NCDOT TPB
TRANSPORTATION PLANNING BRANCH

PROJECT LEVEL TRAFFIC FORECASTING

Administrative Procedures Handbook

PREPARED BY: Transportation Planning Branch
North Carolina Department of Transportation

Purpose of Handbook

There are two specific purposes of this handbook.

- The first purpose is to give the public, traffic forecast customers, and decision makers a synopsis of the NCDOT traffic forecasting process and procedures.

- The second purpose is to provide staff who perform traffic forecasts and persons who request traffic forecasts a better idea of what can be expected during each phase of the process.

To achieve these goals, this handbook includes background information concerning project-level traffic forecasts and a synopsis of general methodology for performing forecasts. The traffic forecasting process is ever evolving as we develop new tools and provide expanded services. We expect this handbook to change as this process matures.

PROJECT LEVEL TRAFFIC FORECASTING

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Acknowledgements:
Our thanks go to Laura Cove, PE, whose foresight originated this manual and for her hard work and guidance in the NCDOT Traffic forecasting process.

Transportation Planning Branch, NCDOT

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WEB LINKS

http://www.ncdot.org/planning/tpb/PDF/flowchart.pdf

http://www.ncdot.org/planning/tpb/PLANNING/FORECAST_REQUEST_FORM_0705.doc

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CHAPTER 1: INTRODUCTION

1.1 Background

The North Carolina Department of Transportation (NCDOT) is the state agency responsible for improving, operating and maintaining the state's transportation system. Within NCDOT, the Transportation Planning Branch and its local partners are responsible for long range transportation planning. While the Transportation Planning Branch focuses on identifying long range needs and potential improvements, staff are also responsible for providing data to support project level decisions. The Transportation Planning Branch provides an efficient delivery of travel demand forecasts for use in implementation of a coordinated transportation system to adequately serve present and anticipated traffic and land development needs for the State. Project-level traffic forecasts are key inputs into feasibility studies, roadway and intersection design, pavement design, and environmental studies which lead to construction of transportation improvements. Project-level traffic forecasts estimate future traffic volumes, including intersection movements, for a defined study corridor.

Also fundamental to a project-level traffic forecast is a report that details the data inputs, assumptions, analysis tools, and results of the forecasting process. A well-documented forecast is essential for the approval of the traffic forecast and application of the results in the project development process. In subsequent years, good documentation will facilitate necessary forecast updates and review procedures.

1.2 Uses of the Project-Level Traffic Forecast

Engineers and forecasters in the Planning and Traffic Forecasting Units perform more than 300 comprehensive, project-level traffic forecasts each year. Comprehensive, accurate, and timely travel demand forecasts are provided to a variety of customers, including:

(1) the Feasibility Studies Unit of the Program Development Branch to analyze benefits and prepare preliminary cost estimates for use in the development of the Transportation Improvement Program;

(2) the Project Development and Environmental Analysis Branch for the purpose of documenting Purpose & Need, preparation of preliminary designs, environmental reviews, and selecting and evaluating alternative alignments in NEPA documents;

(3) the Roadway Design Branch for the purpose of designing and preparing the construction plans;

(4) the Pavement Management Unit for the purpose of selecting and designing the type of pavement to be used for roadway improvements including ESAL (equivalent single axle load) values from truck volumes;

(5) the Traffic Engineering and Safety Systems Branch for the purpose of evaluating capacity analysis of facilities and designing signal systems and traffic operational improvements;

(6) the Bridge Maintenance Unit for the purpose of selecting bridge types and preparing construction plans;

(7) the Fourteen Division Offices for use in making maintenance and minor roadway improvement decisions;

(8) Consultants working for NCDOT on projects to assure accuracy, cost and consistency with related travel demand studies.

1.3 Desired Output

The official output of the traffic forecasting process includes three documents: a memo to the requestor; graphical representation of the traffic volumes (hard copy and possibly electronic format); and a report for the official file. Without all three elements being completed and appropriately distributed, the forecast is not considered complete.

The memo to the requestor should contain all pertinent information, including basic assumptions made in the forecast. These assumptions would include projects assumed built in the future year in addition to the project under study.

The graphical representation of the traffic forecast should look professional using computer developed graphics and indicate 24-hour volumes for through and turning movements including percent trucks for the study area network for both a base year as well as one or more future years. The future year may be 10, 20, or 25 years from the base year. Typically, we provide a future year of at least 20 years. The graphical representation shall always be provided in hard copy, and may additionally be provided in electronic format.

The report for the official file should include the data used in developing the forecast along with an explanation of how the data was used in developing the forecast. Examples could be turning movement counts, census data, local land use plans, development site plans, field notes, interview notes from discussions with local officials, details of the model if a model is used, etc.

The output of all project-level traffic forecasts is similar; however, the analysis used to arrive at the 24-hour volumes differs from project to project depending on the complexity of the study area, data available, and many other factors. The specific traffic variables forecast for a project-level traffic forecast are shown below.

1. Average Annual Daily Traffic (AADT) – The AADT is the total volume that a roadway link carries during 24 hours on an average day. NCDOT Traffic Survey Unit applies seasonal and daily factors to daily traffic count data to estimate an AADT for a roadway link. AADT information by county is distributed by the Traffic Survey Unit. This information can be found in

the large green AADT books, on CD, or it can be found on the internet at http://www.ncdot.org/planning/tpb/gis/DataDist/GISTrafSurvMaps.html

NOTE: *Seasonal traffic forecasts may be provided when requested for areas that experience extreme fluctuations in traffic patterns during certain times of the year, such as the coastal areas. These forecasts take longer than typical forecasts.*

2. Intersection Movements – Intersection movements are estimates of through movements, left turn movements, right turn movements, and occasionally u-turn movements which are determined for each pertinent intersection in the study area. Some projects require turning movements for heavily used driveways or parking lot entrances. Forecasts for corridors with truck stops, major distribution facilities, or shopping centers connected to roads by driveway access in the study area may require driveway movements. The intersection movements will typically be represented by quadrant moves. In some specific cases, such as for one way streets or complicated interchanges, individual intersection movements as identified below may be represented. Typically turning movements are only given where the total entering volume is in excess of 1,000 vpd.
3. Design Hour Volume (DHV) – According to AASHTO, the DHV is the volume for the 30th highest hour in the year (most likely a PM peak on a bad Friday). In practice, the 30th highest peak hour volume is generally the heaviest PM peak hour and is selected by the NCDOT as the default DHV. Special projects may require the DHV to be the 30th highest AM peak hour volume because of major influences on the morning traffic volumes. Forecasts for corridors influenced by schools, truck loading facilities, or businesses that operate a third shift in the study area may require AM peak hour volumes.
4. K Factor (K) – The K factor is the DHV expressed as a percentage of the AADT, or K=DHV/AADT. K factors differ by location and facility type. NCDOT has automatic traffic recorders located throughout the state which count traffic for all hours of the year. From these counts, the DHV can be determined and the K factor can be calculated. For areas where there are no automatic traffic recorder stations, the K factor is estimated by comparing with related sites which do have automated traffic recorder stations.
5. Directional Split (D) – The D factor is the percentage of the DHV traveling in the direction of major flow on two-way roadways. The imbalance of traffic in two-way flows is usually greatest during the peak periods.
6. Direction Arrow – The Direction Arrow on the diagram is pointed in the direction of major flow during the designated peak hour (typically PM peak). It is usually assumed that the direction of major flow for the alternate peak hour (generally AM peak) is the reverse direction.

7. Truck Percentage – A truck percentage for a roadway link is the average annual average daily volume of some classification of heavy vehicle divided by the total AADT. Typically, percentages are provided for Dual-tired vehicle classification and the TTST classification. In this context, Duals mean single-unit trucks with typically at least one dual-tired axle. TTSTs (Truck, Tractor, Semi-Trailer) are multi-unit trucks, including both single and twin trailers. This classification breakout may be expanded in the future particularly as the data needs for pavement design become more specific. Special Projects that include roadways sensitive to weight such as bridges or roadways traveled by unusual vehicles such as triple trailers may require additional vehicle percentages.

1.4 Types of Forecasts

Project-level traffic forecasts typically fall into eight categories. The process for the different types of forecasts is similar; however, the analysis tools used and output provided may be different for each type.

(1) Feasibility studies - turning movements will not usually be needed and the analysis can be more generalized.

(2) Purpose and Need – Only no build and build options will typically be analyzed.

(3) Alternatives Analysis – Complete traffic forecast will be provided for all requested alternatives.

(4) Design – Complete traffic forecast will be provided on the selected alternative.

(5) Pavement Design – Particular focus on turning movements on all y-lines (which may include small y-lines) and on the truck percentages since these are critical to pavement design.

(6) Congestion Management – Particular focus on the turning movements and mainline volumes on the selected alternative or several alternatives.

(7) Bridge Replacement – Complete traffic forecast will be provided for the selected alternative, and major detour routes as requested .

(8) Special products – The output will be determined on a case by case basis.

CHAPTER 2: THE FORECASTING PROCESS

The process of developing a traffic forecast typically varies by the locale of the project (rural or urban) and the complexity of the improvement. Although each traffic forecast is unique and the amount of work associated with each step varies based on these primary parameters, the typical process shown below should be followed whenever possible. At all stages of the forecasting process, the assigned forecasting staff must provide sound documentation (e.g. design year for planning, socio-economic and truck data, area development potential, etc.). The typical process is detailed as follows:

1. Prior to requesting a traffic forecast, the requestor shall review the background data for the project. Accurate maps should be obtained and reviewed. Project descriptions should be developed. A project number to charge work to should be obtained. Assumptions should be clearly identified and documented. A reasonable due date target should be identified. The actual forecast request should be prepared on the standard form shown. The form is periodically updated to reflect input and comments received, so the requestor should always check the Transportation Planning Branch web site for the most recent edition of the form.

   http://www.ncdot.org/planning/tpb/PLANNING/FORECAST_REQUEST_FORM_0705.doc

   Appendix A shows an example of the current form. Three copies should be sent to the State Traffic Forecast Engineer, currently Deborah Hutchings, PE. Please note that incomplete requests will result in delays of the forecast, as they must be returned to the requestor to get the full information needed to provide the proper product.

2. All requests for traffic forecasts must be sent through the State Traffic Forecast Engineer, and will be marked with the receipt date, and recorded in Department's project tracking database by the State Traffic Forecast Engineer. This would include revisions to the scope of a current forecast, or updates of past forecasts.

   It should be noted that revisions in scope will require additional time and a new target due date will be established.

3. Within two weeks of receipt, the State Traffic Forecast Engineer will evaluate the request for compliance with the standards as noted in this manual (including project data provided and target due date). For incomplete requests, the State Traffic Forecast Engineer will return the request to the requestor for completion of the information, mapping, or other missing data, prior to entering the project into the Department's project tracking database. When resubmitted, the request will be issued the new date in the project

tracking database. The official date of the request shall be the date that the complete request is received by the State Traffic Forecast Engineer.

4. Upon receipt of a complete traffic forecast request, the State Traffic Forecast Engineer will review current workloads and assign the forecast accordingly. Forecasts may be assigned to the regional Planning Group, Traffic Forecasting Group staff or on-call consultant staff (hereinafter referred to as the "Assigned Forecaster"). The State Traffic Forecast Engineer will keep one copy of the request, and distribute copies of the request to the assigned engineer / planner / forecaster, and the appropriate Group Supervisor(s).

5. Within two weeks of receiving the assigned request the planning engineers/traffic forecasting modelers must initiate discussions with the requestor to clarify the request and assumptions, receive information on scheduled scoping meetings and field reviews and discuss a target due date based on the information known at that time. This discussion could take place informally or formally in a meeting. It is vital that all assigned planning engineers/ forecasting modelers participate, when possible, in scoping meeting, field reviews, etc. in order to become more familiar and stay abreast with the project details under study.

6. Within two weeks of receiving the assigned request the planning engineers/traffic forecasting modelers will determine the due date (including providing two weeks for internal Transportation Planning Branch review). If the date is not as shown on the original request, then prior to determining the due date, they will discuss the project with the requestor to negotiate a due date. If they are unable to agree on a date, then the State Traffic Forecast Engineer will immediately be notified and work to resolve the issue. **The due date is to be established within two weeks of the engineer / forecaster receiving the request, with the requestor and the State Traffic Forecast Engineer being notified in writing (memo form or e-mail).**

7. After receiving an assigned project, the Assigned Forecaster will perform thorough background research in order to become knowledgeable with the project specifics. This is considered the Input Phase as shown in the Traffic Forecasting Flow Chart in Appendix B. The project research includes:

    - Careful examination of project requestor's background information (i.e. project purpose, description, location maps, current socio-economic and traffic conditions, status with relation to transportation plan, assumptions, alternative scenarios, and target date).
    - Collection and review of previously completed traffic forecast projects at location or within the area under study.
    - Discussion with staff who completed previous forecast projects.
    - Develop project and area work maps (counties, rural, urban, etc.).
    - Initiate discussion with planning project engineer(s) responsible for project area under study to determine all possible data (model volumes, current and future developments, flow patterns, etc.).

- Identify base and future years. Typically, the base year is the year that the analysis is performed. Likewise, the future year does not have to be the project design year. Usually the forecast year is 20-25 years into the future, but it may be more depending on the circumstances such as the horizon year for a transportation demand model. (i.e. 2002 base year/2025 forecast year; 2003 base year/2030 forecast year). The requestor can interpolate intermediate years.
- Collection of historical travel data trends (short and long term).
- Collection of current and projected socio-economic data (employment, population, land use, etc.).
- Collect and analysis of old volume counts and turning movements.
- Provide graphic sketches of project using Visio or other appropriate software. Preliminary graphic sketches of assigned project(s) should be completed prior to performing actual travel forecasting technique(s). Sketches can be useful in initial discussion and presenting collected data. Hard copy should always be provided, and electronic copies may also be provided.
- Documentation of data collected.
- Plan date for project field investigations. Field trips are recommended but are not always necessary. The suitability of a field trip should be discussed with the appropriate supervisor.

8. The Assigned Forecaster will make contacts as appropriate with city/county planning staff, regional council of governments, economic development directors, development recruiters, consultants, and other NCDOT Division staff to assess growth potentials (population, land use, etc.), flow patterns, environmental concerns, and other travel demand details. When appropriate, the staff will schedule appointments to meet with the transportation officials for further discussion on project details. Document all communications with transportation officials.
9. Before performing field investigation(s), the Assigned Forecaster will meet with their supervisor to review findings at this point and discuss traffic forecasting strategies for project under study.
10. Perform field investigation(s), if necessary, to observe travel flow patterns (AM and PM peaks), current land use and potential growth areas (e.g. residential, farm, and industrial uses), trucks routes, identification of traffic data collection locations, etc. A final review or additional field trips may be necessary to collect pertinent data due project requirements or changes.
11. Request traffic counts and turning movement counts at appropriate locations (as necessary). Typically, it is not cost efficient or practical to collect turning movements at location with less than 1,000 ADT. Special justification should be given for requesting turning movements at these locations. The Assigned Forecaster will make request(s) via letter or e-mail to the Traffic Survey Unit

allowing for a six to eight weeks return rate of the requested product. All traffic counts and turning movement count requests must include the count classification sheet giving project description, county location, intersections descriptions and sketches, route locations, functional classifications, facility types, truck spur count designations, etc. NOTE: See the specific guidelines from the Traffic Survey Unit.

12. Document initial communication(s) with requestor. The Assigned Forecaster will provide written confirmation of the request, details of the oral discussions, and proposed project due date within three weeks of receiving the assignment (from the date identified on the memorandum from the State Traffic Forecast Engineer). This confirmation could be done via memo or e-mail. Copies of this correspondence shall be sent to the supervisor and State Traffic Forecast Engineer. These copies are vital for updating the project tracking database and maintaining project information flow between units and the Unit Head. In addition, the Assigned Forecaster will follow up on their initial contact with the forecast requestor on a routine basis. It is vital to maintain a continuing coordination between the forecasting groups and the requesting groups. This continued coordination will promote proper traffic forecast project reviews. In addition, it will maintain consistency in travel demand estimates for the management of road development plans; varying plan scenarios for coordinated development of urban and rural highway systems; and planning areas on a statewide basis (i.e., accuracy in traffic estimates, growth assumptions, socio-economic data, and other travel demand considerations used in systems planning studies).

13. The Analysis Phase as detailed in the Traffic Forecasting Flow Chart in Appendix B begins here. Perform travel demand forecasting technique(s). The Assigned Forecaster will make preliminary forecast(s) using the following technique(s) as appropriate:

    - Regression Analysis
    - Graphical Analysis
    - Simple and Compound Interest Analysis
    - Quick-Response Urban Travel Estimation Analysis
    - Engineering judgment growth rates, plot, equations based on historical travel trends, socio-economic activity trends, future land use growth potential, availability alternate routes and modes
    - Travel Demand Models (such as TransCAD, Tranplan, etc.)
    - Traffic Simulation Models (Corflow, Netsim, etc.)

14. Analyze preliminary forecast estimates by comparing to national, statewide, regional, county, and municipal trends. Check for consistency in travel demand patterns and truck percentages by examining previously completed forecast projects, origin and destination studies, highway statistical reports, and volume counts. Review preliminary travel projections with supervisor,

then coordinate with planning project engineer(s) for consistency of project estimates. In cases when necessary, meet with other appropriate NCDOT staff (Environmental, Design, Traffic, Pubic Transportation Units, etc.) for added information on project specifics to validate travel projections.

15. Refine traffic forecast estimates with careful consideration of truck percentages (vital to highway and pavement design). Develop DHV %, D, and Truck % for all major routes and y-lines considered in project.

16. The Assigned Forecaster and Group Supervisor will meet to discuss and review the draft forecast estimates, recommendations, documentation, and other project details.

17. The Output Phase as shown in the Traffic Forecasting Flow Chart begins here. The supervisor of the Assigned Forecaster will perform all final review of projects and accompanying documentation. The Assigned Forecaster will coordinate the review with their supervisor.

18. A minimum of two weeks prior to the due date, two copies of the final draft traffic forecast, including the background information, report, forecast memo, location map should be forwarded to the State Traffic Forecast Engineer. The State Traffic Forecast Engineer will distribute to the appropriate Regional Planning Group Supervisor (or Forecast Group Supervisor if the forecast is done by the Planning Group) for review and comments. This review is intended to focus on ensuring consistency with other work or traffic forecasts in the area. When necessary, the Assigned Forecaster, supervisor and others will meet to discuss a project and any suggested changes.

19. The actual transmittal memo should include a summary of the project, clearly state the assumptions used in developing the forecast (specifically including what new projects were anticipated to be open in the future year) and any other important factors that the requestor should know. Forecast transmittals will be sent to the requestor via memo with carbon copies to:
    - One copy and all appropriate documentation in the official forecasting files.
    - State Traffic Forecast Engineer (currently Deborah Hutchings, PE),
    - Transportation Planning Branch Regional Planning Group Supervisor,
    - State Roadway Design Engineer (currently Jay A. Bennett , PE),
    - Plan Review Engineer in Congestion Management (currently Nathan Phillips , PE) , and
    - Assistant Director in GIS (currently L. C. Smith).

20. The State Traffic Forecast Engineer will update the forecasting database to show completion of the project.

CHAPTER 3: FORECASTING RESPONSIBILITY MATRIX

3.1 Responsibility

The traffic forecasting process is long and complicated. This responsibility matrix has been designed to be a quick reference for each person in the process. Simply review the section under your role to gain an understanding of what we expect from you and what you can expect of us.

3.2 Requestor

As the requestor, you are our primary customer. We want to meet your needs, but we need your help to do so. *The first and foremost responsibility of the requestor is to be thoroughly familiar with and know the project prior to requesting a forecast.* The following items should guide you.

- Prior to requesting a traffic forecast, the requestor shall review the background data for the project. Accurate maps shall be obtained and reviewed. Project descriptions shall be developed, with project termini designated. Better mapping will produce a better and more timely forecast. If hearing maps are available, copies are greatly appreciated.
- A project number (for the Forecaster to charge work to) shall be obtained prior to requesting the forecast, and included on the request form.
- A forecast shall only be provided for those intersections as specifically requested. A complete listing of intersections where turning movements are needed shall be provided for each alternative / alignment. Be sure to include intersections on the no-build alignment for bypass projects.
- Assumptions shall be clearly identified and documented in writing. (For example: What other projects in the area should be considered open to traffic in the future year? Are there specific future developments that should be considered constructed?)
- A reasonable target due date shall be identified. (While the forecast shall be completed as quickly as possible, the requestor should schedule for the following times as this allows for current work loads, data collection, as well as unexpected projects which may arise).
    - A minimum of five months for a routine Bridge Forecast.
    - A minimum of six months for a routine widening traffic forecast.
    - Complex forecasts, and those on new location, should be allotted more than six months.
- In the case where an “expedite” forecast is requested, the requestor shall obtain appropriate signatures, as well as identify on the form potential forecasts (from the same geographic region of the State) which may be delayed to accommodate the requested expedite. The State Traffic Forecast

Engineer will set up a meeting to finalize the schedule of forecasts affected by the expedite request. While all efforts will be made to minimize or avoid delays to other projects, as a part of the submittal that this must be considered and the information submitted.

- The actual forecast request should be prepared on the standard form shown. (Appendix A shows an example of the current form.) The form is periodically updated to reflect input and comments received, so the requestor should always check the Transportation Planning Branch web site for the most recent edition of the form.

  http://www.ncdot.org/planning/tpb/PLANNING/forecast.html

  This request form, maps, and other documentation must be complete, or it will be returned to the requestor for additional information prior to assigning the forecast. **Three complete copies are required.**
- The requestor can interpolate intermediate years of a forecast, unless the forecast documentation explicitly says otherwise.
- If at any time during the forecasting process, any information changes or if the project is canceled, the requestor shall immediately notify the State Traffic Forecast Engineer, using the Traffic Forecast Request Form. *It should be noted that changes in the project (additional intersections needed, change in due date, or other changes, even if seemingly minor) will result in a revised, later due date.*
- Advise the assigned planning engineers/traffic forecasting modelers of all scoping meetings, field reviews or of any other discussions that could assist the forecaster in developing the forecast.
- You should expect to receive written confirmation (either e-mail or memo) within approximately four weeks of your request. This confirmation will notify you of the assigned planning engineers/traffic forecasting modelers and establish an initial due date.

3.3 Transportation Planning Branch Administrative Staff

The Administrative staff plays a key role in ensuring that forecasts are handled in a timely manner.

- Traffic forecast requests shall be promptly forwarded to State Traffic Forecast Engineer.
- Processing / copying and other handling of forecasting information.
- Routine filing of traffic forecasting information.

3.4 State Traffic Forecast Engineer

The State Traffic Forecast Engineer is responsible for managing the forecasts and assigning the work either internally, or coordinating with the Manager for on-

call consultants. The State Traffic Forecast Engineer should take into account existing workloads, current vacancies, knowledge of the area, and past experience with particular forecasts when determining the assignment.

- Within two weeks of receipt, the State Traffic Forecast Engineer will evaluate the request for compliance with the standards as noted in this manual (including project data provided and target due date). For incomplete requests, the State Traffic Forecast Engineer will return the request to the requestor for completion of the information, mapping, or other missing data, prior to entering the project into the Department's project tracking database.
- Upon receipt of a complete traffic forecast request, The State Traffic Forecast Engineer will mark the request with the receipt date. This date will be entered in the Department's project tracking database by the State Traffic Forecast Engineer as the official date of request. Updates or revisions to a request require a new submittal and will result in a new date being entered, with a subsequent new target due date.
- State Traffic Forecast Engineer will review current workloads and assign the forecast accordingly. Forecasts may be assigned to Planning Group staff, Traffic Forecasting Group staff or on-call consultant staff. The State Traffic Forecast Engineer will consult with both the appropriate Regional Planning Group Supervisor and Traffic Forecasting Group Supervisor prior to assigning the forecast whenever possible.
- The State Traffic Forecast Engineer will prepare a memorandum assigning the forecast including any information such as previous forecasts for the project listed in the Database, or information received during discussion with the Group Supervisors. Copies of the memorandum will be distributed (often by e-mail) to the Assigned Forecaster, and the appropriate Group Supervisor(s), and requestor.
- The project tracking database shall be updated to reflect the assignment.
- In the case of a traffic forecast request being properly requested to be “expedited” (signed by the appropriate official in the originating Branch) the State Traffic Forecast Engineer shall coordinate a meeting with the appropriate staff in the originating Branch to determine the forecasts to be delayed to accommodate the expedite request.
- If there is a problem with the assigned forecaster arriving at an acceptable date the State Traffic Forecast Engineer will be available to assist the forecaster by attending a meeting set up by the forecaster with the affected parties.
- The State Traffic Forecast Engineer shall review all forecasts for format, and distribute forecasts to Planning Group Supervisors for general review by their units. (or distribute to Forecast Group Supervisors when Assigned Forecaster is in a Planning Group). Routine updates on the status of all assigned projects will be provided to the Branch Manager and Unit Heads by the Forecast Group Supervisors.

- The State Traffic Forecast Engineer shall review the tracking of forecast schedules in the PMii database system.

3.5 Forecasting and Planning Group Staff (Assigned Forecaster)

The Assigned Forecasters are ultimately responsible for the quality and timeliness of the traffic forecast. The accepted process and procedures shall be followed for each forecast received. Particular emphasis should be placed on communication and documentation.

- It is vital that all Assigned Forecasters participate in scoping meeting, field reviews, etc. in order to become more familiar and stay abreast with the project details under study.
- Within two weeks of receiving the assigned request (from the date on the memorandum transmitting the forecast by the State Traffic Forecast Engineer), the Assigned Forecaster will provide written confirmation to the requestor of any discussions, and the project due date. This confirmation could be done via memo or e-mail. Copies of this correspondence should be sent to the supervisor and State Traffic Forecast Engineer. These copies are critical for updating the project tracking database and maintaining project information flow between units and the group manager.
- The Assigned Forecaster will follow up on their initial contact with the forecast requestor on a routine basis.
- Forward the draft traffic forecast, including the background information, report, forecast memo, location map to their supervisor and two copies to the State Traffic Forecast Engineer at least two weeks prior to the due date for review and comments (who will forward one copy to other supervisors as appropriate for review). When necessary, the Assigned Forecaster, supervisor and others will meet to discuss a project and any suggested changes.
- It is critical that the target dates promised be met. While every effort should be made to meet the targeted due date, if it becomes apparent that this date is in jeopardy, then immediately (at least two months prior to target date) notify your supervisor, the State Traffic Forecast Engineer and the requestor, and negotiate a revised due date. This new due date will be documented in a memo to the requestor, with copies to the Unit Head and State Traffic Forecast Engineer.
- The Assigned Forecaster shall prepare and distribute the standard transmittal letter and forecast.

3.6 Traffic Forecasting and Planning Group Supervisors

The Traffic Forecasting and Planning Group Supervisors in the Transportation Planning Branch play a key role in ensuring that the forecasts follow the

accepted practice, are suitable for the requested use, take into account any other known applicable information and are delivered on time. In general, the Supervisory staff will meet the following expectations:

- Keep abreast of Branch standards and provide technical and policy guidance when necessary throughout the forecasting process to their staff.
- The supervisor is responsible for reviewing all forecasts in their unit and making sure that the various forecasts throughout their geographic area are consistent.
- When necessary, meet with the Assigned Forecaster and others to discuss a project and any suggested changes.
- The Group Supervisor of the Assigned Forecaster for a given project is directly responsible for:
  - Review and approval of the forecast. This includes insuring that the forecast balances throughout the project; general agreement with the mainline and Y-line volumes, and other forecast information such as truck percentages, directional distribution, etc.
  - Review and approve that the supporting documentation of a forecast is correct. (The format of this documentation is to be standardized and set by the State Traffic Forecast Engineer.) This would include documentation concerning use of model if appropriate and consideration of projects assumed to be constructed in the future year.
- The Regional Planning Group Supervisor. When the Assigned Forecaster is in a forecasting Unit, the forecast and distribution letter (only) will be distributed to the Regional Planning Group Supervisor by the State Traffic Forecast Engineer for a cursory review prior to its release. Typically one to two weeks will be allotted for this review, but in expedited circumstances the time may be less.
  - The Group Supervisor or designee shall provide a cursory review of the mainline numbers to assure that the forecast is consistent in magnitude with other projects in the area. The primary purpose of the review is for consistency with other projects and general logic of the forecast.
  - Other comments concerning any issues with the forecast are welcome and appreciated.
  - A written response is required to the State Traffic Forecast Engineer and Assigned Forecaster by the time designated even if there are no comments, so that the forecast may be released. This can be in memo format or via e-mail. Lack of comment by the due date constitutes formal approval of the forecast.
- The Traffic Forecast Group Supervisor. When the Assigned Forecaster is in a planning Unit, the forecast and distribution letter (only) will be distributed to the Forecast Group Supervisor by the State Traffic Forecast Engineer for a

cursory review prior to its release. Typically one to two weeks will be allotted for this review, but in expedited circumstances the time may be less

- The Group Supervisor or designee shall provide a cursory review of the mainline numbers to assure that the forecast is consistent in magnitude with other projects in the area. The primary purpose of the review is for consistency with other projects and general logic of the forecast.
- Other comments concerning any issues with the forecast are welcome and appreciated.
- A written response is required to the State Traffic Forecast Engineer and Assigned Forecaster by the time designated even if there are no comments, so that the forecast may be released. This can be in memo format or via e-mail. Lack of comment by the due date constitutes formal approval of the forecast.

3.7 Traffic Survey Unit

Traffic data from the Traffic Survey Unit is crucial to developing accurate forecasts. The Traffic Survey Unit can provide Turning Movement Counts (Manual 16 hour), Vehicle Classification Counts (collected using a counter for 48 hours), or Manual Classification Counts (Manual 16 hour). The Manual Classification Counts are typically used only when the traffic flow is too inconsistent at a location to collect using a counter. All counts need to be factored to generate AADT. All measure peak hour volumes and truck volumes (truck volumes are measured to varying degrees). The expectations for the Traffic Survey Unit are:

- Provide timely confirmation on expected delivery dates of turning movement and other data. This will allow forecasters, in turn, to provide due dates to customers of forecast products.
- Investigate and provide currently available accurate data to the Assigned Forecaster.
- Receive request for additional counts.
- Perform requests in a timely manner.
- Provide guidance on the truck percentages, seasonal data and other significant information from the statewide perspective.

CHAPTER 4: SUMMARY

The project level traffic forecast is the foundation for all TIP projects – from the initial determination of feasibility, to the purpose and need of a project, to the geometric design, to the determination of the pavement thickness itself. Many people provide critical inputs into the forecasting process, and many others later use data provided from the forecast.

When requesting a traffic forecast be developed, it is critical that the Requestor first and foremost be familiar with the project. This will minimize repeated updates, or needless work and wasted resources. A fully thought out, well documented request reduces work time both for the initial forecast as well as others throughout the process; reduces frustration; and ultimately reduces project delay.

It is also critical that the Assigned Forecaster be aware of the number of people and processes that await the completion of the forecast . The Forecaster has the obligation to provide a complete and well documented forecast in a timely manner, and on schedule.

Working together in a cooperative process we can provide this critical foundation for transportation projects.