Prospectus
for
Continuing Transportation Planning
for the
Durham-Chapel Hill-Carrboro
Metropolitan Planning Organization

Prepared by:

Statewide Planning Branch
North Carolina Department of Transportation

In cooperation with the:

City of Durham
Town of Chapel Hill
Town of Carrboro
Town of Hillsborough
County of Orange
County of Durham
County of Chatham
Triangle J Council of Governments
Triangle Transit Authority
NCDOT Public Transportation Division
NCDOT Rail Division
NCDOT Division of Bicycle and Pedestrian Transportation
U. S. Department of Transportation

Approved by Durham-Chapel Hill-Carrboro MPO
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I. INTRODUCTION

The Municipality(s) of Durham, Chapel Hill, Carrboro, and Hillsborough, Durham County, Orange County, Chatham County, and the North Carolina Department of Transportation, in cooperation with the various administrations within the U.S. Department of Transportation, participate in a continuing transportation planning process in the Durham-Chapel Hill-Carrboro Urban Area as required by Section 134 (a), Title 23, United States Code. A Memorandum of Understanding approved by the municipalities, the counties, and the North Carolina Department of Transportation establishes the general operating procedures and responsibilities by which short-range and long-range transportation plans are developed and continuously evaluated.

The Prospectus contained herein is primarily a reference document for the transportation planning staff. Its purpose is to provide sufficiently detailed descriptions of work tasks so that staff and agencies responsible for doing the work understand what needs to be done, how it is to be done, and who does it.

A secondary purpose of the Prospectus is to provide sufficient documentation of planning work tasks and the planning organization and procedures so that documentation is minimized in a required annual Planning Work Program (PWP). The PWP identifies the planning work tasks that are to be accomplished in the upcoming fiscal year and serves as a funding document for the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) of the U.S. Department of Transportation.

The Metropolitan Planning Organization (MPO) is responsible for carrying out the transportation planning process in the Durham-Chapel Hill-Carrboro Urban Area. The MPO is an organization consisting of the representatives of general purpose local government; the North Carolina Department of Transportation; a Transportation Advisory Committee; a Technical Coordinating Committee; and the various agencies and units of local and State government participating in transportation planning for the area.

The respective governing boards make policy decisions for local agencies of government. The Board of Transportation makes policy decisions for the North Carolina Department of Transportation. The municipal governing board and the N.C. Department of Transportation have implementation authority for construction, improvement, and maintenance of streets and highways.

The Memorandum of Understanding established a Transportation Advisory Committee (TAC) composed of representatives from the policy boards to provide policy direction for the planning process, and to improve communications and coordination between the several Policy Boards. The TAC is responsible for (1) review and approval of the PWP; (2) review and approval of the area's Metropolitan Transportation Improvement Program (MTIP) which ensures coordination between local and State programs; (3) review of the National Highway System, review and approval of changes to the Functional Classification Designation (as it pertains to the Surface Transportation Program) and review and approval of the Metropolitan Area Boundary; (4) endorsement, review, and approval of the Prospectus; (5) guidance on transportation goals and

objectives; and (6) review and approval of changes to the adopted Long-Range Transportation Plan. As required by North Carolina General Statutes 136-66.2, revisions to the Thoroughfare Plan must be jointly approved by the local governing boards and the North Carolina Department of Transportation.

A Technical Coordinating Committee (TCC), also established by the Memorandum of Understanding, is responsible for supervision, guidance, and coordination of the continuing planning process, and for making recommendations to the local and State governmental agencies and the Transportation Advisory Committee regarding any necessary action. The TCC is also responsible for review of the National Highway System and for development, review, and recommendation for approval of the Prospectus, PWP, TIP, Functional Classification Designation (as it pertains to the Surface Transportation Program), Metropolitan Area Boundary revisions, and technical reports of the transportation study. The membership of the TCC consists of, but is not limited to, key staff from the North Carolina Department of Transportation, the Triangle J Council of Government, Federal Highway Administration, Duke University, North Carolina Central University, the University of North Carolina at Chapel Hill, the Research Triangle Park Foundation, Raleigh-Durham Airport Authority, Triangle Transit Authority, the counties, transit operators, and the municipalities.

The City of Durham is designated as the Lead Planning Agency (LPA) and is primarily responsible for annual preparation of the Planning Work Program and Metropolitan Transportation Improvement Program. The City of Durham is the primary local recipient of planning funds received from USDOT for the Durham-Chapel Hill-Carrboro Urban Area. The Triangle J Council of Government serves as the E.O.12372 intergovernmental review agency.

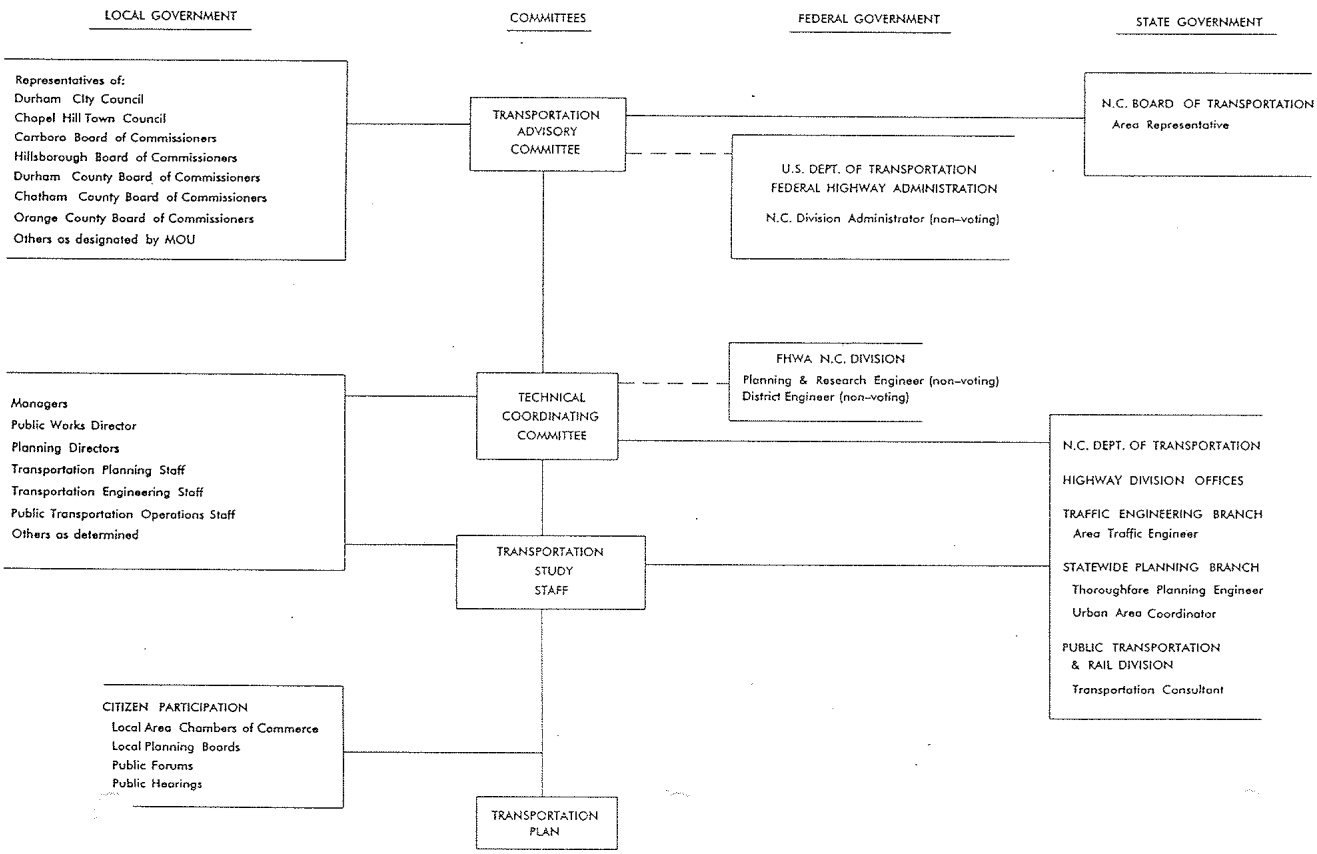
Transportation planning work is divided into two elements in the Prospectus according to type of activity:

Continuing Transportation Planning, Chapter II
Administration, Chapter III

Citizen participation is an important element of the transportation planning process and is achieved by making study documents and information available to the public and by actively seeking citizen participation during the planning process. Involvement is sought through such techniques as goals and objective surveys, neighborhood forums, drop-in centers, workshops, seminars, and public hearings. Elected or appointed city and town representatives and municipal and county planning boards should serve as primary sources in gaining public understanding and support for the transportation planning activity.

An organization chart for continuing transportation planning for the Durham-Chapel Hill-Carrboro Urban Area is shown in Figure 1. The history and status of transportation planning is given in Appendix A. The following are contact agencies for information concerning the transportation planning process in Durham-Chapel Hill-Carrboro Urban Area.

FIGURE 1
ORGANZATION CHART
CONTINUING TRANSPORTATION PLANNING PROCESS
DURHAM–CHAPEL HILL–CARRBORO METROPOLITAN PLANNING ORGANIZATION



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II. CONTINUING TRANSPORTATION PLANNING
Methodology, Responsibilities and Schedules

The continuing transportation planning work tasks are described here and following in Chapter III. Appendix A details the history of transportation planning in the area. *Appendix B* contains the community goals and objectives for the transportation system. *Appendix C* contains the travel modeling agreement between the MPO and NCDOT.

A. Surveillance of Inventory Data

A number of conditions generally need to be continuously surveyed and compiled annually to determine whether previous projections are still valid or whether plan assumptions need to be changed. Surveillance tasks are described in the following sections and agency responsibilities are listed in Table 1.

1. Traffic Volume Counts

Annual Average Daily Traffic (AADT) will be estimated on a biennial schedule at specified locations on each segment of the principal arterial, minor arterial, and collector street systems inside the transportation study area. Traffic data will be collected on weekdays for a minimum of 48 hours. Axle counts will be converted to volume counts using adjustment ratios that account for multiple-axle vehicles. Volume counts will be seasonally adjusted and averaged to generate AADT estimates. These estimates will be evaluated for temporal and spatial consistency. Factors for seasonal adjustment will be based on traffic data from permanent traffic monitoring stations located at typical urban settings throughout the State.

The Municipalities will be responsible for obtaining counts at specified locations on the Urban Area Municipal Street System and for furnishing the raw daily traffic counts, count information, and location maps to the Statewide Planning Branch the first week of November each scheduled collection year. The Statewide Planning Branch is responsible for obtaining counts at specified locations on other segments of the major street system, for updating the count location map biannually to reflect any changes made in the major street system, for preparing the Annual Average Daily Traffic Volume Map, and for sending this information to the Lead Planning Agency.

As part of the Congestion Monitoring Program, the Municipalities will be responsible for taking traffic counts at a specified number of count stations that will be representative of the street system as a whole. These counts will be at 15-minute intervals and collected for a minimum of 48 hours so they can be used to determine peak hour spreading and will be taken every three years.

Special counts may be taken during travel model updates or validations. These include counts at screen-line stations, external stations, major trip generators, and key

intersections as needed. Traffic count types may include daily, hourly, vehicle classification, or turning movements. The Statewide Planning Branch will coordinate traffic data collection for these special counts.

2. Vehicle Miles of Travel (VMT)

Vehicle miles of travel are computed by multiplying the length of each link times the annual average daily traffic volume on that link. Vehicle miles of travel are tabulated annually by county and functional classification by SWP-Road Inventory Section. These VMT estimates are used by the Division of Air Quality (DAQ) for air quality monitoring. MPOs may also choose to estimate VMT for the urban area on a regular basis.

3. Street System Changes

Records on improvements to the state highway system, whether planned, underway, or completed, are maintained by the Division Engineer of the NCDOT. Each municipality should maintain similar records for its municipal street system. The municipalities participating in the Powell Bill Program must certify city street mileage maintained annually.

An inventory of the geometrics and signalization of the existing major street system for the planning area should be maintained by the City of Durham in cooperation with the other municipalities in the urban area. Periodically or as changes or additions to the major street system occur, the inventory may be updated. This inventory will need to be current when the travel model is periodically updated.

4. Traffic Accidents

North Carolina law requires that any traffic accident involving personal injury and/or property damage in excess of $1000.00 be reported in detail to the Division of Motor Vehicles (DMV) of the NCDOT. The DMV also receives a detailed report on any accident investigated by a law officer. Copies of all these reports are forwarded to the Traffic Engineering Branch of the Division of Highways, where the information is summarized and stored. Annual analyses will compare each year's high accident locations to previous years' high accident locations.

The Traffic Engineering Branch will provide the Annual Highway Safety Program Listing Report on request.

5. Transit System Data

A summary and analysis of transit ridership revenue and expense data by route will

be prepared by the Transit Agencies. Agencies will identify strengths and weaknesses of service by route in order to assess service barriers and future options. Information is used to monitor service and meet FTA reporting requirements.

6. Dwelling Unit, Population, and Employment Changes

Changes in population and development across the service area will be identified and evaluated to determine necessary restructuring of transportation services to meet current and forecasted demand. Census data, local parcel, zoning, and tax data records; Employment Security Commission; and private vendors are acceptable sources of information for this purpose. This item may include the development and maintenance of a GIS database.

7. Air Travel

Data may be collected and analyzed to determine influence of local air travel on the area's transportation system and identify needs for additional services. Airport entrance traffic counts would help relate air travel to ground travel in future updates. A ground transportation survey is a good example of this.

8. Vehicle Occupancy Rates (Counts)

Vehicle occupancy counts are collected across the service area to measure effectiveness of transit projects. Information will also be used to comply with the Clean Air Act and is useful in the trip generating process of modeling traffic during the travel modeling phase, as well as other parts of the Long-Range Transportation Plan.

9. Travel Time Studies

Peak and off-peak travel time studies will be conducted for those street segments that are included in the Congestion Management System. The travel time studies will be required during the travel model calibration phase as well.

10. Mapping

Mapping of streets, transit routes, land use, traffic analysis zones, and environmental factors should be updated on an annual basis. The City of Durham and its supporting agencies will be responsible for maintaining this data in a GIS format.

11. Central Area Parking Inventory

Inventories of both on- and off-street parking supply in the Durham-Chapel Hill-Carrboro central areas are maintained by the municipalities. Periodic updates and inventories of other parking facilities in other areas will be performed as determined by the MPO through the development of the Unified Planning Work Program. Data collected should include parking policies, ownership, and rates.

12. Bicycle and Pedestrian Facilities Inventory

An inventory of significant municipal, state, and federal bicycle and pedestrian transportation facilities shall be maintained. These systems shall be incorporated in the Long-Range Transportation Plan update and analyzed in conjunction with other transportation performance measures.

13. Bicycle and Pedestrian Counts

An inventory of bicycle and pedestrian counts will be maintained by the municipalities in the urban area. These counts will be stored in a spreadsheet format.

a) Table 1: Surveillance of Inventory Area

CODE	TASK/DESCRIPTION
II-A	SURVEILLANCE OF CHANGE
1	Traffic Counts
2	Vehicle Miles of Travel
3	Street System Mileage Change
4	Trafic Accidents
5	Transit System Data
6	Dewlling Unit, Pop/Empl Changes
7	Air Travel
8	Vehicle Occupancy Rates
9	Travel Time Studies
10	Mapping
11	Central Area Parking Inventory
12	Bike & Ped Facilities Inventory
13	Bike & Ped Counts

B. Long-Range Transportation Plan (LRTP)

Federal Law (as updated by TEA-21) and USDOT's Metropolitan Planning Regulations, require MPOs to have a Long-Range Transportation Plan that is: multi-modal, financially constrained, a minimum 20 year horizon, adhere to the MPO's adopted public involvement policy, have growth forecasts consistent with latest local land use plan, and be approved by the MPO. The LRTP must be reaffirmed every 5 years. In air quality non-attainment and maintenance areas, the LRTP must be updated and proven to conform with the State Implementation Plan (SIP) every 3 years. The physical product of this LRTP will be in one or more assembled documents containing all plan elements and will be the responsibility of the MPO.

Evaluation of the overall Long-Range Transportation Plan should be undertaken at such time that the surveillance items indicate that travel or land development trends have begun to deviate significantly from forecasts or at such time that new data are required for facility design.

For non-attainment or maintenance areas, the Long-Range Transportation Plan must conform to the intent of the State Implementation Plan (SIP). The Statewide Planning Branch and/or the MPO are responsible for the analysis of all elements of a multi-modal transportation plan to ensure that they conform to the intent of the State Implementation Plan. Specifically, any Long-Range Transportation Plan Revisions must be analyzed for conformity with the SIP.

Many aspects of the transit plan cannot be separated completely from other elements of the Long-Range Transportation Plan. HOV facilities, and even ridesharing and surface bus routes, may need to be addressed in both the transit and the Thoroughfare Plans. Since transit use depends heavily on land use characteristics and pedestrian accessibility, creating a "mode neutral" model and plan requires special attention to transportation/land use interactions. Realistic assumptions are needed concerning potential travel markets and the likely degree to which existing land use, travel behavior, and pricing policies can be influenced. All plans should be carefully analyzed for internal consistency, uncertainty, and sensitivity to assumptions and errors.

TEA-21 stresses "seven planning factors" that should be considered by the MPOs to guide the development of the LRTP. They are:

- Support the economic vitality of the community, especially by enabling global competitiveness, productivity and efficiency;
- Increase the safety and security of the transportation system for motorized and non-motorized users;
- Increase the accessibility and mobility options available to people and freight;

- Protect and enhance the environment, promote energy conservation, improve quality of life;

- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;

- Promote efficient system management and operations; and

- Emphasize the preservation of the existing transportation system.

The TCC prepares recommendations for work required for plan reappraisal for review and approval by the TAC. Agency responsibilities for various work tasks in the Long-Range Transportation Plan evaluation elements are given in Table 2. The following work elements may be required depending upon the depth of the studies needed.

1. Collection of Base Year Data

Collection of the following variables for existing conditions, by traffic zone, is required: (1) population; (2) housing units; and (3) employment. It is expected that re-projection of travel patterns, including transit, would require a re-tabulation of these factors used in developing the travel models. A GIS database may be used to maintain housing and land use information. The MPO will normally be responsible for providing socioeconomic data in spreadsheet form to SWP.

2. Collection of Network Data

Collection of the following variables describing the existing street system is necessary to build a base network for the travel demand model: 1) posted speed limit; 2) width/lanes; 3) segment length; 4) traffic signal locations. These items are generally the standard parameters required, but others may be needed as models become more sophisticated. The network development process is included in this task item.

3. Travel Model Updates (see Appendix C)

A "Modeling Agreement" has been signed between the MPO, Triangle Transit Authority (TTA), Capital Area MPO (CAMPO), and SWP. The agreement details accepted standards and practices, used in the specific travel model, to calibrate and substantiate acceptable tolerances. The urban area travel demand model includes the following steps:

a. Trip Generation – This step generally involves analysis of actual and projected socio-

economic data including, but not limited to, population, dwelling units, and employment. Based on these and other factors, an approximation of the number of trips generated by sub-area or zone can be determined.

b.Trip Distribution - Using formulas based on the gravity model, an approximation of where the specific generated trips are beginning and ending is determined.

c.Modal Split – This step is an analysis of mode chosen and factors that lead to those choices. Factors could include actual and perceived travel times, actual and perceived travel costs, as well as availability or convenience of certain modes.

d.Trip Assignment - This step loads trips onto the network based on the paths selected for the origins and destinations from above. The effects of congestion and the somewhat random nature of travelers can be taken into account through loading techniques such as incremental restraint, equilibrium, stochastic or all-or-nothing assignments.

e.Accuracy Checks – Checks involve comparing or calibrating mathematically generated data to actual field conditions. These typically involve screenline crossings to within 5% and link volumes to within 10% of ground counts.

A technical summary report of the travel modeling process and results will be provided by the modeling custodian as named in the modeling agreement.

4. Travel Surveys

These surveys may be implemented to attain such items as origins and destinations, travel behavior, transit ridership, commercial vehicle usage, workplace commuting, freight movement, etc. Therefore, these surveys may be home interviews, cordon O/Ds, and on-board transit to name a few.

New surveys will be conducted at such time as is necessary for the reevaluation of travel models. Because these surveys are very cost prohibitive, the survey responsibility and funding sources will be determined at the beginning of the study.

5. Forecast of Data to Horizon Year

The travel models determine what planning data must be projected to a new design year. In general, the procedure will be to project population and socio-economic factors independently on an areawide basis, to cross check these projections and convert them to land use quantities if required, and to distribute the projected planning data to traffic zones on the basis of land capabilities, accessibility, and community goals as

implemented through land use controls. The MPO will provide the approved socioeconomic forecasts.

6. Community Goals and Objectives *(see Appendix B)*

In the evaluation of community goals and objectives, the MPO will formulate policies ensuring local goals and objectives are discerned and addressed during the development and implementation of the Long-Range Transportation Plan.

7. Forecasts of Future Travel Patterns

The forecast of future travel patterns will result from using the forecasted planning data as input to the travel forecast models. The models are sensitive to changes in trip generation, trip purpose, trip length, vehicle occupancy, travel mode, and patterns of daily travel. The forecast of travel patterns will include a review of these factors and comparison to community goals and objectives to determine if changes in assumptions are warranted.

8. Capacity Deficiency Analysis

A system planning level capacity deficiency analysis will be made to determine existing and projected street deficiencies.

Link capacities will be calculated in accordance with procedures based on the latest edition of the HIGHWAY CAPACITY MANUAL, Special Report 209, Highway Research Board, National Academy of Sciences, National Research Board.

9. Highway Element of the LRTP

The Thoroughfare Plan (a subset of which is the highway element of the LRTP) will be evaluated in terms of projected travel, capacity deficiencies, travel safety, physical conditions, costs, design, travel time, and possible disruption of people, businesses, neighborhoods, community facilities, and the environment. The evaluation will include an analysis of the Long-Range Transportation Plan and the interrelationship between alternative travel modes. Thoroughfare recommendations should include adequate right-of-way for improvements consistent with the Bicycle & Pedestrian Plan, Transit Plan and other intermodal connection facilities along logical corridors. If major deficiencies are found with the existing plan, alternative plans will be evaluated. It should be noted that any regionally significant Thoroughfare Plan revisions must be analyzed for conformity with the SIP in non-attainment/maintenance areas. Alternatives that may be considered include (1) a Do-Nothing Alternative, (2) Alternative Modes, (3) Travel Demand Management, and (4) Alternative Design: Types and Standards.

10. Transit Element of the LRTP

Transit planning incorporates all vehicular modes other than trucks and the single occupant automobile, including (but not limited to) fixed-route bus service, ridesharing, fixed-guideway transit, and demand responsive transit. The transit plan describes existing transit service and unmet needs, and identifies any additional potential markets. New types, and areas of service may be recommended, supported by ridership forecasts and other analyses. Assumptions and implications related to land use, travel behavior, parking policies and other variables are clearly defined. Establishing objective measures of effectiveness is critical for evaluating transit alternatives. Measures of transit effectiveness include both the reduction of auto use and congestion, and the broadening of mobility options.

11. Bicycle and Pedestrian Element of LRTP

A bikeway and pedestrian plan is an essential part of the multi-modal LRTP for an urban area. The report entitled, Incorporating Bicycle and Pedestrian Elements into Transportation Plans, produced by the Statewide Planning Branch, describes the essentials of this task. At a minimum, an update to the inventory of existing and proposed bicycle and pedestrian elements should be included in the LRTP.

12. Airport/Air Travel Element of LRTP

The Airport Master Plan should be coordinated with the MPO, and be an element of the LRTP.

13. Collector Street Element of LRTP

Collector street planning will be conducted as required to develop standards and preliminary locations for collector streets in advance of development. The objective of this planning activity is to ensure optimum traffic operations for the developing street system and transit accessibility to developing areas.

14. Rail, Waterway, or Other Mode of the LRTP

The MPO will incorporate additional transportation elements in the multi-modal LRTP where appropriate.

15. Freight Movement/Mobility Planning

As one of the TEA-21's seven planning factors, emphasis is placed on increasing accessibility and mobility options available to people and freight. Tasks included in this category may be a survey of freight carriers, recommendations for improving truck mobility or train/truck intermodal movements, and identifying acceptable truck routes.

16. Financial Planning

As required by TEA-21, the LRTP must be fiscally constrained. Project cost estimates and revenue forecasts are required. Federal regulations allow flexibility in the methodologies used for analysis, but they must include estimates for maintenance as well as construction. This item also covers identifying new and alternative funding sources, including new taxing strategies, impact fees, and public-private partnerships.

17. Congestion Management Strategies

The 3-C Transportation Planning Process, as enhanced by TEA-21, stresses efficient system management and operations. Planning for congestion management strategies such as these below are included in this item.

a. Transportation Demand Management (TDM)
b. Intelligent Transportation System (ITS)
c. High Occupancy Vehicle lanes or priorities (HOV)
d. Access Control and Management
e. Traffic Operations Improvements, Incident Management
f. Growth Management

This item covers the costs associated with planning for these items, coordination with public and private stakeholders, and marketing or public education.

18. Air Quality Planning/Conformity Analysis

The transportation sector is a key participant in the development and application of the State Implementation Plan (SIP) for air quality. MPOs have the responsibility to make a determination as to whether or not transportation plans, programs, and projects conform to the intent of the SIP. Tasks involved in this pursuit include, but are not limited to:

a.Participation in interagency consultation process as part of SIP development and conformity determination development

b.Providing assistance to NCDENR in developing and maintaining mobile source emission inventories,

c.Participating in development of TCMs for the SIP

d. Implementation of TCMs as appropriate

e.Performing analysis and approving conformity determination as required; SWP will be responsible for the conformity analysis and producing the report. The conformity determination must be approved by the DCHC TAC.

Table 2: Long-Range Transportation Plan

CODE	TASK/DESCRIPTION
II-B	LONG RANGE TRANSPORTATION PLAN
1	Collection of Base Year Data
2	Collection of Network Data
3	Travel Model Updates
4	Travel Surveys
5	Forecast of Data to Horizon Year
6	Community Goals & Objectives
7	Forecast of Future Travel Patterns
8	Capacity Deficiency Analysis
9	Highway Element of the LRTP
10	Transit Element of LRTP
11	Bicycle & Ped Element of LRTP
12	Airport/Air Travel Element of LRTP
13	Collector Street Element of LRTP
14	Rail, Water or Other Mode of LRTP
15	Freight Movement/Mobility Planning
16	Financial Planning
17	Congestion Management Strategies
18	Air Quality Planning Conformity

II-C-1 Short Range Transit Planning

The Transit Agencies are required to revise their short range transit plans every 5 years. The Municipalities will be responsible for coordinating these short range transit plans with the transit agencies. Any transit plans will be incorporated into the LRTP.

III. ADMINISTRATION

The administration of the planning process is organized into five areas. The Unified Planning Work Program (for MPOs over 200,000 in population, i.e. Transportation Management Areas) is prepared each year and details what work will be completed for the next fiscal year. The Metropolitan Transportation Improvement Program (sometimes referred to as the Local Transportation Improvement Program or LTIP) is prepared on a biennial cycle, and details a seven-year program of transportation improvements that are jointly funded and implemented with the NCDOT. The remaining sections are Civil Rights and Regulatory Compliance, Incidental Planning and Project Development, and Management and Operations. Agency responsibilities for administrative work tasks are given in Table 3.

A. Planning Work Program

A Planning Work Program (PWP) will be prepared annually by the Lead Planning Agency in cooperation with other participating agencies and under the guidance of the Technical Coordinating Committee. The PWP will present the proposed planning work program for the next year and review the recent accomplishments of the planning process. The PWP will be cross-referenced to the Prospectus to minimize repetitive documentation. The PWP will be reviewed and approved by the Transportation Advisory Committee, by the State and Regional intergovernmental review process, the North Carolina Department of Transportation, and Federal agencies providing planning funds for continuing transportation planning. These Federal planning funds are provided by FHWA (Section 104(f)) and FTA (Section 5303). Preparation of a Section 5303 Grant application is also required in addition to the PWP to receive planning funds from FTA.

The MPO must certify their 3-C Transportation Planning Process annually as part of the PWP adoption.

B. Transportation Improvement Program

The Metropolitan Transportation Improvement Program (MTIP) shall have two parts: (1) a metropolitan programming document which is coordinated with the State Transportation Improvement Program (STIP) and (2) a list of prioritized needs.

Prepared every two years, the local programming document shall be a short range,

three to seven-year multi-modal program which identifies transportation improvements recommended for advancement during the program period, identifies priorities, groups improvements into staging periods, includes estimated costs and revenues, and is fiscally constrained.

The MPO Priority Needs List is developed biennially to communicate the MPO's priorities regarding the funding schedule on already programmed projects, the acceleration of long term projects into the program, and the addition of new projects to the STIP. The List may include cost estimates, purpose and need statements, and other supporting materials. The Priority Needs List is a key step in cooperative TIP development between the MPO, the transit operator, and NCDOT.

C. Civil Rights Compliance (Title VI) and Other Regulatory Requirements

1. Title VI

Provide update of Civil Rights statistics report for submittal to FTA to determine MPO compliance to civil rights provisions. Title VI states: The MPO shall comply with all the requirements imposed by Title VI of the Civil Rights Act of 1964 (78 Stat. 252), 49 U.S.C. 2000D TO 2000-D-4; the Regulations of DOT issued thereafter in the Code of Federal Regulations (commonly and herein referred to as CFR) Title 49, Subtitle A, Part 21), and the assurance by the MPO pursuant thereto.

2. Environmental Justice

Executive Order (E. O.) 12898, Federal Actions to Address Environmental Justice in Minority Populations, requires all Federal agencies to identify and address Title VI and Environmental Justice requirements. Recipients of federal funds, including NCDOT and the MPOs, must assure compliance with these requirements. As mandated by the FHWA, planning activities should focus on complying with E. O. 12898 and the three basic principles of Environmental Justice as follows:

a. ensure public involvement of low-income and minority groups in decision-making;

b. prevent disproportionately high and adverse impacts to low-income and minority groups resulting from decisions made; and

c. assure low-income and minority groups receive a proportionate share of benefits resulting from decisions made.

3. Minority Business Enterprise Planning (MBE)

There is a continuing need to address the Minority Business Enterprise (MBE) as a part of the planning and programming phases of project development. Areas are encouraged to give full consideration to the potential services that could be provided by MBEs in the development of transit plans and programs, and the provision of transit service. Transit properties with established MBE programs are encouraged to work with MPOs, utilizing transportation planning funds to update existing MBE programs as necessary.

4. Planning for the Elderly and Disabled

The Americans with Disabilities Act of 1990 (ADA) ensures that persons with disabilities enjoy access to the mainstream of American life. The ADA expands on the Section 504 program to comprehensively address mobility needs of persons with disabilities.

Joint FHWA and FTA regulations require that the urban transportation planning process include activities specifically emphasizing the planning, development, evaluation and reevaluation of transportation facilities and services for the elderly and disabled, consistent with ADA. This process should include an analysis of inventories of disabled persons, their locations, and special transportation services needed. These regulations emphasize estimation of travel needs through statistical analysis and a self-identification process.

Both thoroughfare and transit planning activities should focus on complying with the key provisions of the ADA, and include special efforts to plan transportation facilities and services that can be effectively utilized by persons with limited mobility such as:

a. Public transit authorities providing fixed route transit service must provide comparable level paratransit service to disabled individuals who cannot otherwise use the fixed route service;

b. Transit authorities providing elderly and disabled oriented demand responsive service must also buy or lease accessible vehicles unless it can be demonstrated that the system provides a level of service to the disabled equivalent to that provided to the general public; and

c. New facilities built must be accessible and existing facilities with major alterations must be made accessible to the maximum extent feasible.

d. Planning for better mobility through such items as wheelchair curb cuts, longer pedestrian crosswalk times at certain intersections, and special parking spaces and rates for cars with one or more transportation disadvantaged occupant(s).

5. Safety/Drug Control Planning

MPOs may pass planning funds through to transit operators for use in performing safety audits and in the resultant development of safety/security improvement and in alcohol/drug control planning, programming, and implementation. Attention should be given to the development of policies and planning for the proper safety related maintenance of transit vehicles, fire safety, substance abuse where it affects employee performance in critical safety related jobs, emergency preparedness to improve the capability to respond to transit accidents/incidents, security to reduce theft and vandalism of transit property and to counter potential politically motivated terrorism directed against transit users, facilities, and equipment.

6. Public Involvement

An effective public involvement process provides for an open exchange of information and ideas between the public and transportation decision-makers. The overall objective of an area's public involvement process is that it be proactive, provide complete information, timely public notice, full public access to key decisions, and opportunities for early and continuing involvement (23CFR450.212(a) and 450.316(b)(1)). It also provides mechanisms for the agency or agencies to solicit public comments and ideas, identify circumstances and impacts which may not have been known or anticipated by public agencies, and, by doing so, to build support among the public who are stakeholders in transportation investments which impact their communities. The DCHC MPO has a formalized public involvement policy that was adopted on May 13, 1998.

7. Private Sector Participation

Federal regulations require that private operators be afforded the "maximum feasible opportunity" to participate in the planning and provision of local transportation services. The purpose of the private sector participation requirement is to give private operators the opportunity to initiate involvement. In an effort to more effectively address this requirement, the evaluation of private sector service alternatives has been incorporated into the transportation planning process.

The general criteria for making public/private service decisions may include but is not limited to:

a. comparative cost of private versus public services in similar situations;
b. perceived quality and reliability of service;
c. local control of services;
d. responsiveness and flexibility of operators; and
e. private operator financial stability.

D. Incidental Planning and Project Development

1. Transportation Enhancement Planning

This category of federal funding began with ISTEA and was carried through in TEA-21 legislation. MPO assistance to applicants, review of applications, and preparing endorsements is included under this item. The DCHC MPO shall approve all proposed enhancement projects for inclusion in the Metropolitan Transportation Improvement Program (MTIP) prior to being forwarded to NCDOT for consideration of inclusion in the State Transportation Improvement Program (STIP). Sponsoring agencies must submit completed application packages to the NCDOT for consideration by the Transportation Enhancement Committee.

2. Environmental Analysis and Pre-TIP Planning

The proposed Thoroughfare Plan and selected alternative plans will be evaluated based on criteria established by the goals and objectives reevaluation study and impact on the environment. The Public Transportation Plan and the Airport Master Plan should also be evaluated on these criteria. It is anticipated that the evaluation will be in the following areas: efficiency in serving travel demands; energy conservation; cost; and impact on the physical, social, and economic environment. The physical environmental evaluation will include air quality, water quality, soils and geology, wildlife and vegetation. The social environmental considerations will include housing and community cohesion, low-income and minority populations, noise, churches and educational facilities, parks and recreational facilities, historic sites, public health and safety, national defense, and aesthetics. Effects on business, employment and income, land development patterns, and public utilities will be studied as part of the economic environmental evaluation.

The TCC, LPA, Statewide Planning Branch and Resource Agencies will jointly recommend projects for Pre-TIP Planning. The TAC will be kept informed concerning the results of these studies. Public review will be incorporated as part of the alternatives analysis.

3. Special Studies

During annual reevaluation of the Long-Range Transportation Plan, there occasionally is a need to make a specific study of a transportation corridor to determine the best solution to a problem. While this may include development of a simple functional design for corridor protection, more detailed studies may include evaluations of alternative modes or alignments for cost, feasibility, environmental impact, and

design.

In a similar manner, special problems may arise in relation to major land use changes when large-scale traffic generators (hospitals, regional malls, etc.) will either be developed or closed. These land use changes could significantly affect the regional distribution and/or amount of traffic generated, which could require changes to the Long-Range Transportation Plan to accommodate the newly forecasted growth.

The extent, responsibility, and cost for a corridor or sub-area study, which should be conducted within the work plan of the TCC, would be determined prior to its initiation.

4. Regional or Statewide Planning

The MPO will coordinate with state and federal agencies involved in transportation planning activities on the regional, state, and national levels. Examples of such activities include: Functional Reclassification of roads, designation of Urban Area Boundaries, National Highway System coordination, Highway Performance Monitoring System activities, and regional transit coordination.

Involvement could include, but is not limited to: collection and compilation of data; participation in related workshops, conferences, and meetings; and review and administrative approval or endorsement of documentation.

E. Management and Operations

The continuing transportation planning process requires considerable administrative time for attending monthly committee meetings, preparing agendas and minutes to these meetings, training, preparing quarterly progress reports, documenting expenditures for the various planning work items, and filing for reimbursement of expenditures from the PL fund account and other Federal Funds. The daily operations require dissemination of planning information to the public or other organizations and coordination with NCDOT and other agencies.

It is also necessary to periodically, review and update the Prospectus, Memorandum of Understanding, and other administrative agreements and procedures.

a) Table 3: Administration

CODE	TASK/DESCRIPTION
II-C	SHORT RANGE TRANSIT PLANNING
1	Short Range Transit Planning
III-A	PLANNING WORK PROGRAM
1	Planning Work Program
III-B	TRANSPORTATION IMPROVEMENT PLAN
1	Transportation Improvement Plan
III-C	CIVIL RIGHTS
1	Title VI
2	Environmental Justice
3	Minority Business Enterprise
4	Planning for the Elderly and Disabled
5	Safety/Drug Control Planning
6	Public Involvement
7	Private Sector Participation
III-D	INCIDENTAL PLANNING/PROJECT DEVELOPMENT
1	Transportation Enhancement Planning
2	Environmental Analysis & Pre Tip Planning
3	Special Studies
4	Regional or Statewide Planning
III-E	MANAGEMENT AND OPERATIONS
1	Management and Operations

APPENDIX A

LOCAL AREA TRANSPORTATION PLANNING HISTORY

The history of transportation planning for the Durham-Chapel Hill-Carrboro Urban Area must be described separately as that for Durham and as that for Chapel Hill and Carrboro. Prior to the 1980 Census, which added Chapel Hill and Carrboro to the Durham Urbanized Area, all transportation planning activities for these communities took place independently.

Transportation planning has been underway in both areas for quite some time. The first Durham plan, a "sketch" thoroughfare plan, was mutually adopted by the City of Durham on October 21, 1959 and by the State Highway Commission on May 25, 1960. It was based on historic traffic trends, current traffic volumes, and comprehensive field study of the existing transportation system.

The second major transportation planning endeavor resulted in a mutually adopted 1967 Durham Urban Area Thoroughfare Plan. Harland Bartholomew and Associates, a private consultant, was retained by the State Highway Commission in cooperation with the City of Durham and the U. S. Bureau of Public Roads to determine the thoroughfare planning needs of the area. This study was based on external and internal origin and destination surveys, and in-depth analysis of socioeconomic trends of the area, a complete street system inventory, and comprehensive traffic volume counts. These trends and surveys were used to develop traffic models that, in turn, were used to develop and project 1985 travel on the existing highway system. From the study of these projected traffic problems, the 1967 plan was developed.

A third major transportation study began in 1974 and culminated in 1980 with the adoption of the 1980 Durham Thoroughfare Plan. This study utilized the Federal Highway Administration's PLANPAC/BACKPAC battery of urban travel demand forecasting computer programs. During this effort, two series public meetings were conducted to solicit the citizenry's attitudes about 1) projected deficiencies and 2) the recommended improvements. The 1980 Thoroughfare Plan was amended by the City and the State in 1985.

The history of transportation planning in the Chapel Hill/Carrboro area officially began in 1955 with the development of a "sketch" plan by W. F. Babcock, a private consultant (who later became the N. C. Highway Commission's first administrator). This plan was revised three times over the next six years.

In 1964, Carrboro and Chapel Hill contracted with the Research Triangle Planning commission to prepare a thoroughfare plan using computer based forecasting techniques. The resulting plans were approved in 1965 by both Towns and the N. C. State Highway Commission. A slightly revised version was readopted in 1968.

In 1971, the Towns contracted with the N. C. Department of Transportation to update the area's thoroughfare plan using the PLANPAC/BACKPAC methodology. The Department prepared a

draft report around which considerable controversy ensued. This was due to the prevalent local opinion that the recommended plan was not reflective of local sensitivities and values. As such, no plan resulted from this particular study.

In 1979, the Towns again contracted with the N. C. Department of Transportation to conduct another study; however, the specific methodology was modified by the local staff which also took the lead role in the development and analysis of alternatives, solicitation of citizen input, and documentation of the study's finding. Mutual adoption of the resulting plan by both Towns and the N. C. Department of Transportation took place in 1984.

In 1984 the development of the first combined thoroughfare plan for the Durham-Chapel Hill-Carrboro Urban Area began. The study was prepared by the Transportation Study Committee of the Technical Coordinating Committee. Existing system deficiencies were identified, and with the use of computer based travel forecasts, future deficiencies were identified for a 2010 planning horizon. After five years of public review and reevaluation, the first Durham-Chapel Hill-Carrboro Urban Area Thoroughfare Plan was approved by the Transportation Advisory Committee on October 2, 1991. The Durham County portion of the Urban Area Plan was approved by the Durham City Council on November 18, 1991 and by the N. C. Board of Transportation on January 10, 1992. The Orange County portion of the Urban Area Plan was approved by the Chapel Hill Town Council and the Carrboro Board of Alderman, but not by the N. C. Board of Transportation.

The development and adoption of a thoroughfare plan was provided for in North Carolina General Statutes 136-66 which were enacted by the State Legislature in 1959. These General Statutes require State-municipal cooperative development of a thoroughfare plan, provide for State-municipal adoption of the plan, require State-municipal agreement on street and highway system responsibilities, define State and municipal responsibilities, and provide for revision of the plan.

In 1962, Section 134 of Title 23 (i.e. 1962 Highway Act) was enacted by Congress which required the establishment of a continuing, cooperative, and comprehensive transportation planning process in urban areas over 50,000 population, as a prerequisite for continued federal funding of highway projects. Regulations promulgated by the then Bureau of Public Roads (now the Federal Highway Administration) required State Highway Departments to carry out the transportation planning requirements of the 1962 Highway Act. Thus, the first formal Memorandum of Understanding (MOU) defining a transportation planning process for Durham was adopted by the City of Durham, Durham County and The State of Highway Commission in June 1965. The 1965 MOU delineated responsibilities for maintaining a continuing planning process and established a Technical Coordination Committee (TCC) with the responsibility for general review, guidance, and coordination of the continuing process.

As a result of the Federal-Aid Highway Act of 1973, a revised Memorandum of Understanding was approved in 1975. The revised memorandum established a Transportation Advisory Committee (TAC) of elected representatives from the governing boards to facilitate coordination and communications between the several policy boards. The TAC was given responsibility for

assisting in the development of a coordinated multi-modal transportation capital improvements program for the planning area.

The 1980 Census resulted in the Durham Urbanized Area being expanded to include the Towns of Chapel Hill and Carrboro and a portion of Orange County as well as a significantly larger part of Durham County. Consequently, the MOU was revised again to include the additional member governments, the Triangle J Council of Governments, and the Research Triangle Foundation.

The 1990 Census did not significantly expand the Durham-Chapel Hill-Carrboro Urban Area boundary. However, the federal enactment of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and the Clean Air Act Amendments of 1990, the creation of a regional transit authority, and a general spirit of regionalism resulted in the mutual agreeable expansion of the planning area to include the Town of Hillsborough and surrounding area. Northwest Chatham County had previously been included in the Chapel Hill and the Durham-Chapel Hill- Carrboro Planning Areas, but Chatham County had not been a party to the MOU. The MOU was therefore revised to include the Town of Hillsborough and Chatham County in 1993.

APPENDIX B

TRANSPORTATION SYSTEM GOALS AND OBJECTIVES

Purpose

Transportation Goals and Objectives set forth the urban area values related to the overall transportation system, as well as guide the transportation decision-making process. Most importantly, they bridge the gap between the values that are unique to the individual communities and the mandated technical aspects of the Transportation Plan. The Goals and Objectives should comply with the seven Planning Factors included in the current federal legislation governing the MPO and transportation policy: The Transportation Equity Act for the 21st Century (TEA 21).

1. Overall Transportation System

Goal:

A safe, efficient, attractive, multi-modal transportation system that: supports local land use; accommodates trip-making choices; maintains mobility; protects the environment and neighborhoods; and improves the quality of life for urban area residents.

Objectives:

a) Establish performance standards that will measure the effectiveness of the urban area's overall transportation system in supporting access to goods, services, activities, and destinations.
b) Select and program transportation projects, which are consistent with community goals and are a cost-effective use of funds.
c) Develop and maintain a multi-modal regional transportation model that reflects travel patterns and incorporates innovative techniques for evaluating the impacts of proposed transportation investments on travel and land use patterns.
d) Promote non-automobile transportation alternatives and create efficient connections between all transportation modes.
e) Conserve natural resources and reduce the rate of energy consumption.
f) Develop cooperative strategies with employers to reduce congestion and increase the efficiency of the transportation system.
g) Use transportation funds based on the priority needs of the urban area, in keeping with community values, and explore new funding options.

2. Multi-Modal Street and Highway System

Goal:

An attractive multi-modal street and highway system that allows people and goods to be moved safely, conveniently, and efficiently.

Objectives:

a) Establish performance standards and report on the condition and effectiveness of the multi-modal street and highway system.
b) Create multi-modal street patterns that: encourage safe pedestrian, bicycle, and vehicular travel; provide access to public transportation; and ensure connectivity.

c) Develop and implement level of service (LOS) standards for the urban area that are based on a cooperative agreement between state and local agencies.

d) Preserve and enhance the traffic carrying capacity of arterial street systems, while minimizing traffic intrusion in residential neighborhoods.
e) Identify and recommend design standards that: establish safe speeds; increase pedestrian and bicycle usage of streets; and enhance the attractiveness and appeal of the street and highway system.

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3. Public Transportation System

Goal:

A convenient, accessible, and affordable public transportation system, provided by public and private operators, that enhances mobility and economic development.

Objectives:

a) Establish performance standards and report on the condition and effectiveness of the public transportation system.
b) Increase public transit ridership by enlarging the service area and increasing the frequency of service to the urban area.
c) Coordinate transit service within the urban area by promoting high quality, seamless, integrated, and customer-friendly service.
d) Expand ridesharing, carpool, and vanpool services and opportunities.
e) Develop and implement alternatives to the use of single occupant vehicles, including high occupancy vehicle (HOV) facilities and regional rail services.
f) Develop and implement the Regional Transit Plan.
g) Develop a regional park and ride system for cars and bicycles to support transit services and encourage ridesharing.
h) Ensure that the transportation needs of the youth and elderly, the mobility impaired, and the economically disadvantaged are met.
i) Identify and recommend land use patterns, parking requirements, and development regulations which create compact, mixed use, transit-friendly, walkable development.
j) Identify and recommend ways that the state and the urban area should work together to maintain and enhance the quality of public transportation service throughout the urban area.

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4. Pedestrian and Bicycle System

Goal:

A pedestrian and bicycle system that: provides an alternative means of transportation; allows greater access to public transit; and supports recreational opportunities.

Objectives:

a) Establish performance standards and report on the condition and effectiveness of the pedestrian and bicycle system.
b) Develop and implement a Regional Pedestrian Plan.
c) Update and maintain the Regional Bicycle Plan.
d) Identify and recommend ways that local governments may provide adequate staff and resources to meet the goals of their pedestrian and bicycle programs.

e) Develop a regional bicycle and pedestrian policy that establishes linkages between activity centers and provides for access to public transit.

f) Ensure that bicycle and pedestrian facilities are included in the planning, design, and construction of roadways where applicable.
g) Increase education about the benefits of pedestrian and bicycle alternatives.
h) Support the enforcement of pedestrian and bicycle regulations.
i) Pursue strong funding commitment for building both pedestrian and bicycle facilities.
j) Provide greater safety for pedestrians and bicyclists of all levels of ability, and safer interaction with users of other modes of transportation.
k) Encourage the efforts and activities of citizen advocacy groups for pedestrian and bicycling by providing information and support for their programs.
l) Promote the construction of bicycle and pedestrian facilities that will encourage greater use of these modes by the public.

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5. Integration of Land Use and Transportation System

Goal:
A Transportation Plan that is integrated with local land use plans and development policies.

Objectives:
a) Establish performance standards and report on the integration and consistency of the Transportation Plan with local land use plans and development policies.
b) Create transportation systems that enhance the livability of all communities.
c) Identify and recommend land use patterns that improve and support transportation efficiency.
d) Identify the impacts of different land use patterns and site designs on travel behavior.
e) Evaluate the changes in land use brought about by the expansion of existing transportation facilities and the construction of new facilities.
f) Identify and recommend land use patterns and development policies that increase overall mobility and that support compact, mixed-use, transit-friendly, walkable development.

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6. Protection of Natural Environmental and Social Systems

Goal:
A multi-modal transportation system which provides access and mobility to all residents, while protecting the natural environment, cultural resources, and social systems.

Objectives:
a) Establish performance standards and report on transportation impacts on the natural environment, cultural resources, and social systems.
b) Protect and preserve archaeological, historic, and culturally valuable areas.
c) Identify and protect environmentally sensitive areas early in the planning process.
d) Develop and implement modifications to the transportation system that reduce the rate of growth in vehicle miles traveled (VMT).
e) Modify the transportation system to reduce the pollutants in highway runoff and the vehicle emissions, in accordance with federal, state and local Clean Air and Water legislation.
f) Minimize the noise and dust generated by transportation facilities in neighborhoods and the urban area.

g) Preserve culturally diverse areas of the region.
h) Ensure that transportation facilities do not negatively effect disadvantaged populations disproportionately.

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7. Public Involvement

Goal:

An ongoing program to inform and involve citizens throughout all stages of the development, update, and implementation of the Transportation Plan.

Objective:

a) Establish performance standards and report on the effectiveness of the public involvement element of the Transportation Plan.
b) Encourage citizens to take a proactive role in the development of the Transportation Plan.
c) Bring a broad cross-section of members of the public into the public policy and transportation planning decision-making process.
d) Educate the public and elected officials, in order to increase public understanding of both the options and the constraints of transportation alternatives.
e) Determine the public's knowledge of the metropolitan transportation system, and public values and attitudes concerning transportation.
f) Determine public concerns and/or perceived impacts of elements of the Transportation Plan.
g) Determine which elements of the Transportation Plan would support or diminish the public's desired lifestyle.
h) Establish a channel for an effective feedback process.

APPENDIX C

TRAVEL MODEL PROTOCOL

I. Purpose

The purpose of this protocol is to provide documentation on the continuing development, modification and maintenance of the official Triangle Regional Model (TRM). Specifically, this protocol defines signatories of the protocol, maintenance of the model, modification of the model, distribution of the model, use of the model, amendments to this protocol, and if necessary how to dissolve participation with the TRM. In addition, the purpose of the protocol is to assure consistency of the model set, integrity of the data sets, and the mutual support and buy-in of all member agencies.

II. Official Structure

Signatories

The signatories to this protocol shall be the Transportation Advisory Committee (TAC) chair for the Capital Area Metropolitan Planning Organization (CAMPO), the TAC chair for the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO), the chair of the Triangle Transit Authority Board of Trustees (TTA), and the Secretary of the North Carolina Department of Transportation (NCDOT). Each of these signatories may at any time designate an official signee by notice of letter to each of the other signatories.

Model Executive Committee

The Model Executive Committee shall be composed of one person from each of the signatory members as appointed by each individual signatory. This person will speak for the signatory agency on matters of personnel, budget and resources. This person will also have a designated alternate that may participate on the Committee. This committee shall oversee the development of a common work program and priorities for all aspects of the Triangle Regional Model. In addition, this group is responsible for resolving conflict and disputes related to aspects of the TRM, including but not limited to items associated with the work program, priorities, model team issues and technical differences that arise in the model. This group shall meet quarterly or on an as needed basis.

Model Team

The Model Team shall be made up of technical staff in a form recommended and approved by the Model Executive Committee. The Model Executive Committee shall also approve a specified level of commitment for each fiscal year. This Model Team is responsible for

developing, modifying, enhancing and maintaining the Triangle Regional Model in accordance with this protocol and with the mutual agreement of the signatory agencies.

Model Users Group

The Model Users Group shall be made up of end users of the Triangle Regional Model and shall serve as a forum for issues, problems, concerns and ideas related to the connection between using and developing the TRM. The Model Team shall serve as facilitators for this group. This group shall include but not be limited to MPO and NCDOT member agencies, as well as other end-users. This group shall meet as needed, but not less than quarterly.

III. Triangle Regional Model

Model Definition

The official Triangle Regional Model is comprised of a group of files run on a specified computer platform. The most current version of this model is specified by a version number, name and model date. These files define a base year model, a future long-range planning model whose horizon year shall be maintained at no less than twenty years into the future, and one or more intermediate year models, as recommended by the Model Team. Model documentation shall be kept current and made available along with the model's files. All files and documentation that comprise the official model will be maintained in the Triangle Regional Model Technical Manual.

Using the Model

Organizations wishing to use the Triangle Regional Model shall apply procedures outlined in the Triangle Regional Model Technical Manual. Any model changes, assumptions or alternative analysis must be documented to show deviations from the official model. It is appropriate for any agency or group that will use the Triangle Regional Model to support major transportation decisions to use the most currently adopted version of the official Triangle Regional Model.

Modification of the Model

The Model Team under the supervision of the Model Executive Committee will be responsible for modification of the Triangle Regional Model. Modification of the model includes but is not limited to modifying model structure, updating data files, improving model inputs, correcting errors in the model and adding enhancements to the model structure.

The Model Executive Committee shall collectively develop and maintain a mutually approved list of types of modifications to the official model that can be made by the approval of; (1) the Model Team itself ("minor" changes such as correcting network coding errors or modifying zonal centroid connectors); (2) the Model Executive Committee ("significant"

changes such as modifying capacity restrained assignment types or mode choice model parameters); and (3) the signatory agencies ("major" changes such as revisions to population or employment forecasts).

It shall be the goal of the signatories of this protocol to maximize the decision-making authority of both the Model Team and the Model Executive Committee so that only model modifications deemed to be most important to regional travel demand modeling require the direct review and approval of the signatory agencies. Regardless of the type of approval needed, all modifications made to the official model shall be fully documented to the extent sufficient that all changes can be completely replicated or reversed.

Work Program

In order to plan, budget, and administer model updates, a two-year work program outlining tasks and priorities shall be developed by the Model Team and approved by the Model Executive Committee, at least once a year. This work program shall identify, at a minimum, the agencies responsible for carrying out each task, the estimated time frame and milestones for completing each task, the resources required to complete each task, and note of any future tasks that are dependent upon its completion. Carrying out the tasks of this work program will be the responsibility of the Model Team and, where clearly specified, the signatory agencies.

Work tasks that are proposed by the signatory agencies, Model Team, or Users Group may require an amendment to the approved work program. Unless the sponsor is the Model Team, proposed amendments are to be submitted to the Model Team and subsequently included in the agenda of the next quarterly meeting of the Model Executive Committee. Descriptions of the proposed amendments are to be prepared by the sponsoring agency in a form to be approved by the Model Team and the Model Executive Committee. The Model Executive Committee will approve or deny proposed amendments to the work program, approve modified versions of the proposed amendments or table proposals for further discussion pending receipt of additional information.

Adopting and Distributing the Model

The official Triangle Regional Model shall be adopted by the signatories to this agreement as needed for new versions of the model but not more than every six months. The signatories through their individual approval processes officially adopt the model by letter to the Triangle Model Team. The Model Executive Committee with unanimous approval may approve "significant" model corrections such as modifying capacity restrained assignment types or mode choice model parameters without need of official approval process of the signatories. The Model Team itself can approve "minor" changes such as correcting network coding errors or modifying zonal centroid connectors.

The Model Executive Committee shall appoint a model custodian. The model custodian will be responsible for maintaining the physical computer files related to the Triangle Regional Model. This work will include but not be limited to maintaining a log of changes and current

documentation of model work, complete backup of model files, and managing access to the model via FTP site or other medium. The model custodian is further responsible for distribution of model files and documentation to signatories through FTP access or other medium as needed. It is the signatory's responsibility to supply their contractors or consultants with needed model files.

IV. Amending the Agreement

This document may be revised by mutual agreement of all signatories. Any signatory may resign from the agreement with a written, three-month notice to all other signatories.

During the lifetime of the agreement it may be desirable to add or revise signatories. The approval of all current signatories shall be required to agree to such a change. The Model Executive Committee will then be responsible for revising this document and distributing copies to all signatories.

This agreement shall be automatically renewed on December 31, 2004, and every three years thereafter unless notification is made within 90 days prior to this date of need for review.