Chapter 3: CDOT's NEPA-Specific Planning and Project Development Elements

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3. CDOT's NEPA-Specific Planning and Project Development Elements

The development of transportation projects is a multiphase, multiyear process that involves significant commitment of technical and financial resources. This chapter discusses the National Environmental Policy Act (NEPA) elements of the Colorado Department of Transportation's (CDOT) overall transportation planning and project development process.

3.1 Why CDOT Follows NEPA

CDOT has committed to following the intent and requirements of NEPA for all transportation projects, regardless of whether the projects have a Federal nexus (**Section 2.2.3**). Although non-Federal projects will not require Federal agency approval, the NEPA process provides an excellent framework for ensuring that environmental factors are considered consistent with CDOT's environmental ethic. Thus, the guiding principles of NEPA have been incorporated into the CDOT transportation planning and project development process, as well as maintenance and operations of the state transportation system. Additionally, CDOT is committed to following NEPA, and this NEPA Manual is the main guidance document for NEPA compliance at CDOT as stated in CDOT Policy Directive 1904.0 *National Environmental Policy Act Compliance* (CDOT, 2012).

A key principle in NEPA is the use of an interdisciplinary approach. The application of this approach will lead to good transportation decisions and ensure responsible decision-making that includes social and environmental considerations. Several actions can be taken before the NEPA process officially begins to further promote CDOT's environmental ethic and help streamline projects. These actions are discussed below.

CDOT's Environmental Ethics Statement

"CDOT will support and enhance efforts to protect the environment and quality of life for all of Colorado's citizens in the pursuit of providing the best transportation systems and services possible."

3.1.1 CDOT 10-Year Vision Plan

The CDOT 10-Year Vision Plan provides a statewide list of priority transportation projects proposed for funding through Senate Bill (SB) 1, SB 267, and SB 260, including Federal stimulus funds. The Plan has been compiled through the most expansive and inclusive planning and outreach effort undertaken in Colorado. The Plan emphasizes projects that are aligned with the wants and needs of Coloradans and focus on safety, resilience, improving existing conditions, and advanced multimodal investments to expand choice for Coloradans.

CDOT's **10-Year Vision Plan** can be obtained at:
https://www.codot.gov/programs/your-transportation-priorities/your-transportation-plan

CDOT's ***Project Development Manual*** (CDOT, 2013 as amended in 2022) can be obtained at:
https://www.codot.gov/business/designsupport/bulletins_manuals/project-development-manual/revs-to-project-manual

Project management guidance, tools, templates, and examples to complete and implement CDOT's **Project Delivery Plan (PDP)** can be found here: https://www.codot.gov/business/project-management

3.1.2 CDOT Environmental Stewardship Guide and FHWA's INVEST Program

As stated in the CDOT *Environmental Stewardship Guide*, CDOT strives to be a good steward of the environment in operating and maintaining the state's transportation system, often going beyond environmental compliance and striving for environmental excellence (CDOT 2017a). Furthermore, CDOT follows a NEPA-like process for all projects regardless of the type of funding (e.g., state or Federal).

The Federal Highway Administration (FHWA) has developed a web-based tool that includes a "collection of voluntary best practices, called criteria, designed to help transportation agencies integrate sustainability into their programs and projects." This tool is referred to as the Infrastructure Voluntary Evaluation Sustainability Tool or INVEST. FHWA developed INVEST to help make the nation's transportation systems more sustainable – economically, socially, and environmentally. FHWA created INVEST specifically for transportation agencies to evaluate the sustainability of the full lifecycle of their highway and transportation programs and projects (FHWA, 2012b).

Criteria are divided into four modules: System Planning for States (SPS), System Planning for Regions (SPR), Project Development (PD), and Operations and Maintenance (OM) (FHWA, 2012b). These four modules constitute a comprehensive self-evaluation tool to aid agencies in evaluating the sustainability performance of their projects and programs. The SPS, SPR, and OM modules are used to evaluate an agency's programs, and the PD module is used to evaluate projects, from early project planning through construction (FHWA, 2012b).

CDOT's ***Environmental Stewardship Guide*** (CDOT, 2017) documents CDOT's environmental ethic information. This document can be obtained at:
https://www.codot.gov/programs/environmental/resources/guidance-standards

Information about **FHWA's INVEST** program can be accessed at:
https://www.sustainablehighways.org/100/about.html

3.1.3 Developing the Project Team

A project is initiated with the assignment of a project manager. Each CDOT Region's Program Area Engineer assigns a project to a Resident Engineer, who, in turn, assigns a CDOT project manager. The CDOT project manager guides the project through the remainder of the process.

The CDOT project manager is required to involve the Region Planning and Environmental Manager (RPEM) in the development of Form 1048A *Project Scoping/Clearance Record* and Design Scoping Review (DSR) meeting, which is used in conjunction with the *Project Development Manual* (CDOT, 2013 as amended in 2022) and preparation of a Project Development Plan (PDP) to scope the project and track documentation or activity sign-off dates.

The RPEM will involve environmental specialists, who represent physical, biological, cultural, and socio-economic resources to:

- Identify environmental considerations during the early stages of project definition
- Identify environmental issues that could impact the schedule or budget
- Guide the formal NEPA process, particularly if CDOT retains consultants for NEPA support

The environmental scoping form documents considerations for the lead team member (CDOT Region Environmental, CDOT Environmental Programs Branch [EPB], or Consultant), level of analysis and documentation (Brief, Some, Full, or Complete), and comments related to the specific environmental resource. The NEPA process is initiated immediately after the initial NEPA class of action designation (**Section 2.4**) and environmental study requirements are determined. The results of Form 1048A Sections 1 and 2 are discussed with the RPEM when an environmental study is needed. All information must be kept in the project file, which becomes part of the administrative record (further discussed in **Section 6.15**). Early coordination with the RPEM and environmental specialists will reduce the potential for time delays, increased costs, and project design changes. If the CDOT project manager and RPEM decide to contract a consultant to complete the study, they can use the CDOT *Generic Scope of Work* (CDOT, 2022b) to assign time and tasks to various team members. Section 6 of the *Generic Scope of Work* specifically refers to environmental tasks.

The **environmental scoping form** is available at:
https://www.codot.gov/programs/environmental/resources/forms

For more information on CDOT's ***Generic Scope of Work*** (CDOT, 2022b), refer to:
https://www.codot.gov/business/consultants/guidance-documents/generic-scope-of-work

Additional information on **One Federal Decision** can be obtained at:
https://www.federalregister.gov/documents/2017/08/24/2017-18134/establishing-discipline-and-accountability-in-the-environmental-review-and-permitting-process-for

The core of the NEPA interdisciplinary project team consists of an assigned project manager from the region, a RPEM or their designee, an EPB NEPA specialist, the consultant (as needed), the Area Engineer from FHWA's Colorado Division assigned to the project, and local agency representatives (as appropriate). Other staff members who may contribute to the project team over the course of the project will include staff from CDOT Special Units, including Right-of-Way, Access, Engineering, Bridge, Maintenance, Safety, Traffic, Utilities, Materials, Soils and Geotechnical, and others, as necessary. **Chapter 8** identifies staff and team members involved in the environmental document review process.

Outside the CDOT/FHWA project team, external agencies will also participate in the process. When different agencies have independent decision-making authority, the goal is to produce one NEPA document that will meet the regulatory requirements of all agencies. Executive Order 13807 *Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure* requires Federal agencies to process environmental reviews and authorization decisions for "major infrastructure projects" as One Federal Decision—meaning designating a single lead Federal agency and completing a single NEPA decision document. Executive Order 13807 also sets a government-wide goal of reducing the average time for each agency to complete the required environmental reviews and authorization decisions for major infrastructure projects to two years.

3.1.4 Agency Project Roles

The U.S. Department of Transportation (USDOT) agency conducting the NEPA analysis, such as FHWA or the Federal Transit Administration (FTA), serves as the lead Federal agency for NEPA compliance on transportation projects. FHWA may act as a joint lead agency with either another Federal agency (40 Code of Federal Regulations [CFR] § 1501.5 [b]) or a state or local agency under the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) Amendments (SAFETEA-LU, 23 United States Code [USC] § 1001 – 11167). More detailed information about SAFETEA-LU can be found in Section 2.5.

CDOT's **Local Agency Project Desk Reference** (formerly the Local Agency Manual (CDOT, 2022c.) was developed to assist local agency personnel involved in the design, construction, and management of state and federally funded projects. The Manual can be accessed here:
https://www.codot.gov/business/designsupport/bulletins_manuals/local-agency-project-resources

The joint lead agency is typically the project sponsor, which is a state or local government, such as CDOT, receiving Federal funds. When other transportation authorities or governmental entities serve in the role of a joint lead agency, FHWA will generally request CDOT to assist these governmental entities by acting as a program administrator for NEPA compliance. When CDOT performs NEPA, the standard used for document development and processing will be this CDOT NEPA Manual as stated in Policy Directive 1904.0 *National Environmental Policy Act Compliance* (CDOT, 2012). The project sponsors are the local agencies applying to connect to a local roadway, a state highway, or an interstate or those that receive Federal funds for a project.

A Federal, state, Tribal, or local agency having special expertise with respect to an environmental issue or jurisdiction by law may be a cooperating agency in the NEPA process. A cooperating agency has the responsibility to assist the lead agency through participation in the NEPA process at the earliest possible time. The cooperating agency also participates in the scoping process and in developing information and preparing environmental analyses (including portions of an Environmental Impact Statement [EIS] where the cooperating agency has special expertise). Cooperating agencies also make support staff available at the lead agency's request to enhance the lead agency's interdisciplinary capabilities.

Integrating NEPA with Project Development

- Start NEPA early
- Conduct a site visit with a multidisciplinary team, including engineering and environmental
- Involve resource specialists from the regions and headquarters to represent physical, biological, cultural, and socioeconomic resources
- Complete the environmental scoping form
- Maintain continuity of staff from project inception to completion whenever possible
- Collaborate and communicate across disciplines frequently and consistently

As defined by SAFETEA-LU, participating agencies are those with an interest in the project. The standard for participating agency status is more encompassing than the standard for cooperating agency status described previously. Therefore, by definition, cooperating agencies are participating agencies, but not all participating agencies are cooperating agencies. The lead agencies should consider the distinctions in deciding whether to invite an agency to serve as a cooperating/participating agency or only as a participating agency.

The roles and responsibilities of cooperating and participating agencies are similar, but cooperating agencies have more authority, responsibility, and involvement in the environmental review process. A distinguishing feature of a cooperating agency is that the Council on Environmental Quality (CEQ) regulations (CEQ, 40 CFR § 1500 – 1508) permit a cooperating agency to "assume on request of the lead agency responsibility for developing information and preparing environmental analyses including portions of the environmental impact statement concerning which the cooperating agency has special expertise." An additional distinction is that, pursuant to 40 CFR § 1506.3, "a cooperating agency may adopt without recirculation of the environmental impact statement of a lead agency when, after an independent review of the statement, the cooperating agency concludes that its comments and suggestions have been satisfied." This provision is particularly important to permitting agencies, such as the U.S. Army Corps of Engineers (USACE), who, as cooperating agencies, routinely adopt USDOT environmental documents.

Moving Ahead for Progress in the 21st Century Act (MAP-21) (Section 1205[b]) amended Section 139(c) of title 23 USC and allowed the Secretary of Transportation to designate a single Federal lead agency for purposes of environmental review if the project requires approval from more than one modal administration. MAP-21 (Section 1305[c]) amended 23 USC 139(d) by:

- Directing participating agencies to comply with the environmental review process requirements in Section 139, as amended by MAP-21;
- Requiring participating and cooperating agencies to carry out their obligations under applicable laws concurrently with the lead agency's environmental review process, unless doing so would impair their ability to conduct needed analysis or otherwise carry out those obligations; and
- Requiring participating and cooperating agencies to formulate and implement administrative, policy, and procedural mechanisms to enable the agency to ensure completion of the environmental review process in a timely, coordinated, and environmentally responsible manner.

MAP-21 (Section 1305[a] [23 USC 139[b][3]) included the provision for rulemaking to allow the use of programmatic approaches to conduct environmental reviews that:

- Eliminate repetitive discussions of the same issues;
- Focus on the actual issues ripe for analyses at each level of review; and
- Are consistent with NEPA and other applicable laws.

At a minimum, programmatic reviews should:

- Promote transparency, including the analyses and data used, the treatment of any deferred issues raised by agencies or the public, and the temporal and spatial scales to be used for analysis;
- Use accurate and timely information in the reviews;
- Describe the relationship between programmatic analysis and future tiered analysis;
- Describe the role of the public in the creation of future tiered analysis; and
- Be made available to other relevant Federal and state agencies, Indian tribes, and the public.

Fixing America's Surface Transportation Act (FAST Act) built on the authorities and requirements of SAFETEA-LU, MAP-21, and FHWA's Every Day Counts efforts to accelerate the environmental review process for surface transportation projects by institutionalizing best practices and expediting complex infrastructure projects without undermining critical environmental laws or opportunities for public engagement. The FAST Act added a new procedural requirement aimed at ensuring early collaboration and efficient environmental reviews. That is, to the maximum extent practicable, the lead agency shall develop a single NEPA document sufficient to satisfy the requirements for any Federal approval or other Federal action required for the project, including permits issued by other Federal agencies. Additional information about FAST Act can be found in **Section 2.7**.

3.1.5 Agency Coordination Plan

If conducting an EIS, Section 6002 of SAFETEA-LU requires that a project team complete an Agency Coordination Plan prior to the start of a project. The Agency Coordination Plan defines the roles and responsibilities of the various agencies, outlines major project milestones, and defines how input from stakeholders will be solicited. While this plan is required for EISs, it is encouraged for Environmental Assessments as well. In accordance with MAP 21, participating agencies must concur on the project schedule if a project schedule is included in the Project Coordination Plan. FAST Act requires a schedule to be part of a Project Coordination Plan and requires the creation of a checklist to help project sponsors identify natural, cultural, and historic resources in the area of a proposed project. **Appendix E** includes an example template for an Agency Coordination Plan.

CEQ regulations include criteria for designating a lead agency if a conflict exists (CEQ, 40 CFR § 1501.5), as well as the roles and responsibilities of cooperating agencies (CEQ, 40 CFR § 1501.6). External agency involvement may also be dictated by existing intergovernmental agreements (IGAs) between CDOT and/or FHWA and the agency, such as:

- Memorandum of Understanding (MOU) among CDOT, FHWA, Bureau of Land Management (BLM), and the U.S. Forest Service (USFS) Related to Activities Affecting the State Transportation System and Public Lands in the State of Colorado
- NEPA / Clean Water Act (CWA) Section 404 Merger Process for Transportation Projects in Colorado
- MOU among FHWA, U.S. Environmental Protection Agency (EPA), and CDOT that formalizes the cooperative working relationship among these agencies
- Memorandum of Agreement (MOA) between CDOT and the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD) regarding procedures for determining project level conformity and hotspot analysis.

A video explaining the **MOU among CDOT, FHWA, BLM, and USFS** is located here:
https://www.codot.gov/programs/environmental/resources/intergovernmental-agreements

Current **IGAs** can be found at:
https://www.codot.gov/programs/environmental/resources/intergovernmental-agreements

3.1.6 Project Lifecycle

In 1991, Colorado's General Assembly enacted legislation directing that transportation planning is to occur as a cooperative process:

> ...the General Assembly recognizes the Department of Transportation as the proper body, in cooperation with regional planning commissions and local government officials, for developing and maintaining the state transportation planning process and the state transportation plan. §43-1-1101 Colorado Revised Statutes

With policy direction provided at the statewide level through the Colorado Transportation Commission, regional planning commissions prepare regional transportation plans (RTP) identifying and prioritizing their long-range transportation needs for all modes. These RTPs and priorities are integrated and consolidated into the long range multimodal statewide transportation plan (SWP), which serves as the blueprint for how transportation resources are invested and projects are selected for implementation.

Decisions made during planning can be reflected in project-specific NEPA documentation without revisiting those decisions depending on the process that was followed and the magnitude and sensitivity of the related issues. CDOT project managers must also work closely with their RPEM and planning staff to understand the required components of the project that have already gone through the planning process and may not need to be revisited. For more information on integrating planning with NEPA, see **Section 3.2**.

CDOT's *Project Development Manual* (CDOT, 2013 as amended in 2022) identifies and describes the activities related to project development from conception to award of the build contract and establishes a uniform application of processes and procedures for use across CDOT. The *Project Development Manual* is organized into eight sections, each covering an important aspect of Form 1048A *Project Scoping/Clearance Record*.

The following sections of Form 1048A are important to the initiation of NEPA:

- Section 1 states that the need for a preliminary field survey to be assessed.
- Section 2 must be reviewed in coordination with the RPEM to determine the presence or absence of environmental considerations and the documentation of that information. This information will be used during the initiation of the NEPA process and will help the project team assess the need for supplemental field studies.

Section 2 also addresses route location approval and environmental compliance. In compliance with the FHWA and the FTA jointly issued regulation, *Environmental Impact and Related Procedures* (FHWA and FTA, 23 CFR 771 § 771.101 – 771.131), all proposed projects must be assigned an environmental class of action designation, which helps determine the appropriate level of environmental studies and public involvement activities required for approval by CDOT staff. The RPEM is responsible for scoping the project and, in consultation with the project team and FHWA, determining the initial class of action and the environmental studies, approvals, and permits required.

To find out more about the current **Statewide and Regional Transportation Plans** and other transportation planning related topics, see CDOT's Statewide/Regional Planning website at:
https://www.codot.gov/programs/planning

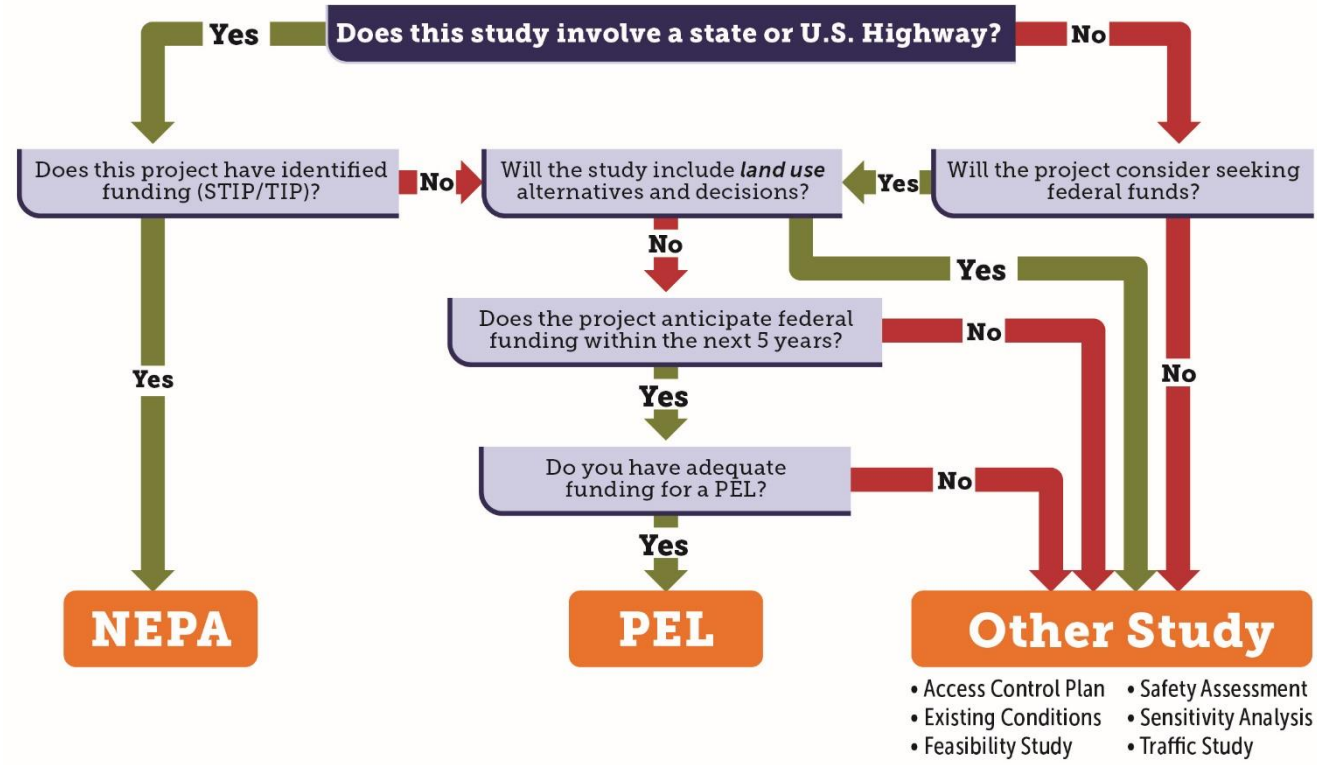
CDOT's ***Project Development Manual*** can be found at:
https://www.codot.gov/business/designsupport/bulletins_manuals/2013-project-development-manual/revs-to-project-manual

3.2 Planning and Environmental Linkages (PEL)

PEL is a study process typically used to identify potential transportation benefits and impacts, along with environmental benefits and concerns, in an area, a corridor, or a specific location. It is generally conducted before overall project construction funding and phasing are identified, and before specific problems and solutions are known. Before a PEL study is conducted, a scoping process determines whether to even do a PEL study. It needs to be determined why the study is being conducted and what questions are trying to be addressed. **Figure 3-1** presents a decision tree on whether to conduct a PEL study.

One condition that specifically needs to be considered when determining whether to do a PEL study is the shelf life of a PEL study. If NEPA does not begin within five years from the conclusion of the PEL study, the information from the NEPA study must validate the PEL alternatives analysis and confirm that conditions or policies and guidance that would affect the analysis and recommendations have not changed.

Figure 3-1. PEL Study Decision Tree



PEL studies can be used to make planning decisions and for planning analysis. These decisions and analyses, for example, can be used to identify and prioritize projects, develop the Purpose and Need for a project, determine project size or length, and/or develop and refine a range of transportation improvement alternatives. A PEL study can create a basic description of the area's environmental setting, recommend methodologies for future environmental resource analysis, and identify mitigation strategies and programmatic level mitigation for potential impacts that are most effectively addressed at a regional or a state level.

The PEL process can be helpful in discovering needs and desires and garnering project support for an overall vision when a project involves multiple jurisdictions, and it can be used as a project prioritization tool. For example, a PEL study for a corridor could result in the identification of multiple potential projects (i.e., capacity improvements for a shorter length of the corridor, and intersection improvements), which can then be prioritized for implementation.

A PEL study evaluates and recommends operational strategies based on existing and reasonably anticipated technologies at the time of the study, either as stand-alone alternatives or supplemental options to identify project recommendations that will optimize safety and operational benefits. Due to the variance of applicability over future years, the technology concepts evaluated for a PEL study should consider potential time horizons and the CDOT-identified target Connected Roadway Classification (CRC) level for the study corridor(s). As new technologies arise, recommendations and prioritized projects may move forward in the future as modified with the proven applicably of new transportation technologies.

A PEL study may determine whether corridor managed lane strategies are appropriate when considering capacity improvement alternatives. The CDOT Managed Lanes Guidelines should be referenced for guidance on the planning process and documentation for managed lane strategies. The PEL study documentation should include a memorandum outlining the decision on managed lanes with the completed Managed Lanes Decision Form. When managed lanes have been evaluated in a previous PEL study, additional evaluation may not be required within the following NEPA study pending confirmation from FHWA and the CDOT RPEM.

The CDOT Managed Lanes Guidelines (February 2019) are available here:
https://www.codot.gov/safety/traffic-safety/assets/cdot-managed-lanes-guidelines_february-2019.pdf

3.2.1 PEL Study Use in NEPA

A PEL study links planning efforts to future environmental issues and results in valuable information that can be carried forward into the NEPA process. These studies must address some aspects of NEPA to be valid for incorporation into a future NEPA analysis, although the PEL study should cost less and take less time than a NEPA process. The environmental overview and resource information within a PEL study should be used to facilitate the scoping for subsequent NEPA documentation.

The PEL study should include a project vision or Purpose and Need with a list of specific project goals, a detailed area description that identifies environmental resource issues and constraints, and stakeholder involvement, including public and agency outreach. This should occur before any alternatives are developed. For the alternatives development and evaluation in a PEL study to be used by reference in a subsequent NEPA process, the basis of the evaluation, including the project

Purpose and Need, evaluation criteria, and alternatives screening, must meet NEPA standards. **Figure 3-2** presents a flowchart displaying the PEL process and showing the four FHWA coordination points required during the study.

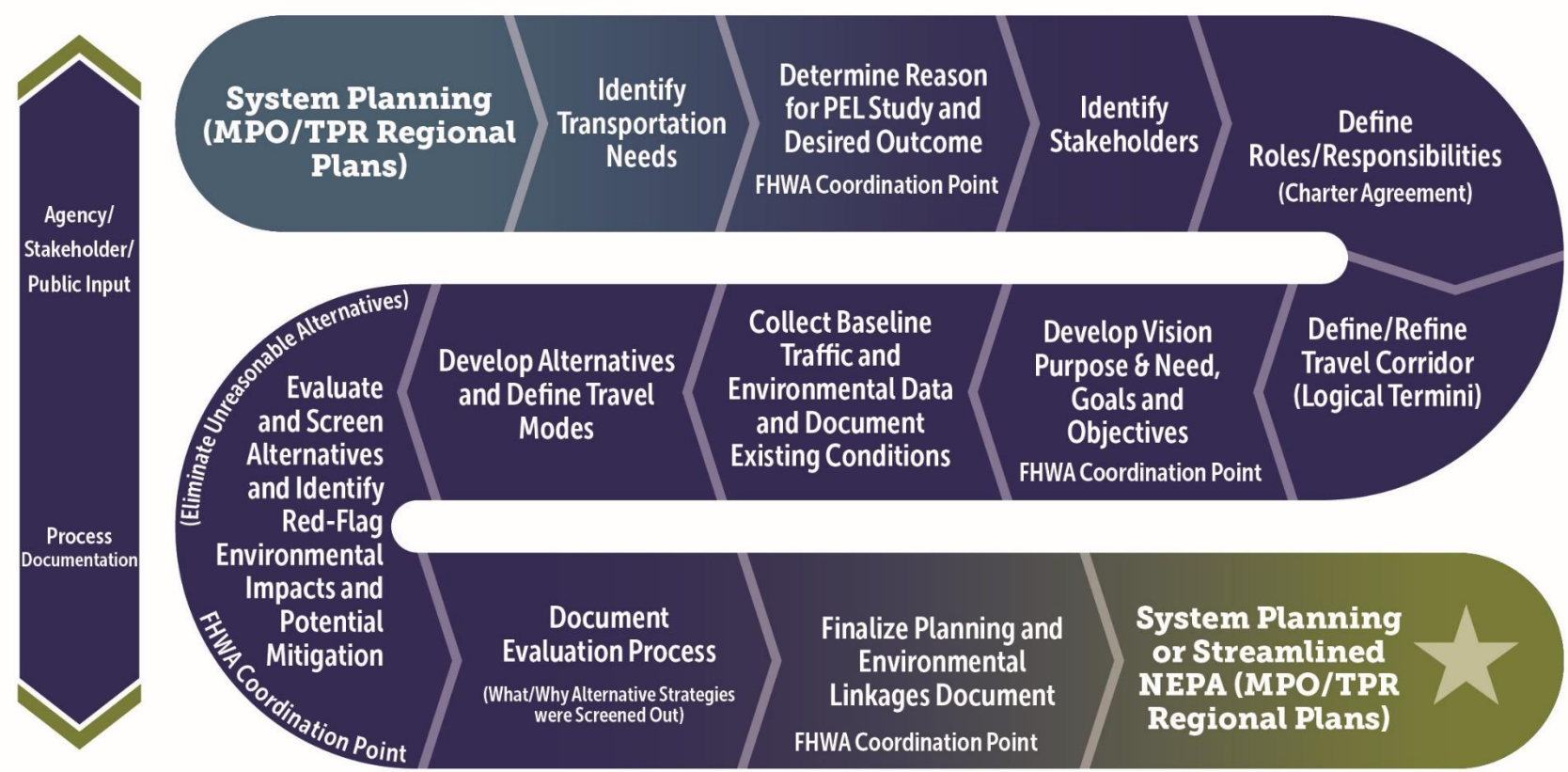
At the conclusion of a PEL study, CDOT requests a letter from FHWA acknowledging the completion of the study and that it was undertaken in a manner consistent with the FHWA PEL guidance (FHWA, 2012a). If the FTA is leading the PEL study, they should be consulted about their PEL acceptance process.

The adoption and the use of a PEL study in the NEPA process are subject to a determination by FHWA, with the concurrence of other stakeholder agencies, that several specific conditions have been met. These conditions are listed in Section 1310, Integration of Planning and Environmental Review, part (d) of MAP-21.

PEL is a study process used to identify transportation issues, priorities, and environmental concerns. It can be applied to make planning decisions and used for planning analysis. The primary objective of the PEL process is to assess transportation needs and priorities. Assessment can be on a program level, such as evaluating transportation funding options, or at a project level. Project-level PEL studies, which have been the majority of PELs completed, can range from large corridor studies to more localized studies, such as an interchange improvement.

More information on the CDOT PEL Program can be found at:
https://www.codot.gov/programs/environmental/planning-env-link-program

Figure 3-2. PEL Process Flowchart*



*Note: Not all these steps must be followed. PEL studies can determine which steps apply based on the reason for the PEL.

3.3 Context Sensitive Solutions (CSS)

Context Sensitive Solutions (CSS) represents an evolution in the philosophical approach to transportation development. It recognizes the need to develop transportation solutions that supplement and support the social, economic, and environmental context of the facility. CSS seeks a balance among four primary elements:

- Mobility
- Safety
- Preservation and enhancement of the natural environment
- Community values

Balancing these elements is accomplished using four key components:

- Project Purpose and Need
- Effective involvement of a full range of stakeholders
- Survey and analysis of environmental features
- Use of multidisciplinary teams

Using these components and balancing the four elements, CSS seeks to proactively identify and address issues early in the project development process, thereby reducing redundancy and lost time during project development, design, and construction. The early use of the four key components balances the four primary elements of CSS and leads to transportation solutions that are more effective and sustainable with fewer corrections and changes needed later.

While aesthetic treatments and visual enhancements are often features in designing a facility that is responsive to stakeholder needs, CSS should not be construed as simply a beautification requirement. CSS represents comprehensive solutions to transportation issues in such a way as to minimize negative impacts to all stakeholders and to design projects that best fit the physical setting, work with, and enhance the community and environment of which they are a part.

A specific section on CSS should not appear in any NEPA document. It should be reflected in the way the NEPA process is implemented. Ideally, CSS will influence how project decisions are made and how the other sections are written.

Because each project has a unique context, a one-size-fits-all process for CSS is not appropriate. How CSS principles and tools can be effective for each project must be developed individually, through the level of stakeholder involvement appropriate for each project.

CDOT has established **CSS guidance** specifically for the **I-70 Mountain Corridor** available at: https://www.codot.gov/projects/contextsensitivesolutions

3.4 CDOT and the 1601 Process

CDOT's 1601 process is required when there is a request for an interchange or major improvements to an existing interchange. Of these 1601s, some also may require FHWA's Interchange Approval Request (IAR) process if they affect interstate travel. Although different processes, they can be completed at the same time.

The CDOT Policy Directive 1601.0 and Procedural Directive 1601.1 Interchange Approval Process describe a CDOT process to review requests for interchanges and major improvements to existing interchanges on the state and Federal-aid highway system that could affect highway travel (CDOT, 2005). The Colorado Transportation Commission established CDOT Policy Directive 1601.0 and Procedural Directive 1601.1 to provide fair and consistent procedures regarding the review and evaluation of requests for new interchanges and major improvements to existing interchanges on the state highway system.

The 1601 process requires, among other things, that the interchange:

- Be consistent with an approved fiscally constrained RTP and SWP, and included in a Transportation Improvement Program (TIP) and/or Statewide Transportation Improvement Program (STIP)
- Be the subject of approved IGAs that address the funding of the application development and review process, timeline and analytical expectations, and an IGA covering construction, operations, maintenance, and replacement of the interchange
- Have sufficient environmental, operational, and other studies performed consistent with FHWA interchange approval and NEPA requirements.

The scope of study and level of detail and effort depend on the improvement type and the complexity of the interchange proposal. The 1601 interchange approval process identifies three types of interchange requests: Type 1, Type 2, and Type 2a.

The 1601 interchange approval pre-application meeting will identify the improvement type (Type 1, 2, or 2a), as well as the appropriate scope of the study and level of detail and effort.

Type 1 requests consist of two categories: (1) Proposals for new interchanges on the state highway system with a functional classification of interstate or freeway; and (2) Any type of proposal on the state highway system not initiated by CDOT that anticipates CDOT cost-sharing participation. The Transportation Commission must approve Type 1 requests.

Type 2 requests consist of proposals for a new interchange not on the interstate or freeway system and all modifications or reconfigurations to existing interchanges. Type 2 requests must be approved by the Chief Engineer, who may elevate the request to the Transportation Commission for consideration.

Type 2a requests consist of minor interchange improvements that will have little or no impact to the state highway system or surrounding local transportation system, consistent with the definitions and guidance provided in the *FHWA Colorado Division Control of Access to the Interstate and its Right of Way* (FHWA, 2005). Type 2a approvals are delegated by the Chief Engineer to the CDOT Region Transportation Director.

To preserve the overall functionality and operability of the state of Colorado's highway system, the applicant will implement traffic reduction or Transportation Demand Management ("TDM") strategies to preserve the long-term functionality of the constructed interchange improvement.

The effectiveness of TDM strategies is highly dependent on the specific location, complementary strategies, nature of the travel segment being targeted, and implementation and promotion. TDM requirements apply to new Type 1 and Type 2 interchange proposals. The TDM requirement does not apply to Type 2a proposals. The proposed TDM improvements will be included for analysis in the Systems Level Study.

The steps in the 1601 interchange approval process include:

- Step 1: 1601 Pre-Application Meeting(s)
- Step 2: Initial IGA Approval
- Step 3: System Level Study Preparation
- Step 4: System Level Study Approval
- Step 5: Metropolitan Planning Organization (MPO)/Transportation Planning Region (TPR) Board Approval
- Step 6: Design and NEPA Approval Process
- Step 7: Final IGA

A System Level Study is required for both Type 1 and Type 2 proposals and should provide enough information to support the FHWA IAR or Minor Interstate Modification Request (MIMR). Type 2a proposals do not require a System Level Study but should have sufficient data to substantiate the determination of "no potential for significant impact" in accordance with the *FHWA Colorado Division Control of Access to the Interstate and its Right of Way* (FHWA, 2005).

The purpose of a System Level Study is to identify the short- and long-term environmental, community, safety, and operations impacts of a proposed interchange or interchange modification to the degree necessary for the CDOT Chief Engineer, Transportation Commission, and FHWA to make an informed decision on whether the proposed interchange or interchange modification is in the public interest. A System Level Study scope should be identified to show the build and no-build conditions of the highway network both on opening day and for a design year, typically twenty years into the future.

A System Level Study includes:

- Draft Purpose and Need Statement
- Existing and Forecasted Conditions
- Alternatives
- Planning-level Evaluation of Alternatives
- Environmental Considerations
- Funding and Phasing

The IAR approval, a two-step process, was developed to help the state manage risk and provide flexibility. The process is intended to identify fatal flaws and to help ensure that the investment in environmental documentation is not wasted. The first step is a finding of operational and engineering acceptability. The second step is the final approval. The FHWA approval constitutes a Federal action and requires that NEPA procedures are followed. Compliance with NEPA procedures need not precede the determination of engineering acceptability. However, final approval of access cannot precede the completion of NEPA. Once NEPA has been completed, approval of access is granted if no changes resulted to the accepted concept.

3.5 Funding and Fiscal Constraint in NEPA

The cost, size, and complexity of transportation projects, combined with limited available funding, often result in transportation projects being funded and implemented over a lengthy period rather than all at once. This section describes the funding and timing of project implementation in relation to the NEPA process. This discussion includes:

- Fiscal constraint requirements for initiating and completing NEPA
- Phasing and timing of construction in relation to NEPA
- Interim construction requirements
- Timing of mitigation

State regulations (2 CCR 601-22) require fiscal constraint of the SWP (this is not a Federal requirement; fiscal constraint is only required for MPO plans).

3.5.1 Funding Definitions

In describing the requirements of fiscal constraint with respect to NEPA, the following FHWA definitions (FHWA, 2011) apply:

- ***Fiscal constraint*** means that the metropolitan RTP, TIP, and STIP have sufficient financial information to demonstrate that a project in the RTP, TIP, and STIP can be implemented using committed, available, or reasonably available revenue resources.
- ***Available funds*** are funds derived from existing sources dedicated to or historically used for transportation purposes. For example, apportioned/authorized Federal-aid dollars or toll revenues for the next 2 to 4 years. [23 CFR § 450.104]
- ***Committed funds*** are funds that have been dedicated or obligated for transportation purposes. For example, funds obligated for a Federal-aid project or toll revenues for the next 2 years. [23 CFR § 450.104]
- ***Reasonably available funds*** – Determining whether a future funding source is reasonably available requires a judgment decision. Two important considerations in determining whether an assumption is "reasonable" are (a) evidence of review and support of the new revenue assumption by state and local officials and (b) documentation of the rationale and procedural steps to be taken with milestone dates for securing the funds.

3.5.2 Fiscal Constraint Requirements

FHWA and CDOT have specific requirements, based on statutes and regulations, for the demonstration of fiscal constraint for a project prior to final NEPA approval (Categorical Exclusion [CatEx], Finding of No Significant Impact [FONSI], or Record of Decision [ROD]). Fiscal constraint for a project is demonstrated by satisfying the requirements of specific transportation planning and air quality conformity regulations, as described in this section.

> Conformity is required by Clean Air Act Section 176(c). This section requires that Federal agencies do not adopt, accept, approve or fund activities that are not consistent with State air quality goals.

The Metropolitan Planning Regulations (23 CFR 450.322) and the Clean Air Act (CAA) Transportation Conformity Rule (40 CFR 93.104) work together to require that a project located in an MPO (the geographic area in which the metropolitan planning process is carried out) and/or in a CAA nonattainment or maintenance area, be contained in a conforming, fiscally constrained long range RTP. The CAA requires air quality conformity to be demonstrated for major transportation projects in non-attainment and/or maintenance areas.

The following fiscally constrained transportation plans must identify all projects that are expected to receive federal funds or that will require FHWA or FTA approval:

- **RTP** – Identifies projects anticipated to be constructed over the next twenty years.
- **TIP** – Identifies capital and non-capital surface transportation projects, as well as regionally significant projects within the metropolitan planning area to be constructed in the next six years.
- **STIP** – Identifies capital and non-capital transportation projects (or phases of projects) proposed for funding under Titles 23 and 49 of the USC, as well as all regionally significant transportation projects regardless of funding source and/or requiring action by FHWA and FTA over a six-year period.

3.5.3 Transportation Planning Process Context

In 1991, Colorado's General Assembly enacted legislation providing the basis for the transportation planning process in Colorado. The law requires the development of a comprehensive fiscally constrained, long range 20-year SWP that incorporates the priorities and needs of Colorado's 15 TPRs. CDOT carries out a continued, cooperative, and comprehensive statewide multimodal transportation planning process with its 15 TPRs. Of the 15 TPRs, 10 are considered non-urban TPRs, and the 5 located in urban areas are considered MPOs. Each TPR includes the municipalities and counties within its established boundaries.

The planning process includes the development of long range multimodal RTPs by each TPR, which are integrated into the SWP. The RTPs and SWP include fiscally constrained and fiscally unconstrained vision components and identify the needs, corridor visions and strategies, and/or projects anticipated to be constructed over the next 20 or more years. The SWP combines the individual corridor visions of the TPRs into a statewide vision that links transportation goals and strategies to investment decisions.

The SWP includes an environmental section that lists conservation and management plans for resource agencies in each TPR and MPO RTP. The SWP is supported by environmental technical reports, transit technical reports, etc. Each of the 15 TPRs includes corridor visions that integrate community values, land use decisions, and environmental concerns with transportation needs. The RTPs include an environmental overview that addresses expected environmental, social, and economic impacts of the recommendations contained in the transportation plan. Colorado Revised Statute (CRS) 43-1-1103 states that the RTPs shall include expected environmental, social, and economic impacts of the recommendations contained in the transportation plan. The TPRs have updated corridor visions to identify current trends and conditions. Corridor visions increase the efficiency and accountability of the transportation system by aligning vision strategies and project priorities.

CDOT also develops a STIP that identifies the short-term project needs and priorities of the state of Colorado. In addition, under Federal law, all MPOs are required to develop a short-term capital improvement program TIP consistent with the long range RTPs for each MPO. Similar to the STIP, the TIPs for each MPO are updated every four years and include a six-year planning horizon. TIPs approved by the MPOs and Governor are included in the STIP without modification. STIP projects must be consistent with the corridor visions identified in the SWP. The RTP and SWP and corresponding TIP identify all Federally funded and regionally significant projects, if applicable.

FHWA's memoranda on fiscal constraint are available at:

Transportation Planning Requirements and Their Relationship to NEPA Process Completion – January 28, 2008 (http://www.fhwa.dot.gov/planning/tpr_and_nepa/index.cfm)

Supplement to January 28, 2008 *Transportation Planning Requirements and Their Relationship to NEPA Process Completion* – February 9, 2011 (http://www.fhwa.dot.gov/planning/tpr_and_nepa/supplementmemo.cfm)

Clarifying Guidance on Flexibilities in Fiscal Constraint – May 15, 2017 https://www.fhwa.dot.gov/planning/clarify_fiscal_constraint.cfm

3.5.4 Fiscal Constraint Requirements for NEPA

FHWA has provided guidance in two memoranda regarding the relationship of transportation planning to NEPA approval, with an emphasis on fiscal constraint. As described in the memoranda, to demonstrate fiscal constraint, certain requirements of the transportation planning process must be completed before initiating and/or finishing the NEPA process. Constraint requirements must be indicated in the NEPA document in a project phasing and implementation section, or elsewhere as appropriate.

In addition to the fiscal constraint requirements, it is incumbent on FHWA and CDOT to consider the broader context of fiscal stewardship when making NEPA decisions, including decisions on whether to initiate the NEPA process. Fiscal stewardship is a critical role and responsibility for FHWA and CDOT and is engrained throughout the transportation decision-making process: from fiscal constraint requirements in the transportation planning process, to reasonable cost estimates of alternatives in project development and the NEPA process, to financial plans and major project requirements during design and construction.

Table 3-1 details the Federal planning and NEPA requirements that must be met whether the environmental process is funded with Federal-aid.

Table 3-2 describes the fiscal constraint actions that must be in place before a final environmental decision is made.

Table 3-1. Planning Requirements for NEPA*

NEPA process	NEPA process can start:	Required actions before the Final NEPA Decision can be approved
NEPA process funded with Federal funds	▪ Corridor/feasibility (Planning and Environment Linkages - PEL) studies: the study does not need to be in the fiscally constrained RTP or SWP and can start at any time, but the study must be in the Unified Planning Work Program (UPWP) or State Planning and Research (SPR) work program when funded with Metropolitan Planning (PL)/SPR funds. Chapter 3, Section 3.2 provides more guidance on the PEL process. ▪ Tier I EIS can start prior to being in the fiscally constrained RTP or SWP if the scope is for corridor planning or feasibility study and will not include decisions directly resulting in project implementation activities of any kind (e.g., Right of Way purchase). Chapter 4, Section 4.21.1 provides more guidance on Tier 1 EISs.	N/A
NEPA process funded with Federal funds	▪ NEPA study must be in the RTP or consistent with the SWP ▪ NEPA phase of the project must be in TIP or STIP	▪ One subsequent phase of project is in the STIP/TIP
NEPA process not funded with Federal funds	▪ After the planning level purpose and need has been identified ▪ Project does not need to be in the fiscally constrained RTP ▪ Project does not need to be in the fiscally constrained STIP/TIP	▪ Project is in the fiscally constrained RTP ▪ NEPA phase of the project is amended into the TIP or STIP ▪ One subsequent phase of project is in the STIP/TIP ▪ Project must meet all NEPA requirements

* In accordance with the *CDOT Environmental Stewardship Guide* (CDOT, 2017), CDOT follows a NEPA-like process for all projects regardless of funding. This table deals specifically with those projects that require the NEPA process in accordance with 23 CFR 771.

Table 3-2. Fiscal Constraint Requirement before Approving the NEPA Decision

Before a Final Environmental Decision (CatEx, FONSI, ROD) is approved in:	Fiscal Constraint must be demonstrated by:
Metropolitan Areas (MPO)	▪ Entire project is in the RTP ▪ At least one subsequent phase of the project to be cleared in NEPA must be in the TIP (more if within TIP timeframe) or STIP ▪ Full funding is reasonably available for the completion of the entire project ▪ Project level conformity determination for all projects subject to transportation conformity
Non-Metropolitan Areas (Outside MPO)	▪ Project is consistent with the SWP ▪ At least one future phase of the project is in the STIP (more if within STIP timeframe) ▪ Full funding is reasonably available for the completion of the entire project

3.5.5 Phasing/Timing of Construction

Transportation projects are often implemented in phases. This may be done for several reasons, the most obvious of which is the ability to physically construct the project. Another reason is funding limitations that may preclude the ability to construct the entire project at one time. Phased implementation is typically detailed during final design. However, the requirements of fiscal constraint must be satisfied for NEPA approval, as described previously.

In cases where a project is implemented in more than one phase, each phase should have independent utility and logical termini to the extent that the phase provides a functional transportation system even in the absence of other phases (i.e., the phase to be implemented has the ability to operate on its own). Each phase must also meet the project purpose and need. In addition, any mitigation measures needed in response to project impacts must be implemented with the phase in which the impacts occur, rather than deferred to a later phase.

When project construction is anticipated to occur in one, two, or more phases separated by a period of time (rather than normal construction phasing), this situation should be described in the NEPA document and in the accompanying public involvement process.

The discussion should include:

- Project funding status
- Project phasing
- Implementation schedule

Often funding limitations may make it difficult to predict the timing of future phases, and in these cases, measures must be taken to ensure the independent utility of each phase. Additionally, it must be demonstrated that air quality conformity will not be jeopardized.

In establishing project phasing, FHWA, CDOT, and local agencies may establish criteria to be used as guidelines in establishing logical project phases including:

- **Independent utility/logical termini** – Each phase should have independent utility and logical termini to the extent that the phase provides a functional transportation system even in the absence of other phases.
- **Elements of purpose and need** –Each phase should contribute to meeting the purpose and need for the entire project.
- **Environmental impacts** – Individual phases should avoid the introduction of additional environmental impacts that cannot be mitigated.
- **Mitigation paired with impacts** – Each phase should include appropriate mitigation measures to match the environmental impacts of that phase.
- **Fiscal constraint** – Any phase selected must meet the requirements of fiscal constraint.
- **Air quality conformity** – Any phase selected must meet the requirements of air quality conformity.

Using criteria such as these can establish a series of logical phases. In addition to these criteria, logical sequencing of phases in terms of constructability and operation should be considered and a general priority of needs applied, with system reliability and safety often as the top priority.

3.5.6 Interim Conditions

When a project is constructed in phases, interim conditions will exist between project construction phases. In some cases, such as when phasing is done only for constructability and/or to maintain traffic on an existing facility, the interim conditions may be short term, lasting only until the next construction phase can begin. In other situations, such as limited funding, interim conditions may last for years.

In some cases where funding is limited, it may be desirable to phase the project to provide interim improvements and benefits earlier rather than waiting for funding for full construction. However, the decision to phase a project in this way should weigh the benefits with additional costs (for example, extra cost for throwaway construction that must be replaced in a future phase) and any additional impacts of phased construction for example. In general, throwaway costs should be minimized.

When interim conditions are expected to last several years, this should be described in the NEPA document. The effect on the transportation facility and any other impacts (such as access or environmental impacts) should be discussed. From a traffic operations standpoint, it is important that the interim construction does not introduce safety problems. Additionally, any interim construction should provide transportation system benefits and should not cause any portions of the transportation system to operate unacceptably or worse than it would without the interim construction. When interim conditions are expected to remain for several years, traffic and/or safety analyses may be needed to establish that the interim improvements will operate at an acceptable level of service in the future.

3.6 Roadway Devolution

Devolution is defined as the transference of a highway or a segment of highway from state ownership and control to local government ownership and control. The authorizing statutes include CRS 43-1-106, 43-1-110, 43 1 114, 42-2-101, 43-2-106, 43-2-110, 43-2-144, and 43-2-303. These statutes empower or authorize CDOT, its Chief Engineer, and the Executive Director to make determinations about abandonment of state highways to affected municipalities and counties. They also provide the authority of the locals to accept an abandoned highway and the need for the entity to establish a special fund to be used only for transportation-related expenditures.

Generally, roadway devolution will not include an interstate and will not have a Federal nexus. Roadway improvement actions are not included with the devolution, and no future actions are evaluated. Under these circumstances, CDOT uses the CDOT Categorical Exclusion Form 128 to process roadway devolutions. **Chapter 5, Categorical Exclusions**, provides specific directions on using Form 128. CDOT's Environmental Stewardship Guide (CDOT, 2017a) also further describes environmental requirements pertaining to roadway devolution.

Resource analysis to support a roadway devolution typically will not include field surveys or samplings to gather additional data. Data is derived from a windshield survey or what is readily available in databases or from previous studies (unless required by law). Environmental analysis will not identify environmental resources or sensitive receptors outside the right-of-way.

3.7 Alternative Project Delivery

This section discusses common innovative project delivery activities and how they integrate with the NEPA process.

CDOT's **Design-Build Manual** is available online here:
https://www.codot.gov/business/alternativedelivery/assets/2016-cdot-d-b-manual

3.7.1 NEPA Requirements and Permissible Project Activities

NEPA review and approval are required for transportation projects being advanced using any project delivery method. For all delivery methods, the NEPA process must be completed and a final NEPA decision must be reached before the project can proceed to final design and construction. FHWA Order 6640.1, as implemented by CDOT's design bulletin revised December 22, 2011 regarding permissible activities during the NEPA process, defines an expanded definition of Preliminary Design and is discussed below (CDOT, 2011).

For purposes of this section, the definition of preliminary and final design are as follows (CDOT, 2011):

- **Preliminary design** – Includes, but is not limited to, preliminary engineering and other activities and analyses, such as environmental assessments, topographic surveys, metes and bounds surveys, geotechnical investigations, hydrologic analysis, hydraulic analysis, utility engineering, traffic studies, financial plans, revenue estimates, hazardous materials assessments, general estimates of the types and quantities of materials, and other work needed to establish parameters for the final design.

Additional preliminary design activities include design and engineering activities to be undertaken for the purposes of defining project alternatives; completing the NEPA alternatives analysis and review process; complying with other related environmental laws and regulations; environmental justice analyses; supporting agency coordination, public involvement, and permit applications; development of environmental mitigation plans; development of typical sections, grading plans, geometric alignment, noise wall justifications, bridge type/size/location studies, temporary structure requirements, staged bridge construction requirements, structural design (sub and super structure), retaining wall design, noise wall design, design exceptions, guardrail length/layout, existing property lines, title and deed research, soil borings, cross sections with flow line elevations, ditch designs, intersection design/configuration, pavement design, storm/sanitary sewer design (plan/profile), culvert design, identification of removal items, quantity estimates, pavement details/elevation tables, and preliminary traffic control plans to be maintained during construction.

- **Final design** – Means any design activities following preliminary design and expressly includes the preparation of final construction plans and detailed specifications for the performance of construction work.

3.7.2 Approval to Proceed with Activities Beyond the Normal Scope of Preliminary Design

CDOT may request concurrence from FHWA to allow CDOT to go beyond the normal scope of preliminary design activities, as defined previously. Subject to FHWA approval, activities may be permitted to advance as part of preliminary design when they meet one or more of the following:

1. The activities are necessary to identify impacts and mitigation in the NEPA process
2. The activities are beneficial to enhance the project schedule and do not affect the NEPA decision
3. The activities provide vital information for other projects or agencies and do not affect the NEPA decision
4. Other reasons as deemed appropriate

Prior to activities proceeding, the CDOT RPEM and Program Engineer must write a letter to the FHWA Division Administrator and concurrence must be obtained.

3.7.3 Project Delivery Methods

CDOT currently uses three project delivery methods: design-bid-build, design-build, and construction manager/general contractor (CM/GC). These three project delivery methods are described in this section. Additional delivery methods may emerge as innovations continue.

Design-Bid-Build

Design-bid-build is the traditional project delivery method where design and construction are sequential steps in the project development process. With the design-bid-build method, CDOT may award a design contract to an engineering firm using a qualifications-based procurement process. When the preliminary and final design phase is complete, and project certification approval

indicating all environmental commitments is included, the final design is prepared and signed by the RPEM or their designee; a construction contract will be awarded to a contractor with the lowest responsive bid through a competitive process. Under this type of delivery, the NEPA decision is made after preliminary design is complete, prior to starting final design, and before the construction contract is awarded.

Design-Build

Colorado Revised Statute 43-1-1401 authorizes CDOT to use the Design-Build method.

Design-build is a project delivery method where both the final design and construction phases of the project are combined into one contract and awarded to a single entity. With this delivery method, preliminary design is typically completed in conjunction with the NEPA process, and before the design-build contractor is selected. In accordance with 23 CFR § 636.109(b)(6), the design-build contractor cannot be involved in the NEPA process or documentation. Specifically, subpart 636.109(b)(6) states: "the design-builder must not prepare the NEPA document or have any decision-making responsibility with respect to the NEPA process." CDOT (or an independent consultant under CDOT's direction) must prepare the NEPA document.

CDOT may award a design contract for preliminary design to an engineering firm using a qualifications-based procurement process, and that firm is then precluded from pursuing the design-build contract. With the design-build method, CDOT may award the design-build contract on a low-bid basis or best value basis through the evaluation of certain factors identified in a request for proposals. For design-build projects, the design-build contract may be awarded either before or after the NEPA decision. If the design-build contract is awarded before the NEPA decision, the design-build contract is divided into two notice-to-proceed phases. The notice to proceed Phase 1 scope is limited to preliminary design-related activities. The notice to proceed Phase 2 scope includes final design and construction. The contract should state that the range of alternatives will be considered, that the issuance of notice to proceed Phase 2 is conditional upon the selection of an alternative in the NEPA decision during notice to proceed Phase 1, and that all environmental commitments in NEPA and associated permits will be adhered to. This bypasses the project certification approval by the RPEM and adds risk regarding proper application of impact assessment and mitigation. This process is typically heavy in post-contract award oversight by CDOT environmental staff.

Other types of project delivery methods that CDOT can use include Private Public Partnerships (PPP), and design, build, operate, maintain, and finance.

Construction Manager / General Contractor (CM/GC)

CM/GC is a project delivery method where a two-phase contract is awarded to a construction manager/general contractor for preconstruction services and construction services. The CM/GC contractor works in conjunction with the design engineer, who is selected using a qualifications-based procurement process. For the CM/GC method, CDOT may award the CM/GC contract based on competitive selection based on qualifications, experience, best value, or any other combination of factors. Under the preconstruction phase of the CM/GC contract, preliminary design may occur if the design does not limit the reasonable range of alternatives. The CM/GC construction services

phase of the project may not be awarded until completion of the environmental review process. However, regulations allow the contracting agency to proceed with design activities at any level of detail for a project before completion of the NEPA review process at the expense of the contracting agency. CM/GC is generally the preferred method for environmental compliance since the construction contractor is finalizing the environmental requirements of the contract during final design BEFORE beginning construction. Therefore, not only is the environmental project certification able to be completed by the RPEM or their designee prior to construction, but the contractor is more familiar with what is expected of them regarding environmental issues and commitments.

CDOT's Design Bulletin 2011 Number 1 *Permissible Activities During the NEPA Process* provides additional guidance on innovative delivery methods and is available at: https://www.codot.gov/business/designsupport/bulletins_manuals/design-bulletins/superseded/db-2011-01-nepa-activities/view

3.7.4 Design-Build and CM/GC Contracting Restrictions During the NEPA Process

As described previously, there are specific regulations and rules regarding the award of contracts to consulting and construction firms for project activities at various points in the NEPA process. These include conflict of interest and two stage contracting requirements. There are both Federal and state requirements. The following should be reviewed when anticipating contracting using these methods:

- 23 USC sec 112. Letting of Contracts
- 23 CFR sec 636. Design-Build Contracting
- 2 Code of Colorado Regulations (CCR) 601-15. Rules to Establish Requirements for Procurement by the Colorado Department of Transportation for Design-Build Contracts for Transportation Projects

3.7.5 Other Measures to Accelerate Project Delivery

MAP-21 has identified other permissible actions, such as advanced acquisition of real property interests and accelerated decision-making, to accelerate project delivery. An outline of MAP-21 is provided in **Chapter 2, Section 2.6**.

3.8 Incorporating Resiliency into NEPA

This section discusses the background, benefits and importance that CDOT leadership places on incorporating resiliency into all projects. The incorporation of resiliency into the NEPA process is currently in development. However, as the resiliency program continues to grow and the process is refined to include resiliency recommendations in projects during the NEPA process, new information will be updated in subsequent versions of the NEPA Manual.

3.8.1 Background

The State of Colorado defines resilience as "the ability of communities to rebound, positively adapt to, or thrive amidst changing conditions or challenges—including human-caused and natural disasters—and to maintain quality of life, healthy growth, durable systems, economic vitality, and conservation of resources for present and future generations" (Colorado House Bill 18-1394).

For transportation systems, resilience is the ability to keep our roads open and functional in the face of unexpected events and challenges. This can involve resilience of the assets themselves (e.g., the design and maintenance of bridges to withstand rare, yet catastrophic flood events), or adaptability of CDOT's operations, maintenance, planning, etc., in the face of stressors and challenges. While the concept of resilience is not limited to physical threats, this is the main focus of resilience work in transportation.

Why Being Resilient Matters

Resiliency became a priority for CDOT after the 2013 flooding event along the Front Range caused severe damage to our roadway network, impacting roughly 500 miles of road and 50 bridges, and requiring more than $700 million in emergency repairs. CDOT, businesses, and the traveling public all felt the financial impact and inconvenience.

Building on lessons learned from this and other events, CDOT has begun assessing its risk to threats to better prepare the transportation system in advance. Every day the system faces threats large and small, such as floods, high winds, avalanches, rockfall, and other unexpected events. While many of these threats are unavoidable, their effects do not have to be catastrophic or cause extended road closures. Building resilience is like an insurance policy. By identifying a threat and implementing a mitigation measure, we can reduce the risk to our system in the future. Proactive management of threats before they occur minimizes the resources needed to rebuild and restore service, minimizes the disruptions to people's lives and to business activity, and lowers the cost to CDOT and the traveling public in the long run. National research on disaster damage and Federal government spending suggests that every $1 spent on pre-disaster preparedness is worth $6 in terms of future damage it mitigates.

This is why CDOT is planning for these adverse events to ensure our transportation system is better able to withstand the impact of events and recover quickly when they happen—ensuring that the routes we use every day to access our homes, businesses, schools, and hospitals remain safe and accessible to all. Examining how resiliency can be incorporated into NEPA is a major step in ensuring these objectives are met.

3.8.2 CDOT Policy Directive 1905.0

Policy Directive 1905 *Building Resilience into Transportation Infrastructure and Operations* became effective November 15, 2018, which required implementation of the principles of resiliency into Colorado's transportation system practices. To help put this Policy into action, CDOT embarked on a project, "Integrating Resiliency at CDOT," to demonstrate how information about risk and resiliency can be incorporated into day-to-day CDOT activities and/or daily business practices. CDOT established an Executive Oversight Committee composed of members of CDOT's Executive Management Team and FHWA to help guide the project. Since NEPA is a required part of a project's

life cycle, this section will discuss the benefits and processes to show how resilience can and should be included early on.

3.8.3 Benefits

CDOT's goal is to proactively manage risks, minimize disruptions to their transportation system, and adapt to changing conditions to provide continuous transportation service in Colorado. Natural hazards are the leading threat to CDOT's infrastructure both in cost to the assets CDOT owns and in risks to system users. Given the increasing prevalence of extreme weather events in Colorado, planning for resiliency is the first step in reducing that risk.

3.8.4 Process for Incorporating Resilience into NEPA

This section discusses the process on how to incorporate resiliency into NEPA.

Who Starts the Resiliency Discussion?

The agency managing the project should incorporate resiliency in the scope of work (if hiring a consultant) or the project workplan if being managed by the agency.

- CDOT (if involved) and local agencies should be informed at the onset that resiliency will be considered for potential at-risk assets so that they can help provide guidance. The degree of incorporation will be determined through an analysis process described below.
- If a local agency is managing the project, they should consider getting CDOT or an outside consultant to help lead the resiliency discussion.
- Agencies should understand that incorporating resiliency into NEPA is not a requirement and they will not be held accountable if they decide they do not want to incorporate resiliency; however, incorporating resiliency should be encouraged at all levels and understanding the benefits early on establishes a motive for people to WANT to incorporate resiliency into the project.

When Does the Resiliency Discussion Start?

- Resiliency should be first discussed as part of the reason for completing the project. It may only be a small component of the reason for the study but having the discussion early will create a "resiliency mindset" within the project team.
- Evaluation criteria related to resiliency should be analyzed and incorporated in either the Purpose and Need or goals.
- Evaluation criteria should focus on the big picture of resiliency such as how it would benefit the overall corridor, structures, or alignment. Design details like culvert size or rockfall fence types should not be included.
- These discussions will document the high-level need so future project phases can dive further into the detailed analysis to determine the most cost-beneficial options to reduce future risk.
- Resiliency measures should be included as part of the alternatives analysis.

How are Resiliency Benefits Calculated and Documented?

- The agency should perform a baseline cost benefit analysis using the Risk and Resiliency (R&R) tool[1] to assist in determining, at a high level, if resiliency features should be carried forward into the next phase of the project. A baseline evaluation should be completed and included in the study, and then a full analysis will be completed during scoping for design.
- Potential opportunities for funding resiliency in construction such as the PROTECT[2] formula and Federal grant opportunities should be examined and documented.
- A matrix of resilient features to include in a library of real-life examples should be created during the project. This library should be updated as projects are built so that others can see which resilient options provided a benefit to the transportation system.

How Should Resiliency Be Documented?

- The resiliency study process and conclusions should be documented in the NEPA decision document if resiliency is a major item in the Purpose and Need or goals.
- Resiliency measures should be included in the alternatives evaluation/analysis.
- Any major resiliency alternatives considered should be documented as they will be useful for future reference and assisting other project teams.

Incorporating resiliency in NEPA is a new philosophy that helps meet the intent of Policy Directive 1905. Building this practice into every NEPA process will enable CDOT to take a major step in protecting their transportation system that serves the people of Colorado. As with any new process there will be changes, improvements, and expansion to other levels of NEPA; therefore, embracing this concept will be a key to its success.

3.8.5 Resilient Recommendations in NEPA

As the program continues to develop, steps for identifying and documenting resiliency recommendations will be refined to incorporate resilient recommendations during the NEPA process. While the planning and PEL process is the time to lay the foundation for resilient ideas to be considered, other factors must be considered before they are incorporated into a project. Additional analysis will be needed to determine the most cost beneficial options to reduce future risk during future NEPA efforts.

[1] The R&R tool determines benefit-cost ratios of different assets based on threat type, the likelihood of an event occurring and the consequence to the owner and user. The tool is a quantitative risk assessment to estimate the potential loss to an asset from a given risk and calculate the reduction in risk or benefit to the asset for mitigating that risk. The resulting benefit-cost ratios can be used to determine the best mitigation method for reducing risk to an asset before an event happens or for repairing an asset after it has been damaged. https://www.codot.gov/programs/planning/assets/risk-and-resiliency/risk-and-resiliency-tool_2022-01-20-1.xlsm

[2] Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) is an infrastructure program introduced in July 2022 by President Biden. The PROTECT formula is designed to help make surface transportation more resilient to natural hazards, including climate change, sea level rise, flooding, extreme weather events, and other natural disasters through support of planning activities, resilience improvements, community resilience and evacuation routes, and at risk costal infrastructure.

3.8.6 Climate Change Effects

In January 2023, the CEQ issued interim final guidance for consideration of climate change effects in the NEPA process. Climate change effects related to a project could include accounting for vulnerabilities in planning and project development exacerbated by climate change or understanding how projects themselves might exacerbate or mitigate local environmental effects related to climate change.

Generally speaking, Colorado is expected to experience an increase in the magnitude and frequency of heat waves and wildfires, as well as extreme precipitation events, particularly in the winter months (Lukas, 2015). These climate change effects will have wide ranging impacts on Colorado's ecosystems, water resources, agriculture, energy, public health, outdoor recreation and tourism, and transportation infrastructure. For example, the increase in severity and frequency of heat waves, particularly in western Colorado, will affect the resilience of the state's roads and bridges. Road materials have a limited range of heat tolerance and bridges are particularly sensitive to extended high temperatures. These climate change effects will likely necessitate increased maintenance and construction costs, potential congestion problems, and access restriction at times (Klein, 2015). Freezing and thawing events can cause severe damages to roads and necessitate load restrictions, while more droughts can increase wildfires—causing road closures, reduced visibility, increased risk of mudslides, erosion, and flooding (Klein, 2015).

The 2023 guidance recommends practitioners identify these climate change effects early in the project development process and make note of any changes in project development, design, or alternatives to adapt to projected climate change effects. Further, the guidance recommends meaningfully engaging with communities with environmental justice concerns that may be impacted by the proposed action and consider how the impacts of the proposed action could potentially amplify climate change effects.

Because this new 2023 guidance is interim, it is possible that it will change after this version of the NEPA Manual is published. Project teams are encouraged to look for the most current version of the CEQ guidance issued and for current CDOT guidance regarding resiliency on CDOT's website.

3.9 References

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