

Appendix H

Ann Arbor

Lower Town Mobility Study

2040 Traffic Forecast Workflow



MEMO

TO: Luke Liu, PE, (City of Ann Arbor)
FROM: Matt Hill, Jason Pittenger, Joyce Yassin (WSP)
SUBJECT: Lower Town Mobility Study – Traffic 2040 Forecast Workflow
DATE: June 30, 2021

INTRODUCTION

This memorandum presents the workflow to develop the 2040 Traffic Forecast for the Lower Town area of Ann Arbor. Existing volumes for the AM and PM peak hour were provided in Synchro format by OHM Advisors. Ten Traffic Impact Study (TIS) reports were provided by the City of Ann Arbor to account for specific development growth in the area per the studies. The Southeast Michigan Council of Governments (SEMCOG) regional travel demand model was used to determine the background growth rate. Synchro 10, along with the Traffic Impact Analysis (TIA) module, was utilized as a tool to develop the 2040 Traffic Forecast. The following section details the process to estimate the 2040 AM and PM traffic volumes.

WORKFLOW

Step 1: Develop AM and PM peak trip generated traffic.

The ten TIS reports were reviewed to determine the trip generated traffic for each development in the AM and PM peak as detailed in Table 1. Only two of the studies accounted for a multi-modal split. A multi-modal split was applied to the remainder of the studies, excluding *Wall Street Parking* as noted in the comments section of the table.

Based on a *2019 Transportation Habits Survey* cited by the City of Ann Arbor, 36% of all trips within the city are made by walking, biking, or transit. To calculate the vehicle trips using the ITE Trip Generated values, the Habits Survey percentage was adjusted to account for the person-trip conversion rate. The Base Modal Split in the ITE Trip Generation Handbook averages less than 3% of all trips are made by walking, biking, or transit. Therefore, the AM and PM peak generated vehicle trips were reduced by 33% to determine the total vehicle trips generated by each development.

The vehicle trips for *Nixon Farms* and *North Sky* were further reduced to account for the partial development that was reflected in the existing traffic volumes as detailed in the comments section of Table 1.



Table 1 – TIS Development Vehicle Trips

TIS REPORT	AM PEAK	PM PEAK	WEEKDAY	COMMENTS
841 Broadway	86	172	2,079	
1040 Broadway	239	309	3,474	TIS accounts for multi-modal split
Bristol Ridge	23	28	322	
Inpatient Tower	101	66	167	Weekday total = AM + PM peak
Barton Green Cottages	149	212	1,798	TIS accounts for multi-modal split
Nixon Farms	142	139	1,666	1/5 partially built
North Sky	84	108	1,254	1/8 partially built
Village of AA	175	208	2,776	
Wall Street Parking	354	325	679	Observed vehicle trips, multi-modal split not applied. Weekday total = AM + PM peak
Woodbury Club	79	98	1,067	
TOTAL	1,432	1,665	15,282	

Step 2: Calculate background growth rate.

An analysis utilizing the SEMCOG travel demand model was conducted to determine the traffic growth projected for the specific Lower Town traffic analysis zones (TAZ) in the 2040 forecast year. The total vehicular trips for all the impacted zones was tabulated for the 2020 and 2040 model years. The predicted growth is depicted in Table 2.

Table 2 – SEMCOG Travel Demand Model Daily Trips

SEMCOG MODEL YEAR	DAILY TRIPS
2020	86,375
2040	101,347
Difference	14,972
20 year growth	17.33%

The planned developments from the TIS’s are expected to generate a daily total of 15,282 trips compared to the 14,972 trips forecasted in the model. The model is showing a 20 year growth of 17.3% traffic from the zones that contain the planned developments. The 2040 SEMCOG model appears to account for the growth identified for the planned TIS developments in this built out urban area fairly close to TIS projections (difference of approximately 310 daily trips).

To determine the level of traffic growth on the roadways within the Lower Town area, a background growth will need to be determined to estimate the growth in pass-through traffic (traffic using the Lower Town street network that originates outside of Lower Town and is destined to areas outside of Lower Town). To determine this background growth rate, a select link analysis was conducted in the SEMCOG model on the Lower Town links (blue links in Figure 1). This analysis tracks and captures all trips traveling on the selected (blue) roadways, including pass-through trips.

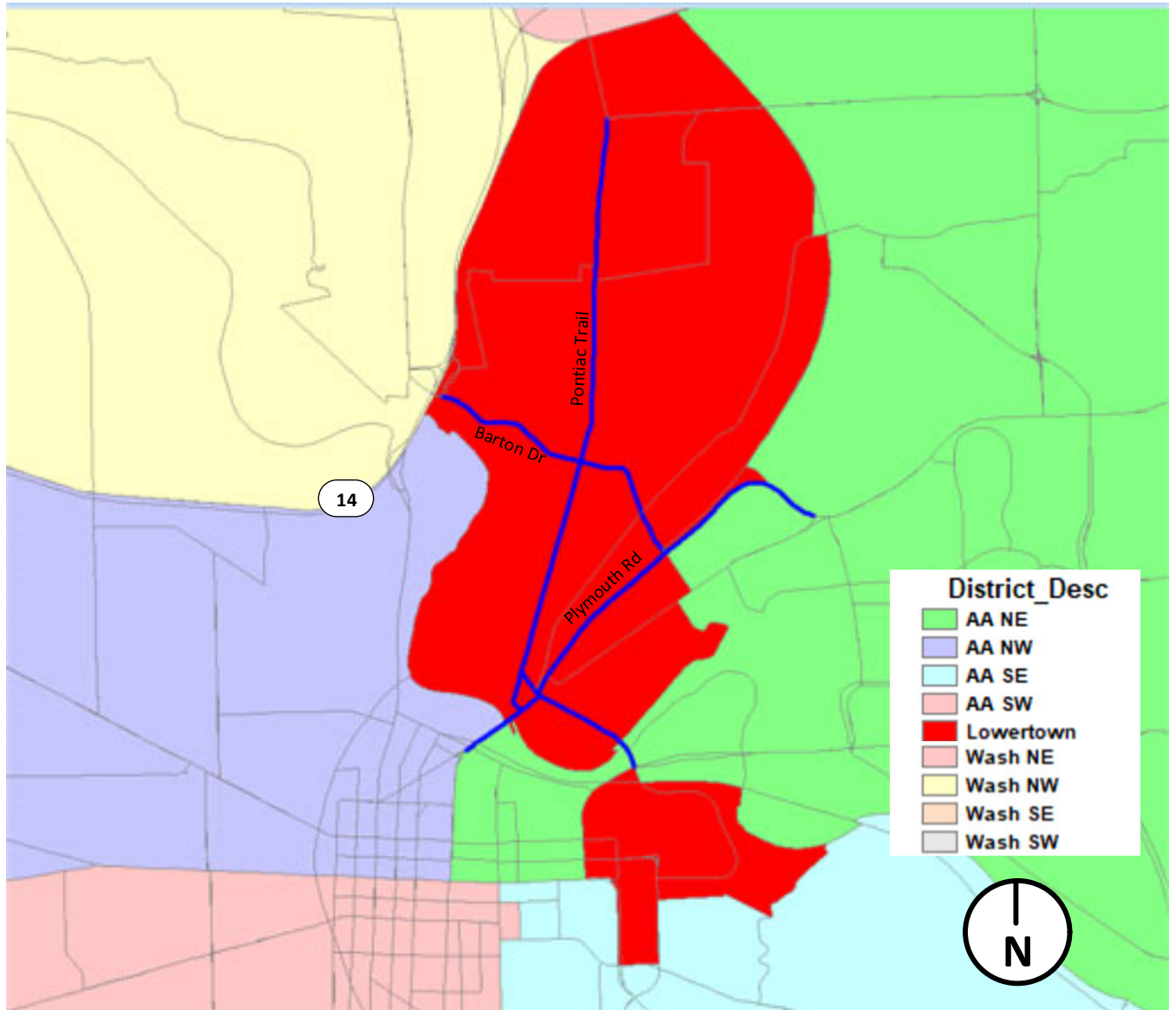


Figure 1 – Lower Town Select Links



Table 3 - Daily Select Link Analysis Results

FORECAST YEAR	SELECT LINK ANALYSIS- DAILY TRIPS				
	To Lower Town from Other Districts	From Lower Town to Other Districts	Lower Town to Lower Town	Pass-Through	Total
2020	14,247	13,970	2,600	37,454	68,271
2040	16,379	16,240	3,052	39,842	75,513
% Difference	14.97%	16.25%	17.39%	6.38%	10.61%

Table 3 depicts the results from the select link analysis, pass through trips increase a total of 6.38% over 20 years. This is the anticipated background growth the Lower Town area is expected to experience independent of the TIS developments identified in this analysis.

Step 3: Calculate 2040 background traffic conditions.

The 2040 AM and PM background traffic volume was calculated by applying a network-wide growth factor. The growth factor calculated in Step 2 for the pass-through traffic was applied to determine the 2040 background traffic conditions without the 10 TIS developments. This background growth factor of 6.38% is a 20 year rate.

Step 4: AM and PM peak hour trip distribution.

This step distributed the trip generated traffic shown in Table 1 using the distributions provided in the TIS reports. Where trip distributions are not provided in the TIS report, traffic was distributed based on the existing travel patterns within the study area. The Village of AA TIS report did not provide trip distributions. Similar distributions were used to match that of the adjacent developers: North Sky, Barton Green Cottages, and Bristol Ridge. The TIA module in Synchro 10 was utilized to distribute the trip generated traffic.

Step 5: Forecast 2040 AM and PM peak hour volumes.

The trip distribution volumes developed in Step 4 were added to the 2040 background volumes developed in Step 3 to determine the forecasted 2040 traffic volumes. Forecasted 2040 AM and PM peak hour volumes were prepared in Synchro format as well as Excel.