

Traffic Impact Analysis Regulations

CHAPTER 155.

24 VAC 30-155-10. Definitions.

“District Planning Manager” means the VDOT employee assigned to supervise the department’s regional and local transportation planning functions within a construction district.

“Locality” means any local government, pursuant to § 15.2-2223, that must prepare and recommend a comprehensive plan for the physical development of the territory within its jurisdiction.

“Redevelopment site” means any existing use that generates traffic and is intended to be developed as a different or more dense land use.

“Residency Administrator” means the VDOT employee assigned to supervise departmental operations within a specified geographical portion of the Commonwealth, or his designee. In districts having centralized functions for the review and approval of site plans, this position may be either the district land development manager or any other position specifically designated to perform plan approval functions.

“State-controlled highway” means a highway in Virginia that is part of the Interstate, Primary, or Secondary systems of state highways and that is maintained by the state under the direction and supervision of the Commonwealth Transportation Commissioner. Highways for which localities receive maintenance payments pursuant to § 33.1-23.5:1 and § 33.1-41.1 of the Code of Virginia are not considered state-controlled highways for the purposes of this regulation.

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“Traffic impact statement” means the document showing how a proposed development will relate to existing and future transportation facilities.

“VDOT” means the Virginia Department of Transportation, the Commonwealth Transportation Commissioner, or a designee.

24 VAC 30-155-20. Authority.

Section 15.2-2222.1 of the Code of Virginia requires localities to submit comprehensive plans and amendments to comprehensive plans that will substantially affect transportation on state-controlled highways to VDOT in order for the agency to review and provide comments on the impact of the item submitted. This section also requires localities to submit traffic impact statements along with proposed rezonings, site plans, subdivision plats, and subdivision development plans that will substantially affect transportation on state-controlled highways to VDOT for comment by the agency. Chapter 527 of the 2006 Acts of Assembly directs VDOT to promulgate regulations for the implementation of these requirements.

24 VAC 30-155-30. Comprehensive Plan and Comprehensive Plan Amendment.

A. Plan and Amendment Submittal.

Prior to adoption of any comprehensive plan pursuant to § 15.2-2223, any part of a comprehensive plan pursuant to § 15.2-2228, or any amendment to any comprehensive plan as described in § 15.2-2229, if required by this section of this chapter, the locality shall submit such plan or amendment to the department for review and comment, such submission should take place at least 90 days prior to anticipated final action by the locality. The Virginia Department of Transportation shall, upon request, provide localities with technical assistance in preparing the

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transportation component of the comprehensive plan. The comprehensive plan or comprehensive plan amendment package shall be submitted to the department, who shall forward it to the district planning manager, if it is reasonably anticipated to result in substantial changes or impacts to the existing transportation network. For the purposes of this section, a substantial impact shall be defined as a change that would allow the generation of 2,000 additional vehicle trips per day on state-controlled highways assuming the highest density of permissible use in accordance with the Institute of Transportation Engineers Trip Generation Handbook (see 24 VAC 30-155-90) or the regional model as adopted by the local Metropolitan Planning Organization, and substantial changes shall include those changes that alter future transportation infrastructure, travel patterns, or the ability to improve future transportation facilities on state-controlled highways.

B. Required Elements.

The submission by the locality to VDOT shall contain sufficient information so that VDOT may evaluate the system of new and expanded transportation facilities, outlined in the transportation plan, that are needed to support the current and planned development of the territory covered by the plan. In order to conduct this evaluation, the package submitted to VDOT shall contain the following items:

1. For a comprehensive plan or a transportation plan, the locality shall provide one copy of the following:
 - a. A cover sheet, containing:
 - (1) Contact information for the locality, and

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- (2) Summary of major changes made to the comprehensive plan or transportation plan:
- b. The proposed comprehensive plan or transportation plan, and the following elements:
- (1) Inventory – an inventory (written or graphic) of the existing transportation network, which shall include at a minimum all roadways within the Federal Aid system which are classified as a collector or above. Additional roads may be included at the discretion of the locality.
 - (2) Assumptions – planning assumptions shall be detailed, since these assumptions directly influence the demand placed on the transportation system. Population growth, employment growth, location of critical infrastructure such as water and sewer facilities, among others, are examples of planning assumptions that may be addressed.
 - (3) Needs Assessment – written or graphic evaluation of the transportation systems current and projected performance and conditions. The needs assessment identifies specific deficiencies.
 - (4) Recommendations – proposed improvements or additions to the transportation infrastructure. Recommendations should be specific so that the need, location and nature of the proposed improvements are clear and understandable. Localities are encouraged to include pedestrian, bicycle, transit, rail and other multi-modal recommendations as they deem appropriate. The transportation plan shall include a map showing road and transportation improvements, taking

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into account the current and future needs of residents in the locality while considering the current and future needs of the planning district within which the locality is situated. Recommended improvements shall include cost estimates as available from VDOT.

2. For an amendment to a comprehensive plan or transportation plan, the locality shall provide one copy of the following:

a. A cover Sheet, containing:

(1) Contact information for the locality;

(2) Summary of proposed amendment or amendments to the comprehensive plan or transportation plan; and

(3) Overview of reasoning and purpose for amendments.

b. Application forms and documentation presented to or prepared by the local jurisdiction,

c. Associated maps or narratives that depict and detail the amendment under consideration,

d. Any changes to the planning assumptions associated with the amendment, and

e. Local assessment of the potential impacts the amendment may have on the transportation system.

f. Those elements identified in B1b above which VDOT determines are needed in order to review and comment on impacts to state-controlled highways.

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After formal submission of a proposed plan or plan amendment for review, the department shall forward the plan or plan amendment to the district planning manager. VDOT may, pursuant to § 15.2-2222.1, request a meeting with the locality to discuss the plan or amendment. The request must be made within 30 days of receipt of the proposal. VDOT must provide written comments to the locality within 90 days of the receipt of the plan or plan amendment or by such later deadline as may be agreed to by the parties. VDOT will conduct its review and provide official comments to the locality for inclusion in the official public record of the locality.

24 VAC 30-155-40. Rezoning.A. Proposal Submittal.

The locality shall submit a package to the department within 10 business days of receipt of a complete application for a rezoning proposal if the proposal substantially affects transportation on state-controlled highways. For the purposes of this section, a rezoning proposal shall substantially affect transportation on state-controlled highways if it meets or exceeds one or more of the following trip generation criteria. All trip generation calculations used for the purposes of determining if a proposal meets the criteria shall be based upon the rates or equations published in the Institute of Transportation Engineers Trip Generation (see 24 VAC 30-155-90), and shall not be reduced through internal capture rates. For redevelopment sites, trips currently generated by existing development that will be removed may be deducted from the total site trips that are generated by the proposed land use.

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1. Within a jurisdiction in which VDOT has maintenance responsibility for the secondary highway system, if the proposal generates more than 100 vehicle trips per peak hour of the generator at the site's connection to a state-controlled highway. For a site that does not have an entrance onto a state-controlled highway, the site's connection is assumed to be wherever the road network that the site connects with attaches to a state-controlled highway. In cases where the site has multiple entrances to highways volumes on all entrances shall be combined for the purposes of this determination; or
2. Within a jurisdiction in which VDOT does not have maintenance responsibility for the local highway system, if the proposal generates more than 1,000 vehicle trips per day and is within 3,000 feet, measured along roads or streets, of a state-controlled highway; or
3. The proposal generates more than 200 daily vehicle trips on a state-controlled highway and more than doubles the daily traffic volume the highway presently carries. For the purposes of determining whether a proposal must be submitted to VDOT, the traffic carried on the state-controlled highway shall be assumed to be the most recently published amount measured in the last traffic count conducted by VDOT or the locality on that highway.

B. Required Proposal Elements.

The package submitted by the locality to VDOT shall contain sufficient information and data so that VDOT may determine the location of the rezoning, its size, its impact on state-controlled highways, and methodology and assumptions used in the analysis of the impact. Submittal of an incomplete package shall be considered deficient in meeting the submission requirements of §

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15.2-2222.1 and shall be returned to the locality identifying the deficiencies noted. A package submitted to VDOT shall contain the following items:

1. A cover sheet containing:
 - a. Contact information for locality and developer (or owner);
 - b. Rezoning location, highways adjacent to site, and parcel number or numbers;
 - c. Proposal summary with development name, size, and proposed zoning; and
 - d. A statement regarding the proposal's compliance with the comprehensive plan.
2. A traffic impact statement prepared in accordance with 24 VAC 30-155-60.
3. A concept plan of the proposed development.

C. Review Process

After formal submission of a rezoning proposal for review, VDOT may, pursuant to § 15.2-2222.1, request a meeting with the locality and rezoning applicant to discuss potential modifications to the proposal to address any concerns or deficiencies. The request must be made within 45 days of receipt of the proposal. VDOT must provide written comments to the locality within 45 days of the receipt of the proposal if no meeting is scheduled or within 120 days of the receipt of the proposal otherwise. VDOT shall conduct its review and provide official comments to the locality for inclusion in the official public record.

24 VAC 30-155-50. Subdivision Plat, Site Plan, Plan of Development.

A. Proposal Submittal.

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The locality must submit a package to the department within 10 business days of receipt of a complete development proposal if the proposal substantially affects transportation on state-controlled highways. For the purposes of this section, a development proposal shall substantially affect transportation on state-controlled highways if it meets or exceeds one or more of the following trip generation criteria. All trip generation calculations used for the purposes of determining if a proposal meets these requirements shall be based upon the rates or equations published in the Institute of Transportation Engineers Trip Generation (see 24 VAC 30-155-90), and shall not be reduced through internal capture rates. For redevelopment sites, trips currently generated by existing development that will be removed may be deducted from the total site trips that are generated by the proposed land use.

1. Within a jurisdiction in which VDOT has maintenance responsibility for the secondary highway system, if the proposal generates more than 100 vehicle trips per peak hour of the generator at the site's connection to a state-controlled highway. For a site that does not have an entrance onto a state-controlled highway, the site's connection is assumed to be wherever the road network that the site connects with attaches to a state-controlled highway. In cases where the site has multiple entrances to highways volumes on all entrances shall be combined for the purposes of this determination; or
2. Within a jurisdiction in which VDOT does not have maintenance responsibility for the local highway system, if the proposal generates more than 1,000 vehicle trips per day and is within 3,000 feet, measured along roads or streets, of a state-controlled highway; or

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3. The proposal generates more than 200 daily vehicle trips on a state-controlled highway and more than doubles the daily traffic volume the highway presently carries. For the purposes of determining whether a proposal must be submitted to VDOT, the traffic carried on the state-controlled highway shall be assumed to be the most recently published amount measured in the last traffic count conducted by VDOT or the locality on that highway.

B. Required Proposal Elements.

1. The package submitted by the locality to VDOT shall contain sufficient information and data so that VDOT may determine the location of the development, its size, its impact on state-controlled highways, and methodology and assumptions used in the analysis of the impact. Submittal of an incomplete package shall be considered deficient in meeting the submission requirements of § 15.2-2222.1 and shall be returned to the locality identifying the deficiencies noted. A package submitted to VDOT shall contain the following items.

a. A cover sheet containing:

(1) Contact information for locality and developer (or owner);

(2) Development location, highways connected to, and parcel number or numbers;

and

(3) Proposal summary with development name and size in acres.

b. A supplemental traffic analysis, as defined in 24 VAC 30-155-50 C.

c. A concept plan of the proposed development.

C. Supplemental Traffic Analysis.

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For the purposes of this subsection, a supplemental traffic analysis will be defined as follows:

1. In cases where a rezoning traffic impact statement has been submitted to VDOT in accordance with 24 VAC 30-155-40, if all assumptions made in the traffic impact statement prepared for the rezoning remain valid and if the submission of the subdivision plat, site plan, or plan of development to the locality occurs within two years of the locality's submission of the rezoning proposal to VDOT in accordance with 24 VAC 30-155-40, the supplemental traffic analysis shall be a letter which provides VDOT with the following information:

- a. A statement that the development's rezoning traffic impact statement is still valid.
- b. The date of the VDOT letter providing the locality comments on the rezoning.

2. In cases where a rezoning traffic impact statement has been submitted to VDOT in accordance with 24 VAC 30-155-40, if all assumptions made in the traffic impact statement prepared for the rezoning remain valid and if the submission of the subdivision plat, site plan, or plan of development to the locality occurs more than two years of the locality's submission of the rezoning proposal to VDOT in accordance with 24 VAC 30-155-40, the supplemental traffic analysis shall be a letter which provides VDOT with the following information:

- a. A statement that the development's rezoning traffic impact statement is still valid.
- b. The date of the VDOT letter providing the locality comments on the rezoning;
- c. Documentation supporting the statement that the development's rezoning traffic impact statement is still valid; and

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d. A copy of the original traffic impact statement.

After review of such letter, the department may require submission in accordance with subdivision 3 of this section.

3. In cases where the rezoning traffic impact statement has not been submitted to VDOT in accordance with 24 VAC 30-155-40, the assumptions made in such traffic impact statement prepared for the rezoning no longer remain valid, or if required pursuant to subdivision 2 of this section, the supplemental traffic analysis shall contain the information required for rezoning traffic impact statements with 100 to 499 peak hour trips. If the subdivision plat, site plan, or plan of development will generate less than 100 peak hour trips then the lower standard for the rezoning traffic impact statement shall be used.

D. Review Process.

After formal submission of a subdivision plat, site plan, or plan of development for review, VDOT may, pursuant to § 15.2-2222.1, request a meeting with the locality to discuss potential modifications to the proposal to address any concerns or deficiencies. The request must be made within 30 days of receipt of the proposal. VDOT must provide written comments to the locality within 30 days of the receipt of the proposal if no meeting is scheduled or within 90 days of the receipt of the proposal otherwise. VDOT will conduct its review and provide official comments to the locality for inclusion in the official public record.

24 VAC 30-155-60. Traffic Impact Statement.

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A Traffic Impact Statement (TIS) assesses the impact of a proposed development on the transportation system and recommends improvements to lessen or negate those impacts. It shall (1) identify any traffic issues associated with access from the site to the existing transportation network, (2) outline solutions to potential problems, and (3) present improvements to be incorporated into the proposed development. The TIS shall be reviewed and signed by a licensed professional engineer. If a TIS is required, data collection shall be by the locality, developer, or owner, as determined by the locality and the locality shall prepare or have the developer or owner prepare the TIS. The completed TIS shall be submitted to the department.

The data and analysis contained in the TIS shall be organized and presented in a manner acceptable to the department and consistent with this regulation. Submittal of an incomplete TIS or one prepared using unapproved methodology or assumptions shall be considered deficient in meeting the submission requirements of § 15.2-2222.1 and shall be returned to the locality identifying the deficiencies noted by the department. The department shall also provide the applicant with a list of deficiencies noted by the department.

A. Required Elements.

The required elements and scope of a TIS are dependent upon the scale and potential impact of the specific development proposal being addressed by the TIS. The elements required to be addressed in a TIS are shown in the table below. When the type of development proposed would indicate significant potential for walking, bike or transit trips either on or off site, the TIS shall estimate multimodal trips.

	<u>Site Generated Peak Hour Trips</u>
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<u>Item</u>	<u>Less than 100</u>	<u>100 to 499</u>	<u>500 to 999</u>	<u>1,000 or more</u>
<u>Background information</u>	-	-	-	-
<u>Map of site location, description of the parcel, general terrain features, and location within the jurisdiction and region.</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>
<u>Description of geographic scope / limits of study area</u>	<u>Within 1,000 ft of site</u>	<u>To nearest off-site intersections or 1 mile, whichever is greater</u>	<u>To nearest off-site signalized intersections or 2 miles, whichever is greater</u>	<u>Within 2-5 miles of site, as determined by VDOT</u>
<u>Plan at an engineering scale of the existing and proposed site uses.</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>
<u>Description and map or diagram of nearby uses, including parcel zoning.</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>

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<u>Description and map or diagram of existing roadways.</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>
<u>Description and map or diagram of programmed improvements to roadways, intersections, and other transportation facilities within the study area.</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>
<u>Analysis of Existing Conditions</u>	-	-	-	-
<u>Collected daily and peak hour traffic volumes, tabulated and presented on diagrams with counts provided in an appendix.</u>	<u>Only diagrams required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>
<u>Analyses for intersections and roadways identified by the Department. Delay and Level of Service (LOS) are tabulated and LOS is presented on diagrams for each lane group.</u>	<u>Only diagrams required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>

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<u>When the type of development proposed would indicate significant potential for walking, bike or transit trips either on or off site, analyses of pedestrian and bicycle facilities under the forecast traffic tabulated and presented on diagrams, if facilities exist.</u>	<u>At frontage, only diagrams required</u>	<u>Within 1,500 ft of site</u>	<u>Within 1,500 ft of site</u>	<u>Within 1,500 ft of site</u>
<u>Speed Study</u>	<u>If requested by VDOT</u>	<u>If requested by VDOT</u>	<u>If requested by VDOT</u>	<u>Required</u>
<u>Crash history near site</u>	<u>If requested by VDOT</u>	<u>If requested by VDOT</u>	<u>Required</u>	<u>Required</u>
<u>Sight distance</u>	<u>If requested by VDOT</u>	<u>If requested by VDOT</u>	<u>Required</u>	<u>Required</u>
<u>Analysis of Future Conditions without Development</u>	-	-	-	-
<u>Description of and justification for the method and assumptions used to forecast future traffic volumes.</u>	<u>Optional</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>

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<p><u>Analyses for intersections and roadways as identified by the Department. Delay and Level of Service (LOS) are tabulated and LOS is presented on diagrams.</u></p>	<p><u>Optional</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>
<p><u>When the type of development proposed would indicate significant potential for walking, bike or transit trips either on or off site, analyses of pedestrian and bicycle facilities under the forecast traffic tabulated and presented on diagrams, if facilities exist or are planned.</u></p>	<p><u>At frontage, only diagrams required</u></p>	<p><u>Within 1,500 ft of site</u></p>	<p><u>Within 1,500 ft of site</u></p>	<p><u>Within 1,500 ft of site</u></p>
<p><u>Trip Generation</u></p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>
<p><u>Site trip generation, with tabulated data, broken out by analysis year for multi-phase developments, and including</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>

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<u>justification for deviations from ITE rates, if appropriate.</u>				
<u>Description and justification of internal capture reductions for mixed use developments and pass-by trip reductions, if appropriate, including table of calculations used.</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>
<u>Site Traffic Distribution and Assignment</u>	-	-	-	-
<u>Description of methodology used to distribute trips, with supporting data.</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>
<u>Description of the direction of approach for site generated traffic and diagrams showing the traffic assignment to the road network serving the site for the appropriate time periods.</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>
<u>Analysis of Future Conditions</u>	-	-	-	-

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<u>With Development</u>				
<u>Forecast daily and peak hour traffic volumes on the highway network in the study area, site entrances and internal roadways, tabulated and presented on diagrams.</u>	<u>Current traffic + site generated traffic</u>	<u>Future background + site generated traffic, at each expected phase and at buildout or 6 years after start, whichever is later</u>	<u>Future background + site generated traffic, at each expected phase, at buildout, and 6 years after buildout</u>	<u>Future background + site generated traffic, at each expected phase, at buildout, and 6 years after buildout</u>
<u>Analyses for intersections and roadways identified by the Department. Delay and Level of Service (LOS) are tabulated and LOS presented on diagrams for each lane group.</u>	<u>Only diagrams required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>
<u>When the type of development proposed would indicate significant potential for</u>	<u>At frontage, only diagrams</u>	<u>Within 1,500 ft of site</u>	<u>Within 1,500 ft of site</u>	<u>Within 1,500 ft of site</u>

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<p><u>walking, bike or transit trips</u> <u>either on or off site, analyses of</u> <u>pedestrian and bicycle facilities</u> <u>under the forecast traffic</u> <u>tabulated and presented on</u> <u>diagrams, if facilities exist or</u> <u>are planned.</u></p>	<p><u>required</u></p>			
<p><u>Recommended Improvements</u></p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>
<p><u>Description and diagram of the</u> <u>location, nature, and extent of</u> <u>proposed improvements, with</u> <u>preliminary cost estimates.</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>
<p><u>Description of methodology</u> <u>used to calculate the effects of</u> <u>travel demand management</u> <u>(TDM) measures, if proposed,</u> <u>with supporting data.</u></p>	<p><u>Required if</u> <u>TDM</u> <u>proposed</u></p>	<p><u>Required if</u> <u>TDM</u> <u>proposed</u></p>	<p><u>Required if</u> <u>TDM</u> <u>proposed</u></p>	<p><u>Required if</u> <u>TDM</u> <u>proposed</u></p>
<p><u>Analyses for all proposed and</u> <u>modified intersections in the</u> <u>study area under the forecast</u> <u>and site traffic. Delay, and</u></p>	<p><u>Only</u> <u>diagrams</u> <u>required</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>

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<p><u>Level of Service (LOS) are tabulated and LOS presented on diagrams. For intersections expected to be signalized, MUTCD Signal Warrant analysis or ITE Manual for Traffic Signal Design, as determined by the department, presented in tabular form.</u></p>				
<p><u>When the type of development proposed would indicate significant potential for walking, bike or transit trips either on or off site, analyses of pedestrian and bicycle facilities under the forecast traffic tabulated and presented on diagrams, if facilities exist or are planned.</u></p>	<p><u>At frontage, only diagrams required</u></p>	<p><u>Within 1,500 ft. of site</u></p>	<p><u>Within 1,500 ft. of site</u></p>	<p><u>Within 1,500 ft. of site</u></p>
<p><u>Conclusions</u></p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>
<p><u>Clear, concise description of</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>	<p><u>Required</u></p>

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<u>the study findings.</u>				
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The geographic scope of the study noted above may be reduced or enlarged based upon layout of the local transportation network, the geographical size of the development, and the traffic volume on the existing network, as determined by VDOT.

B. Methodology and Standard Assumptions.

A TIS shall be prepared based upon methodology and assumptions noted below or as may be agreed upon by the department based upon the results of a study scoping meeting held by VDOT and the locality.

1. Data collection.

Preparers shall collect traffic data in accordance with the identified study area. The count data shall include at a minimum, weekday 24-hour counts, and directional turning movement counts during AM and PM peak times of the day. The 24-hour counts shall include vehicle classification counts. With approval of the department, data collected by the transportation professional preparer within the last 12 months may be used, likewise for data from the VDOT count program. The preparer shall monitor traffic operations during data collection to ensure extraneous events such as vehicle crashes or special event traffic do not affect integrity of count data. Preparers collecting data for utilization in traffic impact studies shall normally avoid data collection during the following instances:

- a. Holidays or times of the year when the traffic patterns are deemed to be unrepresentative of typical conditions, unless required by VDOT or the locality, or both.

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- b. Summer months if school or schools in proximity.
- c. Fridays and weekends unless required by VDOT or the locality, or both.
- d. Other times of the year contingent upon existing adjacent land use activities.
- e. During times of inclement weather.

2. Trip generation.

Estimates of trip generation by a proposed development shall be prepared using the Institute of Transportation Engineers Trip Generation (see 24 VAC 30-155-90), unless the department agrees to allow the use of alternate trip generation rates based upon local trip generation studies. In determining which trip generation process (equation or rate) may be used, VDOT shall follow the guidance presented in the Trip Generation Handbook – an ITE Proposed Recommended Practice (see 24 VAC 30-155-90), which is summarized here. Regression equations to calculate trips as a result of development shall be utilized, provided the following is true:

- a. Independent variable falls within range of data; and
- b. Either the data plot has at least 20 points; or
- c. R^2 greater than 0.75, equation falls within data cluster in plot and standard deviation greater than 110 percent of weighted average rate.

If the above criteria are not met, then the preparer can use average trip rates, provided at least one of the following applies:

- d. At least three data points exist;
- e. Standard deviation less than 110 percent of weighted average rate;

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f. R^2 less than 0.75 or no regression equation provided; or

g. Weighted average rate falls within data cluster in plot.

3. Internal capture and pass-by trips.

a. Internal capture rates consider site trips “captured” within a multi-use development, recognizing that trips from one land use can access another land use within a site development without having to access the adjacent street system. Multi-use developments include a combination of residential and non-residential uses or a combination of non-residential uses only. Internal capture allows reduction of site trips from adjacent intersections and roadways. Unless otherwise approved by the department, the following internal capture rates should be used if appropriate:

- (1) Residential with a mix of non-residential components—use the smaller of 15% of residential or 15% non-residential trips generated.
- (2) Residential with office use—use the smaller of 5% of residential or 5% of office trips generated.
- (3) Residential with retail use—for AM peak hour, use the smaller of 5% residential or 5% retail trips generated; for PM peak hour, use the smaller of 10% residential or 10% retail trips generated; for 24-hour traffic, use the smaller of 15% residential or 15% retail trips generated.
- (4) Hotel/motel with office use—use 15% of hotel/motel trips, if overall volume of office traffic is approximately similar to overall hotel/motel traffic.
- (5) Multi-use development with more than 5 million square feet of office and retail—

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internal capture rate should be determined in consultation with and approval of the department.

b. Pass-by trip reductions consider site trips drawn from the existing traffic stream on an adjacent street, recognizing that trips drawn to a site would otherwise already traverse the adjacent street regardless of existence of the site. Pass-by trip reductions allow a percentage reduction in the forecast of trips otherwise added to the adjacent street from the proposed development. The reduction applies only to volumes on adjacent streets, not to ingress or egress volumes at entrances serving the proposed site. Unless otherwise approved by the department, the following pass-by trip reductions may be used:

(1) Shopping center—15% of trips generated may be considered pass-by.

(2) Convenience stores, service stations, fast food restaurants, drive-in banks, and similar land uses—25% of trip generated may be considered pass-by.

4. Trip distribution.

In the absence of more detailed information, trip distribution shall be in accordance with logical regional travel patterns as suggested by existing highway directional split and intersection movements or population and destination site distribution. If more detailed information is available from trip origin/destination studies, marketing studies, or regional planning models, this may be used to distribute trips upon approval of the department.

5. Planning horizon.

In general, the analysis years shall be related to (1) the opening date of the proposed development, (2) build-out of major phases of a multi-year development, (3) long range

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transportation plans and (4) other significant transportation network changes. The preparer should establish the planning horizon in consultation with and subject to the acceptance of the department.

6. Background traffic growth.

Unless directed by the department, geometric growth (or compound growth), based upon historical growth rates, shall generally be used for determining future background traffic levels where extensive traffic-count history is available and capacity constraint is not appropriate. This growth rate replicates “natural growth” and is typical for projecting urban growth. Where growth within the development area is not stable, or historical data is not adequate as a result of the opening of other major developments, or significant transportation improvements have occurred, background traffic growth may be predicted based on demographic characteristics. For example, traffic growth within a study area could be tied directly to the anticipated population growth. Forecasts made using this method are performed using an average growth rate of two or more factors, including:

- a. Total population based on population growth trends;
- b. Income;
- c. Automobile ownership; or
- d. Land use types within the traffic impact analysis study area.

7. Future Conditions.

For the purpose of the TIS, future conditions shall include background traffic and additional vehicle trips anticipated to be generated by approved but not yet constructed or improved

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projects.

8. Level of Service calculation.

Level of Service (LOS) analysis shall utilize the techniques described in the Highway Capacity Manual (see 24 VAC 30-155-90). Neither the intersection capacity utilization method nor the percentile delay method may be used in the traffic impact calculations of delay and level of service. Preparers shall consult with the department on which traffic analysis software package is to be used to conduct the LOS calculations. The results shall be tabulated and displayed graphically, with levels of service provided for each lane group for each peak period. All data used in the calculations must be provided along with the results of the capacity analysis. Any assumptions made that deviate from the programmed defaults must be documented and an explanation provided as to why there was a change. Electronic files used for the analysis shall be provided to VDOT as a digital submission (e.g. .hcs, .sy6, .inp, .trf files), along with the printed report. If intersections analyzed are in close proximity to each other so that queuing may be a factor, the department may require the inclusion of an analysis with a micro simulation model. Unless actual on-ground conditions dictate otherwise, preparers should use the following defaults when utilizing the Highway Capacity Software (HCS) or other approved programs when evaluating roadway components:

- a. Terrain – choose the appropriate terrain type. Most of the state will be level or rolling, but some areas may qualify for consideration as mountainous.
- b. Twelve-foot wide lanes.

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- c. No parking or bus activity unless field conditions include such parking or bus activity or unless the locality has provided VDOT with a written statement of intent for the services to be provided.
- d. Peak hour factor – calculate from collected traffic counts (requires at least a peak hour count in 15-minute increments).
- e. Heavy vehicle factor – calculate from collected traffic (classification) counts or obtain from VDOT count publications.
- f. Area type – non-center of business district.

The TIS shall identify any existing or proposed bicycle accommodation that would be impacted or enhanced by the proposal. For the purposes of this subsection, a bicycle accommodation is defined as on-street bike lanes, paved shoulders of roadways that are not part of the designated traveled way for vehicles, or exclusive and shared off-street bicycle paths. The LOS for bicycle accommodation shall be determined in accordance with the Highway Capacity Manual (see 24 VAC 30-155-90). The TIS shall provide recommendations for mitigation of impacts where adverse impacts are expected.

The TIS shall identify any pedestrian accommodations that will be affected by the proposal.

The TIS shall include LOS analysis for pedestrian queuing areas, crosswalks, walkways, sidewalks, and, where sidewalks are not present, paved and unpaved shoulders of roadways.

The TIS shall provide recommendations for mitigations of adverse impacts where the likelihood of non-compliance by pedestrians using these facilities on a state-controlled highway is high, LOS E, or very high, LOS F, according to the guidelines established in the

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Highway Capacity Manual (see 24 VAC 30-155-90). All LOS analyses shall be prepared in accordance with the Highway Capacity Manual (see 24 VAC 30-155-90).

The TIS shall provide LOS analysis for all bus service with routes that have, or will have a station or stop within 1,500 feet of the proposal. The TIS shall evaluate and discuss potential for increased demand for bus use due to the proposal, addressing whether such increases will demand longer dwell time at stops or more buses on a route. The LOS for bus service shall be determined in accordance with the Highway Capacity Manual (see 24 VAC 30-155-90).

Where the LOS on a state-controlled highway is or is expected to drop below a LOS C, the TIS shall analyze the impacts of buses on the LOS of the affected state-controlled highway.

The TIS shall provide recommendations for mitigation of adverse impacts where adverse impacts are expected to the LOS to bus service or the LOS on a state-controlled highway

9. Signal warrant analysis.

Traffic signal warrant analysis shall be preformed in accordance with the procedures set out in the Manual on Uniform Traffic Control Devices (see 24 VAC 30-155-90) or ITE Manual of Traffic Signal Design as determined by the department.

10. Recommended Improvements.

Recommendations made in the TIS for improvements to transportation facilities shall be in accordance with the geometric standards contained within the Road Design Manual (see 24 VAC 30-155-90).

24 VAC 30-155-70. Departmental Analysis.

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After concluding its review of a proposed comprehensive plan or transportation plan or plan amendment, rezoning, or site or subdivision plan, the department shall provide the locality with a written report detailing its analysis and recommending transportation improvements to mitigate any potential adverse impacts on state-controlled highways.

24 VAC 30-155-80. Fees.A. Locality Initiated Proposals.

No fee shall be charged for review of any comprehensive plan, comprehensive plan amendment or rezoning proposal initiated by a locality, unless the primary purpose of such proposal is to facilitate the development of a privately-owned project.

B. All Other Proposals.

1. For initial or second review of all comprehensive plans, comprehensive plan amendments, and transportation plans submitted to the department for review, not initiated on behalf of the locality, there shall be a fee of \$1,000 charged to the applicant. This fee shall be paid upon submission of a plan to the department for review. In instances where the actual cost to the department to review the plan is less than \$1,000, the department shall return to the applicant any funds in excess of the actual cost to the department of carrying out its responsibilities pursuant to this chapter.

2. For initial or second review of rezoning proposals there shall be a fee for review determined by the number of vehicle trips generated per peak hour, as follows:

<100 VpPH - \$700

100 to 499 VpPH - \$800

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500 to 999 VpPH - \$900

1,000 or more VpPH - \$1,000

The fee shall be paid upon submission of a plan to the department for review. In instances where the actual cost to the department to review the proposal is less than \$1,000, the department shall return to the applicant any funds in excess of the actual cost to the department of carrying out its responsibilities pursuant to this chapter. In instances where the actual cost to the department to review the proposal is more than the initial fee charged, the applicant shall pay the department the remainder, not to exceed a total payment of \$1,000 total, within one month of completion of the department's review.

3. For initial or second review of subdivision or site plans, there shall be a fee for review as follows:

a. For supplemental traffic analyses described in subdivisions 24 VAC 30-155 50 C 1 and 24 VAC 30-155 50 C 2 of this chapter, the fee charged to the applicant for review shall be \$800.

b. For supplemental traffic analyzes described in subdivision 24 VAC 30-155 50 C 3 of this chapter, the fee charged to the applicant for review shall be \$1,000.

c. This fee shall be paid upon submission of a proposal to the department for review. In instances where the actual cost to the department to review the proposal is less than \$1,000, the department shall return to the applicant any funds in excess of the actual cost to the department of carrying out its responsibilities pursuant to this chapter. In instances where the actual cost to the department to review the proposal is more than the

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initial fee charged, the applicant shall pay the department the remainder, not to exceed a total payment of \$1,000 total, within one month of completion of the department's review.

4. For a third or subsequent submission pursuant to subdivisions B 1, B 2, or B 3 of this section, that is requested by the department on the basis of the failure of the applicant to address deficiencies previously identified by the department, the applicant shall be required to pay an additional fee as though the third or subsequent submission were an initial submission and requiring the fees identified above.

24 VAC 30-155-90. Listing of Documents Incorporated by Reference.

Requests for information pertaining to the availability and cost of any of these publications should be directed to the address indicated below the specific document. Requests for documents available from VDOT may be obtained from the department's division and representative indicated; however, department documents may be available over the Internet at www.VirginiaDOT.org.

A. Trip Generation (effective November, 2003)

Institute of Transportation Engineers

1099 14th Street NW

Suite 300 West

Washington, DC 20005

B. Trip Generation Handbook – an ITE Proposed Recommended Practice (effective 2004)

Institute of Transportation Engineers

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1099 14th Street NW

Suite 300 West

Washington, DC 20005

C. Road Design Manual, (effective January 1, 2005)

Location and Design Division (VDOT)

1401 E. Broad Street

Richmond, Virginia 23219

D. Highway Capacity Manual (effective 2000)

Transportation Research Board

500 Fifth Street NW

Washington, DC 20001

E. Manual on Uniform Traffic Control Devices (effective December 22, 2003)

Federal Highway Administration

Superintendent of Documents

U.S. Government Printing Office

PO Box 371954

Pittsburgh, Pennsylvania 15250

F. ITE Manual of Traffic Signal Design (effective 1998)

Institute of Transportation Engineers

1099 14th Street NW

Suite 300 West

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Washington, DC 20005