



MEMORANDUM

To: David Stiger
From: Ben Swanson
Subject: NH 120 Daily Traffic Patterns Overview
Date: 03 January 2013

In an effort to further understand the nature of traffic on NH 120, we have examined intersection turning movement and automatic traffic count data collected along the NH 120 corridor in October 2011, with a focus on understanding when peak events occur over the course of the day and how these influence congestion and levels of service over the course of the day, particularly during off-peak time periods, which are not typically analyzed in traffic studies. This memorandum presents graphical representations of average daily traffic profiles recorded at many locations along the NH 120 corridor in October 2011 and expands upon previous congestion analyses to examine delays and levels of service (LOS) for every individual 15 minute interval of available turning movement count data (6:00-10:00 AM and 3:00-7:00 PM).

As can be seen below, during the typical weekday morning there is an initial peak of activity from 6:45-7:00 AM seen at many of the corridor intersections overall, and then a second larger peak from 7:30-8:00 AM. After 8:30 AM, traffic volumes and congestion along the NH 120 corridor drop significantly. During the afternoon there is an early peak in traffic volumes and congestion associated with the Lebanon High School dismissal after 3:00 PM and then two larger peaks occurring immediately after 4:00 PM and 5:00 PM. Of all corridor intersections, the longest delays are experienced at the NH 120/Heater Road intersection. However, failing conditions occur here for only 30 minutes during the morning from 7:30-8:00 AM and for 45 minutes during the afternoon, from 4:00-4:30 PM and again from 5:00-5:15 PM. Outside of these peak periods, significantly lower delays are experienced. Additionally, as can be seen below, the addition of WTRB traffic to the No Build condition does not change intersection levels of service along the NH 120 corridor.

- Figure 1 presents average daily traffic volumes by 15 minutes along the NH 120 corridor,
- Figure 2 presents the average of all automatic traffic counts included in Figure 1, representing an average traffic profile for the NH 120 corridor,
- Figure 3 presents a summary of overall intersection delays by 15 minute intervals from 6:00-10:00 AM, with and without WTRB traffic,
- Figure 4 presents a summary of overall intersection LOS by 15 minute intervals from 6:00-10:00 AM, with and without WTRB traffic,
- Figure 5 presents a summary of overall intersection delays by 15 minute intervals from 3:00-7:00 PM, with and without WTRB traffic,
- Figure 6 presents a summary of overall intersection LOS by 15 minute intervals from 3:00-7:00 PM, with and without WTRB traffic.

Figure 1: Average Daily Traffic Volumes by 15 Minute Intervals along the NH 120 Corridor

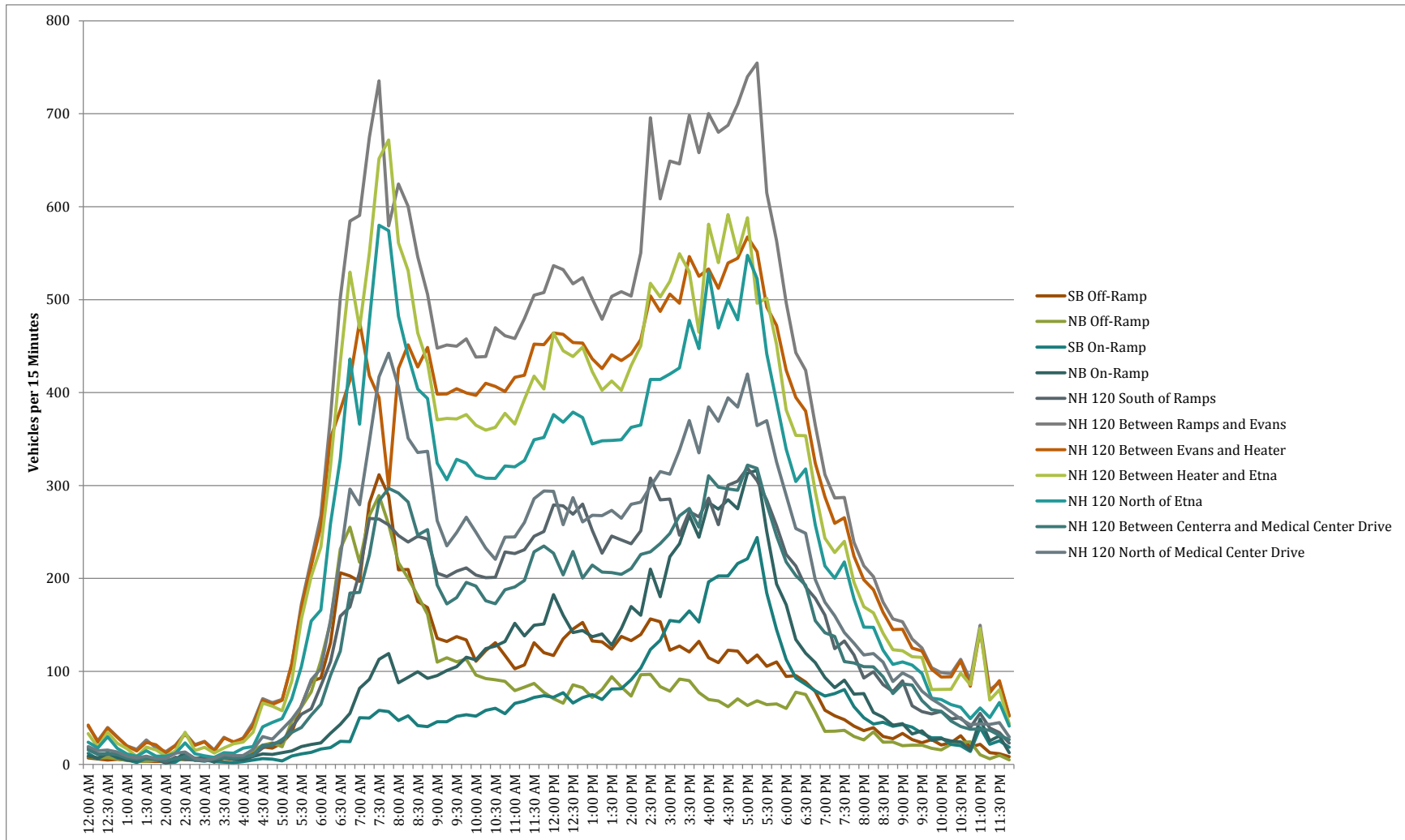


Figure 2: Average Traffic Profile for NH 120 Corridor

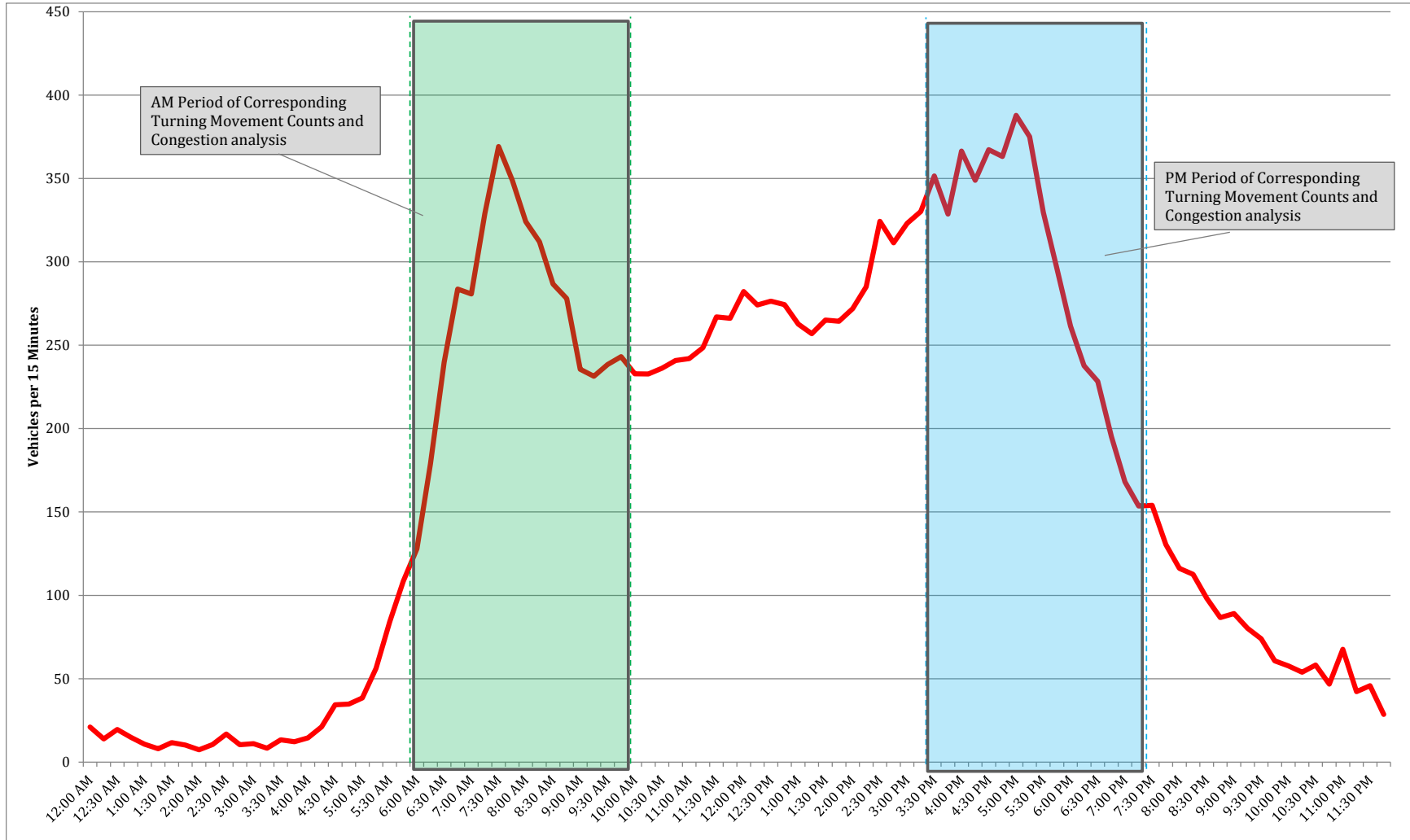


Figure 3: AM Intersection Delays by 15 Minutes (No Build and Build)¹

		AM Peak Hour No Build Delay (Seconds)															
		600-615	615-630	630-645	645-700	700-715	715-730	730-745	745-800	800-815	815-830	830-845	845-900	900-915	915-930	930-945	945-1000
NH 120/Etna Road	Overall	16	17	28	34	29	29	66	57	33	30	28	27	24	26	26	28
NH 120/Heater Road	Overall	24	32	37	58	35	48	108	103	67	57	38	39	40	30	31	31
NH 120/I-89 Exit 1 NB Ramps	Overall	13	24	25	42	25	40	73	61	31	28	21	21	19	16	17	16
NH 120/I-89 Exit 1 SB Ramps	Overall	26	30	27	30	35	37	45	38	39	33	33	32	34	36	31	37

		AM Peak Hour Build Delay (Seconds)															
		600-615	615-630	630-645	645-700	700-715	715-730	730-745	745-800	800-815	815-830	830-845	845-900	900-915	915-930	930-945	945-1000
NH 120/Etna Road	Overall	16	17	27	34	29	29	74	64	32	30	28	27	24	26	26	28
NH 120/Heater Road	Overall	24	32	37	62	36	53	117	111	74	62	39	39	40	31	31	32
NH 120/I-89 Exit 1 NB Ramps	Overall	13	24	25	44	25	43	80	67	34	28	21	21	19	17	17	17
NH 120/I-89 Exit 1 SB Ramps	Overall	26	30	27	31	35	37	48	39	39	33	33	33	34	36	31	37

¹Delays corresponding with LOS E conditions are highlighted in orange and delays corresponding with LOS F conditions are highlighted in red.

Figure 4: AM Intersection Levels of Service by 15 Minutes (No Build and Build)¹

		AM Peak Hour No Build Level of Service															
		600-615	615-630	630-645	645-700	700-715	715-730	730-745	745-800	800-815	815-830	830-845	845-900	900-915	915-930	930-945	945-1000
		LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	
NH 120/Etna Road	Overall	B	B	C	C	C	C	E	E	C	C	C	C	C	C	C	
NH 120/Heater Road	Overall	C	C	D	E	D	D	F	F	E	E	D	D	D	C	C	
NH 120/I-89 Exit 1 NB Ramps	Overall	B	C	C	D	C	D	E	E	C	C	C	C	B	B	B	
NH 120/I-89 Exit 1 SB Ramps	Overall	C	C	C	C	C	D	D	D	D	C	C	C	C	D	C	

		AM Peak Hour Build Level of Service															
		600-615	615-630	630-645	645-700	700-715	715-730	730-745	745-800	800-815	815-830	830-845	845-900	900-915	915-930	930-945	945-1000
		LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	
NH 120/Etna Road	Overall	B	B	C	C	C	C	E	E	C	C	C	C	C	C	C	
NH 120/Heater Road	Overall	C	C	D	E	D	D	F	F	E	E	D	D	D	C	C	
NH 120/I-89 Exit 1 NB Ramps	Overall	B	C	C	D	C	D	E	E	C	C	C	C	B	B	B	
NH 120/I-89 Exit 1 SB Ramps	Overall	C	C	C	C	C	D	D	D	D	C	C	C	C	D	C	

¹ LOS E conditions are highlighted in orange and LOS F conditions are highlighted in red.

Figure 5: PM Intersection Delays by 15 Minutes (No Build and Build)¹

		PM Peak Hour No Build Delay (Seconds)															
		1500-1515	1515-1530	1530-1545	1545-1600	1600-1615	1615-1630	1630-1645	1645-1700	1700-1715	1715-1730	1730-1745	1745-1800	1800-1815	1815-1830	1830-1845	1845-1900
NH 120/Etna Road	Overall	50	44	43	42	47	59	44	62	55	44	30	37	25	27	22	22
NH 120/Heater Road	Overall	49	55	40	49	86	81	68	73	96	57	35	40	27	24	25	22
NH 120/I-89 Exit 1 NB Ramps	Overall	11	11	13	10	10	9	10	9	9	10	8	11	10	12	12	12
NH 120/I-89 Exit 1 SB Ramps	Overall	26	26	30	25	25	24	26	24	25	23	22	24	25	29	27	27

		PM Peak Hour No Build Delay (Seconds)															
		1500-1515	1515-1530	1530-1545	1545-1600	1600-1615	1615-1630	1630-1645	1645-1700	1700-1715	1715-1730	1730-1745	1745-1800	1800-1815	1815-1830	1830-1845	1845-1900
NH 120/Etna Road	Overall	50	44	43	42	51	64	47	65	61	47	30	37	25	26	22	22
NH 120/Heater Road	Overall	51	58	40	51	93	89	74	79	102	65	35	40	27	24	25	22
NH 120/I-89 Exit 1 NB Ramps	Overall	11	11	13	10	10	9	10	9	9	10	8	11	10	12	11	12
NH 120/I-89 Exit 1 SB Ramps	Overall	26	26	30	25	25	24	26	24	25	23	22	24	25	28	27	27

¹Delays corresponding with LOS E conditions are highlighted in orange and delays corresponding with LOS F conditions are highlighted in red.

Figure 6: PM Intersection Levels of Service by 15 Minutes (No Build and Build)¹

		PM Peak Hour No Build Level of Service															
		1500-1515	1515-1530	1530-1545	1545-1600	1600-1615	1615-1630	1630-1645	1645-1700	1700-1715	1715-1730	1730-1745	1745-1800	1800-1815	1815-1830	1830-1845	1845-1900
		LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS
NH 120/Etna Road	Overall	D	D	D	D	D	E	D	E	E	D	C	D	C	C	C	C
NH 120/Heater Road	Overall	D	E	D	D	F	F	E	E	F	E	C	D	C	C	C	C
NH 120/I-89 Exit 1 NB Ramps	Overall	B	B	B	B	A	A	B	A	A	A	A	B	A	B	B	B
NH 120/I-89 Exit 1 SB Ramps	Overall	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

		PM Peak Hour Build Level of Service															
		1500-1515	1515-1530	1530-1545	1545-1600	1600-1615	1615-1630	1630-1645	1645-1700	1700-1715	1715-1730	1730-1745	1745-1800	1800-1815	1815-1830	1830-1845	1845-1900
		LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS
NH 120/Etna Road	Overall	D	D	D	D	D	E	D	E	E	D	C	D	C	C	C	C
NH 120/Heater Road	Overall	D	E	D	D	F	F	E	E	F	E	D	D	C	C	C	C
NH 120/I-89 Exit 1 NB Ramps	Overall	B	B	B	B	A	A	B	A	A	A	A	B	A	B	B	B
NH 120/I-89 Exit 1 SB Ramps	Overall	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

¹ LOS E conditions are highlighted in orange and LOS F conditions are highlighted in red.