Guidance for North Carolina's Comprehensive Transportation Planning (CTP) Process

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Introduction

The North Carolina Department of Transportation (NCDOT) has undertaken a major process improvement with the goal of integrating the long-range transportation planning process and the project development process, essentially the National Environmental Policy Act (NEPA) and its state counterpart State Environmental Policy Act (SEPA). In North Carolina the long range planning process is called the Comprehensive Transportation Planning (CTP) process.

This CTP guidance document is a tool developed by the NCDOT for CTP practitioners to provide a basic understanding of the CTP process. The guidance is intended for use by the Transportation Planning Branch (TPB) and process partners, such as Metropolitan Planning Organizations (MPOs), Rural Planning Organizations (RPOs), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), environmental resource agencies, local governments, land use agencies and other entities responsible for participating in the development of CTPs.

In addition, this CTP guidance document will enable national audiences to understand North Carolina's CTP process and the interactions that occur in this process between the following elements: land use planning, travel demand modeling, multi-modal planning, air quality conformity planning, federal planning requirements, environmental considerations and public involvement.

Send suggestions for revisions to this document to: NCDOT Transportation Planning Branch- Technical Services Unit Head.

List of Acronyms:

AQ: Air Quality
ASA: Alternatives and Scenario Analysis
CCI: Community Characteristics Inventory
CDR: Conformity Determination Report
CEQ: Council on Environmental Quality
CFR: Code of Federal Regulation
CIA: Community Impact Assessment
CPS: Conformity Process Schedule
CSS: Context Sensitive Solutions
CTP: Comprehensive Transportation Planning or Comprehensive Transportation Plan
CUR: Community Understanding Report
EEP: Ecosystem Enhancement Program
EPA: United States Environmental Protection Agency
FHWA: Federal Highway Administration
FTA: Federal Transit Administration
GIS: Geographic Information System
IC: Interagency Consultation (as in Air Quality IC meeting)
ICE: Indirect and Cumulative Effects
LEP: Limited English Proficiency
LPA: Lead Planning Agency (of an MPO or RPO)
LRTP: Long Range Transportation Plan (or an MPO's Metropolitan Transportation Plan)
LU: Land Use
M: Model or Modeling (as in Model Team or Modeling Sub-process)
MM: Multi-modal
MOA: Memorandum of Agreement
MOE: Measure of Effectiveness
MOU: Memorandum of Understanding

MPO: Metropolitan Planning Organization
MTP: Metropolitan Transportation Plan (an MPO's federally required plan, sometimes called LRTP)
MVEB: Mobile Vehicle Emissions Budget
NCDENR-DAQ: North Carolina Department of Environment and Natural Resources- Division of Air Quality
NCDOT: North Carolina Department of Transportation
NCGS: North Carolina General Statute
NEPA: National Environmental Policy Act
ROW: Right of Way
RPO: Rural Planning Organization
SAFETEA-LU: Safe, Accountable, Flexible, Efficient Transportation Equity Act- Legacy for Users
SEPA: State Environmental Policy Act
SIP: State Implementation Plan
STIP: State Transportation Improvement Program
TAC: Transportation Advisory Committee (of an MPO or RPO)
TAZ: Traffic Analysis Zone
TCC: Technical Coordinating Committee (of an MPO or RPO)
TCPCP: Transportation Conformity Pre-analysis Consensus Plan
TDM: Travel Demand Model
TIP: Transportation Improvement Program
TMA: Transportation Management Area
TPB: Transportation Planning Branch of NCDOT
USDOT: United States Department of Transportation
VMT: Vehicle Miles Traveled

Explanation of Selected Terms:

Solutions– Solutions start as broad, general concepts of ways to meet transportation needs. In the CTP process, these conceptual solutions are developed for the various identified transportation needs and then are analyzed and further refined. An example of a potential solution is that it may be known based on deficiency analysis that additional capacity is needed to address congestion issues. Another example is that enhancements to pedestrian facilities are needed in the central business district. These potential solutions start as conceptual in nature and must be developed further prior to specific alternatives being studied.

Alternatives– Alternatives are options studied for the scope, concept, and location of a transportation proposal to serve a specific deficiency or need. Examples may include: multiple options for a bypass for a specific area; converting an existing facility to expressway through minor improvements and operational strategies; adding transit to a facility to handle some of the travel demand; or widening an existing facility.

Scenarios– A scenario is the combination of specific solutions and alternatives, including the underlying land use assumptions. Multiple options may be studied for both the transportation and the land use component of a plan, which is called 'scenario analysis.' The word 'scenario' is also contained within the term 'land use scenarios', which are the options that may be studied, if an area choses to, for different land development patterns based on the projected growth. In this document, the term 'land use' always accompanies 'scenario' when referring to the land use component. Otherwise, the term 'scenario' refers to the combination of a land use scenario plus the resulting transportation proposals needed to meet travel demand. Examples of two scenarios are: 1) land use projections following the current land use plan with transportation proposals such as an outer loop, widening intersecting roads, and some transit

improvements; 2) land use projections following a new land use pattern that is supportive of transit with transportation proposals such as a partial outer loop, widening additional roads, and more transit improvements than the first scenario. Scenario testing does not always have to be an analysis of the entire set of transportation proposals for the entire area. Smaller groupings of projects or a sub-area may be tested separately as needed.

Relationship between Conceptual Solutions, Alternatives, and Scenarios

The decision about whether to test multiple land use scenarios is made early in the CTP process and the potential land use scenarios are discussed in general during CTP Step 1: Develop CTP Vision. After transportation needs are identified through the deficiency analysis in CTP Step 2: Conduct Needs Assessment, conceptual transportation solutions are developed. In CTP Step 3: Analyze Alternatives, these conceptual solutions are developed more fully.

The alternatives and scenario analysis occurring in CTP Step 3 is an iterative process. Potential solutions for particular needs, and combinations of solutions to the various needs in the area, must be defined in order to test various land use scenarios. After a land use scenario is chosen, alternatives analysis is often conducted in more detail with the land use scenario applied to determine the long range planning preferred alternatives for various needs, based on criteria, such as how well they meet the community vision, address the transportation deficiency, and minimize impacts to the natural and human environment. During the process of developing conceptual solutions and analyzing alternatives, it may be determined that certain options fail to meet the community vision, fail to address the transportation deficiency, or would result in an unacceptable level of impacts to the environment. These options are dropped from further consideration in the CTP study and are documented as 'unreasonable' solutions or alternatives. The long range planning preferred alternatives for various needs, those that best meet the criteria, are shown on the adopted CTP maps and documented as the 'CTP Project Proposals'.

Additional information about Alternatives and Scenario Analysis is contained in this CTP Guidance document, such as in the tables documenting various process steps.

1 Background Information on the Comprehensive Transportation Planning (CTP) Process

1.1 What is a CTP?

CTP stands for Comprehensive Transportation Plan, North Carolina's multi-modal transportation plan. The CTP represents a community's consensus on the future transportation system (including the existing system and improvements) needed to support anticipated growth and development over approximately a 25- 30 year timeframe.

A CTP is a mutually adopted legal document between the state and the local area partner(s). When a CTP is adopted by NCDOT, it represents the state's concurrence with the identified transportation needs and proposed recommendations. However, it does not commit the Department to funding or constructing those project proposals, or to a particular cross-section. CTPs replace the thoroughfare plans that have been developed since the 1950's. Both the processes for developing a CTP and the products (CTP maps and document) are different than the thoroughfare plan.

1.2 What has changed?

North Carolina is a growing and dynamic state. While roads will always be an important part of our transportation system, communities across North Carolina want to consider how other transportation modes can support their economic and quality-of-life goals. To reflect the desire to expand transportation planning options in North Carolina, the North Carolina General Assembly amended the state transportation planning law in 2001 [NCGS 136-66.2]. This amendment replaced the thoroughfare plan requirement with the multi-modal Comprehensive Transportation Plan.

The CTP provides a technically sound, comprehensive and integrated planning process for looking at the full range of potential solutions to address an area's future transportation needs.

1.3 How is a CTP different from a thoroughfare plan?

The thoroughfare plan identified the existing and proposed highway network needed to handle existing and future traffic. The CTP is a multi-modal plan that identifies the existing and future transportation system, including highways, public transportation, rail, bicycle, and pedestrian facilities needed to serve the current and anticipated travel demand. The CTP process has additional emphasis on being environmentally and community friendly. It strengthens the connections between an area's transportation plan, adopted local land development plan, and community vision.

1.4 How is CTP different from traditional transportation planning in North Carolina?

While the CTP process is more formal and explicit, there is flexibility to customize the process to meet an area's needs. While a locally endorsed land development plan is required by NCGS 136-66.2, the CTP process allows local areas to test how different land use patterns affect future transportation improvements. New tools and planning processes are used to identify and avoid or minimize impacts to the human and natural environment. Roles have been enhanced for existing partners and defined for new partners, including local land use agencies and state and federal environmental resource agencies.

A project management plan that defines local and NCDOT responsibilities for developing the CTP is agreed upon in the initial steps of the process. The CTP includes a formal public involvement process that identifies specific points where information is provided to and requested from the public, when local policy leaders consider this input during their decision-making, and how the results of the decision-making process are reported back to the public.

1.5 How does a CTP relate to the federally required metropolitan transportation plan?

Under federal law (23 USC 134), Metropolitan Planning Organizations (MPOs) are required to prepare a metropolitan transportation plan (MTP), sometimes referred to as a long range transportation plan (LRTP) in North Carolina. The MTP is required to address the federal planning requirements in 23 USC 134 which includes being fiscally constrained, having a minimum 20 year horizon, and being updated every 4 years in air quality non-attainment or maintenance areas (every 5 years in attainment areas). By comparison, the state law requiring a CTP specifies that the transportation plan will be developed so that it will serve present and anticipated travel demand (it is not required to be fiscally constrained, no minimum horizon year or update timeframes are specified). The CTP is the element of the MTP that identifies all the transportation needs before fiscal constraint is applied.

In the past, the federally required metropolitan transportation plans and the state required thoroughfare plans were developed through separate processes. This required a duplication of effort from MPOs in North Carolina and NCDOT. The CTP process has been designed to complement the federal long range plan requirements in order to eliminate this duplication. The CTP process described herein can be undertaken in a way that results in a single transportation plan that meets both the state and federal requirements in MPO areas.

1.6 What are the benefits of using the CTP process?

The CTP process has many benefits over the old thoroughfare planning process:

- It supports community-adopted vision and goals by integrating land use and transportation planning.
- It allows communities to consider all modes, not just road improvements, for the future transportation system.
- It is more environmentally sound through the early and explicit consideration of environmental resources.
- It is more efficient for the MPOs and NCDOT by tying the state CTP and federal MTP processes together in MPO areas.
- It is more accountable to the public through the formal public involvement process.

Finally, the CTP process has been designed to provide a direct link to project development. Once a project is funded in the State Transportation Improvement Program (STIP or TIP), it must go through an extensive project development process, including environmental review under NEPA/ SEPA. Relevant transportation, environmental and community information collected and analyzed during the CTP process can supplement or replace information needed during project development. This should save time and money in getting projects planned, designed and implemented.

1.7 Does a local area have to go through the CTP process?

According to NCGS 136-66.2, MPOs and municipalities shall develop comprehensive transportation plans in cooperation with NCDOT; counties may also develop CTPs in cooperation with NCDOT. NCDOT, along with local agencies (MPOs, municipalities, and counties) adopt the CTP maps, and projects submitted through the Department's project prioritization process are expected to come from a mutually adopted CTP. The CTP process has been designed to support transportation decision making and the use of transportation planning data in project development (NEPA/ SEPA). This process will be used by NCDOT in all areas where NCDOT provides technical assistance in developing a transportation plan. In order for the CTP to complement the community's vision and support the State's mission of connecting people and places in North Carolina, state, local, and regional partnerships are required to implement the CTP process. There is no legal requirement for an area to go through all the aspects of the CTP process as described in this guidance. The process should be tailored to fit the specific needs of the area being studied.

1.8 What characteristics describe an ideal seamless, multi-modal transportation planning process?

Transportation and local planning agencies across the state were asked this question, and their responses are summarized below. The CTP process has been designed to provide the opportunity for these characteristics and values to be incorporated into plan development.

An ideal seamless, multi-modal transportation planning process would have the following characteristics:

- A continuous planning process that is based on the quality-of-life goals and objectives, as defined by the public within the planning area.
- A planning area that is not necessarily defined by political boundaries.
- A planning process that is structured so that it addresses a broad spectrum of issues, and yet is flexible and can be adjusted by the planning partners to meet its particular set of needs and modified as conditions change.
- A process that includes opportunities for stakeholder involvement from the public, resource agencies and other appropriate parties early and throughout.
- Coordination occurs between technical staff at the local and state level, and between local governments, resource agencies, and policy level decision makers. Coordination occurs in a timely manner and adequate time is provided for feedback.
- A process that encourages the consideration of multiple transportation modes to meet the projected needs within the planning area.
- Consensus between the planning partners is the preferred decision-making method.
- The planning partners commit to follow an agreed upon process with assigned roles and responsibilities, and everyone fully participates. The planning partners stand behind the process and use it as a way to educate public officials about the benefits of integrated planning and the consequences of decisions. Planning partners are considered to include representatives from NCDOT, FHWA, MPO/ RPO, local governments, environmental resource agencies, etc. Additionally, local officials would get involved early, remain engaged throughout the process and understand the benefits of the CTP process.

1.9 What are the products of the CTP process?

There are three primary products that are expected to be developed through the CTP Process: CTP maps (included as part of the MTP, where applicable), the CTP study report, and the CTP project file.

CTP Maps – This is the set of maps (including an adoption sheet, highway map, public transportation and rail map, bicycle map, and pedestrian map) that is adopted by the local area and NCDOT to fulfill GS 136-66.2 requirements.

CTP Study Report – Documentation of the CTP study process and proposals. In addition to information that is necessary for the MPO to meet the federal planning requirements in 23 USC 134, the study report should document the recommendations in the CTP. This would include the long range vision for the planning area, problem statements and alternatives analysis for proposed projects, and how the decision makers balanced meeting the transportation demand with avoiding or minimizing impacts to the human and natural environment.

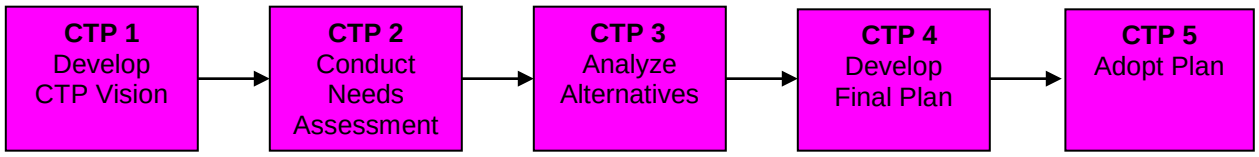
CTP Project File – Supporting data and information from the CTP study should be kept to support future CTP updates and the project development process (NEPA/SEPA). This is typically information that is more technical or detailed in nature than what is useful or informative to customers of the CTP process.

2 High-Level CTP Process Description

2.1 High-Level CTP Steps

The CTP process consists of five (5) High-Level Steps that outline the sequence of major activities. The basic flow of the process is to: establish the framework for the CTP study (Step 1 – Develop CTP Vision); collect data and identify existing and future transportation deficiencies (Step 2 – Conduct Needs Assessment); identify and evaluate various options for addressing the deficiencies (Step 3 – Analyze Alternatives); finalize CTP proposals and document the process (Step 4 – Develop Final Plan); and conduct the final review and adoption process (Step 5 – Adopt Plan).

Within each High-Level Step, there is a series of Mid-Level Steps and four sub-processes that together accomplish the intended outcomes of the High-Level Step. Below is a process flowchart of the five High-Level CTP Steps.



2.2 Purpose and Outcomes for High-Level CTP Steps

The purpose and outcomes for each High-Level CTP Step are provided below. The purpose describes what is to be achieved in each High-Level Step. The outcomes represent the deliverables, products, or results that are intended to be accomplished by that part of the process.

Process Step ID	Step Name	Purpose	Outcomes
CTP 1	Develop CTP Vision	To establish an overall CTP project plan and the partnerships needed to produce community consensus on future transportation improvements that are fully integrated with the community's vision and goals and objectives	• Identification of full range of issues (opportunities and constraints) based on gathering existing data and coordination with appropriate entities • Identified Stakeholders and CTP Steering Committee (and sub-process team) members • Transportation goals and objectives that are consistent with community vision • Measures of effectiveness (MOEs) and performance targets for transportation goals and objectives
CTP2	Conduct Needs Assessment	To establish current and future deficiencies for the overall (multi-modal) transportation system	• Finalize CTP Project Plan, including schedule, roles and responsibilities, identification of tools and data needs, etc. • Documentation of land use, transportation, environmental and community data for both the base year and the future year • Identification of deficiencies for all modes for both the base year and the future year
CTP3	Analyze Alternatives	To develop, evaluate and recommend draft CTP strategies that address transportation deficiencies in a way that	• Evaluation and documentation of alternatives and transportation/ land use scenarios

		minimizes impacts to the natural and human environment and is consistent with the community's vision	• Local official and public review of alternatives and scenarios • Draft CTP
CTP4	Develop Final Plan	To complete preparation of the CTP for adoption/ endorsement by the local decision makers and preparation of the draft CTP documentation	• Final CTP maps and draft documentation
CTP5	Adopt Plan	To complete final adoption/ endorsement by all required local planning partners and NCDOT and complete CTP documentation	• Adopted CTP Maps and completed documentation

2.3 Flow Item

A "flow item" describes the attributes of a representative type of planning area that goes through the CTP process. The CTP process described in this guidance document is designed to develop a CTP for an area that has the following attributes:

- The area is a mid-sized MPO.
- Federal law requires air quality conformity in the planning area.
- A CTP (and MTP) exists for the area and is undergoing a major plan update.
- Federal planning requirements apply, including financial analysis.
- NCDOT's Transportation Planning Branch (TPB) generally serves in the management role for the plan update with a CTP Team conducting the process (made up of technical staff from various agencies/ governments). There may be co-leads, with an MPO representative and NCDOT TPB representative serving as joint project managers; however, the NCDOT TPB representative is still responsible for ensuring work progresses on schedule.
- A CTP Steering Committee is formed to provide targeted input into the process (a local steering committee made up of community representatives from various interests).
- Technical support is provided by NCDOT's Transportation Planning Branch.
- Transit exists in the community.
- The transit agencies have no independent taxing authority.
- A tool exists to support multi-modal planning analysis, which may or may not be part of the travel demand model.
- Local government(s) can and are willing to collect land use data.

If the planning area undergoing CTP development is different from the attributes described above, then the process should be modified to adapt to those characteristics. Any change in the process should be discussed and mutually agreed upon by the planning partners. Changes in these attributes may affect what is accomplished in the steps of the CTP process and its sub-processes, the roles and responsibilities of participating planning partners, and the tools that are used.

The CTP process described in this document is generally applicable to other areas but will be applied differently in some respects, particularly in non-MPO areas and in larger MPOs and those that are contiguous to others. The CTP process outlined in this guidance document will still serve as the foundation for the CTP process for these other types of planning areas; however, steps may be added, deleted or modified to accommodate the different needs within those areas. The applicability to areas other than the flow item is described further in Sections 2.5 and 2.6. Detailed information on how to conduct the CTP process in these other types of planning areas is being developed and will be available in the near future.

2.4 Assumptions

As the CTP process was being developed, certain assumptions had to be made to clearly define each of the process steps. The overarching assumptions for the CTP process are:

- Locals have an agreed upon community vision.
- Locals have established community goals and objectives.
- Documentation of the plan update includes a CTP/ MTP technical report or document and CTP/ MTP maps.
- A moderate number of comments on air quality conformity are received and must be considered.
- A land use tool for alternatives analysis exists.
- The travel demand model structure remains unchanged, but new base and future year data would be used.
- The travel demand model requires re-calibration.
- Technical support for the multi-modal elements is available through the Model Team (the team conducting the Modeling sub-process), either as part of the travel demand model or some other technical analysis tool(s).
- Technical support tools(s) represent best practice.
- NCDOT is the custodian of the existing travel demand model (they keep and maintain the official copy) and primary technical experts (manage and/ or perform most model maintenance and update tasks).
- The overall schedule does not limit the scope of travel demand model work needed.
- Sufficient resources are available to support travel demand model development.
- The tools that are needed that do not exist will be developed and are credible to partners, including FHWA, EPA, resource agencies, etc.
- The planning partners agree to prepare one document (for both CTP and MTP) intended to meet both state and federal requirements.
- Transit agencies and resource agencies are willing to participate.

Similar to the flow item above, if the assumptions for a particular planning area are different from those above, the CTP process will need to be modified to accommodate those different assumptions. The result may be that steps are added, deleted or modified, roles and responsibilities changed, and/or other tools are used. Any change in the process should be discussed and mutually agreed upon by the planning partners when the schedule and roles and responsibilities are being established.

2.5 CTP Process for non-MPO areas

As described above, the CTP process documented in this guidance applies to the flow item of a mid-sized MPO area. This process is generally applicable to non-MPO areas, but there are some differences. A non-MPO CTP study may cover a municipality, a county, or some combination of municipalities and counties. For these types of areas, the federal requirements (including financial constraint) would not apply, air quality conformity would not be required, and multi-modal analysis may or may not be of interest. The technical analysis tool may be a travel demand model or it may be some combination of travel demand model and/ or hand allocation or trend line analysis. The deadline for the CTP study in non-MPO areas will be established by the planning partners, but is not set by a federal requirement.

For non-MPO CTPs, roles will be established as part of the CTP project plan, but the use of teams will likely not be as formalized as in larger areas. There may be a single CTP Team, likely consisting of NCDOT, RPO, and local government representatives, that conducts the CTP process as well as the sub-processes, with input from other resources as appropriate. If multiple land use scenarios are considered, and land use assumptions are agreed upon that differ from the current locally adopted land development plans, those plans will have to be modified to match the newly agreed upon land use assumptions prior to the CTP being adopted. Public

involvement and decision-making will also need to be tailored to the area, with the RPO and local government roles being different than in MPO areas.

Despite these differences, the key components of the CTP process are the same for non-MPO areas. There will still be a community vision/ goals and objectives/ evaluation criteria setting process, sound technical analysis of deficiencies and potential solutions, thorough consideration of the human and natural environment, the ability to consider multiple land use scenarios and multi-modal components as appropriate, a robust public involvement process, and thorough documentation of the process, decision-making, and conclusions of the study. Additional guidance is being developed to assist in applying the CTP process to non-MPO areas.

2.6 CTP Process for Larger or Multiple MPO areas

The CTP process described within this document for a mid-sized MPO is generally applicable to larger MPOs and where multiple MPOs are contiguous. Larger MPOs may have a greater emphasis on multi-modal elements and/ or scenario analysis and for those designated as transportation management areas (TMAs), additional federal requirements must be met. For MPOs that are contiguous with other MPOs, additional coordination needs to occur. Since these areas have a regional model that is used for multiple MPOs, it is important that there is not duplicate modeling work when plans are updated, especially related to air quality conformity. It is also important that there is continuity at the MPOs' boundaries.

3 Mid-Level CTP Process Description

Within each High-Level CTP Step, there are many Mid-Level CTP Steps. The CTP process consists of a total of thirty-two (32) Mid-Level Steps. As with the High-Level Steps, each Mid-Level Step has both an identification number and a name. The Mid-Level Step identification numbers include the High-Level Step identification number followed by a small case letter (in an alphabetical sequence). For example, CTP 2c (Quality Check Data) is the third Mid-Level Step in the second High-Level CTP Step (Conduct Needs Assessment). (The "c" represents the third step as it is the third letter in the alphabet.) The numbering convention also indicates the order in which the steps occur. For example, CTP 1d (Evaluate/ Develop Community Vision) must occur before CTP 1e (Develop CTP Goals and Objectives).

These Mid-Level Steps represent the series of tasks and activities that must be accomplished in a particular order to achieve the overall purpose and outcomes of the High-Level Steps. The Mid-Level CTP Steps relate specifically to the development of the CTP.

4 CTP Sub-process Description

The CTP process also includes four (4) sub-processes that work together to provide the information, analyses, approvals and documentation that support the development of the CTP. Information flows within and between these sub-processes and the Mid-Level CTP Steps. These sub-processes are:

- Modeling (M)
- Land Use (LU)
- Air Quality (AQ)
- Multi-modal (MM)

In addition, it is important to note that public involvement, environmental considerations and MPO/ RPO/ NCDOT coordination were integrated into all of the appropriate process steps of the Mid-Level CTP Steps and other four sub-processes, as applicable.

Each step of each sub-process has an identification number and a name. The identification number is the sub-process acronym followed by a number.

5 CTP Process Flowchart

The complete CTP process that includes the High-Level and Mid-Level CTP Steps and the four sub-processes is shown on the following flowchart. The Legend shows the process names and associated color coding.

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Comprehensive Transportation Planning Process Flowchart Introduction

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High-Level CTP Process	**Five steps that outline the primary activities that take place in the transportation planning process. The process is structured with the intent to offer flexibility to meet an area's planning needs. It balances the need to meet multi-modal transportation demands while considering the natural and human environment within a community. It forms a strong connection between an area's transportation plan, locally adopted land development plans, and community vision and includes a thorough public involvement process.**
Mid-Level CTP Process	**A series of steps identified to carry out the comprehensive transportation planning process. These steps result in a multi-modal CTP that shows identified transportation needs and proposed recommendations for 25-30 years in the future. This process can be conducted so that it meets both state and, in MPO areas, federal requirements for metropolitan long range transportation planning.**
Modeling Sub-Process	**A series of steps dedicated to travel demand modeling that feed into the Mid-Level CTP Process. While not a stand alone model development process, it is intended to serve the transportation planning process by ensuring the analysis tool(s) meet the needs of the CTP process. It is also closely related to the Land Use, Air Quality, and Multimodal sub-processes to ensure that the inputs and outputs between these sub-processes are compatible.**
Land Use Sub-Process	**A series of steps dedicated to analyzing and evaluating the area's land development plans as they relate to the CTP Process. This is not a stand alone land use plan development process; it is intended to build off of existing adopted plans to provide inputs and direction into the community vision and analysis of the CTP. Through this process, land use projections are developed and provided to evaluate and analyze future transportation needs. It is also closely related to the Modeling and Multimodal sub-processes to ensure that the inputs and outputs between these sub-processes are compatible.**
Air Quality Sub-Process	**A series of steps performed by various air quality partners necessary to carry out the air quality conformity process as required for nonattainment and maintenance areas. The Air Quality sub-process is a stand alone process that utilizes the analysis tools from the Modeling and Multimodal sub-processes and the recommended transportation improvements from the endorsed CTP to ensure the recommended CTP meets the intent of the State Implementation Plan (SIP). In other words, the CTP conforms to the Clean Air Act. In addition to the technical process performed by the transportation and air quality partners, there is also significant interagency coordination, public involvement, and ultimately federal approval.**
Multi-Modal Sub-Process	**A series of steps that ensure multi-modal considerations are adequately addressed in the Mid-level CTP Process. Through coordination with the Land Use and Modeling sub-processes, the multi-modal sub-process provides information to the Mid-Level CTP process and the sub-processes. Modes considered may include transit, bicycle, pedestrian, travel demand management strategies, ITS strategies, and ferry, as applicable. The multi-modal sub-process does not include consideration of aviation, HOT/ HOV, intercity passenger rail, goods movement/freight planning, or modes for non-transportation purposes.**
# Critical Path	**Identified steps in the overall CTP Process (Mid-Level and Sub-Processes) that need to be completed before moving forward. Critical path numbers that have an asterisk are the final critical path steps that must be completed by the CTP end date.**

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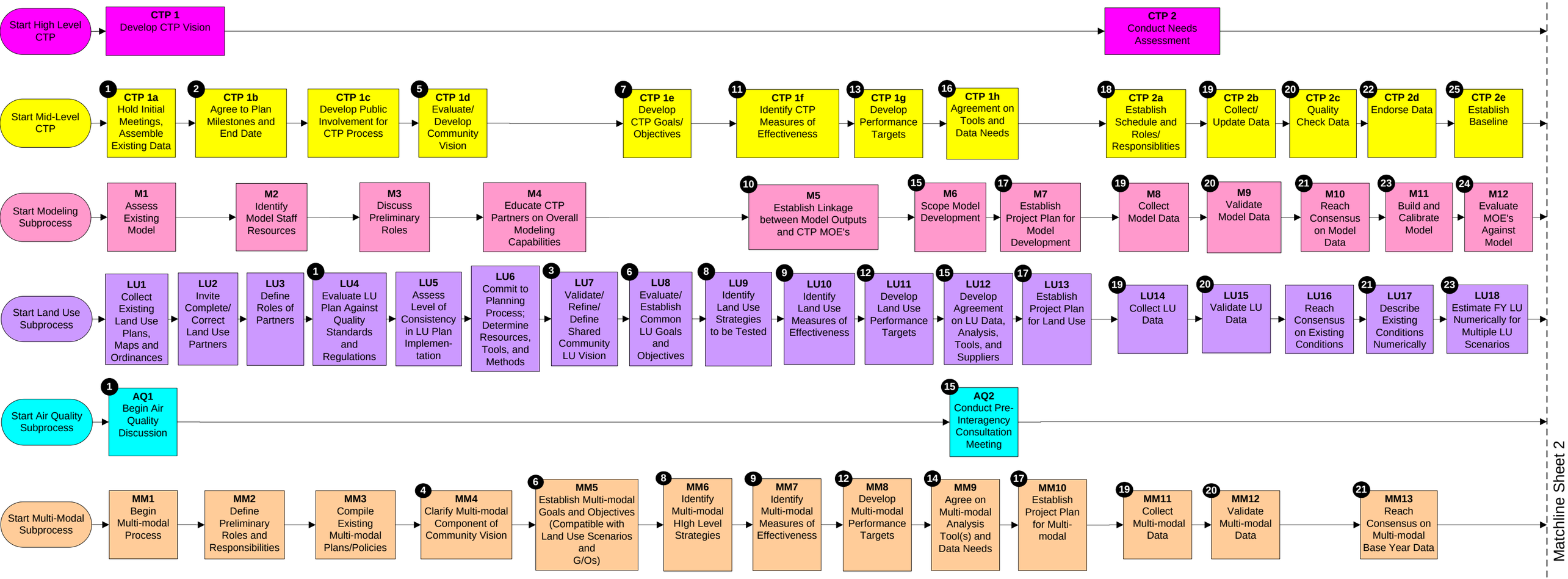
Comprehensive Transportation Planning Process



= critical path points

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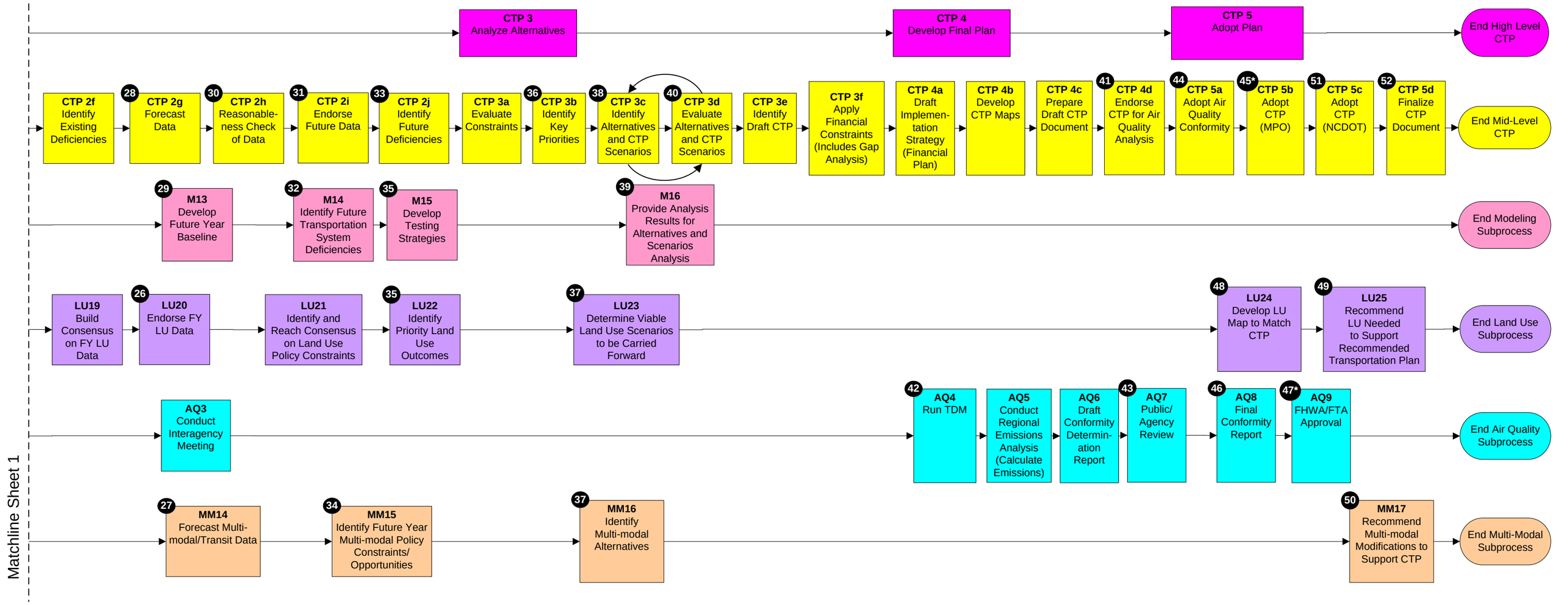

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(#) = critical path points

*must be completed by CTP end date

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6 Performance Measures for the CTP Process

Performance measures for the CTP process can be used to determine how effectively and efficiently the process is working as well as the quality of the outputs (products) from the process. It is important to track performance measures to determine if the process is meeting the intended outcomes, and to identify areas for further improvement. Below are some possible measures for the CTP process.

6.1 Process Measures

- Public participation in the CTP process: number of participants in the public involvement process
- Resource agency participation in the CTP process: of the number of resource agencies identified as possible participants, the number that participated (measured by meeting attendance and feedback received)
- Timeliness of mutually adopted CTP maps: percent of CTPs that are completed (mutually adopted) by agreed upon schedule (as established in CTP2a – Establish Schedule and Roles/ Responsibilities), including ease of adoption
- For MPO areas, MTPs and CTPs are connected: number of MTPs and CTPs that are developed and documented jointly
- Level of satisfaction with the process: rating from partners (including resource agencies) through customer surveys
- Adequacy and accuracy of documentation: percent of projects for which CTP documentation was used in the project development process or NEPA documents

6.2 Product Measures

- Purpose and Need in NEPA: percent of Purpose and Need statements that used information from a CTP, if the project is in an area covered by a CTP document that includes Problem Statements
- Alternatives in NEPA:
  - Number of long range planning alternatives (as shown on the CTP maps) that became an alternative carried forward for detail study in NEPA
  - Number of alternatives carried forward for detail study in NEPA that were never considered in the CTP study
  - Number of alternatives carried forward for detail study in NEPA that was identified as, or would have been considered part of, an unreasonable alternative or solution in the CTP study
- Inclusion of CTP in local decision making: number of land development plans revised to match CTP proposals, when revisions are recommended

7 Detailed Information on CTP Steps

The following detailed information for each step of the CTP process and the CTP sub-processes has been developed:

- purpose of the step
- intended outcomes
- inputs needed to conduct activities within the step and where the inputs come from
- outputs from the step (information, decisions, agreements, etc.) and where they are used in subsequent steps

- roles and responsibilities for entities involved in the process step
- documentation requirements
- specific decisions that are made and who makes them

This detailed information is intended to guide process participants through each step of the process with a common set of expectations. Each area preparing a CTP should use this as a starting point and modify it, as needed, to accommodate the particular needs of their planning area. If modifications are proposed during the CTP process, those changes should be discussed, and if agreed upon, documented and communicated to all process participants.

8 The CTP Critical Path

A critical path is shown on the CTP process flowchart by sequential numbering in black dots on the upper left corner of some process steps. The critical path represents a sequence of steps in which one step must be completed before advancing to the next step. Output from one step in the critical path (such as data, an analysis, a decision or other information) is used as input for the activities in the subsequent steps of the critical path. For example, CTP 2d (Endorse Data), which is Critical Path Point #22, must occur before M11 (Build and Calibrate Model), which is Critical Path Point #23. This means that the data must be endorsed before it is used to build and calibrate the travel demand model.

Critical path points identify sequential dependencies between the Mid-level CTP Steps and sub-processes as well as sequential dependencies among sub-processes. In this guidance, the critical path points are not used to show dependencies within a sub-process where steps are already ordered sequentially. For example, AQ4 (Run TDM) is Critical Path Point #42 and AQ7 (Public/ Agency Review) is Critical Path Point #43; although AQ5 (Conduct Regional Emissions Analysis) and AQ6 (Draft Conformity Determination Report) are not labeled with critical path points, these steps must be completed in sequence before advancing to AQ8. Sometimes a critical path point number will appear on multiple process steps; in these cases, the process steps occur simultaneously, and all steps with that same critical path number must be completed before moving on to the process step with the next critical path number.

Note that for the purposes of this guidance document, the critical path points are denoted henceforth in the text as CP#. For example, Critical Path Point #27 is "CP27". On the CTP process flowchart, Critical Path Point #27 is shown as:  . There are two critical path points marked with an asterisk, CP45 (step CTP 5b) and CP47 (step AQ9). In attainment areas (where no air quality conformity demonstration is required), CP45 (CTP 5b) must be completed by the agreed upon end date for the CTP study in order to avoid a plan lapse (in MPO areas). For areas subject to air quality conformity demonstration requirements (nonattainment or maintenance areas), CP 47 (AQ9) must be completed by the agreed upon end date for the CTP study in order to avoid a conformity and/ or plan lapse.

9 Important Information in Using This Guidance

Order of the Tables for Each Step: Section 10 of this guidance document provides tables for each of the CTP mid-level and sub-process steps. The tables describe the key activities that take place in each step and are organized into subsections by critical path. Steps that are not on the critical path are included in the same section as the next critical path step for that respective sub-process, or the next critical path Mid-Level CTP Step for mainline (yellow) CTP steps. This ordering was selected because all the steps leading up to a critical path point must be completed before the critical path step can be completed. However, some of the steps leading up to a critical path point may be able to be done at the same time (in parallel). For example, LU7 is a critical path point (CP3), but the steps LU1 through LU6 are not on the critical path. Since LU7 is in section 10.1.3 for CP3, LU1 through LU6 are included sequentially in that section as well.

Who Conducts the Process: The *CTP Team* is a technical team that may include, but is not limited to, representatives from the MPO/ RPO lead planning agency (LPA), NCDOT TPB, FHWA, and the leads of each sub-process team, as well as other interested TCC members as appropriate. There is generally a lead person or '***project manager***,' or co-leads, on the project to update the CTP, such as a representative from NCDOT TPB and the MPO. The project manager(s) direct the CTP update process and work closely with the CTP Team (are also considered members of the CTP Team). The CTP Team is responsible for conducting the CTP process (refer to the yellow Mid-Level CTP Steps).

It is assumed that as the CTP process is being carried out work is on-going, or will be initiated, for the sub-processes: Modeling, Land Use, Air Quality, and Multi-modal. The CTP Team may conduct the other sub-processes (Modeling, Land Use, and Multi-modal) or separate *Sub-Process Teams* may be formed, as appropriate for the area. The Air Quality sub-process is typically carried out by an established interagency group for the area.

A *CTP Steering Committee* is formed to provide targeted input into the process. The CTP Steering Committee is a local steering committee made up of community representatives from various interests. It is the project manager(s)'s responsibility to engage the CTP Steering Committee at key points in the process, providing them with the latest information about the study and seeking their input on the direction of the study, including public involvement.

Roles and responsibilities are negotiated at the beginning of the CTP process and are documented as agreed upon as part of the Project Plan for the study. Further information on roles and responsibilities are shown in the following tables for each of the CTP mid-level and sub-process steps.

Following is an explanation of each section of the tables:

Purpose

Description of the goal(s) or what is to be achieved in the step; the reason an activity is being undertaken.

Outcomes

Description of the final product(s) or end result(s) expected from the step.

Input(s)

Data or information intended to be used during the step.

Note that inputs coming from the prior steps in that step's sub-process (or Mid-Level CTP Steps for the CTP mainline) are usually not listed by name (unless they are included for emphasis). Inputs are listed that come from other sub-processes, the CTP mainline (if it is not a Mid-Level CTP step), or outside sources.

Comes from Step #

Step number(s) where the input was created, if applicable. 'N/A' (not applicable) is listed for an input source coming from outside the CTP process and the source is specified if it is not from that step's team; if the input is not available from the outside source, it may need to be generated as part of the given step.

Responsible entity for obtaining inputs

The group or agency responsible for getting the input and bringing or ensuring it gets brought to the sub-process team for a sub-process step (or the CTP Team if it is a Mid-Level CTP step). If the responsible entity is the CTP Team, it means they are responsible for making sure the appropriate sub-process team delivers the inputs to the CTP Team (this would likely be done by the person who is the CTP Team representative on the sub-process team).

The responsible entity may be NCDOT (usually the Transportation Planning Branch), the MPO/ RPO, Local Government, CTP Team, or the applicable sub-process team (Modeling, Land Use, Air Quality, or Multi-modal).

Outputs

The product(s) created from the work done as part of the step.

Goes to Step #

Step number(s) where the output is used, if applicable. Usually only one step for a given sub-process (or the CTP mainline process) is listed. This is the first step where the output is used, even though the output may also be used in subsequent steps. If 'Output Used Within This Step' is listed as the Goes to Step #, it indicates that the output is used within the same step in which it was created and does not go to another step. If the output is part of an iterative process, that is noted and the step(s) it goes to while iterating are shown as '1a.' and the step(s) it goes to at the end of the iteration are shown as '1b.' If 'Final Product' is listed, it indicates the output is a product of the CTP process that is not used elsewhere within the mainline process or sub-processes.

Responsible Entity and Role for Producing outputs (Decision Maker or Analyzer)

The lead group or agency responsible for producing the output.

The responsible entity may be NCDOT, the MPO/ RPO, Local Government, or the applicable CTP Team or sub-process team (Modeling, Land Use, Air Quality, or Multi-modal).

The role of the lead responsible entity is indicated in the table as one of the following:

"D" for Decision Maker. The decision maker is the entity (or entities) responsible for making the decision at that point in the process. There may be multiple decision makers. It may be a Board, a particular person, a decision-making body, or some group with the authority to make the decision. It could be legislatively directed or directed by some other regulatory or legally agreed upon means. It could be negotiated with the other parties in the process. NCDOT is only listed as the decision maker when they make a decision as a separate entity, not as part of the TCC, TAC, or another group.

"A" for Analyzer. Analyzers take the information provided and are responsible for compiling data and/or performing the analysis. Often this may be a technical type of analysis requiring a specialized type of expertise.

The following roles are not specified in the tables because it is assumed that all entities involved in the CTP process are performing these roles as needed:

Information Provider. The information providers provide information, data, etc. at particular points in the process.

Informed Observer. An informed observer is an entity who needs to be kept in the loop because they have a vested interest in the process.

Documentation Requirements

Description of the type and content of documentation required for that step. There are two types of information to be documented: inputs/ outputs and decisions. For documentation of inputs/ outputs, it may be information that would ultimately be included in the CTP/ MTP report or the CTP project file (which is the collection of all records kept for a CTP study beyond the content included in the report). For documentation of decisions, the type of agreement (see list below), entity making the decision, and the decision made are listed. *Note that meeting minutes/ summaries or other documentation are assumed to be created for all meetings and are not listed for each step.*

Following are definitions of the types of agreement referenced in the tables, listed in order of less formal to more formal. The type of agreement listed in the tables represents the minimum level of agreement for that step; a more formal type of agreement may be used if desired. If an agreement is to be reached by an MPO/ RPO TAC, it is always assumed that consideration of the decision first goes to the TCC, per that MPO/ RPO's operating procedures.

Consensus- "everyone can live by the decision," documented in meeting minutes/ summaries

Documented Agreement- an agreement that is in written form, such as the following:

- letter summarizing agreement with response or feedback
- concurrence form with signatures (typically from staff-level, technical participants)
- vote documented in adopted meeting minutes
- other mechanisms formally included in the project plan that achieve the purpose and outcome

Policy Board Action- action by a policy board, through the following mechanisms:

- consent agenda
- formal vote
- Memorandum of Understanding (MOU)/ Memorandum of Agreement (MOA), resolution, or endorsement
- contract
- any other mechanism allowed by local bylaws

Formal Multi-party Agreement- a multi-party agreement that is documented by a signed legal document that establishes the commitments by the primary partners (generally, the agencies that endorse the CTP); types of documentation include:

- contracts
- MOU/ MOA
- concurrence form with signatures (from policy boards)

<u>Key Considerations- Purpose, Outcomes</u>

Description of particular inputs, issues or other items that need to be considered as part of the step, including the intended purpose and desired outcomes. Key considerations are listed by categories of topics that are relevant throughout the CTP process. Categories include Environmental Considerations, Alternatives and Scenario Analysis (ASA), Indirect and Cumulative Effects (ICE), Community Impact Assessment (CIA), MPO/ RPO/ NCDOT Coordination, and Public Involvement.

10 Description of the CTP Process by Critical Path

One way to begin understanding the CTP process is by examining its critical path through each of the High-Level Steps. For each step in the CTP process and sub-processes, the following tables describe the key activities that take place in each of the High-Level Steps. Additionally, there are introductory descriptions for each High-Level CTP Step and for each critical path point (or grouping of critical path points). Note that the abbreviation "CTP" is used in the *step numbers for the High- and Mid-Level CTP Process*, while "CP" represents points along the *critical path*. Use the detailed CTP process flowchart to follow the descriptions. Notice how the critical path flows between sub-processes; this occurs because many of the sub-process steps require information from or provide information to other sub-processes and the CTP mainline process.

10.1 Develop CTP Vision (CTP 1)

The first step of the CTP process is "Develop CTP Vision". It is important to recognize that the purpose of this step is to set the foundation for the partnerships that are needed to develop a CTP that fits into a community's vision. A key element of this step is educating all partners and policy officials of the key linkage between land use and transportation decisions, as well as the need to be aware of environmental opportunities and constraints (human and natural) as land use and transportation planning decisions are made.

Consensus, active participation, and clearly defined goals and objectives would demonstrate successful implementation of this part of the process.

Below is a description of the critical path through the first High-Level Step of the Comprehensive Transportation Planning Process CTP1 - Develop CTP Vision:

10.1.1 Critical Path Point 1

Description CP1: In the initial phase of CTP development, everyone that should be included in the CTP development is identified – transportation professionals (local, state, and federal), land use professionals, resource agencies, and other staff/ professionals that may be unique to an area. While everyone does not necessarily need to attend a meeting, they should be notified and informed of the initiation of a CTP study. CTP 1a is not a single activity or point in time, rather, it is a series of activities gathering existing data, preparing initial information, and holding initial meetings in order to initiate the CTP study.

<table>
<tr><td colspan="7">CTP 1 – Develop CTP Vision</td></tr>
<tr><td colspan="6">Comprehensive Transportation Planning Step 1a (CTP 1a) -- Hold Initial Meetings, Assemble Existing Data</td><td>CP1</td></tr>
<tr><td>Purpose</td><td colspan="6">• Gather potential process participants at initial meeting(s)
• Identify the status of implementation plans from previous/ current adopted CTP
• Assemble and present existing GIS and other available data</td></tr>
<tr><td>Outcomes</td><td colspan="6">• Identification of CTP Team and sub-process participants, if applicable
• Status of existing tools and data
• Status of implementation items in previous/ current CTP implementation plan
• Existing information in a presentable format</td></tr>
<tr><td rowspan="4">Input(s)</td><td></td><td rowspan="4">Comes From Step #:</td><td></td><td colspan="3">Responsible Entity for Obtaining Inputs
X (Team Name)</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td>1. Existing tools and data (transportation system, environmental, community, etc.)</td><td>1. N/A (NCDOT, MPO)</td><td>X</td><td>X</td><td></td><td></td></tr>
<tr><td>2. Current transportation plans and documents</td><td>2. N/A (NCDOT, MPO)</td><td>X</td><td>X</td><td></td><td></td></tr>
<tr><td></td><td>3. Initial potential participant list and list of jurisdictions with land use authority</td><td></td><td>3. N/A (MPO)</td><td>X</td><td>X</td><td>X</td><td></td></tr>
</table>

Table Continued on Next Page

Comprehensive Transportation Planning Step 1a (CTP 1a) -- Hold Initial Meetings, Assemble Existing Data (con't)							
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Status of tools, data, and current transportation plans and documents		1. CTP 1b	A	A		
	2. Identified potential Stakeholders and CTP Steering Committee members		2. CTP 1b	A	A	A	A
	3. Identified participants for CTP Team		3. CTP 1b	D	D		
	4. Identified participants for Land Use, Air Quality, and Multi-modal sub-process teams, if applicable		4. MM1, LU2, AQ1	D	D		
	5. Preliminary Environmental Features Map, CTP ICE Pre-screening maps, preliminary Community Understanding Report (CUR), and other existing data/ mapping		5. CTP 1b		A	A	A
Documentation Requirements	• Summary of status of existing tools, data and current transportation plans and documents • Documented agreement by NCDOT and MPO on members for the CTP Team and LU, AQ, and MM sub-process teams, if applicable • Preliminary Environmental Features Map, preliminary CUR, and other existing data in a presentable format						

Key Considerations	Purpose	Outcomes
Environmental Considerations	Contact potentially interested parties and agencies to identify interest and possible contributions to CTP process	• Possible role of agencies in planning process (to be formalized in the CTP Project Plan) • Identification of data/ info agencies can provide (include coordination with local GIS staff) • Interests and values of agencies

Table Continued on Next Page

Comprehensive Transportation Planning Step 1a (CTP 1a) -- Hold Initial Meetings, Assemble Existing Data (con't)		
Key Considerations	Purpose	Outcomes
Environmental Considerations	Develop preliminary Environmental Features Map and other mapping using existing data	Preliminary Environmental Features Map using existing data; Note that the intent is to use existing information- updating and/or developing new GIS layers should be done prior to the start of the CTP process or in a way that does not lengthen the CTP process time
ASA	Identify critical human and natural environmental constraints that will inform alternatives and scenario analysis	Documentation of potential constraints, including environmental constraints
ICE, CIA, Title VI	• Ensure appropriate members are identified for the CTP Team and sub-process teams, if applicable • Ensure appropriate groups are identified as potential Stakeholders and CTP Steering Committee members, including those representing ICE/ CIA interests, minority/ low income groups, and other populations	• Listing of appropriate participants for CTP Team and sub-process teams, if applicable • Listing of appropriate potential Stakeholders (all groups/ people to ensure include in outreach/ public involvement) and CTP Steering Committee members (the local steering committee for the CTP)
ICE	Assess potential cumulative impacts	CTP ICE Pre-Screening maps
CIA	• Raise awareness of potential community issues (demographics, values, etc.) • To ensure that community interests are identified and considered in CTP process	The Community Understanding Report (CUR) allows for a standardized look at issues across communities, ensures stakeholders are identified that represent various community issues, and provides information on community aspects that are commonly under-reported or not-well understood by policy makers

Table Continued on Next Page

Comprehensive Transportation Planning Step 1a (CTP 1a) -- Hold Initial Meetings, Assemble Existing Data (con't)		
MPO/ RPO/ NCDOT Coordination	Establish members of the CTP Team and the sub-processes teams	• Documented Agreement forming the CTP Team • Consensus on members of the LU sub-process team, if applicable, considering all jurisdictions with land use authority • Consensus members of the MM sub-process team, if applicable, considering the following and others, as appropriate: bicycle/ pedestrian planners/ coordinators, transit operators, TDM coordinator, public transportation providers (including human services) • Consensus on AQ Team members, based on participating agencies referenced in the existing Conformity Memorandum of Agreement for the area

Air Quality Step 1 (AQ1) -- Begin Air Quality Discussion							CP1
Purpose	Inform partners of the due date for the federal conformity determination						
Outcomes	Information on due date for federal conformity determination, federal requirements and other related information						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Date of last conformity determination		1. N/A (USDOT's conformity determination approval)	X	X		
	2. Identified participants for Land Use, Air Quality, and Multi-modal sub-process teams, if applicable		2. CTP 1a		X		
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	AQ Team
	1. AQ conformity due date		1. CTP 1b	A	A		
Documentation Requirements	N/A						

10.1.2 Critical Path Point 2

Description CP2: In many instances, the planning process is driven by a need to complete a plan by a certain date – usually relating to AQ conformity or MTP update cycle. It is important to establish early in the CTP process critical deadlines and the consequences of not meeting these deadlines.

Comprehensive Transportation Planning Step 1b (CTP 1b) -- Agree to Plan Milestones and End Date							CP2
Purpose	• Establish preliminary CTP schedule and resource needs • Confirm validity of or develop/ refine modeling agreement						
Outcomes	• Documented Agreement for each CTP Team member participation • Agreed upon planning area and key CTP steps and deadlines • Valid modeling agreement						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. AQ conformity due date		1. AQ1				X (CTP)
	2. MTP due date		2. N/A (NCDOT, FHWA, MPO)				X (CTP)
	3. Existing modeling agreement		3. N/A (MPO, NCDOT)				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Commitment by each CTP Team member on participation		1. CTP 2a				D
	2. Agreed upon CTP planning area, milestones and end date (based on AQ conformity, MTP schedule, and/or CTP schedule)		2. M2, LU3, MM2				D
	3. Valid modeling agreement, including identification of model custodian		3. M1				A
Documentation Requirements	• Documented agreement by each CTP Team member on participation and commitment • Consensus by CTP Team on CTP planning area, milestones and end date						

Table Continued on Next Page

Comprehensive Transportation Planning Step 1b (CTP 1b) -- Agree to Plan Milestones and End Date (con't)		
Key Considerations	Purpose	Outcomes
MPO/ RPO/ NCDOT Coordination	• Identify and/or verify Model Team as established by modeling agreement, if applicable • Achieve agreement on key steps necessary to complete CTP	• Consensus on or confirmation of members by CTP Team • Consensus on key steps and deadlines within the project scope

10.1.3 Critical Path Points 3 and 4

Description CP3 and CP4: The different land development plans in the area are gathered and reviewed to see if they are adequate for transportation planning. It is important to determine if there is consistency across the planning area – especially when most CTP study areas in NC have multiple jurisdictions. In addition, it is important to denote inconsistencies between the land development plans within the area. Inconsistencies and conflicts are then resolved between plans in order to develop a consistent community land use vision for the planning area. Once there is a consistent community vision for the planning area it is important to clarify any multi-modal components that are a part of that vision. This multi-modal vision will then feed into the overall vision for the CTP.

Land Use Step 1 (LU1) -- Collect Existing Land Use Plans, Maps and Ordinances							
Purpose	Collect local land development plans						
Outcomes	Compilation of local land development plans						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Land Use/ Development Plans		1. N/A (Local governments)		X		
	2. Maps		2. N/A (Local governments)		X		
	3. Ordinances		3. N/A (Local governments)		X		
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Status and summary of land use plans in the planning area		1. LU4		A	A	
Documentation Requirements	Listing/ summary of approved Land Use/ Development Plans including status of the plans and list of areas not covered by the plans						

<table>
<tr><th colspan="8">Land Use Step 2 (LU2) -- Invite Complete/ Correct Land Use Partners</th></tr>
<tr><td>Purpose</td><td colspan="7">• Ensure correct/ complete land use partners are identified
• Establish LU Team</td></tr>
<tr><td>Outcomes</td><td colspan="7">• Agreement on LU Team members
• Commitment to LU sub-process</td></tr>
<tr><td rowspan="2">Input(s)</td><td></td><td rowspan="2">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>1. Identified participants for Land Use, Air Quality, and Multi-modal sub-process teams, if applicable</td><td>1. CTP 1a</td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td rowspan="4">Output(s)</td><td></td><td rowspan="4">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>LU Team</td></tr>
<tr><td>1. List of community contacts to invite that will participate in CTP process</td><td>1. CTP 1c</td><td></td><td>A</td><td></td><td></td></tr>
<tr><td>2. Identified LU team members and local staff commitment to participate in the CTP process</td><td>2. LU3</td><td></td><td></td><td>D</td><td>D</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Contact list including but not limited to neighborhood associations, advocate groups, volunteer board members, planning board members and other interested organizations
• Documented Agreement by each LU Team member on participation and commitment</td></tr>
</table>

Land Use Step 3 (LU3) -- Define Roles of Partners							
Purpose	Identify roles and responsibilities in process for land use partners						
Outcomes	• Commitment to planning process (roles, schedule, etc.) • Mutual understanding of the expected benefits from the CTP process and connection to land use • Agreed upon roles and responsibilities of LU Team members						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Educational information on overall CTP process		1. N/A (NCDOT, CTP Guidance and Procedures)	X	X		
	2. Educational information on role of land use in the overall CTP process		2. N/A (NCDOT, CTP Guidance and Procedures)	X	X		
	3. Information on local land use planning process(es)		3. N/A (Local governments)		X		
	4. Agreed upon CTP planning area, milestones and end date (based on AQ conformity, MTP schedule, and/or CTP schedule)		4. CTP 1b				X (LU)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Definition of LU Team relationship to other sub-process and CTP Teams		1. LU6				D
	2. Identified LU Team liaison to other sub-process teams		2. LU6				D
	3. Definition of roles and expectations of LU Team members		3. LU6				D

Table Continued on Next Page

Land Use Step 3 (LU3) -- Define Roles of Partners							(con't)
Output(s) (con't)	4. Definition of roles and expectations for all land use agencies in the land use sub-process	Goes To Step #: (con't)	4. LU6			D	D
	5. Definition of roles of local land use decision makers in the land use sub-process and CTP process		5. LU4, CTP 1c			D	D
Documentation Requirements	• Consensus by LU Team and local governments on commitment to the CTP process and definition of roles • Roles and expectations information						

Land Use Step 4 (LU4) -- Evaluate LU Plan Against Quality Standards and Regulations							CP1
Purpose	Evaluate land use plan(s) against quality standards and regulations considering human and natural environmental constraints						
Outcomes	Agreement by LU Team on the extent that land use plan(s) meets quality standards						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Quality standards and regulations for land development plan(s)		1. N/A (Note: Land development plan standards are currently under development.)	X			
	2. Status and summary of land use plans in the planning area		2. LU1				X(LU)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Supplemental local land use data needed to assess the plan against quality standards and regulations		1. Output Used Within This Step		A		
	2. Evaluation summary (written) • Gap summary • Recommendation – how to proceed (including whether can conduct ICE analysis)		2. LU5				A, D
Documentation Requirements	• Evaluation summary of land development plan(s) comparison to quality standards and regulations, including a recommendation on how to proceed (i.e. whether more information is needed in order to proceed with the ICE analysis and/ or the CTP study) • Consensus by the LU Team on the evaluation summary and ability to proceed with ICE analysis						

Table Continued on Next Page

Land Use Step 4 (LU4) -- Evaluate LU Plan Against Quality Standards and Regulations (con't)		
Key Considerations	Purpose	Outcomes
ICE	Determine if land use plan and available data is sufficient for ICE analysis	Determination of ability to proceed with ICE analysis
CIA	Evaluate land use plan based on the Community Understanding Report (CUR) and quality standards	Identification of community impact key issue areas in land use vision, goals and objectives

Land Use Step 5 (LU5) -- Assess Level of Consistency in LU Plan Implementation							
Purpose	Determine the extent that local land development plans are being followed						
Outcomes	• Agreement by LU Team on assessment of adherence to land development plans • Recommendations to resolve inconsistencies between land development plans and land development implementation						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Assessment questions		1. N/A				X (LU)
	2. List of appropriate people to interview (staff/ elected/ appointed)		2. N/A (MPO/RPO, local governments)		X	X	
	3. Minutes from planning, zoning, or policy board meetings		3. N/A (Local governments)		X	X	
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Assessment of adherence to land development plans		1. LU6				A, D
	2. Recommendations to resolve inconsistencies		2. LU6				A, D
Documentation Requirements	Consensus by LU Team on written summary of conclusions, recommendations, and supporting information						

Land Use Step 6 (LU6) -- Commit to Planning Process; Determine Resources, Tools, and Methods							
Purpose	• Establish land use process, tools, and methods, including resources needed to meet land use tasks in CTP process • Refine and agree to LU Team roles and responsibilities						
Outcomes	• Agreement by land use planning agencies that they will commit time and resources • Agreement by LU Team on land use process, tools, and methods, including LU Team roles and responsibilities						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Required time and resource commitment for LU sub-process		1. N/A (MPO, local governments)				X (LU)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Potential LU process, tools, and actions needed to support the CTP process		1. Output Used Within This Step				A
	2. Agreed upon CTP process and resources to support it by local governments/ MPO		2. CTP 2a		D	D	A
	3. Agreed upon land use process, tools, and methods, including LU Team roles and responsibilities		3. CTP 2a				D
Documentation Requirements	• Policy Board Action by local governments/ MPO of CTP process and resources to support • Consensus by LU Team on land use process, tools, and methods, including LU Team roles and responsibilities						

Land Use Step 7 (LU7) -- Validate/ Refine/ Define Shared Community Land Use Vision							CP3
Purpose	Confirm, establish, or refine that community knows "what it wants to be when it grows up" (it has a single community-aligned vision)						
Outcomes	Agreement by local jurisdictions on shared local community vision						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Evaluation summary (commonality of local goals and objectives)		1. LU9				A
	2. Agreed upon shared local community vision for the planning area by each local jurisdiction, after fixing gaps if necessary		2. CTP 1d, MM4			D	
Documentation Requirements	• Evaluation summary (commonality of local goals and objectives) • Documented Agreement by each local jurisdiction on shared local community vision for the planning area						

Key Considerations	Purpose	Outcomes
CIA	Evaluate existing land use plan(s) to identify common areas of community vision	Identification of community impact key issue areas in current land use vision, goals and objectives

<table>
<tr><th colspan="8">Multi-Modal Step 1 (MM1) -- Begin Multi-modal Process</th></tr>
<tr><td>Purpose</td><td colspan="7">• Ensure correct/ complete multi-modal partners are identified
• Establish MM Team and commit to a multi-modal planning process</td></tr>
<tr><td>Outcomes</td><td colspan="7">• Initial meetings with correct partners
• Commitment to a multi-modal planning process</td></tr>
<tr><td rowspan="2">Input(s)</td><td></td><td rowspan="2">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>1. Identified participants for Land Use, Air Quality, and Multi-modal sub-process teams, if applicable</td><td>1. CTP 1a</td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team
X (CTP)</td></tr>
<tr><td rowspan="4">Output(s)</td><td></td><td rowspan="3">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>MM Team</td></tr>
<tr><td>1. Identified MM Team members</td><td>1. MM2</td><td></td><td>D</td><td></td><td></td></tr>
<tr><td>2. Commitment to participate in CTP</td><td>2. MM2</td><td></td><td></td><td>D</td><td></td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">Documented Agreement by local governments/ MPO on participation and commitment, including staff resources, to support Multi-modal Sub-process</td></tr>
</table>

<table>
<tr><th colspan="8">Multi-Modal Step 2 (MM2) -- Define Preliminary Roles and Responsibilities</th></tr>
<tr><td>Purpose</td><td colspan="7">Define preliminary roles and responsibilities</td></tr>
<tr><td>Outcomes</td><td colspan="7">Identified preliminary roles and responsibilities</td></tr>
<tr><td rowspan="2">Input(s)</td><td></td><td rowspan="2">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>1. Agreed upon CTP planning area, milestones and end date (based on AQ conformity, MTP schedule, and/or CTP schedule)</td><td>1. CTP 1b</td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td rowspan="3">Output(s)</td><td></td><td rowspan="3">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>MM Team</td></tr>
<tr><td>2. Preliminary roles and responsibilities</td><td>1. MM9</td><td></td><td></td><td></td><td>A</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Summary of discussions of roles and responsibilities
• Identification of potential time commitment/ non-staff resources</td></tr>
</table>

Multi-Modal Step 3 (MM3) -- Compile Existing Multi-modal Plans/ Policies							
Purpose	To compile multi-modal plans and policies						
Outcomes	Status of multi-modal planning in the area and to validate the status of existing multi-modal systems						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Existing multi-modal plans and policies		1. N/A (Local governments/ transit agency)				X (MM)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. List and status of existing multi-modal plans and policies		1. MM4, MM14				A
	2. Identification of gaps (missing or inadequate plans and policies)		2. MM4, MM14				A
Documentation Requirements	Technical report containing list of plans and policies and gap analysis						

Multi-Modal Step 4 (MM4) -- Clarify Multi-modal Component of Community Vision							CP4
Purpose	To recommend community vision and policies for multi-modal systems						
Outcomes	Agreement by MM Team on community multi-modal vision						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Agreed upon shared local community vision by each local jurisdiction, after fixing gaps if necessary		1. LU7				X (MM)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. Agreed upon multi-modal vision		1. CTP 1d				A, D
Documentation Requirements	Consensus by MM Team on documented multi-modal vision						

10.1.4 Critical Path Point 5

Description CP5: Building upon the land use vision for the planning area and using input from the public and planning partners, a CTP (or transportation) vision is developed. As with the land use vision, it is important to recognize that different communities and planning partners within the planning area may have inconsistent transportation visions. It is necessary to find common ground between planning partners to develop the CTP vision before moving forward with the CTP study. The CTP vision will be the framework for developing, analyzing, and evaluating transportation options during the CTP process.

Comprehensive Transportation Planning Step 1c (CTP 1c) -- Develop Public Involvement for CTP Process							
Purpose	Develop public involvement plan that will incorporate public input and seek public buy-in						
Outcomes	Public involvement plan						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Existing public involvement plan		1. N/A (MPO/RPO)		X		
	2. List of community contacts to invite that will participate in CTP process		2. LU2				X (CTP)
	3. Definition of roles of local land use decision makers in the land use sub-process and CTP process		3. LU3				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Public Involvement Plan including list of interested parties		1. CTP 2a				A, D
Documentation Requirements	Consensus by the CTP Team on the Public Involvement Plan						

Table Continued on Next Page

Comprehensive Transportation Planning Step 1c (CTP 1c) -- Develop Public Involvement for CTP Process (con't)		
Key Considerations	Purpose	Outcomes
CIA/ Title VI	• Ensure the Public Participation Plan addresses community issues, community groups are identified and/or strategies for known issues are incorporated • Using information from the Community Understanding Report (CUR), identify and appropriately engage any under-represented groups or interests (i.e., limited English proficiency (LEP), minority, low income, Title VI, etc.)	• Incorporation of community interests/ issues and stakeholders are included in public involvement plan • Public involvement plan includes strategies to reach any under-represented groups or interests via tools identified in the stakeholder involvement toolkit
MPO/ RPO/ NCDOT Coordination	Agree on level of public involvement needed for particular area covered by the CTP	Consensus on establishing roles for public involvement plan by TAC
Public Involvement	Develop public involvement plan that will incorporate appropriate public input and buy-in	Public involvement plan

Comprehensive Transportation Planning Step 1d (CTP 1d) -- Evaluate/ Develop Community Vision							CP5
Purpose	• Educate CTP process participants and the public on relationship between LU vision, transportation vision, and environmental issues • Confirm, establish, or refine a valid, robust community vision; initiate discussion on LU scenarios to be tested						
Outcomes	• Documentation of how LU, transportation, and environmental issues (opportunities and constraints) are tied to community vision • Agreement by TAC on community vision • Agreed upon template for developing sub-process goals and objectives						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Agreed upon shared local community vision by each local jurisdiction, after fixing gaps if necessary		1. LU7				X (CTP)
	2. Agreed upon multi-modal vision		2. MM4				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Community transportation vision		1. CTP 1e, LU9, MM5		D		A
	2. Direction for consideration of LU scenarios to be tested (general range/ limits, possible number of scenarios)		2. LU9		A		A
	3. Template for developing coordinated goals and objectives		3. LU8, MM5				D
Documentation Requirements	• Documented Agreement by TAC on community vision • Consensus by the CTP Team on the template for sub-process goals and objectives						

Table Continued on Next Page

Comprehensive Transportation Planning Step 1d (CTP 1d) -- Evaluate/ Develop Community Vision (con't)		
Key Considerations	Purpose	Outcomes
Environmental Considerations	Solicit input on community vision and goals/ objectives	Understanding by locals of known and potential environmental issues (opportunities and constraints) associated with community vision, goals, and objectives, including identification of environmental features that are of high importance to the community
ICE	Incorporate ICE into shared vision	ICE integrated into vision (input to *NCDOT ICI Guidance* Step 2)
CIA	Validate that the community vision reflects the values that are important to the community – using the Community Understanding Report (CUR) as a base	A community vision that reflects community values
MPO/ RPO/ NCDOT Coordination	• Educate CTP partners on travel demand model capabilities • Recommend land use scenarios (LU and CTP Teams) • Establish a shared community vision • Ensure all concerns from partners and the public are adequately addressed	• Understanding of travel demand model capabilities • Documented Agreement by LU Team, CTP Team, and TAC on recommended land use scenarios • Consensus by LU Team, local governments, and CTP Team on shared community vision • Documentation of how concerns were addressed
Public Involvement	Ensure consensus on "community vision"	Identified vision of community

10.1.5 Critical Path Points 6, 7, and 8

Description CP6 through CP8: It is necessary to determine how the land use and transportation plans will help achieve the community vision, as expressed through land use, multi-modal and overall CTP Goals and Objectives. For example a goal may be to sustain a small town appearance and an objective may be to increase pedestrian facilities, on street parking, and maintain the original two lane road through downtown. The CTP vision may represent a change from current growth trends, or there may be a desire by the planning partners to look at different land use scenarios (or growth patterns) and how these land use scenarios may affect proposals on the CTP. The number of land use scenarios considered will impact the CTP schedule, and it is therefore necessary to reach a consensus on different land use scenarios that would be appropriate to use when analyzing the CTP. During the early stages of the CTP process, these different land use scenarios may be defined in very general terms, but should represent drastically different future growth options (i.e. major differences in the location and types of growth).

<table>
<tr><td colspan="8">Land Use Step 8 (LU8) -- Evaluate/ Establish Common LU Goals and Objectives CP6</td></tr>
<tr><td>Purpose</td><td colspan="7">• Evaluate or establish land use goals and objectives that support an integrated land use and transportation planning process
• Agree upon common goals</td></tr>
<tr><td>Outcomes</td><td colspan="7">• Agreement by LU Team and TAC on LU goals and objectives</td></tr>
<tr><td rowspan="4">Input(s)</td><td colspan="2" rowspan="2"></td><td rowspan="2">Comes From Step #:</td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td colspan="2">1. Template for developing coordinated goals and objectives</td><td>1. CTP 1d</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td colspan="2">2. Multi-modal goals and objectives</td><td>2. MM5*</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td rowspan="4">Output(s)</td><td colspan="2" rowspan="2"></td><td rowspan="4">Goes To Step #:</td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>LU Team</td></tr>
<tr><td colspan="2" rowspan="2">1. Agreed upon shared land use goals and objectives</td><td>1a. MM5*
1b. CTP 1e</td><td></td><td>D</td><td></td><td>A, D</td></tr>
<tr><td colspan="5">*Iterative process between sub-processes MM5 and LU8 before going to CTP 1e</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Technical report documenting shared land use goals and objectives
• Documented Agreement by LU Team and TAC on shared land use goals and objectives</td></tr>
</table>

<table>
<tr><td colspan="8">Multi-Modal Step 5 (MM5) -- Establish Multi-modal Goals and Objectives (Compatible With Land Use Scenarios and G/Os) CP6</td></tr>
<tr><td>Purpose</td><td colspan="7">Establish multi-modal goals and objectives</td></tr>
<tr><td>Outcomes</td><td colspan="7">Recommended multi-modal goals and objectives that are compatible with land use goals and objectives</td></tr>
<tr><td rowspan="5">Input(s)</td><td></td><td rowspan="5">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td>1. Local MM goals and objectives</td><td>1. N/A (Local government/ transit agency)</td><td></td><td></td><td></td><td>X (MM)</td></tr>
<tr><td>2. Community transportation vision</td><td>2. CTP 1d</td><td></td><td></td><td></td><td>X (MM)</td></tr>
<tr><td>3. Template for developing coordinated goals and objectives</td><td>3. CTP 1d</td><td></td><td></td><td></td><td>X (MM)</td></tr>
<tr><td>4. Shared land use goals and objectives</td><td>4. LU8*</td><td></td><td></td><td></td><td>X (MM)</td></tr>
<tr><td rowspan="4">Output(s)</td><td></td><td rowspan="4">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>MM Team</td></tr>
<tr><td>1. Agreed upon multi-modal goals and objectives</td><td>1a. LU8*
1b. CTP 1e</td><td></td><td></td><td></td><td>A, D</td></tr>
<tr><td colspan="5">*Iterative process between sub-processes MM5 and LU8 before going to CTP 1e</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">Consensus by MM Team on recommended multi-modal goals and objectives</td></tr>
</table>

Comprehensive Transportation Planning Step 1e (CTP 1e) -- Develop CTP Goals/ Objectives							CP7
Purpose	Develop CTP goals and objectives by informing and educating process participants on key issues, interactions, and relationships						
Outcomes	• Agreed upon CTP goals and objectives that incorporate desired community and environmentally friendly features • Draft CTP MOEs to support goals and objectives						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Agreed upon shared land use goals and objectives		1. LU8				X (CTP)
	2. Agreed upon multi-modal goals and objectives		2. MM5				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Agreed upon CTP goals and objectives		1. MM6, LU10		D		A, D
	2. Template for coordinating MOEs		2. MM7, LU10		D		A, D
	3. Draft CTP MOEs and data sources		3. CTP 1f, MM7, LU10, M5				A, D
Documentation Requirements	• Documented Agreement by CTP Team and by TAC on CTP goals and objectives and template for coordinating MOEs • Consensus by CTP Team on draft CTP MOEs and data sources						

Table Continued on Next Page

Comprehensive Transportation Planning Step 1d (CTP 1d) -- Evaluate/ Develop Community Vision (con't)		
Key Considerations	Purpose	Outcomes
Environmental Considerations	Incorporate environmental consideration into community vision, goals, and objectives	Community vision, goals, and objectives that reflect environmental quality
ASA	Establish consistency between potential solutions and community vision, goals, and objectives	Documentation of community goals & objectives and priority land use outcomes, to be used to inform identification and analysis of alternatives and scenarios
ICE	Incorporate environmentally friendly land use goals and objectives into plan goals and objectives	Environmentally friendly goals and objectives
CIA	• Ensure that the goals and objectives are developed with community vision in mind • Capture community values within goals and objectives	Transportation goals and objectives aligned with accomplishing community's overall goals
MPO/ RPO/ NCDOT Coordination	Ensure common goals and objectives	Documented Agreement on common goals and objectives by LU Team, CTP Team, and TAC
Public Involvement	Ensure consensus on community goals and objectives of the CTP	Identified desired goals and objectives for the CTP

<table>
<tr><th colspan="8">Land Use Step 9 (LU9) -- Identify Land Use Strategies to be Tested CP8</th></tr>
<tr><td>Purpose</td><td colspan="7">Develop conceptual land use strategies/ scenarios to be tested</td></tr>
<tr><td>Outcomes</td><td colspan="7">Agreement by LU Team on LU strategies/ scenarios</td></tr>
<tr><td rowspan="4">Input(s)</td><td></td><td rowspan="4">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td>1. Community transportation vision</td><td>1. CTP 1d</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td>2. Direction for consideration of LU scenarios to be tested (general range/ limits, possible number of scenarios)</td><td>2. CTP 1d</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td></td><td>3. Evaluation summary (commonality of local goals and objectives)</td><td>3. LU7</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td rowspan="4">Output(s)</td><td></td><td rowspan="4">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>LU Team</td></tr>
<tr><td>1. Range of land use characteristics to be tested (number of LU scenarios, conceptual growth patterns and intensity)</td><td>1a. MM6*
1b. LU10, LU18</td><td></td><td>D</td><td></td><td>A, D</td></tr>
<tr><td></td><td>*Iterative process between sub-processes MM6 and LU9 before going to LU10 and LU18</td><td colspan="4"></td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Technical report documenting range of land use characteristics to be tested
• Consensus, as documented in meeting documentation, by LU Team on conceptual LU strategies/ scenarios</td></tr>
</table>

<table>
<tr><td colspan="8">Multi-Modal Step 6 (MM6) -- Identify Multi-modal High-Level Strategies CP8</td></tr>
<tr><td>Purpose</td><td colspan="7">Develop strategies consistent with land use and multi-modal visions</td></tr>
<tr><td>Outcomes</td><td colspan="7">Multi-modal strategies coordinated with land use strategies</td></tr>
<tr><td rowspan="4">Input(s)</td><td></td><td rowspan="4">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td>1. Agreed upon CTP goals and objectives</td><td>1. CTP 1e</td><td></td><td></td><td></td><td>X (MM)</td></tr>
<tr><td>2. Range of land use characteristics to be tested (number of LU scenarios, conceptual growth patterns and intensity)</td><td>2. LU9*</td><td></td><td></td><td></td><td>X (MM)</td></tr>
<tr><td rowspan="4">Output(s)</td><td></td><td rowspan="4">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>MM Team</td></tr>
<tr><td>1. Multi-modal strategies</td><td>1a. LU9*
1b. MM9</td><td></td><td></td><td></td><td>A</td></tr>
<tr><td colspan="5">*Iterative process between sub-processes MM6 and LU9 before going to MM9</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">Technical report of multi-modal strategies compared to land use strategies</td></tr>
</table>

10.1.6 Critical Path Points 9, 10 and 11

Description CP9 through CP11: Measures of Effectiveness (MOEs) are identified so that draft CTP scenarios, and ultimately the final CTP, can be evaluated to determine the extent to which agreed upon Goals and Objectives are being met (for example, pedestrian facilities are accessible, public transportation options are increased, etc.). The modeling sub-process is initiated in conjunction with the development of MOEs to ensure that MOEs are selected and travel demand model updates are planned in a way that provide the data needed to support the MOEs.

<table>
<tr><td colspan="8">Land Use Step 10 (LU10) -- Identify Land Use Measures of Effectiveness CP9</td></tr>
<tr><td>Purpose</td><td colspan="7">• Recommend LU measures of effectiveness (MOEs)
• Agree on MOEs</td></tr>
<tr><td>Outcomes</td><td colspan="7">Agreed upon land use MOEs by LU Team</td></tr>
<tr><td rowspan="5">Input(s)</td><td></td><td rowspan="5">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td>1. Agreed upon CTP goals and objectives</td><td>1. CTP 1e</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td>2. Template for coordinating MOEs</td><td>2. CTP 1e</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td>3. Draft CTP MOEs and data sources</td><td>3. CTP 1e</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td>4. Multi-modal MOEs and data sources</td><td>4. MM7*</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td rowspan="4">Output(s)</td><td></td><td rowspan="4">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>LU Team</td></tr>
<tr><td>1. Draft land use MOEs and data sources</td><td>1a. MM7*
1b. M5</td><td></td><td></td><td></td><td>A, D</td></tr>
<tr><td colspan="5">*Iterative process between LU10 and MM7 before going to M5</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Technical report documenting draft land use MOEs and data sources
• Consensus by LU Team on land use MOEs and data sources</td></tr>
</table>

Multi-Modal Step 7 (MM7) -- Identify Multi-modal Measures of Effectiveness							CP9
Purpose	Identify multi-modal measures of effectiveness (MOEs)						
Outcomes	Agreed upon multi-modal MOEs by the MM Team						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Local multi-modal MOEs		1. N/A (Local government/ transit agency)				X (MM)
	2. Template for coordinating MOEs		2. CTP 1e				X (MM)
	3. Draft CTP MOEs and data sources		3. CTP 1e				X (MM)
	4. Agreed upon travel demand model capabilities related to goals and objectives		4. M4				X (MM)
	5. Draft land use MOEs and data sources		5. LU10*				X (MM)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. Draft multi-modal MOEs and data sources		1a. LU10* 1b. M5				A, D
			*Iterative process between sub-processes MM7 and LU10 before going to M5				
Documentation Requirements	Consensus by MM Team on draft multi-modal MOEs						

Modeling Step 1 (M1) -- Assess Existing Model							
Purpose	Evaluate current status of travel demand model						
Outcomes	• Status report on current travel demand model • Consensus by CTP Team on current travel demand model status • Recommendation on preliminary travel demand model needs						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Valid modeling agreement, including identification of model custodian		1. CTP 1b				X (CTP)
	2. Existing travel demand model documentation		2. N/A (Model Custodian)				X (CTP)
	3. Existing data files		3. N/A (Model Custodian)				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	M Team
	1. Status report on current travel demand model		1. M4	A	A		
	2. Identification of deficiencies and uncertainties of the current travel demand model		2. M4	A	A		
	3. Recommendations on preliminary study area and other travel demand model needs		3. M4	A	A		
Documentation Requirements	Status report on current travel demand model including recommendations on preliminary model needs						

Modeling Step 2 (M2) -- Identify Model Staff Resources							
Purpose	• Identify Model Team members • Identify model partner staff resources (NCDOT and MPO)						
Outcomes	• Agreement on Model Team members • Agreement on staff resources by NCDOT and MPO						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. List of potential Model Team members		1. N/A (MPO, modeling agreement)				X (CTP)
	2. List of potential model partner staff resources		2. N/A (NCDOT, MPO)	X	X		
	3. Agreed upon CTP planning area, milestones and end date (based on AQ conformity, MTP schedule, and/or CTP schedule)		3. CTP 1b				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	M Team
	1. Model Team appointments		1. M3	D	D		
	2. Model partner staff resource appointments		2. M3	D	D		
Documentation Requirements	Documented agreement by NCDOT and MPO on Model Team members and model staff resources						

<table>
<tr><th colspan="8">Modeling Step 3 (M3) -- Discuss Preliminary Roles</th></tr>
<tr><td>Purpose</td><td colspan="7">• Identify roles of the Model Team members
• Identify roles of the model partner staff resources</td></tr>
<tr><td>Outcomes</td><td colspan="7">• Identified preliminary roles</td></tr>
<tr><td rowspan="2">Input(s)</td><td rowspan="2"></td><td rowspan="2">Comes From Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td></td><td>1. N/A</td><td></td><td>1. N/A</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Output(s)</td><td rowspan="2"></td><td rowspan="2">Goes To Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>M Team</td></tr>
<tr><td></td><td>1. Identification of preliminary roles</td><td></td><td>1. M7</td><td></td><td></td><td></td><td>A</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">Summary of preliminary roles and identification of additional staff resources needed</td></tr>
</table>

Modeling Step 4 (M4) -- Educate CTP Partners on Overall Model Capabilities							
Purpose	• Educate CTP partners on travel demand model capabilities and preliminary needs • Agree on preliminary travel demand model needs and capabilities						
Outcomes	• Understanding of travel demand model capabilities related to goals and objectives • Agreement by Model Team on preliminary travel demand model needs and capabilities						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Status report of current travel demand model		1. M1				X (M)
	2. Identification of deficiencies and uncertainties of the current travel demand model		2. M1				X (M)
	3. Recommendations on preliminary study area and other travel demand model needs		3. M1				X (M)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	M Team
	1. If needed, examples of best practices and other potential travel demand model tools to support desired goals and objectives (i.e., toll analysis)		1. Output Used Within This Step				A
	2. Summary of feedback from CTP partners on desired travel demand model capabilities		2. M6				A
	3. Agreed upon preliminary travel demand model needs including the model boundary		3. M6				A, D

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Modeling Step 4 (M4) -- Educate CTP Partners on Overall Model Capabilities (con't)							
Output(s) (con't)	4. Agreed upon travel demand model capabilities related to goals and objectives	Goes To Step #: (con't)	4. MM7				A, D
Documentation Requirements	• Technical memorandum documenting feedback from CTP partners on desired travel demand model capabilities • Consensus by Model Team, as documented in meeting documentation, on preliminary travel demand model needs and model capabilities related to goals and objectives						

Modeling Step 5 (M5) -- Establish Linkage Between Model Outputs and CTP Measures of Effectiveness							CP10
Purpose	• Document the current travel demand model outputs that support desired CTP measures of effectiveness (MOEs) • Identify gaps between current travel demand model outputs and desired CTP MOEs • Identify means to close gaps						
Outcomes	• Understanding by Model Team of the desired CTP MOEs • Understanding by CTP and sub-process teams of how the existing travel demand model can support desired CTP MOEs • Action plan for addressing the gaps between travel demand model outputs and desired CTP MOEs						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Draft CTP MOEs and data sources		1. CTP 1e				X (M)
	2. Draft land use MOEs and data sources		2. LU10				X (M)
	3. Draft multi-modal MOEs and data sources		3. MM7				X (M)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	M Team
	1. List of MOEs that will be supported by the travel demand model		1. CTP 1f, M6				A
	2. List of data required to support MOEs		2. M6				A
	3. List of desired MOEs that cannot be supported by the travel demand model		3. CTP 1f, M6				A
	4. Needed model improvements to address the gaps between travel demand model outputs and desired CTP MOEs		4. CTP 1f, M6				A
Documentation Requirements	Technical documentation summarizing the action plan for addressing the gaps between travel demand model outputs and desired CTP MOEs						

Comprehensive Transportation Planning Step 1f (CTP 1f) -- Identify CTP Measures of Effectiveness							CP11
Purpose	Develop CTP MOEs that incorporate key issues identified in the goals and objectives						
Outcomes	• CTP MOEs • Agreement by CTP Team on linkage between travel demand model outputs and desired CTP MOEs • Agreement by TAC on MOEs						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. List of desired MOEs that will be supported by the travel demand model		1. M5				X (CTP)
	2. List of desired MOEs that cannot be supported by the travel demand model		2. M5				X (CTP)
	3. Needed model improvements to address the gaps between travel demand model outputs and desired CTP MOEs		3. M5				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Agreed upon CTP MOEs that are supported by travel demand model outputs		1. M6, LU11, MM8		D		A, D
	2. Agreed upon CTP MOEs and their data sources (not supported by the travel demand model)		1. M6, LU11, MM8		D		A, D
Documentation Requirements	• Documentation of MOEs • Consensus by CTP Team, as documented in meeting documentation, on linkage between travel demand model outputs and desired CTP MOEs • Documented Agreement by TAC on MOEs						

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Comprehensive Transportation Planning Step 1f (CTP 1f) -- Identify CTP Measures of Effectiveness (con't)		
Key Considerations	Purpose	Outcomes
Environmental Considerations	Identify environmental MOEs	Environmental MOEs included in CTP MOEs
ICE	Incorporate ICE related MOEs into CTP MOEs	CTP MOEs that include ICE considerations
CIA	Incorporate community impact assessment related key issues into CTP MOEs	CTP MOEs that include community impact assessment key issues
MPO/ RPO/ NCDOT Coordination	Understanding of MOEs for goals and objectives	Documented Agreement on common MOEs for goals and objectives by LU Team, CTP Team, and TAC

10.1.7 Critical Path Points 12, 13 and 14

Description CP 12 through 14: Performance targets establish the criteria for determining if your land use and transportation plans meet your community vision. The performance targets will allow decision makers to see how well the future land development patterns and future transportation system work together to achieve the vision for the planning area.

<table>
<tr><td colspan="8">Land Use Step 11 (LU11) -- Develop Land Use Performance Targets CP12</td></tr>
<tr><td>Purpose</td><td colspan="7">• Develop recommended LU performance targets
• Agree on LU performance targets</td></tr>
<tr><td>Outcomes</td><td colspan="7">Agreement by LU Team on LU performance targets</td></tr>
<tr><td rowspan="4">Input(s)</td><td></td><td rowspan="4">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td>1. CTP MOEs that are supported by travel demand model outputs</td><td>1. CTP 1f</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td>2. Agreed upon CTP MOEs and their data sources (not supported by the travel demand model)</td><td>2. CTP 1f</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td></td><td>3. Multi-modal performance targets</td><td>3. MM8*</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td rowspan="4">Output(s)</td><td></td><td rowspan="4">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>LU Team</td></tr>
<tr><td>1. Land use performance targets</td><td>1a. CTP 1f*, MM8*
1b. CTP 1g</td><td></td><td></td><td></td><td>A, D</td></tr>
<tr><td></td><td colspan="5">*Iterative process between sub-processes MM8 and LU11 before going to CTP 1g</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Technical report documenting LU performance targets
• Consensus by LU Team on performance targets</td></tr>
</table>

Multi-Modal Step 8 (MM8) -- Develop Multi-modal Performance Targets							CP12
Purpose	• Develop multi-modal performance targets • Agree on multi-modal performance targets						
Outcomes	Agreement by MM Team on multi-modal performance targets						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Local MM performance targets		1. N/A (Local government/ transit agency)				X (MM)
	2. CTP MOEs and their linkage to travel demand model outputs		2. CTP 1f				X (MM)
	3. Agreed upon CTP MOEs and their data sources (not supported by the travel demand model)		3. CTP 1f				X (MM)
	4. Land use performance targets		4. LU11*				X (MM)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. Multi-modal performance targets		1a. CTP 1f*, LU11* 1b. CTP 1g				A, D
			*Iterative process between MM8, LU11, and CTP 1f before going to CTP 1g				
Documentation Requirements	Consensus by MM Team on multi-modal performance targets						

Comprehensive Transportation Planning Step 1g (CTP 1g) -- Develop Performance Targets							CP13
Purpose	Develop performance targets to support CTP alternatives/ scenarios analysis						
Outcomes	• Agreed upon performance targets • Resource agency feedback on performance targets						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Land use performance targets		1. LU11				X (CTP)
	2. Multi-modal performance targets		2. MM8				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. CTP performance targets		1. MM9, LU12, M6		D		A, D
Documentation Requirements	• Consensus by CTP Team on performance targets • Documented agreement by TAC on CTP performance targets • *CTP documentation Milestone: complete report outline and documentation of vision						

Key Considerations	Purpose	Outcomes
Environmental Considerations	Identify and incorporate environmental performance targets into plan performance targets	Plan performance targets that includes environmental criteria
ICE	Identify performance targets that incorporate ICE/ CIA considerations	Performance targets that include ICE/ CIA considerations
MPO/ RPO/ NCDOT Coordination	Agree upon performance targets	Documented Agreement by LU Team, CTP Team and TAC

Multi-Modal Step 9 (MM9) -- Agree on Multi-modal Analysis Tool(s) and Data Needs							CP14
Purpose	Identify potential multi-modal analysis tools and data needs						
Outcomes	• Recommended multi-modal analysis tools and data needs • Agreement by the MM Team on recommended analysis tools, data needs, and roles and responsibilities						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. CTP performance targets		1. CTP 1g				X (MM)
	2. Preliminary roles and responsibilities		2. MM2				X (MM)
	3. Multi-modal strategies		3. MM6				X (MM)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. Identification of potential tools available to do analysis and data validation guidelines		1. Output Used Within This Step				A
	2. Recommendation on multi-modal analysis tools and data needs, including MM Team roles and responsibilities		2. M6				A, D
Documentation Requirements	• Technical document on recommended multi-modal analysis tools and data needs • Consensus by MM Team on multi-modal analysis tools, data needs, and roles and responsibilities						

10.1.8 Critical Path Points 15 and 16

Description CP15 through CP16: There should be an agreement between the primary planning partners on the tools that will be used in CTP development and evaluation. This includes: where the data will come from (for example, Census, purchased employment data, GIS data layers to be used, etc.); what type of data (and the process) will need to be collected; what data (and the process) will need to be projected; and the horizon years (HY) and ultimate future year (FY) for which data will need to be projected. It is important to note that an assumption is made that the basic travel demand model structure exists and will not be developed from scratch. The land use data is needed at the parcel level. In step LU12, the LU Team develops common land use categories from the various local governments land use plans. The land use data needs to be maintained in these common land use categories for land use scenario development and future land use planning. For modeling, the land use data will also need to be converted to the established modeling categories and to the TAZ structure.

Modeling Step 6 (M6) -- Scope Model Development							CP15
Purpose	• Scope travel demand model development • Determine model specifications						
Outcomes	• Model specification and model data collection plan • Model performance standards • Agreement by the Model Team on model specifications, model data collection plan and model performance standards						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Agreed upon CTP MOEs that are supported by travel demand model outputs		1. CTP 1f				X (M)
	2. Agreed upon CTP MOEs and their data sources (not supported by the travel demand model)		2. CTP 1f				X (M)
	3. CTP performance targets		3. CTP 1g				X (M)
	4. Summary of feedback from CTP partners on desired travel demand model capabilities		4. M4				X (M)
	5. Agreed upon preliminary travel demand model needs including the model boundary		5. M4				X (M)

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Modeling Step 6 (M6) -- Scope Model Development (con't)							
	6. Recommendation on multi-modal analysis tools and data needs		MM9				X (M)
Input(s) (con't)	7. Tabulation of existing data sets, including year and source of data. For example: • Traffic counts • Land Use (Physical, Socio-economic) • Transit ridership • VMT • ROW inventory (include Bike/ Pedestrian) • Transit route data • Functional classification • Environmental screening data • Census • Behavioral survey data • GIS data (TAZs, Centerlines, etc.) • Aerial photography • Project inventory • Commercial vehicle data (Goods Movement) • Land use/ demographic data • Horizon years • Speed data (highway/ bus)	Comes From Step #: (con't)	6. N/A (Various)				X (M)

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Modeling Step 6 (M6) -- Scope Model Development (con't)							
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	M Team
	1. Model specifications, including: • Model elements to help meet MOEs • Calibration parameters/ performance standards • Identification of data sets needed for inputs, calibration and reasonableness tests (see above list of inputs) • Guidelines for reasonableness checks on input data		1. CTP 1h, M7, M9				A, D
	2. Model data collection plan		2. CTP 1h, M7				A, D
	3. TAZ structure		3. LU17				A
	4. Identification of additional staff resources (time and expertise) needed to support model development		4. M7				A
Documentation Requirements	• Technical memorandum documenting model specifications and model data collection plan • Consensus by Model Team on model specifications including performance standards and model data collection plan						

Land Use Step 12 (LU12) -- Develop Agreement on LU Data, Analysis, Tools and Suppliers							CP15
Purpose	Develop agreement on conceptual land use scenarios and land use analysis tool, including data/ sources/ suppliers						
Outcomes	Agreed upon conceptual land use scenarios and land use analysis tool, including data/ sources/ suppliers						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Available land use data		1. N/A (Local governments)				X (LU)
	2. CTP performance targets		2. CTP 1g				X (LU)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. LU data standards and gap analysis of data availability compared to standards		1. Output Used Within This Step				A
	2. Common LU categories to be used in the CTP process from categories in existing individual LU plans		2. Output Used Within This Step				A
	3. Agreed upon conceptual existing and proposed land use scenarios (e.g. baseline, trend line, alternatives) and land use analysis tool, including: • common LU categories • data, sources, and suppliers (including how to fill gaps identified in the evaluation summary)		3. CTP 1h				D
Documentation Requirements	Documented Agreement by LU Team on conceptual land use scenarios and land use analysis tool, including data/ sources/ suppliers						

Air Quality Step 2 (AQ2) -- Conduct Pre-Interagency Consultation (IC) Meeting							CP15
Purpose	• Review tools and data elements needed to compete the process • Agree on and inform partners of schedule and plan parameters, horizon years and future year, and evaluation methods						
Outcomes	• Understanding of tools and data elements that will be needed for conformity process • Agreement by AQ Team on schedule and plan parameters, horizon years and future year, and evaluation methods						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Last conformity report		1. N/A (MPO)	X	X		
	2. Draft conformity process schedule (CPS)		2. N/A (AQ team lead develops)	X			X (AQ)
	3. Draft transportation conformity pre-analysis consensus plan (TCPCP)		3. N/A (AQ team lead develops)	X			X (AQ)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT/ FHWA	MPO/RPO	Local Gov't	AQ Team
	1. Pre-IC meeting minutes, action items, contact list, draft IC meeting agenda		1. AQ3				A
	2. Draft CPS and draft TCPCP, including needed horizon years and future year		2. AQ3, CTP 1h				A, D
	3. Agency roles for the IC meeting and meeting facilitator		3. AQ3				A
Documentation Requirements	• Consensus by AQ Team on draft CPS and draft TCPCP • Draft IC meeting agenda						

Comprehensive Transportation Planning Step 1h (CTP 1h) -- Agreement on Tools and Data Needs							CP16
Purpose	• Identify needed data with sources and tools • Identify CTP horizon years and future year						
Outcomes	• Agreed upon tools and data to be used • Agreement by TAC on horizon years and future year and on conceptual land use scenarios						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Model specifications, including: • Model elements to help meet MOEs • Calibration parameters/ performance standards • Identification of data sets needed for inputs, calibration and reasonableness tests • Guidelines for reasonableness checks on input data		1. M6				X (CTP)
	2. Model data collection plan		2. M6				X (CTP)
	3. Agreed upon conceptual existing and proposed land use scenarios (e.g. baseline, trend line, alternatives) and land use analysis tool, including: • common LU categories • who is providing what data • how to fill gaps identified in evaluation summary		3. LU12				X (CTP)

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Comprehensive Transportation Planning Step 1h (CTP 1h) -- Agreement on Tools and Data Needs (con't)							
Input(s) (con't)	4. Draft conformity process schedule (CPS) and draft transportation conformity pre-analysis consensus plan (TCPCP), including needed horizon years and future year	Comes From Step #: (con't)	4. AQ2				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Agreement on data, sources and tools		1. CTP2a, M7, LU13, MM10	D	D		A, D
	2. Agreement by TAC on horizon years and future year		2. CTP2a, M7, LU13, MM10		D		
Documentation Requirements	• Consensus by CTP Team on data, sources and tools, including model specifications and conceptual land use scenarios • Formal Multi-party Agreement by NCDOT and MPO/ RPO on data, sources and tools, including model specifications • Documented Agreement by TAC on horizon years and future year and on conceptual land use scenarios						

Key Considerations	Purpose	Outcomes
Environmental Considerations	Identify environmental data for use in CTP development	Identification of environmental data, source and level
ICE/ CIA	Ensure that ICE/ CIA data are incorporated into CTP process	Identification of needed ICE/ CIA data
MPO/ RPO/ NCDOT Coordination	• Investigate data analysis, tools, etc. • Explore and evaluate tools and data to be used • Inform partners of schedule and plan parameters, horizon years and future year, and evaluation methods	• Consensus by LU and CTP Teams on data analysis, tools, etc. • Formal Multi-party Agreement on tools and data needs • Consensus among AQ Team

10.2 Conduct Needs Assessment (CTP 2)

The second step of the CTP process is "Conduct Needs Assessment". This is primarily for updating the existing travel demand model, if needed, tool development for additional analysis that may be needed, data collection and projection (for socioeconomic data), and an analysis of the current transportation system. This step begins with agreement by the planning partners of the roles, responsibilities, and schedule for developing the CTP and concludes with agreeing upon the future transportation system deficiencies.

Success in CTP 2 (Conduct Needs Assessment) is demonstrated by agreement on data, participation, and agreement on base and future year deficiencies.

Below is a description of the critical path through CTP 2 – Conduct Needs Assessment:

10.2.1 Critical Path Points 17 and 18

Description CP17 through CP18: Due to the reliance on multiple partners and multiple jurisdictions, it is critical to the success of the CTP process to determine who will be responsible for various elements of the CTP process and establish milestones and deadlines for the CTP study. As the ultimate completion is most likely driven by a plan update or conformity requirement, the planning partners should evaluate resources that will be put towards the planning effort.

Modeling Step 7 (M7) -- Establish Project Plan for Model Development							CP17
Purpose	Develop travel demand model update and/or enhancement project plan including schedule, tasks, costs, roles, and responsibilities						
Outcomes	Agreed upon model development project plan that incorporates parts of overall CTP project plan already established (i.e., timeframe, scope)						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Agreement on data, sources and tools		1. CTP 1h				X (M)
	2. Agreement by TAC on horizon years and future year		2. CTP 1h				X (M)
	3. Identification of preliminary roles		3. M3				X (M)

Table Continued on Next Page

Modeling Step 7 (M7) -- Establish Project Plan for Model Development (con't)							
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	M Team
	1. Identification of critical modeling milestones and expected output		1. Output Used Within This Step				A
	2. Agreed upon model development project plan based on critical path and available resources*		2. CTP 2a				D
			* Iterative process between the CTP Team and the Model, Land Use, and Multi-modal teams to develop the CTP Project Plan (including the sub-process project plans)				
Documentation Requirements	Documented Agreement by the Model Team on the model development project plan						

<table>
<tr><td colspan="8">Land Use Step 13 (LU13) -- Establish Project Plan for Land Use CP17</td></tr>
<tr><td>Purpose</td><td colspan="7">Establish detailed LU project plan with schedule, tasks, roles, and responsibilities</td></tr>
<tr><td>Outcomes</td><td colspan="7">• LU project plan from land use partners
• Agreement by LU Team on project plan</td></tr>
<tr><td rowspan="3">Input(s)</td><td></td><td rowspan="3">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td>1. Agreement on data, sources and tools</td><td>1. CTP 1h</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td></td><td>2. Agreement by TAC on horizon years and future year</td><td>2. CTP 1h</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td rowspan="4">Output(s)</td><td></td><td rowspan="4">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>LU Team</td></tr>
<tr><td>1. Proposed project plan for LU sub-process*</td><td>1. CTP 2a</td><td></td><td></td><td></td><td>A, D</td></tr>
<tr><td colspan="5">*Iterative process between the CTP Team and the Model, Land Use, and Multi-modal teams to develop the CTP Project Plan (including the sub-process project plans)</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">Documented Agreement by the LU Team on the LU project plan</td></tr>
</table>

Multi-Modal Step 10 (MM10) -- Establish Project Plan for Multi-modal							CP17
Purpose	Establish detailed MM project plan with schedule, tasks, roles, and responsibilities						
Outcomes	Agreement by MM Team on project plan						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Agreement on data, sources and tools		1. CTP 1h				X (MM)
	2. Agreement by TAC on horizon years and future year		2. CTP 1h				X (MM)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. Proposed project plan for MM sub-process*		1. CTP 2a				A, D
			* Iterative process between the CTP Team and the Model, Land Use, and Multi-modal teams to develop the CTP Project Plan (including the sub-process project plans)				
Documentation Requirements	Documented Agreement by the MM Team on MM project plan						

Comprehensive Transportation Planning Step 2a (CTP 2a) -- Establish Schedule and Roles/ Responsibilities							CP18
Purpose	Assemble and synchronize draft project plans from sub-processes, adding elements from the CTP mid-level process (yellow steps)						
Outcomes	• Schedule for CTP; feedback to sub-process schedules • Detailed roles and responsibilities • Agreement on schedule and roles and responsibilities						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Commitment by each CTP Team member on participation		1. CTP 1b				X (CTP)
	2. Public Involvement Plan including list of interested parties		2. CTP 1c				X (CTP)
	3. Agreement on data, sources and tools		3. CTP 1h				X (CTP)
	4. Agreement by TAC on horizon years and future year		4. CTP 1h				X (CTP)
	5. Agreed upon model development project plan based on critical path and available resources		5. M7				X (CTP)
	6. Agreed upon CTP process and resources to support it by local government/ MPO/RPO		6. LU6				X (CTP)
	7. Agreed upon land use process, tools, and methods, including LU Team roles and responsibilities		7. LU6				X (CTP)
	8. Proposed project plan for LU sub-process		8. LU13				X (CTP)
	9. Proposed project plan for MM sub-process		9. MM10				X (CTP)

Table Continued on Next Page

Comprehensive Transportation Planning Step 2a (CTP 2a) -- Establish Schedule and Roles/ Responsibilities (con't)							
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. CTP project plan, to include milestones, end date, public involvement plan, tools, data needs, schedule, and roles/ responsibilities*		1. MM11, LU14, M8	D	D		A, D
			* Iterative process between the CTP Team and the Model, Land Use, and Multi-modal teams to develop the CTP Project Plan (including the sub-process project plans)				
Documentation Requirements	• Consensus by CTP Team on detailed roles and responsibilities and CTP project plan • Formal Multi-party Agreement by NCDOT and MPO/ RPO on CTP project plan						

Key Considerations	Purpose	Outcomes
Environmental Considerations	Incorporate agencies' roles and responsibilities into CTP project plan	Commitment by agencies to fulfill defined roles and responsibilities
CIA	Assign responsibility for creating CIA data layers (for any needed/ agreed upon layers)	Entity(ies) charged with creating data layers
MPO/ RPO/ NCDOT Coordination	Establish which member(s) of the CTP Team can accomplish a particular task and when it is needed	Formal Multi-party Agreement on delegated tasks, resources and schedule

10.2.2 Critical Path Points 19, 20, 21, 22, 23, 24 and 25

Description CP19 through CP25: The basis for the entire plan development rests on getting accurate data and developing good planning tools. This means gathering a wide range of data from multiple sources and partners. This includes data needs for the critical path such as: base year land use data and transportation system data (for example, roadway attributes, transit, pedestrian, or bicycle information), and non-critical path needs such as: financial data (costs and revenue) and environmental information. In addition to collecting data, it must be checked for accuracy and the base year land use and transportation system data and analysis tool(s) will be endorsed by the planning partners.

<table>
<tr><td colspan="7">Comprehensive Transportation Planning Step 2b (CTP 2b) – Collect/ Update Data CP19</td></tr>
<tr><td>Purpose</td><td colspan="6">Collect and update CTP data related to:
• Transportation system
• Environmental features
• Community characteristics- Community Understanding Report (CUR)
• ICE Pre-Screening
• Financial information
• Other data as appropriate
Update the preliminary Environmental Features Map, CTP ICE Pre-screening maps, and Community Understanding Report (CUR), if needed (developed in CTP 1a)</td></tr>
<tr><td>Outcomes</td><td colspan="6">Collected data (data collection for Modeling, Land Use, Multi-modal occurs in the sub-processes)</td></tr>
<tr><td rowspan="3">Input(s)</td><td></td><td rowspan="3">Comes From Step #:</td><td></td><td colspan="3">Responsible Entity for Obtaining Inputs
X (Team Name)</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td>1. Current project costs estimates</td><td>1. N/A (current CTP, TIP, Capital Improvement Program, etc.)</td><td></td><td></td><td></td><td>X (CTP)</td></tr>
<tr><td></td><td>2. Past federal, state, local, and private revenues and expenditures</td><td></td><td>2. N/A (current CTP, TIP, Capital Improvement Program, etc.)</td><td></td><td></td><td></td><td>X (CTP)</td></tr>
</table>

Table Continued on Next Page

Comprehensive Transportation Planning Step 2b (CTP 2b) – Collect/ Update Data (con't)							
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Environmental Features Map, CTP ICE Prescreening maps, and CUR		1. CTP 2c				A
	2. Table of past revenues and expenditures by funding source, agency, division, and MPO area		2. CTP 2c				A
	3. Other data as appropriate		3. CTP 2c				A
Documentation Requirements	Collected data and metadata (sources, creator, date, etc.)						

Key Considerations	Purpose	Outcomes
Environmental Considerations	Collect and/ or update environmental data, including existing mitigation sites (EEP)	Incorporate data into CTP
ICE	Collect additional ICE data	Additional ICE data collected to inform CTP process
CIA	Collect additional CIA data	Additional CIA data collected to inform CTP process (primarily new GIS data layers, if any)
Public Involvement	Possibly, if it is the only way to get needed data, solicit info from targeted/ special groups	Community characteristics inventory (CCI) data

Modeling Step 8 (M8) -- Collect Model Data							CP19
Purpose	Collect necessary model data						
Outcomes	Data collected as specified by model development project plan						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. CTP project plan, to include milestones, end date, public involvement plan, tools, data needs, schedule, and roles/ responsibilities		1. CTP 2a				X (M)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	M Team
	1. Collected data		1. M9				A
Documentation Requirements	N/A						

Land Use Step 14 (LU14) -- Collect LU Data							CP19
Purpose	Collect necessary land use data						
Outcomes	Land use data to support integrated process						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Existing parcel data including vacant land		1. N/A (Local GIS)				X (LU)
	2. CTP project plan, to include milestones, end date, public involvement plan, tools, data needs, schedule, and roles/ responsibilities		2. CTP 2a				X (LU)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Parcel level land use data in maps and tables, including: • Household and employment data by model categories • Data by common LU categories, including vacant land		1. LU15				A
Documentation Requirements	Parcel level LU data in maps and tables						

Multi-Modal Step 11 (MM11) -- Collect Multi-modal Data							CP19
Purpose	Collect multi-modal data						
Outcomes	Multi-modal data						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. CTP project plan, to include milestones, end date, public involvement plan, tools, data needs, schedule, and roles/ responsibilities		1. CTP 2a				X (MM)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. Multi-modal base year data		1. MM12				A
Documentation Requirements	Tabulated multi-modal base year data						

Comprehensive Transportation Planning Step 2c (CTP 2c) -- Quality Check Data							CP20
Purpose	Validate CTP data elements for: • Environmental features • Community characteristics- Community Understanding Report (CUR) • ICE Pre-Screening • Financial information • Other data as appropriate						
Outcomes	Validated CTP data (Model, Land Use, and Multi-modal data are validated in the sub-processes)						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Validated CTP data (not including sub-processes)		1. CTP 2d				A, D
Documentation Requirements	Consensus by CTP Team on CTP data (not including sub-process data)						

Key Considerations	Purpose	Outcomes
Public Involvement	Validate community characteristics, environmental features, and other data by the public and resource agencies	Validated data

<table>
<tr><td colspan="8">Modeling Step 9 (M9) -- Validate Model Data CP20</td></tr>
<tr><td>Purpose</td><td colspan="7">Validate travel demand model data</td></tr>
<tr><td>Outcomes</td><td colspan="7">Preliminary validation of travel demand model data</td></tr>
<tr><td rowspan="2">Input(s)</td><td></td><td rowspan="2">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>1. Model specifications, including:
• Model elements to help meet MOEs
• Calibration parameters/ performance standards
• Identification of data sets needed for inputs, calibration and reasonableness tests
• Guidelines for reasonableness checks on input data</td><td>1. M6</td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td rowspan="2">Output(s)</td><td></td><td rowspan="2">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>1. Preliminary validated data sets</td><td>1. M10</td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>M Team</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">Draft technical memorandum documenting data validation process and results</td></tr>
</table>

Land Use Step 15 (LU15) -- Validate LU Data							CP20
Purpose	Validate that LU data reasonably reflects conditions on the ground and is adequate to support an integrated land use and transportation planning process						
Outcomes	Validated land use data with carefully defined data elements and documentation						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Land use data reviewed by individual planning jurisdictions		1. Output Used Within This Step			A	
	2. Feedback to the LU Team on any modifications needed to the land use data		2. LU16			A	
Documentation Requirements	Letter or memo transmitting local board meeting minutes to LU Team						

Multi-Modal Step 12 (MM12) -- Validate Multi-modal Data							CP20
Purpose	Validate multi-modal data						
Outcomes	Validated multi-modal data						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. Validated multi-modal data		1. MM13				A
Documentation Requirements	Validated multi-modal data						

<table>
<tr><td colspan="8">Modeling Step 10 (M10) -- Reach Consensus on Model Data CP21</td></tr>
<tr><td>Purpose</td><td colspan="7">• Discuss and review travel demand model data and validation results
• Reach consensus on travel demand model data by Model Team</td></tr>
<tr><td>Outcomes</td><td colspan="7">Agreement by Model Team on travel demand model data</td></tr>
<tr><td rowspan="2">Input(s)</td><td rowspan="2"></td><td rowspan="2">Comes From Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td></td><td>1. N/A</td><td></td><td>1. N/A</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Output(s)</td><td rowspan="2"></td><td rowspan="2">Goes To Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>M Team</td></tr>
<tr><td></td><td>1. Validated travel demand model data sets</td><td></td><td>1. CTP 2d</td><td></td><td></td><td></td><td>A, D</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">Consensus by Model Team, as documented in a final technical memorandum, on data validation process and results</td></tr>
</table>

<table>
<tr><th colspan="8">Land Use Step 16 (LU16) -- Reach Consensus on Existing Conditions</th></tr>
<tr><td>Purpose</td><td colspan="7">• Reach agreement by LU Team that data reflects existing conditions
• Determine land use baseline</td></tr>
<tr><td>Outcomes</td><td colspan="7">Agreement by LU Team on existing conditions and baseline</td></tr>
<tr><td rowspan="2">Input(s)</td><td rowspan="2"></td><td rowspan="2">Comes From Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td></td><td>1. N/A</td><td></td><td>1. N/A</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Output(s)</td><td rowspan="2"></td><td rowspan="2">Goes To Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>LU Team</td></tr>
<tr><td></td><td>1. Consensus on existing land use conditions by LU Team (including modifications and/ or responses based on local government input)</td><td></td><td>1. LU17</td><td></td><td></td><td></td><td>A, D</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Technical report of existing LU conditions
• Consensus by LU Team on existing LU conditions</td></tr>
</table>

Land Use Step 17 (LU17) -- Describe Existing Conditions Numerically							CP21
Purpose	Describe existing land use conditions numerically by modeling category and TAZs						
Outcomes	Numerical description of existing land use conditions sufficient to support an integrated land use and transportation planning process						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. TAZ structure		1. M6				X (LU)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Existing land use by TAZ (for travel demand model or other analysis tools)		1. CTP 2d				A
Documentation Requirements	Letter or memo transmitting LU data by TAZ to CTP Team						

<table>
<tr><td colspan="8">Multi-Modal Step 13 (MM13) – Reach Consensus on Multi-modal Base Year Data CP21</td></tr>
<tr><td>Purpose</td><td colspan="7">Establish multi-modal base year data</td></tr>
<tr><td>Outcomes</td><td colspan="7">Agreement on multi-modal base year data</td></tr>
<tr><td rowspan="2">Input(s)</td><td rowspan="2"></td><td rowspan="2">Comes From Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td></td><td>1. N/A</td><td>1. N/A</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Output(s)</td><td rowspan="2"></td><td rowspan="2">Goes To Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>MM Team</td></tr>
<tr><td></td><td>1. Validated multi-modal base year data</td><td>1. CTP 2d, MM14, MM15</td><td></td><td></td><td></td><td>A, D</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Technical report on validated multi-modal base year data
• Consensus by MM Team on multi-modal base year data</td></tr>
</table>

Comprehensive Transportation Planning Step 2d (CTP 2d) -- Endorse Data							CP22
Purpose	• Assemble sub-process collected data (Model, LU, Multi-Modal) and CTP Team collected data (including ICE Pre-Screening maps), as well as the validation of these data sets • Review of data sources and endorsement by TAC						
Outcomes	• CTP Team recommendation for endorsement of all data sets • Endorsement by TAC of data sets and sources						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Validated travel demand model data sets		1. M10				X (CTP)
	2. Existing land use by TAZ (for travel demand model or other analysis tools)		2. LU17				X (CTP)
	3. Validated multi-modal base year data		3. MM13				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Agreed upon data sets and sources		1. M11, LU21		D		A, D
Documentation Requirements	• Consensus by CTP Team on sub-process data • Policy Board Action by TAC on validated data sets and sources (CTP data and sub-process data)						

Key Considerations	Purpose	Outcomes
MPO/ RPO/ NCDOT Coordination	Discuss, review, and agree upon travel demand model data	Consensus on travel demand model data by Model Team and CTP Team

Modeling Step 11 (M11) -- Build and Calibrate Model							CP23
Purpose	• Develop, calibrate, and validate the base year travel demand model • Test functionality of the travel demand model using future year land use data • Obtain agreement on use of the validated travel demand model						
Outcomes	• Validated travel demand model • Agreement by Model Team on the validated travel demand model						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Agreed upon data sets and sources		1. CTP 2d				X (M)
	2. Preliminary future year LU trend line		2. LU18				X (M)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	M Team
	1. Validated and tested travel demand model		1. CTP 2e				A
	2. Documentation of the travel demand model development and performance against agreed upon model specifications		2. CTP 2e				A
	3. Model Team agreement on the validated travel demand model		3. CTP 2e				D
	4. Model application user's guide		4. Final Product				A
Documentation Requirements	• Model development report • Documented Agreement by Model Team, in a technical memorandum stating agreement by all parties, on the travel demand model validation process and results • Model Application User's Guide						

Land Use Step 18 (LU18) -- Estimate Future Year LU Numerically for Multiple LU Scenarios							CP23
Purpose	Estimate future year land use numerically						
Outcomes	Future year land use that is consistent to support integrated land use and transportation planning process						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Location of high priority land uses		1. N/A (Local land use plans)			X	
	2. Range of land use characteristics to be tested (number of strategies, conceptual growth patterns and intensity)		2. LU9				X (LU)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Population and employment control totals		1. Output Used Within This Step				A
	2. Preliminary future year LU trend line		2. M11				A
	3. Future year LU data by TAZ for each land use scenario, by LU common categories (include assessment of differences between the CTP LU proposed projections and the current local land use plans, if any)		3. LU19			A	
	4. Future year LU data by TAZ for each land use scenario, by modeling categories		4. LU19				A
Documentation Requirements	Maps and tables of future year LU data by TAZ, as well as maps and documentation (tables and/ or text description) of the differences between the CTP LU proposed projections and the current local land use plans, if applicable						

<table>
<tr><td colspan="8">Modeling Step 12 (M12) -- Evaluate MOEs Against Model CP24</td></tr>
<tr><td>Purpose</td><td colspan="7">Evaluate MOEs for suitability using the validated travel demand model</td></tr>
<tr><td>Outcomes</td><td colspan="7">Technical memo that documents MOE evaluation process and application guidance</td></tr>
<tr><td rowspan="2">Input(s)</td><td rowspan="2"></td><td rowspan="2">Comes From Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td></td><td>1. Updated data sets as needed to test and refine MOEs</td><td></td><td>1. N/A</td><td></td><td></td><td></td><td>X (M)</td></tr>
<tr><td rowspan="4">Output(s)</td><td rowspan="2"></td><td rowspan="4">Goes To Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>M Team</td></tr>
<tr><td>1. Technical memo documenting ability of the travel demand model to support MOEs</td><td>1. CTP 2e</td><td></td><td></td><td></td><td>A</td></tr>
<tr><td>2. Recommendation to modify MOEs if needed</td><td>2. CTP 2e</td><td></td><td></td><td></td><td>D</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Technical memo documenting ability of the travel demand model to support MOEs including recommendation to modify MOEs if needed
• Consensus by Model Team on recommendation to modify MOEs if needed</td></tr>
</table>

Comprehensive Transportation Planning Step 2e (CTP 2e) -- Establish Baseline							CP25
Purpose	Validate analysis tool(s) performance for baseline						
Outcomes	CTP Team and TAC Agreement on valid analysis tool(s) performance						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Validated and tested travel demand model		1. M11				X (CTP)
	2. Documentation of the travel demand model development and performance against agreed upon model specifications		2. M11				X (CTP)
	3. Model Team agreement on the validated travel demand model		3. M11				X (CTP)
	4. Technical memo documenting ability of the travel demand model to support MOEs		4. M12				X (CTP)
	5. Recommendation to modify MOEs if needed		5. M12				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. CTP Team agreement on validity of analysis tool(s)		1. CTP 2f				D
	2. TAC agreement on validity of analysis tool(s)		2. M13		D		
Documentation Requirements	• Documented Agreement by CTP Team on validity of analysis tool(s) • Policy Board Action by TAC on validity of analysis tool(s)						

10.2.3 Critical Path Points 26, 27, 28, 29, 30 and 31

Description CP26 through CP31: Once the base year information has been endorsed, future year data is needed to evaluate the transportation system. This will include the development of multiple land use scenarios. Each land use scenario will include its own allocation of data to the zone or district level. Prior to moving forward and identifying future year deficiencies, the TAC will endorse the future year land use scenarios.

<table>
<tr><th colspan="9">Land Use Step 19 (LU19) -- Build Consensus on Future Year LU Data</th></tr>
<tr><td>Purpose</td><td colspan="8">Ensure that future year LU data supports agreed upon land use scenarios</td></tr>
<tr><td>Outcomes</td><td colspan="8">Agreement by LU Team that future year LU data supports agreed upon land use scenarios</td></tr>
<tr><td rowspan="2">Input(s)</td><td rowspan="2"></td><td rowspan="2">Comes From Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td></td><td>1. N/A</td><td></td><td>1. N/A</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">Output(s)</td><td rowspan="2"></td><td rowspan="3">Goes To Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>LU Team</td></tr>
<tr><td>1. Consensus that future year LU data supports agreed upon land use scenarios</td><td>1. LU20</td><td></td><td></td><td></td><td>D</td></tr>
<tr><td>Documentation Requirements</td><td colspan="8">Consensus by LU Team that future year LU data supports agreed upon land use scenarios to be sent to local land use agencies (along with maps, tables, and other documentation from LU18)</td></tr>
</table>

Land Use Step 20 (LU20) -- Endorse Future Year LU Data							CP26
Purpose	Validate that future year LU data meets reasonableness checks and adequately supports an integrated land use and transportation planning process						
Outcomes	Agreement by local governments on future year LU data for each land use scenario, including acknowledgment of differences between CTP LU projections and current local land use plans, if any						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Agreed upon future year LU data for each land use scenario		1. CTP 2g, MM14			D	A
Documentation Requirements	Policy Board Action by local governments on future year LU data for each land use scenario						

Multi-Modal Step 14 (MM14) – Forecast Multi-modal/ Transit Data							CP27
Purpose	Establish future year multi-modal/ transit network and service data						
Outcomes	Agreement by MM Team on future year multi-modal/ transit network and service data						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. List and status of existing multi-modal plans and policies		1. MM3				X (MM)
	2. Identification of gaps (missing or inadequate plans and policies)		2. MM3				X (MM)
	3. Agreed upon future year LU data for each land use scenario		3. LU20				X (MM)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. Agreed upon future year multi-modal/ transit network and service data		1. CTP 2g, M13, MM15				A, D
Documentation Requirements	• Technical report with future year multi-modal/ transit network and service data • Consensus by MM Team on future year multi-modal/ transit network and service data						

Comprehensive Transportation Planning Step 2f (CTP 2f) -- Identify Existing Deficiencies							
Purpose	Identify existing system deficiencies through: • Travel Demand Model • Other analysis • Public input						
Outcomes	Agreement by CTP Team on existing system deficiencies						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Input from public involvement		1. N/A (Public involvement process)				X (CTP)
	2. CTP Team agreement on validity of analysis tool(s)		2. CTP 2e				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Existing system deficiencies		1. MM13, M15, LU21				A, D
Documentation Requirements	Consensus by CTP Team on existing system deficiencies						

Key Considerations	Purpose	Outcomes
MPO/ RPO/ NCDOT Coordination	• Identify existing deficiencies • Reasonableness check of performance targets	Consensus on existing deficiencies
Public Involvement	• Solicit deficiency information from the public • Review and validate existing deficiencies	• Identified deficiencies • Public understanding of existing deficiencies

Comprehensive Transportation Planning Step 2g (CTP 2g) -- Forecast Data							CP28
Purpose	• Build consensus on and endorse future year constraints • Identify multi-modal priorities						
Outcomes	• Reasonable check of constraints • Agreement by CTP Team on land use and financial projections and multi-modal constraints, priorities, and strategies • Endorsement of future year multi-modal constraints by transit policy boards						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Agreed upon future year LU data for each land use scenario		1. LU20				X (CTP)
	2. Future year multi-modal/ transit network and service data		2. MM14				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Financial projections by horizon year		1. CTP 2h				A, D
	2. Land use and financial projections		2. M13				D
	3. Future year multi-modal constraints, priorities, and strategies (including assessment of level of importance of various strategies)		3. M13				A, D
	4. Future year (existing plus committed) transportation projects		4. M13				A, D
Documentation Requirements	• Consensus by CTP Team on land use and financial projections and multi-modal constraints, priorities, and strategies • Policy Board Action by transit policy boards to endorse future year multi-modal constraints						

Table Continued on Next Page

Comprehensive Transportation Planning Step 2g (CTP 2g) -- Forecast Data (con't)		
Key Considerations	Purpose	Outcomes
ICE	Incorporate ICE data future year LU TAZ structures	TAC structure data that includes ICE information
MPO/ RPO/ NCDOT Coordination	• Determine LU future year and data consistency • Project future revenues	• Consensus by LU and CTP Teams • Consensus on overall revenues and sources

Modeling Step 13 (M13) -- Develop Future Year Baseline							CP29
Purpose	• Develop future year baseline, where future year baseline is defined as assumed future conditions (existing plus committed roadway, transit, and other transportation elements, trend land use, policies, and all other assumptions remaining constant) to be used for comparison when doing future year alternative and scenario analysis • Reach consensus on future year baseline by Model Team						
Outcomes	• Agreement by Model Team on future year baseline • Recommended future year baseline						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. TAC agreement on validity of analysis tool(s)		1. CTP 2e				X (M)
	2. Land use and financial projections		2. CTP 2g				X (M)
	3. Future year multi-modal constraints, priorities, and strategies (including assessment of level of importance of various strategies)		3. CTP 2g				X (M)
	4. Future year (existing plus committed) transportation projects		4. CTP 2g				X (M)
	5. Future year multi-modal/ transit network and service data		5. MM14				X (M)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	M Team
	1. Future year baseline		1. CTP 2h				A
	2. Technical memo documenting future year baseline		2. CTP 2h				A, D
Documentation Requirements	Consensus by Model Team, as documented in a technical memorandum, on future year baseline						

Comprehensive Transportation Planning Step 2h (CTP 2h) -- Reasonableness Check of Data							CP30
Purpose	Validate reasonableness of future year data: • Network (Existing and Committed) • Land Use • Financial • Multi-modal						
Outcomes	Recommendation from CTP Team on future year projections						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Future year baseline		1. M13				X (CTP)
	2. Technical memo documenting future year baseline		2. M13				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Validated future year land use (for each land use scenario), financial, and other data		1. CTP 2i				A, D
Documentation Requirements	Consensus by CTP Team on validated future year data						

Key Considerations	Purpose	Outcomes
Public Involvement	Review and validate projected/ future transportation, financial, growth, and LU data	Public understanding of future transportation, financial, growth, and LU data

Comprehensive Transportation Planning Step 2i (CTP 2i) -- Endorse Future Data							CP31
Purpose	Endorsement of data (future year) by TAC for multiple land use scenarios, if applicable						
Outcomes	Endorsed future year data by TAC						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Finalized future year data for CTP analysis		1. M14		D		
Documentation Requirements	Policy Board Action by TAC to endorse future year data (control totals and distribution for multiple land use scenarios, if applicable)						

Key Considerations	Purpose	Outcomes
ICE	Acknowledge environmental considerations (including ICE) as factors in endorsing future year data	Endorsed future year data that reflect environmental considerations
MPO/ RPO/ NCDOT Coordination	Agree on future year baseline	Documented Agreement on the future year baseline by TAC
Public Involvement	Buy-in that information given earlier has been incorporated into projections. The Public includes the business community and community/ special interest groups.	Buy-in on projections or suggestions for modifications of future data

10.2.4 Critical Path Points 32, 33, 34 and 35

Description CP32 through 35: The planning partners agree with the problem areas that need some type of transportation service improvement (for example, roadway capacity improvement, transit service, bicycle or pedestrian facilities). The "Identified Problem" section of the Problem Statement will be completed. It is possible that deficiencies in the transportation system, especially in regards to the non-highway modes, may be identified by a lack of service or facilities.

Before evaluating constraints it is important to identify the broad spectrum of alternatives that will be considered. It is also important to ensure that there is consistency between different elements that will ultimately go into evaluating alternatives and scenarios. Basically, it is important to ensure that the land use policies and desires match desired multi-modal alternatives and there is an analysis tool or tools available to evaluate various alternatives. These policy constraints provide the basis for moving forward into the next High-Level CTP Step (Alternatives Analysis).

Modeling Step 14 (M14) -- Identify Future Transportation System Deficiencies							CP32
Purpose	Identify future transportation system deficiencies using future year baseline						
Outcomes	Documented future transportation system deficiencies						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Finalized future year data for CTP analysis		1. CTP 2i				X (M)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	M Team
	1. Technical memo documenting future year deficiencies including MOEs		1. CTP 2j				A
Documentation Requirements	Future transportation system deficiencies documented in a technical memorandum						

Comprehensive Transportation Planning Step 2j (CTP 2j) -- Identify Future Deficiencies							CP33
Purpose	Identify future deficiencies using forecasted data, partner and public input, and policy constraints						
Outcomes	Agreement by CTP Team on future year system deficiencies						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Public input		1. N/A (Public involvement process)				X (CTP)
	2. Policy constraints		2. N/A (Local government, MPO/RPO, NCDOT)	X	X	X	
	3. Technical memo documenting future year deficiencies including MOEs		3. M14				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Future year system deficiencies based on current LU plans and trends, as well as other LU scenarios to be tested, if applicable		1. LU22, M15, MM15				A, D
	2. Initial information for Problem Statements		2. CTP 3b, M15				A, D
Documentation Requirements	• Consensus by CTP Team on documented future year system deficiencies and initial information for problem statements • *CTP documentation Milestone: complete documentation of methodology, analysis tool, and results of deficiencies analysis						

Key Considerations	Purpose	Outcomes
MPO/ RPO/ NCDOT Coordination	Identify policy/ land use constraints and future deficiencies (including reasonableness check of modeled future year deficiencies)	Consensus on land use constraints and future deficiencies by LU Team
Public Involvement	Review and get public input on future transportation deficiencies	Public understanding of and input on future transportation deficiencies

Multi-Modal Step 15 (MM15) -- Identify Future Year Multi-modal Policy Constraints/ Opportunities							CP34
Purpose	Identify future year multi-modal policy constraints/ opportunities						
Outcomes	Recommendation of future year multi-modal constraints/ opportunities						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Benchmark/ peer comparisons as examples		1. N/A (Research best practices)				X (MM)
	2. Validated multi-modal base year data		2. MM13				X (MM)
	3. Future year multi-modal/ transit network and service data		3. MM14				X (MM)
	4. Future year system deficiencies based on current LU plans and trends, as well as other LU scenarios to be tested, if applicable		4. CTP 2j				X (MM)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. Preliminary future year multi-modal constraints and opportunities		1. Output Used Within This Step				A
	2. Agreed upon future year multi-modal policy constraints, opportunities and desired outcomes		2. Output Used Within This Step			D (Transit Board)	
	3. Recommended future year multi-modal policy constraints, opportunities and desired outcomes		3. CTP 3a, LU22, MM16				A, D

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Multi-Modal Step 15 (MM15) -- Identify Future Year Multi-modal Policy Constraints/ Opportunities (con't)	
Documentation Requirements	• List of multi-modal policy constraints and opportunities by transit policy boards endorsing future year multi-modal policy • Policy Board Action on constraints, opportunities and desired outcomes • Consensus by MM Team on recommended future year multi-modal policy constraints, opportunities and desired outcomes

Modeling Step 15 (M15) -- Develop Testing Strategies							CP35
Purpose	Develop testing strategies to evaluate alternatives that address identified transportation problems						
Outcomes	• Model Team consensus on testing strategies to evaluate alternatives • Reasonable, meaningful combinations of land use and transportation alternatives						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. List and description of projects in the existing CTP and/ or metropolitan transportation plan (MTP)		1. N/A (NCDOT, MPO)				X (M)
	2. Existing system deficiencies		2. CTP 2f				X (M)
	3. Future year system deficiencies based on current LU plans and trends, as well as other LU scenarios to be tested, if applicable		3. CTP 2j				X (M)
	4. Initial information for Problem Statements		4. CTP 2j				X (M)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	M Team
	1. Testing strategies agreed upon by Model Team		1. CTP 3b				A, D
	2. Reasonable combinations of land use/ transportation alternatives		2. CTP 3b				A, D
Documentation Requirements	Consensus by Model Team on testing strategies and reasonable combinations of land use/ transportation alternatives documented in a technical memorandum						

Land Use Step 21 (LU21) -- Identify and Reach Consensus on Land Use Policy Constraints							
Purpose	Identify and evaluate flexibility for changing land use goals and policies that potentially constrain transportation solutions (LU policy constraints)						
Outcomes	Agreement by LU Team on LU constraints for potential transportation solutions						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Agreed upon data sets and sources		1. CTP 2d				X (LU)
	2. Existing system deficiencies		2. CTP 2f				X (LU)
	3. Agreed upon future year multi-modal policy constraints/ opportunities and desired outcomes		3. MM12				X (LU)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Land use policy constraints		1. CTP 3a				A, D
Documentation Requirements	Consensus by LU Team on LU policy constraints						

Land Use Step 22 (LU22) -- Identify Priority Land Use Outcomes							CP35
Purpose	Identification of priority land development projects or key public investments (water, sewer, gas)						
Outcomes	Agreement by LU Team on land uses that must be accommodated with transportation improvements						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Utility (water, sewer, gas, etc.) expansion plans		1. N/A (Local government or other entity utility plans)			X	
	2. Future year system deficiencies based on current LU plans and trends, as well as other LU scenarios to be tested, if applicable		2. CTP 2j				X (LU)
	3. Agreed upon future year multi-modal policy constraints/ opportunities and desired outcomes		3. MM15				X (LU)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Priority land use outcomes		1. CTP 3b			A	A, D
Documentation Requirements	Consensus by LU Team on priority LU outcomes						

10.3 Alternatives Analysis (CTP 3)

The third High-Level Step of the CTP process focuses on developing and evaluating different CTP strategies that address the transportation deficiencies. In evaluating different strategies to handle these deficiencies, it is necessary to look at environmental issues (opportunities and constraints) – both human and natural, and community/ public desires – relating back to the community's vision and the transportation benefit. For alternatives and scenario analysis, it is helpful to recall the following definitions:

- *Alternatives* – Options studied for the scope, concept, and location of a transportation proposal to serve a specific deficiency or need
- *Scenarios* – Options studied for groupings of multi-modal transportation proposals (alternatives) with land use assumptions to address the various needs throughout the area being studied

Indicators of success in this part of the process are that alternatives be fully evaluated against the performance measures, documented, agreed upon, and tied to the vision.

Below is a description of the critical path through CTP3 – Alternatives Analysis:

10.3.1 Critical Path Points 36 and 37

Description CP36 and CP37: The purpose is to identify environmental areas to avoid and/ or minimize impacts to when developing different alternatives, whether that is natural environmental areas or communities. This may also include resources or features that have special local importance. Also occurring is identification of areas that need to be served (for example, a proposed industrial park, major commercial development, or other strategies aimed to promote a defined economic development). It may also be necessary to re-evaluate the land use scenarios that will be tested to ensure they continue to be viable options (implementable). In LU23 it is important that viable land use scenarios that will be carried forward are realistic, and the local land use agency(s) are open to modifying their land development plan(s) to match the scenario used to evaluate the final CTP.

Comprehensive Transportation Planning Step 3a (CTP 3a) -- Evaluate Constraints							
Purpose	Collect and evaluate identified physical and policy constraints						
Outcomes	Prioritized list of constraints						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Land use policy constraints		1. LU21				X (CTP)
	2. Recommended future year multi-modal policy constraints, opportunities and desired outcomes		2. MM15				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Global constraints (environmental, system, financial, etc.)		1. CTP 3b				A, D
	2. Recommended LU policy constraints		2. CTP 3b				A, D
Documentation Requirements	Consensus by CTP Team on global constraints, multi-modal constraints, and LU policy constraints						

Key Considerations	Purpose	Outcomes
Environmental Considerations	Incorporate environmental planning and LU factors in developing the future network	A future year integrated database that includes consideration of environmental resources
ASA	Document the reasons for narrowing the range of potential solutions to be considered	Document of reasons for narrowing the range of potential solutions
CIA	Incorporate community characteristics constraints with other transportation planning and land use factors in developing potential solutions	A future year integrated database that includes community characteristics constraints
MPO/ RPO/ NCDOT Coordination	Determine alternatives testing strategies	Consensus on alternatives testing strategies by Model Team

Comprehensive Transportation Planning Step 3b (CTP 3b) -- Identify Key Priorities							CP36
Purpose	Collect and evaluate key priorities and outcomes						
Outcomes	Prioritized list of priorities and outcomes with a range of options to accommodate these						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Initial information for Problem Statements		1. CTP 2j				X (CTP)
	2. Testing strategies agreed upon by Model Team		2. M15				X (CTP)
	3. Reasonable combinations of land use/ transportation alternatives		3. M15				X (CTP)
	4. Priority land use outcomes		4. LU22				X (CTP)
	5. Recommended future year multi-modal policy constraints, opportunities and desired outcomes		5. MM15				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Recommended multi-modal key priorities		1. CTP 3c, MM16				A, D
	2. Recommended priority LU outcomes		2. CTP 3c				A, D
	3. Recommended range of options to accommodate priorities and outcomes		3. CTP 3c				A, D
Documentation Requirements	Consensus by CTP Team on list of priorities and outcomes with a range of options to accommodate them						

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Comprehensive Transportation Planning Step 3b (CTP 3b) -- Identify Key Priorities (con't)		
Key Considerations	Purpose	Outcomes
MPO/ RPO/ NCDOT Coordination	Identify alternatives to be evaluated	• Consensus on alternatives to be evaluated by CTP Team • Documented Agreement by TAC

<table>
<tr><td colspan="8">Land Use Step 23 (LU23) -- Determine Viable Land Use Scenarios to be Carried Forward CP37</td></tr>
<tr><td>Purpose</td><td colspan="7">• Allow local land use decision makers the opportunity to understand land use/ transportation interactions, including differences from current land use plans
• Make changes to land use scenarios that allow community to balance transportation and LU goals
• Refine or eliminate land use scenarios as appropriate</td></tr>
<tr><td>Outcomes</td><td colspan="7">• Agreement by LU Team on viable land use scenarios</td></tr>
<tr><td rowspan="2">Input(s)</td><td rowspan="2"></td><td rowspan="2">Comes From Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td></td><td>1. CTP ICE Prescreening</td><td></td><td>1. CTP 2b</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td rowspan="4">Output(s)</td><td rowspan="2"></td><td rowspan="4">Goes To Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>LU Team</td></tr>
<tr><td>1. Input from local land use decision makers on viable LU scenarios</td><td>1. Output Used Within This Step, CTP 3e (for public involvement and CTP documentation)</td><td></td><td></td><td>A</td><td></td></tr>
<tr><td>2. Agreed upon viable land use scenarios by LU Team</td><td>2. CTP 3c</td><td></td><td></td><td></td><td>D</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">Documented Agreement by LU Team on viable land use scenarios</td></tr>
</table>

Multi-Modal Step 16 (MM16) -- Identify Multi-modal Alternatives							CP 37
Purpose	Identify multi-modal alternatives with project attributes						
Outcomes	Multi-modal alternatives with project attributes						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Recommended multi-modal key priorities		1. CTP 3b				X (MM)
Output(s)		Goes To Step #:					
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. Multi-modal alternatives with project attributes		1. CTP 3c				A, D
Documentation Requirements	• Technical report with multi-modal alternatives including project attributes • Consensus by MM Team on multi-modal alternatives						

* Note: Multi-modal alternatives and scenarios are validated and tested as part of CTP 3c and CTP 3d.

10.3.2 Critical Path Points 38, 39, and 40

Description CP38 through CP40: The identification and evaluation of alternatives and scenarios is an iterative process. Using the agreed upon measures of effectiveness (MOEs) different alternatives are evaluated to see if they are addressing an identified deficiency or problem. In addition, there is an evaluation of environmental issues (opportunities and constraints) associated with each alternative. As a part of the documentation associated with these steps, it is important to denote alternatives that were not considered (for example, it did not make sense to actually propose a project in the critical watershed or there was no reason to propose a project in a location that would not serve the transportation need).

Alternatives are combined with the appropriate land use scenario. The agreed upon MOEs and performance targets are used to evaluate the scenarios. Based upon the evaluation, public input, and input from the planning partners, a scenario is ultimately selected as the draft CTP. During the evaluation of alternatives and scenarios there may also be a need to modify the land use scenarios.

Once the draft CTP has been identified, financial constraint is applied. This also involves identifying projects by horizon years that are expected to be funded and constructed. Note that this is not a requirement for a non-MPO CTP.

Comprehensive Transportation Planning Step 3c (CTP 3c) -- Identify Alternatives and Scenarios							CP38
Purpose	Identify alternatives and scenarios which address deficiencies, constraints, and priorities						
Outcomes	• Alternatives for evaluation • Agreement by CTP Team and by TAC on scenarios to be tested						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Public comments		1. NA (Public Involvement Process)				X (CTP)
	2. In iterative process, evaluation of transportation alternatives and/or scenarios (includes comparison to MOEs)		2. CTP 3d*				X (CTP)
	3. Agreed upon viable land use scenarios by the LU Team		3. LU23				X (CTP)
	4. Multi-modal alternatives with project attributes		4. MM16				X (CTP)

Table Continued on Next Page

<table>
<tr><th colspan="7">Comprehensive Transportation Planning Step 3c (CTP 3c) -- Identify Alternatives and Scenarios (con't)</th></tr>
<tr><td rowspan="4">Output(s)</td><td></td><td rowspan="4">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>CTP Team</td></tr>
<tr><td>1. Identified transportation alternatives and scenarios to be evaluated further, including project attributes (alternatives displayed on a CTP Alternatives Impact Map)</td><td>1a. M16*
1b. CTP 3d*</td><td></td><td>D</td><td></td><td>A, D</td></tr>
<tr><td>2. Identified transportation solutions/ alternatives and scenarios not to be evaluated further (and documented reasons)</td><td>1. CTP 3e (for public involvement and CTP documentation)</td><td></td><td></td><td></td><td>A</td></tr>
<tr><td colspan="5"></td><td>*Iterative process between CTP 3c, M16, and CTP 3d before going to CTP 3e; Other iteration/ coordination may occur between CTP3c/ CTP 3d and the Land Use or Multi-modal sub-processes, if needed</td></tr>
<tr><td>Documentation Requirements</td><td colspan="6">• Consensus by the CTP Team on identified alternatives and scenarios to be tested
• Documented agreement by the TAC on identified scenarios to be tested (showing alternatives as well)</td></tr>
</table>

Table Continued on Next Page

Comprehensive Transportation Planning Step 3c (CTP 3c) -- Identify Alternatives and Scenarios (con't)		
Key Considerations	Purpose	Outcomes
Environmental Considerations	Identify a range of alternatives that avoid/ minimize impacts to identified environmental resources	A range of alternatives that avoids/ minimizes impacts to environmental resources
ASA	Identify alternatives and scenarios that address deficiencies and avoid/ minimize impacts to the human and natural environment	Potential alternatives and scenarios to be evaluated that address deficiencies and avoid/ minimize impacts
ICE	Consider information from the CTP ICE Pre-screening in development of alternatives and scenarios	Potential alternatives and scenarios that consider ICE pre-screening information
CIA	• Identify a range of alternatives that avoid/ minimize impacts to identified community characteristics constraints • Ensure that there are alternatives proposed that are consistent with community vision	• A range of alternatives that avoids/ minimizes impacts to identified community characteristics • A range of alternatives that reflect community values
MPO/ RPO/ NCDOT Coordination	Identify alternatives and scenarios to be evaluated	• Consensus on alternatives and scenarios to be evaluated by CTP Team • Documented Agreement by TAC
Public Involvement	Obtain public's ideas for potential alternatives and scenarios	Potential alternatives and scenarios based on public input

<table>
<tr><td colspan="7">Modeling Step 16 (M16) -- Provide Analysis Results to Support Alternatives and Scenarios Analysis CP39</td></tr>
<tr><td>Purpose</td><td colspan="6">Provide analysis results for alternatives analysis using measures of effectiveness (MOEs)</td></tr>
<tr><td>Outcomes</td><td colspan="6">Summary report of alternatives evaluated using MOEs</td></tr>
<tr><td rowspan="3">Input(s)</td><td></td><td rowspan="3">Comes From Step #:</td><td></td><td colspan="3">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td>1. Identified transportation alternatives and scenarios to be evaluated further, including project attributes (alternatives displayed on a CTP Alternatives Impact Map)</td><td>1. CTP 3c*</td><td></td><td></td><td></td><td>X (M)</td></tr>
<tr><td rowspan="4">Output(s)</td><td></td><td rowspan="4">Goes To Step #:</td><td></td><td colspan="3">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>M Team</td></tr>
<tr><td>1. Summary report of alternatives and scenarios using MOEs</td><td>1. CTP 3d*</td><td></td><td></td><td></td><td>A</td></tr>
<tr><td colspan="5">*Iterative process between M16, CTP 3c, and CTP 3d before final goes to CTP 3d</td></tr>
<tr><td>Documentation Requirements</td><td colspan="6">Technical memorandum summarizing alternatives using MOEs</td></tr>
</table>

<table>
<tr><td colspan="8">Comprehensive Transportation Planning Step 3d (CTP 3d) -- Evaluate Alternatives and Scenarios CP40</td></tr>
<tr><td>Purpose</td><td colspan="7">Evaluate transportation alternatives and scenarios based upon:
• LU constraints and policies
• Environmental considerations
• MOEs and Performance Targets (reflecting Community Vision and Goals/ Objectives
• Community impacts
• Indirect/ Cumulative impacts
• Financial
• Other data as appropriate</td></tr>
<tr><td>Outcomes</td><td colspan="7">• Documentation of unreasonable alternatives/ solutions
• Alternatives and scenarios to carry forward for further analysis, or for decision-making, with appropriate documentation</td></tr>
<tr><td rowspan="4">Input(s)</td><td colspan="2"></td><td rowspan="3">Comes From Step #:</td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td colspan="2"></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td colspan="2">1. Public comments</td><td>1. N/A (Public involvement process)</td><td></td><td></td><td></td><td>X (CTP)</td></tr>
<tr><td colspan="2">2. Summary report of alternatives and scenarios using MOEs</td><td>2. M16*</td><td></td><td></td><td></td><td>X (CTP)</td></tr>
<tr><td rowspan="4">Output(s)</td><td colspan="2"></td><td rowspan="3">Goes To Step #:</td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td colspan="2"></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>CTP Team</td></tr>
<tr><td colspan="2">1. Project cost estimates</td><td>1. Output Used Within This Step</td><td></td><td></td><td></td><td>A</td></tr>
<tr><td colspan="2">2. Evaluation of transportation alternatives and/or scenarios (includes comparison to MOEs)</td><td>2a. CTP 3c*
2b. CTP 3e</td><td></td><td></td><td></td><td>A</td></tr>
</table>

Table Continued on Next Page

Comprehensive Transportation Planning Step 3d (CTP 3d) -- Evaluate Alternatives and Scenarios (con't)							
Output(s) (con't)	3. Identification of unreasonable solutions/ alternatives	Goes To Step #: (con't)	3. CTP 3e (for public involvement and CTP documentation)				A, D
			*Iterative process between CTP 3c, M16, and CTP 3d before going to CTP 3e; Alternatives are developed in enough detail to adequately evaluate scenarios, then more detailed alternative analysis may be done after the selection of the LU scenario; Other iteration/ coordination may occur between CTP3c/ CTP 3d and the Land Use or Multi-modal sub-processes, if needed				
Documentation Requirements	• Additional information for alternative and scenario analysis documentation • Consensus by CTP Team on unreasonable alternatives/ solutions						

Key Considerations	Purpose	Outcomes
Environmental Considerations	Screen, document, and eliminate unreasonable solutions for environmental reasons	Elimination of unreasonable solutions due to environmental reasons
ASA	Evaluate alternatives and scenarios	Information on evaluation of alternatives and scenarios, possibly including: • CTP Alternatives Impact Map (from CTP 3c) • CTP Full Alternatives Impact Table • CTP Alternatives Evaluation Table (includes comparison to primary purposes, MOEs, etc.) • CTP Summarized Alternatives Impact Table • Problem Statements • Other information and documentation
ASA	Identify unreasonable solutions	Documented reasons for determining certain solutions to be unreasonable

Table Continued on Next Page

Comprehensive Transportation Planning Step 3d (CTP 3d) -- Evaluate Alternatives and Scenarios (con't)		
ICE	Disclose ICE impacts of identified scenarios and for highest transportation impacting alternatives	Information on evaluation of alternatives and scenarios for ICE, possibly including: • CTP ICE Prescreening • CTP Alternatives ICE Evaluation • CTP Scenarios ICE Screening
CIA	Evaluate alternatives and scenarios for community impacts and to ensure community vision is reflected in alternatives and scenarios carried forward	• Identification of community impacts of alternatives and scenarios • Exclusion of unreasonable solutions for community impacts • Alternatives and scenarios that reflect the community's vision

Comprehensive Transportation Planning Step 3e (CTP 3e) – Identify Draft CTP							
Purpose	• Identify draft CTP with selected LU scenario, considering ICE, CIA, other environmental issues (opportunities and constraints), and meeting transportation demand • Solicit environmental input from agencies on draft CTP • Identify potential strategies for implementation by local governments to minimize land development impacts to environmentally sensitive areas						
Outcomes	• Agreed upon draft CTP • Response to environmental concerns from agencies by addressing in CTP; disclosing unresolved environmental concerns in CTP • Documentation of unreasonable alternatives/ solutions that were eliminated from further consideration due to environmental concerns and/or failure to solve an identified problem and/or inconsistency with the community vision. • Potential strategies for implementation by local governments to minimize land development impacts to environmentally sensitive areas						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Identified transportation solutions/ alternatives and scenarios not to be evaluated further (and documented reasons)		1. CTP 3c				X (CTP)
	2. Input from local land use decision makers on viable LU scenarios		2. LU23				X (CTP)
	3. Public and resource agency input		3. N/A (Public involvement process)				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Draft CTP, including draft Problem Statements		1. CTP 3f		D		A
Documentation Requirements	Documented Agreement by TAC on Draft CTP						

Key Considerations	Purpose	Outcomes
MPO/ RPO/ NCDOT Coordination	Authorize public review on Draft CTP	Documented Agreement on Draft CTP

<table>
<tr><td colspan="8">Comprehensive Transportation Planning Step 3f (CTP 3f) -- Apply Financial Constraints (Includes Gap Analysis)</td></tr>
<tr><td>Purpose</td><td colspan="7">Update project costs and apply financial constraints</td></tr>
<tr><td>Outcomes</td><td colspan="7">• CTP funding gap analysis
• Updated project cost estimates</td></tr>
<tr><td rowspan="2">Input(s)</td><td rowspan="2"></td><td rowspan="2">Comes From Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td></td><td>1. N/A</td><td>1. N/A</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">Output(s)</td><td rowspan="3"></td><td rowspan="3">Goes To Step #:</td><td rowspan="3"></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>CTP Team</td></tr>
<tr><td>1. CTP projects grouped by horizon year to match available revenue, and identification of unmet needs</td><td>1. CTP 4a</td><td></td><td></td><td></td><td>A</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Financial constraint information for CTP document
• *CTP documentation milestone: complete documentation of recommendations, including problem statements</td></tr>
</table>

10.4 Develop Final Plan (CTP 4) and Adopt Plan (CTP 5)

The final two High-Level Steps in the CTP process are the mechanism to move the plan through the adoption process and complete the air quality conformity process (for nonattainment areas only).

Success in these two final phases of the CTP process is evidenced by good documentation and a plan that is implementable and representative of the community's vision.

Below is a description of the critical path through CTP 4 (Develop Final Plan) and CTP 5 (Adopt Plan):

10.4.1 Critical Path Point 41

Description CP41: A major implementation element is the financial plan for the CTP. The implementation strategy may also identify elements of the land use plan that may need to be changed to be consistent with the draft CTP. It may also include recommended strategies tied to land development (such as zoning requirements) to protect environmentally sensitive areas and reduce the potential for Indirect and Cumulative Effects (ICE). The documentation of the plan up to the development of the draft CTP should be complete (in draft form).

Prior to moving forward with air quality conformity the MPO policy board should endorse the plan to be analyzed. (This is not an adoption of the plan; adoption would occur after conformity analysis is complete.).

<table>
<tr><td colspan="7">Comprehensive Transportation Planning Step 4a (CTP 4a) -- Draft Implementation Strategy</td></tr>
<tr><td>Purpose</td><td colspan="6">• Identify implementation strategies to address:
o ICE
o CIA
o Multi-modal
o Environmental Considerations
o Mitigation opportunities</td></tr>
<tr><td>Outcomes</td><td colspan="6">• Viable implementation strategies</td></tr>
<tr><td rowspan="2">Input(s)</td><td></td><td rowspan="2">Comes From Step #:</td><td></td><td colspan="3">Responsible Entity for Obtaining Inputs
X (Team Name)</td></tr>
<tr><td>1. N/A</td><td>1. N/A</td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td colspan="5"></td><td></td><td>X (CTP)</td></tr>
</table>

Table Continued on Next Page

Comprehensive Transportation Planning Step 4a (CTP 4a) -- Draft Implementation Strategy (con't)							
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Recommended implementation strategies and potential mitigation opportunities		1. CTP 4c				A
Documentation Requirements	Projects by horizon year, unfunded needs, and implementation strategies						

Key Considerations	Purpose	Outcomes
Environmental Considerations	Discuss implementation strategies to be used by area with TAC	Consensus by TAC on a financial plan
ICE	• Identify implementation strategies to address ICE • Communicate implementation strategies to local jurisdictions	• Implementation strategies incorporated into plan • Communication occurred
CIA	• Identify implementation strategies to address community impacts • Communicate community impact implementation strategies to local land use jurisdictions	• Implementation strategies incorporated into plan • Communication occurred about community impact implementation strategies
MPO/ RPO/ NCDOT Coordination	• Group (by horizon year) CTP projects to match available revenues • Coordinate to ensure project estimates and budget feasibility	• Consensus on CTP projects (by horizon year) by CTP Team • Consensus on a draft that includes multiple strategies
Public Involvement	• Validate recommended strategies • Make the public aware of recommended strategies	Validated implementation strategies

Comprehensive Transportation Planning Step 4b (CTP 4b) -- Develop CTP Maps							
Purpose	Develop CTP Maps						
Outcomes	CTP Maps for local and State adoption						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Draft CTP Maps (including documentation of the land use scenario on which the CTP map is based)		1. CTP 4c, LU24				A
Documentation Requirements	Draft CTP maps						

Comprehensive Transportation Planning Step 4c (CTP 4c) -- Prepare Draft CTP Document							
Purpose	Complete CTP documentation of process and proposals						
Outcomes	Draft CTP document						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Draft CTP document		1. CTP 4d, CTP 5d				A
Documentation Requirements	*CTP documentation milestone: Draft CTP document						

Key Considerations	Purpose	Outcomes
Environmental Considerations	Develop a user friendly constraint map for incorporation into CTP documentation	A user-friendly environmental constraints map and documentation
ASA/ ICE/ CIA	Document ASA/ ICE/ CIA related information in the CTP report (and CTP project file)	CTP documentation that includes ASA/ ICE/ CIA information

Comprehensive Transportation Planning Step 4d (CTP 4d) -- Endorse CTP for Air Quality Analysis							CP41
Purpose	Endorse Draft CTP by TAC for Air Quality analysis						
Outcomes	Endorsed Draft CTP including projects by horizon year						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Agreed upon projects by horizon year		1. AQ4		D	D	
Documentation Requirements	• Policy Board Action by local boards on Draft CTP • Documented Agreement by TAC on Draft CTP						

Key Considerations	Purpose	Outcomes
MPO/ RPO/ NCDOT Coordination	• Authorize air quality analysis on Draft CTP • Coordinate CTP and LU scenario map	• Documented Agreement by TAC that the plan is ready for the AQ conformity process • Documented Agreement on coordinated LU scenario map
Public Involvement	Adoption/ endorsement of CTP by local policy board	Adopted/ endorsed CTP

10.4.2 Critical Path Points 42, 43, 44, 45 and 46

Description CP42 through CP46: For areas that are designated nonattainment or maintenance for air quality, a conformity determination must be made on the transportation plan. The process consists of a series of steps that are performed by various air quality partners. In addition to the technical process performed by the transportation and air quality partners, there is also significant interagency coordination, public involvement, and ultimately federal approval. For these non-attainment and maintenance areas, CP 46 (AQ9) must be completed by the agreed upon end date for the CTP study in order to avoid a conformity and/ or plan lapse. In attainment areas (where no air quality conformity demonstration is required), the air quality sub-process does not apply, but CP44 (CTP 5b) must be completed by the agreed upon end date for the CTP study in order to avoid a plan lapse (in MPO areas).

<table>
<tr><th colspan="8">Air Quality Step 3 (AQ3) -- Conduct Interagency Meeting</th></tr>
<tr><td>Purpose</td><td colspan="7">• Get agreement from all AQ Team members (MPO/ RPO/ NCDOT/ NCDENR-DAQ/ EPA/ FHWA/ FTA/ local air quality agency) on the conformity process analysis parameters
• Agree on schedule and plan parameters, including horizon years and future year, and evaluation methods</td></tr>
<tr><td>Outcomes</td><td colspan="7">Agreement by AQ Team members on CPS and TCPCP</td></tr>
<tr><td rowspan="2">Input(s)</td><td rowspan="2"></td><td rowspan="2">Comes From Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>NCDOT/ FHWA</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td></td><td>1. N/A</td><td></td><td>1. N/A</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Output(s)</td><td rowspan="2"></td><td rowspan="2">Goes To Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>NCDOT/ FHWA</td><td>MPO/RPO</td><td>Local Gov’t</td><td>AQ Team</td></tr>
<tr><td></td><td>1. Completed CPS and TCPCP</td><td></td><td>1. AQ4</td><td></td><td></td><td></td><td>A, D</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">Consensus by AQ Team on CPS and TCPCP</td></tr>
</table>

Air Quality Step 4 (AQ4) -- Run TDM							CP42
Purpose	Obtain VMT and speeds						
Outcomes	VMT and speeds by horizon year						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Agreed upon projects by horizon year		1. CTP 4d				X (AQ)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	AQ Team
	1. VMT and speeds by horizon year		1. AQ5	A	A		
Documentation Requirements	Electronic format of travel demand model run data by horizon year						

<table>
<tr><th colspan="8">Air Quality Step 5 (AQ5) – Conduct Regional Emissions Analysis (Calculate Emissions)</th></tr>
<tr><td>Purpose</td><td colspan="7">Determine the MTP emissions and compare them to the State Implementation Plan (SIP) motor vehicle emissions budgets (MVEBs)</td></tr>
<tr><td>Outcomes</td><td colspan="7">• Identified exempt projects
• Regional emissions analysis- MTP emissions and a table comparing them to SIP MVEBs</td></tr>
<tr><td rowspan="2">Input(s)</td><td rowspan="2"></td><td rowspan="2">Comes From Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity for Obtaining Inputs
X (Team Name)</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td></td><td>1. SIP MVEBs</td><td></td><td>1. N/A (NCDENR/ AQ)</td><td></td><td></td><td></td><td>X (AQ)</td></tr>
<tr><td rowspan="5">Output(s)</td><td rowspan="2"></td><td rowspan="5">Goes To Step #:</td><td rowspan="2"></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>AQ Team</td></tr>
<tr><td>1. Emissions factors by horizon year, if applicable depending on the emissions model</td><td>1. Output Used Within This Step</td><td></td><td></td><td></td><td>A</td></tr>
<tr><td>2. Identification of exempt projects</td><td>2. AQ6</td><td></td><td></td><td></td><td>A, D</td></tr>
<tr><td>3. Regional emissions analysis- MTP emissions and a table comparing them to SIP MVEBs</td><td>3. AQ6</td><td></td><td></td><td></td><td>A</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Consensus by AQ Team on identification of exempt projects
• Regional emissions analysis- table comparing MTP emissions and SIP MVEBs</td></tr>
</table>

<table>
<tr><th colspan="8">Air Quality Step 6 (AQ6) -- Draft Conformity Determination Report</th></tr>
<tr><td>Purpose</td><td colspan="7">• Develop a report that documents the inputs/ outputs of the process and details how conformity was reached
• Authorize public review of draft conformity report</td></tr>
<tr><td>Outcomes</td><td colspan="7">• Draft Conformity Determination Report (CDR)
• Endorsement by TAC to release draft CDR for public comment</td></tr>
<tr><td rowspan="2">Input(s)</td><td></td><td rowspan="2">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>1. N/A</td><td>1. N/A</td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td rowspan="2">Output(s)</td><td></td><td rowspan="2">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td>1. Draft CDR</td><td>1. AQ7, CTP 5a</td><td>D (for non-MPO areas)</td><td>D</td><td></td><td>A</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">• Draft CDR
• Policy Board Action by TAC to release draft CDR for public comment</td></tr>
</table>

Air Quality Step 7 (AQ7) -- Public/ Agency Review							CP43
Purpose	Give the public and agency partners an opportunity to comment on the draft CDR						
Outcomes	Comments from the public, federal and state agencies on the draft CDR						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	AQ Team
	1. Public and agency comments on the draft CDR		1. Output Used Within This Step				A
	2. Responses to public and agency comments on draft CDR		2. AQ8, CTP 5a				A
Documentation Requirements	N/A						

Key Considerations	Purpose	Outcomes
Public Involvement	Receive comments from the public on Draft CDR	Response to public comments on Draft CDR

Comprehensive Transportation Planning Step 5a (CTP 5a) -- Adopt Air Quality Conformity							CP44
Purpose	Demonstrate conformity of MTP to SIP						
Outcomes	MPO AQ conformity finding						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Draft CDR		1. AQ6				X (CTP)
	2. Responses to public and agency comments on draft CDR		2. AQ7				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. AQ conformity finding		1. AQ8, CTP 5d	D (for non-MPO areas)	D		
Documentation Requirements	Policy Board Action by TAC and/or NCDOT on AQ conformity finding						

Key Considerations	Purpose	Outcomes
MPO/ RPO/ NCDOT Coordination	Ensure that the plan meets AQ conformity	Policy Board Action (adoption) of final AQ conformity finding

Comprehensive Transportation Planning Step 5b (CTP 5b) -- Adopt CTP (MPO)							CP45*
Purpose	• Meet state/ federal planning requirements for MPO • Highlight inconsistencies between local land use plans and CTP						
Outcomes	• Adopted CTP maps and documentation • Inform local governments of inconsistencies and reconciliation between land use plans and CTP						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Adopted CTP maps and documentation		1. CTP 5c, MM17		D		
	2. Identified inconsistencies between LU plan and adopted CTP		2. LU25				A
Documentation Requirements	• Policy Board Action by TAC on CTP maps and documents • Documentation of inconsistencies between LU plan and adopted CTP						

Key Considerations	Purpose	Outcomes
MPO/ RPO/ NCDOT Coordination	Adopt Final CTP	Documented Agreement (adoption) of the Final CTP

*This step (CTP 5b) must be completed by the agreed upon CTP study end date to avoid a plan lapse (in MPO areas with no AQ conformity analysis required). If AQ conformity analysis is required, see AQ9. The remaining critical path steps may occur later but must be done before the CTP study is considered complete.

Air Quality Step 8 (AQ8) -- Final Conformity Report							CP46
Purpose	Develop final CDR to be submitted to FHWA/ FTA						
Outcomes	Final CDR to be submitted to FHWA/ FTA						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Final letter of review by NCDENR (clean review letter)		1. N/A (NCDENR)				X (AQ)
	2. AQ conformity finding		2. CTP 5a				X (AQ)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	AQ Team
	1. Final CDR		1. AQ9				A
Documentation Requirements	Final CDR						

<table>
<tr><td colspan="8">Air Quality Step 9 (AQ9) -- FHWA/ FTA Review and Approval CP47*</td></tr>
<tr><td>Purpose</td><td colspan="7">• FHWA/ FTA review of the final CDR, including coordination with EPA
• FHWA/ FTA determination that the MTP conforms to the SIP and 40 CFR 93</td></tr>
<tr><td>Outcomes</td><td colspan="7">Approval by FHWA/ FTA on the MTP conformity finding</td></tr>
<tr><td rowspan="2">Input(s)</td><td></td><td rowspan="2">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td>1. N/A</td><td>1. N/A</td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov't</td><td>Team</td></tr>
<tr><td rowspan="4">Output(s)</td><td></td><td rowspan="4">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>FHWA</td><td>FTA</td><td>Local Gov't</td><td>AQ Team</td></tr>
<tr><td>1. If applicable, FHWA/ FTA and EPA comments on the final CDR and responses to comments</td><td>1. Output Used Within This Step</td><td></td><td></td><td></td><td>A</td></tr>
<tr><td>2. Approval by FHWA/ FTA on the MTP conformity finding</td><td>2. N/A</td><td>D</td><td>D</td><td></td><td></td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">Documented agreement (approval letter) from FHWA/ FTA on the MTP conformity finding</td></tr>
</table>

*This step (AQ9) must be completed by the agreed upon CTP study end date to avoid a conformity and/ or plan lapse. The remaining critical path steps may occur later but must be done before the CTP study is considered complete.

10.4.3 Critical Path Points 47, 48, 49, 50, 51 and 52

Description CP47 through CP52: The CTP process concludes with mutual adoption of the CTP maps by NCDOT in addition to the MPO. Once the maps are approved it is essential to provide feedback to the land use agencies, especially where the adopted CTP is based on a land use scenario with some differences from the adopted land development plan. This is done using mapping of the land use plan changes necessary to support the adopted CTP. There should also be a recommended land use strategy to support the transportation plan.

<table>
<tr><td colspan="8">Land Use Step 24 (LU24) -- Develop LU Map to Match CTP CP48</td></tr>
<tr><td>Purpose</td><td colspan="7">Coordinate and develop land use map to match CTP</td></tr>
<tr><td>Outcomes</td><td colspan="7">• Common understanding of the land use needed to support recommended transportation plan
• Recommendation on coordinated land use scenario map</td></tr>
<tr><td rowspan="2">Input(s)</td><td></td><td rowspan="2">Comes From Step #:</td><td></td><td colspan="4">Responsible Entity for Obtaining Inputs X (Team Name)</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>Team</td></tr>
<tr><td></td><td>1. Draft CTP Maps (including documentation of the land use scenario on which the CTP map is based)</td><td></td><td>1. CTP 4b</td><td></td><td></td><td></td><td>X (LU)</td></tr>
<tr><td rowspan="3">Output(s)</td><td></td><td rowspan="3">Goes To Step #:</td><td></td><td colspan="4">Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])</td></tr>
<tr><td></td><td></td><td>NCDOT</td><td>MPO/RPO</td><td>Local Gov’t</td><td>LU Team</td></tr>
<tr><td>1. LU map to match CTP</td><td></td><td>1. LU25</td><td></td><td></td><td></td><td>A, D</td></tr>
<tr><td>Documentation Requirements</td><td colspan="7">Consensus by LU Team on LU map to match CTP</td></tr>
</table>

Land Use Step 25 (LU25) -- Recommend LU Needed to Support Recommended Transportation Plan							CP49
Purpose	• Identify the land use needed to support the CTP • Highlight inconsistencies between current local LU plans and CTP						
Outcomes	• Informed local governments of inconsistencies and how to reconcile their current LU plans to match the land use scenario upon which the CTP is based						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Identified inconsistencies between current LU plans and adopted CTP		1. CTP 5b				X (LU)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	LU Team
	1. Map and other documentation identifying changes to local LU plans needed to match CTP (policy, regulatory, pattern, intensity, etc.)		1. CTP 5d, Final Product (Local Governments)		A		A
Documentation Requirements	Letter or memo from MPO/ RPO to local governments identifying changes to current LU plans needed to match CTP						

Key Considerations	Purpose	Outcomes
ICE	Communicate ICE minimization strategies to local land use jurisdictions	Informed local governments
CIA	Communicate community impact minimization strategies to local land use jurisdictions	Informed local governments

Multi-Modal Step 17 (MM17) -- Recommend Multi-modal Modifications to Support CTP							CP50
Purpose	Highlight inconsistencies between local multi-modal plans and CTP						
Outcomes	Informed local governments of inconsistencies and how to reconcile local multi-modal plans with the CTP						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. Adopted CTP maps and documentation		1. CTP 5b				X (MM)
	2. Map and other documentation identifying changes to local LU plans needed to match CTP (policy, regulatory, pattern, intensity, etc.)		2. LU25				X (MM)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	MM Team
	1. Identification of inconsistencies between local multi-modal plans and CTP		3. CTP 5d, Final Product (local governments and transit boards)				A
Documentation Requirements	Letter or memo from MPO/ RPO identifying inconsistencies between local multi-modal plans and CTP						

Comprehensive Transportation Planning Step 5c (CTP 5c) -- Adopt CTP (NCDOT)							CP51
Purpose	Meet state planning requirements						
Outcomes	Adopted CTP maps						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. N/A		1. N/A				X(CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Mutually adopted CTP maps		1. CTP 5d	D			
Documentation Requirements	Policy Board Action by NCDOT on CTP maps						

Key Considerations	Purpose	Outcomes
MPO/ RPO/ NCDOT Coordination	Adopt Final CTP Maps	Documented Agreement (adoption) of the Final CTP Maps

Comprehensive Transportation Planning Step 5d (CTP 5d) – Finalize CTP Document							CP52
Purpose	Finalize CTP document						
Outcomes	Final CTP document						
Input(s)		Comes From Step #:		Responsible Entity for Obtaining Inputs X (Team Name)			
				NCDOT	MPO/RPO	Local Gov't	Team
	1. AQ conformity finding		1. CTP 5a				X (CTP)
	2. Draft CTP document		2. CTP 4c				X (CTP)
	3. Map and other documentation identifying changes to local LU plans needed to match CTP (policy, regulatory, pattern, intensity, etc.)		3. LU25				X (CTP)
	4. Identification of inconsistencies between local multi-modal plans and CTP		4. MM17				X (CTP)
Output(s)		Goes To Step #:		Responsible Entity and Role for Producing Outputs (Decision Maker [D] or Analyzer [A])			
				NCDOT	MPO/RPO	Local Gov't	CTP Team
	1. Final CTP document		1. Final Product (CTP Distribution)				A
Documentation Requirements	*CTP documentation milestone: Final CTP document						