### *How Is a Sole Source Aquifer Identified?*

The boundaries of sole source aquifers are mapped by EPA and can be found on the agency's website: <https://www.epa.gov/dwssa>.

### *How Is a Sole Source Aquifer Analyzed, Mitigated, and Documented?*

The particular project and associated design and drainage activities would determine the impact the project could have on a sole source aquifer. Generally, transportation projects are not expected to affect sole source aquifers and mitigation is not required. See the language below regarding coordination with EPA when the project is within the boundary of a sole source aquifer.

Established template text:

Under Section 1424(e) of the Safe Drinking Water Act, the U.S. Environmental Protection Agency (EPA) designated the [insert Upper Santa Cruz and Avra Valley Basin or Bisbee-Naco], which underlies the study area, as a sole source aquifer. This designation means that the area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health.

As a result of this designation, proposed projects receiving federal financial assistance with the potential to contaminate the designated sole source aquifer are subject to EPA review.

To establish compliance with Section 1424(e) of the Safe Drinking Water Act, a letter describing the project area and scope, anticipated involvement of groundwater during construction, and methods to protect groundwater resources during construction was sent to EPA's Region 9 Drinking Water Protection Section.

This project is within the Upper Santa Cruz and Avra Basin Sole Source Aquifer designated area. Historic well data obtained from the Arizona Department of Water Resources indicate that the regional groundwater depth has ranged from about # to # feet below ground surface along this location. It should be noted that groundwater levels could fluctuate because of seasonal variations, irrigation, groundwater withdrawal or recharge, and other factors not apparent at the time of the most recent

fieldwork. Perched water conditions may also occur across the site; however, their depths and horizontal extent are subject to seasonal changes.

This is a transportation project, and no additional consumption of water, no impact on aquifer recharge or discharge areas, and no new wells or discharges of pollutants around existing well sites or to the aquifer are anticipated. Materials used for the pier construction would not leach to the aquifer, and methods used for construction would not create a pathway for other materials to reach the aquifer.

All wells in the project area would be properly abandoned in accordance with Arizona Department of Water Resources standards prior to construction activities; therefore, there will be no potential for discharges to the sole source aquifer. This is a highway project, and no additional consumption of water, no impact on aquifer recharge or discharge areas, and no new wells or discharges of pollutants around existing well sites or to the aquifer are anticipated.

#### *What Coordination Is Required for Sole Source Aquifers?*

If the project is located within the boundary of a sole source aquifer, a Section 1424(e) review by EPA is required. Project information and a request for a review will be provided to EPA. More information can be found on EPA's website (<https://www.epa.gov/dwssa>).

#### *Where Are Sole Source Aquifer Laws, Regulations, and Guidance Found?*

The following resources provide additional information regarding assessments under Sections 404, 401, and 402:

- EPA website – Sole Source Aquifers for Drinking Water  
<https://www.epa.gov/dwssa>
- Section 1424(e) of the Safe Drinking Water Act  
<https://www.epa.gov/dwssa/overview-drinking-water-sole-source-aquifer-program>

#### *How Is a Sole Source Aquifer Analysis Different in an EA Versus an EIS?*

There are generally no differences in how sole source aquifers are analyzed in an EA or EIS.

## Biological Resources

Roadway construction and operation activities with the potential to affect wildlife, vegetation, and protected species or their habitats are required to consider biological resources regulated by various federal and state agencies. Regulations and guidance provided by these agencies offer direction that may influence the roadway design, construction, and operation to ensure regulations and protected biological resources are addressed.

The Endangered Species Act (ESA) of 1973, as amended, provides for the listing and protection of species designated as threatened, endangered, candidate, or proposed. Under Section 7 of the ESA, lead federal agencies are required to consult with USFWS to ensure that their actions do not jeopardize the continued existence of threatened or endangered species or destroy any designated critical habitat.

Although the ESA is a major component to address in the EA or EIS, other federal and state biological resource regulations and guidance are included in the NEPA documentation that address the following:

- Bald and Golden Eagle Protection Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act, as needed<sup>1</sup>
- Arizona Native Plant Law
- Arizona Species of Greatest Conservation Need, as needed
- invasive species
- wildlife connectivity
- other federal agency and tribal sensitive species, as needed

### *What Is an Appropriate Study Area for Biological Resources?*

The size of the study area for biological resources varies depending on the project location, project size, and potential species to be addressed. The study area for a Tier 1 NEPA document is generally larger than the study area for a project-specific (Tier 2) NEPA document. The specific biological resources to be addressed for a project also have various requirements for the area of consideration (for example, protected native plants versus wide-ranging wildlife). The study area may require taking into account potential wildlife movement corridors that may be a great distance from the project location or considering impacts from the construction and operation of the project, such as noise, light, or sedimentation. The initial biological resources document is typically a technical document that addresses biological information for the entire study area and describes biological factors specifically in the area around and within the build alternative(s), as applicable. When a preferred alternative is identified, it is appropriate to focus the biological study on the corridor and adjacent properties. If ESA-listed species are affected and a biological assessment (BA) or biological evaluation (BE) is required, that document also focuses on the corridor and adjacent properties but addresses more

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<sup>1</sup> if issues arise during the project development process

specific locations and potential impacts. Prior to defining the study area for addressing biological resources, consult with the ADOT EP Planner and ADOT biologist to establish agreement on the appropriate study area.

### *How Are Biological Resources Identified?*

Biological resources addressed in the EA or EIS include ESA-listed species, federal land managing agency listed species (as applicable), state-listed species, migratory birds, bald and golden eagles, native plants, habitat and vegetative communities, and wildlife connectivity. Discuss the details of the project with the ADOT EP planner and biologist to ensure there is agreement regarding any special considerations or required activities and that any necessary agency contacts can be made.

Biological resources are identified using existing natural resource data, web-based environmental review tools, databases from the Arizona Game and Fish Department (AGFD) and USFWS, coordination with resource agencies, on-site reconnaissance-level field surveys, and, if on lands managed by other agencies or tribes, their respective resource data, if applicable.

### *How Are Biological Resources Analyzed, Mitigated, and Documented?*

The ADOT process is intended to ensure a project's compliance with applicable federal, state, tribal, and other biological resources-related laws, regulations, orders, and policies. The initial process for assessing the appropriate analysis for biological resources is preparing a technical memo, ideally developed by the consultant biologist that provides the information that documents the key biological considerations that will establish the approach for biological investigations during the project. The technical memo will be based on information obtained from sources such as the AZGFD Environmental Review tool, USFWS Information, Planning and Conservation Website, aerial imagery, previous area studies, and any other readily available information. The ADOT biologist will be consulted and agreement reached on the information in the technical memo. Biological resources/issues typically addressed through the ADOT biology process include, but are not necessarily limited to, the following areas.

#### Species or Habitat Protected by the Federal Endangered Species Act

The primary focus of the ADOT biology process is compliance with the federal ESA; therefore, the following ESA-protected species and habitats are the primary focus of ADOT biological documents:

- species listed as threatened or endangered under Section 4 of the ESA
- species proposed for listing as threatened or endangered
- designated or proposed critical habitat
- experimental nonessential populations, that is, "10j" populations

Species with candidate status (that is, candidates for listing as threatened or endangered) receive no protection under the ESA, but often receive some protection through other agency special-status designations, as identified below. Candidate species

are evaluated in ADOT biological documents but are treated as sensitive/other special-status species.

#### Other Protected Species

- eagles protected by the federal Bald and Golden Eagle Protection Act
- birds protected by the federal Migratory Bird Treaty Act
- native plants protected by the Arizona Native Plant Law
- species subject to official conservation agreements
- culturally sensitive species

#### Agency-specific Special-status Species

- Navajo Nation Endangered Species List species (when on Navajo Nation land)
- other tribal sensitive species (when on other tribal lands)
- U.S. Forest Service sensitive species (when on national forest lands)
- U.S. Bureau of Land Management sensitive species (when on Bureau of Land Management lands)
- AGFD Species of Greatest Conservation Need

#### Other Species, Resources, or Issues

- wildlife connectivity/movement
- invasive species
- riparian areas and wetlands
- important bird areas

Initially, biological resources are, in most cases, documented in a biological resources technical document that typically addresses the entire study area. Subsequent documents address biological resources in more detail when a preferred alternative is identified. Depending on the potential for threatened and endangered species to occur within the study area, a BA or BE will likely be required for an EA or EIS. Guidelines for the format and information to include in the BA or BE are provided by ADOT. Species protected by federal land-managing agencies and tribes are included in the biological document, as applicable. Based on the conclusions in the BA or BE, when Section 7 consultation is required, the document is submitted to USFWS and a letter is provided to USFWS requesting concurrence on the effects determinations or a Biological Opinion. The BA or BE outlines conservation recommendations and measures to minimize effects and any monitoring or reporting that may be required.

ADOT EP has addressed biological resource impacts across a wide range of project circumstances for a wide range of species. Specific project impacts may require modification of developed measures or, in some situations, may require new measures that would be specific to the project and impacts. Since factors such as the type of NEPA document (EA, EIS, Tier 1 EIS) and timing between NEPA approval and project

construction can affect the level of detail and type of mitigation measures that should be developed for biological resources, the ADOT EP planner and biologist should be consulted to develop a mitigation strategy.

### *What Coordination Is Required for Biological Resources?*

Agency coordination for biological resources begins during NEPA scoping. Scoping letters request comments, concerns, and information about biological resources from USFWS, AGFD, and federal land-managing agencies and tribes, as applicable. When a project is on federal or tribal lands, the level of biological documentation and species to be addressed may be gathered through the responses to the biology scoping letters.

Depending on the potential for threatened and endangered species to occur within the study area, a BA or BE may be required. Threatened and endangered species information for the BA or BE is generally obtained from AGFD and USFWS. Species information or protocols for federal land-managing agencies and tribes are obtained from that agency or tribe. When threatened and endangered species surveys are needed, AGFD and USFWS is contacted and given the location and dates of the survey. If a BA or BE is required and it is determined that a project may affect a threatened or endangered species or critical habitat, informal or formal Section 7 consultation with USFWS is required. If formal Section 7 consultation is required, USFWS prepares a Biological Opinion in response to the BA or BE, which identifies conservation recommendations and measures to minimize effects and any monitoring or reporting that may be required.

In order to finalize an EA or and EIS with respect to Section 7 resources, the following sequence occurs:

- 1 – A no effect determination is made and documented in a BE or BA and summarized in the EA or EIS,
- 2- A concurrence is received from USFWS when a may affect not likely determination is made or,
- 3 – A Biological Opinion is received USFWS if ADOT determines there would be adverse effects to a listed species.

### *Where Are Biological Resources Laws, Regulations, and Guidance Found?*

The following resources provide additional information regarding biological resources assessments:

- Endangered Species Act of 1973, as amended  
<https://www.fws.gov/endangered/laws-policies/>
- Bald and Golden Eagle Protection Act  
<https://www.fws.gov/midwest/midwestbird/eaglepermits/bagepa.html>
- Migratory Bird Treaty Act of 1918, as amended  
<https://www.fws.gov/laws/lawsdigest/migtrea.html>
- Executive Order 13112 on Invasive Species  
<https://www.invasivespeciesinfo.gov/laws/execorder.shtml#eo13112>

- USFWS Information, Planning, and Conservation System  
<https://ecos.fws.gov/ipac/>
- AGFD On-Line Environmental Review Tool  
<https://azhgis2.esri.com/>
- AGFD – HabiMap™ Arizona  
<http://www.habimap.org/>
- Arizona Department of Agriculture – Arizona Native Plant Law  
<https://agriculture.az.gov/plantsproduce/native-plants>
- ADOT Guidance for Federal-aid Projects – Biological Resources  
<https://www.azdot.gov/business/environmental-planning/biology>

*How Is a Biological Resources Analysis Different in an EA Versus an EIS?*

A biological resources technical document is prepared for most draft EAs and EISs that addresses the biology and setting for the study area. The technical document include an analysis of the biological resources and impacts associated with each alternative, which is important information to support identification of the preferred alternative; the document should also define any additional biological documentation needed during the EA and EIS process. If a BA or BE is prepared for the project (EAs that include one build alternative or final EAs or EISs that identify a preferred alternative), results of the BA or BE are summarized in the final EA or EIS. An exception to a BA or BE being completed for an EIS is the Tier 1 EIS. Tiered EISs can provide various levels of biological information based on the purpose of the tiering, but typically the Tier 1 EIS would provide a general level of analysis across a broad scale, and the detailed analysis would occur in a subsequent project-level EIS. Because the biology-related circumstances of the EA or EIS will vary based on the type of NEPA document, ESA species involvement, agency sensitive species, stakeholder involvement, and construction programming, coordination with the ADOT biologist must occur early to establish the driving biological concerns and to reach an agreement on the direction through the EA/EIS process.

## Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 USC 1271–1287) to preserve rivers with outstanding natural, cultural, and recreational values. It safeguards the special character of these rivers, while also recognizing the potential for their appropriate use and development. Wild and scenic rivers are managed by four federal agencies: the U.S. Forest Service, National Park Service, U.S. Fish and Wildlife Service, and Bureau of Land Management. Within the Wild and Scenic Rivers System, there are wild, scenic, and recreational designations.

### *What Is an Appropriate Study Area for Wild and Scenic Rivers?*

The study area for wild and scenic rivers is approximately 0.25 mile from the project limits. It should be noted that wild and scenic rivers may also be Section 4(f) resources and thus have the same study area.

### *How Are Wild and Scenic Rivers Identified?*

Arizona has two currently designated wild and scenic rivers: Fossil Creek and Verde River, which can be found on the Nationwide Rivers Inventory provided by the National Parks Service. The inventory also shows rivers recommended for listing in the National Wild and Scenic Rivers System. For projects on federal land, the land managers are required to manage rivers identified as eligible for listing as if they are listed.

### *How Are Wild and Scenic Rivers Analyzed, Mitigated, and Documented?*

If a designated wild and scenic river, or a river recommended for listing, occurs in the study area, use the following.

Established template text:

This project is located near [name of river], which is a listed [or eligible for listing as a] Wild and Scenic River. The Wild and Scenic Rivers Act, signed by Congress in 1968 established the National Wild and Scenic Rivers System, which includes rivers administered by the Bureau of Land Management, U.S. Forest Service, National Park Service, and U.S. Fish and Wildlife Service. Rivers are classified as wild, scenic, or recreational:

Wild – Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic – Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in place by roads.

Recreational – Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Examples of typical adverse effects on wild and scenic rivers (that is, those designated or recommended for listing as shown on the Nationwide Rivers Inventory), according to the National Park Service, include the following:

- destruction or alteration of all or part of the free-flowing nature of the river
- introduction of visual, audible, or other sensory intrusions that are out of character with the river or alter its setting
- deterioration of water quality
- transfer or sale of property adjacent to a Nationwide Rivers Inventory segment without adequate conditions or restriction for protecting the river and its surrounding environment
- foreclosure of options to classify any portion of a segment on the Nationwide Rivers Inventory as wild, scenic, or recreational

If the NEPA analyst determines that an adverse impact on a Wild and Scenic River that is listed or eligible for listing (on federal land) would occur, the ADOT EP planner should be immediately notified and consultation with the agency responsible for managing the river should be initiated.

#### *What Coordination Is Required for Wild and Scenic Rivers?*

Under the Wild and Scenic Rivers Act Section 5(d)(1), all federal agencies must seek to avoid or mitigate actions that would adversely affect wild and scenic rivers; therefore, coordination with the agency responsible for managing the river and the National Park Service should be undertaken as soon as possible to discuss avoidance, minimization, and mitigation. The National Park Service website has consultation instructions that should be followed.

#### *Where Are Wild and Scenic Rivers Laws, Regulations, and Guidance Found?*

- Wild and Scenic Rivers Program  
<https://www.nps.gov/orgs/1912/index.htm>
- Nationwide Rivers Inventory  
<https://www.nps.gov/orgs/1912/nationwide-rivers-inventory.htm>
- Interactive Map of Wild and Scenic Rivers Responsibilities  
<https://www.nps.gov/orgs/1912/plan-your-visit.htm>
- Consultation Instructions  
<https://www.nps.gov/subjects/rivers/consultation-instructions.htm>
- Wild and Scenic Rivers Act  
<https://www.rivers.gov/act.php>
- 16 USC 1271–1287  
<https://www.gpo.gov/fdsys/pkg/USCODE-2011-title16/html/USCODE-2011-title16-chap28.htm>

#### *How Are Wild and Scenic Rivers Analyzed Differently in an EA Versus an EIS?*

There is no difference in how the analysis is conducted.

## Prime and Unique Farmland

The Farmland Protection Policy Act (FPPA) was passed by Congress as part of the Agriculture and Food Act of 1981 (Public Law 97-98 and 7 CFR 658). The FPPA, administered by the Natural Resources Conservation Service (NRCS), states that the “purpose of the Act is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.” In addition, the FPPA states that federal programs shall be administered in a manner that, as practicable, would be compatible with state and local government and private programs and policies to protect farmland. Under the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance.

In response to the FPPA, the U.S. Department of Agriculture developed a land use policy (Departmental Regulation 9500-003) that also considers prime forest lands, rangelands, and timberlands. The regulation’s ultimate goal is to reduce the rate and amount of conversion of the nation’s farmlands, forest lands, and rangelands, which may impair the ability to produce sufficient food, fiber, and wood to meet both domestic needs and the demands of export markets.

### *What Is an Appropriate Study Area for Prime and Unique Farmland?*

The study area for prime and unique farmland is the land area that would be irreversibly converted from farmland to a nonagricultural use by the proposed action being analyzed in the NEPA document. Generally, this area is the ROW limits for the build alternatives, including any permanent easements (such as utility easements) where farming would no longer be allowed. This is an iterative process that proceeds through the project design process. The actual amount of farmland to be acquired is not determined until final design when the ADOT ROW group determines the final acreage amounts to be taken out of production for the project.

### *How Is Prime and Unique Farmland Identified?*

The presence of prime and unique farmland in the study area is determined using NRCS soil survey data, U.S. Department of Agriculture Web Soil Survey mapping, and aerial mapping to identify irrigated farmland with soil types that support prime and unique farmland in Arizona. An aerial map of prime and unique farmland should be included in the NEPA document.

Note that prime farmland and agricultural land (as identified in the land use section of an EA or EIS) are not necessarily the same. The agricultural land use designation is a product of local community planning efforts, while the prime and unique farmland designation is a product of NRCS criteria such as soil type and irrigation availability. Therefore, the NEPA practitioner will need to consult local general and comprehensive plans to be sure of the difference. These plans should also be consulted to determine whether land designated as prime or unique by NRCS offices in Arizona is planned for future conversion to nonagricultural uses.

Note that 7 CFR 658.2 and 658.3 define lands not subject to FPPA provisions.

### *How Is Prime and Unique Farmland Analyzed, Mitigated, and Documented?*

If a proposed action would convert prime and unique farmland and the study area has not already been planned for development by a local jurisdiction and is not within an urban area, then the size of the prime and unique farmland impact must be calculated by completing the NRCS-CPA-106: Farmland Conversion Impact Rating for Corridor Type Projects form. The size of the impact will be expressed in acres and as the project's impact rating. Note that if the Section VI score of the NRCS-CPA-106 form is 60 points or less, then it will be mathematically impossible for the NRCS to score an alternative above the 160-point threshold for mitigation. In other words, if the score of Part VI is less than 60, no further action or coordination with NRCS is necessary. If Section VI of NRCS-CPA-106 scores greater than 60 points, then the form is sent to NRCS for the agency to complete its portion of the form and score the project or alternative. If a proposed alternative scores more than 160 points, NRCS will recommend mitigation of impacts or avoidance measures to prime and unique farmland. Note: NRCS will notify ADOT through the NRCS-CPA-160 if prime rangeland, timberland, or forest lands are present in the study area. Generally, NRCS recommends the following:

- use of land that is not farmland
- modifications in location or design that meet the purpose and need of the action, but convert fewer acres of farmland or use farmland with a lower relative value
- special siting requirements

In addition to the completed NRCS-CPA-106 form, the prime and unique farmland section of the environmental document should discuss impacts from direct and indirect conversion (both included in the NRCS-CPA-106 scoring) and cumulative impacts. An example of indirect effects could be the creation of remnants too small to efficiently and economically farm. A discussion of project activities that could affect farmland or farmland operations, such as lane or driveway closures, should be included.

The following should be used in the prime and unique farmland section of the EA or EIS.

Established template text:

This section identifies prime or unique farmland that may be affected by the proposed action. An analysis of prime and unique farmland is being conducted because federal funds would be used to construct this project. This section addresses compliance with the Farmland Protection Policy Act (FPPA) regulations (7 CFR 658). The FPPA requires identification of proposed actions that would affect land classified as prime or unique farmland before federal agency approval of any activity that would convert such farmland to other uses, including converting farmland to right-of-way for transportation improvements.

The Natural Resources Conservation Service (NRCS), part of the U.S. Department of Agriculture, administers the FPPA as it relates to protection of farmland. Congress passed the FPPA because of a substantial decrease in the amount of open farmland. Under the FPPA, the Secretary of Agriculture is required to set criteria to identify and take into account the potential effects of federal agency activities on the preservation of farmland. FPPA regulations (7 CFR 658.5) establish the criteria for such evaluation, with an emphasis on urban aspects of proposed programs. In

7 CFR 658.3, it is stated that the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses would be minimized. In 7 CFR 658.4, it is stated that federal programs shall be administered in a manner that, as practicable, would be compatible with state, local government, and private programs and policies to protect farmland. It requires identification of proposed federal actions that would affect any land classified as prime or unique farmland and the consideration of alternative actions. Pursuant to the FPPA, farmland includes:

Prime – Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion, as determined by the Secretary of Agriculture. Prime farmland includes land that possesses the above characteristics but is being used currently to produce livestock and timber [7 USC 4201(c)(1)(A)].

Unique – Land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, fruits, and vegetables. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods [7 USC 4201(c)(1)(B)].

Other – This encompasses farmland, other than prime or unique farmland, that is of statewide or local importance for the production of food, feed, fiber, forage, or oilseed crops, as determined by the appropriate state or unit of local government agency or agencies, and that the Secretary of Agriculture determines should be considered as farmland [7 USC 4201(c)(1)(C)].

In the FPPA regulations (7 CFR 658.2–658.3), a description of land not subject to (that is, not protected by) provisions of the FPPA is provided and includes land that: (1) receives a combined score of less than 160 points from the land evaluation and site assessment criteria, (2) is identified as an urbanized area on U.S. Census Bureau maps, (3) is designated as an urban area and shown as a tint overprint on U.S. Geological Survey topographical maps, (4) is shown as white (not farmland) on U.S. Department of Agriculture Important Farmland Maps, (5) is shown as urban-built-up on U.S. Department of Agriculture Important Farmland Maps (according to guidance of the National Resources Inventory, areas 10 acres or larger without structures are not considered urban-built-up and are subject to the FPPA), (6) is used for national defense purposes, or (7) is privately owned and no federal funds or technical assistance are used.

### *What Coordination Is Required for Prime and Unique Farmland?*

If Part VI of the NRCS-CPA-106 form results in a score of less than 60 points, then no coordination is required with NRCS. If the Part VI score exceeds 60 points, then coordination with NRCS is required. In addition to the NRCS-CPA-106 form, NRCS typically requests GIS shapefiles of the alternatives on an aerial. NRCS normally requires 30 days to complete the NRCS-CPA-106 form. More time should be allowed to work with NRCS to develop avoidance and mitigation, as necessary.

The NEPA document should also discuss future land use trends in the area with regard to prime and unique farmland with affected local jurisdictions. This coordination should be conducted to determine if local jurisdictions include farmland or agricultural land protection or preservation goals and policies in their respective general or future land use plans.

*Where Are Prime and Unique Farmland Laws, Regulations, and Guidance Found?*

- USDA NRCS Farmland Protection Policy Act website  
<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/fppa/>
- Farmland Protection Policy Act of 1981 (Public Law 97-98)  
[https://www.nrcs.usda.gov/wps/PA\\_NRCSConsumption/download?cid...ext=pdf](https://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid...ext=pdf)
- Farmland Protection Policy Act, 7 CFR 658 and 7 USC 4201  
<https://www.gpo.gov/fdsys/granule/CFR-2010-title7-vol6/CFR-2010-title7-vol6-part658/content-detail.html>  
<https://www.gpo.gov/fdsys/granule/USCODE-2010-title7/USCODE-2010-title7-chap73-sec4201>
- Prime and Unique Farmland regulations (7 CFR 657)  
<https://www.gpo.gov/fdsys/granule/CFR-1999-title7-vol6/CFR-1999-title7-vol6-part657>
- Part 523 – Farmland Protection Policy Act Manual  
[https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb1049240.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1049240.pdf)
- U.S. Department of Agriculture Departmental Regulation 9500-003 [https://www.ocio.usda.gov/sites/default/files/docs/2012/DR9500-003\\_1.pdf](https://www.ocio.usda.gov/sites/default/files/docs/2012/DR9500-003_1.pdf)

*How Is Prime and Unique Farmland Analyzed in an EA Versus an EIS?*

There is no difference in how this resource is analyzed in an EA versus an EIS.

## National Natural Landmarks

The National Natural Landmarks (NNL) program is administered by the National Park Service and recognizes the conservation of sites containing outstanding biological and geological resources. The sites are designated by the Secretary of the Interior because they contain the best remaining examples of specific biological and/or geological features. Arizona has 10 NNLs that range in size from 11 to nearly 305,000 acres and are owned or managed by a variety of entities including the U.S. Forest Service, Bureau of Land Management, The Nature Conservancy, and private individuals.

### *What Is an Appropriate Study Area for National Natural Landmarks?*

An appropriate study area for NNLs is 0.25 mile from each of the alternatives identified for the proposed action.

### *How Are National Natural Landmarks Identified?*

NNLs are identified by consulting the National Registry of Natural Landmarks directory on the National Park Service website. Arizona currently has 10 NNLs:

- Barfoot Park
- Barringer Meteor Crater
- Canelo Hills Cienega
- Comb Ridge
- Grapevine Mesa Joshua Trees
- Kaibab Squirrel Area
- Onyx Cave
- Patagonia-Sonoita Creek Sanctuary
- Ramsey Canyon
- Willcox Playa

The National Registry of Natural Landmarks for Arizona includes a map of NNLs in the state.

### *How Are National Natural Landmarks Analyzed, Mitigated, and Documented?*

All NNLs in the study area should be described and mapped. Any direct or indirect impacts on NNLs (for example, visual, access) would also need to be coordinated with other disciplines (for example, visual resources).

### *What Coordination Is Required for National Natural Landmarks?*

Notify ADOT EP if an NNL may be affected. If direct or indirect impacts would occur, coordination with the National Park Service and the owner/manager of the NNL would be needed to develop any avoidance, minimization, or mitigation measures.

### *Where Are National Natural Landmarks Laws, Regulations, and Guidance Found?*

- National Park Service National Natural Landmarks website  
<https://www.nps.gov/subjects/nlandmarks/index.htm>

- National Natural Landmarks, 36 CFR 62  
<https://www.gpo.gov/fdsys/granule/CFR-2011-title36-vol1/CFR-2011-title36-vol1-part62>

*How Are National Natural Landmarks Analyzed in an EA Versus an EIS?*

There is no difference in the treatment of NNLs in an EA versus an EIS.

## Hazardous Materials

Hazardous materials and hazardous waste sites pose a threat to any infrastructure project, including two primary risk triggers: (1) ownership liability concerns and (2) construction safety concerns. EPA's 2002 Brownfields Act identified the appropriate steps of All Appropriate Inquiry for investigating hazardous materials sites. The ASTM International (ASTM) E1527 series of standards (current version E1527-13, last updated in 2013) guides the assessment of properties and the qualifications of environmental professionals engaged to perform the analysis (the Environmental Professional, as defined in the ASTM standard). The E1527 standard was first adopted in 1993 and has undergone several updates since then, the most recent in 2013.

### *What Is an Appropriate Study Area for Hazardous Materials?*

ASTM defines the radii for the information envelope of data searches for listed hazardous waste sites, at different distances, depending on the type of environmental database. These distances generally go out to 1 mile. In general, assessors place more emphasis on sites closer to the actual project footprint, and the most emphasis on sites located either within the footprint or immediately adjacent. The ASTM Phase I (ADOT Initial Site Assessment, or ISA) process allows the assessor some latitude on the distances of concern, provided that a rationale for the chosen distances is provided. The database search distances are dictated by the ASTM standard, which ADOT follows for Phase Is/ISAs.

### *How Are Hazardous Materials Identified?*

ADOT has adopted a step-wise approach developed by FHWA to hazardous materials site analysis, which conforms to the ASTM series of standards governing Phase I-type site investigations.

These steps include the Preliminary Initial Site Assessment (PISA), the ISA (Phase I equivalent), and the Preliminary Site Investigation (PSI, Phase II equivalent). A final step in the process is remediation, which may involve performing an active cleanup or developing plans to handle and dispose of contaminated soil and/or groundwater prior to or during construction. The remediation step is specific to each situation, and is not covered in detail in this guidance.

### *How Are Hazardous Materials Analyzed, Mitigated, and Documented?*

The PISA, ISA, and PSI steps are described below based on the specific study area identified for each project.

#### Preliminary Initial Site Assessment

ADOT employs a PISA scope of work as an early comparative tool for projects with multiple possible alternatives. The PISA may also be used as the hazardous waste site analysis tool on projects in rural areas, without prior development that could have led to contamination of property. The PISA includes a review of the regulatory history of sites located in the study area (generally using an automated database search service), and a limited field review by the Environmental Professional. The PISA is not, and is not intended to be, ASTM-compliant, but it provides elements of the ASTM scope that give

the study team adequate information to compare alternatives or to identify hazardous materials issues that may be sufficiently large to provide a basis of preference for one alternative over another.

A PISA must be conducted; however, further investigations may be required based on the results of the PISA. The types of further investigation are described below.

#### Initial Site Assessment

Once a corridor is selected, or a property is identified for acquisition, a PISA is performed to assess specific sites of concern along the corridor in more detail. If issues are identified that require further investigation, an ISA is performed as the next step. The ISA conforms to the most current ASTM E1527 standard and includes elements of the ASTM E1527 Phase I analysis (site reconnaissance, interviews, and analysis of historic data sources to assess historic waste streams and issues).

The goal of the Phase I-equivalent ISA is to provide adequate information for the project owner to move forward with property acquisitions and to develop management strategies for sites that have been identified with hazardous materials and/or hazardous waste contamination issues.

In certain cases, a Corridor ISA may be performed. The Corridor ISA generally follows the level of detail for investigation of a corridor, using the ISA (ASTM Phase I) protocol. Certain limitations are acceptable, such as limited site access to private properties, and deletion of certain interviews (as guided by ADOT). The Corridor ISA is effective in that it can be used to “clear” sites with no issues, reducing the number of site-specific ISAs that must be performed (on more complex sites).

#### Preliminary Site Investigation

The PSI is the equivalent of a commercial Phase II site investigation, broadly governed by the ASTM E1903-11 protocol. A PSI is designed to verify or refute the findings of the Phase I analysis by collecting soil and possibly groundwater samples for inclusion in a targeted analytical program. Drill rigs are commonly used to collect soil and groundwater samples, and a fixed-base analytical lab analyzes the samples. These data can be compared with state, tribal, or federal action levels for concentrations of specific contaminants in the sampled media. The PSI results may be used to “clear” a site (if no actionable contaminant concentrations are verified), or the data may support decision-making for remedial activities or soil management during construction. Each PSI is highly customized for the issues discovered during the ISA, and the goals of the data collection and analysis are to support future construction management.

#### Additional Hazardous Waste-related Tasks

Assessment of asbestos-containing materials and the potential for lead in paint are also required on any project. Asbestos can occur in concrete, stripe paint, bridge elements or paint, or any structure. Lead is a common element in roadway striping paint and bridge paint. The ADOT Hazardous Materials Coordinator (HMC) may bundle the assessment task for asbestos and lead analysis with the other investigative steps listed above, or separately contract this work (or perform it in-house). The HMC is also responsible for

verifying that the person performing the asbestos analysis work is properly trained and certified for the level of asbestos analysis being performed.

While asbestos and lead paint issues are not considered limiting factors for project decision-making, they are important to consider regarding potential cost impacts to the project and proper waste handling and disposal both before and during construction.

#### *What Coordination Is Required for Hazardous Materials?*

The ADOT HMC plays a key decision-making role at every step in the project. The HMC first reviews the parameters on all projects to determine whether a PISA or an ISA is appropriate as the first investigative step. The HMC coordinates with the project manager, the design team, and the environmental planner to determine scope and timing of the investigative efforts. The HMC also provides technical review for scopes and fees, and for technical deliverables prepared by the consultant. The HMC also has decision-making authority regarding the length of time that the provided data may be considered valid (since hazardous waste bodies in the environment do not remain in a static state).

#### *Where Are Hazardous Materials Laws, Regulations, and Guidance Found?*

- ASTM E1527-13, Phase I investigations (ISAs)  
<https://www.astm.org/Standards/E1527.htm>
- ASTM E1903-11, Phase II investigations (PSIs)  
<https://www.astm.org/Standards/E1903.htm>
- ASTM E2600, Vapor Intrusion  
<https://www.astm.org/Standards/E2600.htm>

#### *How Are Hazardous Materials Analyzed in an EA Versus an EIS?*

These steps apply equally to both an EA and an EIS. Since the preparation of an EIS often takes longer, certain steps may need to be repeated (since project conditions relative to hazardous wastes are not static). While the step-wise process does not change between an EA and an EIS, certain allowances must be made for the increased passage of time in the EIS process.

## Material Sources and Waste Materials

Large transportation projects often involve considerable amounts of earthwork, resulting in careful consideration of balancing cut and fill. If there is not enough fill material, then suitable sources must be found and hauled to the project site, or if there is excess material, a disposal location is needed. Additionally, if the on-site cut material cannot be used for fill on site, it must be properly disposed of and replacement material found.

### *What Is an Appropriate Study Area for Material Sources and Waste Materials?*

The study area for material sources and waste materials is no different from the standard project environmental study area. Material sources and waste disposal locations are determined by the contractor after the project is started. If import material is needed or waste needs to be disposed of offsite, the distances to those locations is determined by the contractor after the project is let. Only in the rare situations when a material source or disposal site is dictated to the contractor, or when off-site locations are on federal land, would such sites be included in the NEPA document.

### *How Are Material Sources and Waste Materials Identified?*

The proposed action—including the main line, interchanges, drainage channels, and drainage basins—is modeled to estimate earthwork quantities.

### *How Are Material Sources and Waste Materials Analyzed, Mitigated, and Documented?*

If there would be excess material, an off-site disposal location would be identified by the contractor. Conversely, if fill material is needed, an off-site source must be located. The contractor is generally tasked with finding appropriate locations for either disposal of, or additional, material. Material source locations can be ADOT preapproved locations, or the contractor may propose a new source, which must be examined, and cleared, for environmental effects by the contractor prior to moving material based on the ADOT *Contractor-Furnished Materials Source List*.

Established template text:

Preliminary calculations indicate that construction of the Build Alternative would require approximately [#] cubic yards of borrow material. It would be the responsibility of the contractor to identify any needed material sources or waste disposal sites and to provide the environmental documentation regarding the potential use of these sites, as specified in the ADOT *Standard Specifications for Road and Bridge Construction* (2008).

The No-Build Alternative would not require the use of borrow material or waste sites. Therefore, the No-Build Alternative would have no impact related to the use of materials sources or waste sites.

### *What Coordination Is Required for Material Sources and Waste Materials?*

There are no specific coordination requirements.

*Where Are Material Sources and Waste Materials Laws, Regulations, and Guidance Found?*

- ADOT Material Source Guidance  
<https://www.adot.gov/business/environmental-planning/material-source-guidance>
- ADOT *Standard Specifications for Road and Bridge Construction* (2008)  
<https://www.azdot.gov/docs/business/2008-standards-specifications-for-road-and-bridge-construction.pdf>

*How Is a Material Sources and Waste Materials Analysis Different in an EA Versus an EIS?*

There is no appreciable difference; the technical (drainage, cut-and-fill, excavations, etc.) and topographical complexity of the project determines the level of analysis on material sources and waste materials.

## Secondary and Cumulative Impacts

CEQ regulations (40 CFR 1500–1508) define the impacts and effects that must be addressed and considered by federal agencies during the NEPA process. The terms “effect” and “impact” are used synonymously in the CEQ regulations (40 CFR 1508.8). “Secondary impact” does not appear, nor is it defined in either the CEQ regulations or related CEQ guidance. However, the term is used in FHWA’s Position Paper: Secondary and Cumulative Impact Assessment in the Highway Project Development Process (April, 1992) but is defined with the CEQ definition of indirect impact (40 CFR 1508.8). “Secondary effects” and “indirect impacts” mean the same thing; ADOT uses the term *secondary* to avoid potential confusion in terminology.

- Direct effects are caused by the action and occur at the same time and place. (40 CFR 1508.8)
- Secondary effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. (40 CFR 1508.8)
- Cumulative effects are the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (40 CFR 1508.7)

### *When Is a Secondary and Cumulative Impact Analysis Required?*

CEQ regulations require that all federal agencies consider the cumulative effects of any proposed action. The level of the NEPA document being prepared will provide some idea about when and if the analysis should be prepared. If a project will not cause direct or secondary impacts on a specific environmental resource, it will not contribute to a cumulative impact on that resource.

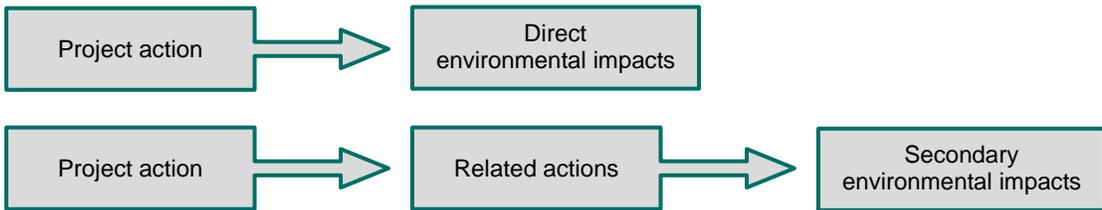
**EA:** Generally required. These are projects in which the significance of environmental impacts is unknown. The degree to which resources may be affected will determine the extent of the cumulative impact analysis needed. When a project is large, complex, and in an environmentally sensitive area, the secondary and cumulative impact analysis should mirror what is done for an EIS.

**EIS:** Absolutely required. These are projects for which ADOT has established that significant environmental impacts would occur, and a cumulative impact analysis may assist decision makers in making decisions regarding project scope, design, and location. In general, the secondary and cumulative impact analysis should include information about resources, past and current actions that have contributed to trends, and reasonably foreseeable actions.

*What Are the Primary Elements of a Secondary Impact Analysis?*

Figure 1 shows a comparison of the cause-and-effect relationship of direct impacts and secondary impacts to a project action. As the name implies, direct impacts are those that are actually caused by project activities. Secondary impacts, on the other hand, are caused by another action or actions that have an established relationship or connection to the project. These induced actions are those that would not or could not occur without implementation of the project. These actions are often referred to as “but for” actions and generally occur at a later time or some distance removed from the original action.

**Figure 1.** Cause-and-effect relationship



Changes in land use patterns, growth or decline, in a given locale are attributable to many circumstances, events, and activities including federal, non-federal, and private actions. While transportation projects are not the only or primary factor in possible land use changes, the potential for certain transportation proposals to influence land use is undeniable. The same is true for other infrastructure improvements such as water supply, sewer, and/or utilities.

A proposal for a new alignment project in an area where no transportation facility currently exists, or one that adds new access to an existing facility, may indicate the potential for project-related indirect impacts from other distinct but connected actions. Likewise, the purpose and need of a proposed project that includes a development or economic element might establish an indirect relationship to potential land use change or other action that would result in subsequent environmental impacts. The potential relationship of a transportation proposal to indirect impacts should be established on a case-by-case basis, early in the NEPA project development process.

Established template text:

Actions that may induce secondary (or indirect) impacts are perhaps less obvious than those identified as direct impacts. They are more difficult to quantify, additive in nature, or long-term in occurrence and effect. This section identifies the likely, foreseeable secondary impacts that would result from construction of the proposed roadway; any cumulative impacts are addressed in the following section.

FHWA is required to implement NEPA and the CEQ guidelines under 23 CFR 771. FHWA has developed interim guidance on the analysis of secondary and cumulative impacts (FHWA 2003), which supplements the CEQ guidance. Combined, these documents provide the primary basis for analysis. The classification of secondary impacts and cumulative impacts discussed below, in accordance with FHWA guidance, is presented in Table 4.

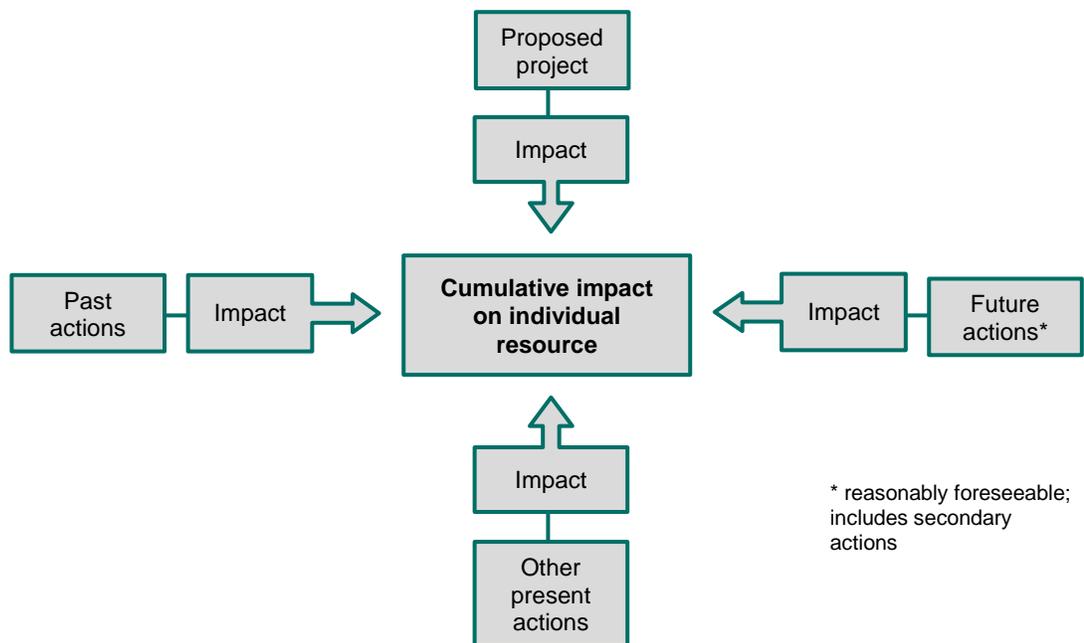
**Table 4.** Secondary and cumulative impacts classification

Impact category	Impact classification	Description
Type	Neutral, positive, or negative	Compares the final condition of a given resource with its existing condition (assumes that the expected impact occurs); impacts on personal property are considered negative
Severity	Minor, moderate, or substantial	Considers the relative contribution of the proposed action to a given impact
Duration	Temporary or permanent	Assumes “permanent” unless otherwise specified

*What Are the Primary Elements of a Cumulative Impact Analysis?*

As shown in Figure 2, a cumulative impact includes the total effect on a natural resource, ecosystem, or human community attributable to past, present, and reasonably foreseeable future activities or actions of federal, non-federal, public, and private entities. Cumulative impacts may also include the effects of natural processes and events, depending on the specific resource in question.

**Figure 2.** Cumulative impact



Cumulative impacts include the total of all impacts on a particular resource that have occurred, are occurring, and will likely occur as a result of any action or influence, including the direct and reasonably foreseeable indirect impacts of a federal activity. Accordingly, there may be different cumulative impacts on different environmental resources. Cumulative impact analysis may be thought of as a comparison of the past, present, and reasonable foreseeable health or condition of a specific resource.

### *How Should a Cumulative Impact Analysis Be Prepared?*

The cumulative impact analysis should begin early in project development, usually during the NEPA scoping process. As the process continues, use the gathered data to further refine the cumulative impact analysis. The following eight steps offer helpful guidelines for identifying and assessing cumulative impacts:

1. Identify the resources that may have cumulative impacts to consider in the analysis;
2. Define the study area and timeframe for each affected resource;
3. Describe the current health and historical context for each;
4. Identify direct and any secondary impacts that may contribute to a cumulative impact;
5. Identify other historic, current, and reasonably foreseeable actions that may affect resources;
6. Assess potential cumulative impacts on each resource and determine their type, severity, and duration in accordance with Table 4 above;
7. Report the results; and
8. Assess and discuss potential mitigation issues for all adverse impacts.

Note that these steps are iterative and may not necessarily be sequential. It may be appropriate to identify the resources included in the analysis (Step 1), then apply Steps 2 to 6 to each resource, rather than doing each step and re-listing each resource under every step. Steps 7 and 8 can be done at the end. As new information becomes available, it could alter decision-making, possibly resulting in changes in methods to avoid and/or minimize impacts.

Established template text:

Cumulative impacts include the direct and indirect impacts of the project together with the impacts of all other anticipated past, present, and reasonably foreseeable future actions in the area, including those of others. This analysis of cumulative impacts concentrates on current and future actions that could contribute to cumulative impacts on the key considerations of [list applicable resources]. Past, present, and reasonably foreseeable future actions considered in this analysis are the result of planned/proposed projects developed by the [list applicable cities and counties, federal agencies, developers, etc.].

For this cumulative impacts assessment, past, present, and reasonably foreseeable future transportation projects and non-transportation projects are considered. This EIS/EA assumes that the local municipalities and county comprehensive and general

plans direct the type of development in the study area. This development would likely occur eventually whether or not the [project name] is implemented.

#### **Past Actions/Completed Projects**

This section describes existing conditions of the applicable environmental resources and considerations that exist from some of the past actions or projects completed since [20XX]:

[list in bullet form]

#### **Ongoing/Present Actions**

Ongoing or present actions in the study area that have a cumulative impact on the study area include:

[list in bullet form]

#### **Reasonably Foreseeable Future Actions**

Reasonably foreseeable future actions that would have a cumulative impacts on the study area include:

[list in bullet form]

The Preferred Alternative, when combined with past, present, and future actions, would [state the conclusion of the cumulative impact assessment by impact category, classification, and description, similar to Table 4].

## Public Involvement/Project Coordination

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This section discusses the public involvement and project coordination information that should be included in this section of the EA or EIS. The information is basically the same for each type of NEPA document.

### Who at ADOT Leads the Public Involvement Program?

Coordination should be undertaken with ADOT Office of Communications. See the ADOT EP website and the ADOT *Public Involvement Plan* manual (ADOT 2017) for more detailed information.

### What Public Involvement Information Should Be Included?

Public involvement and community outreach efforts for the project are summarized in this section of the NEPA document based on the ADOT *Public Involvement Plan* manual requirements, FHWA requirements for Title VI, environmental justice, and LEP, along with key agency meetings and consultation and coordination efforts. Summaries should be provided for public and agency meetings held during the various phases of the NEPA process, including the following:

- public and agency scoping meetings
- public information meetings
- public hearings – include date and location, if known, in the draft EA or EIS; include date and location of the public hearing and a summary of the public hearing in the final EA or EIS

For the various meetings, describe the method used to announce the meetings, the meeting format, when and where the meetings were held, how many people attended, the number and type of comments received, and how ADOT generally responded to the comments.

Meeting summaries should also be included for other key meetings, such as meetings with local elected and government officials, business representatives, and other major stakeholders with an interest in the project.

When addressing the public comments in this section, a table should be used, and similar comments should be grouped together, along with an approved ADOT response. Specific public comments and associated ADOT responses should be included in an appendix, including individual comment cards, comment sheets, website comments, public hearing comments or testimony, and any other comments received. Private citizens' names and contact information should be redacted.

List the agencies that received meeting invitation letters and coordination letters and which agencies responded or participated; these should also be included in a table.

All of the more detailed public involvement, agency, or other stakeholder summary reports should be placed in an appendix to the NEPA document, posted on the study website for public review, and referenced in this section of the EA or EIS.

## Bibliography

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ADOT does not dictate how the bibliography section should be written; therefore, the consultant should choose one style and follow its approach consistently. Each style manual is different (for example, *Chicago Manual of Style*, *Publication Manual of the American Psychological Association*, *MLA Handbook*), but their purpose and ADOT's goal is to ensure a uniform system of citing works consulted in the preparation of the NEPA document.

During the editing and quality control processes, environmental document preparers should ensure that body of the NEPA document contains appropriate in-text citations and that each citation is captured in the bibliography.

## Appendices

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ADOT does not typically attach technical reports or conceptual design plans as appendices to the EA or EIS; however, these documents are made available on ADOT's website for the specific project and can be made available upon request.

Typical appendices for ADOT environmental documents include the following:

- agency letters regarding:
  - Section 106 determinations
  - project-level air quality conformity (if the project is in an air quality nonattainment or maintenance area)
  - any required Section 4(f) approval in accordance with 23 CFR 774, according to 23 CFR 771.127(a) (for example, *de minimis*, significance determinations, temporary occupancy)
- memoranda of agreement or programmatic agreements
- all other project correspondence that shows information used to make decisions
- public, agency, and other stakeholder meeting summary reports, including specific public comments and associated ADOT responses

## Final Environmental Documents

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ADOT final EAs and final EISs are in one of two formats: an errata or a complete final EA or final EIS. Generally, errata sheets, instead of rewriting the entire document, are appropriate when public and agency comments on the draft EA or draft EIS are minor and the responses to the comments are limited to factual corrections, reiterations of material in the draft EA or draft EIS, or explanations of why the comment does not warrant further response. The errata document only includes changes to the draft EA or draft EIS. According to CEQ, the errata should include, at a minimum, the following information:

- A list of the factual corrections made to the draft EA or draft EIS with references to the relevant page numbers in the environmental document;
- Copy or summary of comments received on the draft EA or draft EIS and public hearing and responses (and identification of any coordination activities that have taken place since issuance of the draft EA or EIS);
- A list and explanation of why the draft EA or draft EIS comments do not warrant further ADOT response in the final EA or final EIS, citing the sources, authorities, or reasons that support the position of the agency; and
- A section that includes the following information, as outlined in 23 CFR 771.133 and in section VI(c) of FHWA Technical Advisory T 6640.8A:
  - identification of the preferred alternative and a discussion of the reasons why it was selected
  - final 23 USC 138/49 USC 303 Section 4(f) evaluation, if applicable
  - findings, including any on wetlands, floodplains, and Section 106 effects, as applicable
  - list of commitments for mitigation measures for the preferred alternative
  - any other findings to be made in compliance with all applicable environmental laws, regulations, Executive Orders, and other related requirements (with associated agency consultation documentation) where there is reasonable assurance that full compliance will occur after issuance of the final EIS (23 CFR 771.133).

ADOT generally prepares a final EA or final EIS (versus an errata sheet) if additional alternatives are identified after the draft EA or draft EIS has been made available to the public that require further study, or if there are substantial changes to the analysis documented in the draft EA or draft EIS. Regardless of whether ADOT EP chooses the errata or complete final environmental document approach, a summary of the public hearing information should be placed in the public hearing report and an official transcript of the hearing should be included in the appendix. The final EA or final EIS should be submitted with a cover letter and a signature page as shown in the example on the next page. All final environmental documents prepared under NEPA Assignment are approved and signed by the ADOT EP Administrator.

For NEPA Assignment projects, the following statement is required to appear on the cover page of the draft and final EA or EIS:

*The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by ADOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 16, 2019, and executed by FHWA and ADOT.*

Final Environmental Assessment

for

Project Name

County

Federal-aid No.

ADOT Project No.

Month 20XX

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

Paul O'Brien, P.E.

Environmental Planning Administrator

*The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by ADOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 16, 2019, and executed by FHWA and ADOT.*

## Decision Documents

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At the conclusion of the environmental process, ADOT issues a decision on the proposed action, typically a FONSI for an EA and a ROD for an EIS. Both the FONSI and the ROD are public documents.

### Finding of No Significant Impact

The ADOT FONSI has a standard format, shown on the next page.

### Record of Decision

According to 40 CFR 1505.2, the ROD should include the following elements:

- the decision and the basis for the decision (that is, all of the factors considered and how they influenced the decision)
- all alternatives considered by ADOT, the NEPA selected alternative, and the environmentally preferable alternative (40 CFR 1505.2) (if the selected alternative is also an environmentally preferable alternative, this should be stated)
- summary of the environmental impacts and identification of all findings required by federal environmental laws and Executive Orders, including:
  - Section 106 determination and any agreements (that is, memorandum of agreement or programmatic agreement)
  - project-level air quality conformity (if the project is in an air quality nonattainment or maintenance area)
  - Section 7 (ESA) finding
  - any required Section 4(f) approval in accordance with 23 CFR 774, according to 23 CFR 771.127(a).
- according to 40 CFR 1505.2, a statement whether all practicable means to avoid or minimize environmental harm have been adopted for the selected alternative and, if not, an explanation as to why (40 CFR 1505.2)
- summary of mitigation measures that will be incorporated into the project (23 CFR 771.127(a) (if a monitoring plan is included as mitigation, it should be summarized in the ROD and should be adopted as part of the ROD or separate agreement)

If the final EIS is released separate from the ROD (ADOT will strive to release a combined final EIS and ROD, when possible), then the ROD should respond to any new substantive comments received on the final EIS, as appropriate. A brief summary of comments and responses may appear in the body of the ROD or in an attachment to the ROD.

For NEPA Assignment projects, the following statement is required to appear on the cover page of the FONSI and ROD:

*The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by ADOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 16, 2019, and executed by FHWA and ADOT.*

Arizona Department of Transportation  
FINDING OF NO SIGNIFICANT IMPACT  
FOR  
Project Name

Federal-aid No.  
ADOT Project No.

The Arizona Department of Transportation has determined that this project will not have any significant impact on the human or natural environment. This finding of no significant impact is based on the attached environmental assessment, which has been evaluated and determined to adequately discuss the environmental issues and impacts of the proposed project. The environmental assessment provides sufficient evidence and analysis for the Arizona Department of Transportation to determine that an environmental impact statement is not required. The Arizona Department of Transportation takes full responsibility for the accuracy, scope, and content of the attached environmental assessment.

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

Paul O'Brien, P.E.  
Environmental Planning Administrator

*The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by ADOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 16, 2019, and executed by FHWA and ADOT.*

## EA and EIS Re-evaluations

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See Section 9, *EA and EIS Re-evaluations and Supplemental EISs*, in the main body of the *NEPA EA and EIS Guidance*.

## References

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