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
By-Right Trip Generation Analysis

This memorandum summarizes a by-right trip generation analysis conducted for the property at 444 Maple Avenue. This analysis has been performed to provide context for the trip generation that would result from a rezoning proposal of the subject property.

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.

The purpose of this by-right trip generation analysis is to determine the quantity of trips that would be generated by the site if developed within the existing zoning.

The 444 Maple Avenue Transportation Impact Analysis (TIA) contained a by-right analysis that considered a 62,780 GSF supermarket. This is shown in Table 1.

Town staff has indicated that a more modest development, a 35,000 GSF Supermarket or Shopping Center, should be considered for the purposes of the by-right analysis.

Table 1: 444 Maple Avenue Trip Generation (Excerpt)

Table 5-1
444 Maple
Site Trip Generation [1]

Scenario	Land Use Code	Amount	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Average Daily Trips	Saturday Peak Hour In	Saturday Peak Hour Out	Saturday Peak Hour Total
Proposed Program													
Apartment	220	160	Rooms	16	66	82	69	37	106	1,093	45	38	83
Internal allowance (5%/10%/15%)				*(1)*	*(2)*	*(3)*	*(3)*	*(2)*	*(5)*	*(133)*	*(7)*	*(6)*	*(13)*
Saturday Off-Peak Reduction (2% In, 0% Out)											*(1)*	*0*	*(1)*
Net External Trips				15	64	79	66	35	101	960	37	32	70
Specialty Retail	826	20,000	SF	36	38	74	24	30	54	886	160	147	307
Retail Subtotal				**36**	**38**	**74**	**24**	**30**	**54**	**886**	**160**	**147**	**307**
Internal allowance (5%/10%/15%)				*(2)*	*(1)*	*(3)*	*(2)*	*(3)*	*(5)*	*(133)*	*(6)*	*(7)*	*(13)*
Saturday Off-Peak Reduction (0% In, 2.2% Out)											*0*	*(3)*	*(3)*
Net External Trips				34	37	71	22	27	49	753	154	137	294
Pass-by Trips (35%)				(12)	(13)	(25)	(8)	(9)	(17)	(264)	(54)	(48)	(103)
Net New External Retail Trips				22	24	46	14	18	32	489	100	89	191
Net New Trips				37	88	125	80	53	133	1,449	137	121	261
By-Right													
Supermarket	850	62,780	SF	132	81	213	282	270	552	6,419	353	339	692
Pass-by Trips (35%)				(46)	(28)	(75)	(99)	(95)	(193)	(2,247)	(124)	(119)	(242)
Net New Trips				86	53	138	183	175	359	4,172	229	220	450
Difference (Proposed minus By-Right)				(49)	35	(13)	(103)	(122)	(226)	(2,723)	(92)	(99)	(189)

Note(s):
(1) Trip generation based on the Institute of Transportation Engineers' Trip Generation Manual, 9th Edition.
(2) For LU code 220 no Directional Distribution for Saturday is provided by ITE. For purposes of this analysis, the distribution used is for LU Code 230 (Residential Condominium/Townhouse)
(3) For LU code 826 no Saturday Peak Hour is provided by ITE. For purposes of this analysis, the Saturday Peak Hour of Generator for LU Code 820 (Shopping Center) was used

Approach and Findings

Trip generation for the by-right development was conducted using both the 9th and 10th Edition of ITE (for comparison purposes).

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

- Land Use Code 220 (Apartment) has been removed from the 10th Editions. Users must now 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).
- Land Use Code 826 (Specialty Retail) has been removed from the 10 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.

Where appropriate, the use of the ITE land use code equation or rate was made consistent with what was used in the 444 Maple Avenue TIA. The findings of the by-right analysis are shown in Table 2 and Table 3 assuming a supermarket and a shopping center, respectively.

The by-right development of a 35,000 GSF supermarket will generally result in more trips than the proposed program of development (assuming that the pass-by attraction of trips is consistent between the proposed retail and the potential by-right supermarket). Using the 9th Edition methodologies, a by-right supermarket would generate 75 percent more trips during the PM peak hour, 61 percent more trips daily, and 23 percent more trips during the Saturday midday peak hour. Using the 10th Edition methodologies, a by-right supermarket would generate 87 percent more trips

during the PM peak hour, 63 percent more trips daily, and 50 percent more trips during the Saturday midday peak hour.

The by-right development of a 35,000 GSF shopping center will generally result in more trips than the proposed program of development (assuming that the pass-by attraction of trips is consistent between the proposed retail and the potential by-right shopping center). Using the 9th Edition methodologies, a by-right shopping center would generate 45 percent more trips during the PM peak hour, 54 percent more trips daily, and 10 percent more trips during the Saturday midday peak hour. Using the 10th Edition methodologies, a by-right shopping center would generate 31 percent more trips during the PM peak hour and 28 percent more trips daily.

A by-right shopping center, due to the mix of uses that could be included therein (some of which may not be open during AM peak hour or may have very specific trip attraction hours), generates less trips than a by-right supermarket.

In terms of impacts, while the by-right development would result in more trip generation, we expect that the by-right development would result in similar overall operations at proximate intersections when compared to the proposed program of development. This is because the proximate signalized intersection of Maple Avenue and Nutley Street already operates at LOS E (and is projected to operate at LOS F in the future). As such, it is not anticipated that increases in delay associated with the by-right development will not significantly worsen the current congested conditions.

Table 2: By-Right Trip Generation Comparison (Supermarket)

ITE 9th Edition													
Land Use Code	Description	Quantity	Units	AM Peak Hour			PM Peak Hour			Daily Trips (Weekday)	Saturday Peak Hour		
				In	Out	Total	In	Out	Total		In	Out	Total
850	Supermarket	35,000	SF	74	45	119	183	175	358	3,578	253	243	496
	Pass-By Trips (35%)			-26	-16	-42	-64	-61	-125	-1,252	-89	-85	-174
Net New By-Right Trips				**48**	**29**	**77**	**119**	**114**	**233**	**2,326**	**164**	**158**	**322**
Proposed Development New Trips				37	88	125	80	53	133	1,449	137	121	261
Difference (Proposed minus By-Right)				-11	59	48	-39	-61	-100	-877	-27	-37	-61
Percent change				30%	-67%	-38%	49%	115%	75%	61%	20%	31%	23%
ITE 10th Edition													
Land Use Code	Description	Quantity	Units	AM Peak Hour			PM Peak Hour			Daily Trips (Weekday)	Saturday Peak Hour		
				In	Out	Total	In	Out	Total		In	Out	Total
850	Supermarket	35,000	SF	80	54	134	182	175	357	3,737	219	211	430
	Pass-By Trips (35%)			-28	-19	-47	-64	-61	-125	-1,308	-77	-74	-151
Net New By-Right Trips				**52**	**35**	**87**	**118**	**114**	**232**	**2,429**	**142**	**137**	**279**
Proposed Development New Trips				23	58	81	72	52	124	1,494	93	93	186
Difference (Proposed minus By-Right)				-29	23	-6	-46	-62	-108	-935	-49	-44	-93
Percent change				126%	-40%	7%	64%	119%	87%	63%	53%	47%	50%

Table 3: By-Right Trip Generation Comparison (Shopping Center)

ITE 9th Edition													
Land Use Code	Description	Quantity	Units	AM Peak Hour			PM Peak Hour			Daily Trips (Weekday)	Saturday Peak Hour		
				In	Out	Total	In	Out	Total		In	Out	Total
820	Shopping Center	35,000	SF	21	13	34	143	154	297	3,432	230	212	442
	Pass-By Trips (35%)			-26	-16	-7	-5	-12	-50	-54	-104	-1201	-81
Net New By-Right Trips				**14**	**8**	**22**	**93**	**100**	**193**	**2231**	**149**	**138**	**287**
Proposed Development New Trips				37	88	125	80	53	133	1449	137	121	261
Difference (Proposed minus By-Right)				23	80	103	-13	-47	-60	-782	-12	-17	-26
Percent change				-62%	-91%	-82%	16%	89%	45%	54%	9%	14%	10%
ITE 10th Edition													
Land Use Code	Description	Quantity	Units	AM Peak Hour			PM Peak Hour			Daily Trips (Weekday)	Saturday Peak Hour		
				In	Out	Total	In	Out	Total		In	Out	Total
820	Shopping Center	35,000	SF	20	13	33	120	130	250	2,944	140	130	270
	Pass-By Trips (35%)			-28	-19	-7	-5	-12	-42	-46	-88	-1030	-49
Net New By-Right Trips				**13**	**8**	**21**	**78**	**84**	**162**	**1914**	**91**	**84**	**175**
Proposed Development New Trips				23	58	81	72	52	124	1494	93	93	186
Difference (Proposed minus By-Right)				10	50	60	-6	-32	-38	-420	2	9	11
Percent change				-43%	-86%	-74%	8%	62%	31%	28%	-2%	-10%	-6%

Thank you for the opportunity to prepare this by-right analysis. Please feel free to contact us at 703-674-1300 should you have any questions.