

8 Mitigation Strategies

This chapter discusses strategies that would be undertaken to mitigate adverse impacts if the Build Alternatives are built. Mitigation generally includes avoiding, minimizing, or compensating for those adverse effects (40 CFR 1508.20) in the following manner:

- Avoid the effects altogether by not taking a certain action or parts of an action, or revise an alternative if it is possible to avoid a resource
- Minimize effects by limiting the degree or magnitude of the action or revising the alignment
- Compensate for the effects by repairing, rehabilitating, or restoring the affected environment
- Reduce or eliminate the effects over time through preservation and maintenance operations during the life of the action
- Compensate for the effect by replacing or providing substitute resources or environments

The following sections describe the avoidance activities undertaken in this document and the mitigation strategies developed for Tier 2 studies.

8.1 TIER 1 AVOIDANCE AND MINIMIZATION ACTIVITIES

The U.S. 50 Tier 1 EIS alternatives development process was able to avoid effects to resources in many locations along the U.S. 50 corridor. Through-town options, which would have improved U.S. 50 on its current alignment through the municipalities along the highway, were eliminated from further consideration because they didn't fully meet the purpose and need of the U.S. 50 Tier 1 EIS, but also because they have a greater potential for affecting community resources. These options could have impacted:

- As many as 250 resources (directly or indirectly) that are either known to be historic or may be historic, representing more than 60 percent of the historic resources identified within the APE
- The downtown areas (i.e., primary commercial districts) of the eight municipalities east of Pueblo by widening the highway, and, therefore, requiring property acquisition in these areas
- Access to about 200 important community facilities and services through alterations to existing travel routes

Tier 2 Avoidance Opportunities

Avoidance of resources will be the first priority during Tier 2 studies, followed by minimization, then compensation. Because the Tier 1 Build Alternative is 1,000 feet wide and the Tier 2 roadway footprint will be a maximum of 250 feet wide, numerous opportunities for resource avoidance will exist during Tier 2 studies.

- A small number of agricultural resources, parklands, and recreational resources, and Section 6(f) and Section 4(f) resources

More detail about this process and its associated avoidance activities can be found in Chapter 3, Alternatives Considered, and Chapter 4, Affected Environment, Environmental Consequences, and Mitigation.

8.2 MITIGATION STRATEGIES

The purpose of this document is to determine the location of a 1,000-foot-wide alternative within which a 250-foot-wide (maximum) roadway footprint would be identified during Tier 2 studies (see Figure 8-1).

Because the roadway footprint will not be identified until Tier 2 studies, this Tier 1 analysis cannot identify effects to specific resources or develop mitigation actions. Also, the build-out period for Tier 2 studies is estimated to be decades (i.e., not months or years), and best management practices for mitigation activities could change during this time period. As a result, mitigation strategies—not mitigation activities—have been developed as part of this document. These strategies are meant to guide mitigation activities for Tier 2 studies to ensure that negative effects are minimized.

Since the approach used to develop mitigation strategies was different for natural resources than for resources associated with the built (human) environment, they are discussed separately.

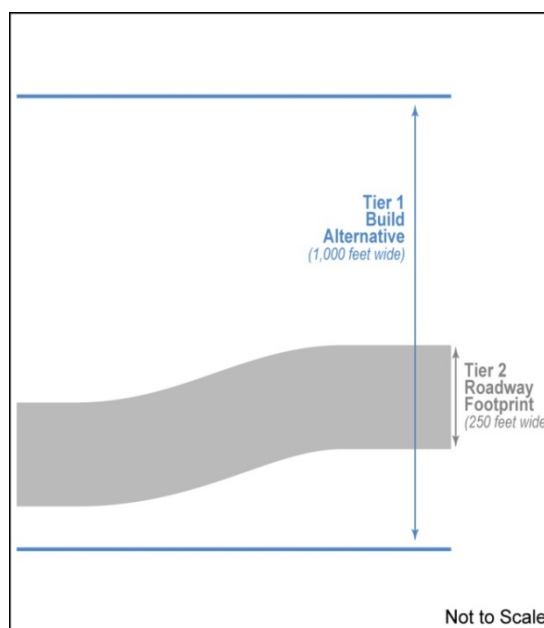


Figure 8-1. Tier 1 vs. Tier 2 Decision

8.2.1 Mitigation Strategies for Natural Environment Resources

The Natural Resources Mitigation Strategies Plan, included as Appendix E of this document, was developed to guide mitigation strategies for natural resource effects that occur as the result of all Tier 2 studies, including effects to wildlife and their habitat, wetlands and riparian areas, and water resources. It outlines a holistic approach to mitigation that prioritizes effective ecological outcomes and coordination with resource agencies and other organizations focused on environmental conservation.

Since the build-out time period for Tier 2 studies is estimated to be decades, the intent of this plan is to help decision makers better coordinate mitigation activities over the long term. As a result of this long-term vision and focus on coordination, the ultimate objective of the plan is to produce better results than traditional, smaller-scale mitigation efforts that normally are undertaken in individual projects.

The plan contains the following three overarching goals that approach mitigation activities on a broad-based and long-term planning level:

- **Maintain and enhance biodiversity in the Lower Arkansas River Valley**—Effective mitigation needs to address biodiversity on several scales simultaneously: landscape level, ecosystem level, species level, and genetic level.
- **Improve ecosystem integrity in the Lower Arkansas River Valley**—Ecosystem integrity means that the natural system is complete, unimpaired, and sound.
- **Accommodate social and economic objectives in the Lower Arkansas River Valley when possible**—Biking, birding, wildlife viewing, hunting, and fishing are recreational activities of economic importance to the region. A sustainable balance must be struck so that the economic activities do not degrade the sustainability of the ecosystems upon which they depend.

To meet these goals, a hierarchy of mitigation strategies was developed that includes general mitigation strategies, mitigation banking strategies, early mitigation strategies, and partnering opportunities. The mitigation hierarchy is presented on Figure 8-2 and the individual strategies are summarized in the following discussion. Details on mitigation strategies are included in Appendix E.

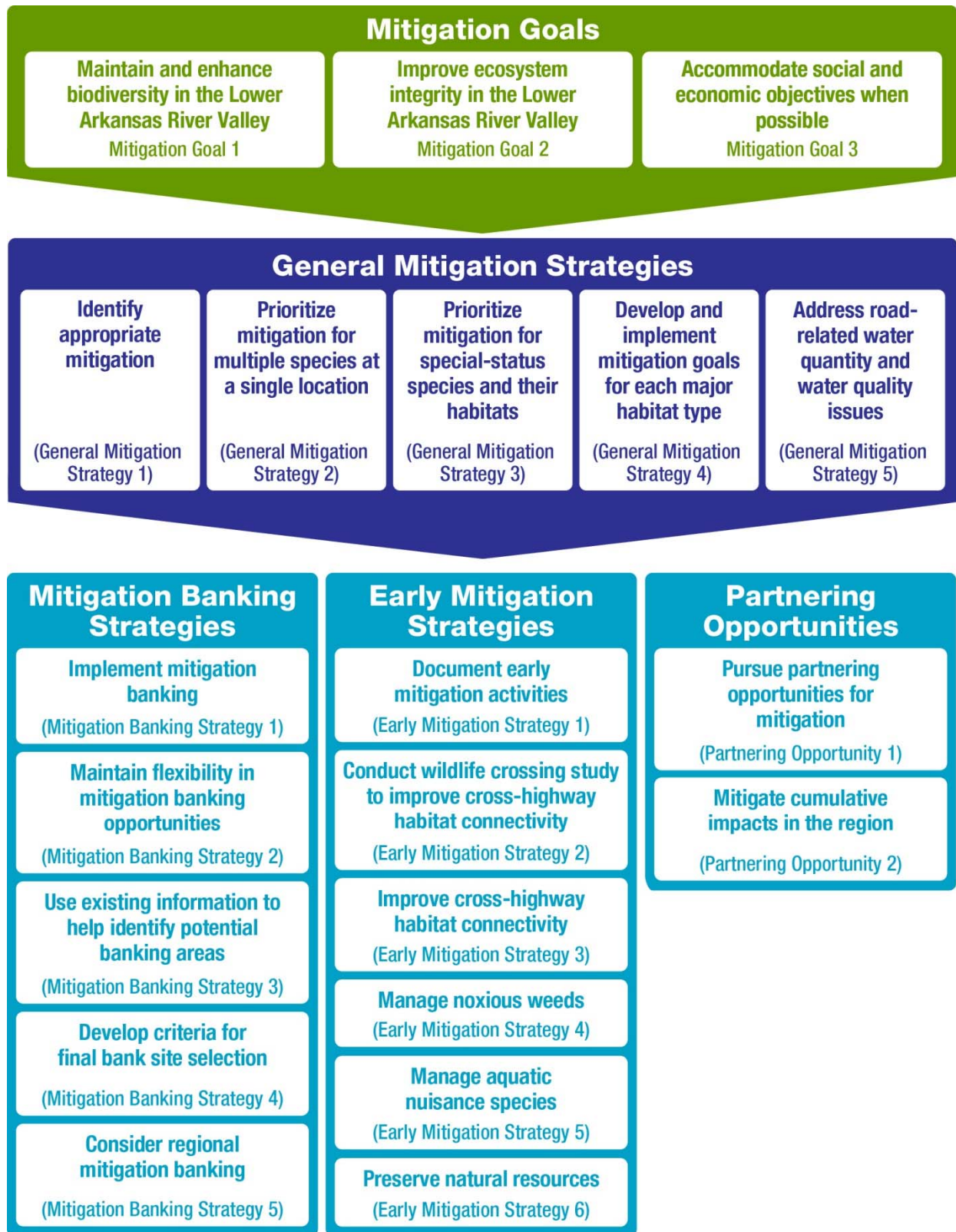


Figure 8-2. Hierarchy of U.S. 50 Tier 1 EIS Mitigation Strategies

General Mitigation Strategies

General mitigation strategies include overall approaches to mitigating impacts to natural resources. The five general mitigation strategies are:

1. Identify appropriate mitigation

Assess site-specific impacts and determine if the most meaningful compensatory mitigation for the impacted habitat or species should occur onsite or at an offsite location. In some cases, compensatory mitigation will be most meaningful to the species inhabiting the area if the mitigation is accomplished onsite, such as impacts to aquatic habitats. However, in other situations, compensatory mitigation will frequently be most meaningful and successful if accomplished at one location where resources can be focused and larger tracts of land can be preserved and restored to natural conditions (e.g., shortgrass prairie, sand sage, and wetland/riparian areas).

2. Prioritize mitigation for multiple species at a single location

Prioritize compensatory mitigation for multiple species in a single location over single-species mitigation, unless regulatory obligations prevent this course of action. This strategy does not preclude mitigation for single species that are unique or uncommon.

3. Prioritize mitigation for special-status species and their habitat

Prioritize mitigation for special-status species (state and federally listed threatened, endangered, and candidate plants and animals) that will likely be directly or indirectly impacted by U.S. 50 improvements over general wildlife species or vegetation. To a lesser degree, species listed by the Colorado Natural Heritage Program as critically imperiled, imperiled, or vulnerable to extirpation within the state of Colorado (ranked S1, S2, or S3) that will be adversely impacted by proposed improvements should be given preference over general wildlife species or vegetation.

4. Develop and implement mitigation goals for each major habitat type

Develop, implement, and document compensatory mitigation goals and objectives for each of the four major habitat/ecosystem types impacted by the Build Alternatives during Tier 2 studies, which include shortgrass prairie, sand sage, wetland/riparian areas, and aquatic.



5. Address road-related water quantity and water quality issues

Address potential increases or decreases in water quantity and delivery caused by improvements associated with the U.S. 50 Tier 1 EIS and subsequent Tier 2 projects by maintaining historic drainage patterns and using best management practices. Similarly, water quality issues also will be addressed during the development and implementation of Tier 2 studies through the creation of site-specific construction stormwater management plans.

Mitigation Banking Strategies

Mitigation banking strategies are specific to wetland or habitat banking. The five strategies related to mitigation banking are:

1. Implement mitigation banking

Wetland and habitat/ecosystem mitigation banks are a form of compensatory mitigation in which the responsibility for compensatory mitigation implementation and success is assumed by a party other than the permittee. In most cases, mitigation banking provides more ecologically important and cost-effective mitigation for impacts than mitigation done in piecemeal fashion. Furthermore, the Compensatory Mitigation Rule of 2008 established a preference for the use of banks when appropriate credits are available.

2. Maintain flexibility in mitigation banking opportunities

Maintain flexibility in creating a mitigation bank (or banks) so that these opportunities can be pursued as they arise. However, maintaining flexibility must be tempered with reasonable judgment so that when a major banking opportunity surfaces, it should not be passed up or overlooked simply to maintain this flexibility.

3. Use existing information to help identify potential banking areas

A substantial amount of environmental, demographic, and species-specific information is available for southeastern Colorado from a variety of sources. Building on this information, and perhaps working within the conservation framework it presents, is both logical and economical because at least a portion of the preliminary research has been completed and will help to focus the search for a banking site.

4. Develop criteria for final bank site selection

The evaluation of sites for final mitigation bank site selection should be based on objective criteria established prior to selecting the site. Evaluation criteria should be scored and based on mitigation strategies described above, as well as land owner interest, projected cost, partnering opportunities, and other relevant variables.

5. Consider regional mitigation banking (i.e., umbrella mitigation bank)

If or when wetland/habitat mitigation bank sites are being developed for the U.S. 50 Tier 1 EIS (including projects resulting from Tier 2 studies), the potential mitigation needs of other CDOT projects (or projects of other agencies in the area) also should be considered. This type of integrated planning approach for mitigating impacts from multiple projects at one or several select bank locations will streamline future permitting, be more cost effective in the long run, and likely result in more “ecologically significant” mitigation.

Early Mitigation Strategies

Early mitigation projects can include anything that is done to mitigate impacts to natural resources prior to impacts occurring within a specific segment of the U.S. 50 Tier 1 EIS Build Alternative. The six early mitigation strategies are:

1. Document early mitigation activities

U.S. 50 early mitigation actions must be documented and approved by the Agency Working Group. This group is comprised of representatives from federal, state, and local agencies. A description of the membership and roles of the Agency Working Group is found in this EIS in Chapter 7, Community Outreach and Public Involvement. Without a documented review process, it is likely that early mitigation projects would either fail to adequately address mitigation concerns of the Agency Working Group or would not receive the appropriate amount of credit commensurate to the beneficial impact of the mitigation activity.

2. Conduct wildlife crossing study to improve cross-highway habitat connectivity

CDOT and FHWA, in cooperation with CPW, will implement a wildlife crossing study to identify structure and non-structure crossings, as well as the best locations within the Build Alternative for new or improved wildlife crossings. The agencies also will identify opportunities to minimize the use of road salt or decrease palatable browse plant species that may attract deer, pronghorn, and other wildlife to the road.



3. Improve cross-highway habitat connectivity

CDOT and FHWA, with the cooperation of CPW and the USFWS, will implement the recommendations of the wildlife crossing study (as described above) to improve cross-highway habitat connectivity and thereby reduce wildlife mortality and improve driver safety.

4. Manage noxious weeds

CDOT will participate, support, and foster coordinated long-term noxious weed management efforts in the U.S. 50 project area. To effectively combat noxious weeds, a coordinated effort across federal, state, and local levels is required. Long-term management of noxious weeds would be necessary to facilitate the restoration of shortgrass prairie, sand sage, and wetland/riparian habitats to a properly functioning native state.

5. Manage aquatic nuisance species

CDOT will participate, support, and foster coordinated efforts to manage aquatic nuisance species in the U.S. 50 project area. Management should include the eradication of aquatic nuisance species populations and the prevention of their spread through public education and monitoring.

6. Natural resource preservation

Under certain circumstances, CDOT may elect to pursue preservation of natural resources, such as acquisition of lands with established, highly functional habitats. Preservation could be preferable and justifiable based on the presence of unique habitat and/or special-status species. The use of preservation as compensatory mitigation would be determined with consideration for compliance with the other established mitigation goals, as well as the amount of credit generated.

Partnering Opportunities

Though not specifically required under NEPA, partnering with federal, state, and local agencies, local governments, and others will help CDOT meet their goals for sustainability in transportation and environmental stewardship, and help FHWA meet some of their goals under MAP-21. The following mitigation strategies relate to partnering opportunities.

1. Pursue partnering opportunities for mitigation

Consult with the Agency Working Group, demonstrating that a reasonable effort has been expended in pursuing financial or in-kind types of partnering opportunities for all types of natural resource mitigation (i.e., avoidance, minimization, and compensatory). In addition to the Agency Working Group, consider discussing partnering opportunities within the U.S. 50 project area with local governments, and non-governmental organizations. The Transportation Environmental Resource Council (TERC), made up of federal, state, and local agencies and Colorado Indian tribes, meet quarterly with CDOT to discuss projects and environmental issues. Partnering opportunities for mitigation may exist with this active group.

2. Mitigate cumulative impacts in the region

Explore opportunities to team with other agencies or organizations operating in the area to help mitigate impacts to natural resources by coordinating efforts to minimize habitat fragmentation, restore degraded habitat and water quality, expand or connect existing habitats, and increase public awareness.

8.2.2 Mitigation Strategies for Built Environment Resources

Mitigation strategies for resources related to the built (human) environment were developed based on the potential effects the Build Alternative could have on each type of resource. Similar to the strategies developed for natural resources, these strategies also are intended to guide mitigation activities for effects that occur as the result of Tier 2 studies.

Mitigation strategies for historic properties (i.e., historic and archaeological resources) were agreed to as part of the *U.S. 50 Tier 1 Section 106 Programmatic Agreement*. This agreement outlines how historic properties will be identified and evaluated in the U.S. 50 Tier 1 EIS. It was developed and signed by representatives from the lead agencies (CDOT and FHWA) and the Colorado State Historic Preservation Officer. The agreement includes the following mitigation strategies:

- When a preferred alternative is chosen, the lead agencies will meet with the Colorado State Historic Preservation Officer and the Section 106 consulting parties “to discuss appropriate mechanisms for avoiding, minimizing and mitigating adverse effects” to historic properties (U.S. 50 Tier 1 Section 106 PA, Sect III(B)(3)).
- Tier 2 studies will include the standard Section 106 consultation process.



Mitigation strategies developed for other resources associated with the built environment are listed in Table 8-1. They also are discussed in Chapter 4, Affected Environment, Environmental Consequences, and Mitigation.

Table 8-1. Mitigation Strategies for Built Environment Resources

Resource	Mitigation Strategies
Air quality	Watering, sweeping, and other dust-suppression techniques would be used to minimize fugitive dust emissions during construction. Additional efforts to minimize pollutant emissions during construction would be made in accordance with CDOT Air Quality Directive 1901.
Agricultural resources	<p>Tier 2 roadway footprints would be routed in the following manner, where possible, to:</p> <ul style="list-style-type: none"> • Follow section lines and existing roads • Minimize impacts to Prime and Unique Farmlands and losses to agricultural productivity • Minimize the number of uneconomical remainders • Work around feedlots and in a manner that would allow operations to continue at these facilities • Avoid direct effects to roadside produce markets • Minimize disruptions to key portions of U.S. 50 that are heavily used for farm-to-market travel, especially during harvest times <p>Also, these footprints would be constructed in a manner that maintains water flows in irrigation canals and ditches and the functionality of those systems' maintenance roads.</p>
Paleontological resources	If paleontological resources are encountered, reasonable efforts would be made to avoid them and to identify and implement efforts to preserve them.
Hazardous materials	Appropriate mitigation measures would be taken during Tier 2 studies to ensure that hazardous materials sites encountered do not cause harm to human health or the environment. Efforts will be made to avoid hazardous material sites, with special consideration for sites that require a Phase 1 assessment and are determined to be Recognized Environmental Condition sites during Tier 2 studies. CDOT or the party responsible for the contamination will safely remove and dispose of any hazardous materials encountered.
Historic resources	In addition to the strategies outlined in the <i>U.S. 50 Tier 1 Section 106 Programmatic Agreement</i> , CDOT would—to the greatest extent feasible—support communities' efforts related to heritage tourism along U.S. 50 in the Lower Arkansas Valley.
Archaeological resources	Follow the strategies outline in the <i>U.S. 50 Tier 1 Section 106 Programmatic Agreement</i> .
Land use	Attempt to remain consistent with existing and planned land uses.

Table 8-1. Mitigation Strategies for Built Environment Resources (continued)

Resource	Mitigation Strategies
Parklands and recreational resources	<p>If the Tier 2 roadway footprint in Granada affects the Granada School District Property, CDOT would evaluate potential noise effects to the facility.</p> <p>If Tier 2 roadway footprints affect any trails managed by local governments or CPW, CDOT would make reasonable efforts to ensure the continued operation of these trails during construction.</p> <p>If Tier 2 roadway footprints result in a direct effect to State Wildlife Areas, including the John Martin Reservoir State Park and State Wildlife Area, CDOT will coordinate with the manager/owner of the resource to identify mitigation during Tier 2 studies.</p> <p>If Tier 2 studies result in effects to the Cottonwood Links Golf Course, Fowler officials have indicated in the past that they would agree to altering the course layout (CDOT 2002b). To minimize disruption and loss of revenue to the facility, new holes would be constructed prior to affecting the existing ones, and changes to the course would be made during the course's low-use season (the course is open year round), to the extent possible.</p> <p>If Tier 2 roadway footprints result in a direct effect to the Las Animas Golf Course, CDOT will coordinate with the manager/owner of the resource to identify mitigation during Tier 2 studies.</p>
Section 4(f) resources	<p>CDOT will undergo a complete Section 4(f) evaluation (see Chapter 5, Section 4(f) Evaluation) during Tier 2 studies to better determine uses and the significance of resources that can't be avoided.</p>
Section 6(f) resources	<p>If Tier 2 roadway footprints would result in a conversion of a Section 6(f) resource, the resource would be replaced with land of at least current fair market value and of reasonable equivalent usefulness and location, in accordance with Section 6(f)(3) of the Land and Water Conservation Act. At this time, no Section 6(f) resources would be affected.</p>
Social and economic conditions	<p>CDOT would assist municipalities with their efforts to preserve the Preferred Alternative right of way around their communities. This could include assistance in drafting zoning ordinances or buying development rights for the property.</p> <p>CDOT would work with municipalities to ensure that signage along U.S. 50 advises travelers of services, businesses, recreational areas, and other amenities available in the communities.</p> <p>CDOT would route Tier 2 roadway footprints to minimize impacts to permanent roadside produce markets and avoid disrupting their access to U.S. 50, where possible.</p> <p>CDOT would schedule construction activities to minimize disruption on key portions of U.S. 50 that are heavily used for farm-to-market travel, especially during harvest times.</p>
Traffic noise	<p>Specific noise conditions would be modeled during Tier 2 studies, and mitigation activities would be considered based on the results of that analysis.</p>
Transportation	<p>If Tier 2 studies impede an existing direct access from U.S. 50 to a property, reasonable measures would be taken to develop an alternative access point to ensure future access to the properties is provided.</p>

**Table 8-1. Mitigation Strategies for Built Environment Resources (continued)**

Resource	Mitigation Strategies
Energy	Mitigation strategies to reduce energy impacts will be considered for construction and operation activities during Tier 2 project evaluation. These strategies will include reducing idling time for construction and maintenance vehicles, and assessing the potential for increased access to transit.

When effects to resources cannot be avoided or minimized during Tier 2 studies, CDOT will compensate for the effects. All acquisitions and relocations (i.e., property acquisition) will comply fully with federal and state requirements, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended.