VIRGINIA DEPARTMENT OF TRANSPORTATION

TRANSPORTATION PLANNING AND MOBILITY DIVISION

INSTRUCTIONAL AND INFORMATIONAL MEMORANDUM

GENERAL SUBJECT: Traffic Forecasting	NUMBER: IIM-TMPD - 7.0
SPECIFIC SUBJECT: Responsible parties for approving traffic forecasts for VDOT plans or projects.	DATE: January 22, 2021
	SUPERSEDES: *N/A*
APPROVED: Marsha Fiol Marsha Fiol State Transportation Planner Approved (date) January 22, 2021	

EFFECTIVE DATE: This document is effective on the approval date above.

This memorandum identifies the responsible parties for approving future traffic forecasts for VDOT's transportation plans or projects and Traffic Impact Analysis (TIAs). It includes guidance on the best practices for obtaining base year traffic data due to the impacts of the COVID-19 pandemic and the recovery period in which traffic patterns may be considerably different from pre-pandemic conditions. This document also provides an overview of certain best practices from the Traffic Forecasting Guidebook. The abbreviations and definitions in the Traffic Forecasting Guidebook (Guidebook) apply in this memorandum.

The VDOT project manager or planning manager (PM) is the lead individual responsible for overseeing the technical team, directing the study from scoping through project delivery, the PM should consult with subject matter experts, as needed. Although study team members carry out portions of the work, throughout this memorandum, "PM" refers to the team leader or a team member to whom the PM has assigned certain responsibilities. The PM, who may be a VDOT or Locality staff person or a VDOT consultant team member, will consult with the VDOT District Transportation Planner and/or the State Transportation Planning Director or their designees for approvals at various steps in the traffic forecasting process.

PURPOSE/SCOPE/REQUIREMENTS:

This memorandum applies to the traffic forecasting procedures for all VDOT planning studies, as well as planning for the STARS program and Smart Scale projects. The guidance in this memorandum can also be used for other transportation studies where traffic forecasting is a task. The guidance is presented under three main headings: **I. Approval Authority of Traffic Forecasts, II. Traffic Forecasting Guidance During the COVID-19 Recovery Period, and III. Best Practices Guidance.**

I. Approval Authority of Traffic Forecasts

Approval of the traffic forecasts is the responsibility of the District Transportation Planner (DTP) and VDOT's State Transportation & Mobility Planning Director (TMPD) or their designees. The Traffic Forecasting Guidebook (Guidebook) provides guidance for best practices along with other VDOT governance documents such as the VDOT *Road Design Manual*, *Travel Demand Modeling Policies and Procedures*, or *Traffic Operations and Safety Analysis Manual* (TOSAM).

The future traffic forecasts in VDOTs transportation studies are very important in that the analysis will: (1) show the impact of future traffic growth on the existing transportation network, (2) show changes in travel patterns with improvement projects and (3) show the best potential locations for investing in new improvements.

Since the Guidebook contains guidance that for the most part, is already in practice, the District and Central Office transportation planners should use the Guidebook to reinforce those practices in their daily work. This IIM advocates the use of the Guidebook and provides instructions on the responsibilities for developing traffic forecasts as well as the review and approval of those traffic forecasts developed by others on VDOT projects.

To ensure the consistency and reliability of future traffic forecasts the approval authority for traffic forecasts is as follows:

- **Traffic Impact Analysis** – Approval by the Area Land Use Engineer or Assistant Resident Engineer—Land Use in consultation with VDOT's District Transportation Planner (DTP), District Traffic Engineer, or Designee and/or VDOT's State Transportation & Mobility Planning Director/or Designee per the guidance below.

- **All studies/projects that impact VDOT maintained (non- NHS) roads** – Approval by VDOT's District Transportation Planner (DTP), or their designee.

- **All studies/projects on the National Highway System (NHS)** – Approval by VDOT's District Transportation Planner (DTP), or their designee and VDOT's State Transportation & Mobility Planning Director/or Designee (TMPD). **Note:** This includes the VTrans designated Corridors of Statewide Significance (CoSS).

- **All studies/projects requiring use of travel demand modeling** – Approval by VDOT's District Transportation Planner (DTP), or their designee and VDOT's State Transportation & Mobility Planning Director/or Designee (TMPD).

II. Traffic Forecasting Guidance During the COVID-19 Recovery Period

Studies have shown that over the past 30+ years, traffic growth and travel patterns have certain characteristics that have allowed transportation experts to be able to forecast future traffic with a reasonable assurance of accuracy. As noted in chapter 7 of the Guidebook, "no traffic forecast is perfect. Analysts should recognize and acknowledge the uncertainty inherent in project traffic forecasts". Since early 2020, there is even more uncertainty in developing reliable traffic forecasts – this section outlines those uncertainties and offers ways to continue traffic forecasting for planning projects.

The COVID-19 pandemic has been a disruption to normal life in Virginia and that disruption includes traditional travel patterns. The traditional trips, such as home – work, home – shopping, home – school, home – other, and non-home based trips, have temporarily stopped or significantly reduced. Most professional and government employees are working from home and many service workers have been furloughed or lost their jobs. This means that developing reasonable traffic forecasts will be even more difficult as Virginia recovers from the effects of COVID-19.

Since it may be months or years before an area's travel patterns return to some level of normalcy, VDOT has outlined how to develop the base year and long-range traffic forecasts for transportation plans and projects during the interim years.

1. The PM will set a scoping meeting or scoping process to gather input from the area stakeholders. Documenting the scoping process is important in that it will identify study goals and the traffic data needed for the planning study, a TIA, or STARS study.

2. The scoping document will list the available data from VDOT's traffic data systems. The data review should include annual counts, K factors, turning movements, and other traffic counts from previous studies and growth trends. See VDOT's available data sources in chapter 4 of the Guidebook.

3. The scoping report will also include the traffic counts that are needed for the base year but cannot be counted due to the COVID-19 disruption. If any intersection data is missing, alternative methods for developing the needed data are available in NCHRP Report 255, VTRC Report - Estimating Intersection Turning Movements and NCHRP Report 765.

4. Traffic counts from previous studies between 1/01/2015 and 3/01/2020 are acceptable as the basis for developing the base year traffic. The PM will review VDOT's traffic data, develop a trend analysis and establish the appropriate growth factors to apply to the counts to establish the base year traffic. Using growth factors the project manager will adjust the earlier traffic counts to the appropriate base year, 2020, 2021, etc.

5. It is very likely that much greater numbers of employees will be working from home during the COVID-19 recovery period. However, the ITE trip generation rates will continue to be the basis for determining trips generated or attracted by the various types of land uses. TMPD will request the VTRC to coordinate with ITE on any possible changes in trip rates and travel patterns in the coming months.

6. Regional or Locality developed Travel Demand Models must be reviewed by the PM and compared to the trend analysis before it can be used in the traffic forecasting. The PM will also consult with TMPD before using a travel demand model on the project.

7. Before starting the traffic forecast, the PM must consider; (1) the highway system (NHS, CoSS and non-NHS) and (2) the type of study (example: a TIA, a planning or project study), as outlined in **Section I** above. The PM will consult with the DTP and TMPD, as appropriate, throughout the process of developing the base year and future traffic forecasts. When the traffic forecasts are in final draft form, the PM will request approval by DTP, TMPD, or the Area Transportation and Land Use Engineer (as appropriate for the project) and as outlined in **Section I** above. For TIA guidance see VDOT's Land Use Regulations and Processes in the **REFERENCE** Section below.

8. Other alternative traffic forecasting methods for developing base year and future traffic forecasts must be evaluated and approved by TMPD prior to the project scoping.

9. Big data sources such as StreetLight should not be used for determining the actual traffic volumes at a specific location. These data sources can be effective in determining traffic patterns. For example, on each approach to an intersection, the data can help determine the percentages of the traffic that makes left or right turns and the percentage of traffic that continues through the intersection. However, these sources should not be used for vehicle turning movement volumes without being analyzed and compared to pre-COVID-19 pandemic traffic count data for consistency.

10. There may be a need to adjust or reduce the traffic forecasts for the horizon year (ex. 2040, 2045). However, until more is known about the possible long-term effect of the COVID-19 pandemic on future travel, the future horizon year traffic forecasts for current plans should not be changed.

11. The effect of the COVID-19 on the Commonwealth's transportation network is being monitored by the Traffic Engineering Division to compare the latest traffic volumes to pre-Pandemic traffic volumes. Based on this monitoring, these instructions will be revised at the appropriate time to provide the guidance needed for traffic forecasting.

12. The PM will document each of the steps in the traffic forecasting process including the scoping, the data review, the assumptions, the consultations with the DPM and TMPD, the analysis and the approvals. This documentation, the project traffic forecasts and supporting documentation will be uploaded to the Statewide Planning System (SPS) and Pathways for Planning (P4P) so the information is available for the next phase of the project.

13. This guidance will remain in effect until further notice.

III. Best Practices Guidance

The purpose of the Traffic Forecasting Guidebook (Guidebook) is to provide consistency in the development of future traffic estimates for VDOT projects, traffic impact analyses (TIA), and transportation planning studies. As stated in chapter 1 of the Guide, "Traffic forecasting is not a 'one-size-fits-all' process."

The Guidebook further states: "There are various analysis methods that depend on factors such as the complexity and size of the project." It is very important for the PM to follow the appropriate steps in developing traffic forecasts for each study. The following are some of the best practices to follow in developing traffic forecasts.

1. Before beginning the project, the PM should have a thorough knowledge of the traffic forecasting process. The PM should review the Guidebook placing emphasis on project scoping in chapter 3. This chapter provides guidance for determining a traffic forecasting method based on the project size and project area type.

2. Project scoping is the critical first step in the traffic forecasting process, which includes numerous parameters. However, prior to the project scoping, the PM will become familiar with the proposed project by gathering basic information on the project area and the available traffic data. The information should include how the facility serves (does it carry through trips, commuter or local trips), also, how will it serve in the future (does the Locality plan more intense land uses). The traffic data will include historic traffic counts, truck percentages, K factors and traffic forecasts from previous projects in the area. Evaluating the information and analyzing the data will help the project team conduct a focused and effective scoping meeting.

3. The results of the project scoping will include a purpose and need for the project and a plan for developing the traffic forecast. A good reference to follow is section 3.1 of

the Guidebook and the Traffic Forecasting Prompt List in Appendix B. The PM will document the scoping meeting including the methodology for developing the traffic forecast and consult with the DTP and TMPD as appropriate for any further directions on the study.

4. An historic trend analysis, as explained in chapter 5 of the Guidebook, will be developed for all projects as the first option for the traffic forecast. A trend analysis can be used to forecast the traffic for any project size or area type, but it is the best forecasting method for small to medium sized projects that are located in a stable growth area. In all trend analyses, the PM will consider any planned land use changes that may affect the traffic growth trend.

5. The Statewide Planning System (SPS) is a good data source for the PM to use in developing a traffic forecast through trend analysis, but the PM should also use VDOT's other traffic data sources for information to develop the growth trend - see Table 5 of the Guidebook. VDOT recommends as many data sources as possible when developing a traffic forecast.

6. A travel demand model should be used for complex projects, in high growth areas where additional planned development is anticipated, or on facilities that have numerous intersections and alternatives to analyze. If a validated travel demand model is available for the area of the project or from another project in the vicinity, the model outputs may be used to develop the forecast instead of the trend analysis. Outputs of the travel demand model will be analyzed and adjusted by the PM. As part of the decision process, the PM should consult with the DTP, TMPD, ***and*** the TMPD Modeling and Accessibility Manager on the use of the travel forecast model for medium and large projects.

7. As stated in the Guidebook, "Regardless of the forecasting methodology or complexities of the proposed project, the PM must apply good "engineering judgement" in evaluating the traffic model forecasts. Checking the travel demand model outputs for consistency with previous traffic forecasts on adjacent projects, comparing the forecast to current travel patterns and considering the logic of the forecast are some of the critical reviews the PM makes before finalizing the traffic forecast."

8. The PM must document the information used for the traffic forecast including, data and information collected for the base year, the data system(s) that were used for the trend analysis, the procedures and assumptions used in the data analysis and decisions to develop the forecast.

9. When a travel demand model is used, the PM should collaborate with the TMPD Model and Accessibility Manager to agree on the model inputs and the traffic forecast. Regardless of the forecasting method used, the PM will provide the traffic forecast and documentation to the DTP and TMPD for approval of the final traffic forecast. All of the documentation will be loaded to TMPD's SPS database and other data systems for future references.

10. The PM will document the traffic forecasting process including the scoping, the data review, the assumptions, the consultations with the DPM and TMPD, the analysis and the approvals. The project traffic forecasts and supporting documentation will be uploaded to the Statewide Planning System (SPS) and Pathways for Planning (P4P) so the information will be available for the next phase of the project.

Traffic Forecasts for Environmental Documents

Although the Guide indicates that it does not address traffic forecasts for environmental documents, the same techniques described above can produce the inputs to the traffic forecasts for environmental documents. However, to ensure the traffic forecasts are appropriate for the environmental assessments, close collaborations with the Environmental Quality Division staff is necessary. To accomplish this, the PM may need to provide more in-depth documentation of the land use data from the locality, provide more details on existing traffic volumes, and current travel patterns.

REFERENCES

VDOT Traffic Forecasting Guidebook
https://www.virginiadot.org/projects/resources/Arterial_Management_Plans/VDOT_Traffic_Forecasting_Guidebook_5-2020.pdf

National Cooperative Highway Research Program (NCHRP) Report 765*: Analytical Travel Forecasting Approaches for Project-Level Planning and Design.* Transportation Research Board of the National Academies, 2014.
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_765.pdf

NCHRP Report -255*: Analytical Travel Forecasting Approaches for Project-Level Planning and Design,* *Estimating Intersection Turning Movements (VDOT Research Council)* https://trid.trb.org/view/503390, https://rosap.ntl.bts.gov/view/dot/15671

Traffic Operations and Safety Analysis Manual (TOSAM) –
Chapter 6: Standard Data Requirements for Analysis, (Traffic Count Data),
Chapter 9: Traffic Operations and Safety Analysis Project Scoping, (Transportation Modeling & Accessibility Program)
http://www.virginiadot.org/business/resources/TOSAM.pdf

Virginia Transportation Modeling & Accessibility Program
http://www.virginiadot.org/projects/vtm/vtm.asp

VDOT's Land Use Regulations and Processes see VDOT's external website at:
http://www.vdot.virginia.gov/info/transportation_and_land_use.asp.

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