INTEGRATING COMPREHENSIVE TRANSPORTATION PLANNING AND PROJECT DEVELOPMENT PROCESSES

Background

The North Carolina Department of Transportation has undertaken a major process improvement with the goal of integrating the long range planning process with the project development process, essentially NEPA and its state counterpart SEPA. In North Carolina the long range planning process is called the Comprehensive Transportation Planning (CTP) process. Through a series of discussions and workshops the department has identified eight potential linkages where work that is done during the CTP process could inform or serve as the starting point for NEPA/SEPA. These eight are:

Long range planning		Project development
Problem Statement	linked to	Purpose and Need
Alternatives analysis	linked to	Alternatives selected for detailed study
Unreasonable solutions	linked to	Alternatives selected for detailed study
Multi-modal analysis	linked to	Multi-modal alternatives
Community impacts assessment	linked to	Community impacts analysis
Land use	linked to	Indirect and cumulative effects
Public involvement	linked to	Public involvement
Mitigation opportunities	linked to	Mitigation needs and opportunities

These integration linkages are described in more detail on the following pages. Multi-modal analysis is not addressed separately because it is a part of the general Alternatives analysis and Unreasonable solutions. Public Involvement was integrated into the CTP process design as a key imbedded element and, therefore, is not described separately as a stand-alone linkage.

Overall Integration Approach

The overall approach is based on viewing these as producer (CTP) and customer (NEPA/SEPA) processes. By using this producer-customer framework it allows in-depth discussions of what data, analyses and decisions are available from long range planning that can be useful and value-added for project development.

The department has formed a multi-agency Integration Team that includes representatives from NCDOT's long range planning and environmental review branches (Transportation Planning Branch and the Project Development and Environmental Analysis Branch), federal and state resource agencies, metropolitan planning organizations, rural planning organizations, and the Federal Highway Administration. This team examined of eight the potential linkages during a series of 2-day workshops to determine:

 Can the data, analysis and/or decisions that are made during the CTP process be used to replace or inform work done during the project development process?
 If so, what standards or criteria need to be in place during long range planning for the data, analysis, decisions or documentation to be acceptable to the project development process?

Problem Statement to Purpose and Need

In February 2005 the Integration Team began work by examining the potential connection between a systems level "problem statement" to a project level "purpose and need" statement. Over the last two years NCDOT's Transportation Planning Branch (TPB) has been piloting an effort to create a "systems level purpose and need" statement. However, there have been problems in fitting the systems level data into a NEPA defined purpose and need framework and some difficulty in establishing acceptance of the concept by the project development process participants at both NCDOT and the resource agencies.

For these reasons the Integration Team was re-framed around the concept of developing a "Problem Statement." The term "problem statement" was selected because it is neutral and has no current definition within the CTP process. The team was given the goal:

To develop a problem statement in the CTP process that can be used as the starting point for NEPA/SEPA. The intent is that this problem statement would:

- Form a substantial core of the NEPA/SEPA required purpose and need statement and
- Save time in preparing and/or agreeing to the purpose and need portion of project development

The Integration Team agreed that the purpose of creating this problem statement is to communicate the context, concept and justification for potential projects included in the CTP.

The team identified eleven categories of information that are available from the CTP process that would be relevant to the goal and purpose outlined. These eleven are:

- History of the project (documented background)
- Overall community vision
- Land use patterns
- Environmental context
- Air quality context
- Justification of need
- Multi-modal considerations
- Linkages within the overall CTP, other community/state plans, other projects
- Identification of overall CTP study area and any sub-area relevant to the project
- Context sensitive concepts
- Documentation of public/stakeholder involvement process

For each of these eleven categories of information the Integration Team identified the relevant CTP-available 1) supporting data collected or created; 2) decision-making by technical or policy bodies; 3) stakeholder involvement; and 4) general concepts for the type of documentation to be provided.

The table below shows the product of the CTP level analysis that is available for incorporation into NEPA analysis.

PRODUCT	DESCRIPTION	COMMENTS
Problem Statement Report	Individual report for selected	 Deficiencies to be detailed
	deficiencies (potential projects)	in Problem Statement report
	included in the CTP	are selected by the
	Following categories of	community based on
	information are included:	priority and potential for
	 History of the potential 	inclusion in the TIP
	project	
	 Community vision context 	 Primarily GIS level
	 Land use context 	environmental data
	 Environmental context 	
	 Public involvement 	
	 Air quality context 	
	 Linkages to other plans and 	
	projects	
	 Recommended study area 	
	 Context sensitive solutions 	
	context	
	 Multi-modal considerations 	

SUMMARY OF CTP PROBLEM STATEMENT PRODUCT

The Integration Team also developed an implementation plan that details the steps needed to turn their initial discussions and concepts into procedure level guidance on the development of a CTP-based problem statement.

Alternatives Analysis to Alternatives Selected for Detailed Study

For this linkage the Integration Team was organized into producers (CTP) and customers (Merger 01). The goal of this workshop was to document selected alternatives analyzed during CTP process for inclusion in the alternatives selected for detailed study. The intent of documenting these selected alternatives is to:

- Form a substantial core of the NEPA/SEPA alternatives selected for detailed study and
- Save time in preparing and/or agreeing to the alternatives selected for detailed study portion of project development.

The team identified seven categories of information that are available from the CTP process that could form a substantial core of the alternatives documentation. These seven are:

- Facility characteristics
- Specially administered lands and adopted plans
- Human environment
- Natural environment
- Transportation measures of effectiveness
- Costs and methodology
- Air quality

For each of these seven categories of information the Integration Team identified the relevant CTP-available 1) supporting data collected or created; 2) decision-making by technical or policy bodies; 3) stakeholder involvement; and 4) general concepts for the type of documentation to be provided.

The table below shows the products from the CTP process that would be available to support alternatives selected for detailed study.

Product	Description	Comments
Alternatives Recommended for Study Report	 Individual report for alternatives considered during the CTP that are recommended for detailed study during NEPA. Following categories of information are included: Transportation evaluation (summary of alternative against the evaluation and measures of effectiveness identified for the CTP) Facility characteristics Environmental impacts (human and natural including information included in the ICE summary and the CIA summary developed from previous linkages) Impact on specially administered lands and adopted plans (for example, tribal lands, wildlife refuge lands, economic development plans, school plans, multi-modal plans, etc.) Air quality implications 	This report can be developed for any alternative that the local area recommends be included in the NEPA study process. One of its primary purposes, however, is to assure that the "Locally Preferred Alternative" corridor that is included in the CTP is documented for inclusion in the NEPA study. GIS level environmental data is the most likely source for much of what is included in this report.

SUMMARY OF CTP ALTERNATIVE ANALYSIS PRODUCTS

During the workshop the Integration Team developed an implementation plan that details the steps needed to turn their initial discussions and concepts into procedure level guidance on the development of a CTP-based alternatives analysis. Detailed implementation plans were developed for creating CTP based alternatives analysis documentation; identifying and providing GIS data availability and use; training and education on alternatives/scenarios analysis; and identification and evaluation of best practices for alternatives/scenarios analysis.

Unreasonable Solutions to Alternatives Selected for Detailed Study

As with all of the integration topics the over-arching goal is to:

To develop documentation of solutions eliminated in the CTP process that can be used as the starting point for NEPA/SEPA. The intent is that the documentation of CTP based unreasonable solutions would:

- Form a substantial core of the NEPA/SEPA alternatives selected for detailed study and
- Save time in preparing and/or agreeing to the alternatives selected for detailed study portion of project development.

The team established a specific goal for this linkage: to create a clear record of every CTP identified unreasonable solution, including the opportunities for involvement provided to resource agencies, and other interested parties, in order to reduce time and/or save money in completing the NEPA/SEPA process. The benefits that they saw from creating a tight linkage for this area are:

- Reduce time to deliver transportation improvements to the public
- Save money in both project development and overall project costs
- Clear record of every solution considered
- Opportunity for involvement by resource agencies and other interested parties

Prior to the workshop that team members were asked to provide their definition for "fatally flawed alternatives." The workshop was opened with a presentation an overview of the responses received. The team then had an open ended discussion with a goal of developing a common understanding among the team members of what the term "fatally flawed alternative" means during the CTP process. One of the outcomes of this discussion was an agreement by the team to use the term "unreasonable alternative" rather than "fatally flawed alternative" during the CTP process.

The team explored seven potential reasons or themes for defining an unreasonable solution or alternative. These seven were:

- Purpose and need
- Impact to natural environment
- Impact to community/cultural environment
- Cost
- Physical constraints
- Behavior change
- Community goals/values

The team then explored these criteria with the goal of identifying the data needed to support the finding for an unreasonable solution. Table 1 summarizes this discussion. As a result of the discussion two of the issues were eliminated from further consideration. These two were physical constraints and behavior change. The team felt that physical constraints are closely related to cost and/or natural environment and was therefore a duplicative category. In the case of behavior

change the team did not feel that there was sufficient data available from the CTP process to provide an adequate unreasonable alternative justification to transfer to the NEPA/SEPA process. The remaining four criteria, failure to meet purpose and need, impact to the natural environment, impact to community/cultural resources, and failure to address community goals and values, provide the framework for a CTP-based unreasonable alternative justification.

The team also looked at the CTP process to identify the CTP steps where there might be enough information to trigger an unreasonable solution discussion by CTP technical staff and/or decision-makers. These CTP steps are:

CTP1a - Call/Hold Initial Meeting¹ CTP1e - Develop CTP Plan Goals and Objectives CTP3b - Identify Key Priorities CTP3c - Evaluate Alternatives CTP3e - Evaluate CTP Scenarios

In addition, the team identified the Merger 01 (NEPA/SEPA) process steps where information related to CTP-based unreasonable solutions should be considered. These steps are:

Compile Purpose and Need Statement Develop Environmental Features Map Identify Corridors

Table 2 below summarizes the products from the CTP that document an unreasonable solution or alternative.

The team developed detailed implementation plans for linking CTP-based unreasonable solutions to project development based Alternatives Selected for Detailed Study. Implementation plans were developed for training and education; best practices and process standards; and documentation format and standards.

¹ This is the CTP scoping meeting where all process partners and interested parties provide input to the overall CTP process. The team envisioned that any attendee could identify a "pristine" resource to be avoided at all costs. This does not mean that the CTP development team and decision-makers will accept this constraint, but the team felt the opportunity should be provided at this earliest possible stage of CTP development.

DATA NEEDED TO SUPPORT "UNREASONABLE" SOLUTIONS

Question to be Asked Regarding "Unreasonable" Solutions	Data Needed to Support "Unreasonable" Solutions
Purpose and Need	
How does the "unreasonable" solution fail to meet Purpose and	Community vision/goals
 What supporting data justifies that the solution is 	Economic development
"unreasonable"?	Modal interrelationships Modal considerations
• What aspect of the Purpose and Need does this solution fail to meet?	Capacity Transportation demand
 Why was this modal solution determined to be "unreasonable" 	Security Local key priorities
based on Purpose and Need?	Documentation of adequate public involvement Safety
	System linkage Transportation system deficiencies
Community/Cultural Resources	
What impacts to community resources make this solution unacceptable?	Established communities and neighborhoods
	Locally identified special areas (red flags) (i.e., Horn in the West, Lowe's Motor Speedway. universities, major industrial facilities, major retail centers, transportation facilities)
	Section 4(f) properties Section 6(f) properties
	Public lands (i.e., Corps of Engineers, Tribal Lands, Department of Defense
	Transportation system deficiencies
	Local long range plans
Natural Environment	
What impacts to the natural environment make this solution	Rare natural features (i.e., mountain bogs, mafic depressions, tidal marshes)
unacceptable?	Watershed waters (WS I, WS II)
	Threatened and endangered species (includes critical habitat) Mitigation sites (EEP)
What physical constraint makes this	Superfund sites Mapping
solution unacceptable? Goals/Values	
What creates conflict and the	
transportation solution?	Adopted plan
	Community involvement Community vision

SUMMARY OF CTP UNREASONABLE SOLUTIONS PRODUCTS

Product	Description	Comments
Alternatives	Individual report for any alternative	It is anticipated that this report
Recommended for	that was studied during the CTP and	will include most of the
Elimination from	eliminated as "unreasonable" or	background information
Study Report	"fatally flawed." Four unreasonable	detailed in the Alternatives
	solution criteria with associated	Recommended for Further
	questions to be answered were	Study report. In addition,
	identified:	however, the purpose of this
		report is to provide sufficient
	Failure to meet purpose and need	justification to allow the NEPA
	 What supporting data justifies that 	practitioners to reference this
	the solution is unreasonable?	information (after evaluating
	 What aspect of the P&N does the 	the need for updating of
	solution fail to meet?	information) as NEPA
	 Why was this modal solutions 	documentation for an
	determined to be "unreasonable"	eliminated alternative
	based on the P&N?	
		For each of these categories and
	Community/Cultural Resources	questions the data and
	 What impacts to community 	stakeholder involvement
	resources make this solution	information has been detailed.
	unreasonable?	
	Natural Environment	
	Natural Environment	
	What impacts to the natural	
	environment make this solution	
	unacceptable?	
	• What physical constraint makes this	
	solution unacceptable?	
	Community Goals and Values	
	 What creates a conflict between the 	
	community's goals and values and	
	the unreasonable transportation	
	solution?	

Community Impacts Assessment to Community Impacts Analysis

In July 2005 the Integration Team convened to accomplish two tasks. The first was to identify appropriate process steps to collect and analyze data, and make decisions associated with transportation-related community impacts during long range planning. The second was to identify the how the CIA information developed during long range planning could be used as the starting point for the community impact assessment required during the NEPA process.

Community Impacts Assessment (CIA) has traditionally been conducted as part of the NEPA analysis in the project development process, although there has been increasing national emphasis on using CIA in the long-range planning process. This workshop sought to find ways to bring CIA into the CTP process, on the premise that: a) some portions of the community impact analyses may be conducted more effectively during long-range planning; and b) there are missed opportunities with regard to identifying transportation improvements that are an asset to the community by failing to systematically consider community impacts during long-range planning.

The Integration Team reviewed the seven CIA issue areas that are used in the recently developed national CIA course. These seven are:

- Socio-cultural
- Economic
- Land Use
- Displacement
- Mobility / Accessibility
- Sensory / Aesthetics
- Safety

The team first identified each step-in the CTP process (and sub-processes) where one or more of these issue areas should be considered. For each of these identified steps the Team developed the purpose and outcome for the CIA related discussion.

For each CIA-related CTP process step, the Integration Team identified the CIA-related 1) supporting data collected or created; 2) decision-making by technical or policy bodies; 3) stakeholder involvement; and 4) general concepts for the type of documentation to be provided.

The Integration Team discussed the need to educate both technical staff and policy decisionmakers about the issues and process associated with CIA. To address this concern the team developed a "CIA education process." They did this by identifying the steps in the CTP process where there is an opportunity to provide both technical and policy decision-makers with information about the role and importance of CIA. Nine CTP process steps and one sub-process step were identified as appropriate opportunities for educating CTP participants on CIA.

In order to connect this long range planning CIA discussions to the NEPA/SEPA process the team detailed the content and the general format of documentation that the "customers" (NEPA practitioners and resource agency staff) need if they are to understand and accept the long range planning CIA discussions as the starting point for their project level discussions.

The following table summarizes the CIA related products from the CTP process that support or are provided to the NEPA process when this linkage is completed.

The Integration Team also developed both a high-level and a detailed implementation plan to detail the steps needed to turn their initial discussions and concepts into procedure-level guidance on the incorporation of data, information, decisions and documentation into the CTP process.

PRODUCTS	DESCRIPTION	COMMENTS
 Community Characteristics Inventory report 	 Summary of the community characteristics and the stakeholder issues that should be examined and evaluated during the NEPA CIA process 	 Combination of GIS and primary community data collected during the CTP process
 Explicit consideration of broad range of community impacts as part of CTP process 	 CIA technical procedure collects and integrates CIA data into the overall CTP technical and decision- making process 	
 Education program about broad range of community impacts (what they are and why they are important) 	• Detailed education process that identifies what staff and policy makers need to know about CIA, when they need to know it and the best education mechanism	

SUMMARY OF CIA-RELATED CTP PRODUCTS

Land Use to Indirect and Cumulative Effect (ICE) Assessment

In the spring of 2005 the Integration Team analyzed the connections between land use information available as a part of the CTP process and the indirect and cumulative effect assessments required during project development. There were two goals for this integration workshop. First, the team wanted to develop an approach that would integrate indirect and cumulative considerations into the long range planning process including both the CTP and the land use sub-processes that have been developed by NCDOT and its partners. Second, this CTP "indirect and cumulative effects" assessment needed to be connected to the project level ICE required during project development, specifically NEPA.

In 2002 NCDOT and North Carolina's state environmental agency, the Department of Environment and Natural Resources (DENR), partnered to develop indirect and cumulative effect assessment guidance which has been adopted by both agencies for use in transportation project NEPA analysis. This guidance was used during the workshop to help frame the discussions for a systems-level approach to ICE analysis.

CTP (Long Range Planning) Level ICE

The goals for the development of an ICE-related technical procedure for the CTP process are: 1) to create data related to environmental effects associated with potential land use scenarios and/or land use changes associated with potential transportation alternatives; 2) to integrate this data into the CTP decision-making process.

The creation of this explicit technical procedure provides the support for technical and policy decision-makers to identify adopt and document ICE-related avoidance and minimization strategies during long range planning.

Using the new CTP process and the land use sub-process as the framework for the discussion, the team identified each step where ICE needed to be discussed during the CTP process. For each of the 18 steps, they identified why ICE needed to be discussed (the purpose) and what the output of the discussion was intended to be (the outcome).

Once these steps and their associated purpose and outcomes were identified the team detailed the following information **for each of the 18 steps**:

- 1. What data is needed to support the ICE technical process?
- 2. What decisions, if any, are made and who is making those decisions?
- 3. If there is ICE-related stakeholder involvement, then what is the purpose and the outcome for this stakeholder involvement?
- 4. What level of documentation is needed (including in most cases the recommended format)?

The technical procedure that the Integration Team established integrates ICE discussions throughout the long range planning process. Such explicit and robust consideration of the ICE-related issues assures that decision-makers are aware of the land use change implications

associated with the adopted CTP. This summary will not include a discussion of each of these 18 steps, but there are a few steps that warrant explicit discussion in this summary:

Evaluate/Establish Common Land Use Goals and Objectives (Land Use Process step (LU10)

In this step of the land use sub-process occurs very early in the CTP process—prior to the development of goals and objectives for the overall transportation plan. The overall purpose of LU10 is to evaluate the quality and overall consistency of all the land use plans that will serve as a fundamental component of the CTP. The ICE technical procedure assures that this evaluation will include a review of the environmental "friendliness" of the underlying land use plans, and the highlighting (or "red flagging") of environmental problems associated with the land use plans that are the basis for transportation planning.

This explicit review allows the CTP team the opportunity to identify these land use associated environmental issues to both technical and policy decision-makers before substantive transportation planning begins. This provides an opportunity for these decision-makers to consider more environmentally friendly land use scenarios as a part of the CTP process (which can support the evaluation of up to four different land use scenarios) or potentially to "fix" the land use plan before the CTP process proceeds. It also allows the CTP team to include land use "red flag" issues in meetings and discussions with the public so that there are no surprises for stakeholders about underlying issues and assumptions for the final CTP.

Identify Measures of Effectiveness and Develop Evaluation Criteria (CTP1f and 1g and LU 11 and 12)

The purpose of these steps is to translate high level transportation goals and objectives into the measures and criteria that will be used to evaluate CTP alternatives that are considered by the technical and policy decision-makers. The team recognized that if ICE were not an explicit component of these two steps that it was unlikely that decision-makers would include the potential land use effects of the transportation alternatives as a part of their substantive alternatives discussions. With this in mind the Integration Team identified the development of ICE related measures of effectiveness and evaluation criteria as critical to successful integration of ICE into CTP decision-making.

Draft Implementation Strategy (Financial Plan) (CTP4a)

When the CTP was originally developed, step CTP4a was included to assure that the required financial constraints are reflected in the overall implementation strategy that is discussed and approved by the policy makers when the CTP is adopted. The Integration Team has recommended that this step be expanded beyond financial constraints to discuss broader CTP implementation issues, specifically ICE-related minimization and mitigation strategies that local governments should consider implementing as a part of local government controlled land use planning and land development administration. Some of the strategies that the team provided as examples were inclusion of high environmental quality open space, buffers or wildlife corridors in adopted land use plans and protection of these environmentally beneficial areas through zoning administration.

Integration of CTP ICE analysis with Project Development (NEPA)

The detailing of the CTP ICE technical process allowed the team to identify and understand the potential outputs from systems planning that would be available and useful to inform the project level ICE analysis required by NEPA. The integration of these two processes has two goals:

- 1. To identify and provide documentation of land use related avoidance and minimization decisions that are made during long range transportation planning.
- 2. To identify information from systems planning that can be used during project level ICE assessment with the goals of improving the quality of the ICE impact analysis (stewardship) and/or reducing the time to complete the ICE impact analysis (streamlining).

The table below shows the anticipated products created during the CTP that support or are available to the project based NEPA process.

PRODUCTS	DESCRIPTION	COMMENTS
Land Use Summary Report The creation of this summary report is supported by two CTP based products:	 Individual report for selected deficiencies detailing data that will be useful as a starting point for NEPA based ICE analysis. Beyond considerable background information, this report includes documentation of avoidance and minimization strategies that have been taken during long range planning. 	 Primarily GIS level environmental data
CTP ICE Technical Procedure	 ICE technical procedure that collects and integrates ICE data into the overall CTP technical and decision-making processes 	• This technical procedure assures that the overall CTP is sensitive to ICE
Explicit education about ICE (what it is and why it is important) of technical staff and policy decision-makers involved in CTP	 Detailed education process that identifies what staff and policy makers need to know about ICE, when they need to know it (in the overall CTP process), and the best education mechanism 	

SUMMARY OF LAND USE RELATED CTP PRODUCTS

The education product was considered a critical success factor for making this linkage work. During scoping for the Integration Project, it was clear that long range planning transportation professionals and policy makers do not understand the concepts or the implications of the project level indirect and cumulative effects. For this reason the Integration Team has developed an education process that can be conducted during the CTP process. For this work the team identified all the steps in the CTP process and the land use sub-process where there is an opportunity to educate process participants about ICE. For each of these 19 steps the team identified the audience (technical staff, policy makers or both), the basic information that should be presented (the "what"), and recommended mechanisms to deliver the information (the "how"). This information is summarized in the workshop booklet in a table called "Educating CTP Participants in ICE."

Mitigation Opportunities to Mitigation Needs and Opportunities

In June 2005 the Integration Team examined the potential connection between the mitigation process of the Ecosystem Enhancement Program (EEP) and the Comprehensive Transportation Planning process. The goal of this workshop was document the outputs from EEP that could be valuable to the CTP process and to identify the CTP outputs that could be valuable to the EEP planning process.

The Team first examined the EEP planning processes to determine what information could be useful to the CTP process. The EEP has three (3) types of planning as part of its core business processes:

- 1. River Basin Planning is used to identify watersheds within a basin to target with strategies to improve water quality
- 2. Local Watershed Planning involves 14-digit watershed problem and solution identification and implementation, including the identification of stakeholder needs
- 3. Strategic Planning is the process of identifying mitigation needs statewide and how those projection needs will be met through strategies

The team identified the type of information from the EEP planning process that is already or could easily be made available for use in the CTP process. From EEP's local watershed planning process, the useful information includes:

- location of targeted watersheds and why they were selected
- existing conservation plans/assets/opportunities
- detailed environmental data
- build-out information and analyses
- watershed plans and supporting information, including existing watershed conditions, updated GIS information, and other environmental data
- stakeholder involvement information from EEP's watershed planning process

Strategic EEP mitigation planning data that would be beneficial to the CTP process includes mitigation credit surplus and deficit areas, as well as the schedule for upcoming detailed watershed study areas.

Other information that would be useful includes EEP-generated GIS data layers, detailed information on the location of current and planned mitigation sites as well as their type [high quality preservation, preservation, restoration, enhancement, creation].

For each of the items above, the team detailed the data, decision-making, stakeholder involvement and documentation that would be beneficial for creating the formal linkage from the EEP to the CTP process. An implementation plan was created to identify the actions needed to institutionalize this linkage.

The Team recognized that the EEP processes can also be enhanced by the incorporation of certain information from the CTP process and related sub-processes. Following the workshop, a sub-group also outlined information that could be taken from the CTP process as an input to EEP planning processes. Such information identified included: socioeconomic data, MPO/RPO boundaries and contact information, status of CTP studies, known infrastructure improvement (water/sewer), completed CTP plans, land use plans, and ICE impact studies. The Transportation Planning Branch and EEP staff are working to provide information that is already available or to make the CTP information available on an as-requested basis.