

# CHAPTER 10 – Formal Project Studies

## Table of Contents

<b>CHAPTER 10 – Formal Project Studies .....</b>	<b>10-3</b>
SECTION 1 General.....	10-3
Reference Information .....	10-3
Applicability .....	10-3
Initiating Formal Studies .....	10-3
Project Development Category.....	10-4
Engineering Studies and Preliminary Design .....	10-4
Environmental Studies.....	10-4
Community Involvement.....	10-5
Studies Determination .....	10-5
SECTION 2 Engineering Studies.....	10-6
General.....	10-6
Effect of Physical Features .....	10-6
Scoping Project Features .....	10-6
Importance of Accurate Mapping.....	10-6
Phases of Engineering Studies.....	10-7
Engineering Standards.....	10-8
Geometric Drawings.....	10-8
Scope of Engineering Studies and Preliminary Design.....	10-8
Life-Cycle Cost Analysis.....	10-10
Headquarters Project Delivery Coordinator Review .....	10-10
SECTION 3 Environmental Studies.....	10-11
Engineering/Environmental Comparison .....	10-11
Environmental Effects Need Specific Studies.....	10-11
Lead Agency.....	10-11
Begin Environmental Studies .....	10-11
Types of Studies .....	10-12
Federal Concerns .....	10-12
Alternative Studies.....	10-13
Responsibility of Project Development Team.....	10-13
Notice of Preparation / Intent .....	10-13
Continuous Environmental Involvement.....	10-14
SECTION 4 Identifying Project Alternatives and Mitigations for Impacts..	10-15
General.....	10-15
Stating the Purpose-and-Need .....	10-15
Identifying Possible Alternatives.....	10-18

Eliminating Unreasonable Alternatives .....	10-19
Identifying Specific Effects of Each Alternative.....	10-20
Determine if Additional Alternatives Need to be Developed.....	10-20
Identifying Reasonable Mitigation Measures .....	10-20
Perform Constructability Reviews.....	10-21
SECTION 5 Draft Project Report.....	10-22
ARTICLE 1 General.....	10-22
Purpose of Draft Project Report .....	10-22
Authorization for Public Hearing .....	10-22
Authorization to Circulate Draft Environmental Document .....	10-22
Project Approval .....	10-23
Coordination with Project Study Report.....	10-23
Coordination with Project Study Report-Project Development Support..	10-23
Mapping and Costs .....	10-23
Notify Local Agencies of Right-of-Way Needs .....	10-23
Approval by District Director .....	10-24
Approval of Changes .....	10-24
ARTICLE 2 Format and Content .....	10-24
General.....	10-24
Engineering and Environmental Data.....	10-24
Project Report Outline .....	10-25

# CHAPTER 10 – Formal Project Studies

---

## SECTION 1 General

### Reference Information

Some of the references found in this chapter have hyperlinks that connect to Caltrans intranet pages which are not displayable to the general public. Until such time that the specific reference becomes available on the internet, the user will have to contact their district liaison, Caltrans project manager, or the appropriate Headquarters division to inquire about the availability of the reference.

### Applicability

This chapter covers those projects that had a project study report (PSR) or a project study report-project development support (PSR-PDS) as the project initiation document. It also applies to those projects having a specialized project initiation document that requires further project studies prior to project approval.

[Chapter 12](#) – Project Approvals and Changes to Approved Projects, Section 4 “Other Reports that Approve Projects,” identifies those project initiation documents that function as project approval documents and also specifies what conditions need to be met for this to apply. These specialized projects can begin the final design process once they are approved and the project has been programmed.

### Initiating Formal Studies

The project initiation process produced a PSR or other project initiation document that may include project alternatives. With the exception of the PSR-PDS, the preliminary scope of each alternative is determined, reliable estimates are prepared, and a feasible schedule is established. When the most likely alternative (or minimum alternative or a stage of the project) is included in an appropriate programming document, formal project studies can begin. Formal project studies should focus on the programmed project unless the programmed project is a stage—in which case the total project would probably be studied.

A PSR-PDS is used to gain approval for the project studies to move into the Project Approval and Environmental Document (PA&ED) phase. The PSR-PDS is used to estimate and program the capital outlay support cost necessary to complete the studies and work needed during PA&ED only. Only existing information is used and preliminary studies are not prepared for a PSR-PDS. Therefore, formal studies for projects initiated with a PSR-PDS will take more time to prepare and require more resources to complete than a project initiated with another type of project initiation document (PID).

### **Project Development Category**

The project development process places projects into Project Development Categories, which are defined by various project-processing requirements. The project development team (PDT) determines the Project Development Category for a project, as well as the type of required environmental studies.

The PDT also addresses other questions:

- Is the project categorically exempt under the California Environmental Quality Act (CEQA)?
- Are the project effects environmentally significant?
- Is a negative declaration or environmental impact report (EIR) required?

If an EIR is contemplated, the PDT will undertake formal scoping to determine the extent of required environmental studies.

### **Engineering Studies and Preliminary Design**

For all projects, except for those initiated with a PSR-PDS, preliminary engineering studies are updated and preliminary design commences for viable project alternatives before environmental studies begin. For projects initiated with a PSR-PDS, the preliminary engineering studies are performed in conjunction with formal studies. The preliminary design is used to develop base maps for the required environmental studies.

### **Environmental Studies**

Environmental studies include air, noise, water, wetlands, historical and cultural, parklands, historic and recreation areas, coastal zone, wildlife and plants, and visual aspects. Social, economic, and land-use issues are also addressed, along with specific concerns such as potential hazardous waste sites and right-of-way impacts.

## **Community Involvement**

A community involvement plan is mandatory and is developed with active participation from local representatives. See [Chapter 22](#) – Community Involvement, Article 4 “Initial Meetings.” It is designed to obtain answers to questions such as:

- Does the project have community support?
- Is the project “right” for the community?
- How can project impacts be minimized and transportation services be maximized?

## **Studies Determination**

The PDT is responsible for directing and evaluating the studies. An initial public information meeting is held to measure the public support for the project. Additional informational meetings may be required to obtain sufficient support to proceed. Once support is obtained, the PDT proceeds with the studies. Completion of studies leads to preparation of a draft project report and a draft environmental document or, for a project that is categorically exempt/excluded, directly to the preparation of a project report.

## **SECTION 2 Engineering Studies**

### **General**

Although engineering studies are performed during all phases of project development (including construction), the engineering studies and preliminary design performed following the project initiation phase will support environmental evaluation and project approval. The project engineer uses imagination, ingenuity, and technical skill to develop or refine transportation project alternatives to solve a transportation problem.

### **Effect of Physical Features**

Engineering studies begin with the identification of physical features, to establish physical controls and constraints. Physical features include terrain (flat, hilly, mountainous), material (dirt, sand, rock), improvements (buildings, drainage structures, utilities), environmental concerns (flora, fauna, wetlands), etcetera.

### **Scoping Project Features**

Once physical controls are defined, project features are scoped. The following questions are posed:

- What level of service (LOS) is obtainable?
- What design speed is most suitable for the LOS and physical features?
- What typical section is needed to accommodate traffic?
- Is the proposed project cost effective?

### **Importance of Accurate Mapping**

Adequate mapping is necessary as a basis for accurate engineering studies. The district right-of-way unit needs accurate maps to make estimates. Environmental studies require good mapping, particularly for cultural and biological studies. Windshield surveys may help produce estimates, but good project scope and good estimates need good maps.

Accurate maps are not always available early, so available mosaics or strip maps should be systematically checked in the field to ensure reasonableness. The mapping prepared in the project initiation phase should be checked, updated, and expanded as required (as-built plans, mosaics, strip maps, aerial contour maps).

It is essential that appropriately accurate mapping and photography be obtained on each route study or major improvement project. In rural areas, foothills, or mountainous terrain, mapping on a scale of 1" = 200' with 10-ft contours is considered appropriate; in some cases, mapping at a smaller scale may be appropriate in particularly rugged terrain. In urban areas, larger scale maps with closer contour intervals usually will be desirable; a scale of 1" = 50' or 1" = 100' is preferable.

Under special circumstances where the combination of terrain and development is especially critical, the use of photo-contour maps should be considered. In relatively flat areas, mosaics supplemented by elevation data or correlation with United States Geological Survey (USGS) maps may be satisfactory.

For further information on mapping, see the [\*Plans Preparation Manual\*](#).

### **Phases of Engineering Studies**

Early engineering studies began with the identification of the transportation problems and the identification of reasonable alternative solutions. The early feasibility studies used sources such as the transportation concept report, district system management plan, regional transportation plan, Congestion Management Program, and initial engineering studies, which served as the basis for the project initiation document. They addressed such questions as:

- What is the problem?
- What are the possible solutions?
- Can significant environmental impacts be avoided?
- What is the cost?

Since formal environmental studies are not undertaken during the project initiation phase, there was no public input beyond that provided by local agencies, regional agencies, or resource and regulatory agencies.

At the “formal project studies” stage, formal engineering studies expand the project initiation studies, as necessary. Formal studies for projects initiated with a PSR-PDS may take more time to prepare and require more resources to complete than projects initiated with another type of project initiation document since initial studies are not prepared when developing a PSR-PDS. These and subsequent engineering studies reflect public input and the need for environmental evaluation and project approval.

## **Engineering Standards**

By adherence to the engineering standards in the [Highway Design Manual](#), engineering studies should lead to a serviceable, high quality product. These standards must be met unless a deviation is approved following the procedures in [Chapter 21](#) – Design Standard Decisions.

## **Geometric Drawings**

On location studies, separations and interchanges for each alternative studied are shown on draft project report (DPR) and environmental exhibit maps, either by schematics or by delineating the geometric pattern of these facilities. Because interchange arrangements could have a deciding effect upon the relative traffic service provided by the different studied locations, consideration must be given to the type and location of interchanges.

Where special problems are involved, such as provision for local service ramps in the proximity of freeway-to-freeway interchanges, the working drawing delineating the geometric pattern of these facilities that are used as the basis of estimates must be cleared with the Headquarters Project Delivery Coordinator for feasibility prior to submittal of a DPR for approval.

## **Scope of Engineering Studies and Preliminary Design**

Engineering studies go hand-in-hand with environmental studies. The scope of the studies should be sufficient to complete the environmental evaluation of the project and to reach a decision on project approval. Consistent with Federal Highway Administration (FHWA) policy and federal regulations, as a project's lead agency for National Environmental Policy Act (NEPA), Caltrans will perform only the work necessary to complete NEPA decision documents and comply with other related environmental laws and regulations to the maximum extent possible during the NEPA process. This work includes environmental studies, related engineering studies, agency coordination, and public involvement.

Preliminary design: Activities required defining the general project location and design concepts. It 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. Prior to completion of the NEPA review process, any such preliminary engineering and other activities and analyses must not materially affect the objective consideration of alternatives in the NEPA review process.

Other activities that are considered preliminary design 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/locations studies, temporary structure requirements, staged bridge construction requirements, structural design (substructure and superstructure), retaining wall design, noise wall design, design decision documents, guardrail length/layout, existing property lines, title and deed research, soil borings, cross sections with flow line elevations, ditch designs, intersection design/configuration, interchange 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.

The preceding list of activities is not exclusive. Other activities necessary to the NEPA decision and that establish the parameters for final design may proceed as preliminary design so long as those activities do not materially affect the objective consideration of alternatives in the NEPA process or have an adverse environmental impact.

FHWA encourages flexibility within existing regulation in advancing project-specific design activities that streamlines project delivery by reducing overall project delivery time frames and reducing costs in developing and delivering projects. Where feasible, it is advantageous to move forward on design work that is defined as preliminary design, as long as no commitments are made to any alternative being considered in the NEPA process, and the design work does not prejudice the objective comparison of all alternatives under consideration.

Engineering studies produce a line (location), grade (elevation), typical section (width), and cost for each alternative under consideration. Engineering studies include: geological, advance structures, drainage, noise abatement elements, capacity, and traffic management. Value analysis studies are also conducted to ensure that concepts are economically feasible. The information discussed in the project study report should be reviewed and the data expanded and updated as necessary.

## **Life-Cycle Cost Analysis**

Life-cycle cost analysis shall be completed as discussed in [Chapter 8](#) – Overview of Project Development.

## **Headquarters Project Delivery Coordinator Review**

In all cases, geometric and grade line alternatives should be reviewed by the Headquarters Project Delivery Coordinator prior to preparation of the DPR.

## **SECTION 3 Environmental Studies**

### **Engineering/Environmental Comparison**

While the engineering studies described in this chapter, do consider environmental impacts, they concentrate primarily on design standards, operating characteristics, and cost. Environmental studies focus on the environmental impacts of the project alternatives, giving further consideration to how environmental, social, and economic impacts can be avoided or significantly reduced.

### **Environmental Effects Need Specific Studies**

A project's direct effect on environmental resources (wetlands, historic buildings, etcetera) and its potential effects on less obvious resources (air quality, noise, water, etcetera) require study before project decisions can be made.

Preliminary environmental evaluations were performed in both the system planning and the project initiation stages. These basic studies identified environmental issues and anticipated adverse effects. Avoidance alternatives, if required, should also have been considered at that time. If an avoidance alternative was required, and a reasonable avoidance alternative existed, further consideration of non-avoidance alternatives should have ceased.

### **Lead Agency**

For projects that are not entirely Caltrans projects, the assignment of the CEQA lead agency is specified in a cooperative agreement or in a memorandum of understanding. [Chapter 2](#) – Roles and Responsibilities discusses the determination of the lead agency.

### **Begin Environmental Studies**

Formal environmental studies for project development begin after programming, after updating the studies used to develop the project study report (traffic forecasts, etcetera), and after adequate mapping has been prepared showing the area of potential impact. For certain Project Development Categories (see [Chapter 8](#) – Overview of Project Development, Section 5 “Project Development Categories,” Figure 8-1, and [Chapter 22](#) – Community Involvement, Article 5 “Principles and Techniques for Community Involvement”), initial public meetings are held to assist the project

development team (PDT) in reaching agreement on the project study process. Then, for various Project Development Categories (see [Chapter 8](#) – Overview of Project Development, Section 5 “Project Development Categories,” and [Chapter 22](#) – Community Involvement, Article 10 “Media Relations”), a written notice of studies is issued to provide public notification of the process that will be followed. Refer to the [Standard Environmental Reference](#) for current instructions.

## **Types of Studies**

The type and extent of environmental studies vary with the location and complexity of the project. Typically, the studies need to address air quality, noise impacts, water quality, wetlands, coastal zone infringement, floodplains, wildlife and plants, historic and cultural resources, social and economic changes, park lands and recreational areas, hazardous waste, energy, and visual effects.

## **Federal Concerns**

The federal government’s involvement in the project development process is described in [Chapter 2](#) – Roles and Responsibilities. Particular attention, however, must be given to Federal Highway Administration (FHWA) involvement with the following federal executive orders, environmental laws and their implementing regulations, and agreements:

- *Title 49 United States Code, Section 303 and Title 23 United States Code, Section 138*: popularly known as Section 4(f), prohibits use of publicly owned parkland, recreation area, wildlife or waterfowl refuge or significant historic site if there is a prudent or feasible alternative.
- *National Historic Preservation Act*: requires that cultural resources including archaeological sites, historic architectural and other historic resources be identified. If identified areas are affected, a Historic Property Survey Report must be prepared to meet the requirements of Section 106 clearance by the FHWA.
- *Endangered Species Act*: requires a determination as to whether any federally listed species may be affected. This includes both a “direct taking” and a loss of critical habitat. Formal consultation with the U.S. Fish and Wildlife Service may be required, and informal consultation may be undertaken for a candidate species that may become listed during the life of the project.
- *NEPA/404 Memorandum of Understanding (MOU)* — early identification of potential impacts to protected resources and the documentation of all steps taken to reach agreement with resource and regulatory agencies is discussed in the NEPA/404 MOU.

- Clean Water Act — requires a U.S. Army Corps of Engineers 404 Permit for any action that will result in dredging or filling of waters of the United States. This act requires demonstrating that there is no avoidance alternative.
- Executive Order 11990 (wetlands) — requires early public involvement and a very deliberate review process for wetlands. A key principle in the process is that 404 Permits are only to be issued for the “least environmentally damaging practical alternative.” A project cannot result in any net loss of wetlands area or values.
- Executive Order 11988 (flood hazards) — requires analysis of floodplain encroachments and requires “only practicable alternative” finding to support any project that will result in a significant encroachment or a significant incompatible floodplain development.
- Clean Air Act of 1990 and subsequent amendments — require that a non-exempt project (in a nonattainment area for certain pollutants) must be included in the Regional Transportation Plan which is found to conform to the State Implementation Plan (SIP). The SIP is composed of the EPA-approved Regional Air Quality Attainment Plan.

### **Alternative Studies**

Environmental studies are performed for all viable alternatives (see [Chapter 8 – Overview of Project Development, Section 6 “Project Alternatives”](#)). The environmental effects and possible required mitigation are quantified to assess the feasibility of each alternative.

### **Responsibility of Project Development Team**

The PDT has the responsibility to direct and evaluate the project studies, to determine if any project rescoping is needed, and to develop new alternatives, if required. When consensus is reached, the PDT determines the appropriate level of environmental evaluation. If an environmental document is required, the PDT directs its preparation.

### **Notice of Preparation / Intent**

If the PDT determines there is the potential for significant environmental effects and that preparation of an EIR/EIS is required, the District Environmental Unit prepares and distributes a notice of preparation as required by the California Environmental Quality Act (CEQA) and requests FHWA to issue a notice of intent as required by the National Environmental Policy Act (NEPA). Refer to the [Standard Environmental Reference](#) for current instructions.

## **Continuous Environmental Involvement**

Environmental involvement should continue throughout the entire project development process. During the design phase, in construction, and during maintenance activities, decisions must consider environmental concerns.

The prior discussion highlights important environmental requirements. For additional information, please refer to the [\*Standard Environmental Reference\*](#).

## **SECTION 4 Identifying Project Alternatives and Mitigations for Impacts**

### **General**

Caltrans subscribes to what can be called a “plan-to-ground” philosophy in its approach to environmental analysis and project development. This plan-to-ground philosophy calls for the separate and independent evaluation and discussion of each viable project alternative, covering only its own specific impacts upon its surrounding environment. This philosophy is intended to develop a draft environmental document (DED) that avoids comparisons between alternatives.

The comparison between alternatives (“plan-to-plan” philosophy) is reserved for the later evaluation process where a preferred alternative may be offered, and where the comparisons may be used as an evaluation tool by the ultimate decision-maker.

The objective at this stage of alternatives analysis is to enter the public review process with a bias-free presentation, such that the results of the public review process, after evaluation, will dictate the selection of the preferred alternative.

The following seven headings chart the formal project studies process to develop viable alternatives for the public hearing stage.

### **Stating the Purpose-and-Need**

The purpose-and-need section of an environmental document is the key to developing a document that is defensible in court. This section provides the foundation for identifying the full range of possible alternatives, and determining which of these alternatives are reasonable.

When preparing this section, it’s important to have early identification of the potential environmental issues and a general knowledge of the associated regulatory requirements. This is beneficial because the purpose-and-need section must not only substantiate the project as a whole; it must also justify each of the resulting significant environmental impacts, uses of protected resources, and impacts on hazardous wastes.

It is important to present this section in terms readily understood by the public. Written text can be enhanced by high-quality graphics and non-technical explanations.

It is prudent to often re-examine the project’s purpose-and-need statement to reflect community input, funding constraints, and the discovery of additional impacts.

The following paragraphs discuss items to be considered when developing the purpose-and-need section. The items discussed are not all inclusive. It is important that the specific objectives provide a comprehensive point of reference with which to compare possible alternatives.

### Clear Project / Neutral Statement

A clear and defensible purpose-and-need is a requisite of quality project planning and development. It is the basis for making decisions. The purpose-and-need section of the environmental document must clearly demonstrate the purpose-and-need for the transportation improvement. The discussion should be presented in a project-neutral fashion against which the various alternatives can be compared. This definition of purpose-and-need will be weighed by the public and the decision-makers against the documented impacts of the project; as such, it deserves thorough analysis and discussion. The following paragraphs provide discussion on a variety of purpose-and-need approaches.

- **Supporting Legislation or Commitments**  
Is there a federal, State, or local government mandate for the project? —Are the local, regional, and State land-use and transportation plans based on the assumption that the project will be implemented? —Is there a history of commitment toward ultimate implementation? —Have there been elections, special legislation, or other decisions or commitments mandating consideration of the project?
- **Safety**  
Is the project necessary to correct an existing or potential safety hazard? —Is the existing accident rate high? —Why? —How will the project improve it? For ease of public understanding, the objective should relate to how many fewer accidents, injuries, and fatalities could be expected to occur within the project area through the design year.
- **System Linkage**  
Will the project provide a connecting link in the regional or area-wide system of transportation modes that would enhance utility and/or efficiency? As an example, will the project eliminate a gap between two improved portions of the system and thereby contribute to more consistent user expectations? If so, what will be the benefits to the user?

- **Maintenance and Operational Deficiencies**  
Are there inappropriately high maintenance costs that can be substantially lowered by the project? If so, outline the data. —Are there inappropriate user weight or size restrictions that would be eliminated? If so, what will be the benefit of removing these restrictions? —Is the existing facility in danger of partial or complete loss of service unless the project is completed? If so, what is the anticipated time frame for such loss of service?
- **Demand Exceeding Capacity**  
Is the capacity of the present facility adequate for the present and projected demand? For the ease of public understanding, it is necessary to explain the terms “capacity” and “levels of service.” The existing and expected levels of service are to be outlined, and then compared to the minimum standards. A concept more easily understood, is “total or cumulative time delays.” Accordingly, it is also appropriate to document the existing delays, how they compare to unconstrained flows, and what they are expected to be with and without the project.  
  
With flexible funding, demand needs to be evaluated comprehensively. For example, even if there is congestion on the State highway, it may not necessarily be State highway traffic; it could be local traffic that could be encouraged to remain on local facilities. Under these conditions, problems and solutions need to be looked at more creatively.
- **Growth and Cumulative Impacts**  
When discussing future demands, it is very important to be consistent with the environmental document’s strategy for addressing growth and cumulative impacts. The traditional approach is to use transportation projections from, or consistent with, those of the local or regional transportation planning agency. These projections are based on the best available local and regional land-use plans. This facilitates the position that land-use development and transportation facilities are planned together. With this, the question of growth and cumulative impacts can most often be addressed in a relatively conclusive manner.
- **Economic Development**  
An exception to this traditional approach is where there are specific economic developments (for example: convention centers, sports complexes, etcetera) or other land use changes that are directly tied to the implementation of the proposed project. In such cases, the transportation projections and cumulative impacts should address these secondary changes.
- **Eliminate Unacceptable Impacts**  
Is the existing facility resulting in unacceptable social, economic, or environmental impacts that are able to be eliminated with the project?

- **Financial Resources**  
Are there limits to the amount of financial resources available to address the identified problems? If so, what are these limits? —Is it possible to increase these resources? If not, why not? —Can part of the purpose-and-need be addressed in a cost-effective manner within these limits?

### **Identifying Possible Alternatives**

The following range of options is required to be addressed when project alternatives must be formally considered. See [Chapter 8](#) – Overview of Project Development, Section 6 “Project Alternatives,” for more details.

#### Formal Alternatives

- “No Action” alternative, also known as “No Build”
- Transportation System Management (TSM) alternative, including high-occupancy vehicle (HOV) lanes in urbanized areas
- Mass transit in larger urbanized areas
- Improvement of the existing system, which may include both State and local facilities
- The full range of potentially reasonable, “build” alternatives

#### Limit Number of Reasonable Alternatives

When there are a large number of potentially reasonable “build” alternatives, it is only necessary to present a representative number of the most reasonable examples, covering the full range of options. Often, several alternatives are actually variations of a single alternative and would be more appropriately treated as design variations.

#### Impacts of Alternatives

Again, as with the development of the purpose-and-need statement, it is important to keep in mind the significant environmental impacts, uses of protected resources, and impacts on hazardous wastes that are likely as a result of the proposed alternative. This basic information will assist in identifying quality alternatives, and will improve the ability to defend the final selection process.

## **Eliminating Unreasonable Alternatives**

### Consider Only Reasonable Alternatives

When the formal consideration of alternatives is required, all reasonable alternatives should be evaluated in a comparable level of detail. The Council of Environmental Quality’s “Questions and Answers about NEPA” states that:

Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of [FHWA/Caltrans].

### Criteria for Rejecting Alternatives

A project alternative may be rejected as unreasonable for any of the following reasons:

- Not meeting the project’s purpose-and-need
- Excessive construction cost
- Severe operational or safety problems
- Unacceptable adverse social, economic, or environmental impacts
- A combination of reasons listed previously, that taken individually might not be significant—but would be significant if taken cumulatively
- Previously rejected in an earlier stage (for example: in a regional planning process, that was documented in an environmental document)

### Test for Reasonableness

The most direct test of reasonableness is: “Does the alternative meet the project’s purpose-and-need?” This is one of the key reasons why the project’s purpose-and-need statement is so important. Each alternative is compared to each specific objective in the purpose-and-need statement. Only those alternatives that fulfill the major objectives will be determined to have passed this test of reasonableness. However—required avoidance alternatives may still need to be carried forward if they were not eliminated in an acceptable manner in a previous environmental process.

It is important to review the reasonable “build” alternatives to ensure that they are consistent with the planning or design concept and scope, or if not, to consider revising the planning or programming documents. (Refer to [Chapter 8](#) – Overview of Project Development, Section 1 “General.”)

### “First Cut” of Alternatives

It is important to recognize that this is only the “first cut” of the alternatives. At this point, adverse impacts are to be evaluated only in general terms; harm to specific protected resources should not be considered. The difficult task of weighing the relative value of, and assessing the relative harm to, the affected protected resources is simplified by delaying the process until the nonviable alternatives have been rejected: the appropriate time for such a task is during the selection process for determining the preferred alternative (see [Chapter 12](#) – Project Approvals and Changes to Approved Projects, Section 2 “Selecting a Preferred Alternative”). For certain protected resources, if “avoidance” alternatives are available, no impacting alternatives may be allowed for consideration.

### Document the Elimination of Specific Alternatives

The environmental document must briefly explain why eliminated alternatives were found to be unreasonable. Once documented, no additional consideration of such alternatives is required.

### **Identifying Specific Effects of Each Alternative**

Each alternative under consideration is examined for its full range of environmental impacts. Special studies are undertaken that focus on the potentially significant effects. Each alternative’s significant adverse effects on the environment are clearly identified and described in the environmental document.

### **Determine if Additional Alternatives Need to be Developed**

Following completion of detailed environmental studies, a review is conducted of the project alternatives under consideration. This review is performed to re-evaluate the purpose-and-need statement, and the range and reasonableness of the alternatives.

### **Identifying Reasonable Mitigation Measures**

All reasonable mitigation measures are identified for each adverse environmental effect expected as a result of each alternative considered. Unavoidable significant effects, if any, are documented for each alternative. Using this information, a final review is conducted to determine the type of environmental document needed. Normally this determination would be to proceed with the draft environmental impact

report/environmental impact statement (EIR/EIS). However, it could be to complete the initial study/environmental assessment and prepare a negative declaration.

### **Perform Constructability Reviews**

See [Chapter 8](#) – Overview of Project Development for information on meeting constructability requirements. Summarize the results of the constructability review in the draft project report and project report.

## **SECTION 5 Draft Project Report**

### **ARTICLE 1 General**

#### **Purpose of Draft Project Report**

The draft project report (DPR) is a decision document. It is only used when there is a draft environmental document (DED). The purpose of the DPR is to document the need for a transportation project, to summarize key points from the DED, and to summarize the studies of the scope, cost, and overall impact of alternatives so that the decision maker can make an informed decision on whether or not to proceed to the public hearing phase of project development.

DPRs are used for Project Development Categories 1, 2, 3, and 4; they must include a DED prepared in accordance with the [Standard Environmental Reference](#). DPRs are not applicable to Category 2B or 3 projects that are determined to be categorically exempt.

#### **Authorization for Public Hearing**

When a DED is required, approval of the DPR grants approval to release the DED to the public. In accordance with the project development team (PDT) recommendation in the DPR, the public may be (1) invited to a public hearing, (2) given an opportunity for a public hearing, or rarely, (3) the public hearing process may be waived altogether (but only if determined unnecessary on a Category 3 or 4 project that has no federal involvement or it is a federal categorical exclusion under the National Environmental Policy Act [NEPA]).

#### **Authorization to Circulate Draft Environmental Document**

If there is any federal involvement in a transportation project, a separate approval must be obtained to circulate the DED (see [Standard Environmental Reference](#)). For projects without federal involvement, approval of the DPR grants authorization to circulate the DED.

## **Project Approval**

Project approval for Category 1 through Category 4 projects is made after: (1) evaluation of the responses to the DED, (2) completion of the public hearing process, (3) selection of a preferred alternative, and (4) completion of the final environmental document (FED).

Caltrans' project approval action is recommended in the final version of the Project Report (PR) and is authorized by approval of the PR. See [Chapter 12](#) – Project Approvals and Changes to Approved Projects, for details.

## **Coordination with Project Study Report**

DPRs and PSRs require similar information, acquired at different points in time. The PSR is preliminary in nature and does not benefit from knowledge acquired from detailed environmental studies. When preparing the DPR, appropriate PSR data should be updated prior to its insertion into the DPR; appropriate summary data from the environmental studies should also be included.

## **Coordination with Project Study Report-Project Development Support**

A DPR requires more information than a PSR-PDS. Since initial studies are not developed during the preparation of a PSR-PDS, formal studies may take more time to prepare and require more resources to complete as compared to a project initiated with another type of PID. When preparing the DPR, appropriate PSR-PDS data should be updated prior to its insertion into the DPR. A summary of appropriate data from the environmental studies should also be included.

## **Mapping and Costs**

Since the DPR is used to document engineering decisions and to determine the proposals and alternatives presented to the public, it is essential that accurate mapping be used. Project costs (roadwork, structures, and right-of-way) for all project alternatives are calculated to enable a realistic comparison of alternatives.

## **Notify Local Agencies of Right-of-Way Needs**

If the DPR is a first determination that specific right-of-way parcels may be required, the appropriate city or county planning department should be notified, in compliance with the *California Streets and Highways Code*, Section 103.65.

## **Approval by District Director**

DPRs are approved by the District Director or a Deputy District Director who has been delegated that authority.

## **Approval of Changes**

Once a project is programmed in a programming document, the project description (type of work, limits, and cost) defines the overall project scope. District Directors are responsible for project delivery (including approval of changes up to certain thresholds). When any threshold is exceeded, Headquarters' approval of the change is required before a new cost, scope, or schedule will be proposed to be included in the programming document (see [Chapter 6](#) – Project Cost, Scope, and Schedule Changes).

See [Chapter 12](#) – Project Approvals and Changes to Approved Projects, Section 6 “Changes to Approved Projects,” for a discussion on revisions to approved PRs.

# **ARTICLE 2      Format and Content**

## **General**

A DPR contains the documentation and data necessary to support a public hearing discussion of the proposed alternatives. Most of the people who read the DPR will not be familiar with the proposal; therefore, the information in the DPR should be of sufficient depth and scope to provide evidence to the reader that there is a need for a project.

All DPRs should answer these three basic questions:

- Why do it at all? (need for project)
- Why do it now? (cost effectiveness)
- Which ways are practical? (alternatives)

## **Engineering and Environmental Data**

The DPR is an engineering report. The DED, on the other hand, is not an engineering document. It is a full disclosure document, and must be attached to the DPR to provide details of the environmental studies. The DPR contains introductory and engineering material and other information that would not be appropriate in the DED, and briefly summarizes pertinent data from the attached DED. Do not unnecessarily

repeat what already exists in the DED. The ultimate objective is to produce a document that secures necessary project approvals.

### **Project Report Outline**

The PR preparation guidelines and outline are located in [Appendix K](#) – Preparation Guidelines for Project Report. They cover both the DPR and the project report, which is discussed in [Chapter 12](#) – Project Approvals and Changes to Approved Projects, Section 3 “Project Report Approves Projects.”