Chapter 412  Indirect and cumulative impacts

412.01  Introduction

This chapter provides the policy direction regarding the assessment of indirect and cumulative effects for projects requiring a NEPA environmental assessment (EA) or a NEPA/SEPA environmental impact statement (EIS). This chapter also contains WSDOT’s policy regarding the consideration of climate change as a cumulative effect. Find direction regarding Endangered Species Act indirect effects and cumulative effects in Chapter 436.

NEPA requires that any agency proposing a major federal action that may significantly affect the environment, consider the environmental impacts of the proposed action, any unavoidable adverse environmental impacts, and the relationship between local short term uses and long-term productivity of the environment (42 U.S.C. § 4332(c)).

SEPA rules direct state agencies to identify and evaluate probable impacts, alternatives and mitigation measures, emphasizing important environmental impacts and alternatives (including cumulative, short-term, long-term, direct and indirect impacts).

The 1978 CEQ NEPA regulations required federal agencies to evaluate three types of effects in environmental reviews: (i) direct effects, which are “caused by the action and occur at the same time and place;” (ii) indirect effects, which are “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable;” and (iii) cumulative effects, which result from “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.

The 2020 NEPA regulations changed the definitions, merging direct and indirect and eliminating cumulative. The new regulations state that: “Effects means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives.” (new CEQ 2020 – 40 CFR 1508.1)
Indirect effects should be considered as part of direct effects for all projects. Cumulative effects analysis is required only for EAs and EISs. Projects or activities that are categorically excluded do not have the potential for significant impacts and therefore do not trigger a cumulative effects analysis.

**Exhibit 412-1  Highlights the distinctions between direct, indirect and cumulative**

<table>
<thead>
<tr>
<th>Type of Effect</th>
<th>Direct</th>
<th>Indirect</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of effect</td>
<td>Typical, predictable</td>
<td>Reasonably foreseeable, probable</td>
<td>Reasonably foreseeable</td>
</tr>
<tr>
<td>Cause of effect</td>
<td>Project</td>
<td>Project’s direct effects</td>
<td>Project’s direct and indirect effects together with effects of other activities</td>
</tr>
<tr>
<td>Timing of effect</td>
<td>Project construction and implementation</td>
<td>At some future time after direct effects</td>
<td>Past, present, or in the future</td>
</tr>
<tr>
<td>Location of effect</td>
<td>Within project impact area</td>
<td>Within boundaries of systems affected by project</td>
<td>Within boundaries of systems affected by the project</td>
</tr>
</tbody>
</table>


**412.01(1)  Recent changes**

On September 14, 2020, new federal NEPA implementing regulations took effect (see *Chapter 400*). The CEQ eliminated the terms indirect and cumulative impacts. The revised regulations repeal the prior definition of “cumulative effects” and limit the consideration of effects to those “that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives” (Revised 40 C.F.R. § 1508.1(g)). As a result, there is very little change to how indirect effects are considered (while they are not called out separately). The big change is the elimination of the analysis and disclosure of cumulative effects. This change has already been targeted in litigation against the rules. The state of Washington is one of 23 states challenging the new NEPA rules.

**WSDOT’s management direction is to continue to consider cumulative effects in NEPA documents (EAs and EISs).** This chapter uses the terms as they appeared in the 1978 NEPA regulations, and as they are used today in our common language when describing environmental effects.

At the state level, WSDOT has new direction as result of the passage of Senate Bill 5141, known as the Health Equity for All (HEAL Act). Project teams should follow the direction in *Chapter 458* regarding the use of the Environmental Health Disparity tool and consider cumulative human health effects. Environmental justice is an important topic that should be considered during the assessment of direct, indirect and cumulative effects.
412.02 Applicable statutes, regulations, & executive orders

412.02(1) Federal

- National Environmental Policy Act (NEPA), 42 USC Section 4321. 42 USC 4332(c) re: relationship to long term productivity of the environment
- CEQ NEPA Implementing Regulations – 40 CFR 1500 - 1508 (Note: WSDOT refers to the 1978 version)
- FHWA and FTA Rules – 23 CFR 771

412.02(2) State

- State Environmental Policy Act (SEPA), RCW 43.21C, and RCW 43.21C.031.
- SEPA implementing regulations are WAC 197-11-792 and WAC 197-11-060(4).
- NEW State Law – HEAL Act – cumulative environmental and health disparities SB 5141

412.02(3) Local

- N/A

412.03 Considerations during project development

412.03(1) Planning

Chapter 200 explains how planning projects (any pre-NEPA plan) can consider environmental issues. Cumulative effects include long-term issues like climate change and land use conversion. These issues can be effectively considered at a planning level to inform the proposed solutions.

412.03(2) Scoping

Chapter 400 explains the importance of public and agency outreach during pre-NEPA and scoping of our environmental documents. Often the members of the public raise concerns around issues that may seem outside the project. These concerns may indicate cumulative effects, that should be captured early and considered as important context for the project. For example, a pattern of development in the flood plain, increased flooding, and concerns surrounding future climate change projections.

412.03(3) Design

Project NEPA documents should disclose all the effects, and respond to public and agency concerns. The proposed project should highlight ways to address the direct and indirect effects, and ways to be resilient to climate and other hazards.

412.03(4) Construction

- N/A

412.03(5) Maintenance and Operations

- N/A
412.04 Analysis & documentation requirements

412.04(1) Right size to classification (CE, EA, EIS)

Indirect effects

Any project regardless of NEPA classification may have indirect effects. These should be assessed and described alongside direct effects. This is consistent with both the 1978 and the 2020 versions of the CEQ NEPA regulations.

Cumulative effects

The level of the environmental document being prepared will dictate whether a cumulative effects analysis should be prepared. If so, the scope of the cumulative effects analysis should be limited to those resources that are directly affected by the proposed action. If a project will not impact a resource, it will not contribute to a cumulative impact on the resource.

- **Categorical Exclusion (CE): Not Required** – These projects are by definition minor projects without significant environmental impacts, and as such should not require a cumulative impact analysis. There may be unusual circumstances requiring such an analysis, but this should be very rare.

- **Environmental Assessment (EA): Required** – These are projects in which the significance of environmental impacts is unknown. As one of the primary purposes of the EA is to help decision makers and the public understand whether or not an EIS is needed, you need to consider potential cumulative effects. The degree to which resources may be impacted will determine the extent of the cumulative impact analysis needed. Where direct and indirect effects are found to be present, you will need to complete a cumulative impact analysis.

- **Environmental Impact Statement (EIS): Required** – These are projects in which there are anticipated significant environmental impacts, and a cumulative impact analysis may assist decision makers and the public in making informed decisions. The cumulative impact analysis should include substantial information about resources, past actions that have contributed to trends and reasonably foreseeable effects.

412.04(2) Analysis & Methodology

The definitions of indirect and cumulative effects were repealed by the NEPA regulations issued by the Council on Environmental Quality in 2020. However, state law and legal precedents have not changed. Project teams should work with the federal NEPA lead to determine how to address WSDOT policy and SEPA requirements which are consistent with the prior CEQ regulations (effective from 1978-2020).

Indirect effects should be documented with the direct effects. It is not necessary to document the indirect effects separately.
The NEPA project lead determines the approach for documenting cumulative impacts. Options are to:

1. Prepare a separate chapter or section on cumulative effects.
2. Integrate the disclosure of cumulative impacts within the individual discipline studies and report within those chapters or sections.

In either case, a separate cumulative impacts discipline report or tech memo may help to keep the document size to a minimum.

As explained in the SEPA Handbook, “When describing the environmental impacts of a proposal, the lead agency should consider direct, indirect, and cumulative impacts. For example:

• A new residential development may propose to place fill in a wetland in order to construct a road (a direct impact).
• The new road may encourage increased development in the area because of the improved access (an indirect impact). [Note that if the development is already forecast by a locally approved plan, the road project is not inducing the growth, but the relationship can be noted.]
• Increased runoff and contaminants from the development would be added to the volumes and levels of contamination from similar developments surrounding the wetland (cumulative impacts)."

**Recommended resources**

WSDOT is following the 1978 CEQ NEPA regulations with regard to indirect and cumulative effects analysis.

WSDOT project teams should use the AASHTO guidance for cumulative effects analysis. AASHTO's guide “Practitioner’s Handbook #12: Assessing Indirect and Cumulative Impacts under NEPA” recommends five general stages, and five analytical steps:

I. Information gathering
II. Initial assessment of cumulative effects
III. Determining the scope and methodology (count what counts)
IV. Conducting the analysis
   1) Describe resource conditions and trends
   2) Summarize proposed project’s effects on key resources
   3) Describe other actions and their effects on key resources
   4) Estimate combined effects
   5) Consider minimization and mitigation (be sure to reflect the distinction between the proposed action and other actions)
V. Documentation
WSDOT also has a 2008 guidance document that was used as a resource for the AASHTO practitioner's guide. That older document is available from the NEPA/SEPA program staff.

WSDOT has useful information in GIS on several topics, including climate change and natural hazards. Local agencies maintain land use information as well as emergency management plans that contain valuable information on flooding and other natural hazards. Transportation planners can reach out to the locals, tribes and representatives from traditionally underrepresented, underserved, overburdened communities to find out what issues are most of concern. The State Department of Health's Environmental Health Disparities tool is a great resource.

**Indirect impacts**

Any project regardless of NEPA classification may have indirect effects. These should be assessed and described alongside direct effects. This is consistent with both the 1978 and the 2020 versions of the CEQ NEPA regulations.

Analysis of indirect effects is needed when effects are reasonably foreseeable and have a reasonably close causal relationship to the proposed action. A separate indirect effects analysis is not recommended, except in rare cases when a project is likely to cause otherwise unplanned changes in land use patterns.

Most indirect impacts are derived from project-related changes in land uses. Under the Growth Management Act, land use changes are controlled by local planning decisions. However, indirect impacts may be associated with a transportation project if the project affects the rate and pattern of land use development. For example, if WSDOT constructs a bypass route around a town, the rate of planned growth around the new route may increase. WSDOT’s projects should consider the potential indirect impacts, including whether there is a likelihood that development and economic vitality along the original route may decline. Other examples of indirect impacts include changes in wildlife populations due to direct project-related effects on habitat, changes in use of a park due to improved access.

It is very important to determine if the project is likely to support planned land use. Ask whether the project will alter the type, rate, or timing of planned growth. Consider whether there is potential for indirect effects on either the natural or the human environments (including environmental justice populations).

To evaluate the potential for indirect impacts, consider the likelihood of development in the project area following project construction. Carefully examine the land use discipline study for your project. Consider the following:

- Look at population and land use trends in the project area and region or subarea. How has the area developed? How fast is it planned to develop? Will the project affect the rate of development? Are people building in the area? Look at the pattern of zoning. Has it recently changed or is it about to change?
- Review the local comprehensive plans. Is the project area within the urban growth boundary or outside it? Is the local jurisdiction considering changes in the urban growth boundary to allow for growth or are they concentrating on infill? Confirm that the
proposed project is aligned with the transportation element of the plan. Would the transportation project support other modal decisions contained within adopted plans? Do the city planners expect the project to support or encourage development?

Document your conclusion and describe the indirect effects associated with the proposed action. If your project is likely to induce growth that is not planned, refer to AASHTO’s guide “Practitioner’s Handbook #12: Assessing Indirect and Cumulative Impacts under NEPA” for direction and national best practices.

**Cumulative impacts**

For EAs and EISs, potential cumulative impacts should be considered as early as possible in the NEPA process. Use information from existing environmental documents and other relevant information, such as natural resource plans, local comprehensive plans, existing zoning, recent building permits, and interviews with local government. These may also be good sources for information on past actions.

Quantifying cumulative impacts may be difficult, since a large part of the analysis requires projections about what may happen in a project area. The analyst must develop a list of reasonably foreseeable future actions taken by governmental and private entities. We recommend coordinating with the authors of the social, environmental justice, land use and transportation studies to capture the information they have on future actions. Coordinate your outreach to other agencies and the public so that you understand the likely future context for the project and the surrounding area.

A cumulative impact analysis builds upon information derived from direct and indirect impacts. This makes it tempting to postpone the identification of cumulative impacts until the direct and indirect impact analyses are well under way. However, early consideration of cumulative impacts may facilitate the design of alternatives to avoid or minimize impacts. Do not defer the consideration of cumulative impacts. Instead, as you begin to consider a project’s potential direct and indirect impacts, start outlining the potential cumulative impacts as well. As more information about direct and indirect impacts becomes available, use it to further refine the cumulative impact analysis. If you determine that cumulative effects are not an issue, document that decision along with the reasons for the decision.

**Climate Change and Greenhouse Gases**

WSDOT developed the nation’s first DOT project-level guidance for GHG analysis and climate change in 2009. WSDOT’s direction is scaled to the NEPA classification; project-level NEPA Environmental Impact Statements and Environmental Assessments must disclose project-level greenhouse gas (GHG) emissions and consider ways to address extreme weather and potential climate threats.

Greenhouse gases – The emission of greenhouse gases (such as carbon dioxide) and issues related to global climate change should be discussed in environmental assessments and environmental impact statements as a cumulative impact. The discussion should include efforts currently underway in Washington State to reduce GHG emissions and the effects of
current projects on GHG emissions (see the Addressing climate change webpage. Find also more information in the Air, Greenhouse Gas, Energy Chapter 425).

**Climate change & project resilience** - Project teams are expected to examine available information about climate trends and to use the results of WSDOT’s assessment of vulnerable infrastructure. By doing this, project teams will satisfy WSDOT’s directive to consider ways to make their proposed projects more resilient to future climate impacts and severe storm events. Past trends for a specific resource (water, habitat, air) may not be accurate predictions for the future; instead, we need to look at scientifically-based projections of the changing climate as part of our analysis of cumulative effects. WSDOT advises project teams to use the current climate projections available from the University of Washington’s Climate Impacts Group in combination with the WSDOT Climate Impacts Vulnerability Assessment (completed November 2011) and WSDOT’s Guidance for Project-Level Climate Change Evaluations on the WSDOT Addressing climate change in planning and project documents webpage, or contact WSDOT’s Environmental Policy Branch Manager.

**Endangered Species Act**

The Endangered Species Act (ESA) requires consideration of cumulative impacts as part of the Section 7 consultation process, but defines cumulative impacts differently than NEPA. Under the ESA, cumulative impacts include “those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation” (50 CFR § 402.02). This definition differs from the NEPA/SEPA definition in two key ways: (1) only “future state or private activities” are considered, and (2) the impacts must be “reasonably certain” to occur, not just reasonably foreseeable. The distinction between general and ESA definitions should be taken into account when preparing cumulative impacts analyses that are intended to serve both laws.

412.04(3) **Required documentation for cumulative effects**

WSDOT projects that are preparing a NEPA EA or EIS should document the analysis of cumulative effects in the same way they did under the 1978 CEQ NEPA regulations. WSDOT project teams should follow the documentation requirements described in:

1. AASHTO’s guide “Practitioner’s Handbook #12: Assessing Indirect and Cumulative Impacts under NEPA.” That direction is consistent with WSDOT policy and SEPA rules.

2. WSDOT’s procedures for climate change and greenhouse gas (see website).

Cumulative impacts can either be discussed in individual sections on each element of the environment or included in a separate section. A separate section is most appropriate when there are a lot of cumulative impacts that are interrelated across disciplines. The majority of project teams find it useful to have a separate discipline report or technical memo to document the details of methodology and findings. In some cases where there are few cumulative effects, a project team can write cumulative effects entirely within the EA or EIS.

Whatever approach you take, be sure that the reader can find your discussion of cumulative effects.
412.05 External engagement

Public involvement and inclusive engagement is central to NEPA and SEPA. It is part of how you successfully identify direct, indirect and cumulative effects of a proposed project. We must reach out to others. Work with your project team, communications, tribal liaison and the other subject matter experts to find out what they’ve heard about cumulative effects. Tribal leaders and staff have very deep knowledge of the trends that have adversely impacted tribal resources, these are very useful in preparing the cumulative effects analysis, and in identifying potential mitigation. Environmental justice community members and local government staff have very valuable insights as well.

412.06 Internal Roles and responsibilities

See roles as described in Chapter 400.

412.07 Mitigation

It is the project team’s responsibility to define mitigation for direct and indirect effects. Mitigation requirements are discussed within the other discipline chapters. With regard to cumulative effects and potential mitigation, refer to the AASHTO practitioners guide.

412.08 Applicable permits & approval process

There are no permits or approvals associated with indirect or cumulative effects.

412.09 Abbreviations and acronyms

AASHTO American Association of State Highway and Transportation Officials
CEQ Council on Environmental Quality
CFR Code of Federal Regulations
EA Environmental Assessment
EIS Environmental Impact Statement
ESA Endangered Species Act
NEPA National Environmental Policy Act
SEPA State Environmental Policy Act

412.10 Glossary

Context – “This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.” (40 CFR 1508.27(a))
**Cumulative Impact/Effect (NEPA)** – 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 or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (This is the CEQ definition as it was established 1978. See note in introduction regarding the repeal effective 9/14/2020.)

**Cumulative Effects (ESA)** – Effects of future state or private activities, not involving federal activities, that are reasonably certain to occur within the action area of the federal action subject to consultation (50 CFR 402.02). **Note:** NEPA and ESA share a common threshold for determining whether to consider the potential for the action to change the rate of growth thereby increasing the indirect effects of an action. Therefore, the same causal relationship should be used for writing the NEPA document as for writing the biological opinion for ESA compliance (see EM Section 436.05).

**Direct Impact/Effect** – Effect caused by the proposed action and occurring at the same time and place.

**Effects or impacts** – means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives. (new CEQ 2020 – 40 CFR 1508.1)

**This new definition continues, saying:**

(1) Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic (such as the effects on employment), social, or health effects. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

(2) A “but for” causal relationship is insufficient to make an agency responsible for a particular effect under NEPA. Effects should generally not be considered if they are remote in time, geographically remote, or the product of a lengthy causal chain. Effects do not include those effects that the agency has no ability to prevent due to its limited statutory authority or would occur regardless of the proposed action.

(3) An agency’s analysis of effects shall be consistent with this paragraph (g). Cumulative impact, defined in 40 CFR 1508.7 (1978), is repealed.

**Indirect Impacts/Effects (prior NEPA regs)** – Effects which are caused by the action that are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (CEQ 1978 – old 40 CFR 1508.8).
Induced Growth or Growth Inducing Effect – Terms used as examples of an indirect effect related to changes in the pattern of land use, population density, or growth rate. (WSDOT discourages the use of these terms because they are vague and confuse the local decisions regarding planned growth under the Washington State Growth Management Act with project-specific effects.)

Irretrievable – Impossible to retrieve or recover.

Irreversible – Impossible to reverse.

Intensity – This refers to the severity of a proposed action’s impact on the environment. CEQ NEPA Regulations (40 CFR 1508.27(b)) list several factors to consider. Context and intensity are considered together in determining the significance of an impact (the more sensitive the environmental context, the less intense an impact needs to be to have a potentially significant effect).

Mitigation – According to 40 CFR 1508.20, includes: (a) Avoiding the impact; (b) Minimizing impacts by limiting the degree or magnitude; (c) Rectifying the impact by repairing, rehabilitating, or restoring; (d) Reducing or eliminating the impact over time; and (e) Compensating by replacing or providing substitute resources.

Reasonably Foreseeable – An action is reasonably foreseeable if it is considered “likely to occur” and isn’t too “speculative.” EPA’s Consideration of Cumulative Impacts in EPA Review of NEPA Documents (May, 1999) states that “Court decisions . . . have generally concluded that reasonably foreseeable future actions need to be considered even if they are not specific proposals. The criterion for excluding future actions is whether they are “speculative.” The NEPA document should include discussion of future actions to be taken by the action agency. The analysis should also incorporate information based on the planning documents of other federal agencies, and state and local governments. For example, projects included in a 5-year budget cycle might be considered likely to occur while those only occurring in 10-25 year strategic planning would be less likely and perhaps even speculative.”

Language from court decisions can be helpful in formulating questions and criteria as practitioners proceed with analysis to determine which actions may be reasonably foreseeable. For example, one court case defined “reasonably foreseeable” as an action that is “sufficiently likely to occur, that a person of ordinary prudence would take it into account in making a decision.” Sierra Club v. Marsh, 976 F.2d 763, 767 (1st Cir. 1992) (Sierra Club IV). Courts have also recognized that “An environmental impact is considered ‘too speculative’ for inclusion in an EIS (Environmental Impact Statement) if it cannot be described at the time the EIS is drafted with sufficient specificity to make its consideration useful to a reasonable decision maker.” Dubois v. US. Dept. of Agriculture, 102 F.3d 1273,1286 (1st Cir. 1996).

Factors that indicate whether an action or project is “reasonably foreseeable” for the purposes of cumulative impacts analysis include: whether the project has been federally approved; whether there is funding pending before any agency for the project; and whether there is evidence of active preparation to make a decision on alternatives to the project. Clairton Sportmen’s Club v. Pennsylvania Turnpike Commission, 882 F. Supp 455 (W.D. Pa 1995).
Resource – Referred to in NEPA and SEPA implementing regulations as “natural or depletable” resources (CEQ 1502.16, WAC 197-11-440(6)) and renewable or nonrenewable resources (WAC 197-11-444). FHWA Technical Advisory T 6640.8A (October 30, 1987) refers to “natural, physical, human, and fiscal resources" in guidance on irreversible and irretrievable commitments of resources.

Resource Study Area – A Resource Study Area is specific for each resource and focused on the area where cumulative effects on the resource are expected to occur. It may be the same or larger than the study area for direct and indirect effects.

Significance – The significance of a potential impact on the natural or built environment depends upon context, setting, likelihood of occurrence, and severity, intensity, magnitude, or duration of the impact. Almost every transportation project that would be recognized as major federal action, no matter how limited in scope, has some adverse impact on the environment.

Review and consideration of case law can help clarify interpretations of the term “significance." In deciding whether a project will significantly impact the environment, case law suggests that agencies should review the proposed action in light of the extent to which the action will cause adverse environmental effects in excess of those created by existing uses in the affected area and the absolute quantitative adverse environmental effects of the action itself, including the cumulative harm. In any proposed major federal action, the public must have an opportunity to submit factual information on this issue which might bear on the department’s threshold decision of significance. Hanley V. Kleindienst, 471 F.2d 823 (2nd Cir. 1972, cert. denied, 412 U.S. 908 (1973). If you are concerned about the role that the level of significance and controversy may have, you should consult your Attorney General's office or other legal counsel.