



Draft Memorandum

Date: June 19, 2019

To: Mr. Chris Ghione, City of Morgan Hill

From: Gary Black
Ollie Zhou

Subject: Morgan Hill Roadway Regional Cut-Through Analysis

Hexagon Transportation Consultants, Inc. has completed a regional cut-through analysis of major roadway segments within the City of Morgan Hill. The purpose of this study is to 1) estimate the amount of regional cut-through traffic on major roadways within the City, 2) identify the major cut-through routes, and 3) estimate the potential effects of local roadway improvements on cut-through traffic.

Regional cut-through traffic, for the purpose of this study, is defined as traffic travelling on City of Morgan Hill roadways that does not have an origin or destination within the City. US 101 has been identified as congested in the peak directions during the peak commute periods. According to the Valley Transportation Authority's (VTA) *2017 CMP Monitoring & Conformance Report*, the US 101 peak-direction segments passing through Morgan Hill are operating mostly at level of service F, meaning the freeway segments experience considerable congestion. It is our understanding that Morgan Hill city staff and residents believe that vehicles are cutting through city roadways to bypass freeway congestion. The City of Morgan Hill has some north-south roadways that are parallel to US101 and could be used by cut-through traffic.

The term "cut-through" traffic is sometimes used to describe local traffic cutting through residential streets to avoid congestion on arterials/collectors. It should be noted that this analysis is limited to analyzing *regional* cut-through traffic on arterials and collectors with no origin or destination within the City of Morgan Hill.

Scope of Analysis

Hexagon analyzed percentages of regional cut-through traffic on 34 segments of City roadways (see Figure 1 and Table 1). These segments were selected to capture the likely routes of potential regional cut-through traffic.

Table 1
List of Study Roadway Segments

Segment #	Roadway Segment
1	Hale Ave. north of Llagas Rd.
2	Hale Ave. between Main Ave. and Llagas Rd.
3	Monterey Rd. north of Cochrane Rd.
4	Monterey Rd. between Main Ave. and Cochrane Rd.
5	Monterey Rd. between Dunne Ave. and Main Ave.
6	Monterey Rd. between Tennant Ave. and Dunne Ave.
7	Monterey Rd. between Watsonville Rd. and Tennant Ave.
8	Butterfield Blvd. between Main Ave. and Cochrane Rd.
9	Butterfield Blvd. between Dunne Ave. and Main Ave.
10	Butterfield Blvd. between Tennant Ave. and Dunne Ave.
11	Butterfield Blvd. between Monterey Rd. and Tennant Ave.
12	Watsonville Rd. between Sunnyside Ave. and Monterey Rd.
13	Dewitt Ave. between Edmundson Ave. and Dunne Ave.
14	Sunnyside Ave. between Watsonville Rd. and Tennant Ave.
15	Condit Rd. between Dunne Ave. and Main Ave.
16	Condit Rd. between Tennant Ave. and Dunne Ave.
17	Murphy Ave. north of Dunne Ave.
18	Murphy Ave. between Tennant Ave. and Dunne Ave.
19	Hill Rd. north of Dunne Ave.
20	Hill Rd. between Tennant Ave. and Dunne Ave.
21	Cochrane Rd. between Monterey Rd. and Butterfield Rd.
22	Cochrane Rd. between Butterfield Blvd. and US 101
23	Cochrane Rd. between US 101 and Mission View Dr.
24	Main Ave. between Monterey Rd. and Butterfield Blvd.
25	Main Ave. between Butterfield Blvd. and Condit Rd.
26	Main Ave. between Condit Rd. and Hill Rd.
27	Dunne Ave. between Dewitt Ave. and Monterey Rd.
28	Dunne Ave. between Monterey Rd. and Butterfield Blvd.
29	Dunne Ave. between Butterfield Blvd. and US 101
30	Dunne Ave. between US 101 and Murphy Ave.
31	Dunne Ave. between Murphy Ave. and Hill Rd.
32	Edmundson Ave. between Sunnyside Ave. and Monterey Rd.
33	Tennant Ave. between Monterey Rd. and Butterfield Rd.
34	Tennant Ave. between Butterfield Rd. and US 101

Notes:
Ave. = Avenue; Rd. = Road; Blvd. = Boulevard

Data Source

Hexagon utilized data provided by StreetLightData to determine the percentages of regional cut-through traffic on City roadways. StreetLightData purchases anonymized location data from mobile applications for personal cellular phones. The data is processed to record the origin, destination and route of each trip. According to StreetLightData, the data used for this analysis has a penetration rate of approximately 1% to 2% of all vehicles on the roadways within the City of Morgan Hill. While the penetration rate is relatively low, there is no other commercially-available data source with better penetration rates while maintaining accurate geographical tracking of the data.

Furthermore, by averaging the combined data obtained on a daily basis over the span of multiple months/years, it is assumed that the data represents an accurate account of vehicle travel patterns. For the purpose of this study, Hexagon utilized the data to estimate regional cut-through percentages. By estimating *percentages* rather than *number* of vehicles, it is assumed that the potential bias and inaccuracy in the data is minimized.

Hexagon analyzed regional cut-through traffic percentages in Year 2017 and Year 2018 to determine current percentages of regional cut-through traffic on City roadways. It should be noted that data during summer (June through August) and holiday months (January, November and December) were not included in the analysis as traffic patterns during these months may be more irregular than the other months when schools are in session. The analysis included data on only regular weekdays (Tuesday through Thursday) between 7 AM and 9 AM, and between 4 PM and 6 PM. It is typically during these weekdays during these peak periods that peak levels of congestion occur.

Peak Hour Roadway Regional Cut-Through Percentages

Figures 2 and 3 and Tables 2 and 3 show regional cut-through traffic as a percentage of all roadway traffic on each of the study roadway segments. During both the AM and PM peak periods, roadway segments near the City limits (i.e. De Witt Avenue, Hale Avenue, northern and southern segments of Monterey Road) have relatively higher percentages of regional cut-through traffic compared to roadway segments in the inner-city areas. East/west roadway segments with connectivity to US 101 (Cochrane Road, Dunne Avenue and Tennant Avenue), especially the segments closer to US 101, have relatively higher percentages of regional cut-through traffic compared to east/west segments further away from US 101 or segments along Main Avenue that have no connectivity to US 101.

Table 2
AM Peak Cut-Thru Percentages – Descending Order

Segment #	Roadway Segment	AM Peak Cut-Thru Percentages ¹
11	Butterfield Blvd. between Monterey Rd. and Tennant Ave.	35%
16	Condit Rd. between Tennant Ave. and Dunne Ave.	32%
18	Murphy Ave. between Tennant Ave. and Dunne Ave.	30%
12	Watsonville Rd. between Sunnyside Ave. and Monterey Rd.	27%
10	Butterfield Blvd. between Tennant Ave. and Dunne Ave.	24%
34	Tennant Ave. between Butterfield Rd. and US 101	21%
3	Monterey Rd. north of Cochrane Rd.	20%
22	Cochrane Rd. between Butterfield Blvd. and US 101	19%
13	Dewitt Ave. between Edmundson Ave. and Dunne Ave.	19%
30	Dunne Ave. between US 101 and Murphy Ave.	18%
7	Monterey Rd. between Watsonville Rd. and Tennant Ave.	18%
14	Sunnyside Ave. between Watsonville Rd. and Tennant Ave.	18%
8	Butterfield Blvd. between Main Ave. and Cochrane Rd.	17%
1	Hale Ave. north of Llagas Rd.	16%
2	Hale Ave. between Main Ave. and Llagas Rd.	16%
9	Butterfield Blvd. between Dunne Ave. and Main Ave.	16%
21	Cochrane Rd. between Monterey Rd. and Butterfield Rd.	15%
4	Monterey Rd. between Main Ave. and Cochrane Rd.	14%
6	Monterey Rd. between Tennant Ave. and Dunne Ave.	13%
5	Monterey Rd. between Dunne Ave. and Main Ave.	13%
20	Hill Rd. between Tennant Ave. and Dunne Ave.	12%
29	Dunne Ave. between Butterfield Blvd. and US 101	12%
15	Condit Rd. between Dunne Ave. and Main Ave.	12%
17	Murphy Ave. north of Dunne Ave.	11%
25	Main Ave. between Butterfield Blvd. and Condit Rd.	9%
33	Tennant Ave. between Monterey Rd. and Butterfield Rd.	7%
32	Edmundson Ave. between Sunnyside Ave. and Monterey Rd.	7%
23	Cochrane Rd. between US 101 and Mission View Dr.	6%
24	Main Ave. between Monterey Rd. and Butterfield Blvd.	5%
28	Dunne Ave. between Monterey Rd. and Butterfield Blvd.	5%
19	Hill Rd. north of Dunne Ave.	4%
31	Dunne Ave. between Murphy Ave. and Hill Rd.	4%
27	Dunne Ave. between Dewitt Ave. and Monterey Rd.	2%
26	Main Ave. between Condit Rd. and Hill Rd.	1%

Notes:
Ave. = Avenue; Rd. = Road; Blvd. = Boulevard
 1. Percentages were estimated using data provided by StreetLightData for Year 2017/2018.

Table 3
PM Peak Cut-Thru Percentages – Descending Order

Segment #	Roadway Segment	PM Peak Cut-Thru Percentages ¹
3	Monterey Rd. north of Cochrane Rd.	26%
13	Dewitt Ave. between Edmundson Ave. and Dunne Ave.	21%
21	Cochrane Rd. between Monterey Rd. and Butterfield Rd.	21%
14	Sunnyside Ave. between Watsonville Rd. and Tennant Ave.	21%
1	Hale Ave. north of Llagas Rd.	20%
11	Butterfield Blvd. between Monterey Rd. and Tennant Ave.	19%
16	Condit Rd. between Tennant Ave. and Dunne Ave.	18%
22	Cochrane Rd. between Butterfield Blvd. and US 101	18%
2	Hale Ave. between Main Ave. and Llagas Rd.	17%
7	Monterey Rd. between Watsonville Rd. and Tennant Ave.	15%
10	Butterfield Blvd. between Tennant Ave. and Dunne Ave.	15%
4	Monterey Rd. between Main Ave. and Cochrane Rd.	14%
12	Watsonville Rd. between Sunnyside Ave. and Monterey Rd.	13%
5	Monterey Rd. between Dunne Ave. and Main Ave.	12%
34	Tennant Ave. between Butterfield Rd. and US 101	12%
8	Butterfield Blvd. between Main Ave. and Cochrane Rd.	11%
6	Monterey Rd. between Tennant Ave. and Dunne Ave.	11%
9	Butterfield Blvd. between Dunne Ave. and Main Ave.	10%
18	Murphy Ave. between Tennant Ave. and Dunne Ave.	10%
30	Dunne Ave. between US 101 and Murphy Ave.	8%
20	Hill Rd. between Tennant Ave. and Dunne Ave.	7%
25	Main Ave. between Butterfield Blvd. and Condit Rd.	6%
29	Dunne Ave. between Butterfield Blvd. and US 101	5%
15	Condit Rd. between Dunne Ave. and Main Ave.	5%
19	Hill Rd. north of Dunne Ave.	4%
33	Tennant Ave. between Monterey Rd. and Butterfield Rd.	4%
24	Main Ave. between Monterey Rd. and Butterfield Blvd.	4%
23	Cochrane Rd. between US 101 and Mission View Dr.	3%
28	Dunne Ave. between Monterey Rd. and Butterfield Blvd.	3%
32	Edmundson Ave. between Sunnyside Ave. and Monterey Rd.	3%
27	Dunne Ave. between Dewitt Ave. and Monterey Rd.	2%
17	Murphy Ave. north of Dunne Ave.	2%
26	Main Ave. between Condit Rd. and Hill Rd.	2%
31	Dunne Ave. between Murphy Ave. and Hill Rd.	1%

Notes:
Ave. = Avenue; Rd. = Road; Blvd. = Boulevard
1. Percentages were estimated using data provided by StreetLightData for Year 2017/2018.

Regional Cut-Through Traffic Due to US 101 Congestion

It has been conjectured that the regional cut-through traffic on city roadways is mainly due to vehicles avoiding US 101 congestion. Using available data, Hexagon quantified the percentages of northbound traffic during the AM peak period that originated south of the City travelling to north of the City that used City roadways as cut-through routes. Similarly, Hexagon quantified the percentages of southbound traffic during the PM peak period that originated north of the City travelling to south of the City that used City roadways as cut-through routes. The northbound direction during the AM peak period and the southbound direction during the PM peak period are analyzed because these are the peak directions of travel.

AM Peak Period

During the AM peak period, of all northbound traffic originating south of the City travelling to north of the City (henceforth referred to as northbound commute traffic), Hexagon estimated that approximately 31% of the northbound commute traffic cut through city streets. Below is a breakdown of the roadways this cut-through traffic used as they entered City streets from the south:

- Santa Teresa Boulevard: 6%
- Monterey Road: 16%
- North/South Roadways east of US 101: 6%
- US 101: 3%

Below is a breakdown of the roadways the northbound commute cut-through traffic used after they exited City streets to the north:

- Hale Avenue: 3%
- Monterey Road: 9%
- US 101: 19%

The above breakdowns of the roadways carrying the northbound commute cut-through traffic suggest that most of this traffic entered the City from the south through local roadways and exited the City onto US 101. As shown on Figure 4, Butterfield Boulevard is the most utilized route for the northbound commute cut-through traffic, carrying approximately 23% to 38% of this cut-through traffic. Monterey Boulevard south of Cochrane Boulevard, as well as segments of Cochrane Road and Tennant Avenue near US 101 carried approximately 16% to 22% of this cut-through traffic. Monterey Boulevard north of Cochrane Boulevard carried approximately 29% of this cut-through traffic.

PM Peak Period

During the PM peak period, of all southbound traffic originating north of the City travelling to south of the City (henceforth referred to as southbound commute traffic), Hexagon estimated that approximately 39% of the southbound commute traffic cut through city streets. Below is a breakdown of the roadways this cut-through traffic used as they entered City streets from the north:

- Hale Avenue: 7%
- Monterey Road: 23%
- US 101: 9%

Below is a breakdown of the roadways the southbound commute cut-through traffic used after they exited City streets to the south:

- Santa Teresa Boulevard: 6%
- Monterey Road: 17%
- North/South Roadways east of US 101: 2%
- US 101: 14%

The above breakdowns of the roadways carrying the southbound commute cut-through traffic suggest that most of this traffic entered the City from the north through local roadways. Approximately 64% of this cut-through traffic exited the City to the south still using local roadways, and the remaining 43% exited the City onto US 101. Contrary to the AM northbound commute cut-through pattern where the majority of traffic entered the City via local roadways and exited the City onto US 101, the reverse is not observed during the PM peak period.

As shown on Figure 5, the Monterey Boulevard segment north of Cochrane Boulevard was the most utilized by the southbound commute cut-through traffic, carrying approximately 62% of the cut-through traffic. Cochrane Boulevard east of Monterey Boulevard carried approximately 34% to 38% of the cut-through traffic. Segments of Monterey Boulevard and Butterfield Boulevard south of Cochrane Boulevard each carried approximately 18% to 23% of the cut-through traffic. The distribution of the southbound commute traffic as they cut through City streets is similar to the AM distribution for the northbound commute traffic.

Origin-Destination Analysis

Hexagon conducted a detailed analysis of the routes of the regional cut-through traffic on select roadway segments. Below is a detailed analysis of each of the roadway segments selected by City staff.

Hale Avenue Between Main Avenue and Llagas Road

Figure 6 shows the origins and destinations of the regional cut-through traffic that travelled on northbound Hale Avenue between Main Avenue and Llagas Road during the AM peak period and for southbound cut-through traffic during the PM peak period.

As shown on the figure, most morning cut-through traffic originates from local roads south of the City and exits the City continuing travelling on local roads. The evening cut-through traffic mirrors the morning cut-through origin-destination patterns.

Monterey Road North of Cochrane Road

Figure 7 shows the origins and destinations of the regional cut-through traffic that travelled on northbound Monterey Road north of Cochrane Road during the AM peak period and for southbound cut-through traffic during the PM peak period.

As shown on the figure, most morning cut-through traffic originates from local roads south of the City and exits the City continuing travelling on local roads. The evening cut-through traffic patterns shows that although most of the southbound cut-through traffic entered the City via local roads, more than half of them exited the City onto US 101 to the south.

Monterey Road Between Tennant Avenue and Dunne Avenue

Figure 8 shows the origins and destinations of the regional cut-through traffic that travelled on northbound Monterey Road between Tennant Avenue and Dunne Avenue during the AM peak period and for southbound cut-through traffic during the PM peak period.

As shown on the figure, most morning cut-through traffic originates from local roads south of the City and exits the City continuing travelling on local roads. The evening cut-through traffic mirrors the morning cut-through origin-destination patterns.

Sunnyside Avenue

Figure 9 shows the origins and destinations of the regional cut-through traffic that travelled on northbound Sunnyvale Avenue during the AM peak period and for southbound cut-through traffic during the PM peak period.

As shown on the figure, most morning cut-through traffic originates from local roads south of the City and exits the City continuing travelling on local roads. The evening cut-through traffic mirrors the morning cut-through origin-destination patterns.

Watsonville Road West of Monterey Road

Figure 10 shows the origins and destinations of the regional cut-through traffic that travelled on eastbound Watsonville Road west of Monterey Road during the AM peak period and for westbound cut-through traffic during the PM peak period.

As shown on the figure, most morning cut-through traffic originates from Santa Teresa Boulevard south of the City or roadways east of the City, and the traffic exits the City onto US 101 north of the City. The evening cut-through traffic mirrors the morning cut-through origin-destination patterns.

Murphy Avenue Between Tennant Avenue and Dunne Avenue

Figure 11 shows the origins and destinations of the regional cut-through traffic that travelled on northbound Murphy Avenue between Tennant Avenue and Dunne Avenue during the AM peak period and for southbound cut-through traffic during the PM peak period.

As shown on the figure, most morning cut-through traffic originates from local roads south of the City west of US 101 and exits the City onto US 101 north of the City. The evening cut-through traffic mirrors the morning cut-through origin-destination patterns.

Effects of Local Roadway Improvements on Cut-Through Traffic

Given the presence of cut-through traffic on City roadways, City staff is concerned that the additional capacity generated by future roadway improvements would simply be used by more regional cut-through rather than to serve local residents. To quantify the effects of local roadway improvements, Hexagon used the citywide travel demand forecast model to evaluate the effects during the AM peak hour. As discussed above, most of the cut-through traffic characteristics are very similar between the AM and PM peak hours, therefore it is assumed that the local roadway improvement effects would also be very similar during both the AM and PM peak hours. City staff provided a list of roadway improvements to analyze:

- Hale Avenue extension to Dewitt Avenue
- Signal coordination along Monterey Road, Wastonville Road/Butterfield Boulevard, Cochrane Road, Tennant Avenue and Dunne Avenue

Hexagon used the model to assign the existing AM peak hour traffic assuming these roadway improvements. As shown on Figure 12, the assumed roadway improvements had minor effects on traffic volumes on most city roadway segments. Only a small number of trips (less than 100) were shown to be drawn away from US 101, and about 75% of this traffic is local traffic. Therefore, most of the noticeable volume changes on roadway segments represent traffic that was originally on local streets, just redistributed due to the assumed roadway improvements.

Table 5 shows a comparison of total traffic, cut-through traffic, and local traffic with and without the potential roadway improvements. Most roadways within the City of Morgan Hill were shown to experience minor changes in peak hour traffic volumes, and the changes in cut-through traffic and local traffic were also minor. Several segments of Hale Avenue, Dewitt Avenue, and Dunne Avenue near the Hale Avenue extension were shown to experience considerable traffic increases. The traffic increases on these segments would be mainly due to the new capacity created by the Hale Avenue extension. Table 5 shows that the traffic increase on Hale Avenue is due to a combination of increases in cut-through traffic and local traffic (approximately 60-40 split). The traffic increase on Dunne Avenue west of Monterey Road is mainly due to increased cut-through traffic, while the traffic increase on Dewitt Avenue is mainly due to increased local traffic. Segments of Butterfield Boulevard north of Dunne Avenue also were shown to experience slight traffic increases (mostly local traffic increases) due to the slightly increased roadway capacity assumed from the potential signal coordination. On the other hand, segments of Monterey Road between Dunne Avenue and Cochrane Road showed slight traffic decreases mainly due to traffic being pulled away to the assumed Hale Avenue extension. This traffic decrease is mainly a reduction in the cut-through traffic.

Table 4
Volume Differences Due to Potential Roadway Improvements

Segment #	Roadway Segment	AM Peak Hour - Model Results			
		Total Volume Difference		Local Traffic Difference	Cut-Thru Traffic Difference
		Change	% Change		
1	Hale Ave. north of Llagas Rd.	(3)	0%	(32)	29
2	Hale Ave. between Main Ave. and Llagas Rd.	244	38%	94	150
3	Monterey Rd. north of Cochrane Rd.	220	8%	195	26
4	Monterey Rd. between Main Ave. and Cochrane Rd.	(103)	-6%	(88)	(15)
5	Monterey Rd. between Dunne Ave. and Main Ave.	(175)	-14%	67	(243)
6	Monterey Rd. between Tennant Ave. and Dunne Ave.	48	2%	(17)	66
7	Monterey Rd. between Watsonville Rd. and Tennant Ave.	30	2%	(30)	61
8	Butterfield Blvd. between Main Ave. and Cochrane Rd.	160	7%	159	1
9	Butterfield Blvd. between Dunne Ave. and Main Ave.	106	4%	107	(1)
10	Butterfield Blvd. between Tennant Ave. and Dunne Ave.	(27)	-2%	3	(30)
11	Butterfield Blvd. between Monterey Rd. and Tennant Ave.	(30)	-2%	(31)	0
12	Watsonville Rd. between Sunnyside Ave. and Monterey Rd.	(9)	-1%	(3)	(5)
13	Dewitt Ave. between Edmundson Ave. and Dunne Ave.	92	20%	85	7
14	Sunnyside Ave. between Watsonville Rd. and Tennant Ave.	52	8%	42	10
15	Condit Rd. between Dunne Ave. and Main Ave.	(46)	-8%	(30)	(16)
16	Condit Rd. between Tennant Ave. and Dunne Ave.	(10)	-5%	(10)	(0)
17	Murphy Ave. north of Dunne Ave.	(8)	-9%	(8)	0
18	Murphy Ave. between Tennant Ave. and Dunne Ave.	(30)	-7%	(17)	(13)
19	Hill Rd. north of Dunne Ave.	(8)	-3%	(8)	0
20	Hill Rd. between Tennant Ave. and Dunne Ave.	(6)	-3%	(6)	(0)
21	Cochrane Rd. between Monterey Rd. and Butterfield Rd.	80	4%	73	7
22	Cochrane Rd. between Butterfield Blvd. and US 101	(67)	-2%	(56)	(11)
23	Cochrane Rd. between US 101 and Mission View Dr.	(61)	-3%	(45)	(16)
24	Main Ave. between Monterey Rd. and Butterfield Blvd.	68	7%	70	(2)
25	Main Ave. between Butterfield Blvd. and Condit Rd.	(8)	-1%	(8)	0
26	Main Ave. between Condit Rd. and Hill Rd.	5	1%	5	0
27	Dunne Ave. between Dewitt Ave. and Monterey Rd.	293	49%	(9)	302
28	Dunne Ave. between Monterey Rd. and Butterfield Blvd.	(87)	-5%	(70)	(16)
29	Dunne Ave. between Butterfield Blvd. and US 101	23	1%	23	0
30	Dunne Ave. between US 101 and Murphy Ave.	(21)	-1%	(7)	(14)
31	Dunne Ave. between Murphy Ave. and Hill Rd.	5	0%	5	0
32	Edmundson Ave. between Sunnyside Ave. and Monterey Rd.	(27)	-6%	(32)	5
33	Tennant Ave. between Monterey Rd. and Butterfield Rd.	(4)	-1%	(4)	(0)
34	Tennant Ave. between Butterfield Rd. and US 101	16	1%	3	13

Notes:
Ave. = Avenue; Rd. = Road; Blvd. = Boulevard
* All numbers are generated using the citywide travel demand forecast model

Overall, the analysis found that under existing conditions, the potential roadway improvements would not attract a considerable amount of regional cut-through traffic onto local roadways. Given the fact that 75% of the traffic drawn away from using US 101 was shown to be local traffic, it suggests that the potential roadway improvements would improve the commutes of local residents.

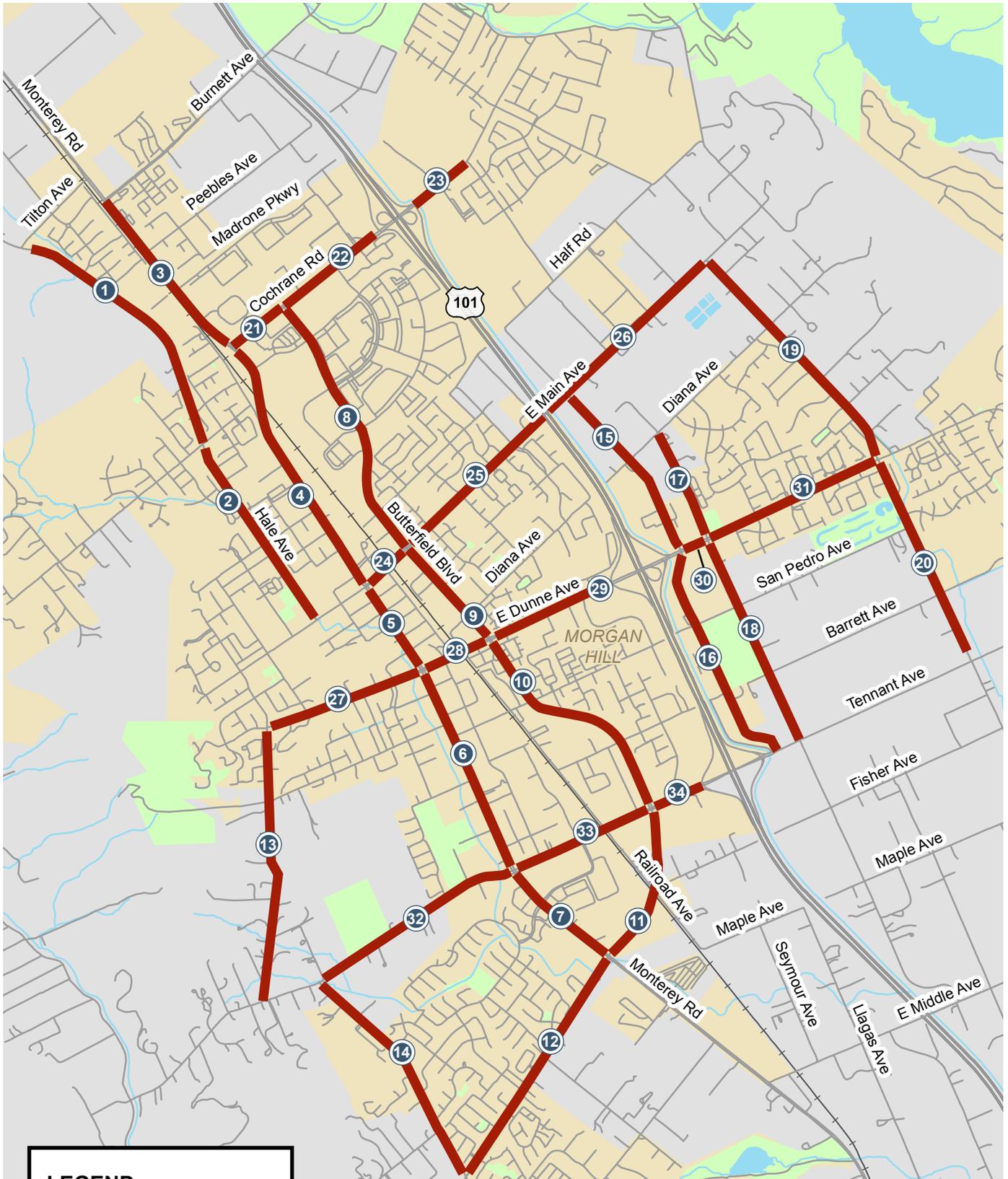


Figure 1
Study Segments

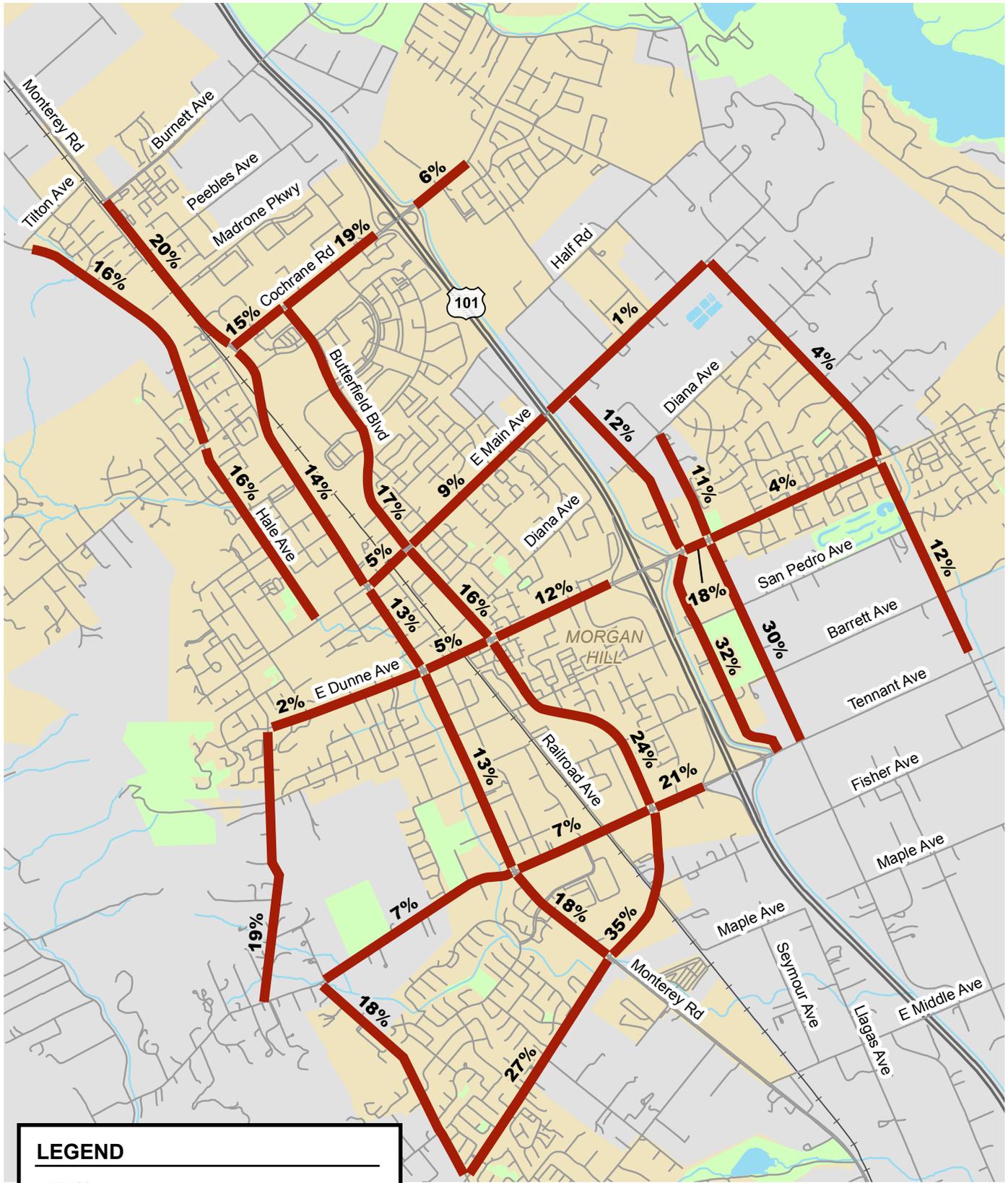


Figure 2
Roadway Regional Cut-through Percentages - AM Peak Period

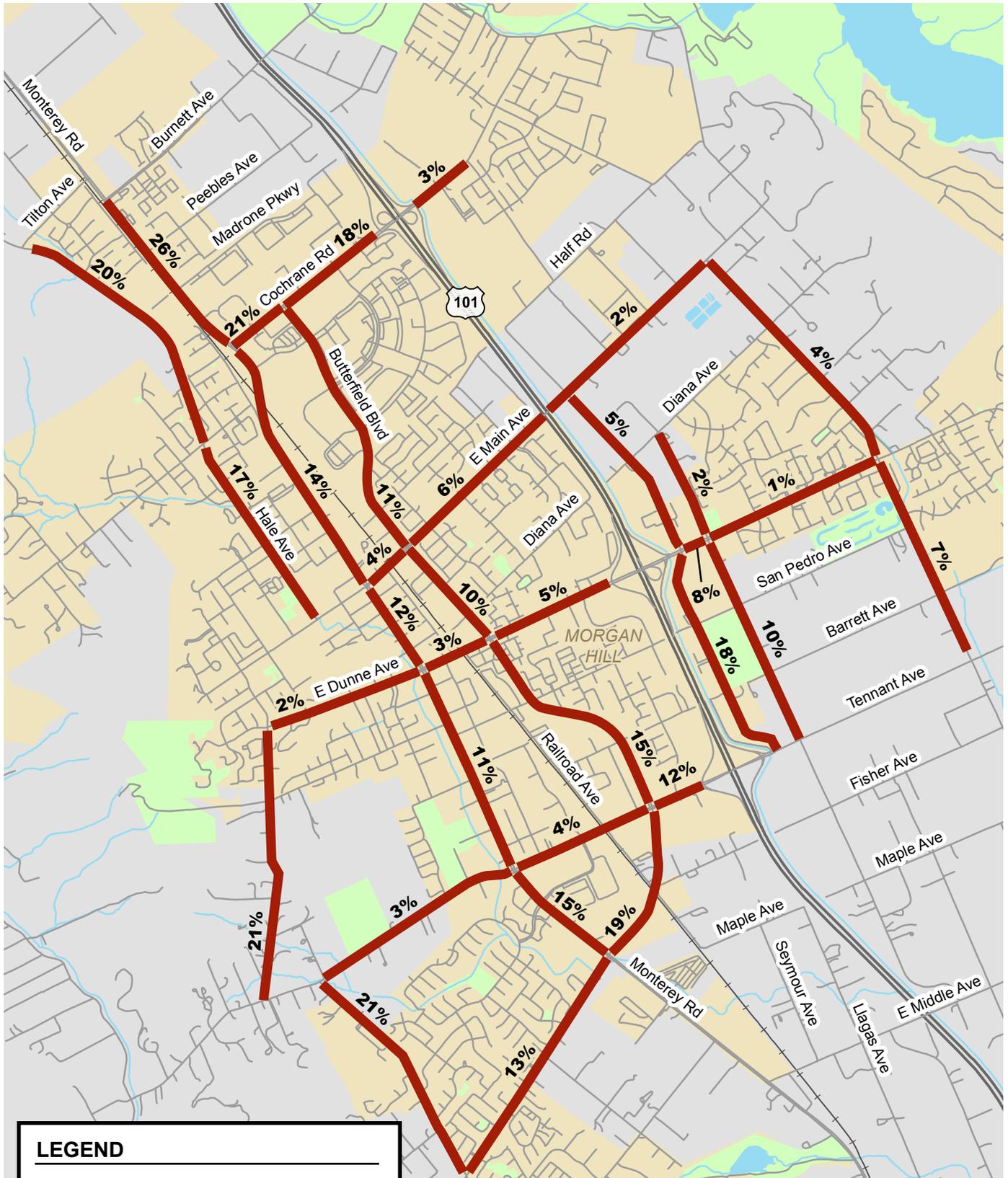


Figure 3
Roadway Regional Cut-through Percentages - PM Peak Period

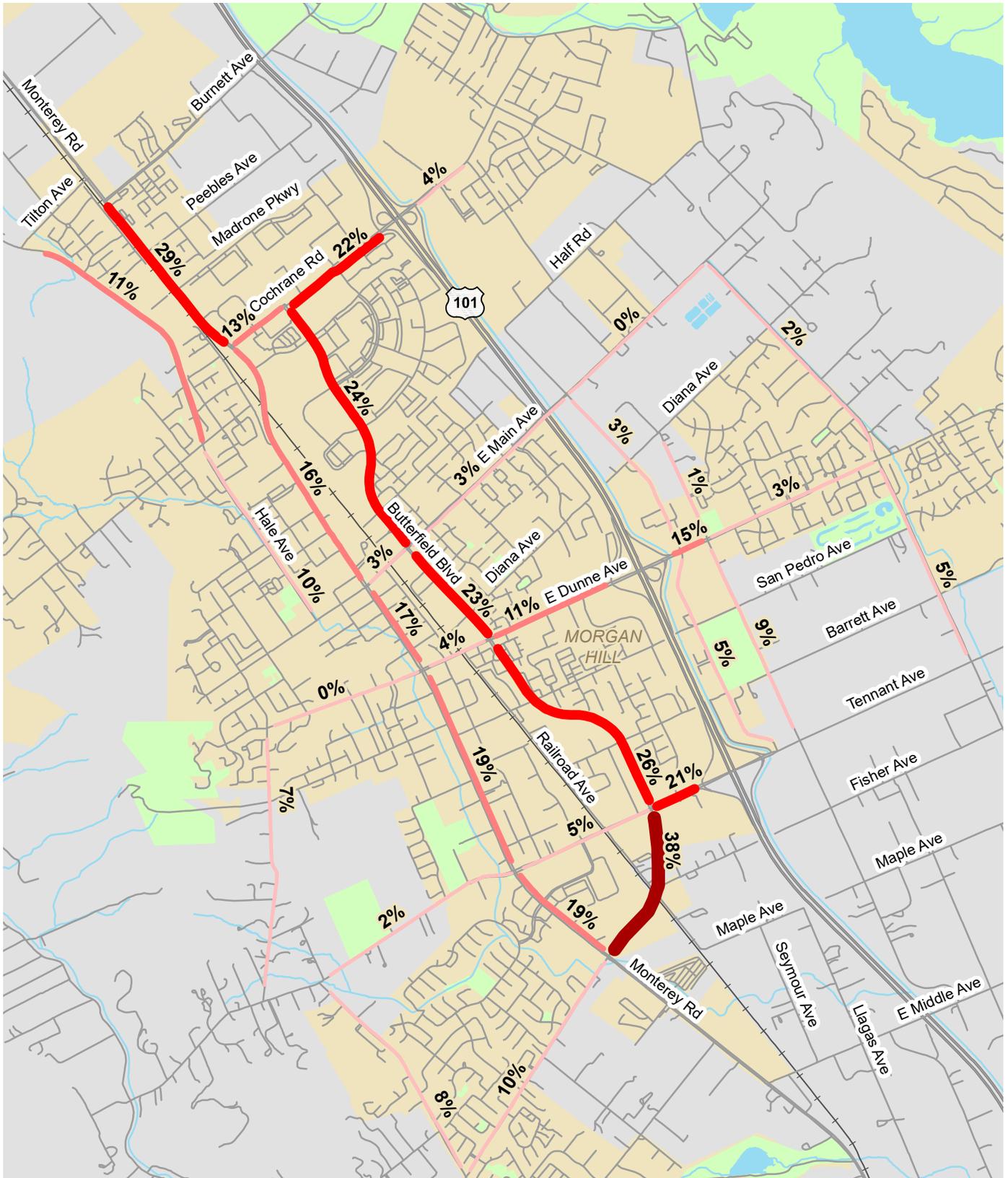


Figure 4
Route Choice for Northbound Regional Cut-Through Traffic – AM Peak Hour

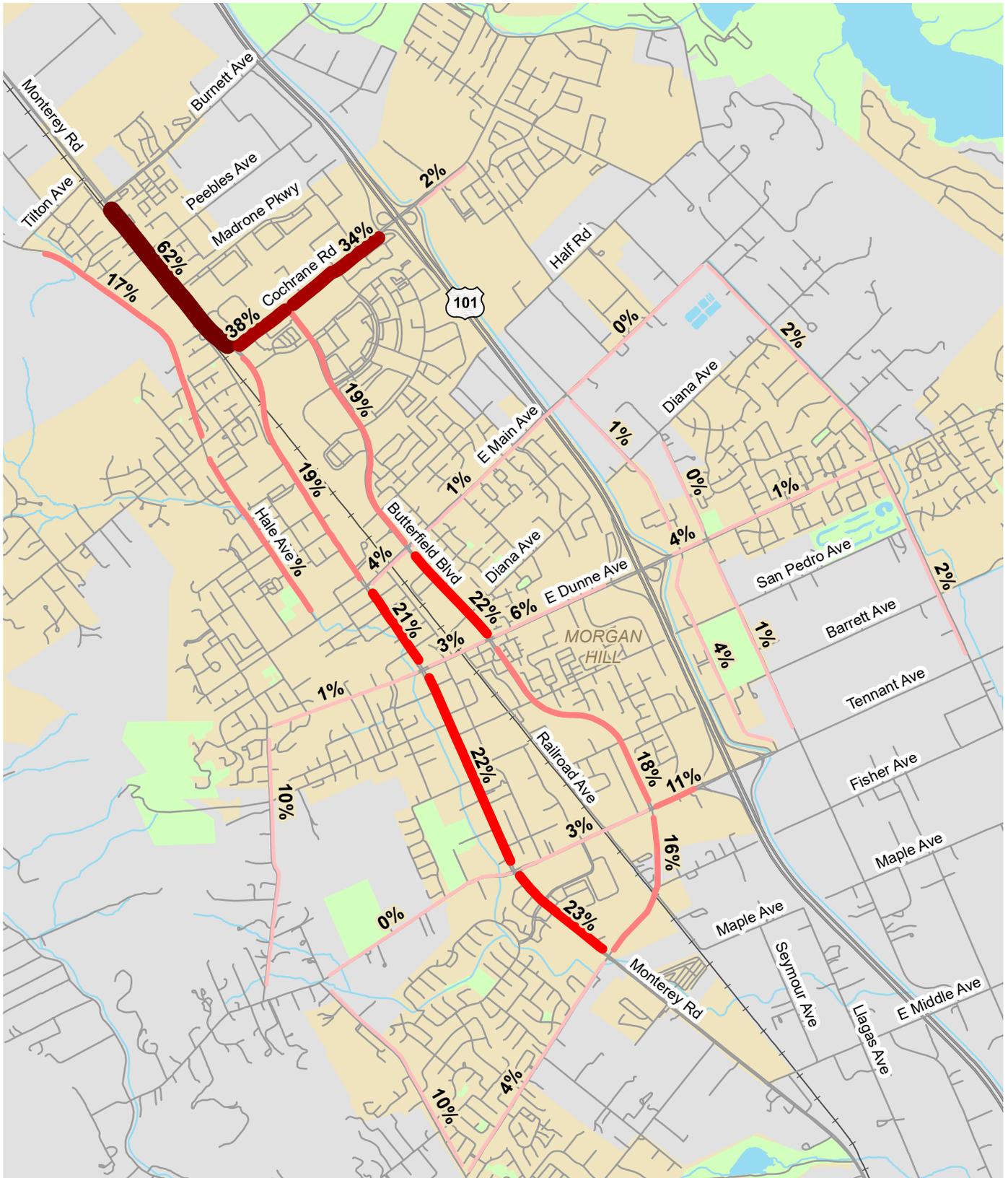


Figure 5
Route Choice for Southbound Regional Cut-Through Traffic – PM Peak Hour

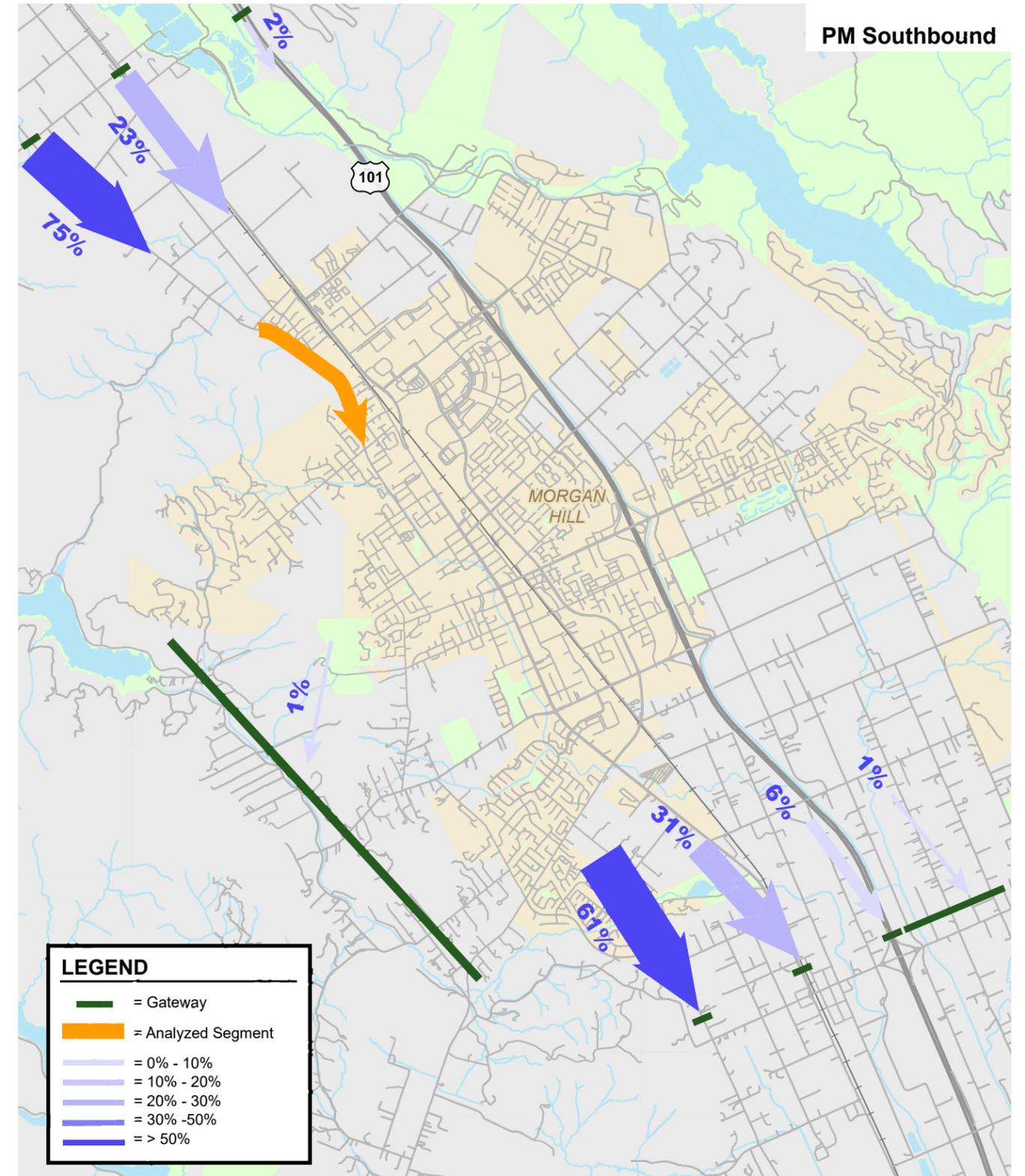
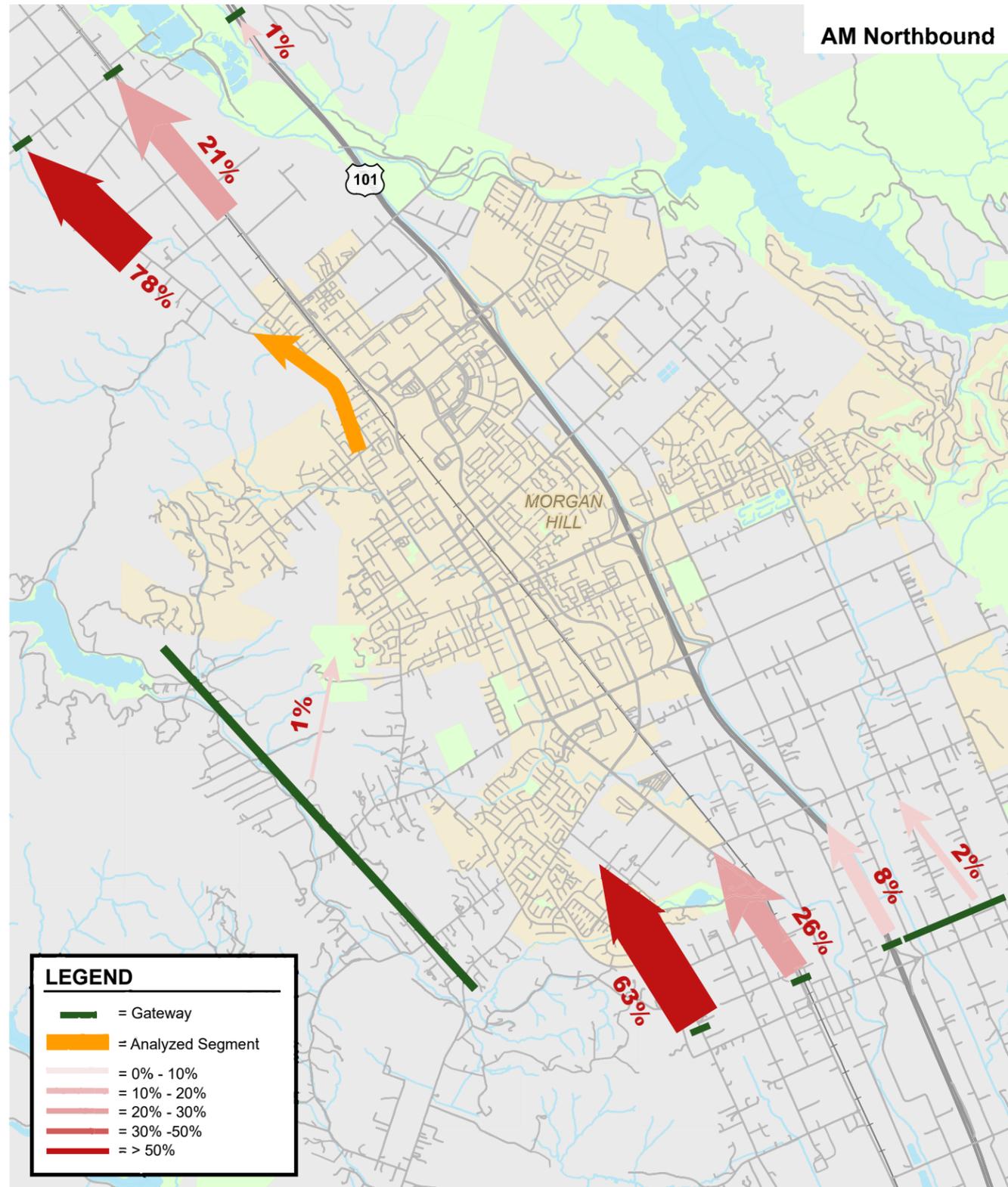


Figure 6
Origin-Destination Analysis of Hale Avenue Between Main Avenue and Llagas Road

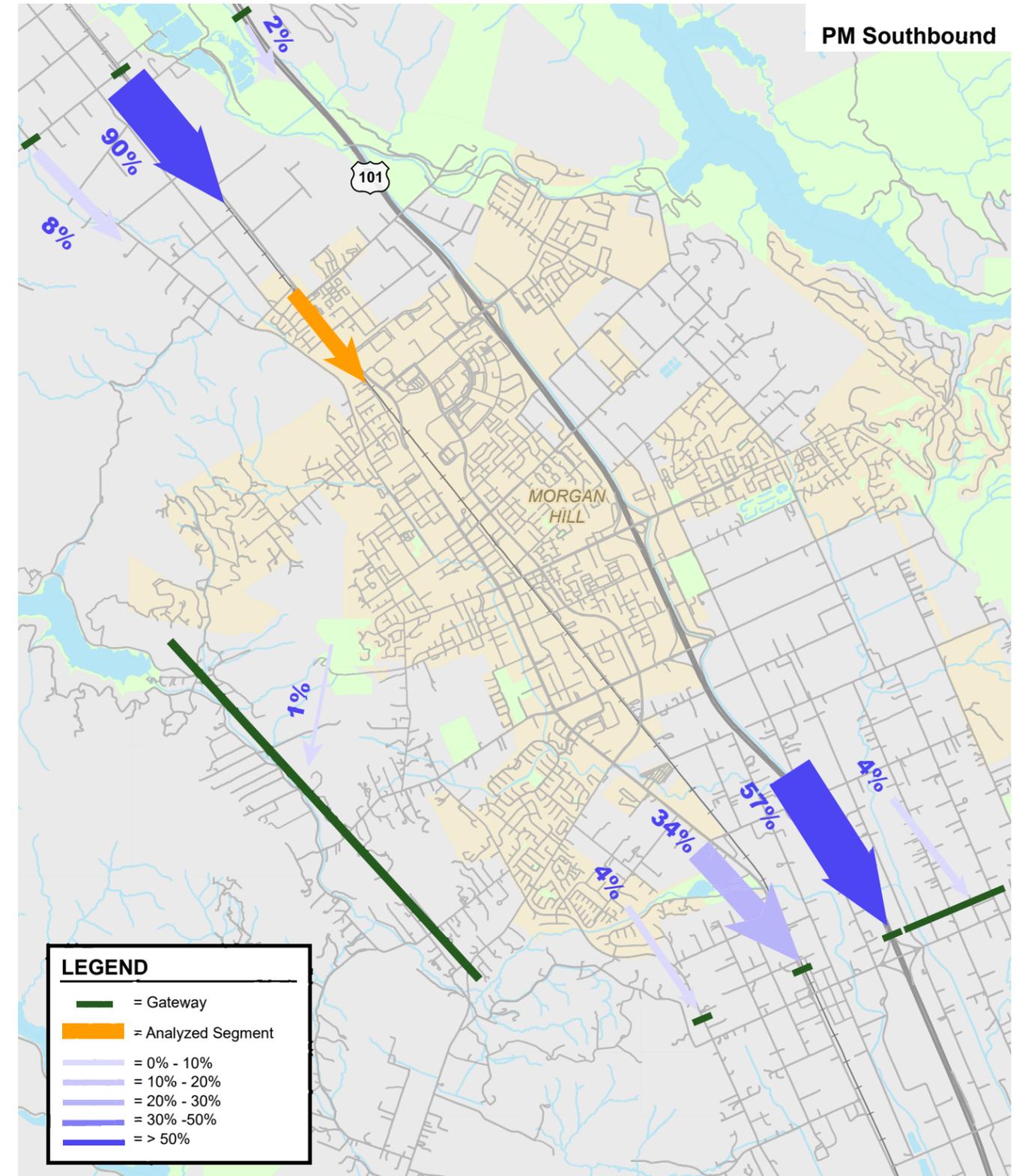
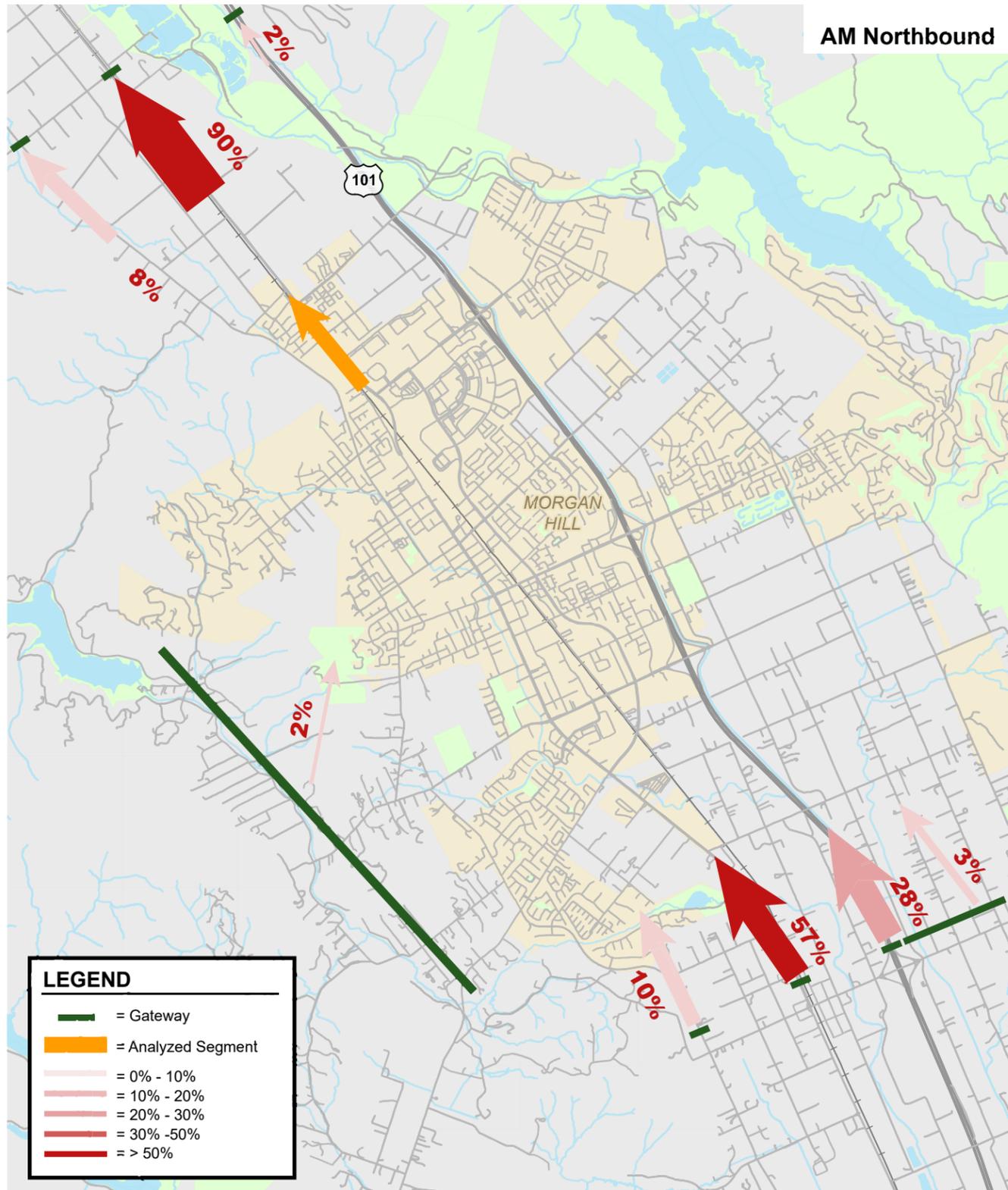


Figure 7
Origin-Destination Analysis of Monterey Road North of Cochrane Road

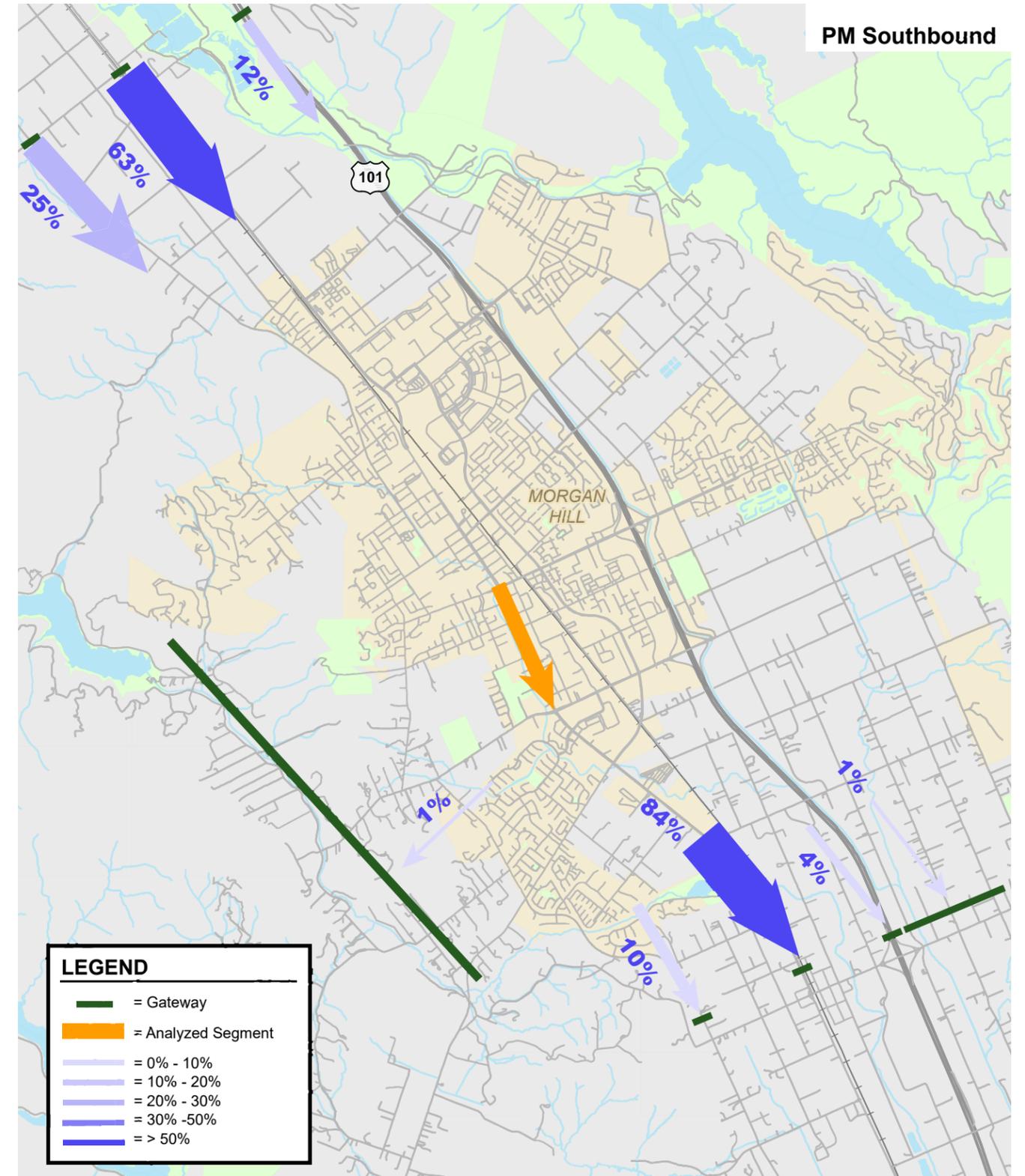
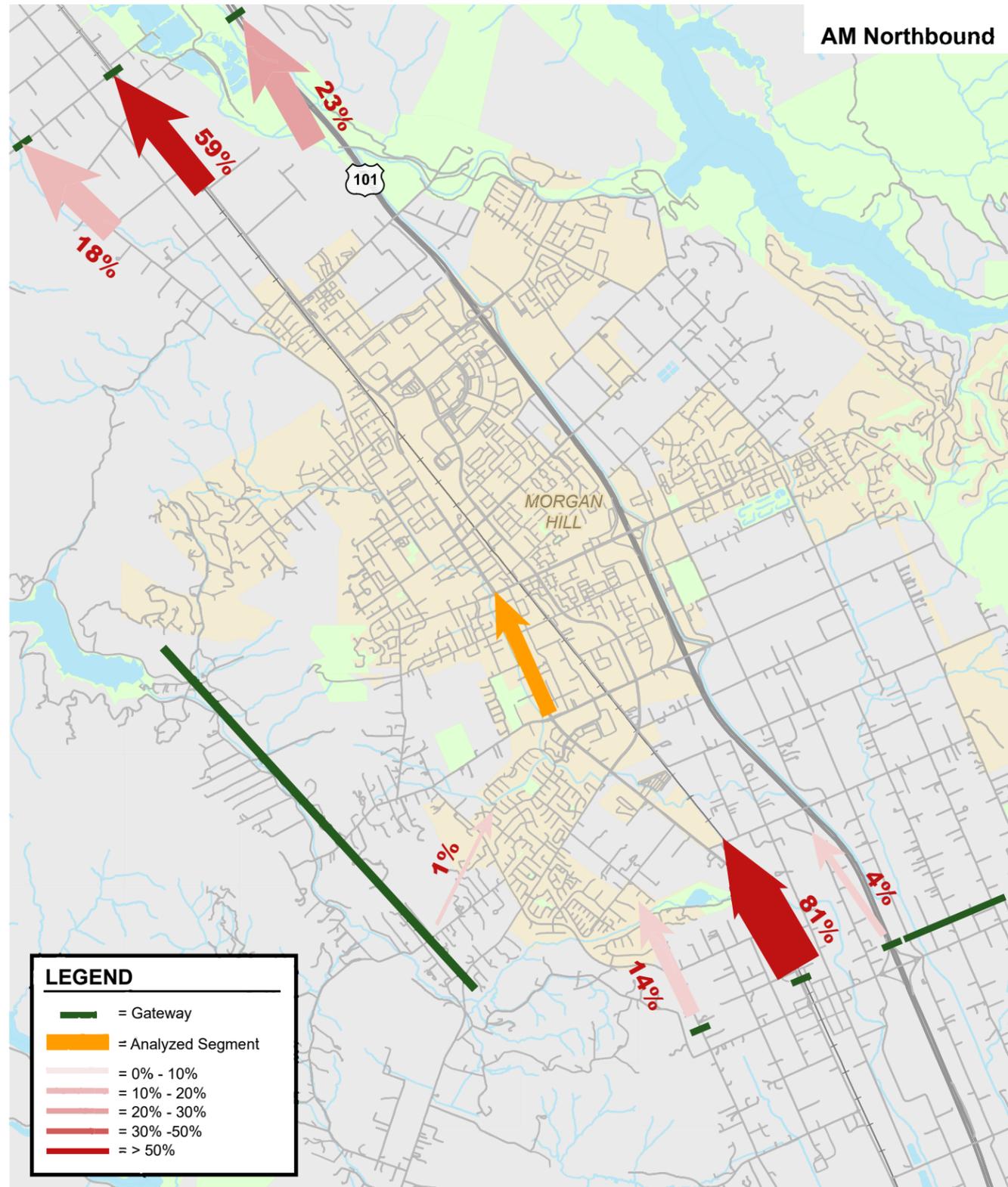


Figure 8
Origin-Destination Analysis of Monterey Road between Tennant Avenue and Dunne Avenue

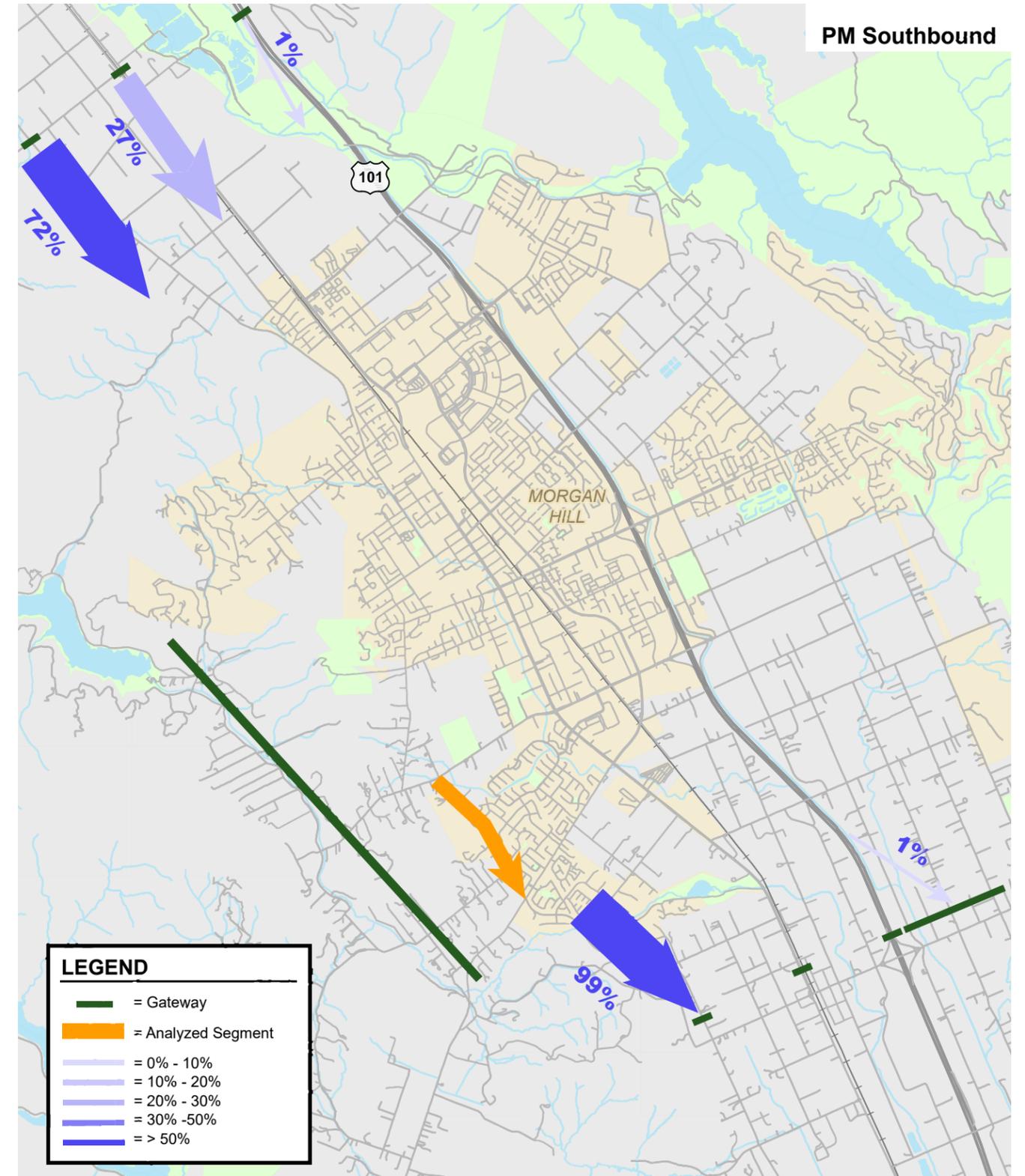
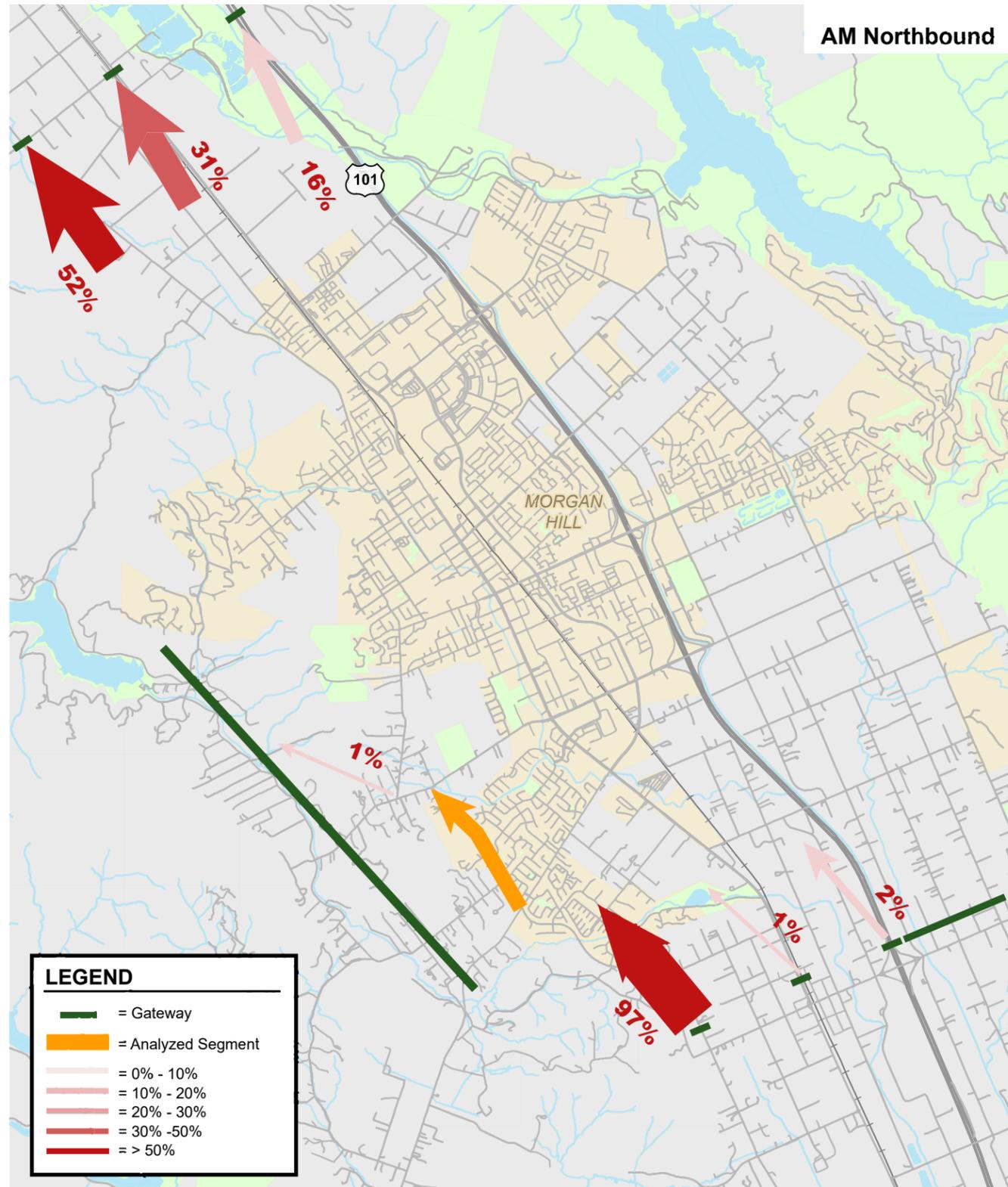


Figure 9
Origin-Destination Analysis of Sunnyside Avenue

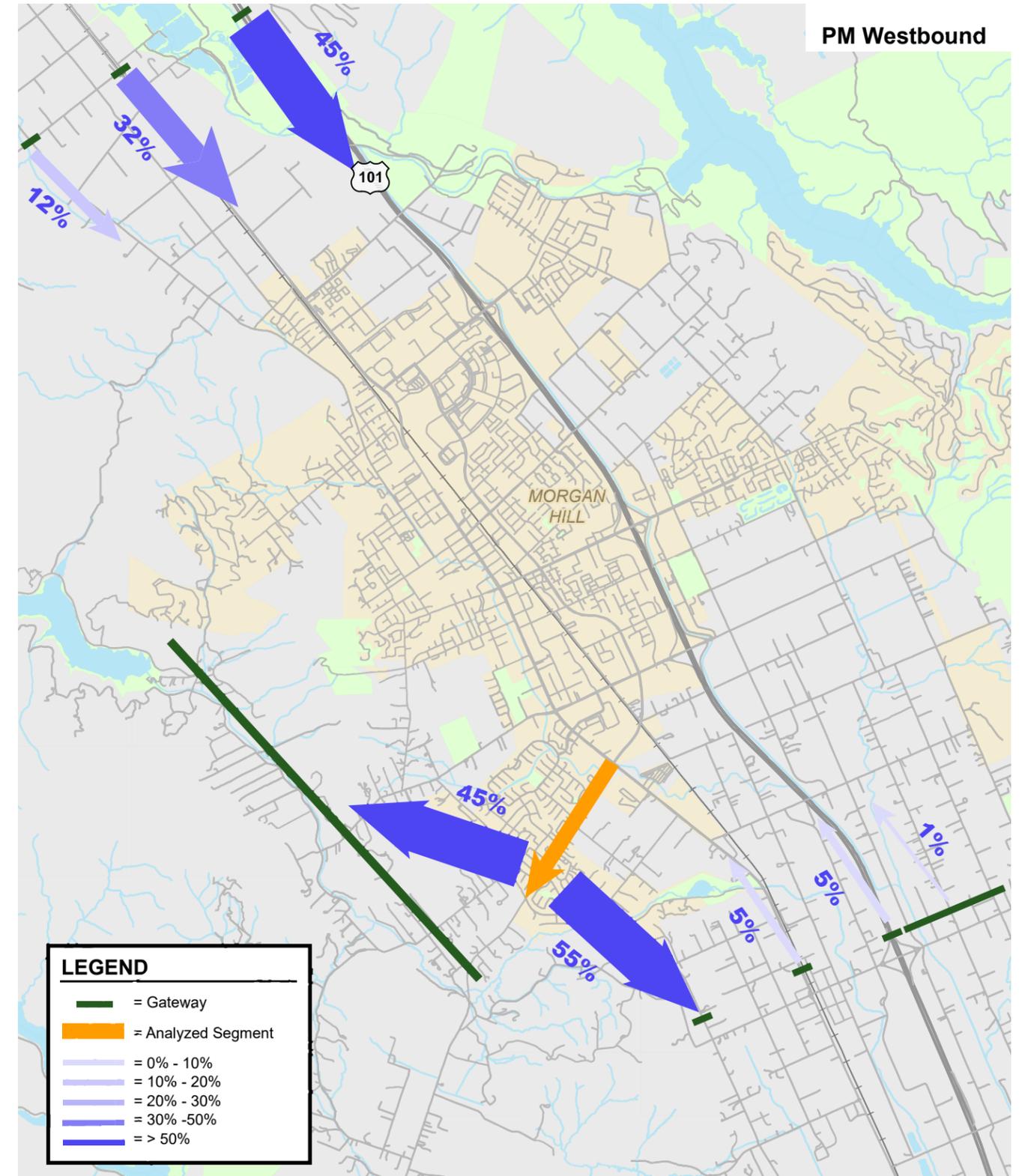
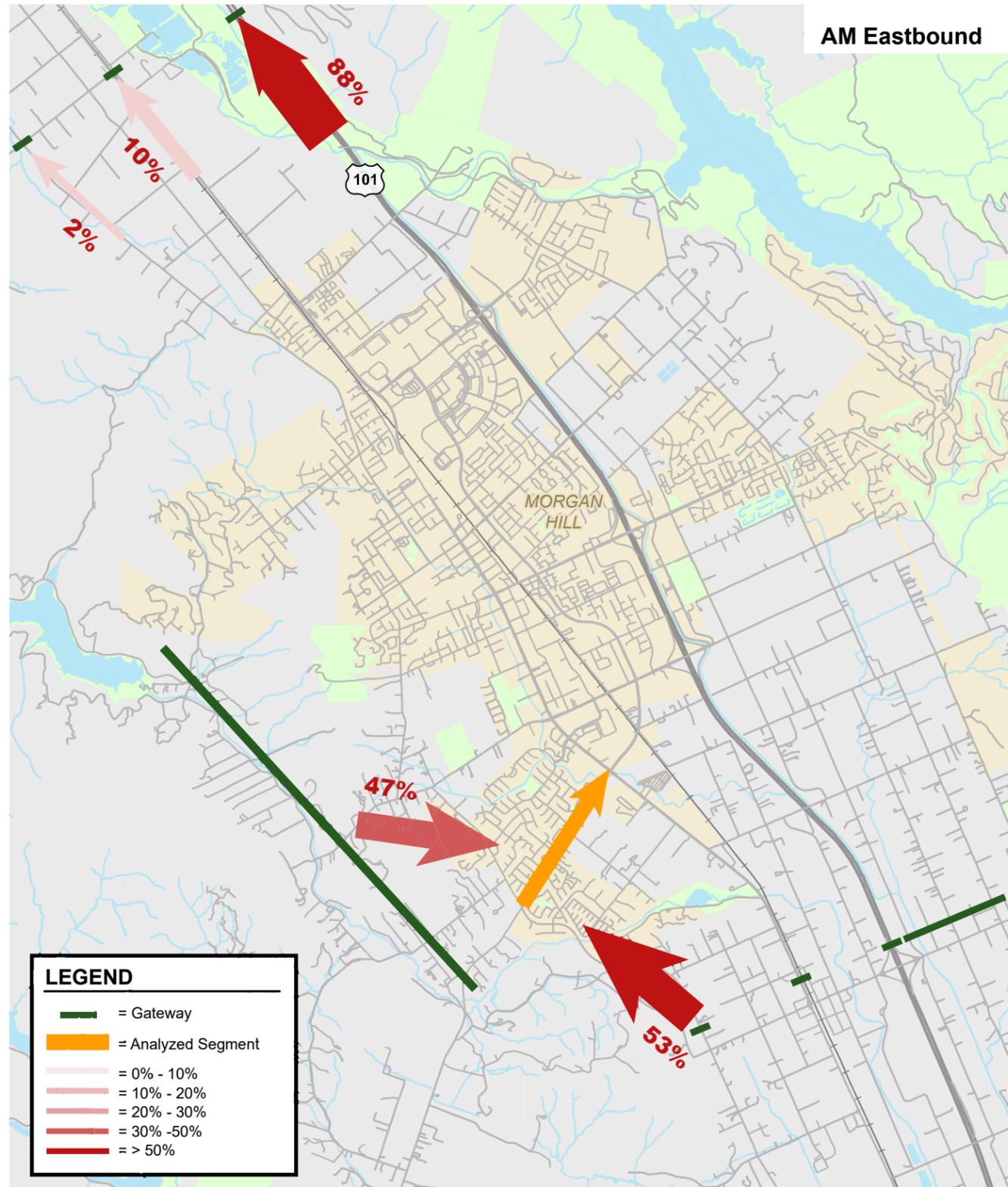


Figure 10
Origin-Destination Analysis of Watsonville Road West of Monterey Road

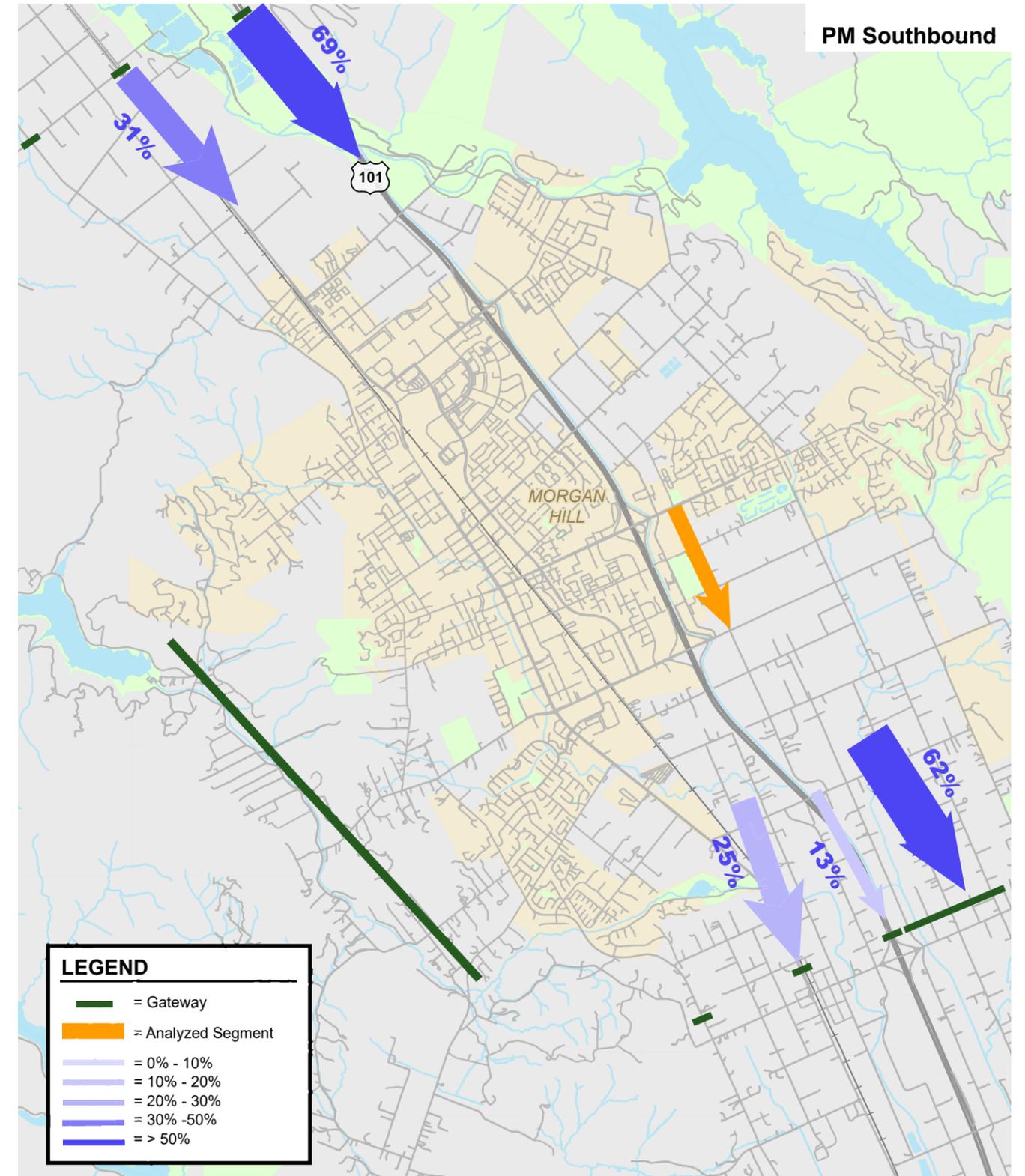
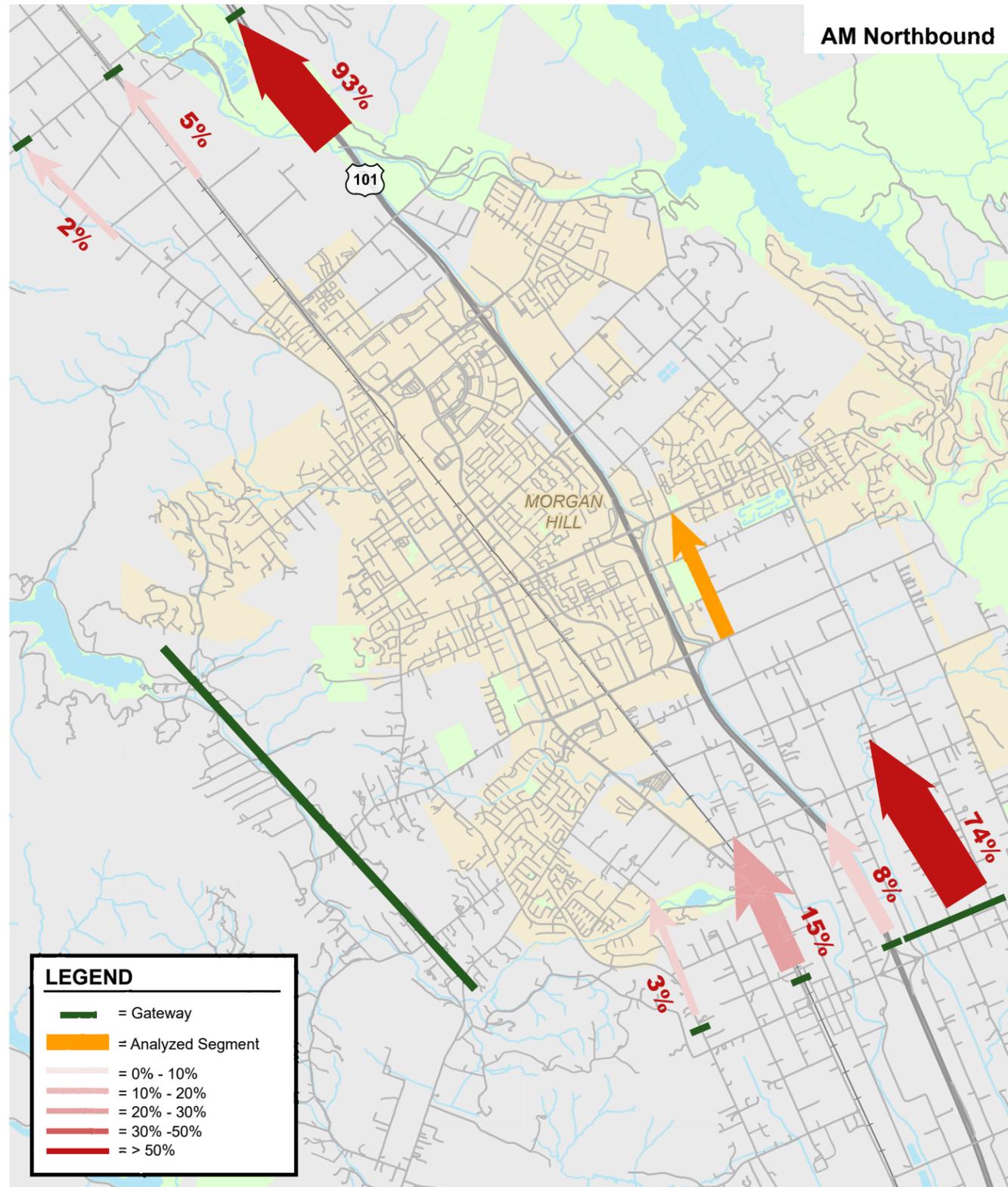


Figure 11
Origin-Destination Analysis of Murphy Avenue Between Tennant Avenue and Dunne Avenue

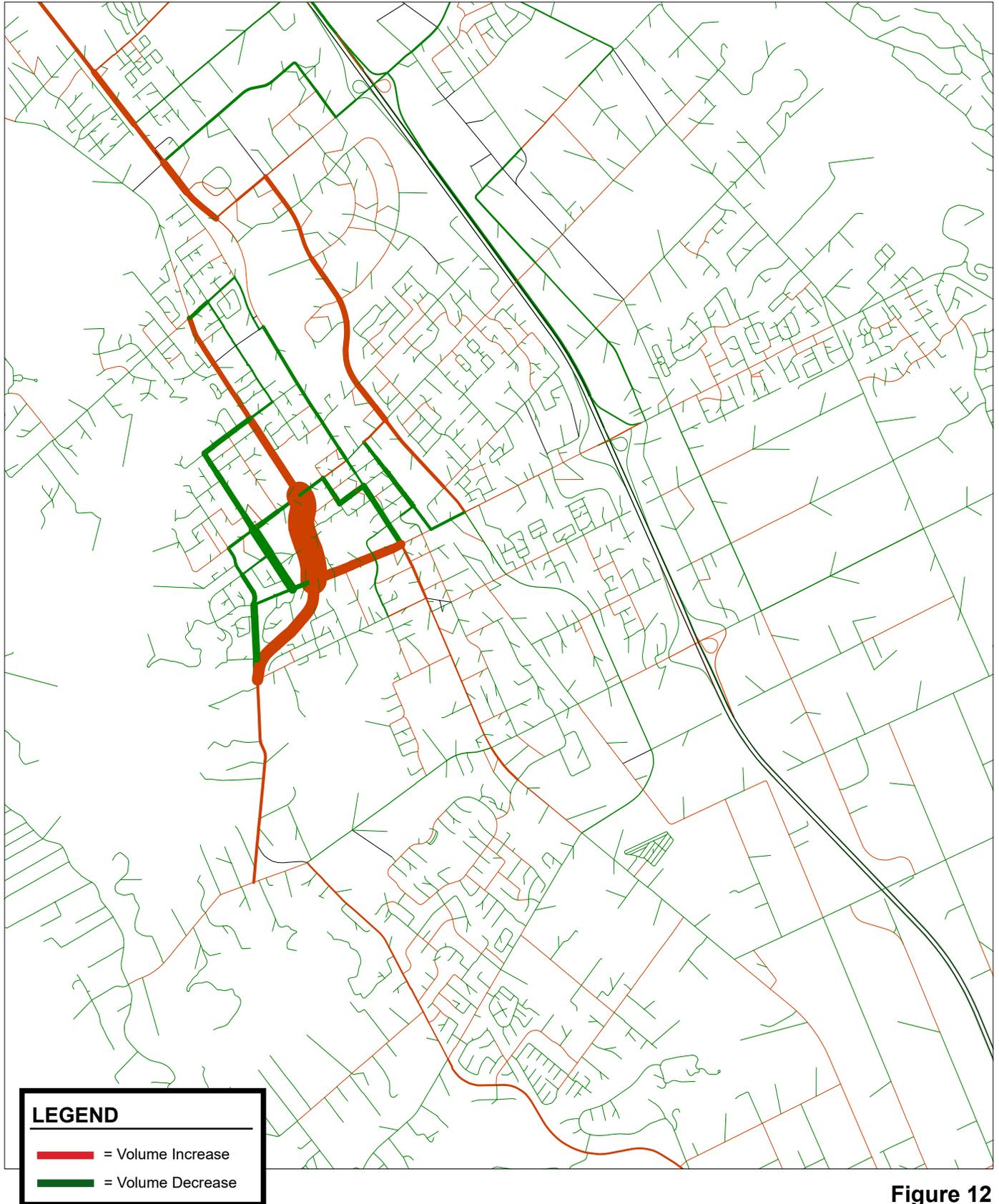


Figure 12
Volume Difference Due to Roadway Improvements - AM Peak Hour