



Memorandum

To: Cindy Petkac, AICP
Director of Planning and Zoning
Town of Vienna
127 Center Street S
Vienna, VA 22180

From: David B. Samba, P.E., PTOE
Kimley-Horn

Date: August 2, 2018

Subject: 444 Maple Avenue Multimodal Transportation Impact Analysis
TIA Review

This memorandum summarizes Kimley-Horn's review of the transportation impact analysis (TIA) prepared by Wells & Associates for the 444 Maple Avenue development located in the southeast quadrant of intersection of Nutley Street NW and Maple Avenue NW. The 444 Maple Avenue TIA is dated December 6, 2017 with revisions dated February 16, 2018.

Overview

The Applicant is seeking a rezoning application for a proposed redevelopment in the Town of Vienna, Virginia. The project would redevelop the subject site with a mixed-use development including approximately 160 multifamily dwelling units and 20,000 gross square foot (GSF) of retail uses. The proposed uses would replace a 119-room hotel and a 3,500 GSF sit-down restaurant. The proposed rezoning application would convert the property from C-1 (local commercial) to MAC (Maple Avenue Commercial).

Access to the site is currently provided via a right-in/right-out driveway on Nutley Street, a right-in/right-out driveway on Maple Avenue, and a full-movement driveway at an existing, unsignalized median break on Maple Avenue. The right-in/right-out along Maple Avenue would be removed with this application.

A TIA scoping meeting was held on April 19, 2016 with representatives of the Virginia Department of Transportation (VDOT) and the Town of Vienna to discuss the parameters for the study area.

TIA Review Comments

1. The TIA appears to be consistent with industry standard procedures for conducting an analysis of the transportation impacts associated with development.
2. The TIA is generally in conformance with the scoping document/agreements contained in Appendix B. Exceptions include:

- a. Scoping document references a development program that includes 152 multifamily dwelling units, 51,190 GSF of grocery, and 5,482 GSF of additional retail.

It is noted that it is not uncommon for the development plan to change between scoping and the preparation of the TIA. It is assumed that these changes have been coordinated with the appropriate Town staff.

- b. Scoping document states that turn lane warrants would be conducted at site entrances. No turn lane warrant analyses are described in the TIA.
 - c. Scoping document states that trip generation analysis would include both the “peak hour of generator” and the “peak hour of adjacent street”. The trip generation table in Chapter 5 of the TIA does not specifically identify the trips associated with the “peak hour of generator” and the trips associated with the “peak hour of adjacent street.”
3. Trip generation was based on the application of the rates/equation from the 9th edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.

It is noted that the 10th Edition of the Trip Generation Manual was released in August/September 2017. Because the study was started in 2016, it is appropriate that 9th Edition was used for the purposes of trip generation.

For context, however, it is noted that applying the 10th Edition land use code, rates, and equations would result in differences in trip generation due to broad changes that occurred between the 9th and 10th Edition (i.e. addition/removal of specific land use codes, addition of context-sensitive trip generation rates and equations, and removal of data that originated in the 1960s and 1970s).

Key differences in the ITE Editions that are relevant to this analysis include:

- Land Use Code 220 (Apartment) has been removed from the 10th Edition. Users must now must choose between more specific land uses such as new land use code 220 (multifamily housing, low-rise), land use code 221 (multifamily housing, mid-rise), and land use code 222 (multifamily housing, high-rise), among others.
- Land Use Code 826 (Specialty Retail) has been removed from the 10th Edition. ITE recommendation is for users to apply Land Use Code 820 (shopping center) unless the specific retail use is known and that specific retail use has an applicable land use code in the 10th Edition.
- Land Use Code 820 is generally a higher peak hour trip generator than Land Use Code 826 – this means that had the applicant used ITE 10th Edition for the purposes of trip generation, the PM peak hour retail trips would have increased by about 40 percent. It is noted that this increase could be offset by a reduction in the trip generation associated with the residential portion of the development; generally, the more specific multifamily land uses of ITE 10th Edition (low-rise, mid-rise, etc.) result in less peak hour trips than the more generic “apartment” land use of ITE 9th Edition.

- Based on the above, we believe the net trip generation differences to be insignificant for this particular mix of land uses and as such the use of the ITE 9th Edition is appropriate.
4. Analyses were conducted using Synchro Version 9.1. Synchro Version 10 was released in January 2017.

Because the study was started in 2016, it is appropriate that Synchro Version 9.1 was used for analysis. It is also noted that, typically, TIAs are prepared using the analysis platform that is also in use by staff; it is our experience that most Northern Virginia jurisdictions have not yet required studies to be conducted in Synchro Version 10.

Based on a review of release notes, the most significant change of Synchro Version 10 was the addition of functionality to run calculations using the methodologies outlined in Highway Capacity Manual 6 (HCM 6).

It is noted that VDOT's Traffic Operations and Safety Analysis Manual (TOSAM,) from which this study's analytical parameters are drawn, has not yet been updated to consider HCM 6. TOSAM currently suggests that studies be prepared per HCM 2000 or HCM 2010 methodologies. Both of these methodologies are contained in Synchro Version 9.1.

As such we find the use of Synchro Version 9.1 to be acceptable.

5. Generally, VDOT's TOSAM suggests that studies be conducted using HCM 2010 unless there are specific conditions that warrant the use of HCM 2000 methodologies. The applicant should state within the TIA why HCM 2000 methodologies were used.
6. It is noted that while new traffic counts were collected in March 2016 and April 2016 for most intersections, counts from January 2015 were used for the intersection of Maple Avenue and James Madison Drive.

It is noted that some jurisdictions do not accept traffic counts that are more than one year old at the time of study commencement. By contrast, VDOT is willing to accept traffic counts up to two years old.

Since the impacts of the proposed development are negligible at this intersection, this may not be a significant variance.

7. We are unable to reproduce some of the trip generation results shown in Table 5-1. The applicant should specifically state how the trips were derived (i.e., using commuter peak hour versus using the peak hour of generator, and using rates versus using equations).

Generally, we would suggest that the use of the commuter peak hour is appropriate and that the use of either the rate or equation should be determined based on ITE guidance.

8. A by-right trip generation calculation was included in Table 5-1. It demonstrates that a by-right development of a 62,780 GSF supermarket would generate more trips than the proposed program of development. In context, this means that the traffic impacts of what the applicant could achieve by-right would be more significant than the traffic impacts associated with the proposed development.

9. The level of service (LOS) results presented within the TIA are oriented around the overall intersection LOS. Minimal discussion is provided regarding the LOS of individual movements and approaches. Given that the intersection of Maple Avenue and Nutley Street already operates at LOS E, it may have been prudent to discuss specific movements or approaches to indicate how the proposed development affects the local area.
 - a. Generally, all intersections operate at the same overall LOS under 2022 conditions without the development as under 2022 conditions with the development.
 - b. The proposed development increases the overall delay at the intersection of Maple Avenue and Nutley Street by 5.0 seconds during the AM peak hour, by 2.4 seconds under the PM peak hour, and by 12.7 seconds during the Saturday midday peak hour. Because the intersection generally operates at high delays under existing conditions (and is projected to operate under higher delays in the 2022 without development scenario), the increases in delay associated with the proposed development are unlikely to greatly alter the travel patterns or perceptions of the average traveler.
 - c. Specific movements at the intersection of Maple Avenue and Nutley Street operate at worse LOS under 2022 conditions with development (westbound left during the AM and Saturday peak hours, northbound through-left during the Saturday peak hour).
10. The queuing analysis indicates that the 95th percentile queuing would exceed the available turning lengths at multiple locations under every scenario (existing, no-build, and total future).
11. The conclusions of the TIA do not present specific mitigation measures for the site's traffic impacts.

While it is recognized that overall intersection LOS is unchanged at intersections in close proximity to the site, it is common practice to identify some mitigation strategies that would address the additional delay and queuing generated by the development.

At a minimum, since the TIA identifies transportation demand management (TDM) as a mitigation strategy, some estimate of the potential trip reductions that would result from the TDM strategies should be described and backed with supporting data.

In summary, we offer the following recommendations to the Town:

1. Request that the applicant review, further expand on, and, if applicable, correct the trip generation shown in Table 5-1 (using either ITE 9th or 10th generation data).
2. Verify that the use of 2015 traffic count data is acceptable.
3. Request that the applicant provide the basis for using HCM 2000 methodologies or otherwise update the analysis to demonstrate the results under HCM 2010 methodologies.
4. Request that the applicant conduct turn lane warrant analyses at the site entrances. While we note that right turn lanes may not be desired along these streets and may be inconsistent with the Maple Avenue Commercial corridor, conducting turn lane warrant analyses could reveal potential queuing/site access issues that may need to be addressed in the future.

5. Request that the applicant provide additional details regarding traffic impact mitigation options. For example, the Town may consider requiring the applicant to participate in traffic signal or intersection configuration improvements at the intersection of Maple Avenue and Nutley Street.

Thank you for the opportunity to review the 444 Maple Avenue TIA. Please feel free to contact us at 703-674-1300 should you have any questions.