CITY OF LOMITA
CITY COUNCIL REPORT

TO: City Council **Item No. SCH 8b**

FROM: Ryan Smoot, City Manager

PREPARED BY: Carla Dillon, P.E., Director of Public Works

MEETING DATE: July 18, 2023

SUBJECT: Discussion of Lane Striping on Narbonne Avenue South of Pacific Coast Highway

---

RECOMMENDATION:

Discussion only.

BACKGROUND:

In 2017, following a County evaluation, the City Council approved changes to restripe Narbonne Avenue to its current configuration from the northern city boundary to just north of Pacific Coast Highway (PCH) in conjunction with a street pavement project (Figure 1). In addition, the city's Bicycle and Pedestrian Master Plan, adopted as a guidance document by the City Council in March 2018, calls for the lane reconfiguration on the southern portion of Narbonne Ave to allow for one driving lane in each direction, a center turn lane, two 6' bike lanes, and parking on each side. The existing striping pattern, south of PCH is shown on Figure 2.

While the City is in the design phase of a street reconstruction project for Narbonne Avenue south of PCH, decisions need to be made prior to finalizing the plans as the pavement substructure design may vary for a traffic lane versus a parking or bike lane. The change in 2017, with a single lane in each direction with the center turn lane, provided benefits to ease traffic concerns north of Pacific Coast Highway, and the city's Technical Traffic Advisory Committee has received concerns with speed, visibility, and parking along the section of Narbonne Avenue that remains in its original striping pattern.

Striping North of PCH (Fig. 1)

Striping South of PCH (Fig. 2)

The Public Safety and Traffic Commission reviewed this proposed striping plan on June 21, 2023, and recommended the change to one driving lane in each direction. In addition, the Commission requested that staff consider angled parking on this segment of Narbonne Avenue to relieve parking congestion in the area. The City's consultant reviewed the street width and determined that even with one side of angled parking and the other side with parallel parking, the street does not provide enough width for a driving lane in each direction, a center turn lane, and bicycle lanes.

Staff is seeking Council's direction on the proposed restriping so the City's design consultant can complete the pavement design. The final drawings and bid package will be presented to the City Council for approval prior to awarding the contract for construction. The final design will incorporate details, such as right turn lane pocket and no parking within a certain distance from the intersection.

FISCAL IMPACT

None at this time.

OPTIONS

1. Provide input on striping plan

ATTACHMENT

1. 2017 Restriping Report from LA County
2. 2023 Traffic Assessment

Reviewed by:

Gary Y. Sugano
Assistant City Manager

Approved by:

Ryan Smoot
City Manager

Prepared by:

Carla Dillon, PE
Public Works Director

Attachment 1

July 27, 2017

TO: Mark McAvoy, Public Works Director
City of Lomita

FROM: Irena Guilmette
Traffic Advisor

CONSIDERATION OF A REQUEST TO RESTRIPE NARBONNE AVENUE BETWEEN PACIFIC COAST HIGHWAY AND LOMITA BOULEVARD

At the March 7, 2017, Lomita City Council Meeting, the Council was presented with a proposal to restripe a portion of Narbonne Avenue between Pacific Coast Highway and Lomita Boulevard. This roadway reconfiguration was to be completed due to the upcoming pavement rehabilitation project on Narbonne Avenue that is slated to begin construction soon. After hearing the Staff report, the City Council made a motion to continue this matter after a more comprehensive traffic study was conducted by Los Angeles County.

Existing Conditions

This segment of Narbonne Avenue is classified as a minor arterial roadway on the 2013 Functional Classification System's California Road System maps on file with the Federal Highway Administration. It is an undivided highway striped for two lanes of travel in each direction with on-street parking. The roadway has curb, gutter and sidewalk on both sides. Narbonne Avenue is signalized at Lomita Boulevard, 250th Street, 255th Street and Pacific Coast Highway. Between Lomita Boulevard and 250th Street, the abutting property consists of commercial and residential properties with the Lomita Magnet Elementary School located on the northwest corner of 247th Street and Narbonne Avenue. Between 250th Street and Pacific Coast Highway, there is a mix of commercial, multiple-dwelling residential and single-family residential development. The 0.90 mile Narbonne Avenue corridor between Pacific Coast Highway and Lomita Boulevard has a posted speed limit of 35 miles per hour (mph), and the average daily traffic is approximately 14,300 vehicles per day.

Proposed Conditions

This roadway reconfiguration would reallocate road space to one lane in each direction, a center two-way left-turn lane, a Class II bicycle lane in each direction with parking to remain on both sides of the roadway. The striping at the signalized intersections of Narbonne Avenue at 250th Street and 255th Street would transition the two-way left turn lanes into dedicated left turn lanes for both northbound and southbound Narbonne Avenue. The striping at the signalized intersection of Lomita Boulevard would remain the same except for the extension of the northbound left turn lane and the addition of dedicated right turn lanes on Lomita Boulevard. The existing striping at the signalized intersection of Pacific Coast Highway would remain the same. Traffic signal timing on Narbonne Avenue at the signalized intersections would need to be modified to accommodate the reconfigured roadway.

Traffic Analysis Methodology

The County of Los Angeles considers any roadway with less than 20,000 vehicles per day to be an ideal lane reconfiguration candidate and a roadway with less than 15,000 vehicles

per day wouldn't require a level of service (LOS) analysis. Although Narbonne Avenue has less than 15,000 vehicles per day, for purposes of this study, the County conducted a LOS analysis at the intersection of Narbonne Avenue and Lomita Boulevard due to traffic concerns raised by the public at the March 7, 2017, City of Lomita Council Meeting. Based on the analysis, LOS ratings ranging from A through F were assigned to this intersection, with A representing free flow, and F representing congested conditions. The following table represents the LOS for the intersection of Narbonne Avenue at Lomita Boulevard:

Intersection	Peak	Existing Conditions (2016)		Existing Conditions (2035)		Project Conditions (2016)		Project Conditions (2035)	
		LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C
Narbonne Avenue at Lomita Boulevard	AM	D	0.85	D	0.88	C	0.81	D	0.84
	PM	E	0.97	F	1.01	E	0.91	E	0.95

Indicates inadequate northbound and southbound left-turn lane storage capacity

Indicates adequate northbound and southbound left-turn lane storage capacity

According to the County's General Plan, acceptable LOS is considered on a case-by-case basis with LOS D generally being the minimum desired. LOS ratings below D may be acceptable according to the County's General Plan if the project supports the General Plan goals, such as creating an efficient multimodal transportation system that serves the needs of all residents, and promoting active transportation.

Based on the analysis, the intersection studied was categorized into the following groupings:

- **LOS A through D**

  Implementation of roadway configuration is not expected to result in traffic congestion at this intersection.

- **LOS E**

  Implementation of roadway reconfiguration is expected to result in traffic congestion at this intersection. However, LOS ratings below D may be acceptable according to the County's General Plan if the project supports the General Plan goal of promoting active transportation. The benefits, if implemented, should outweigh the traffic congestion impacts at this intersection.

- **LOS F with Adequate Turn-Lane Capacity**

  Implementation of roadway reconfiguration is expected to result in severe traffic congestion at this intersection. However, turn-lane capacities are adequate to accommodate the forecasted queue lengths. The benefits, , if implemented, should substantially outweigh the traffic congestion impacts at this intersection.

- **LOS F with Inadequate Turn-Lane Capacity**
  Implementation of roadway reconfiguration is expected to result in severe traffic

congestion at this intersection. Furthermore, extending the length of the turn-lanes to accommodate the forecasted queue is not feasible due to site-specific constraints. Implementation of roadway reconfiguration is not advisable along the roadways approaching this intersection.

- **No Change to LOS**
  For purposes of analysis, the intersection configuration is not expected to change at this location. Lane configurations from roadway reconfiguration will transition to join existing striping conditions approaching this intersection.

Although the LOS at the intersection of Narbonne Avenue at Lomita Boulevard shows a LOS of E during the PM peak hours, the northbound and southbound left-turn capacity goes from inadequate to adequate with the intersection lane changes.

Benefits of lane reconfiguration along Narbonne Avenue

Pedestrians

- Pedestrian crossing of Narbonne Avenue may be easier and safer due to a reduction in the number of lanes to cross which reduces potential conflicts between pedestrians and vehicles.

Bicyclists

- Increase in Active Transportation by providing bike lanes which meets the goals of Complete Streets and Healthy Design.

- Increase in the safety and comfort of bicyclists by providing a striped space on the roadway. The National Association of City Transportation Officials (NACTO) advocates the benefits of bike lanes, including increased bicyclist comfort and confidence on busy streets, separation between bicyclists and automobiles, increased predictability of bicycles and motorists positioning and interaction, increased total capacities of streets carrying mixed bicycle and motor vehicle traffic and a visual reminder to motorists of bicyclists' right to the street.

Emergency Vehicles

- Adding a 2-way left-turn lane would create unimpeded lanes that can be used by emergency vehicles or motorists needing to pull over to provide through movement of emergency responders.

Motorists

- Reduce specific types of traffic collisions. Per the U.S. Department of Transportation Federal Highway Administration, roadway configurations such as this may have a crash reduction of 19 percent on corridors within suburban areas surrounding larger cities.

- Reduce intersection conflicts.

- Enhance intersection sight distance.

- Reduces left-turn conflicts at intersections and midblock locations.

- Reduce vehicle travel speeds because having additional lanes during non-peak hours encourages people to speed.

- Provide continuous turning lanes for left-turning vehicles which may potentially reduce mid-block delay and weaving.

Community

- Improve business because people who walk or use bikes spend more money.

Cost-Effective

- Implementing roadway design during the upcoming pavement rehabilitation project on Narbonne Avenue is cost-effective because there is no need to grind out existing striping.

Left Turn Access at signalized intersections

- Left turn access for northbound and southbound Narbonne Avenue will be enhanced because dedicated left turn lanes will be installed at the signalized intersections of 250th Street and 255th Street. This will enhance visibility for left turning motorists as well as reduce left-turn collision potential.

<u>Conclusions</u>

Recognizing there are factors in addition to LOS that have bearing upon the suitability of roadway reconfiguration on Narbonne Avenue, it is recommended the City consider implementing these striping changes by weighing the potential benefits of facilitating multimodal transportation which supports the City of Lomita's recently adopted Complete Streets policy.

DAVID EVANS AND ASSOCIATES INC.

June 8, 2023

MEMORANDUM

To: Suzanne Moubayed, MS, EIT

David Evans and Associates, Inc.

From: James M. Daisa, TE

RE: PRELIMINARY TRAFFIC OPERATIONS ASSESMENT OF NARBONNE / PACIFIC COAST HIGHWAY INTERSECTION WITH PROPOSED IMPROVEMENTS

This memorandum summarizes a preliminary operations assessment of the intersection of Narbonne Avenue and Pacific Coast Highway in the City of Lomita with implementation of proposed lane reconfigurations.

Proposed Changes to Narbonne Avenue

Narbonne Avenue currently is a four-lane undivided street except at major signalized intersections where a left turn bay is provided. The proposed configuration—a "road diet"—of Narbonne Avenue is to provide one lane in each direction and a continuous center turn lane which transitions into left turn bays at select intersections to provide width to add Class II bicycle lanes in each direction. On-street parking remains as currently configured.

Intersection Capacity Analysis Methodology

With limited traffic volume data, a capacity analysis was performed to identify one of three possible operational conditions with implementation of the proposed road diet: intersection operates below capacity, intersection operates near capacity, intersection operates over capacity. The city's level of service standard is LOS D.

Available traffic data was limited. The city provided an Engineering & Traffic Survey for establishing speed limits on Narbonne Avenue prepared in 2021 which included daily traffic counts divided into hourly volumes by direction. Bi-directional volumes on Narbonne Avenue for the PM peak hour were available north and south of the Pacific Coast Highway. Peak hour volumes for Pacific Coast Highway were derived from Caltrans' Traffic Census Program bi-directional peak hour volume data for the year 2021. Caltrans count data was limited to Pacific Coast Highway at Route 231 and at Crenshaw Boulevard.

Intersection turn movements at Narbonne Avenue and Pacific Coast Highway were estimated based on an assumed percentage of directional traffic volumes turning left and right at the approaches of the intersection. The percentages were adjusted so that the departure volumes matched the contributing approach turning volumes as close as possible. The resulting intersection turning movements are rough approximations, but conservative.

Results of Analysis

Based on the assumptions described above, the PM peak hour capacity analysis results in an overall LOS C (see Attachment D) with the northbound and southbound approaches of Narbonne Avenue operating at a LOS D. This finding falls under the operational condition of "intersection operates below capacity".

\ Attachments:
Attachment A – Peak Hour Traffic Data for Narbonne Avenue
Attachment B - Excerpt from Caltrans Peak Hour Volume Data (Year 2021)
Attachment C - Derivation of Turning Movements from Directional Link Volumes
Attachment D - PM Peak Hour Capacity Analysis of PCH and Narbonne Ave

NARBONNE AVENUE

(Between Lomita Boulevard and the
Rolling Hills Estates City Boundary south of Pacific Coast Highway)

Engineering and Traffic Survey (E&TS)

Prepared by: Irena Guilmette, T.E. #2259
City of Lomita Traffic Advisor
Los Angeles County Public Works
September 2021

NARBONNE AVENUE

TRAFFIC VOLUMES

Los Angeles County Department of Public Works

Access Date: 9/7/21 3:07 PM

24 Hour Traffic Count

Report ID: HOME 587V

Count Date: 8/13/2021 Friday

Conditions: Clear

Location: NARBONNE AVENUE S/O 248TH STREET

	N/B		S/B		Total	
Time	15'	Hour	15'	Hour	15'	Hour
12:00 AM	13	33	11	41	24	74
12:15 AM	6	28	13	34	19	62
12:30 AM	7	27	9	27	16	54
12:45 AM	7	20	8	23	15	43
1:00 AM	8	14	4	16	12	30
1:15 AM	5	8	6	14	11	22
1:30 AM	0	4	5	10	5	14
1:45 AM	1	8	1	13	2	21
2:00 AM	2	12	2	14	4	26
2:15 AM	1	11	2	14	3	25
2:30 AM	4	13	8	14	12	27
2:45 AM	5	10	2	10	7	20
3:00 AM	1	10	2	9	3	19
3:15 AM	3	12	2	12	5	24
3:30 AM	1	11	4	12	5	23
3:45 AM	5	21	1	12	6	33
4:00 AM	3	25	5	18	8	43
4:15 AM	2	35	2	15	4	50
4:30 AM	11	44	4	17	15	61
4:45 AM	9	44	7	20	16	64
5:00 AM	13	69	2	21	15	90
5:15 AM	11	83	4	31	15	114
5:30 AM	11	93	7	45	18	138
5:45 AM	34	125	8	60	42	185
6:00 AM	27	131	12	77	39	208
6:15 AM	21	158	18	101	39	259
6:30 AM	43	203	22	130	65	333
6:45 AM	40	237	25	152	65	389
7:00 AM	54	282	36	193	90	475
7:15 AM	66	333	47	227	113	560
7:30 AM	77	359	44	244	121	603
7:45 AM	85	395	66	263	151	658
8:00 AM	105	407	70	282	175	689
8:15 AM	92	414	64	306	156	720
8:30 AM	113	427	63	325	176	752
8:45 AM	97	429	85	342	182	771
9:00 AM	112	444	94	365	206	809
9:15 AM	105	420	83	342	188	762
9:30 AM	115	434	80	340	195	774
9:45 AM	112	431	108	361	220	792
10:00 AM	88	414	71	349	159	763
10:15 AM	119	447	81	376	200	823
10:30 AM	112	440	101	389	213	829
10:45 AM	95	456	96	420	191	876
11:00 AM	121	480	98	432	219	912
11:15 AM	112	467	94	456	206	923
11:30 AM	128	468	132	482	260	950
11:45 AM	119	442	108	453	227	895

	N/B		S/B		Total	
Time	15'	Hour	15'	Hour	15'	Hour
12:00 PM	108	434	122	452	230	886
12:15 PM	113	414	120	434	233	848
12:30 PM	102	411	103	422	205	833
12:45 PM	111	413	107	417	218	830
1:00 PM	88	398	104	411	192	809
1:15 PM	110	414	108	443	218	857
1:30 PM	104	393	98	433	202	826
1:45 PM	96	411	101	454	197	865
2:00 PM	104	430	136	454	240	884
2:15 PM	89	441	98	436	187	877
2:30 PM	122	448	119	454	241	902
2:45 PM	115	433	101	471	216	904
3:00 PM	115	428	118	502	233	930
3:15 PM	96	425	116	499	212	924
3:30 PM	107	446	136	526	243	972
3:45 PM	110	445	132	516	242	961
4:00 PM	112	413	115	501	227	914
4:15 PM	117	404	143	505	260	909
4:30 PM	106	383	126	512	232	895
4:45 PM	78	395	117	525	195	920
5:00 PM	103	412	119	508	222	920
5:15 PM	96	381	150	506	246	887
5:30 PM	118	389	139	470	257	859
5:45 PM	95	363	100	426	195	789
6:00 PM	72	339	117	419	189	758
6:15 PM	104	348	114	386	218	734
6:30 PM	92	322	95	365	187	687
6:45 PM	71	304	93	351	164	655
7:00 PM	81	302	84	340	165	642
7:15 PM	78	280	93	339	171	619
7:30 PM	74	262	81	318	155	580
7:45 PM	69	240	82	296	151	536
8:00 PM	59	222	83	277	142	499
8:15 PM	60	201	72	253	132	454
8:30 PM	52	190	59	228	111	418
8:45 PM	51	171	63	219	114	390
9:00 PM	38	146	59	205	97	351
9:15 PM	49	137	47	177	96	314
9:30 PM	33	106	50	169	83	275
9:45 PM	26	93	49	147	75	240
10:00 PM	29	86	31	129	60	215
10:15 PM	18	81	39	123	57	204
10:30 PM	20	73	28	114	48	187
10:45 PM	19	70	31	99	50	169
11:00 PM	24	62	25	93	49	155
11:15 PM	10		30		40	
11:30 PM	17		13		30	
11:45 PM	11		25		36	

24 Hour		AM Peak Hour		PM Peak Hour	
Direction	Volume	Time	Volume	Time	Volume
Total	12101	11:30 AM	950	3:30 PM	972
N/B	5993	11:00 AM	480	2:30 PM	448
S/B	6108	11:30 AM	482	3:30 PM	526

Los Angeles County Department of Public Works

Access Date: 9/7/21 3:04 PM

24 Hour Traffic Count

Report ID: HOME 588V

Count Date: 8/13/2021 Friday

Conditions: Clear

Location: NARBONNE AVENUE S/O 254TH STREET

	N/B		S/B		Total	
Time	15'	Hour	15'	Hour	15'	Hour
12:00 AM	7	29	12	32	19	61
12:15 AM	9	28	11	25	20	53
12:30 AM	6	24	5	19	11	43
12:45 AM	7	18	4	18	11	36
1:00 AM	6	13	5	15	11	28
1:15 AM	5	9	5	13	10	22
1:30 AM	0	8	4	11	4	19
1:45 AM	2	10	1	13	3	23
2:00 AM	2	12	3	14	5	26
2:15 AM	4	16	3	12	7	28
2:30 AM	2	15	6	12	8	27
2:45 AM	4	15	2	11	6	26
3:00 AM	6	14	1	13	7	27
3:15 AM	3	12	3	16	6	28
3:30 AM	2	13	5	18	7	31
3:45 AM	3	21	4	24	7	45
4:00 AM	4	28	4	27	8	55
4:15 AM	4	28	5	28	9	56
4:30 AM	10	34	11	31	21	65
4:45 AM	10	37	7	31	17	68
5:00 AM	4	51	5	31	9	82
5:15 AM	10	66	8	43	18	109
5:30 AM	13	74	11	58	24	132
5:45 AM	24	95	7	66	31	161
6:00 AM	19	107	17	90	36	197
6:15 AM	18	137	23	110	41	247
6:30 AM	34	172	19	133	53	305
6:45 AM	36	207	31	164	67	371
7:00 AM	49	253	37	207	86	460
7:15 AM	53	272	46	237	99	509
7:30 AM	69	312	50	253	119	565
7:45 AM	82	345	74	272	156	617
8:00 AM	68	369	67	286	135	655
8:15 AM	93	387	62	302	155	689
8:30 AM	102	391	69	326	171	717
8:45 AM	106	390	88	339	194	729
9:00 AM	86	377	83	353	169	730
9:15 AM	97	377	86	340	183	717
9:30 AM	101	391	82	344	183	735
9:45 AM	93	381	102	371	195	752
10:00 AM	86	391	70	361	156	752
10:15 AM	111	425	90	392	201	817
10:30 AM	91	415	109	392	200	807
10:45 AM	103	416	92	401	195	817
11:00 AM	120	433	101	419	221	852
11:15 AM	101	423	90	440	191	863
11:30 AM	92	418	118	464	210	882
11:45 AM	120	429	110	471	230	900
12:00 PM	110	416	122	455	232	871
12:15 PM	96	407	114	445	210	852
12:30 PM	103	411	125	418	228	829
12:45 PM	107	411	94	397	201	808
1:00 PM	101	410	112	407	213	817
1:15 PM	100	414	87	428	187	842
1:30 PM	103	420	104	449	207	869
1:45 PM	106	419	104	449	210	868
2:00 PM	105	403	133	448	238	851
2:15 PM	106	420	108	443	214	863
2:30 PM	102	415	104	450	206	865
2:45 PM	90	406	103	475	193	881
3:00 PM	122	437	128	510	250	947
3:15 PM	101	416	115	515	216	931
3:30 PM	93	432	129	538	222	970
3:45 PM	121	448	138	533	259	981
4:00 PM	101	421	133	530	234	951
4:15 PM	117	422	138	553	255	975
4:30 PM	109	401	124	550	233	951
4:45 PM	94	392	135	563	229	955
5:00 PM	102	391	156	524	258	915
5:15 PM	96	367	135	495	231	862
5:30 PM	100	353	137	457	237	810
5:45 PM	93	327	96	420	189	747
6:00 PM	78	316	127	408	205	724
6:15 PM	82	321	97	366	179	687
6:30 PM	74	317	100	355	174	672
6:45 PM	82	322	84	321	166	643
7:00 PM	83	301	85	298	168	599
7:15 PM	78	280	86	283	164	563
7:30 PM	79	260	66	272	145	532
7:45 PM	61	240	61	272	122	512
8:00 PM	62	223	70	260	132	483
8:15 PM	58	197	75	235	133	432
8:30 PM	59	185	66	213	125	398
8:45 PM	44	152	49	184	93	336
9:00 PM	36	130	45	172	81	302
9:15 PM	46	121	53	157	99	278
9:30 PM	26	95	37	140	63	235
9:45 PM	22	96	37	132	59	228
10:00 PM	27	94	30	113	57	207
10:15 PM	20	86	36	107	56	193
10:30 PM	27	79	29	87	56	166
10:45 PM	20	63	18	72	38	135
11:00 PM	19	52	24	69	43	121
11:15 PM	13		16		29	
11:30 PM	11		14		25	
11:45 PM	9		15		24	

24 Hour		AM Peak Hour		PM Peak Hour	
Direction	Volume	Time	Volume	Time	Volume
Total	11713	11:45 AM	900	3:45 PM	981
N/B	5671	11:00 AM	433	3:45 PM	448
S/B	6042	11:45 AM	471	4:45 PM	563

Los Angeles County Department of Public Works

Access Date: 9/7/21 3:08 PM

24 Hour Traffic Count

Report ID: HOME 589V

Count Date: 8/13/2021 Friday

Conditions: Clear

Location: NARBONNE AVENUE N/O PACIFIC COAST HIGHWAY

	N/B		S/B		Total	
Time	15'	Hour	15'	Hour	15'	Hour
12:00 AM	8	32	12	30	20	62
12:15 AM	10	27	9	23	19	50
12:30 AM	9	21	4	14	13	35
12:45 AM	5	13	5	14	10	27
1:00 AM	3	10	5	10	8	20
1:15 AM	4	10	0	11	4	21
1:30 AM	1	11	4	14	5	25
1:45 AM	2	12	1	17	3	29
2:00 AM	3	13	6	19	9	32
2:15 AM	5	15	3	14	8	29
2:30 AM	2	11	7	14	9	25
2:45 AM	3	11	3	15	6	26
3:00 AM	5	11	1	16	6	27
3:15 AM	1	8	3	20	4	28
3:30 AM	2	14	8	24	10	38
3:45 AM	3	14	4	32	7	46
4:00 AM	2	15	5	39	7	54
4:15 AM	7	18	7	39	14	57
4:30 AM	2	16	16	39	18	55
4:45 AM	4	29	11	42	15	71
5:00 AM	5	43	5	42	10	85
5:15 AM	5	51	7	59	12	110
5:30 AM	15	65	19	91	34	156
5:45 AM	18	74	11	96	29	170
6:00 AM	13	92	22	126	35	218
6:15 AM	19	118	39	144	58	262
6:30 AM	24	137	24	162	48	299
6:45 AM	36	179	41	195	77	374
7:00 AM	39	221	40	235	79	456
7:15 AM	38	246	57	265	95	511
7:30 AM	66	259	57	259	123	518
7:45 AM	78	283	81	294	159	577
8:00 AM	64	282	70	299	134	581
8:15 AM	51	267	51	292	102	559
8:30 AM	90	274	92	320	182	594
8:45 AM	77	246	86	308	163	554
9:00 AM	49	233	63	333	112	566
9:15 AM	58	265	79	357	137	622
9:30 AM	62	282	80	367	142	649
9:45 AM	64	286	111	378	175	664
10:00 AM	81	290	87	345	168	635
10:15 AM	75	294	89	360	164	654
10:30 AM	66	304	91	358	157	662
10:45 AM	68	296	78	393	146	689
11:00 AM	85	267	102	397	187	664
11:15 AM	85	226	87	389	172	615
11:30 AM	58	182	126	382	184	564
11:45 AM	39	163	82	347	121	510

	N/B		S/B		Total	
Time	15'	Hour	15'	Hour	15'	Hour
12:00 PM	44	172	94	382	138	554
12:15 PM	41	169	80	396	121	565
12:30 PM	39	162	91	397	130	559
12:45 PM	48	171	117	419	165	590
1:00 PM	41	177	108	391	149	568
1:15 PM	34	181	81	367	115	548
1:30 PM	48	207	113	366	161	573
1:45 PM	54	248	89	366	143	614
2:00 PM	45	280	84	359	129	639
2:15 PM	60	306	80	378	140	684
2:30 PM	89	317	113	393	202	710
2:45 PM	86	294	82	373	168	667
3:00 PM	71	264	103	378	174	642
3:15 PM	71	261	95	374	166	635
3:30 PM	66	264	93	384	159	648
3:45 PM	56	278	87	408	143	686
4:00 PM	68	292	99	411	167	703
4:15 PM	74	303	105	408	179	711
4:30 PM	80	295	117	404	197	699
4:45 PM	70	293	90	391	160	684
5:00 PM	79	272	96	376	175	648
5:15 PM	66	247	101	383	167	630
5:30 PM	78	218	104	348	182	566
5:45 PM	49	194	75	327	124	521
6:00 PM	54	201	103	328	157	529
6:15 PM	37	201	66	319	103	520
6:30 PM	54	222	83	348	137	570
6:45 PM	56	230	76	330	132	560
7:00 PM	54	231	94	334	148	565
7:15 PM	58	232	95	323	153	555
7:30 PM	62	223	65	306	127	529
7:45 PM	57	216	80	303	137	519
8:00 PM	55	205	83	278	138	483
8:15 PM	49	180	78	235	127	415
8:30 PM	55	172	62	210	117	382
8:45 PM	46	139	55	185	101	324
9:00 PM	30	116	40	169	70	285
9:15 PM	41	106	53	165	94	271
9:30 PM	22	86	37	149	59	235
9:45 PM	23	91	39	134	62	225
10:00 PM	20	85	36	121	56	206
10:15 PM	21	75	37	100	58	175
10:30 PM	27	70	22	83	49	153
10:45 PM	17	54	26	78	43	132
11:00 PM	10	43	15	66	25	109
11:15 PM	16		20		36	
11:30 PM	11		17		28	
11:45 PM	6		14		20	

24 Hour		AM Peak Hour		PM Peak Hour	
Direction	Volume	Time	Volume	Time	Volume
Total	9331	10:45 AM	689	4:15 PM	711
N/B	3847	10:30 AM	304	2:30 PM	317
S/B	5484	11:00 AM	397	12:45 PM	419

Los Angeles County Department of Public Works

Access Date: 9/7/21 3:09 PM

24 Hour Traffic Count

Report ID: HOME 590V

Count Date: 8/13/2021 Friday

Conditions: Clear

Location: NARBONNE AVENUE S/O PACIFIC COAST HIGHWAY

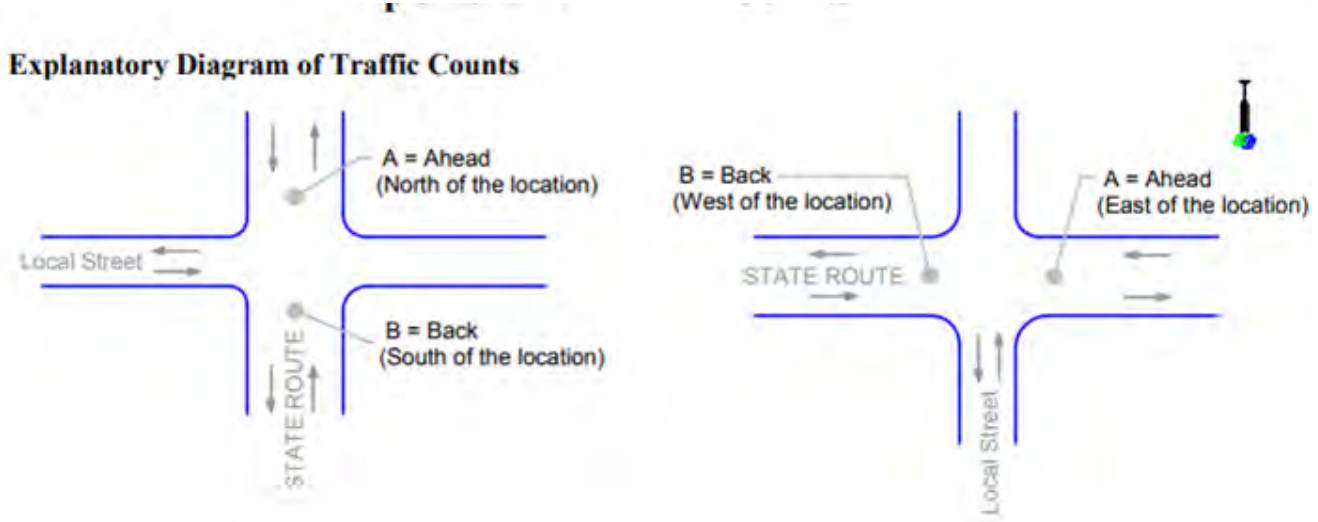
	N/B		S/B		Total	
Time	15'	Hour	15'	Hour	15'	Hour
12:00 AM	8	31	11	39	19	70
12:15 AM	8	28	14	32	22	60
12:30 AM	10	25	11	24	21	49
12:45 AM	5	18	3	17	8	35
1:00 AM	5	17	4	18	9	35
1:15 AM	5	17	6	21	11	38
1:30 AM	3	15	4	18	7	33
1:45 AM	4	14	4	19	8	33
2:00 AM	5	17	7	18	12	35
2:15 AM	3	16	3	15	6	31
2:30 AM	2	14	5	16	7	30
2:45 AM	7	14	3	14	10	28
3:00 AM	4	14	4	15	8	29
3:15 AM	1	15	4	15	5	30
3:30 AM	2	18	3	15	5	33
3:45 AM	7	25	4	21	11	46
4:00 AM	5	30	4	23	9	53
4:15 AM	4	42	4	22	8	64
4:30 AM	9	60	9	23	18	83
4:45 AM	12	68	6	32	18	100
5:00 AM	17	92	3	53	20	145
5:15 AM	22	104	5	70	27	174
5:30 AM	17	118	18	109	35	227
5:45 AM	36	151	27	126	63	277
6:00 AM	29	168	20	153	49	321
6:15 AM	36	189	44	191	80	380
6:30 AM	50	233	35	197	85	430
6:45 AM	53	283	54	219	107	502
7:00 AM	50	334	58	233	108	567
7:15 AM	80	383	50	231	130	614
7:30 AM	100	414	57	256	157	670
7:45 AM	104	450	68	279	172	729
8:00 AM	99	478	56	303	155	781
8:15 AM	111	470	75	324	186	794
8:30 AM	136	459	80	321	216	780
8:45 AM	132	419	92	308	224	727
9:00 AM	91	377	77	300	168	677
9:15 AM	100	398	72	299	172	697
9:30 AM	96	408	67	326	163	734
9:45 AM	90	430	84	361	174	791
10:00 AM	112	450	76	365	188	815
10:15 AM	110	456	99	384	209	840
10:30 AM	118	444	102	390	220	834
10:45 AM	110	452	88	434	198	886
11:00 AM	118	465	95	452	213	917
11:15 AM	98	477	105	468	203	945
11:30 AM	126	467	146	481	272	948
11:45 AM	123	453	106	448	229	901
12:00 PM	130	444	111	458	241	902
12:15 PM	88	441	118	459	206	900
12:30 PM	112	487	113	457	225	944
12:45 PM	114	488	116	463	230	951
1:00 PM	127	487	112	476	239	963
1:15 PM	134	472	116	504	250	976
1:30 PM	113	450	119	517	232	967
1:45 PM	113	442	129	530	242	972
2:00 PM	112	433	140	507	252	940
2:15 PM	112	416	129	481	241	897
2:30 PM	105	396	132	486	237	882
2:45 PM	104	395	106	502	210	897
3:00 PM	95	399	114	536	209	935
3:15 PM	92	422	134	550	226	972
3:30 PM	104	422	148	556	252	978
3:45 PM	108	418	140	572	248	990
4:00 PM	118	412	128	578	246	990
4:15 PM	92	397	140	613	232	1010
4:30 PM	100	402	164	647	264	1049
4:45 PM	102	406	146	637	248	1043
5:00 PM	103	420	163	623	266	1043
5:15 PM	97	400	174	600	271	1000
5:30 PM	104	383	154	526	258	909
5:45 PM	116	357	132	494	248	851
6:00 PM	83	315	140	466	223	781
6:15 PM	80	302	100	407	180	709
6:30 PM	78	274	122	414	200	688
6:45 PM	74	264	104	372	178	636
7:00 PM	70	243	81	346	151	589
7:15 PM	52	222	107	345	159	567
7:30 PM	68	211	80	316	148	527
7:45 PM	53	197	78	312	131	509
8:00 PM	49	190	80	303	129	493
8:15 PM	41	168	78	287	119	455
8:30 PM	54	177	76	277	130	454
8:45 PM	46	145	69	245	115	390
9:00 PM	27	129	64	226	91	355
9:15 PM	50	129	68	202	118	331
9:30 PM	22	107	44	180	66	287
9:45 PM	30	108	50	168	80	276
10:00 PM	27	96	40	152	67	248
10:15 PM	28	87	46	138	74	225
10:30 PM	23	75	32	116	55	191
10:45 PM	18	60	34	109	52	169
11:00 PM	18	50	26	106	44	156
11:15 PM	16		24		40	
11:30 PM	8		25		33	
11:45 PM	8		31		39	

24 Hour		AM Peak Hour		PM Peak Hour	
Direction	Volume	Time	Volume	Time	Volume
Total	12840	11:30 AM	948	4:30 PM	1049
N/B	6091	8:00 AM	478	12:45 PM	488
S/B	6749	11:30 AM	481	4:30 PM	647

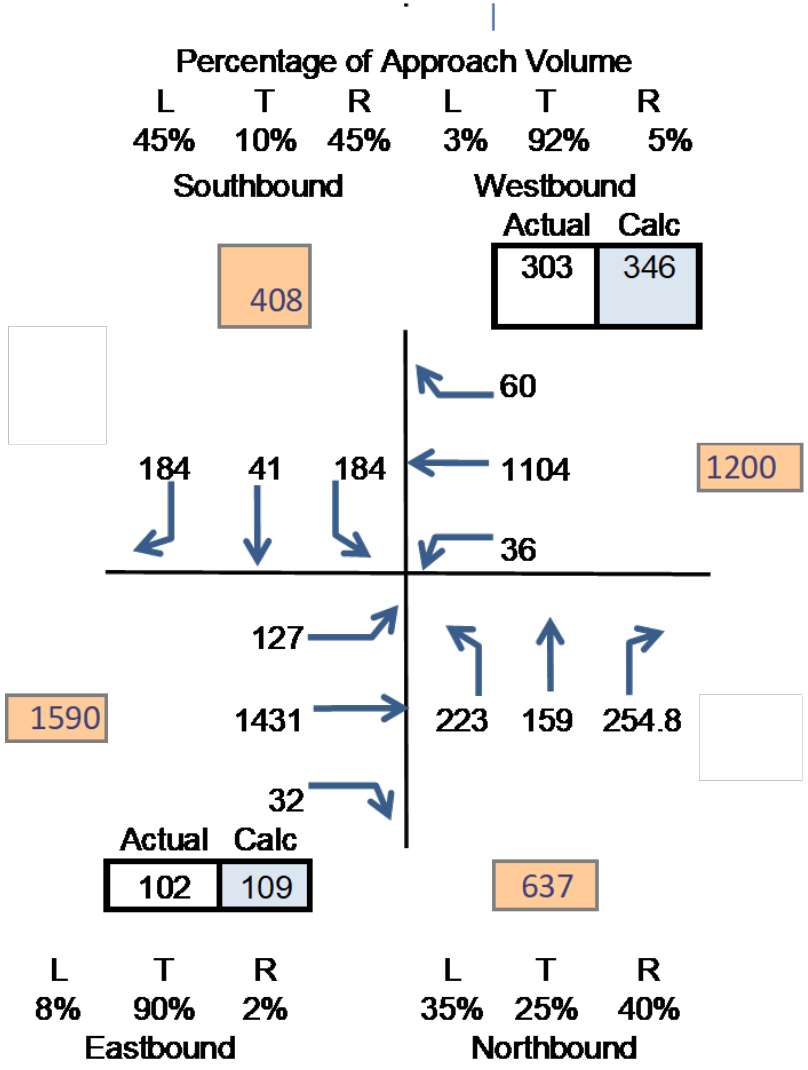
ATTACHMENT B
EXCERPT FROM CALTRANS PEAK HOUR VOLUME DATA (YEAR 2021)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	DISTRICT	ROUTE	ROUTE_SFX	COUNTY	PM_PFX	PM	PM_SFX	LOCATION DESCRIPTION	BACK_PEAK_HOUR	BACK_PEAK_MADT	BACK_AADT	AHEAD_PEAK_HOUR	AHEAD_PEAK_MADT	AHEAD_AADT
35	07	001		LA		13.1		LOS ANGELES, JCT. RTE. 213	3000	49500	46000	3700	61000	57000
36	07	001		LA		14.634		TORRANCE, CRENSHAW BOULEVARD	3500	58000	54000	2650	44000	40500
37	07	001		LA		16.005		TORRANCE, JCT. RTE. 107	2350	39000	36000	2600	42500	39500
38	07	001		LA		18.09		TORRANCE, PALOS VERDES BOULEVARD	1950	32000	30000	1750	29500	27500

Source: Caltrans Traffic Census Program, Peak Hour Volume Data (Year 2021) https://dot.ca.gov/programs/traffic-operations/census



ATTACHMENT C
DERIVATION OF TURNING MOVEMENTS FROM DIRECTIONAL LINK VOLUMES



PCH 2021 Peak Hour Bi-Directional Traffic Counts

Rte 213	East of Narbonne	3000 vph	60% EB	1800
			40% WB	1200
Crenshaw	West of Narbonne	2650 vph	60% EB	1590
			40% WB	1060

Source: Caltrans Traffic Census Program, Peak Hour Volume Data (Year 2021)
https://dot.ca.gov/programs/traffic-operations/census

Narbonne Ave Peak Hour Directional Traffic Counts

	NB	SB
South of PCH	637	102
North of PCH	303	408

Source: Engineering and Traffic Survey (E&TS) for Narbonne Avenue (Between Lomita Boulevard and the Rolling Hills Estates City Boundary south of Pacific Coast Highway), 2021, ADT Report (4:15 PM N/O PCH, 4:45 PM S/O PCH.

Lane Geometrics

EB L, 2TH, 1TR
WB L, 2TH, 1TR
NB L, T, R
SB L, T, R

Signalized (8-Phase)

ATTACHMENT D
PM PEAK HOUR CAPACITY ANALYSIS OF PCH AND NARBONNE AVE

HCM 6th Signalized Intersection Summary — Synchro 11 Report
2: Pacific Coast Highway (HWY 1) & Narbone Ave — 06/05/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	1431	32	36	1104	60	223	159	255	184	41	184
Future Volume (veh/h)	127	1431	32	36	1104	60	223	159	255	184	41	184
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	138	1555	35	39	1200	65	242	173	277	200	45	200
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	173	2224	50	52	1808	98	286	376	319	242	330	280
Arrive On Green	0.10	0.43	0.43	0.03	0.36	0.36	0.16	0.20	0.20	0.14	0.18	0.18
Sat Flow, veh/h	1781	5138	116	1781	4958	268	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	138	1030	560	39	824	441	242	173	277	200	45	200
Grp Sat Flow(s),veh/h/ln	1781	1702	1850	1781	1702	1822	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.0	19.6	19.6	1.7	16.1	16.1	10.5	6.5	13.5	8.7	1.6	9.5
Cycle Q Clear(g_c), s	6.0	19.6	19.6	1.7	16.1	16.1	10.5	6.5	13.5	8.7	1.6	9.5
Prop In Lane	1.00		0.06	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	173	1473	801	52	1241	664	286	376	319	242	330	280
V/C Ratio(X)	0.80	0.70	0.70	0.75	0.66	0.66	0.85	0.46	0.87	0.83	0.14	0.72
Avail Cap(c_a), veh/h	246	1473	801	134	1241	664	403	423	359	358	376	319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.1	18.3	18.3	38.3	21.2	21.2	32.4	28.0	30.8	33.4	27.6	30.9
Incr Delay (d2), s/veh	11.3	2.8	5.0	19.6	2.8	5.2	11.1	0.9	18.4	9.7	0.2	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	7.7	8.9	1.0	6.5	7.5	5.3	2.9	6.6	4.3	0.7	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	21.1	23.4	57.9	24.0	26.4	43.6	28.8	49.2	43.1	27.8	37.3
LnGrp LOS	D	C	C	E	C	C	D	C	D	D	C	D
Approach Vol, veh/h		1728			1304			692			445	
Approach Delay, s/veh		23.9			25.8			42.1			38.9	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	38.4	16.8	18.0	11.7	33.0	14.8	20.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	34.0	18.0	16.0	11.0	29.0	16.0	18.0
Max Q Clear Time (g_c+I1), s	3.7	21.6	12.5	11.5	8.0	18.1	10.7	15.5
Green Ext Time (p_c), s	0.0	8.2	0.3	0.4	0.1	6.1	0.2	0.5

Intersection Summary	
HCM 6th Ctrl Delay	29.1
HCM 6th LOS	C