

MEMO

TO: Abby Dery, PE
FROM: Jon Slason, PE; Mark Smith, PE, Roxanne Meuse, EIT
CC:
DATE: April 6, 2017
SUBJECT: Traffic Analysis for Colchester Ave Housing

RSG modeled three traffic scenarios in the PM peak hour at the intersection of the project driveway and UVM Medical Center, as well as at three adjacent intersections along Colchester Ave: Pearl Street / Prospect Street, Mansfield Ave, and East Ave / Trinity Campus. The modeled scenarios are:

1. No Build
2. Build with existing signal phasing
3. Build with separate phases at the UVM Medical Center & Project Driveway intersection (aka “split phasing”)

No Build and Build volumes were provided by Trudell Consulting Engineers (TCE) for use in local permitting. For the No Build volumes, TCE had adjusted count volumes at Pearl St / Prospect St and East Ave / Trinity Campus to 2017 using the design hourly volume (DHV). Adjustments were not made at Mansfield Ave and the UVM Medical Center because volumes were at or above 2017 DHV.

See **Table 1: LOS Summary** and **Table 2: Queue Summary** and a brief on the following pages.

ANALYSIS

From No Build to Build (with existing phasing), the level-of-service remains the same at all intersections, with overall delay at each intersection increasing by two seconds at most. At the project intersection, average queues* increase by two vehicles at most on all approaches.

Modifying the signal at the UVM Medical Center / Project Driveway intersection to split-phasing on the north and south approaches would also minimally affect the vehicle delay at this intersection. Delay, v/c, and queues are approximately the same as the existing phasing scenario. The split phasing option was evaluated given the unknown degree of risk that may exist with the slightly offset intersection. The split phase option was assessed using the current cycle length to maintain coordination with Mansfield.

The analysis demonstrates that in the build condition, maintaining the current phasing or possibly moving it to split phasing does not significantly affect the Colchester Avenue network.

Both Build scenarios maintain permissive (unprotected) eastbound left turns entering the future development, as queues and delay are acceptable for this movement.

*Note: Five one-hour-long simulations were averaged together to estimate queue lengths using SimTraffic. As each run will give slightly different results, small differences (less than 50 feet, or two vehicles) should not be seen as significant.

TABLE 1: LOS SUMMARY

Lane Group	No Build			Build - Existing Phasing			Build - Split Phase at UVMC			Delay via SimTraffic		
	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	No Build	Build	Build - Split Phase at
S. Prospect St / N. Prospect St & Colchester Ave												
Overall	E	69	0.86	E	72	0.87	E	72	0.87	43.7	48.7	
EB	E	71	0.93	E	74	0.94	E	74	0.94	39.1	44.7	
WBL	F	81	0.87	F	86	0.88	F	86	0.88	33.8	34.1	
WBT	C	23	0.46	C	23	0.46	C	23	0.46	17.5	19.7	
NBL	F	97	0.93	F	98	0.94	F	98	0.94	40.4	41.5	
NBT	D	46	0.57	D	47	0.57	D	47	0.57	77.0	81.4	
NBR	D	39	0.07	D	39	0.07	D	39	0.07	19.7	22.7	
SB	F	>100	0.93	F	>100	0.95	F	>100	0.95	91.2	>100	
Mansfield Ave & Colchester Ave												
Overall	B	19	0.74	B	19	0.75	B	18	0.75	14	14.5	
EBL	A	6	0.12	A	6	0.12	A	6	0.12	21.9	43.5	
EBT	B	12	0.66	B	12	0.67	B	12	0.67	5.9	5.7	
WBT	C	20	0.77	C	20	0.78	B	16	0.78	14.3	15.3	
SBL	D	40	0.67	D	41	0.68	D	41	0.68	33.3	34.4	
SBR	C	30	0.02	C	30	0.02	C	30	0.02	23.5	26.7	
UVMC / Project Driveway & Colchester Ave												
Overall	B	20	0.81	B	20	0.81	C	23	0.82	13.8	15.3	15.5
EBL	A	10	0.01	A	10	0.05	A	9	0.05	<1	20.6	13.5
EBT	C	24	0.81	C	24	0.81	C	27	0.86	14.4	16.4	15.5
WBL	B	11	0.16	B	11	0.16	B	13	0.20	17.3	12.6	10.0
WBT	A	8	0.51	A	8	0.53	B	10	0.56	9.3	9.6	10.7
NBL	D	42	0.68	D	42	0.68	D	47	0.73	31	34.6	35.1
NBT	C	30	0.08	C	30	0.08	C	34	0.09	8.6	10.8	9.9
SBT	C	30	0.01	C	30	0.08	D	43	0.34	25.4	11.1	34.5
East Ave / Trinity Campus & Colchester Ave												
Overall	D	45	0.74	D	46	0.75	D	46	0.75	42.9	50.2	
EBT	D	46	0.76	D	46	0.76	D	46	0.76	37.7	43.9	
EBR	D	47	0.54	D	48	0.55	D	48	0.55	32.8	40.5	
WBL	C	30	0.27	C	30	0.27	C	30	0.27	30.0	28.0	
WBT	C	22	0.45	C	22	0.46	C	22	0.46	19.5	19.6	
NBT	E	69	0.81	E	72	0.84	E	72	0.84	85.0	>100	
NBR	D	46	0.08	D	46	0.08	D	46	0.08	12.0	13.9	
SBT	F	83	0.53	F	83	0.53	F	83	0.53	73.5	71.1	

Note: The SimTraffic delays were not calculated for the adjacent intersections given the minor change at the project intersection.



TABLE 2: QUEUE SUMMARY

S. Prospect St / N. Prospect St & Colchester Ave

	PM 2017 No Build			PM 2017 Build - Existing Phasing			PM 2017 Build - Split Phase at UVMCC		
	Lane Group	Link Distance	Queue Length	Lane Group	Link Distance	Queue Length	Lane Group	Link Distance	Queue Length
EB	TR	4319	324	TR	4319	334	TR	4319	368
WB	L	220	56	L	220	55	L	220	54
NB	T	1739	334	T	1739	363	T	1739	307
SB	LTR	1553	163	LTR	1553	198	LTR	1553	164

Mansfield Ave & Colchester Ave

	PM 2017 No Build			PM 2017 Build - Existing Phasing			PM 2017 Build - Split Phase at UVMCC		
	Lane Group	Link Distance	Queue Length	Lane Group	Link Distance	Queue Length	Lane Group	Link Distance	Queue Length
EB	T	281	113	T	281	118	T	281	105
WB	TR	490	209	TR	490	248	TR	490	203
SB	L	1584	116	L	1584	124	L	1584	121

UVMCC / Project Driveway & Colchester Ave

	PM 2017 No Build			PM 2017 Build - Existing Phasing			PM 2017 Build - Split Phase at UVMCC		
	Lane Group	Link Distance	Queue Length	Lane Group	Link Distance	Queue Length	Lane Group	Link Distance	Queue Length
EB	TR	490	250	TR	490	299	TR	490	283
WB	TR	1042	149	TR	1042	150	TR	1042	177
NB	L	250	99	L	250	105	L	250	105
SB	LTR	154	7	LTR	154	15	LTR	154	30

	<i>95th %ile</i>			<i>95th %ile</i>			<i>95th %ile</i>		
	Lane Group	Link Distance	Queue Length	Lane Group	Link Distance	Queue Length	Lane Group	Link Distance	Queue Length
EB	L	95	10	L	95	61	L	95	43

East Ave / Trinity Campus & Colchester Ave

	PM 2017 No Build			PM 2017 Build - Existing Phasing			PM 2017 Build - Split Phase at UVMCC		
	Lane Group	Link Distance	Queue Length	Lane Group	Link Distance	Queue Length	Lane Group	Link Distance	Queue Length
EB	LT	1042	322	LT	1042	403	LT	1042	367
WB	TR	2832	168	TR	2832	194	TR	2832	226
NB	LT	1828	465	LT	1828	594	LT	1828	404
SB	LTR	348	41	LTR	348	42	LTR	348	35