Approved: October 20, 2009
**Revised: February 5, 2013**
Version 2.0

# Traffic Forecasting
# Collect Existing Data

## *Description*

*The purpose of this procedure is* to provide guidance for the Assigned Forecaster (AF) when they accumulate complete and relevant collections of data to support the development of project level traffic forecasts and to ensure consistency of data across forecasts.

## *Responsibility*

The *TPB Assigned Forecaster (AF)* is responsible to ensure that existing data is properly collected.

The *TPB Group Supervisors (Supervisors)* to provide training such that their staff is aware of available data and how to collect the data.

## *Scheduling and Time Constraints*

None.

## *Procedure*

| Step | Action |
|---|---|
| **1** | **Traffic - NCDOT AADT Counts**<br>Collect the available NCDOT AADT (Average Annual Daily Traffic) counts for the roads in the forecast. Historical counts should be collected for a minimum 20 year period.<br>It is important to remember that MPO Urban areas and Secondary Roads (SR) are counted on a biennial cycle; approximately half counted each year. Primary Roads, including Interstates are counted annually. Check both the urban and county maps as needed.<br>• AADT GIS shapefiles could be downloaded from the NCDOT – Traffic Survey products website http://www.ncdot.gov/doh/preconstruct/tpb/traffic_survey/<br>• Historical AADT data is available from the Resource tab on the CTP GIS Data Layers spreadsheet S:\Shared\TPB Reference\Comprehensive Transportation Plan.<br>E-mail the TSG staff to research available existing counts. The link to send a request can be found on the above reverenced site. When requesting traffic data, please provide the following information:<br>• County in which the request is located<br>• City or Town (if applicable) in which the request is located<br>• Nearest intersecting road to the request location<br>• It is also desirable to ask for the data from several years (such as “the past 5 years.”)<br>• Do not use an address, block number, distance or GPS when describing location. |

Example:

- Wake County
- City of Raleigh
- I-440 (location of the count request)
- SR 1005 - Six Forks Rd (nearest intersecting road)

**Traffic - Other Available TSG Traffic Count Data** Review the list of available Automatic Traffic Recorder (ATR) data.

- Go to S:\Traffic Forecast Tools\library\ATR Station Map (PDF map)
- Look on the map in the area of the project, and note the station number(s) (if any).
- For relevant location(s), send in the data request via Contact Us (on the TSG web site).

Review the list of available Interstate Control (IC) data if the project will include an Interstate (mainline or Y line).

- Go to http://www.ncdot.org/doh/preconstruct/tpb/traffic_survey/
- In the box labeled "Product Links" click on the "AADT Interstate & Freeway Volume Reports" for years 2007 through 2011. If additional information is required, follow the instructions at the bottom of the web site to contact TSG and request additional information.
- Scroll through the line map to the interstate of interest.
- Look on the map in the area of the project. Under the "Control" column, the Station number is noted. Note the appropriate "**IC**" station numbers (such as "IC1005" in the example below). ["A" is for ATR stations, and this is not the best resource for that data. "TC" is data not utilized in the forecasting process.]

*Transportation Planning Branch - Division of Highways*

*2005 Interstate AADT Volumes*

*Interstate 26*

*Traffic Survey Unit*

| Area/Station | Exit | AADT | Control | RSeg |
|---|---|---|---|---|
| Asheville Urban 10000244 | 21 – 23 | 54,000 | | 22.0 |
| Asheville Urban 10000243 | 23 – 24 | 55,000 | | 23.5 |
| Asheville Urban 10000253 | 24 – 25 | 60,000 | | 24.5 |
| Asheville Urban 10000066 | 25 – 26 | 57,000 | TC1099 | 25.5 |
| Asheville Urban 10000065 | 26 – I-240 | 62,000 | TC1099CC | 26.5 |
| Asheville Urban 10000174 | I-40 – 33 | 72,000 | IC1005 | 32.0 |
| Asheville Urban 10000180 | 33 – 37 | 68,000 | | 35.0 |
| Buncombe County 1000053 | 37 – 40 | 63,000 | | 38.5 |
| Henderson County 4400010 | 40 – 44 | 49,000 | A4401 | 42.0 |

**3** **Traffic - Other Traffic Count Data – NOT from TSG**

Traffic data may be available from a variety of other sources such as other NCDOT Business Units or local governments. It is critical that data collected by others (not TSG) be used with caution.

**NOTE:** Before using a local government's traffic data, be sure to understand how the data was collected prior to using the data. Often others collect data for different purposes and therefore use different standards which are not as comprehensive as those for forecasting. Differences can include truck groupings; numbers of hours data collected; methodology to convert from counts to AADT.

**4** **Traffic – Summary**

It is recommended that a summary of available traffic count data be complied in tabular form. The summary table should include the following:

- Location Description (e.g., US421 west of NC Hwy 16)
- Count Type (e.g., Turning Movement; tube count; ATR),
- Serial Number (if applicable) – this would be the number assigned the station by the Traffic Survey Group.
- Date Count taken (Include the month, day and year. The day of the week is also useful)
- Count Duration
- Count Source (TSG, MPO, city, county, etc.).

**I-4733 TRAFFIC DATA**

| Location Description | Count Type | Serial No. | Month(s) | Source |
|---|---|---|---|---|
| US521 & I-485 INNER RAMPS | TM | 06TM0310 | October 17, 2011 | TSG |
| WESTINGHOUSE BLVD & I-485 SERVICE ROAD | TM | 06TM0315 | October 10, 2011 | TSG |
| RAMP FROM I-485 "INNER" TO WB NC51 | Hourly | 66010700027 | October 12-13, 2011 | TSG |
| RAMP FROM SB NC49 TO I-485 "OUTER" | Hourly | 66010800178 | October 12-13, 2011 | TSG |
| GREEN ROAD SOUTH OF PARK ROAD | Hourly | N/A | October 12-13, 2011 | Charlotte |
| PARK ROAD AT I-485 BRIDGE | Class. | 66020100194 | October 12-13, 2011 | TSG |
| I-485 WEST OF I-77 | Class. | 06MC0214 | October 10-11, 2011 | TSG |
| SR1126-NATIONS FORD RD AT I-485 BRIDGE | Class. | 66020300067 | October 12-13, 2011 | TSG |
| I-485 EAST OF I-77 | ATR | A5910 | 2003-2005 | TSG |
| I-77 BETWEEN I-485 ENTRANCE AND EXIT RAMPS | WIM | W5902CC | DECEMBER 2010 | TSG |
| I-485 WEST OF I-77 | IC | IC5904 | JULY 2011 | TSG |
| Class = Classification Count (48 hrs.) | | | | |
| TM = Turning Movement Count (16 hrs.) | | | | |
| Hourly = electronic volume count (48 hrs.) | | | | |

**5** **Socio-Economic Data**

Conduct a survey of available socio-economic data:

- Download employment data from the North Carolina Department of Commerce Division of Employment Security
- Download county-level population projections from the North Carolina Office of State Management and Budget web site.
- Download US Census data from the U.S. Census web site.
- The data obtained should be concisely complied and kept in the AF's files until

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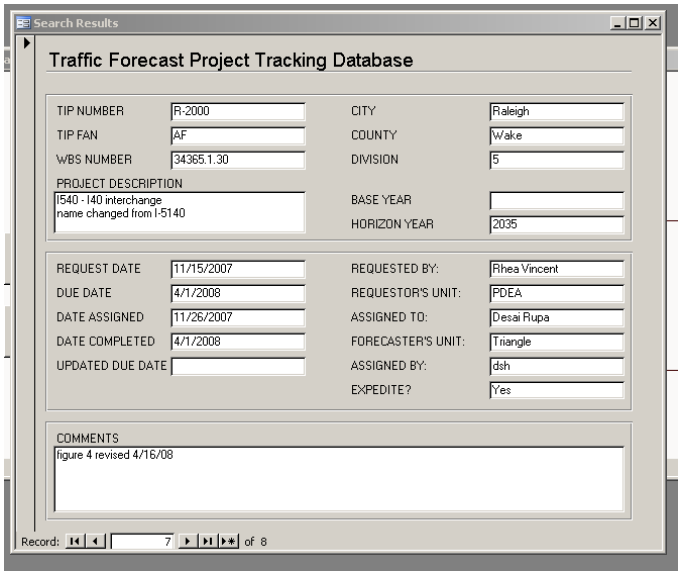
| | such time as summarized in the ***Traffic Forecast - Report*** procedure. |
| **6** | **Travel Demand Model (TDM)**<br>Determine if the project is located in an area where Travel Demand Model (TDM) coverage is available.<br>• As a preliminary check, go to the Traffic Forecasting Workbook (S:\Traffic Forecast Tools\TF-workbook.htm). Under Traffic Forecasting Tools click the link for Model Area Coverage Map. This figure shows major model locations and their network superimposed on a State map. The Available MPO Model Data link will access an excel spreadsheet which indicates the base / future / intermediate years and status of the MPO models.<br>• Contact the Planning Engineer in the geographic Planning Group for information on the current model status.<br>If there is a current model available to use as a tool in the forecast, the Assigned Forecaster should collect data from the model. The method for collecting this data could include using the model directly; asking the Planning Group Engineer for assistance; or asking for assistance from the TPB Model Group. Each situation is unique and the Assigned Forecaster should discuss the preferred method with their Supervisor.<br>Travel Demand Model information should be collected and displayed in a concise, understandable manner. Data which is required would include (but not necessarily be limited to):<br>• Specific version of model used (name and version number or date of adoption).<br>• Model base year volumes in area of project Forecast<br>• AADT from NCDOT AADT files for corresponding locations to review sub area calibration / applicability of model for forecasting.<br>• Raw model numbers for years / scenarios for the forecast.<br>• Adjustments made to model output to determine forecast estimates.<br>An Excel spreadsheet has been developed for ease of display of model volumes / calibration review data**.** This can be found at S:\Traffic Forecast Tools\Forecast Templates\ModelValidation. Minor modifications to the table may be necessary depending upon specific forecast needs.<br>Additionally, in the documentation there should be included discussion of any major developments in the immediate area and if they are assumed to be inherent in the model SE future year data, or to be added to the model forecast. |
| **7** | **Previously Developed Traffic Forecasts**<br>Review and / or assemble copies of previously developed traffic forecasts for projects that intersect or coincide with the subject project.<br>• Check the Traffic Forecast Database to see if the project has been entered before. This can be found on the S drive: (S:\Traffic Forecast Tools\projtrac).<br>o Double click on the most recently dated file (the file is updated several time per year).<br>o Click on “Search by TIP”<br>o Enter the TIP number in question. The dash must be included, but any TIP section letters (such as A or CC) should not be included. Example: |

- R-2000 ← acceptable
- R2000 ← not acceptable
- R-2000AB ← not acceptable

o The database may have multiple entries for a project, if the forecast has been completed multiple times. Below is a typical screen shot:




- Check "official" traffic forecast files located on the 4th floor in room 447. (Forecasts developed after July 2009 may also be found electronically in Project Store.)
  - o To access the Official Forecast files, follow the procedures outlined in the ***Traffic Forecast – Official File*** procedure. Files must be signed out and returned immediately when not in use.
  - o Forecasts are filed first by County name, then by TIP number.
  - o Copies should be made of past forecasts as needed.

**8 Interviews**

Conduct professional interviews with representatives from relevant parties. The name and position of each person interviewed (and information given) should be retained and will later be included in the Cover Letter when the forecast is distributed. Staff to interview may include, but not be limited to

- NCDOT Transportation Planning Branch (TPB) MPO or RPO Coordinator (required);
- Other NCDOT staff such as Division Engineer or Division Planning Engineer;
- MPO / RPO staff ;
- Local government staff (typically planning and zoning personnel); and
- Private developers when development activities are planned or ongoing.

The interview should focus on issues that directly or indirectly affect travel demand on roadway facilities in the study areas. This includes, but is not limited to:

- Planning and zoning provisions that aim to encourage or constrain future growth.
- Public works projects funded and managed by other government agencies (not

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| | NCDOT).<br>• Examples of specific ongoing or recently completed development projects.<br>• Examples of specific projects under review on the date of the interview.<br>• Discussion of anecdotal information regarding traffic operations to support or refute other data sources.<br>• Transcribe each telephone interview in written notes. |
| **9** | **Field Investigation**<br>Conduct a field investigation of the study area. It is necessary that there be a field (site) investigation for every forecast. Whenever possible, it is desirable to combine site visits for more than one project in a single trip. On the day of the field investigation, the forecaster drives all around the project area to gather information, most of which is recorded as written notes. Land use in the area is observed and characterized. Indications of the basis and strength of the local economy are recorded.<br>Special attention should be directed to:<br>• evidence of new or recent development;<br>• signs of economic decline or land abandonment;<br>• factors which tend to inhibit development, such as rugged terrain or wetlands; and<br>• any development of special interest to trucks (such as garbage dumps, truck docking facilities; gravel pits, etc.) |
| **10** | **Transportation Planning Documentation**<br>Review applicable transportation planning documentation.<br>• Check for latest Comprehensive Transportation Plan, or Thoroughfare Plan. https://connect.ncdot.gov/projects/planning/Pages/default.aspx<br>• Check the latest MPO Long Range Transportation Plan (LRTP) on the MPO's website.<br>• Check for transportation studies, corridor studies and other reports developed by local government agencies.<br>• Go to web site for the town / city / county to search for any documentation on plans and reports.<br>Assemble electronic or hard copies of selected sections of each report. |
| **11** | **Project Planning Data**<br>Visit https://connect.ncdot.gov/projects/planning/Pages/default.aspx to find information about STIP and Project Breakdown Maps. Assemble relevant data. |
| **12** | **ArcGIS shapefiles**<br>• Assemble a collection of relevant ArcGIS shapefiles, including roads, railroads, boundaries and water features within the project area from the Resource tab on the CTP GIS Data Layers spreadsheet S:\Shared\TPB Reference\Comprehensive Transportation Plan. Links and datasets on this spreadsheet are regularly updated. A variety of data can be downloaded from the NCOneMap or NCDOT GIS unit data portal https://connect.ncdot.gov/resources/gis/Pages/GIS-Data-Layers.aspx |

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|---|---|
| | • Visit the NCSU GIS Library web site to find county GIS webpage.. |
| **13** | **Aerial Photography**<br>Assemble or review (and note source of) relevant aerial photography. Use Google and Bing maps, the 2010 NC Orthoimagery available at http://imagery.nconemap.com/ArcGIS/rest/services/2010_Orthoimagery/ImageServer or Basemap function available through ArcGIS10. |
| **14** | Pertinent data should be placed in the traffic forecast report according to ***Traffic Forecast - Report*** procedure<br>**Note**: Electronic copies of GIS data and aerial photography may be kept in the Assigned Forecaster's project folder, but should not be placed in the official Forecast Files on the 4th floor. |

## *Policy, Regulatory, and Legal Requirements*

None.

## *Resources*

The following is a list of web sites referenced in the procedure steps, above.

| **Description** | **URL** |
|---|---|
| County-level population projections | http://www.osbm.state.nc.us/ncosbm/facts_and_figures/socioeconomic_data/population_estimates.shtm |
| US Census | www.census.gov/ |
| NCSU GIS Library | http://www.lib.ncsu.edu/gis/counties.html |
| NC One Map | http://www.nconemap.com/ |

Project Store - a shared drive where data from projects for all Business Units can be stored until after the project is built. Traffic Forecasts are also being stored there after completion. See Procedure Miscellaneous, **Project Store – Enter Data** procedure.

## *Background*

The Assigned Forecaster develops a project level traffic forecast using a well-defined set of facts and assumptions, which is built upon a solid foundation of data. Therefore it is crucial for the AF to assemble a meaningful set of data that is both complete and consistent with data sets developed for other forecasts.

Traffic forecasting data can be split into two subsets: new and existing data. New data consists of traffic data that is collected by the NCDOT Traffic Survey Group (TSG) for the purpose of developing a particular traffic forecast. Existing data includes information from all other sources. This procedure outlines steps required for assembling a collection of existing data. Steps required for collecting new data are outlined in the **Traffic Forecast – Order Traffic Counts** procedure.

It is expected that the AF will use appropriate business practices and judgment as required of engineering level staff. This procedure is intended to augment training given by the supervisor and does not cover all possible circumstances or sources of data.

## *Record of Revision*

*The information contained in this procedure is deemed accurate and complete when posted. Content may change at any time without notice. We cannot guarantee the accuracy or completeness of printed copies. Please refer to the online procedure for the most current version.*

| Version | Section Affected | Description | Effective Date |
|---|---|---|---|
| 1.1 | Entire procedure | Updated hyperlinks | 02/24/2010 |
| 1.1 | Procedures – Step 12 | Added cautionary statement to last bullet. | 02/24/2010 |
| 1.2 | Procedures – Step 2 | Added available web resources, updated links. | 09/28/2011 |
| 2.0 | Entire Procedure | Updated template, links and GIS information. | 02/5/2013 |
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## *Flowchart*