Guidance on Indirect Effects and Cumulative Impacts Analyses

Office of Environmental Services
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Table of Contents

Section 1: Introduction

Section 2: Background

Section 3: Definitions

Section 4: Determining the Need for Indirect Effects & Cumulative Impacts Analysis

Section 5: Determining Indirect Effects

Section 6: Cumulative Impacts Consideration

Section 7: The ODOT Project Development Process

   7.1: Path 1 Projects
   7.2: Path 2 Projects
   7.3: Path 3 Projects
   7.4: Path 4 Projects
   7.5: Path 5 Projects

Section 8: ICE and ODOT’s Project Development Process

Section 9: References and Web Resources

Appendices:

   Table 1: Effect Types
   Attachment 1: FHWA Indirect Effects Analysis Worksheet
   Attachment 2: CalTrans 8-Step Cumulative Impacts Analysis – A Hypothetical Project Example
   Attachment 3: If Little or No Data Is Available
   Attachment 4: Examples of ICE analyses on projects from other states
   Attachment 5: Example Table of Contents for ICE Analyses
Section 1: Introduction

This guidance was developed by the ODOT Office of Environmental Services (OES) and is intended to be used on projects administered with Federal Highway Administration funding through ODOT’s Project Development Process (PDP).

The objective of this guidance is to establish a consistent, legally sufficient, and efficient process on how to consider, analyze, and address environmental impacts from indirect effects and cumulative impacts when developing Federal-aid transportation projects. Consultants and agencies need the certainty of what ODOT requires for ICE analyses. In turn, ODOT desires a consistency of approach on ICE analyses undertaken on ODOT projects. It is required that you contact the District Environmental Coordinator (DEC) and OES to discuss your PDP Path 4 and Path 5 projects and their needs relative to ICE analyses. If you think any other project may need an ICE analysis, it is recommended that you contact OES to discuss the project.

In preparing this document, a number of Federal and State DOT publications were considered and used to synthesize this guidance for ODOT. This document has focused on those most recently published by AASHTO, Texas DOT, Tennessee DOT, Florida DOT, California DOT, Wisconsin DOT, and Montana DOT, all of which are hyperlinked for reference in Section 9 of this document. For this document we have chosen to mirror the 2011 AASHTO practitioner’s handbook, which is an overview and which, along with other primary sources, uses the terminology “indirect effects and cumulative impacts.” ODOT is therefore using language that is consistent with these sources. However, in this guidance ODOT will use the commonly used, and easy to remember, acronym “ICE” to refer to these analyses.

All publications consulted for this guidance stress that an essential element of National Environmental Policy Act (NEPA) decision-making for transportation projects is the consideration and analysis of the potential environmental impacts or effects of Federal-aid projects and actions (i.e., ecological, aesthetic, historic, cultural, economic, social, health impacts/effects, etc.). This includes not only the direct effects, but also indirect effects (sometimes called secondary effects) and cumulative impacts. These effects and impacts are different and distinct from one another, and are not treated the same in environmental analyses.

Section 2: Background

The following background is confined to major points in the historic and conceptual developments on ICE. Please refer to Section 9 of this guidance for relevant and recent publications that present comprehensive background information on this subject matter. Because of the quality of recent state and federal publications, a similar thorough accounting of the background for this subject matter was considered unnecessary for this guidance. Readers can readily access these references in Section 9 for more details.

The 1970 federal statute, the National Environmental Policy Act (NEPA), is the basis for the work on federal aid projects which ensures that social and physical environmental matters are properly
coordinated and disclosed. While the act did not specifically state the need for consideration of indirect effects and cumulative impacts, it did say that the Federal government has responsibility to:

“...assure for all Americans safe, healthful, productive, and aesthetically and cultural pleasing surroundings ... attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences ... preserve important historic, cultural and natural aspects of our national heritage... “

The Council for Environmental Quality (CEQ) subsequently issued regulations for implementing NEPA at Title 40, Code of Federal Regulations, Parts 1500-1508, requiring that environmental effects be evaluated for all proposed federal actions. On ODOT projects, a cumulative impact analysis is required whenever an Environmental Assessment (EA) or Environmental Impact Statement (EIS) is prepared. However, a detailed, extensive cumulative impacts analysis will likely only be needed on EIS level projects.

The Federal Highway Administration has stated that under the CEQ regulations, FHWA must consider the possibility of secondary and cumulative impacts on all agency actions (FHWA 1992). However, FHWA stresses that it will concentrate on construction actions which have a potential to produce indirect environmental consequences. Further, secondary and cumulative impact analyses should be based on the possibility of indirect effects combined with various site specific conditions which will shape the scope and intensity of the studies necessary to provide adequate information to the project decision makers.

“There are no clear cut techniques to determine the secondary and cumulative consequences of highway project proposals. Nevertheless, in situations where the potential for indirect impacts exists, the likely consequences beyond direct project impacts should be determined with greatest amount of confidence possible (FHWA 1992: 6).”

In 1997, CEQ released a handbook titled Considering Cumulative Effects under the National Environmental Policy Act. This handbook was not formal guidance but served to explain the issue of cumulative effects and provided a method to deal with such impacts in the preparation of Environmental Assessment (EA) and Environmental Impact Statement (EIS) documents.

All publications referenced for this guidance postdate this FHWA and CEQ guidance. Thus the state of the practice for ICE analyses used to develop this guidance is very up to date.

**Section 3: Definitions**

The CEQ regulations (40 CFR §§ 1500 -1508) define the impacts and effects that must be addressed and considered by Federal agencies in satisfying the requirements of the NEPA process. This includes direct effects, indirect effects, and cumulative impacts:

**Direct effects** are caused by the action, are predictable, and occur at the same time and place as the project (40 CFR § 1508.8). Direct effects are typically well understood and predictable, and are action focused effects such as residential displacements, the filling of wetlands or the removal of a historic structure (AASHTO 2011).
**Indirect effects** are caused by the action and are later in time or farther removed in distance from the project, but are still reasonably foreseeable, logical, and likely or probable. 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 (40 CFR § 1508.8).

As stated in *Guidance for Estimating the Indirect Effects of Proposed Transportation Projects* (NCHRP 1998), there is no clear or common definition of ‘indirect effect’ beyond this definition from the CEQ regulations. However, all subsequent publications consulted on this topic use the CEQ definition as the basic point of understanding the meaning of the terminology. Practitioners should also understand that any interpretation of the meaning should satisfy other statutory requirements in order to avoid redundant analyses. Other statutes to consider include Section 404 of the Clean Water Act (effects on waters of the United States), Section 106 of the National Historic Preservation Act (effects on historic properties), and Section 7 of the Endangered Species Act (effects on critical habitats) (Ibid: 57).

The terms “effect” and “impact” are considered as synonymous in the CEQ regulations, where the CEQ uses the terms “indirect effects” and “cumulative impacts” (40 CFR §1508.8). The CEQ itself uses both in their guidance and regulations and will also use “cumulative effects” in guidance documents. However, for consistency with the CEQ regulations, and for consistency in ODOT NEPA documentation, this guidance uses the terms “indirect effects” and “cumulative impacts,” and expects these to be consistently used by practitioners working on ODOT projects.

"Secondary impact" does not appear in nor is it defined in either the CEQ regulations or related CEQ guidance. However, the terminology is used in numerous Federal and State publications, and is generally understood to be the same as the CEQ definition of “indirect effects” above (40 CFR § 1508.8). Again, for purposes of this guidance and ODOT’s transportation program, and for consistency with the CEQ regulations, this guidance uses the terminology “indirect effects.”

**Cumulative impacts** are the combined result of direct and indirect effects on the environment which result 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.7).

Refer to Table 1 at the end of this document for further information regarding direct effects, indirect effects, and cumulative impacts.

‘Reasonably foreseeable.’ Indirect effects and cumulative impacts must be considered if they are reasonably foreseeable. Effects and impacts that are merely possible, or that are considered ‘speculative,’ are not reasonably foreseeable. Courts in the United States have found that only those effects that are “sufficiently likely to occur” (or “foreseeable” or “reasonably foreseeable”) need to be discussed.

In *Sierra Club v. Marsh*, 976 F 2d 763, 767 (1st Cir. 1992), the Court 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.” In *Dubois v. U.S. Dept. of Agriculture*, 102 F.3d 1273, 1286 (1st Cir. 1996),
the Court recognized that “An environmental impact is considered ‘too speculative’ for inclusion in an EIS 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.”

“Reasonably foreseeable events – although uncertain – must also be probable. Effects that are possible but not probable may be excluded from consideration” (Texas DOT 2010: 3-4).

Refer to AASHTO Practitioner’s Handbook 12 (2011, pages 2-4) for more detail on this clarification and discussion of other related terminology. You will see multiple references to this publication in this guidance as ODOT-OES considers it to be the primary reference source for ICE analyses. As such, this ODOT guidance mirrors the AASHTO publication quite closely.

Though this may not be common, practitioners should also bear in mind that indirect effects and cumulative impacts could occur before a project is constructed, for example, when property speculators might request land use actions in anticipation of project construction. This would fall within the bounds of the ‘reasonably foreseeable’ definition above and sufficient research should be conducted to ascertain whether or not this is a factor on a project.

The test for determining what is ‘reasonably foreseeable’ would be in the timing of some of the other improvements being done for a development and when a federal-aid highway project was planned, funded, and implemented. For example, if a development such as a shopping mall was being planned – or even under construction – and the zoning, utilities, access points, and access roads were already designed or being built, the FHWA/ODOT highway project would most likely be in response to all of that development. The highway project would be reactive and playing ‘catch up’ to the development. In this type of situation, the highway project would not be construed as causing reasonably foreseeable effects or impacts to the surrounding area.

Conversely, if development of the mall wasn’t going to start – even if some planning and zoning for it had already taken place – but there was no commitment to begin the development project until the FHWA/ODOT roadway project was underway or completed, then it would be likely that the federal-aid highway project would be understood to cause reasonably foreseeable impacts and effects to the surrounding area.

“Substantial” means “of considerable importance, size, or worth.” Substantial impacts are those that potentially affect unique or sensitive resources, or alter the environmental conditions to an extent greater than changes caused by current land uses in the area. Avoidance, minimization or mitigation options for these effects may be difficult to identify. Context and intensity play a role in determining which impacts are substantial. For example, potential impacts to a common animal are not likely to be substantial, but those to a rare or endangered animal probably are. Substantial impacts are noteworthy, but may not be significant (Florida DOT 2012b: 2-9).

The term “significance” carries special weight in NEPA because it is used to determine the level of environmental documentation required for a project based on its impacts. According to the CEQ regulations (40 CFR 1508.27), the determination of a significant impact is a function of both context and intensity, as defined below:
(a) **Context** 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.

(b) **Intensity** refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect will be beneficial.
2. The degree to which the proposed action affects public health or safety.
3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.
5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

To determine significance, examine the severity of the impact in terms of:

- Type, quality and sensitivity of the resource involved
- Location of the proposed project
- Duration of the effect (short-term or long-term)
- Other context-specific considerations
Significance of the impact will vary with the setting of the proposed action and the surrounding area (including residential, industrial, commercial, and natural sites) (40 CFR 1508.27).

**Section 4: Determining the Need for ICE Analysis**

The focus of this section is on how to determine if you need to perform an ICE analysis on your project. Making that decision is related to the complexity of the project, understanding the requirements of the project, and determining what is the likelihood of the project having both indirect effects and cumulative impacts.

“An important consideration is an estimate of the potential for development in the area of a proposed project within a reasonable period of time. The estimate should recognize the potential both with and without the project. In areas experiencing growth over time, an individual highway project will likely have a negligible contribution to a cumulative impact because of the absence of other activities occurring in the vicinity. Conversely in areas of moderate to rapid development, the contributions of a highway improvement can be a measurable element of the aggregated change leading to long term impacts (FHWA 1992: 5-6).”

The bulleted list on the next page is not exhaustive, but is intended to guide practitioner’s thinking about ICE analysis and their project. Projects that require lower level Categorical Exclusion (CE) level NEPA documents will likely never need an ICE analysis. Projects requiring higher level CE documents may also need to be considered for ICE analysis by working through the bulleted list on the next page.

EA and EIS level projects are the most likely to require an ICE analysis. However, practitioners should keep in mind that some EA and EIS level projects may not need an extensive ICE analysis, other than to show it was considered. So by working through an iterative process, as guided by the bulleted list on the next page, the information in the subsequent sections, and the information included with the guidance in the Attachments, you will be able to determine if your project will likely need an ICE analysis. ¹

Regarding the questions listed on the bullet list on the next page, if you answer ‘yes’ to any of them then your project would likely be expected to encourage development in the project area for your project. As such, and understanding that development would be a primary cause of indirect effects and cumulative impacts, your knowledge of your project is critical to this determination.

¹ The entire idea of conducting ICE on a project is predicated on significant impacts to the environment. That is a standard that is carried through all the literature consulted for this guidance from 1992 to 2013 (refer to definitions in Section 3 above). FHWA’s guidance from 1992 is clear on this: An action that is categorically excluded from NEPA will not cause such impacts to the environment. These actions are minor by definition and therefore will not contribute to significant cumulative impacts. Similarly, an EA which results in a Finding of No Significant Impact will not require extensive ICE documentation. Thus a more thorough or extensive ICE analysis will in nearly all instances be part of an EIS NEPA process and document.
Once you work through this iterative process on your project, you may find that your project does indeed contribute to moderate to rapid development (or one of its primary purposes may be for economic development).

In those situations your project will need a thorough ICE analysis similar to the projects listed in Attachment 4 and utilizing a table of contents similar to the example in Attachment 5. However, it is expected that such analyses will be incorporated into the project’s EA or EIS document. OES believes that having an ICE analysis as a separate document for a project will be a rare occurrence.

These bulleted items below are considerations to have in mind as you assess the requirements of a project which will be processed with a high level NEPA document. Any combination of these considerations could potentially contribute to a project having significant effects and impacts to its surrounding area.

- Is the project a new facility or one requiring substantial right-of-way?
- Does the project purpose and need include economic development as a primary need element?
- Will the project significantly improve travel times, which can support the attractiveness of an area for new development?
- Will the project conflict with local zoning plans in the project area?
- Have there been considerable changes in population demographics and employment over the past 10-20 years in and/or around the project area?
- Does the project area contain any proposed new developments?
- Does the project increase access to areas suitable for development?
- Have there been significant conversions of agricultural land uses to other land use types in or adjacent to the project area?
- Have local officials, federal and/or state agencies, property owners, stakeholders or others raised concerns related to potential indirect effects and cumulative impacts from the project?
- Does the project add capacity and does it substantially increase mobility or access in the project area?

If you are developing an EA or EIS on your project, you must evaluate your project against this list. You must also contact the District Environmental Coordinator (DEC) and the appropriate OES staff contact who has the ODOT District assignment for your project for further discussions about the project. (Note: Projects requiring a high level CE may also need to be considered for ICE analysis by working through the above considerations. Consult with OES to determine if your high level CE requires an ICE analysis.)

Upon discussing your project with the DEC and OES, if it is confirmed that your project does not require an ICE analysis, then you can use the following language in your EA and EIS level documents to verify that an ICE analysis is not needed on your project:

“The project will not result in significant indirect effects and cumulative impacts as defined by ODOT’s “Guidance on Indirect Effects and Cumulative Impacts (ICE) Analyses” (2014). This conclusion was based on the evaluation of factors including project design concepts and scope; project purpose and need; project type; facility function (current and planned); project location; improved travel times to an area; local land use and planning considerations; population and demographic considerations; rate of
urbanization; and public/agency concerns. The data and evaluation supporting this conclusion are contained in the project file. Therefore, further evaluation of indirect effects and cumulative impacts in a detailed analysis is not warranted. If changes are made to the project design and alternatives, then the project may need to be re-examined to see if this evaluation is sufficient.”

Section 5: Determining Indirect Effects

NEPA requires the evaluation of indirect effects of all federal projects, pursuant with CEQ regulations. However not all transportation projects, such as those being processed as Categorical Exclusion level NEPA documents on ODOT’s program, will warrant an evaluation and discussion of indirect effects. This section will assist practitioners in determining indirect effects and may also be helpful with the scoping process for the project.

The process of evaluating indirect effects is an analytical process that requires researchers to build upon earlier analyses as appropriate. As researchers investigate deeper into a project’s potential for indirect effects, they will encounter many of the same considerations used when thinking about a project’s potential for both indirect effects and cumulative impacts (i.e., when they followed the process laid out previously in Section 4 to guide initial thinking about a project’s potential for ICE). Indirect effects analysis takes into account both encroachment-alteration effects and induced-growth effects (AASHTO 2011: 7).

As stated by AASHTO (2011: 8), there are many methods that can be used to analyze indirect effects, but the analysis always involves the same core objective: To understand the causal relationship between a transportation project, the growth that may be caused by that project, and the impacts that may result from that growth. Projects being processed under EIS and EA level NEPA documents must be examined individually to understand whether a particular factor or combination of factors requires detailed analysis for indirect effects. If the project team is uncertain how to begin this process, they should contact the District Environmental Coordinator (DEC) and the appropriate OES staff who has the ODOT District assignment for their project for assistance.

Indirect effects are typically (or can be) much less certain than direct effects, but they are still reasonably foreseeable. Many times, they may not be as apparent as direct effects because they are occurring at a different time than the project, and they may be occurring at a physical location that is some distance from the project. Indirect effects are likely or possible consequences of the development of a project. However analysis of indirect effects should be logical, following the likely effects of a project – it should not be speculative in nature. It should be understood that uncertainty is part of the equation when trying to predict indirect effects, but that uncertainty does not minimize the requirement to perform the analysis, nor should that force the analysis into pure speculation. Again, it is important for practitioners to remember that indirect effects are reasonably foreseeable, logical, and likely.

Many of the referenced sources in Section 9 discuss court cases that have been historically important in determining the course of indirect effect analysis on transportation projects. One in particular established a three part ‘reasonably foreseeable’ test (sometimes referred to as ‘the Marsh test’) to be
used when assessing whether indirect effects from a proposed action were either certain enough or too speculative ([*Sierra Club v. Marsh*, 976 F 2d 763, 767 (1st Cir. 1992)]:

1. Is the agency confident that impacts are likely to occur?
2. Can impacts be sufficiently described and specified now to allow for useful evaluation?
3. If impacts are not evaluated now, will the future evaluation of impacts be irrelevant?

Should the answer to any of these questions be ‘yes,’ then it is apparent that there is enough certainty about the impacts to require consideration on the project. This test is applicable for practitioners to use on projects on ODOT’s program. Refer to Attachment 1 for a FHWA worksheet for this three part test and a NCHRP ‘best practices’ eight step process for indirect effects analyses.

Most of the primary and recent references in Section 9 have created extensive lists of considerations with supporting analysis that practitioners should address when evaluating a project’s indirect effects and this guidance will only give an overview of some of that information. Practitioners are encouraged to consult these recent references for a more complete understanding of indirect impact analysis. NCHRP Report 466 (2002) is particularly good for ‘how to’ guidance for indirect effects analyses (and its eight step process is included here in Attachment 1 as part of FHWA’s worksheet.)

The Wisconsin DOT developed a six step approach for analyzing a project’s potential for indirect effects which was based on earlier NCHRP studies (2007). We have incorporated their six step process as part of Section 8 of this guidance and merged it with ODOT’s PDP in Section 8 because we believe this is a valid approach to indirect effect evaluation on an ODOT project.

Practitioners should study the Wisconsin manual for details regarding each step and bear in mind the following from that guidance:

“As with all step-by-step approaches, an iterative process naturally occurs. Once the Study Team has gone past one step, you may find in the next step that the previous one did not include all the information it needed to move forward. This should not be looked at as a flaw in your approach, but rather part of the analysis and review process. Each of these steps has a purpose in adequately completing the analysis, based on NEPA, FHWA guidance, and court cases that have shaped indirect effects policy. Providing the appropriate documentation is critical for the entire analysis process for indirect effects.” (Ibid: 13.)

Similarly, the AASHTO Practitioner’s Handbook 12 (2011: 9-10) referenced here in Section 9 contains a clear four step process for conducting the indirect effects analysis. It is recommended that practitioners consult that reference directly and understand that process, as OES is incorporating that four step process directly herein by reference via this hyperlink above rather than by copying and pasting that text for inclusion here. All of the recent primary references in Section 9 contain this kind of information. However, this discussion of each of these four steps is excellent and should be employed by practitioners on ODOT projects.

In addition, practitioners should read Appendix B in the [*Wisconsin DOT manual* (2007: 37-40), which is a very focused and useful discussion of indirect effects analysis tools and techniques that can be used on a
The results of the indirect effects analysis requires appropriate documentation both in the project file and within the project NEPA document itself. In this documentation, it is important to include various data sources used and summarize the rationale for determining the level of impact. For some projects requiring EIS level NEPA documents, the analysis may be so extensive as to require a separate document. Practitioners should consult with OES to determine whether or not a separate document will be needed. Refer to Attachment 4 for project examples of analyses that were included in NEPA documents and for examples that were compiled as stand-alone documents. Attachment 5 assists in this understanding by presenting the table of contents from one of these examples so that practitioners can see how such an analysis was organized.

Once the evaluation of indirect effects is completed, if it is concluded - and OES and District staffs concur - that further analysis is not necessary, the EA or EIS level environmental document should include the following concluding language to summarize the evaluation. This conclusion will be based on the project data and summary of rationale included in the evaluation:

“Through analysis for indirect effects, it is concluded that the factors of the project do not warrant further detailed analysis of the potential for indirect effects. The project will not have the likelihood to result in significant indirect effects as defined by ODOT’s “Guidance on Indirect Effects and Cumulative Impacts (ICE) Analyses” (2014). This conclusion was based on the evaluation of factors including project design concepts and scope; project purpose and need; project type; facility function (current and planned); project location; improved travel times to an area; local land use and planning considerations; population and demographic considerations; rate of urbanization; and public/agency concerns. The data and evaluation supporting this conclusion are contained in the project file. Therefore, further evaluation of indirect effects in a detailed analysis is not warranted. If changes are made to the project design and alternatives, then the project may need to be re-examined to see if this evaluation is sufficient.”

Section 6: Cumulative Impacts Consideration

Cumulative impacts are by definition, inclusive of all past changes in a project area, all direct effects of the action (project under consideration), all indirect effect of the action, and all reasonable and foreseeable actions in the future.

There is no single approach available for determining the scope and extent of a cumulative impact analysis. Ultimately the practitioner must determine the methods and extent of the analysis based on the size and type of the proposed project, its location, potential to affect environmental resources, and the health of any potentially affected resource (California Department of Transportation). “Health” in this sense refers to the overall vitality, condition, or stability of a resource, and whether or not a resource can easily withstand development pressure, or not hold up under such pressure well at all. This analysis will logically focus on resources that are substantially impacted, those that are in poor or declining condition, or those at risk from the project or actions by others. Attachment 4 contains several project examples that illustrate how resource health can be evaluated.
For the practitioner who is trying to determine and then document impacts other than direct ones for a transportation project, there may be uncertainty regarding the extent to which they should consider future physical and/or social impacts from the proposed action. For general guidance, we can look to some recent federal court decisions involving ICE situations that were favorable for the federal transportation project. The first example is a situation where the court determined that there were limits to the consideration of possible indirect and cumulative impacts for a proposed project.

In 2010, a federal court agreed with FHWA that it was permissible to exclude a future connector road from the cumulative effects discussion of the project EIS (NC Alliance for Transportation Reform v. USDOT: Case No. 2010 WL 1992816). While the future connector road was included in the local MPO’s adopted long range plan, the plan also acknowledged that the connector road was unfunded. Further, it was made clear that it was a financially unconstrained project that might be funded twenty or more years in the future. The court found that merely listing the road in the plan did not make it ‘reasonably foreseeable’ given that no funding source had ever been identified for the project. This finding supports the definition of ‘reasonably foreseeable’ that was given earlier in this ODOT guidance document.

The second example gives guidance to the practitioner regarding how large a study area should be considered for a transportation project in ICE analysis. In this 2010 case the plaintiff claimed that the study area was too small to be able to account for possible ICE impacts (Sierra Club North Star Chapter v. Peters: Case No. 2019 WL 890984). However the federal court found that FHWA does in fact have the discretion to determine the limits of the study area for ICE analysis. Again, as with the first example, the definition of ‘reasonably foreseeable’ allows for ICE analysis in a non-speculative manner that can be constrained by a study area that is supported by the project purpose and need, project scope, alternatives analysis, etc.

Therefore, the test of ‘reasonableness’ is met in both examples by supporting the study of likely and non-speculative real effects in the present and future, and also by not requiring ICE analysis in a study area unbounded by time or physical space.

The California Department of Transportation (2007) developed the following eight step process to serve as a guideline for identifying and assessing cumulative impacts. ODOT believes this process has clear applicability to projects in Ohio. Practitioners are encouraged to access the website at the URL below to get more information on this process:

1) Identify the resources to consider in the cumulative impact analysis by gathering input from knowledgeable individuals and reliable information sources. This process is initiated during project scoping and continues throughout the NEPA analysis.
2) Define the geographic boundary or Resource Study Area (RSA) for each resource to be addressed in the cumulative impact analysis.
3) Describe the current health and the historical context of each resource.
4) Identify the direct and indirect impacts of the proposed project that might contribute to a cumulative impact on the identified resources.
5) Identify the set of other current and reasonably foreseeable future actions or projects and their associated environmental impacts to include in the cumulative impact analysis.
6) Assess the potential cumulative impacts.
7) Report the results of the cumulative impact analysis.
8) Assess the need for mitigation and/or recommendations for actions by other agencies to address a cumulative impact.

These steps provide a framework for practitioners rather than a formula. The level of detail required at each step will vary based on the type of the project. As noted in #2 above, each resource will have a study area, which reflects the condition of that resource. Study area boundaries are not influenced or limited by the project itself, but by existing boundaries such as historic property boundaries, habitat type, watershed, community boundaries, etc.

Refer to Caltrans’ “Approach and Guidance” document for more information and details about the eight step process: [http://www.dot.ca.gov/ser/cumulative_guidance/approach.htm](http://www.dot.ca.gov/ser/cumulative_guidance/approach.htm). This guidance also includes an excellent ‘how-to’ hypothetical project example showing how such analyses are performed through this eight step process. We recommend that practitioners read through this example, which is attached to this guidance as Attachment 2. The Florida DOT’s ‘Quick Guide’ (2012a) is also a very good ‘how to’ reference for cumulative impacts analyses.

The Council on Environmental Quality (CEQ) issued guidance to federal agencies regarding the consideration of past actions in cumulative effects analysis (2005). This memorandum is not policy, so federal agencies may not have incorporated this into their own NEPA policies and procedures. Nevertheless, we believe that certain points in this guidance are good practice for understanding the analysis of past actions for cumulative effects analyses:

1) Agencies have discretion to determine whether, and to what extent, information about the specific nature, design, and present effects of a past action is useful for the agency’s analysis of a proposal’s effects and its reasonable alternatives.
2) The extent of the information needed to appropriately analyze the cumulative effects of a proposed action and alternatives under NEPA varies widely and must be determined by the federal agency proposing the action on a case-by-case basis.
3) CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions.
4) Just because information about past actions may be available or obtained with reasonable effort does not mean that it is relevant and necessary to inform decision making on a proposed action.
5) The scope of the cumulative effects analysis is related to the magnitude of the environmental impacts of the proposed action.
6) Proposed actions of limited scope typically do not require as comprehensive an assessment of cumulative impacts as proposed actions that have significant environmental impacts over a large area.
7) Proposed actions that are finalized with a finding of no significant impact usually involve only a limited cumulative impact assessment to confirm that the effects of the proposed action do not reach a point of significant environmental impacts.
8) Except in extraordinary circumstances, proposed actions that are categorically excluded from NEPA analysis do not involve cumulative impact analyses.
Though this CEQ guidance does not explicitly state this, it appears that the CEQ is making the point that the assessment of cumulative effects, specifically the evaluation of past, indirect, and reasonably foreseeable effects along with direct effects, will be limited on projects requiring an EA, and will primarily occur on those projects requiring an EIS. Consequently it may be then inferred that extensive ICE analyses will likely only occur on a limited number of ODOT projects.

The AASHTO Practitioners Guidebook 12 (2011: 15-16) gives guidance regarding the documentation of both indirect effects and cumulative impacts which should be understood by practitioners. This guidance stresses that a project’s indirect effects and cumulative impacts analyses should be separated for both discussion and documentation. Care should be taken by practitioners during documentation to maintain a clear distinction between the discussions of indirect effects and cumulative impacts and to include all supporting documentation for the analyses. The simplest solution is to keep the analyses in separate sections in a chapter or in separate chapters. Since they don’t have the same meaning, don’t confuse them in your project documentation. After a discussion of direct effects, indirect effects should be discussed, and then all should be summarized during a cumulative impacts discussion.

NCHRP published the report *Legal Sufficiency Criteria for Adequate Indirect Effects and Cumulative Impacts Analysis as Related to NEPA Documents* (2008) wherein three steps are identified for providing legally sufficient documentation.

1. Explain the methodology.
2. Provide factual support.
3. Use clear reasoning.

This NCHRP report has an extensive discussion regarding legal sufficiency, including separate appendices discussing legal sufficiency for both indirect effects analysis and cumulative effects analysis. It is incumbent on practitioners working on ODOT projects to review this guidance from NCHRP.

Practitioners should also bear in mind that when cumulative impacts are unlikely and no further evaluation is needed, they must document the consideration of both indirect effects and cumulative impacts in the project NEPA document and project file. An ICE is not needed for resources that won’t be directly or indirectly affected by the project because the project will not contribute to cumulative impacts on those resources.

“The best way to confirm that the agency’s selection of resources for the cumulative impact analysis is reasonable is to obtain public and agency feedback through a workshop or similar venue.” (NCHRP 2008: 58)

Practitioners will continue to evaluate impacts to environmental and community resources in the standard way for all levels of NEPA documentation, and as appropriate for a project. That evaluative process should lead to conclusions that are clear on a project’s impacts – or lack thereof. Coupled with feedback from stakeholders and public involvement on a project, practitioners should be able to clearly summarize a project’s impacts. This is the standard process of NEPA, regardless of the level of NEPA document. As such, the impacts will be documented in the NEPA document. With such conclusions – and all impacts being clearly understood within the context of a project’s requirements – practitioners
will be able to verify a project’s direct and indirect impacts or the lack of such impacts – leading to the cumulative impacts summation for an EA or EIS.

The California Department of Transportation published a very helpful guide in 2005 which discusses the whole concept of data gathering for ICE analyses. While the document contains information specific to projects in California, it also contains considerable general information that OES believes is applicable to transportation projects in Ohio. It is critical that practitioners study this document. We have also included one portion from that guidance herein as Attachment 3 as we feel it gives the best possible guidance to answer the inevitable question of “what if little or no data is available?”

All of the ICE literature referenced in this guidance is clear that in order to perform an ICE evaluation, NEPA practitioners must evaluate impacts to environmental and community resources in the way they normally do under NEPA. Once that is completed, an evaluation of indirect effects and cumulative impacts can be completed on those high level NEPA projects that would require such analysis.

We realize that the difficult part of this ICE equation for practitioners is knowing WHEN they need to have this discussion section in their NEPA documents. The best answer we can give here is that practitioners should include an ICE section in their documents, wherein they clearly show what the direct and indirect effects of a project are on environmental and community resources as a result of the resource studies and coordination, the public involvement and stakeholder feedback, and any other required meetings and consultation.

The requirements of the project will dictate what goes into that section under the topics of direct and indirect effects. Then the documentation of what comprise the project’s cumulative impacts is the summation of both the direct and indirect effects coupled with the thought progression of how the practitioner understands the project’s effects and impacts as a whole. Your projects will dictate how in depth the evaluation and documentation of ICE needs to be, including (as stated above) documenting when cumulative impacts are unlikely on a project and no further evaluation is necessary.

Practitioners are directed to Attachments 4 and 5 in this document. Attachment 4 is a list of linked ICE documents from different states. Most of the examples are sections from FEIS, DEIS, EA, or other unnamed project documents. The last three examples on that list are stand-alone ICE documents. Together, all these reflect a variety of projects and resource issues, and range in length from 12 pages to over 50 pages. Thus readers will be able to have a clearer understanding of how state DOTs have approached ICE analyses and performed the necessary studies to focus their documents on those resource effects and impacts that clearly require ICE analysis. Some projects clearly do not require as much analysis as other projects. The take away here is that you must know your projects, follow the guidance contained herein, look at examples, and then do the work necessary on your projects to understand indirect effects and cumulative impacts. Attachment 5 will assist in this understanding by presenting the table of contents from one of these examples so that practitioners can see how such an analysis was organized.

Additionally, evaluations of indirect effects and cumulative impacts can be conducted early as part of a project’s transportation planning process. This approach is allowed but not required under FHWA and FTA’s transportation planning regulations (23 CFR Part 450). As such, in certain circumstances those
evaluations can then be adopted into a project’s NEPA process (AASHTO 2011: 17-19). Such an approach must be fully discussed with OES prior to employing any such approach on a project in ODOT’s program. Furthermore, the CEQ recommends that potential cumulative impacts on a project be considered early. The idea is that practitioners should not wait until direct and indirect effects analyses are well under way (or finished) before thinking about cumulative impacts. We want to begin thinking about the larger, cumulative impacts picture early on a project because, for example, such early consideration might facilitate project design in ways to avoid or minimize impacts (California Department of Transportation).

Once the evaluation of cumulative impacts is completed, if it is concluded - and OES and District staffs concur - that further analysis is not necessary, the environmental document should include the following concluding language to summarize the evaluation. This conclusion will be based on the project data and summary of rationale included in the evaluation:

“Through analysis for cumulative impacts, it is concluded that the factors of the project do not warrant further detailed analysis of the potential for cumulative impacts. The project will not have the likelihood to result in significant cumulative impacts as defined by ODOT’s “Guidance on Indirect Effects and Cumulative Impacts (ICE) Analyses” (2014). This conclusion was based on the evaluation of factors including project design concepts and scope; project purpose and need; project type; facility function (current and planned); project location; improved travel times to an area; local land use and planning considerations; population and demographic considerations; rate of urbanization; and public/agency concerns. The data and evaluation supporting this conclusion are contained in the project file. Therefore, further evaluation of cumulative impacts in a detailed analysis is not warranted. If changes are made to the project design and alternatives, then the project may need to be re-examined to see if this evaluation is sufficient.”

Section 7: OVERVIEW OF THE ODOT PROJECT DEVELOPMENT PROCESS

ODOT has developed and implemented a Project Development Process (PDP) that includes regular communication among technical disciplines, results in quality plans, and minimizes cost overruns during project planning, right-of-way acquisition and project construction. The PDP is a project management and transportation decision-making tool that outlines project development from concept through completion. Depending on the size, complexity, and/or potential impact to the environment, ODOT transportation projects are categorized as following one of five paths (Path 1– 5). All projects must advance through five sequential phases: Planning, Preliminary Engineering, Environmental Engineering, Final Engineering/ROW, and Construction.

The PDP encourages communication among disciplines, requires documentation of the reasoning behind project decisions, eliminates duplicated effort among disciplines, and provides for early identification of potential issues. Involvement of all disciplines during the early stages of project development ensures that issues affecting project type, scope, development schedule and costs can be correctly anticipated and evaluated.
Selection of the appropriate project path is based on the anticipated level of project development complexity. The project path identifies the recommended level of analysis, amount of stakeholder involvement, and activities performed during each phase.

ODOT’s project development process is focused on identifying environmentally sensitive resources early on in the process and thus allows for the most consideration to avoiding direct impacts to such resources. The early resource identification also affords opportunities to minimize direct impacts. This ICE guidance will augment the process of identifying direct impacts with the identification of indirect impacts.

7.1: Path 1 Projects

Path 1 Projects are defined as transportation improvements generated by the traditional maintenance and preventive maintenance program as they relate to the development of the District Work Plan. These projects are typically processed as low level Categorical Exclusion (CE) NEPA documents.

7.2: Path 2 Projects

Path 2 Projects are defined as simple transportation improvements that include minor structure and roadway work. Path 2 Projects can involve non-complex right-of-way acquisition (strip takes, temporary easements). These projects will typically be processed as low level CE NEPA documents.

7.3: Path 3 Projects

Path 3 Projects are defined as transportation improvements that generally are located on an existing alignment. Small adjustments to the existing alignment to improve geometric conditions may be involved. Substantial relocations of roadways that do not result in significant environmental impacts also can qualify as Path 3 Projects. Path 3 Projects can typically be evaluated and processed as a documented or higher level CE NEPA document.

7.4: Path 4 Projects

Path 4 Projects are defined as mostly rural transportation improvements, where the anticipated result of the improvement is expected to have a significant impact to the highway’s public access, level of service, traffic flow, mobility patterns, or mode shares; require substantial right-of-way acquisition; and have a high degree of public controversy.

These projects are typically located on a new alignment but could include any project type that might impact a high-quality environmental resource, require agency coordination at several decision points in the PDP, or have substantial public controversy. The context and intensity of impacts should be considered when addressing an impact on a resource. Path 4 Projects may require a higher level CE, an Environmental Assessment (EA), or Environmental Impact Statement (EIS) NEPA document. From a design perspective, Path 4 Projects are those in which new highway alignments or significant alterations to existing highway alignments will result in the examination of multiple alternatives as a necessary and systematic progression to selecting the preferred alternative.
7.5: Path 5 Projects

*Path 5 Projects* are defined as mostly urban transportation improvements where the anticipated result of the improvement is expected to have a significant impact to the highway’s public access, level of service, traffic flow, mobility patterns, or mode shares; require substantial right-of-way acquisition; require coordination of complex access management issues; require significant utility relocation; and have a high degree of public controversy. It is possible for a Path 5 Project to require little to no new right-of-way (e.g., interstate widening within existing right-of-way).

These projects typically are located on new alignment but could include any project type that might impact a high-quality environmental resource, require agency coordination at several decision points in the PDP, or have substantial public controversy. The context and intensity of impacts should be considered when addressing an impact on a resource. Path 5 Projects typically require an EIS or EA NEPA document, but could in some instances also be processed as a high level CE NEPA document.

**Section 8: ICE Analyses and ODOT’s Project Development Process**

This section is designed so that practitioners will better understand how and when to conduct ICE analyses relative to ODOT’s PDP.

Based on the above discussion of ODOT’s Project Development Process, it should be understood by ODOT and consultant NEPA practitioners that ICE analysis will be undertaken mainly on Path 4 and Path 5 EA and EIS projects. While it is very unlikely that a Path 3 high level CE project will require an ICE analysis, it is possible that a Path 4 high level CE project might need one. As stated previously, Path 4 projects can be processed as high level CE, EA, or EIS level NEPA documents. Even though OES believes it is very unlikely that a Path 4, high level CE project will require an ICE analysis, other Path 4 projects processed as EA and EIS level NEPA documents will likely require that analysis. Similarly, Path 5 projects will typically be EA and EIS level NEPA documents and would require ICE analysis with rare exception.

Therefore, as we have indicated, in nearly all instances it is the complex undertakings on ODOT’s program being processed with EA and EIS level NEPA documents that will require ICE analysis. There will certainly be exceptions and ODOT and consultant staffs should consult with OES if they think their project may be an exception. As with many tasks under the PDP, the Project Manager and the project management team (in consultation with appropriate resource/technical specialists), will determine what studies will be necessary on a project. All questions regarding the need for ICE analyses on a project should be directed to the appropriate OES staff having the ODOT District assignment for the project in question.

During the **Planning Phase** of the PDP, which is the first phase of the PDP, the project team will work to identify environmental and community resources through readily available online information sources, as well as through engagement and discussions with identified local project stakeholders to understand what direct and indirect effects might be involved for a given project.

In ODOT’s PDP Planning Phase, the Project Initiation Package (PIP) provides a snapshot of potential issues and concerns that could require major scope, schedule or cost issues during project development.
During this phase of the process, the first opportunity to document resources and ICE issues on Path 4 and 5, projects should occur with the compilation of information in the PIP.

Among the environmental resources that must be given preliminary consideration during this phase of the PDP are scenic rivers, historic bridges, wetlands, streams and waterways, archaeological sites, historic buildings, parks and recreation areas, threatened and endangered species, air quality, landfills and industrial sites, farmlands, and public facilities. This information is gathered through secondary literature searches and field reviews for the purposes of refining the scope of a given project.

The project site should also be visited to observe, document, and verify any such environmental issues for the PIP. The project management team should document concerns about potential ICE and evaluate their validity throughout the PDP.

**Preliminary Engineering** is the second phase of the PDP. The purpose of Preliminary Engineering is to begin the process of collecting more detailed information by conducting field investigations, other technical studies, and engineering. This work builds upon and refines the information and analyses produced during the Planning Phase in order to develop preliminary alternatives.

In this phase, as the project team begins to develop feasible alternatives, the previously identified resource and ICE information documented in the Planning Phase will be considered. The first product in this phase that may be developed for Path 4 and 5 projects is the Feasibility Study. For this study, environmental analyses will be merged with engineering considerations, and with feedback obtained through public involvement and stakeholder consultation.

On Path 3 projects, the outcome of the Feasibility Study will usually be the preferred alternative. As a result of the environmental analyses (and possibly feedback obtained through the public involvement

In the PDP Planning Phase:

- **Scope the project & establish the project Study Area.**
- **Identify the resources to consider by gathering input from reliable information sources.**
- **Define the geographic boundary or resource study area for each resource.**
- **Define all known aspects of the proposed transportation improvement (i.e., project description, purpose and need, engineering details/requirements for the project.)**
- **Determine if the study area contains any proposed new developments; assess the potential for increased accessibility.**
- **Determine the main changes in developed area vs. undeveloped area over the past 5-10-20 years.**
- **Determine if the project will bring about major change(s) to the area; assess the potential for induced growth.**
- **Describe the current condition or health of each resource based on research and consultation with resource agencies (for example, describe if resources are protected or in poor or declining health).**
- **Identify and include other current and reasonably foreseeable future actions or their associated impacts.**
process), any possible ICE concerns will be documented and considered in the preferred alternative recommendation of the Feasibility Study or in a higher level CE document.

On Path 4 and 5 projects the outcome of the Feasibility Study will be a limited number of alternatives to be studied further and carried forward into the Alternative Evaluation Report (AER). The AER will discuss environmental and design issues, then recommend a preferred alternative.

As a result of the environmental analyses (and possibly also from feedback obtained through the public involvement process), ICE concerns will be documented and considered in the AER in the preferred alternative recommendation. Earlier in this document, we stated that in Appendix B of the Wisconsin DOT manual (2007: 37-40), information and tools are given for working with the public, a technical advisory committee, etc. Practitioners should review that information for its applicability to their projects.

As more information is gathered during the initial field studies of the direct impacts of a project during the Preliminary Engineering Phase, the project team should begin to identify other current and reasonable future actions and their associated impacts relative to the proposed action. Both the identified direct and indirect effects of the proposed action that might contribute to cumulative impacts to resources should be discussed. Identification of direct and indirect effects will be based on project parameters, on concerns of the agencies managing and regulating resources, the presence of other proposed actions that could degrade resources in the future. Findings from other NEPA studies from nearby actions, local and regional planning documents, and community feedback will all help with the identification of potential for growth related to each alternative. To identify socioeconomic factors and issues, practitioners can consider general planning areas or units used by local governments for future land use planning. The focus for ICE should be on large planning areas rather than at the neighborhood level. For environmental justice issues, a community level consideration may be more appropriate.

Any project that includes economic development as part of the project’s Purpose and Need requires an in-depth analysis of indirect effects. If the project’s purpose is to stimulate economic development in the area, the project itself is essentially promoting indirect effects.

In the PDP Preliminary Engineering Phase:
- **Identify the direct and indirect effects of the proposed action that might contribute to cumulative impacts for each resource.**
- **Identify the potential for growth for each alternative.**
- **Assess the growth-related effects of each alternative to resources of concern.**
- **Identify land use in the study area via local and MPO plans, land use designations (including zoning and economic development plans), and occupancy rates for residential and commercial buildings.**
- **Identify utilities in the area (such as current and future service for water, sewer, electric, gas, and communication services).**
- **Identify socioeconomic factors or issues.**
- **Identify population and demographic changes over the past 5-10-20 years.**
Environmental Engineering is the third phase of the PDP. The purpose of Environmental Engineering is to perform detailed environmental analysis of the preferred alternative concurrently with detailed engineering and other technical studies. This work builds upon and refines the information and analyses produced during the Preliminary Engineering Phase. It takes a detailed look at the preferred alternative and its associated direct and indirect effects within the context of the design work that has been completed.

Continuing what was begun during the previous phase of the PDP more precise information is gathered during environmental field studies of the project’s direct impacts during the Environmental Engineering Phase. The project team should identify other current and reasonable future actions and their associated impacts relative to the proposed action. Both the identified direct and indirect effects of the proposed action that might contribute to cumulative impacts to resources should be studied in anticipation of its discussion in the NEPA document.

Therefore, in this phase, the project team should assess the potential cumulative impacts of the preferred alternative, and as the project team prepares the NEPA document, the results of the ICE analyses must be included therein. All direct effects, indirect effects, and cumulative impacts will be documented and discussed in the NEPA document. The NEPA document will contain all environmental commitments that have been made relative to the ICE analyses.

This information will be carried forward into the Environmental Commitments Summary, which is the link between the Environmental Engineering Phase and the Final Engineering/ROW and Construction Phases of the PDP. This summary includes information about direct, indirect effects and cumulative impacts to resources that require mitigation and information about resources that are to be specifically avoided during the next phases of project development.
**Final Engineering/ROW** is the fourth phase of the PDP. The purpose of Final Engineering/ROW is to perform the final (Stage 3) detailed engineering design of the preferred alternative. This work builds upon and refines the Stage 2 design work completed during the Environmental Engineering Phase. As stated above, all appropriate ICE analyses will be part of the Environmental Commitments Summary from the Environmental Engineering Phase. This summary will bring any necessary ICE issues regarding mitigation and/or avoidance of resources into the final design process for the project.

In the PDP Final Engineering/ROW Phase:
- **Ensure all ICE commitments from the Environmental Commitments Summary are reflected in the final engineering plans and related documents.**

**Construction** is the fifth phase of the PDP. The purpose of the Construction Phase is to perform the final step of the PDP: Construct the project and perform all necessary pre- and post-construction tasks. All environmental commitments as they relate to the direct, indirect, and cumulative effects of the project, and as included in the final design plans, will be completed in this phase.

In the PDP Construction Phase:
- **Complete the ICE commitments as part of the project’s construction, pursuant with the final plans and related documents.**
Section 9: References and Web Resources

AASHTO Center for Environmental Excellence website “Indirect Effects/Cumulative Impacts”:
http://environment.transportation.org/environmental_issues/indirect_effects/

American Association of State Highway and Transportation Officials (AASHTO)
Electronic document. AASHTO Center for Environmental Excellence.

California Department of Transportation (Caltrans)
http://www.dot.ca.gov/ser/cumulative_guidance/purpose.htm

2005 Guidance for Preparers of Indirect and Cumulative Impacts Assessments:

Council on Environmental Quality


Federal Highway Administration
http://www.environment.fhwa.dot.gov/projdev/tdm2_c_imp.asp


Florida Department of Transportation
http://www.dot.state.fl.us/emo/publications.shtm

http://www.dot.state.fl.us/emo/publications.shtm

Montana Department of Transportation
National Cooperative Highway Research Program (NCHRP)


http://environment.transportation.org/pdf/indirect_effects/NCHRP252543.pdf

Tennessee Department of Transportation
http://www.tdot.state.tn.us/epm/manual/05_0.shtml

Texas Department of Transportation

Wisconsin Department of Transportation
www.dot.wisconsin.gov/localgov/docs/landuse-indirect.pdf
<table>
<thead>
<tr>
<th>Effects &amp; Impacts</th>
<th>Direct</th>
<th>Indirect</th>
<th>Cumulative</th>
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<tbody>
<tr>
<td></td>
<td>Caused by project activities</td>
<td>Caused by project activities, but later or farther away than direct effects.</td>
<td>Caused by project activities, pre-existing conditions, and the actions of others.</td>
</tr>
<tr>
<td>Focus</td>
<td>Project activities.</td>
<td>Can be from project activities and from other pressures for development: if its already suitable land for development, if utilities, water, sewer infrastructure are in place or planned; if zoning has been changed to facilitate development; if economic conditions support development; if work force is in area; and if amenities like schools, recreation facilities, etc. are in area.</td>
<td>Condition of resources: those substantially impacted, those that are in poor or declining health, or those at risk from the project or actions by others.</td>
</tr>
<tr>
<td>Study Area</td>
<td>Within and closely adjacent to the project limits</td>
<td>Within and near the project limits. Often a larger area than the study area for direct impacts. Represents the geographic area where changes may be influenced by the project.</td>
<td>Multiple study areas. Each specific resource has its own study area which reflects the condition of that resource. Boundaries are not influenced by the project, but by existing boundaries (e.g., community boundaries, habitat type, watershed, historic property boundaries, etc.)</td>
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</table>

Adapted from: “Guidance on Preparing Indirect and Cumulative Impact Analyses,” Texas Department of Transportation (2010)
Indirect Effects Analysis

Federal Highway Administration

Directions: Key elements (review questions and steps) that comprise the Community of Practice for indirect effects analyses are located in the right hand column. Identify the location within the analytic documentation (for example, the page and paragraph in the associated Environmental Assessment) in the left hand column. For each IEA, all key elements must be explicit in the analytic document. At a minimum, all key elements must be mapped to specific information in the analytic document.

NOTE that IEA are action focused! If all three test question answers are yes, then analyze the potential indirect effect. For sensitive or potentially controversial issues, document negative responses particularly well. Sierra Club v. Marsh 976 F.2d 763, 767 (1st Cir. 1992) also addresses the likelihood of potential indirect effects and prudent decision making. See NCHRP reports #403 and #466 for their discussion of additional IEA issues discussed in the courts.

Judicial Review Standard: The “Sierra Club v. Marsh*” Reasonably Foreseeable Test
* Sierra Club v. Marsh, 769 F.2d 868 (1st Cir. 1985). See also NCHRP Report #466, cited below.

Location:

<table>
<thead>
<tr>
<th>Can one be confident that the impacts are likely to occur?</th>
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<tr>
<td>Can impacts be sufficiently described and specified now to allow for useful evaluation?</td>
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<td>If impacts are not evaluated now, will future evaluation of impacts be irrelevant?</td>
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continued next page:
**Best Practices: The NCHRP Report #466* 8 steps**


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<th>Location:</th>
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<tr>
<td><strong>Scoping</strong> – identify basic approach, effort required, and</td>
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<tr>
<td><strong>Identify the Study Area’s Direction and Goals</strong> – define the context for the IEA</td>
</tr>
<tr>
<td><strong>Inventory the Study Area’s Notable Features</strong> – identify specific environmental issues</td>
</tr>
<tr>
<td><strong>Identify Impact-Causing Activities of Proposed Action &amp; Alternatives</strong> – break down activities into individual, impact-causing components for analysis</td>
</tr>
<tr>
<td><strong>Identify Potentially Significant Indirect Effects for Analysis</strong> – catalog indirect effects by component activities; identify potentially significant indirect effects meriting further analysis</td>
</tr>
<tr>
<td><strong>Analyze Indirect Effects</strong> – use qualitative and quantitative techniques to estimate the magnitude and intensity of potentially significant indirect effects, and to enhance comparative description of future conditions</td>
</tr>
<tr>
<td><strong>Evaluate Analysis Results</strong> – evaluate the uncertainty of results for ramifications on overall assessment</td>
</tr>
<tr>
<td><strong>Assess Consequences and Develop Mitigation</strong> – evaluate the consequences of indirect effects in context of full range of project effects; develop strategies to avoid or lessen unacceptable effects; and, re-evaluate effects in context of mitigation strategies</td>
</tr>
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Attachment 2:

Using the CalTrans 8-Step Approach for Cumulative Impacts: A Hypothetical Example

To assess the potential for cumulative impacts, the practitioner determines the potential for past trends and current and reasonably foreseeable future actions, in combination with the proposed project, that affect the health of the resource.

Below is a brief outline of how to use the steps, with a hypothetical example for wetlands:

Step 1: The project will have direct or indirect impacts to wetlands; therefore, it is included in the resources to consider for cumulative impacts assessment.

Step 2: Based on consultation with DOT biologists and wetlands specialists, you determine that the relevant resource study area (RSA) is the drainage basin.

Step 3: The context: Currently the area is being used for farming, and has relatively intact wetland complexes. Current acreage: 5,000 acres. Historically (pre-settlement), the area contained abundant wetland resources. The resources have been disturbed by agricultural activities over the past 150 years. Innovative rice farming techniques have helped maintain wetland function in some areas. In recent years, urban development and deep ripping activities associated with vineyards have increased the pace of wetland loss. The trend: Rapid development is continuing, and is expected to accelerate over the next 20 years.

Step 4: This project will have 7 acres of direct and indirect impacts to wetlands in the RSA.

Step 5: You have identified reasonably foreseeable actions in the wetlands RSA, and the associated impacts to wetlands. These reasonably foreseeable actions include 5 new housing developments, 2 new business parks, and several transportation improvements. Based on available environmental documents, discussions with wetlands experts, and other information you have collected about these actions, you estimate that 1,000 acres of wetlands will be adversely affected by reasonably foreseeable actions.

Step 6: You employed a trends method to analyze the cumulative effect on the wetlands over time. You also consulted with Caltrans biology staff and regulatory experts to analyze the effect of cumulative stresses (fragmentation, pollution, sedimentation) to the values and functions of wetlands in the RSA.

Step 7: You concluded that there will be substantial cumulative impacts to wetlands within the RSA given past, current, and reasonably foreseeable actions. Your analysis shows that that your project will account for 7 acres of the 1,000 acres of potential cumulative impacts to wetlands. You conclude that the wetland impacts associated with your project will be cumulatively minor in comparison to the impacts of other current and reasonably foreseeable projects.

Step 8: Based on your analysis of the status of wetlands in the RSA, you recognize an opportunity to promote wetland health by building upon the existing wetland conservation efforts in the RSA. You recommend that any compensatory mitigation required for the project impacts be located proximate to existing wetland mitigation areas or wildlife refuges.

(Adapted from California Department of Transportation)
If Little or No Data Is Available

You will encounter situations when data is unavailable or incomplete, and generating data is not feasible. Cumulative and indirect impacts assessments are not intended to require extensive data gathering efforts to develop information that is not available. The Council on Environmental Quality (CEQ) recognizes that this situation might arise and has adopted regulations that address this issue. Regulations at CEQ 1502.22 allow for the preparer to:

- Include a statement that information is incomplete or unavailable;
- Include a statement of the relevance of the incomplete or unavailable information to evaluating significant adverse impacts;
- Provide a summary of existing relevant credible scientific evidence; and
- Include the agency’s evaluation of reasonably foreseeable impacts based on theoretical approaches or research methods generally accepted in the scientific community.

However, some amount of data is almost always available. CEQ regulations at 40 CFR 1502.22 provide ample flexibility for sensible adaptation of analysis to the information you can obtain through the reasonable and practical means illustrated in this paper.

Source:
Guidance for Preparers of Indirect and Cumulative Impacts Assessments: Data Gathering Issue Paper (California DOT 2005: 16)
Attachment 4:

Examples of ICE analyses on projects from other states:


http://www.dot.ca.gov/dist12/files/1SHOV/DED/2.21%20Cumulative%20Impacts.pdf


http://www.in.gov/indot/projects/files/MPUS50NVE_AppendixI.pdf


http://www.dot.ca.gov/ser/Growth-related INDIRECTImpactAnalysis/GRI_guidance06May_files/canyoncity_project.pdf **

http://www.dot.wisconsin.gov/projects/neregion/41/docs/ice-sect1-5.pdf **

Note: All examples except the last three marked with “**” are sections from FEIS, DEIS, EA, or other unnamed project documents. The last three examples are stand-alone reports. Together, all of these examples illustrate a wide range of possibilities on how ICE analyses can be presented.
Attachment 5: Example Table of Contents for ICE Analyses

Table of Contents

1.0 Introduction

2.0 Methodology
2.1 RESOURCES ANALYZED
2.2 RESOURCES DISMISSED FROM ANALYSIS
2.3 SCOPE OF ANALYSIS
2.4 CURRENT STATUS AND HISTORICAL CONTEXT OF RESOURCES
2.5 DIRECT EFFECTS
2.6 INDIRECT EFFECTS
2.7 CUMULATIVE IMPACTS
2.8 OTHER CURRENT AND REASONABLY FORESEEABLE ACTIONS
2.9 POTENTIAL MITIGATION MEASURES
2.9.1 Mitigation for Direct Effects
2.9.2 Mitigation for Indirect Effects
2.9.3 Mitigation for Cumulative Impacts

(Note: Section 2 topics will outline how you work through an ICE analysis to see if you have the need to perform a more intensive analysis of effects and impacts to any specific resources, which then would be discussed as outlined below in Section 3.)

3.0 Indirect Effects and Cumulative Impacts Discussion by Resource
3.1 SPECIFIC RESOURCE DISCUSSION
3.1.1 Methodology
3.1.2 Current Health & Historical Context
3.1.3 Direct Effects
3.1.4 Indirect Effects
3.1.5 Other Current and Reasonably Foreseeable Actions
3.1.6 Cumulative Effects
3.1.7 Discussion of Potential Mitigation Measures

(Note: As a result of the analyses and discussion contained in Section 2, each resource that requires a more intensive analysis for ICE will have its own discussion following this outline. For example, 3.1 could be agriculture and farmland impacts, 3.2 could be cultural resources, 3.3 could be wetlands, etc.)

4.0 Summary

5.0 References

List of Exhibits (generic examples)
Exhibit 1 - Project Vicinity Map
Exhibit 2 - Acres of Farmland in County
Exhibit 3 - Cumulative Impacts of the Alternatives on Conversion of Farmlands
Exhibit 4 - Potential Effects and Benefits of Other Current and Reasonably Foreseeable Actions on Fish, Surface Water, Vegetation, Wetlands, and Wildlife Resources  
Exhibit 5 - Population Trends in County  
Exhibit 6 - Projected Population Trends in County  
Exhibit 7 - Summary of Mitigation Methods for Noise Effects  
Exhibit 8 - Wetland Resources in Project Vicinity  
Exhibit 9 - Permanent and Temporary Direct Effects of the Build Alternative on Wetland Resources  
Exhibit 10 - Impacted Wetland Resources  

**List of Appendices** (generic example)  
Appendix A - Map and List of Other Current and Reasonably Foreseeable Actions

**Note:**

This table of contents is generic and not specific to any project. However, it is based on this source: “Final Indirect and Cumulative Effects Analysis: SR 502/I-5 to Battleground – Add Lanes.” Prepared by Parsons Brinckerhoff for the Washington Department of Transportation (2008).  

As such, practitioners should review this report to see how and why the Washington DOT structured the report in this way and to read several of the sections that go into detail for a specific resource (e.g., Sections 3.1 - 3.8 in that report). The resources discussed in those sections were determined to require detailed evaluation of direct and indirect effects, and cumulative impacts. Practitioners should look at this example via the hyperlink above so they understand how such decisions are made and how to advance into more detailed analyses on those resources that are determined to need such analyses.