

CHAPTER 23. CUMULATIVE EFFECTS

1. INTRODUCTION AND DEFINITIONS.

a. **General.** This chapter discusses how to consider a proposed action's cumulative impacts. It supplements the information in Chapters 4 and 5 of Order 1050.1E. Cumulative impacts are impacts the proposed action would have on a particular resource when added to impacts on that resource due to past, present, and reasonably foreseeable actions within a defined time and geographical area. Note that this range of actions includes actions FAA itself undertakes as well as those for which any other public or private entity is responsible. According to the Council on Environmental Quality (CEQ), cumulative impacts represent the:

"...impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time."

b. **Past actions.** When determining how a cumulative impact analysis will assess past activities, the availability of data will determine how to analyze past FAA and non-FAA actions. Due to poor recordkeeping or simply the scarcity of information going back in time, the analysis of some actions may be more qualitative than quantitative. Scoping or consultation is useful in determining the extent of past actions for a cumulative analysis. Information on past actions (i.e., within the past 3 to 5 year) may be available from agencies, tribes, and developers responsible for those actions, but obtaining these data may require close coordination among agencies and other parties.

c. **Present actions.** The cumulative impact analysis should include information on FAA and non-FAA actions within the geographic area and time frame that affect environmental resources the proposed action would affect. Scoping or consultation is useful in determining the extent of present actions for a cumulative analysis. Information on present actions is available from agencies, tribes, and developers responsible for those actions, but obtaining these data may require close coordination among agencies and other parties.

d. **Reasonably foreseeable actions.**¹ These are actions that occur on or off-airport. They have been developed with enough specificity to provide useful information to a decision maker and the interested public. Use the following table to help determine if an action is reasonably foreseeable.

¹ From FAA Order 5050.4B, paragraph 9.q.

OFF-AIRPORT ACTION.	ON-AIRPORT ACTION.
<p>The proponent has committed to completing the proposed action. As a result, the action is or will be the subject of a NEPA document, or a Federal, State, local, or Tribal government permit application or approval and would occur within the same time frames as those evaluated for the proposed airport action.</p>	<p>The action is included on an unconditionally approved ALP and the proponent has:</p> <ul style="list-style-type: none"> • committed to complete the proposed action depicted on the unconditionally approved ALP; and/or • developed preliminary design plans for an action in an Airport Capital Improvement Plan and those plans are available for review by interested parties.
<p>Would affect all, some, or one of the environmental resources the proposed action would affect.</p>	<p>Would affect all, some, or one of the environmental resources that the proposed action would affect.</p>
<p>Would occur within the same time frames as the time frames analyzed for the proposed airport action.</p>	<p>Would occur within the same time frames as the time frames analyzed for the proposed airport action.</p>

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS. The National Environmental Policy Act of 1969 (NEPA), as amended contains the statutory framework for consideration of cumulative effects in Federal decisions. The CEQ regulations implementing NEPA's cumulative effects requirements are at 40 CFR Sections 1508.7 and 1508.25(a)(2) and (3).

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
<p>40 CFR Section 1508.7</p>	<p>Defines cumulative effects. These effects are the incremental adding of a proposed action's effects on an environmental resource to impacts on the same resource due to past, present, and reasonably foreseeable actions, regardless of the agency or entity undertaking those actions. Individually minor impacts due to actions occurring over time may cause significant impacts when those impacts are collectively evaluated.</p>	<p>CEQ</p>

<p>40 CFR Section 1508.25(a)(2)</p>	<p>This section requires Federal environmental documents to address cumulative actions which, when viewed with other proposed actions, have cumulatively significant impacts. Therefore, those actions and their impacts should be discussed in the same EIS.</p>	<p>CEQ</p>
<p>CEQ's <i>Considering Cumulative Effects</i>, January 1997²</p>	<p>This document provides CEQ guidance specifically addressing cumulative impacts and the regulations at 40 CFR 1500 <i>et seq.</i></p>	<p>CEQ</p>
<p>CEQ's <i>Guidance on the Consideration of Past Actions in Cumulative Effects Analysis</i>, dated June 24, 2005.³</p>	<p>Based on scoping, agencies have the discretion to determine whether and to what extent information about specific past actions is useful when conducting a cumulative impact analysis. The guidance discusses how to determine the past actions needed for agency decision making. Among other things, the guidance notes that agencies may focus on the current <i>aggregate</i> effects of past actions. Agencies need not delve into <i>each</i> individual past action's historical details.</p>	<p>FAA</p>

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. **General.** FAA must evaluate any airport development action funded under the Airport Improvement Program (AIP) or subject to FAA approval under NEPA (See Order 5050.4B, paragraph 9.g.(1)-(11)). Part of that evaluation requires FAA to assess a proposed action's direct and indirect impacts on a particular resource. The other part of the NEPA evaluation requires FAA to consider those effects in *combination* with the effects on the same resource due to past, present, and reasonably foreseeable actions. NEPA requires this to determine if a proposed action would cause any significant cumulative effects. Actions that could cause such impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids [NAVAIDS], etc.); land acquisition for aviation-related use, new or relocated

² <http://ceq.eh.doe.gov/nepa/ccenepa/ccenepa.htm>

³ http://ceq.eh.doe.gov/nepa/regs/Guidance_on_CE.pdf

access roadways, remote parking facilities and rental car lots; significant changes in aircraft operations; and significant amounts of construction activity.

b. Applicability. A cumulative impact analysis is an integral part of an EA or EIS.⁴ This analysis provides FAA officials with information on impacts resulting from other actions that have occurred or that will occur within a defined time and geographic area. The responsible FAA official uses this information to decide if a proposed airport project's impact to a specific resource would cause a significant impact on that resource when added to past, present, and reasonably foreseeable actions within a specific geographic area or designated time frame. Applications for permits and licenses under the scopes of other Federal, State, or local agencies are excellent sources of information for defining the scope of past, present, and reasonably foreseeable actions.

(1) Where? This is a "specific geographic area." It is that geographical area containing environmental resources the proposed action would affect. Consultation with resource agencies in the affected area is important when defining this area.

(2) When? This is a "designated time period." Typically, it is the cycle during which the project is expected to affect a resource, ecosystem, or human community. FAA or the sponsor should determine this time period after consulting with agencies having knowledge of other actions in the area the proposed action would affect. See section 6.b. of this chapter

(3) What? These are the actions considered in a proposed project's cumulative impact analysis. They include the proposed FAA action and past, present, and reasonably foreseeable future actions of FAA *and/or* other entities or individuals. See sections 1.b.-1.d. of this chapter.

4. PERMITS, CERTIFICATIONS, AND APPROVALS. No specific permits, certifications, or approvals are required.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. General. A cumulative impact analysis is resource specific and generally addresses environmental resources the proposed action would affect (40 CFR Section 1508.7).

⁴FAA must also consider cumulative impacts to determine whether there are extraordinary circumstances surrounding a normally categorically excluded action. If such circumstances would occur, FAA must determine if they warrant preparation of an environmental assessment. See FAA Order 5050.4B, Table 6-3; FAA Order 1050.1E, paragraph 304k, and 40 CFR section 1508.7

b. Consultation and cooperation are useful tools when developing a cumulative impact analysis. As already noted, information on past, present, and reasonably foreseeable future actions of other agencies and persons is necessary to properly evaluate cumulative impacts. Gathering this information is critical. Yet, it can be difficult because it typically involves checking with a host of sources. In addition, defining the geographic and temporal boundaries of a cumulative impact analysis adds more difficulty to this effort. If either boundary is too narrow, significant impacts may be missed. If they are too wide, the cumulative impact analysis can be unwieldy and the uncertainty and remoteness of the impacts will be of little benefit to the analysis. Consultation and cooperation are useful tools in completing this step.

(1) Federal, State, or local agencies, tribes, private developers, and citizen organizations are excellent sources for information vital in establishing these boundaries.

(2) They often provide information on pending permit applications or other documents prepared for actions. Because those applications or documents contain information on past, present, or reasonably foreseeable projects, they are often excellent sources of information necessary for use in the cumulative effects analysis.

(3) Therefore, the geographical reach, timing, and information critical to the cumulative analysis should be developed based on information gleaned through consultation and cooperation. Often, scoping or scoping principles are excellent ways to accomplish these tasks.

6. DETERMINING CUMULATIVE IMPACTS.

a. General. As noted earlier, cumulative effects may occur when the impacts of an FAA action are considered with the actions of other agencies, tribes, private developers, or FAA. The key question is:

“Do the effects of FAA’s proposed action on a particular environmental resource, when added to the effects on the same resource due to FAA and non-FAA actions, adversely impact that resource?”

Therefore, the cumulative analysis should focus on meaningful impacts, not inconsequential or irrelevant ones. Doing this allows the analysis to focus only on those environmental resources the proposed action (40 CFR Section 1508.7) would affect and the impacts it would cause.

b. Affected environment. In addition to characterizing the resources and human communities, defining the affected environment also requires describing the baseline conditions of project-affected resources. Consultation, cooperation, and scoping, once again, play vital roles here. This is because data used to describe the defined affected

environment depend on information from other governmental or non-governmental sources. Note that the geographic and temporal boundaries for a cumulative analysis are larger than those defined for the project alone.

(1) Setting the baseline. The historical context of commonly affected resources included in a cumulative analysis' geographic area or time frame are critical in setting the baseline for a cumulative analysis. This is because baseline conditions provide the context for evaluating those impacts.

(2) Setting geographic boundaries. To set geographic boundaries, the agency must first determine the area that the proposed action would affect. Then, based upon the resources in the project area and the geographic areas the affected resources occupy, the cumulative impact analysis' geographic boundaries are expanded beyond the proposed project's impact area. Examples of geographic boundaries include airsheds, river basins, regional boundaries (e.g., forest or ecological classification), or socioeconomic zones.

(3) Setting the time frame. The time frame is the time period during which the project is expected to affect a resource, ecosystem, or human community. The time frame for cumulative effects is not necessarily the life of the project because it includes reasonably foreseeable actions. For example, a cumulative impact analysis focusing on sedimentation impacts during an airport project's 2-year construction period would address the effects of sedimentation on affected water quality and fish populations. Therefore, the analysis would examine sedimentation effects:

(a) due to past actions, proposed actions, and any reasonably foreseeable within the 2-year period; and

(b) any other reasonably foreseeable action that would occur *beyond* that 2-year period, if that action would affect the same waters and fish populations the proposed action would affect.

Again, consultation with resource agencies is critically important in obtaining information to determine the range of actions the cumulative analysis should include.

(4) Tools. In addition to the geographic boundaries and time frame, there are other useful aids when defining the affected environment. Examples include the Nature Conservancy's Natural Heritage and Conservation Data Programs, the U.S. Geological Survey's (USGS) Biological Resources Division's, National Biodiversity Information Infrastructure, or the U.S. Environmental Protection Agency's (EPA) Environmental Monitoring and Assessment Program.

(a) The Nature Conservancy's Natural Heritage and Conservation Data Programs provide current, comprehensive data on the abundance and distribution of rare species and communities.

(b) USGS' Biological Resources Division consolidates and distributes biological research, inventory, and monitoring data that seven Department of Interior (DOI) agencies collect. The data are used to support management of the nation's resources. Its National Biodiversity Information Infrastructure provides a source of comprehensive biological data.

(c) The Environmental Monitoring and Assessment Program identifies the extent and size of regional and national environmental problems. It is useful in identifying the effectiveness or success of various environmental programs and policies.

e. **Determining environmental effects in the cumulative impact analysis.** The complex nature of cumulative impacts means there may be different methods for conducting the analysis. As noted often in this chapter, analysts should broaden their thinking beyond project-specific impacts. "Cause and effect" relationship tools are generally useful in determining the extent of effects resulting from actions included in this analysis.

(1) **Broaden the scope.** When determining cumulative effects, the agency must go beyond a project's specific effects on a resource. For example, the cumulative impact analysis of an airport expansion project's effect on roadway traffic would consider the increase in passengers, extending roadways that provide terminal access, and other actions planned in the area that add traffic or that would require roadway work. If the associated roadways would reduce a wetland whose primary function is retaining floodwaters, the individual resource analysis would focus on direct impacts to that wetland. The cumulative wetland analysis would assess how project-caused wetland losses added to past, present, and reasonably foreseeable wetland losses would affect flooding potential within the geographic boundaries set for the cumulative impact analysis.

(2) **Additive effects.** The cumulative impact analysis addresses the additive or synergistic effects on resources, ecosystems, or human communities resulting from the proposed actions and other actions included in that analysis.

(3) **Sustainability.** Consider if the cumulative effects would adversely affect the sustainability of the resources, ecosystems, or human communities. In this instance, a qualitative presentation is likely more useful because quantitative data may not be available or difficult to obtain.

7. DETERMINING THE SIGNIFICANCE OF CUMULATIVE EFFECTS.

a. General. The significance threshold for cumulative impacts varies according to the affected resource. However, after completing the cumulative effects analysis, compare the cumulative impacts against the applicable significance threshold for the resource analyzed. The responsible FAA official should determine if project impacts *added* to those of past, present, and reasonably foreseeable future actions trigger the significance threshold for the resource analyzed.

b. Potential mitigation measures. The Environmental Consequences analysis should address the cumulative effects causing the greatest impact to the affected resources within the time frame and geographical area established for the cumulative impact analysis.

c. Mitigation. During the environmental review process, agencies having jurisdiction or special expertise about project-affected resources may provide letters addressing the effects. Often, those letters include recommended measures to mitigate effects. The mitigation should focus on measures that would most effectively reduce cumulative impacts to affected resources. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If the FAA or the sponsor does not adopt any recommended mitigation, the environmental document should clearly explain why the recommendation was not adopted.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. Preparers may present cumulative analysis information in a separate chapter addressing cumulative effects. Logically, that chapter would follow those chapters discussing environmental consequences, because information in those chapters focuses on resources the project alone would affect. As an alternative, preparers may include a cumulative impact analysis in the document's Environmental Consequences section discussing each project-affected environmental resource. That analysis should be in a clearly marked "Cumulative Analysis" subsection at the end of the discussion on a particular resource.

b. Mitigation. Describe proposed mitigation when FWS or other consulted agencies provide such recommendations. FAA should fully consider those measures and balance their benefits against those of the proposed action. Explain why FAA or the sponsor did not adopt any recommended measure. If feasible, provide an estimated schedule for undertaking accepted mitigation.