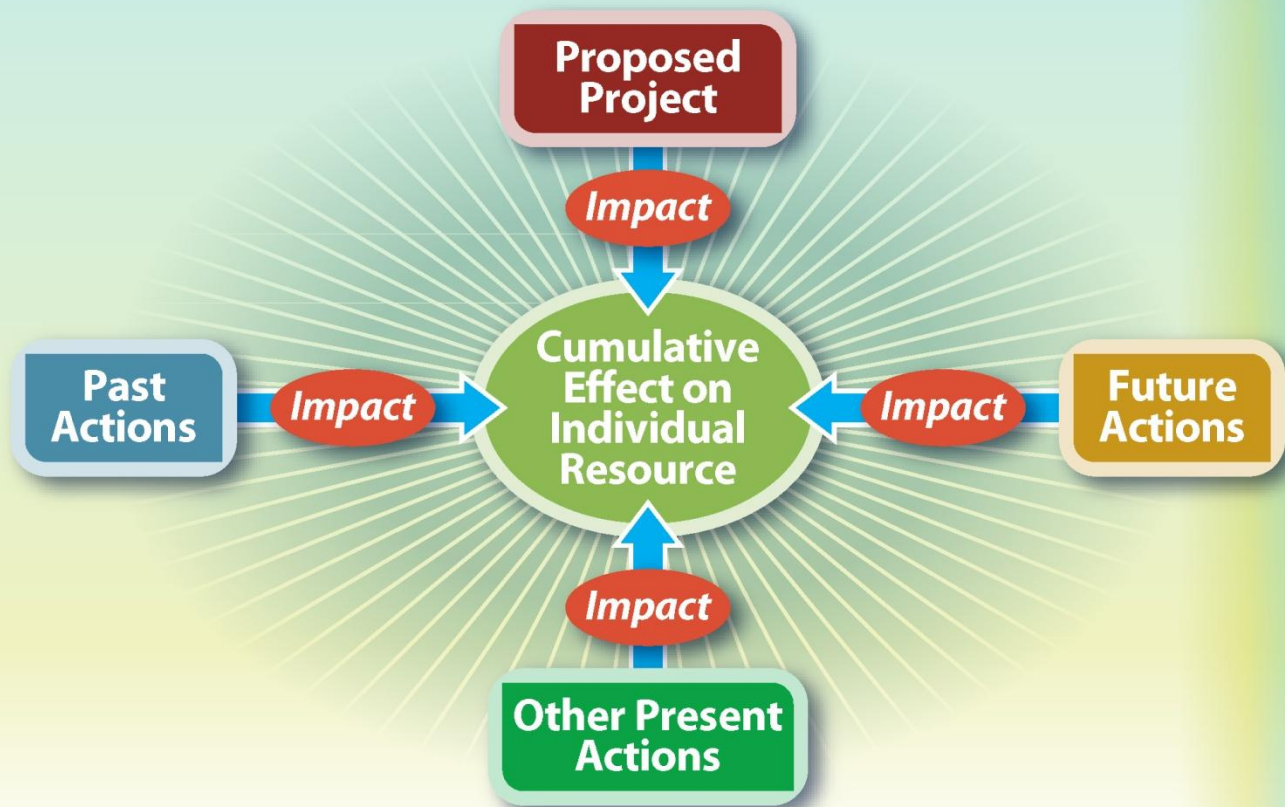


Cumulative Effects Evaluation Quick Guide



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Table of Contents

Section 1	Introduction	1
Section 2	When to Evaluate for Cumulative Effects.....	3
	Level of Analysis by Class of Action.....	3
	Considering Cumulative Effects	4
Section 3	Cumulative Effects Evaluation Process	6
	Step 1 Initiate the Cumulative Effects Evaluation.....	6
	Step 2 Identify Resources of Concern.....	7
	Step 3 Define the Study Time Frame	7
	Step 4 Determine the Potentially Affected Resource Area	7
	Step 5 Evaluate Past and Present Impacts on the Resource.....	7
	Step 6 Evaluate Effects of Reasonably Foreseeable Future Actions	7
	Step 7 Add Direct and Indirect Effects of Build Alternatives	8
	Step 8 Assess the Potential for Cumulative Effects	8
	Step 9 Identify Potential Mitigation Measures	8
	Step 10 Document Results.....	8
Section 4	Evaluations Initiated in Area-wide Planning	9
Section 5	Summary	10
Section 6	List of Acronyms	11
Section 7	References Cited	12

Section 1 Introduction

The Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) require that environmental effects be evaluated for proposed federal actions. Many Florida Department of Transportation (FDOT) projects fall into this category because they need federal funding, a federal permit, or involve a federal facility, such as an Interstate Highway.

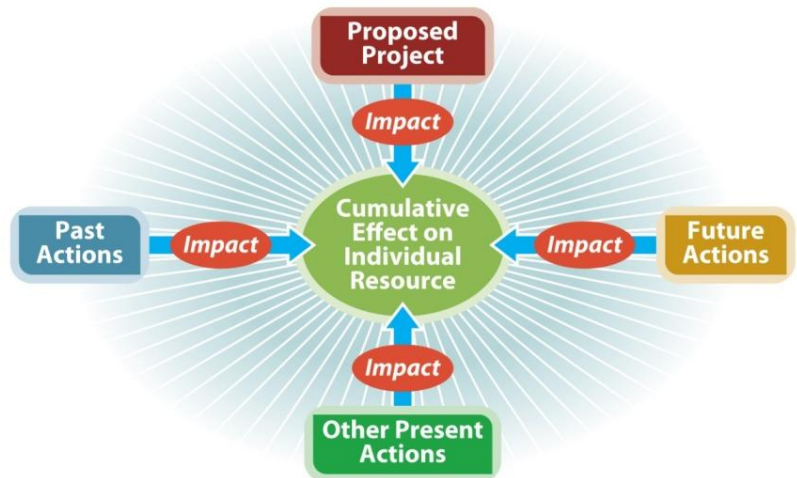
Environmental effects evaluated under NEPA include direct, indirect and cumulative effects. According to **Title 40, Sections 1508.7 and 1508.8, Code of Federal Regulations (CFR):**

- **Direct effects**... are caused by a direct result of an action and occur at the same time and place
- **Indirect effects**...are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable
- **Cumulative impact** is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.¹

Throughout the United States, federal and state agencies have successfully evaluated and determined potential direct and indirect effects of proposed transportation actions. However, evaluation of cumulative effects has been difficult to accomplish within existing processes. According to the 2005 Baseline Report (Indirect and Cumulative Impact [ICI] Work Group, 2005), this resulted in a general state of the practice producing:

- Inadequate consideration of cumulative impacts in environmental documents; and
- Disagreement between transportation and resource agencies regarding analytical methodologies.

¹ The terms “effects” and “impacts” are synonymous in these regulations (**40 CFR 1508.8**) and are used interchangeably in this guide book.



Cumulative Effects = (Direct Effects + Indirect Effects) of Many Projects



Furthermore, transportation projects are being more frequently challenged in the courts on the basis of inadequate cumulative impact evaluations (National Cooperative Highway Research Program [NCHRP], 2006). In response to these trends, several states, including Florida, initiated programs to better conduct cumulative effects analyses in their environmental evaluations (American Association of State Highway Transportation Officials [AASHTO], 2008).

Towards this end, FDOT assembled an Indirect and Cumulative Effects (ICE) Task Group to recommend methods for evaluating indirect and cumulative effects within Florida's Efficient Transportation Decision Making (ETDM) Process. The ICE Task Group included 38 representatives from 11 federal and state agencies; Metropolitan Planning Organizations (MPOs); and FDOT Central Office, Districts, legal counsel and consultants.

The ICE Task Group recommendations provided the conceptual approach for cumulative effects evaluations. FDOT legal counsel reviewed the recommended approach and accepted it with minor modifications. The recommendations were subsequently used with two Environmental Impact Statement (EIS) projects to develop the technical approach for addressing cumulative effects in those Project Development and Environment (PD&E) Studies. This led to additional clarification and refinement in the cumulative effects evaluation (CEE) guidance to address questions from these technical teams. Finally, recommendations for the FDOT CEE Process incorporated guidance from CEQ (1997) and best practices recently published by the NCHRP, AASHTO, and other state Departments of Transportation (AASHTO, 2011; California Department of Transportation, 2005a and 2005b; NCHRP, 2008; Texas Department of Transportation, 2009).

It should be noted that no preferred methodology for evaluating cumulative effects exists. However, the FDOT CEE Process incorporates key components that have gained general acceptance within the practice and have been upheld in the courts. It is important that all of the identified analytical elements be included in the cumulative effects evaluation. However, the steps may be modified to meet the needs of the project. The level of assessment and documentation depends on the nature of the project, the severity of impacts, and the potential for controversy. For each individual project, the lead agency will make the final determination regarding the appropriateness of the analysis.

The FDOT CEE Process is summarized in this **CEE Quick Guide**. For more detailed guidance, please see the **FDOT Cumulative Effects Evaluation (CEE) Handbook** (FDOT, 2012).



Section 2 When to Evaluate for Cumulative Effects

Level of Analysis by Class of Action

CEQ regulations require all federal agencies to consider the cumulative effects of all proposed agency actions. Cumulative effects may also be considered for state projects in order to expedite project delivery. The level of analysis and documentation will vary based on the context and severity of the effects.

It is important to document the consideration of cumulative effects and the rationale for determining the level of analysis. The Class of Action will help determine the level of consideration and documentation:

- **Type 1 Categorical Exclusion (CE) and Programmatic CE** – CEs are types of actions which, based on prior experience with similar projects, do not individually or cumulatively have significant environmental impacts (**40 CFR 1508.4 and 23 CFR 771.117(a)**). FHWA regulations (**23 CFR 771.117**) specifically identify certain types of actions that meet these criteria and normally do not require any further NEPA documentation or approvals. These are the Type 1 CEs. Likewise, Programmatic CEs meet the conditions stipulated and have been identified through agreement between FDOT and FHWA Florida Division. See ***PD&E Manual, Part 1, Chapter 2, Environmental Class Of Action Determination*** for the Type 1 and Programmatic CE listings. These projects are by definition minor and do not contribute to cumulative effects. Cumulative effects evaluations are considered when determining the class of action. See the section, ***Considering Cumulative Effects***, below and use your knowledge of the project context to consider the potential for cumulative effects.
- **Type 2 CE** – This classification applies to project types that do not appear on the standard lists for Type 1 or Programmatic CEs, but where impacts, including the cumulative impacts, are not significant. Pursuant to **23 CFR 771.117(d)**, these projects require appropriate analysis, documentation, and approval by FHWA Florida Division to demonstrate that the project is correctly categorized as a CE. Use the information provided below under ***Considering Cumulative Effects***, and knowledge of the project context to consider cumulative effects and to decide whether additional analysis is needed. Address findings under the topical categories on the ***Summary of Environmental Impacts Checklist for Type 2 Categorical Exclusions***. You can find the checklist and more details in ***PD&E Manual, Part 1, Chapter 5, Type 2 Categorical Exclusions***.
- **Environmental Assessment (EA)** – These projects have environmental impacts, but the significance of the environmental impacts is not clearly established. The CEE needs to address those resources or features that have the likelihood to be significantly impacted. The CEE should be concise, providing sufficient information for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).



- **Environmental Impact Statement (EIS)** – Because actions requiring an EIS will have significant environmental impacts, a CEE is required for resources determined to be important based on coordination and context. The CEE should describe the context and intensity of the impacts.
- **State Environmental Impact Report** – A CEE is a federal requirement that is not typically required for a state project. However, if a federal action (such as a permit) will be required in a later project phase, then a CEE may be needed to prevent future delays in the project schedule. For example, a CEE is recommended when a permitting agency needs information about cumulative effects to complete its review of the permit application. In these cases, coordinate with the regulatory agency to identify their requirements. (See the discussion of other laws and regulations in the **CEE Handbook, Section 2.4**, to consider other perspectives.) A CEE is also recommended any time there is a possibility in which federal funds or subsequent Federal Highway Administration (FHWA), Federal Rail Administration (FRA) or Federal Transit Administration (FTA) approval is going to be required in any of the project phases. In these cases, early coordination with the federal agency is recommended to determine the appropriate scope and approach for the CEE.

Considering Cumulative Effects

Consider the nature of the project and potentially affected resources to decide if further evaluation is needed. If the project is unlikely to contribute to cumulative effects, further study should not be necessary. In some cases, a focused technical study may be needed to verify that there are no significant cumulative effects. If so, consult with the lead federal agency to determine the appropriate level of analysis.

The following guidance addresses examples of circumstances where a cumulative effects evaluation may be appropriate. You can find information to help with these considerations in the **Final Programming Screen Summary Report** for the project, off-line documents, and through consultation with Environmental Technical Advisory Team (ETAT)² members and FDOT District environmental staff.

1. The project is a new facility or one requiring substantial right-of-way.

Consider new facilities or those requiring substantial right-of-way acquisitions. Also, review potential stormwater pond locations.

2. The project may result in substantial direct or indirect impacts on environmental resources

Consider the context and intensity or degree to which the action or project may affect a resource. If mitigation is used to reduce substantial impacts, consider

² ETATs are comprised of government agencies and tribal governments participating in Florida's Efficient Transportation Decision Making (ETDM) Process. For more information, refer to <http://www.dot.state.fl.us/emo/ETDM.shtm>.



whether the project will contribute to cumulative effects when combined with the effects of other actions.

3. The project may cause direct or indirect impacts on resources that:

(a) Have protected status; or

(b) Are in poor or declining health

Evaluate the health and protection status of each resource based on information provided by the ETAT or preliminary environmental assessments. For resources at risk, even minimal impacts may lead to cumulative effects. If information gathered about the status of the resources in the project area indicates that any of them are in poor or declining health, consider whether these impacts contribute to cumulative effects on the resource of concern.

4. The project increases access to areas suitable for development

Identify undeveloped land on the local government Future Land Use Maps (FLUMs). Also review comments provided by the ETAT. If there is undeveloped land in the project area, consider the following to determine if it is likely to be developed:

- Existing vacant buildings are for sale or lease in the area.
- Vacant land or agricultural land suitable for future development.
- The project is within or near special FLUM and Comprehensive Plan overlay area for which redevelopment is ongoing or planned.
- Future land use designations are consistent with development or re-development land use trends in the project area.
- The project is adjacent to or within an area experiencing population/economic growth.

Also consider if a community has a steady and/or growing population and/or employment. If the population is growing, the area has new or expanding businesses, and opportunities for development or redevelopment exist, consider whether cumulative effects would be likely.

5. Other actions are planned that may impact resources affected by the project.

“Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time” (**40 CFR 1508.7**). Consider any resource potentially impacted by the project, even if those impacts are minor. Conduct a preliminary assessment to determine if other actions are planned within the resource boundaries. If there are other reasonably foreseeable activities that will potentially affect the resource, consider whether the combined effects require further study.

When cumulative effects are unlikely and no further evaluation is needed, document the consideration of cumulative effects in the project file.

When further analysis is needed to address concerns about cumulative effects, the CEE should focus on specific resources and issues of concern. Consult with the lead federal agency to determine the appropriate level of analysis. The scope and extent of the



cumulative effects evaluation depends on the nature of the project and potentially affected resources. The methods and extent of the analysis will vary based on the size and type of the proposed project, its location, potential to affect environmental resources, the health of any potentially affected resource, and the level of controversy related to the resource.

If significant impacts seem likely, a higher level of documentation may be warranted. The initial Class of Action may have been based on project type, but if the analysis results in identification of significant cumulative effects and the project is not an EIS, a higher classification will be needed. In these cases, coordination with the Central Environmental Management Office (CEMO) and the lead federal agency is recommended to determine the appropriate document classification.

Section 3 Cumulative Effects Evaluation Process

The FDOT CEE Process provides a framework to assist practitioners in assessing cumulative impacts under NEPA. It is important to note that compliance with NEPA does not ensure compliance with other laws that may require analysis of cumulative effects.

Cumulative effects are environmental impacts resulting from multiple actions over time, regardless of who undertakes the actions. Cumulative effects are not a different kind of environmental effect; they are the combination of direct and indirect impacts that have occurred to a resource over time.

Because cumulative effects focus on multiple actions to resources of concern, the evaluation is a resource-based analysis, rather than project specific. The FDOT approach to CEE follows a 10-step process, where Steps 3 – 10 are repeated for each resource of concern. The remainder of this section summarizes each step of the CEE Process.

FDOT 10-Step CEE Process

- Step 1** Initiate the Cumulative Effects Evaluation
- Step 2** Identify Resources of Concern
- Step 3** Define the Study Time Frame
- Step 4** Determine the Potentially Affected Resource Area (PARA)
- Step 5** Evaluate Past and Present Impacts on the Resource
- Step 6** Evaluate Effects of Reasonably Foreseeable Future Actions
- Step 7** Add Direct and Indirect Effects of Build Alternatives
- Step 8** Assess the Potential for Cumulative Effects
- Step 9** Identify Potential Mitigation Measures
- Step 10** Document Results

Step 1 Initiate the Cumulative Effects Evaluation

CEQ recommends early consideration of potential cumulative effects, preferably during scoping. Such early consideration helps to focus the studies on resources of concern and may influence the design of alternatives to avoid or minimize impacts. In the ETDM



Process, consideration of cumulative effects begins during the Planning and Programming Screens. Continue involvement with the ETAT and other stakeholders to minimize litigation risk and gather information to support the evaluation.

Step 2 Identify Resources of Concern

Early in the CEE Process, identify specific elements of the natural and human environment to study and explain how these resources were selected. The cumulative effects evaluation usually studies a subset of resources considered in the direct and indirect effects analyses, focusing on priority resources in poor or declining condition that may be substantially affected by the project or other activities in the area.

Step 3 Define the Study Time Frame

The study time frame establishes the outer years of the time horizon for identifying past and future effects. The time frame will be used in subsequent steps to identify effects of past, present, and reasonably foreseeable future actions. The time frame may be defined differently for each resource of concern. Document the time frame(s) in the CEE report and explain how and why those outer years were selected.

Step 4 Determine the Potentially Affected Resource Area

The Potentially Affected Resource Area (PARA) is the geographic study area used in the CEE. The PARA boundary is usually resource based, to the extent in which the project contributes to the cumulative effects. It should encompass the resources affected by the project, to the extent in which its alternatives contribute to the cumulative effects on the resources. The CEE document should explicitly identify the PARA boundary for each resource addressed in the study. It should also explain the reason for selecting the PARA and respond to any substantive objections raised about the selection.

Step 5 Evaluate Past and Present Impacts on the Resource

The CEE should include an analysis of past and present effects, not just a listing of actions. Describe the current condition of each resource, how it got to its current state, and major trends affecting the health of the resource (NCHRP, 2008). The analysis should also discuss resource management initiatives and thresholds or carrying capacity for each resource, if applicable. It should also describe any regulation or conservation programs that have been implemented to protect or restore the resource(s), and note the effectiveness of these programs in reducing the impact on the resource(s).

Step 6 Evaluate Effects of Reasonably Foreseeable Future Actions

In this step, identify future actions that may affect the resources of concern. Include all types of planned actions, not just transportation projects. Carefully evaluate whether



each action identified is “reasonably foreseeable” enough to be evaluated or too speculative. Focus on activities “that are likely or probable, rather than merely possible” (FHWA, 2003). Then, describe the direct and indirect effects of these actions. These effects do not need to be evaluated in the same level of detail as the impacts of the proposed project. They may be estimated; exact calculations of impacted areas are not necessary (NCHRP, 2008).

Step 7 Add Direct and Indirect Effects of Build Alternatives

The CEE addresses the “incremental impact” of the proposed project by summarizing the direct and indirect effects of the project alternatives (NCHRP, 2008). The direct and indirect effects of the project alternatives are studied separately from the cumulative effects. Use the findings from these studies in the CEE and summarize them in the CEE section of the environmental document. The CEE does not usually include all of the effects considered in the direct and indirect effects evaluations. Focus on those effects relevant to the resources of concern selected for the CEE.

Step 8 Assess the Potential for Cumulative Effects

Use the baseline, trends, and potential effects identified in the previous steps to consider how a particular resource responds to change, and estimate the combined effects on each resource of concern. Evaluate each project alternative separately. Then, draw conclusions about the cumulative effects. Refer to ***FDOT CEE Handbook, Section 12*** for guidance on selecting appropriate methodologies, estimating cumulative effects, and drawing conclusions about the importance of these effects.

Step 9 Identify Potential Mitigation Measures

Mitigation strategies recommend ways to avoid, lessen, remedy, or compensate for adverse effects (**40 CFR 1508.20**). NEPA requires that appropriate mitigation measures be considered and discussed for all adverse effects, including direct, indirect and cumulative effects (CEQ, 1981).

The sponsoring agency may be required to mitigate for the direct or indirect effects caused by the proposed project. They are not required to implement mitigation measures for effects caused by others (NCHRP, 2006). Nonetheless, all relevant, reasonable mitigation measures that could improve the project must be identified, even if they are outside the jurisdiction of the agency, or unlikely to be implemented (FHWA, 2003). Indicate the entity that would carry out the mitigation measures as well as the probability of the mitigation measures being implemented (NCHRP, 2006).

Step 10 Document Results

Finally, complete the CEE portion of the environmental document. Using the level of detail appropriate for the Class of Action, provide the results of the CEE in the environmental document in a separate section from direct and indirect effects. The CEE can be presented as a separate chapter or as a separate section within the same



chapter as direct and indirect effects (AASHTO, 2011). In general, adequate documentation explains the process and methodology. The CEE should explain what the effects are, how they were analyzed, why the analysis methodology(s) are reasonable, and what the results of the analysis mean. The process, methodology and conclusions should be understandable by all readers of the document (i.e., reported in a manner a layperson or court judge who is not educated in the specific fields of analysis could understand).

Section 4 Evaluations Initiated in Area-wide Planning

The previous section of this **CEE Quick Guide** focuses on evaluating cumulative effects on a project-by-project basis during the PD&E Phase, with early consideration in the Planning and Programming Screens.

There may be times when an FDOT District can save time and money by conducting a resource-based planning study that could be applied to multiple projects as they move forward in the project development process. This study would begin early in planning, prior to considering a specific project (known in the transportation process as “area-wide” planning). Conducting these early studies may be especially desirable when multiple projects are planned in areas where there is a concern about the future health and viability of the natural or community resources.

When begun as an area-wide planning study, the CEE Process is completed in three phases:

Phase 1 – Scoping the area-wide planning study

- Step 1** Initiate the Cumulative Effects Evaluation
- Step 2** Identify Resources of Concern
- Step 3** Define the Study Time Frame
- Step 4** Determine the Potentially Affected Resource Area (PARA)

Phase 2 – Establishing resource conditions and trends

- Step 5** Evaluate Past and Present Impacts on the Resource
- Step 6** Evaluate Effects of Reasonably Foreseeable Future Actions

Phase 3 – Considering the incremental project effects

- Step 7** Add Direct and Indirect Effects of Build Alternatives
- Step 8** Assess the Potential for Cumulative Effects
- Step 9** Identify Potential Mitigation Measures
- Step 10** Document Results

The first two phases would begin during area-wide planning, evaluating the cumulative effects of past, present, and future actions – without an emphasis on any specific project. These phases focus on resources of concern and provide the foundation for multiple projects. Once these steps are completed, this resource-based analysis may be used on any project proposed in the area.



The last four steps (Phase 3) of the process would be done during project-specific Planning, Programming, and PD&E Phases to identify the incremental effects of a single project. At that time, the direct and indirect effects of the project would be evaluated and incorporated into the study. In the end, the environmental document would include the total effects from both the area-wide and project-specific studies, resulting in conclusions about cumulative effects.

Section 5 Summary

This **CEE Quick Guide** summarizes FDOT guidance for considering cumulative effects within the transportation decision making process. The rationale for FDOT's approach is based on the NEPA regulation, **40 CFR 1508.7**, defining cumulative effects as resulting from the incremental effects of a project when added to other past, present, and reasonably foreseeable future actions. These effects may individually be minor, but collectively significant over time.

FDOT recommendations for evaluating cumulative effects have been developed through a collaborative process with input from FDOT personnel and resource agency partners. The guidance also incorporates best practices from recently published research, guidance from other state Departments of Transportation, and results of an extensive review of applicable case law. The guidelines were developed with the following goals in mind:

- Provide legally sufficient evaluations
- Enable project time and cost savings through an efficient, standardized approach
- Reduce sources of disagreement over methodologies
- Identify potentially controversial projects early in project development
- Reduce costs by using area-wide evaluations for multiple projects

FDOT's approach to CEE follows a 10-step process, allowing for flexibility to address project-specific circumstances. These steps are typically addressed during the PD&E Phase of project development, with early consideration during the Planning and Programming Phases. Alternatively, the evaluation may be initiated as an area-wide planning study before project-specific environmental analysis begins. In those cases, the evaluation provides invaluable insights into the planning of proposed projects, especially in high-growth regions. It considers the collective effects on the environment based on the effects from many actions over time. This is a planning-level evaluation focused on the environmental resource rather than a single project. The evaluation identifies past, present, and future actions; establishes baselines for the resources; and assesses trends in the condition of the resources. This planning-level study subsequently builds the foundation for all projects needing further study within a resource area.

For more details about Florida's approach to cumulative effects evaluation, refer to the **FDOT CEE Handbook**. The Handbook provides step-by-step guidance for conducting



cumulative effects evaluations. It also lists additional resources and examples from previous cumulative effects evaluations that were successfully defended in recent court cases.

Section 6 List of Acronyms

Acronym	Definition
AASHTO	American Association of State Highway Transportation Officials
CE	Categorical Exclusion
CEE	Cumulative Effects Evaluation
CEMO	Central Environmental Management Office
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
EA	Environmental Assessment
EIS	Environmental Impact Statement
ETAT	Environmental Technical Advisory Team
ETDM	Efficient Transportation Decision Making
MPO	Metropolitan Planning Organization
FLUM	Future Land Use Map
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FRA	Federal Rail Administration
FTA	Federal Transit Administration
ICE	Indirect and Cumulative Effects
ICI	Indirect and Cumulative Impact
NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
PARA	Potentially Affected Resource Area
PD&E	Project Development and Environment



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