

FINAL GUIDANCE

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Revision to NCDOT/NCDENR Guidance for Assessing Indirect and Cumulative Impacts of Transportation Projects in North Carolina - Volume II: Practitioner's Handbook

Section II: Pre-Screening Projects for Applying Indirect/Cumulative Impact Assessment

A. Purpose of Pre-Screening

Assessment of indirect and cumulative effects of projects is required under the National Environmental Policy Act of 1969, as amended (NEPA), under the Council on Environment Quality (CEQ) regulations implementing NEPA, and under the North Carolina Policy Act of 1976 (NCEPA), which generally adopted the federal definitions of indirect and cumulative impacts. In addition to the NEPA and NCEPA guidelines, rules for the 401 Water Quality Certification Program (15A NCAC 2H .0506(b)(4) and (c)(4), as well as those for the Isolated Wetland Permit Program (15A NCAC 2H .1300), require that the Division of Water Quality (DWQ) determine that a project “does not result in cumulative impacts, based upon past or reasonably anticipated future impacts, that cause or will cause a violation of downstream water quality standards.” It is important to note that the NCDENR Division of Water Quality has produced guidance on the assessment of indirect and cumulative impacts for the express purpose of dealing with Section 401 Water Quality certification, and that this NCDOT pre-screening guidance incorporates the work of DWQ. However, not all transportation projects warrant detailed indirect and cumulative impact (ICI) assessment. This is because certain projects will not lead to changes in land use nor the condition of resources. The purpose of ICI pre-screening is to use readily available information about ICI-oriented factors to evaluate whether or not the factors point to the need to commence a detailed, project-specific eight-step ICI assessment (described in Section III). The factors for pre-screening purposes relate to the project design concept and scope, area demographic trends, and local land use policy and enforcement.

ICI pre-screening can also provide information as input to cumulative impact assessments required under various regulations, e.g., the Section 401 Water Quality and Isolated Wetlands Programs and the Coastal Area Management Act Program, among others. The determinations reached through ICI pre-screening should not supersede those of other regulatory requirements where the other regulatory requirements are more stringent.

B. Pre-Screening Factors and Procedure

Various factors can influence the timing and location of land development and the subsequent change in the quality of resources affected by that development. For example, transportation development and economic development change land uses and travel patterns and trips; these changes in turn affect mobile source emissions and air quality. Similarly, changes in transportation access and economic development change the consumer preferences for where site development occurs (generally, sites that have good transportation access and strong economic development potential are developed more intensely); these changes in turn affect the density of impervious surface cover, the stormwater hydrograph and pollutant loadings, and water quality, among other factors.

Pre-screening examines a variety of factors in combination. Figure 1 contains a decision tree for reaching ICI pre-screening conclusions. The ICI pre-screening decision tree is organized around project-specific design concept and scope considerations and area-specific demographic, land use, and planning considerations. As shown, if these considerations point to indirect and cumulative impacts, then the appropriate conclusion is that a project-specific, eight-step ICI assessment should be commenced. Conversely, if these considerations point to potentially minimal or no indirect and cumulative impacts, then the appropriate conclusion is that a project-specific eight-step, ICI assessment is not warranted. If the pre-screening analysis is inconclusive, then a project-specific, eight-step ICI assessment should be commenced.

The information needed to conduct the pre-screening is usually readily available or can be calculated with relatively minimal effort. Sources include project planning documents, the regional travel demand model, census data, economic development data, and resources data from geographic information systems.

Ideally, pre-screening should be conducted during systems planning and, if not, then early in project development.

1. Project Design Concept and Scope Considerations

A project's design concept and scope typically takes shape in systems planning. Included are factors of project purpose and need, project type, facility function, and change in accessibility.

a. Project Purpose and Need and Project Type

Transportation projects often have the stated purpose of fostering economic development or growth. In the broader sense, transportation and economic development are inextricably linked. Transportation is necessary but alone not sufficient for economic development (and land use change) to occur. Courts have found that a "hard look" at ICI's is warranted when a transportation project is being planned to serve a specific economic development purpose, e.g., needed access to a planned industrial center or transit-oriented development. Consequently, **the eight-step ICI assessment should be commenced on projects that have a stated purpose of economic development.**

Project type means the project's design aspects which will affect the proposed facility's potential impact on land use, i.e., new project on new location versus improvement on existing location, vehicle carrying capacity (e.g., number of lanes to be constructed or added), length of project, and access control (number and location of interchanges). There are three classes of transportation actions under Federal Highway Administration regulations for implementing the National Environmental Policy Act, specifically, categorical exclusions, environmental assessments and environmental impact statements. There are two types of categorical exclusions (CEs): Type I and Type II. Type I CEs are minor actions that do not involve significant impacts and are pre-approved by the Federal Highway Administration. Type I CEs include such actions as installations of noise barriers, fencing, and pavement markers, improvements to rest areas and weigh stations, and non-construction activities. **Therefore, ICI pre-screening (and commencement of the eight-step ICI assessment process) is not needed for Type I CEs.**

Type II CEs are actions that are designated as CEs when documentation demonstrates that significant environmental impacts will not occur and only after FHWA approval. Type II CEs are classified as Type II (A), Type II (B), or Type II (C) documents. The *Categorical Exclusion Action Classification Form* documents projects that are classified by the FHWA as Type II (A) and Type II (B) CEs. These projects qualify as programmatic categorical exclusions under regulations implementing the National Environmental Policy Act (23 CFR 771.117) and no further documentation is required. **Therefore, ICI pre-screening (and commencement of the eight-step ICI assessment process) is not needed for Type II (A) and Type II (B) CEs.**

Type II (C) CEs are projects which meet the conditions and criteria established in 23 CFR 771.117 for a CE, but more than minimally exceed the threshold values. Type II (C) CEs include such actions as small-scale widening projects, bridge replacements and intersection improvements. These projects require environmental studies to document the potential impacts. If the documentation concludes that the project will not have significant environmental impacts, then the project is approved by the FHWA as a CE. **The ICI pre-screening should be undertaken for Type II (C) CEs as part of the NEPA documentation process to determine the potential for indirect and cumulative impacts. If it is determined that a CE is the appropriate level of documentation for the project, then the eight-step ICI assessment is not needed. However, a determination that the project is not likely to result in indirect and cumulative impacts, documentation substantiating this determination and a description of the water quality impacts will be provided (reference Section "C" of this pre-screening guidance).**

The NCDOT has established minimum criteria for determining when the preparation of environmental documents pursuant to the North Carolina Environmental Policy Act (NCEPA) is not required (19A NCAC 2F .0102). **The ICI pre-screening should be undertaken for minimum criteria projects to determine the potential for indirect and cumulative impacts only if the condition described in 19A NCAC 02F.0103(3) is met; that is, the NCDOT determines that "the secondary or cumulative impacts of the proposed activity, which are not generally covered in the approval process, may**

result in a significant adverse impact to human health or the environment.” Otherwise projects meeting the minimum criteria description do not need to undergo the eight-step ICI assessment. However, even minimum criteria projects will require, at a minimum, that a determination be made that the project is not likely to result in indirect and cumulative impacts, and documentation substantiating this determination and a description of the water quality impacts will be provided (*reference Section “C” of this pre-screening guidance*).

The ICI pre-screening should be undertaken for projects classified as Environmental Assessments (EAs) as part of the NEPA documentation process to determine the potential for indirect and cumulative impact, and whether it is necessary to initiate the eight-step ICI assessment. Environmental Assessments are prepared for such actions as widening on existing location with or without segments on new location, interchange construction, and major bridge replacement projects. The ICI pre-screening should be undertaken for Environmental Assessments to determine the potential for indirect and cumulative impacts, and whether it is necessary to initiate the eight-step ICI assessment of the project. If it is determined the eight-step ICI assessment is not needed, then a determination that the project is not likely to result in indirect and cumulative impacts, documentation substantiating this determination and a description of the water quality impacts will be provided (*reference Section “C” of this pre-screening guidance*). **If it is determined that the eight-step ICI assessment should be initiated as a result of pre-screening, then procedures set forth in the NCDOT-NCDENR Indirect and Cumulative Impact Assessment Guidance: Integrated NEPA/SEPA/401 Eight-Step ICI Assessment will be applied.**

The eight-step ICI assessment, in accordance with the procedures set forth in the NCDOT-NCDENR Indirect and Cumulative Impact Assessment Guidance: Integrated NEPA/SEPA/401 Eight-Step ICI Assessment, should be initiated on all projects classified as Environmental Impact Statements. Therefore, pre-screening is not necessary for EIS-level projects.

b. Facility Function

The critical relationship between roadway classification and ICI assessment in both urban and rural areas is that of travel generation served (an indicator of the intensity of land use) and the geographic area served (at a scale that affords meaningful evaluation – roughly corresponding to boundaries of census tracts or block groups or natural systems, e.g., sub-watersheds). Based on these factors, the following paragraphs discuss the functional classifications appropriate for ICI assessment in urban and rural areas, respectively.

The *urban principal arterial system* (interstates, other freeways, and other principal arterials with partial or no control of access) serves the major centers of activity of urbanized areas, carries a large proportion of trips in the urban area, and distributes travel to relatively large geographic areas. The *urban minor arterial system* (all arterials other than principal) interconnects with and augments the principal arterial system. The urban

principal and minor arterial systems carry between 65 and 80 percent of urban area travel volumes. It also covers a geographic scale suitable for evaluating land use and natural systems changes.

In rural areas, *rural principal and minor arterials* serve travel of primarily statewide importance, i.e., interstate and intercounty travel, linkage of cities and larger towns, etc. *Major rural collector roads* serve travel along the more important intracounty travel corridors, e.g., serving county seats, larger towns, and other traffic generators of intracounty importance.

For the above-stated reasons, **ICI assessment should be considered for those urban projects for principal arterial and/or minor arterial system roadways and for rural projects for arterial and/or major collector roadways.** Projects on facilities with functional classifications lower than those specified generally do not warrant project-specific eight-step ICI assessment because they do not have a substantial influence on land use over a broad area. **If the Pre-Screening indicates that the eight-step ICI assessment is not needed, then a statement that the project is not likely to result in indirect and cumulative impacts, documentation substantiating this determination and a description of the water quality impacts will be provided (*reference Section "C" of this pre-screening guidance*).** If it is determined that the eight-step ICI assessment should be initiated, then procedures set forth in the **NCDOT-NCDENR Indirect and Cumulative Impact Assessment Guidance: Integrated NEPA/SEPA/401 Eight-Step ICI Assessment** should be applied.

c. Change in Accessibility to an Area

Indirect and cumulative impacts are often the result of land use change. Generally, a change in transportation facility capacity (e.g., roadway widening) or access (e.g., new interchange or transit station) lowers travel times to areas served by the facility. This is the variable of a transportation project that most affects land use. **Generally, if the travel time between areas served by a project and major centers of activity, e.g., a central business district, is lowered by five minutes or more, then the attractiveness of the area for development will increase and the potential for land use change in those areas will be strong (1).** In such cases, the eight-step ICI assessment should be initiated.

2. Demographic, Land Use and Planning Considerations

Demographic trends provide measures of the spatial distribution of population and employment. It is important to understand demographic trends for several reasons, including travel generation and land use intensity (density). Included are factors of population and employment, and the rate and path of urbanization. These factors are interrelated and should be examined together.

a. Population and Employment Trends

An area's population and employment may change over time. Trends are typically observed by examining data from a minimum of two or three censuses.

Population and employment trends should be examined at the county and sub-county (minor civil division, census tract, census block group) levels. Quite often, there is spatial variation in trends between one portion of a county and another. The important trends are those of the area potentially influenced by the project.

Growth of population and/or jobs at a rate of greater than approximately one-to-two percent per year indicates that an area has a growing economy and the potential for further development (and land use change) (2). If an area's population and employment is stagnant or declining, then there is little or no development potential to attract.

b. Rate and Path of Urbanization

Spatial patterns of growth trends are often revealed when examining historic population and employment trends. For example, growth around a city typically does not occur symmetrically. Many factors, e.g., quality of schools, housing stock, and other amenities, contribute to a location's attractiveness. The path of urbanization is often indicative of this attractiveness for development. If growth is occurring along a path in a certain direction, then future development (e.g., development on the urban fringe, infill, and redevelopment to higher densities) will often continue along that path.

Other factors can be indicative of the future rate and path of urbanization, and used to support conclusions thereon. These other factors include:

- *Water and sewer service boundaries* (which are generally planned based on detailed demographic analysis). **The potential for land use change in an area tends to be strong if public water and sewer services are either available now or, if not available, are planned or programmed.**
- *Proposed developments* (e.g., residential communities or office parks) or industrial parks. **The potential for land use change in an area tends to be strong if there is a strong market for development, as well as suitable, available land for development (considering topography, soil drainage, vacancy, etc.).**
- *Growth Management Policy* (e.g., zoning). For development potential to result in change, it must be allowed. **The potential for land use change in an area tends to be strong when other factors point to development potential and there is either weak or no growth management policy or, if there is a policy, enforcement is weak.**

Projects located within a well-defined historic path, or anticipated future path of urbanization, tend to reinforce the surrounding area's attractiveness for development.

In summary, if the population and/ or employment of an area is growing greater than two percent per year; if public water and sewer services are available, are planned or programmed in the foreseeable future; or if there is a weak or no growth management policy for the area, the eight-step ICI assessment should be initiated.

3. Concern Over ICI Issues

Concern over ICI issues, e.g., concern about the potential for undesirable transportation-influenced land use change, may be raised during public or interagency coordination. If such concerns are evident during the NEPA project planning process, then, more detailed ICI assessment should be initiated, particularly when the design concept and scope and demographic trends do not point to a clear conclusion.

C. Documentation

Documenting the results is the last step of pre-screening. Documentation should include the data sources and the rationale supporting the conclusion of the pre-screening, i.e., whether or not further, more detailed ICI assessment is warranted (and tabulated using the Figure 1 decision tree). Documentation of pre-screening provides a record of the potential for ICI issues, any data needs, etc. that can be used during project development as the basis for commencing the eight-step ICI assessment, if warranted, and for inclusion in the NEPA/NCEPA document and permit application(s).

When the ICI pre-screening concludes that initiating the eight-step ICI assessment process is not warranted, then documentation of that conclusion must summarize the data supporting the conclusion, as well as the following statement (or similar):

This project has been evaluated through application of the Indirect and Cumulative Impact (ICI) Pre-Screening Procedure as set forth in the North Carolina Department of Transportation/North Carolina Department of Environment and Natural Resources *Guidance for Assessing the Indirect and Cumulative Impacts of Transportation Projects in North Carolina – Volume II: Practitioner's Handbook (Section II: Pre-Screening Projects for Applying Indirect & Cumulative Impact Assessment)* – the *ICI Guidance*. Based on the ICI Pre-Screening applied specifically to this project, it is concluded that the project does not have the potential to result in significant indirect and cumulative impacts as defined by the National Environmental Policy Act or the North Carolina Environmental Policy Act. This conclusion is based on evaluation of the project's design concept and scope, including purpose and need, type, and facility function, in combination with evaluation of the demographic, land use and planning trends of the area in which the project is located. The data and evaluation supporting this conclusion are attached. Consequently, further evaluation of this project's

indirect and cumulative impact through initiation of the eight-step ICI assessment process as set forth in the *ICI Guidance* is not warranted.

The following additional statement should be added for projects classified as categorical exclusion or minimum criteria projects:

The project is one which qualifies as a [insert categorical exclusion under 23 CFR 771.117 or minimum criteria under 19A NCAC 2F .0102, as appropriate]. As such, the project is in a category of projects that add either no or a minor amount of new impervious surface directly, indirectly or cumulatively. Consequently, the project will not result in cumulative impacts that cause or will cause a violation of downstream water quality standards.

D. References

(1) Five-minute travel time threshold:

Travel time savings are usually analyzed in increments no lower than 5 minutes because in responses to travel surveys people often express answers and preferences in 5-minutes increments even when not instructed to do so. (Susan Hanson and Margo Schwab, "Describing Disaggregate Flows: Individual and Household Activity Patterns" in Susan Hanson, The Geography of Urban Transportation, New York: Guilford Press, 1995.)

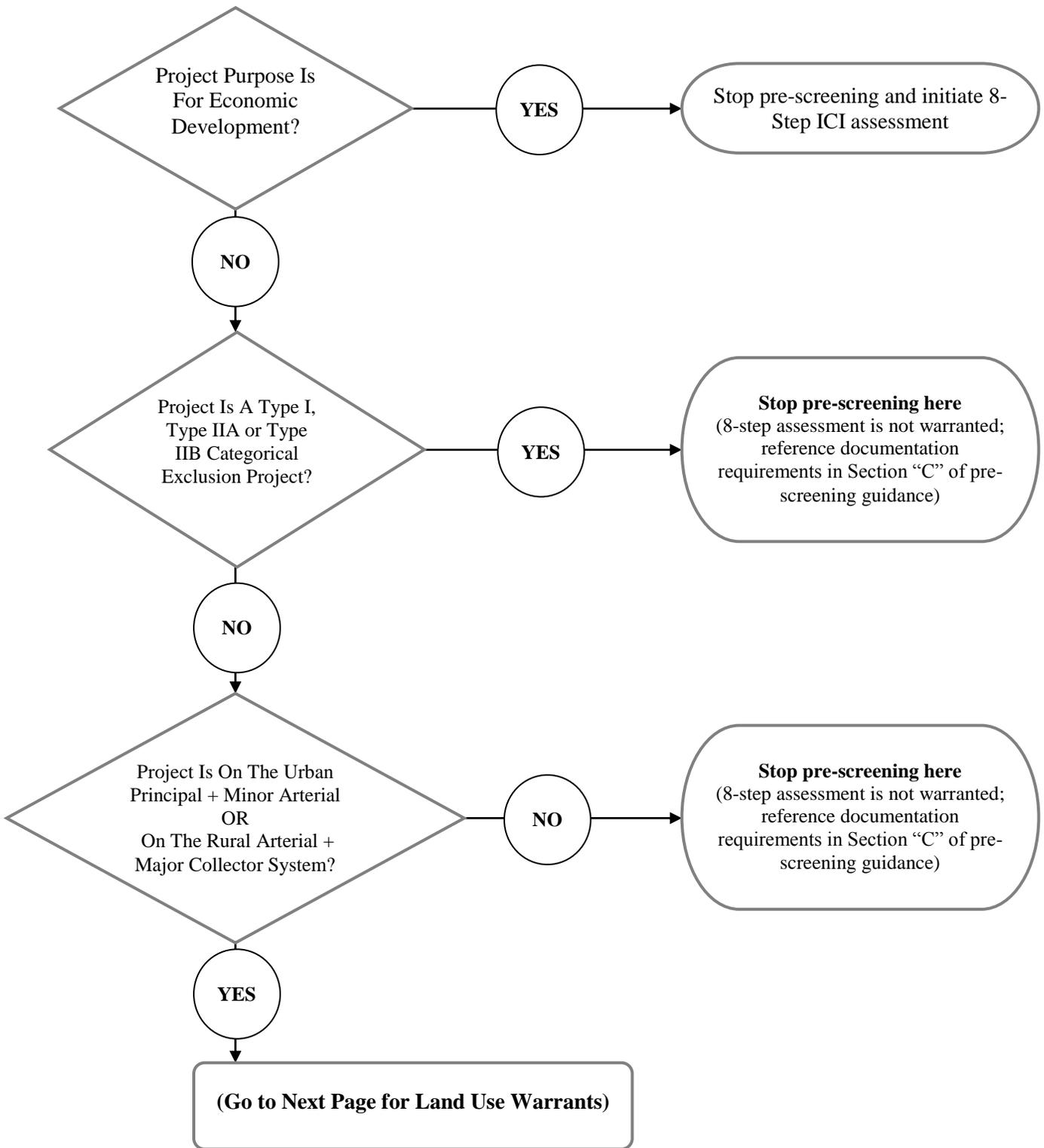
Small increments of travel time savings are often not perceived as substantial to individuals because they amount to a small portion of an overall daily personal transportation "budget" and are not perceived as useable. (David Forkenbrock and Glen Weisbrod, *Guidebook for Assessing the Social and Economic Effects of Transportation Projects*, NCHRP Report 456, 2001.)

(2) One- two percent population and economic growth rates:

Bureau of Labor Statistics 2005 Projections: Low GDP and employment growth less than 1.5%; Moderate 2%; High 3%.

USDA Economic Research Service (ERS) defines high growth in rural areas as greater than 1.4%.

Figure 1. ICI Pre-Screening Decision Tree



Potential Land Use Change Warrants 8-Step ICI Assessment?			
Demographic, Land Use and Planning Considerations		Highway System Access Change	
		> 5 minute travel time reduction between residential and employment centers	< 5 minute travel time reduction between residential and employment centers
Population/ Employment Change	>2% annual increase	Yes	Maybe
	<2% annual increase	Maybe	No
Water/Sewer	Available or Programmed	Yes	Maybe
	Not Available or Programmed	Maybe	No
Development Market/Available Land	Strong	Yes	Maybe
	Weak	Maybe	No
Growth Management Policy	None or Weak	Yes	Maybe
	Strong	Maybe	No

