

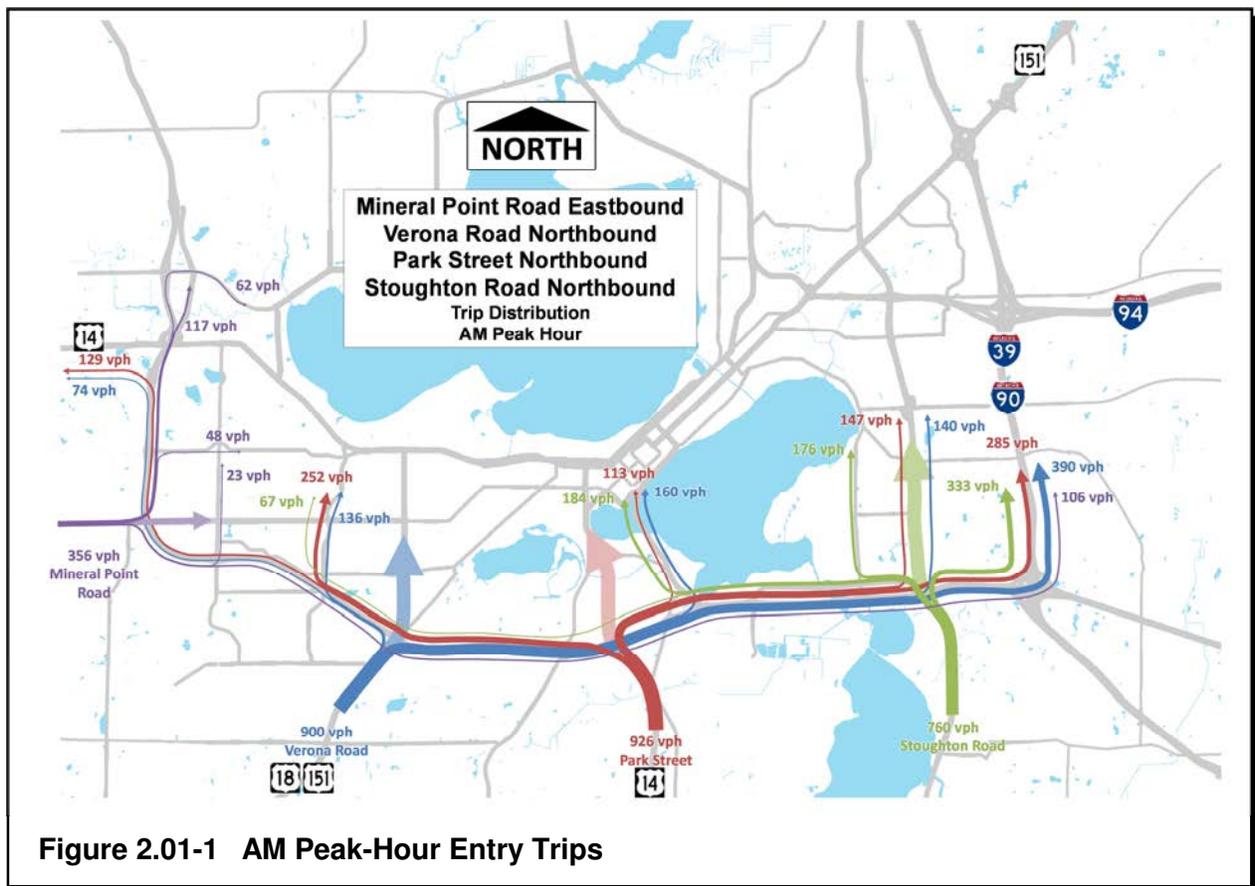
SECTION 2
ORIGIN AND DESTINATION DATA

2.01 SUMMARY OF BELTLINE TRAVEL TRENDS

A. Travel Trends

The origin-destination analysis of the Beltline shows two main trends. For trips that originate outside the Beltline, travelers are using the Beltline relatively short distances to get to their desired entry arterial into the Madison area. Second, for trips originating inside the Beltline, travelers tend to use the Beltline to travel around obstacles and resources within the Madison area that do not have a roadway framework.

The Beltline directs traffic from outside the Madison area into major entry arterials such as Midvale Boulevard, John Nolen Drive, Stoughton Road, and Park Street. A significant amount of the traffic observed in the AM peak hour was destined for the major employment centers in the Madison area. The opposite was true for the PM peak hour as traffic exiting the major employment centers was observed as a major component of the overall Beltline traffic. Major AM peak-hour entry trips are shown in Figure 2.01-1.



When examining areas without roadway networks in the Madison area, the major areas are resources such as the E-way, the Arboretum, and the lakes. These obstacles concentrate traffic onto the Isthmus, between Lake Mendota and Lake Monona, and between Lake Monona and Lake

Waubesa. The Beltline is the only major east-west roadway between Lake Monona and Lake Waubesa. The effect of these obstacles on motorized vehicle travel is observed along the Beltline corridor in several areas. The most extreme of these is Lake Monona. During the AM peak hour, 614 vehicles per hour (vph) enter the westbound Beltline at South Towne Drive and exit at John Nolen Drive. This is a local trip that is made on the Beltline solely because the Beltline is the only road that efficiently serves this traffic. During the PM peak hour, 338 vph enter the eastbound Beltline at John Nolen Drive and exit at South Towne Drive. The auxiliary lanes between the John Nolen Drive and South Towne Drive interchanges are functioning as local streets for traffic trying to get around Lake Monona.

B. Key Conclusions

The following key conclusions can be drawn from the Beltline origin-destination traffic data:

- Very little Beltline traffic is regional, beginning and ending trips outside of Dane County. (less than 8 percent)
- Very little traffic travels the Beltline from end to end
- Over half of the vehicles entering the Beltline during the AM and PM peak hours exit within four interchanges
- Traffic entering the Beltline from Stoughton Road, Monona Drive, and South Towne Drive and exiting on John Nolen Drive, Rimrock Road, and Park Street account for 23 percent of the Beltline traffic between John Nolen Drive and South Towne Drive.
- During the AM peak hour, southbound US 12, eastbound Mineral Point Road, and eastbound US 14 (west) predominately feed employment centers in West Madison/Middleton and do not contribute to East Beltline traffic
- The Beltline distributes traffic from origin arterial to destination arterial. Typically only 30 to 40 percent of approaching arterial traffic is through traffic.

2.02 SOURCES OF DATA

The Origin-Destination information that revealed the existing conditions patterns for motorized vehicle travel on and across the Beltline comes from three data sources.

A. Skycomp, Inc. Aerial Survey

Skycomp, Inc. performed an aerial time-lapse photography origin-destination survey of the Beltline in the fall 2012. The efforts included the use of four helicopters stationed over the Beltline taking synchronized pictures of traffic along the Beltline for 1 1/2 hours during the AM and PM peak hours and during mid-day. The images were taken at 1 second intervals and were then combined to create a complete image of the Beltline for each time slice.

The images created by Skycomp were then viewed to perform traffic counts at the ramp terminal and adjacent intersections, and determine regional origin-destination data along the Beltline corridor. The intersection counts used a 100 percent capture rate with every car being counted. The origin-destination data was developed by tracing the route of every eighth car from where it entered the Beltline system at an on-ramp or from either end until it exited at another interchange

or at either end. Vehicles entering or exiting at the interchanges were further separated into coming from or going to the north or south sides of the Beltline.

B. Blufax Bluetooth Traffic Count

Traffic Analysis and Design® placed Blufax Bluetooth counters throughout Dane County to collect regional travel data that is used to analyze larger origin-destination patterns and also calibrate the regional travel demand model. The Blufax counters work by recording the MAC address of individual Bluetooth-enabled devices such as cell phones, headsets, and cars. Matched pairs of the recorded MAC addresses are analyzed to establish travel patterns. The Bluetooth data collection period spanned a full month in the fall 2012.

C. WisDOT Automated Traffic Recorder Data

Traffic count data available from the system of WisDOT automated traffic recorders (ATRs) was used to determine general information about the daily traffic characteristics along the Beltline corridor. 2012 data from the ATRs was used for this analysis. The two ATR stations used were:

1. ATR 130011—US 12-18 1.0 M E of CTH BW
2. ATR 130587—US 12-14 West of Highpoint Rd

2.03 DANE COUNTY DAILY REGIONAL TRAFFIC PATTERNS

Blufax Bluetooth traffic data was used to look at travel patterns within Dane County as a whole. Seven count locations located on major roadways at the borders of the county provided data on the regional traffic through Dane County. The following is a list of the locations of the counters that are shown in Figure 2.03-1.

1. R01—US 18/151 between East Brigham Road and County F
2. R02—US 14 between Hodgson Road and Dover Lane
3. R03—US 12 southeast of Sauk City
4. R04—I-39/90/94 between Patton Road and County K
5. R05—US 151 between County V and Deansville Road
6. R06—I-94 between Jacobs Road and County O
7. R07—US 12/18 between Rodney Road and WIS 134
8. R08—I-39/90 between Lake Drive and Goede Road
9. R09—US 14 between West Stewart Road and North Union Road

The data from these Bluetooth receptors was used to estimate the regional travel use of the Beltline corridor. The five highest regional contributors were R01-US 18/151 west of Verona, R03-US 12 southeast of Sauk City, R05-US 151 east of Sun Prairie, R06-I-94 between Jacobs Road and County O, and R08-I-39/90 between Lake Drive and Goede Road.

Figure 2.03-1 shows the regional traffic that originated at R01.

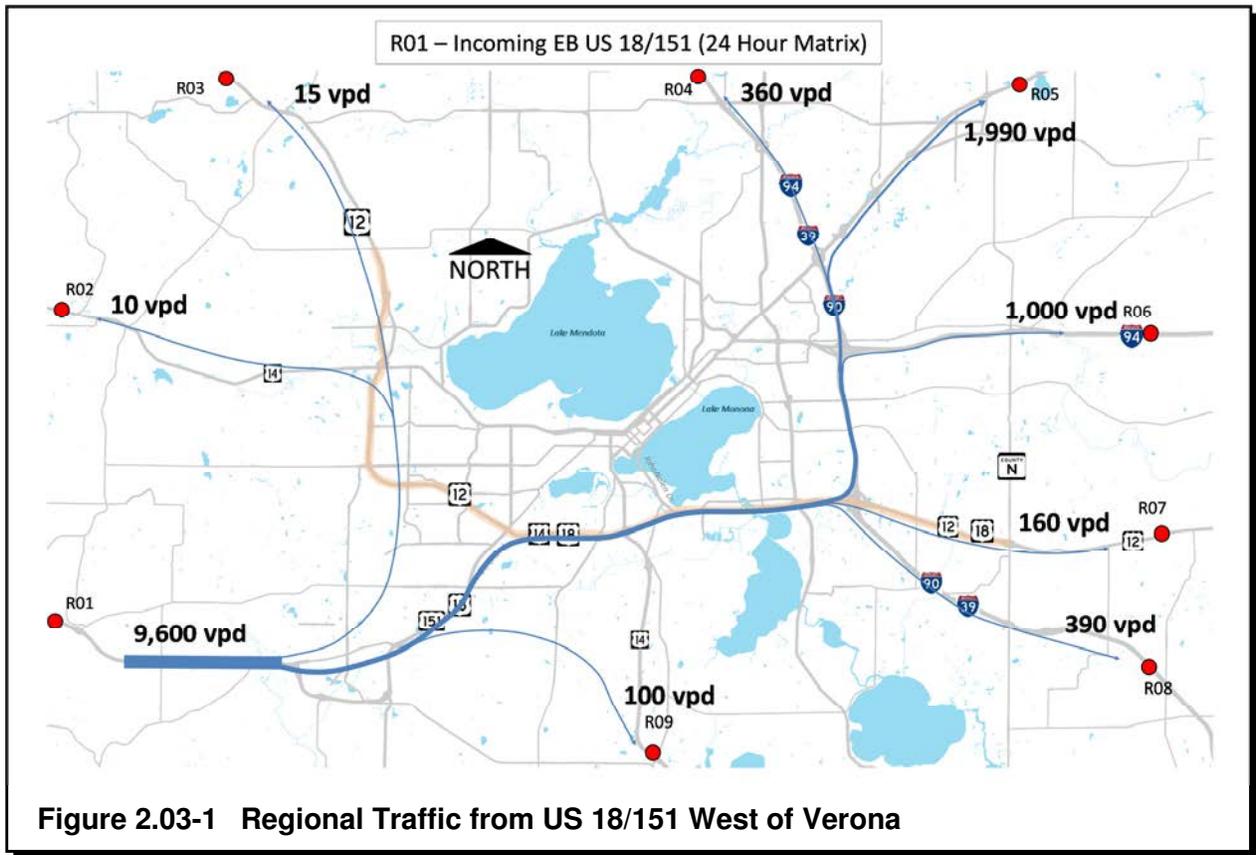
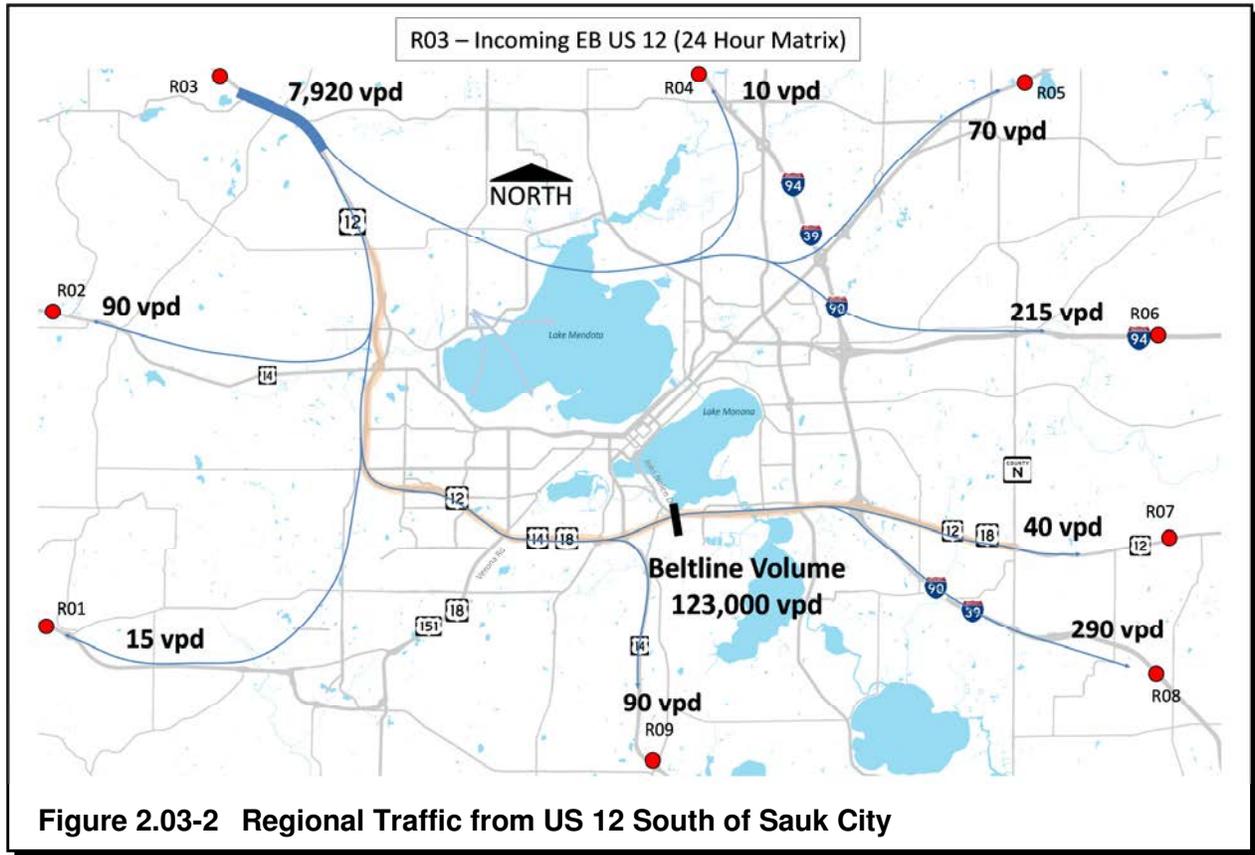


Figure 2.03-1 Regional Traffic from US 18/151 West of Verona

According to the Blufax data, approximately 9,600 vehicles per day (vpd) enter the county on eastbound US 18/151. Of these vehicles, 3,900 vpd continue along US 151 and onto the Beltline to I-39/90/94, US 12, or US 151 with destinations outside of Dane County. This represents 3.2 percent of the daily Beltline volume.

Figure 2.03-2 shows regional traffic that originated at R03.



Approximately 7,920 vpd enter the county on eastbound (southbound) US 12. Of these vehicles, only 330 continue along US 12 through the Beltline corridor. This represents 0.3 percent of the daily Beltline volume.

Figure 2.03-4 shows the regional traffic that originated at R05.

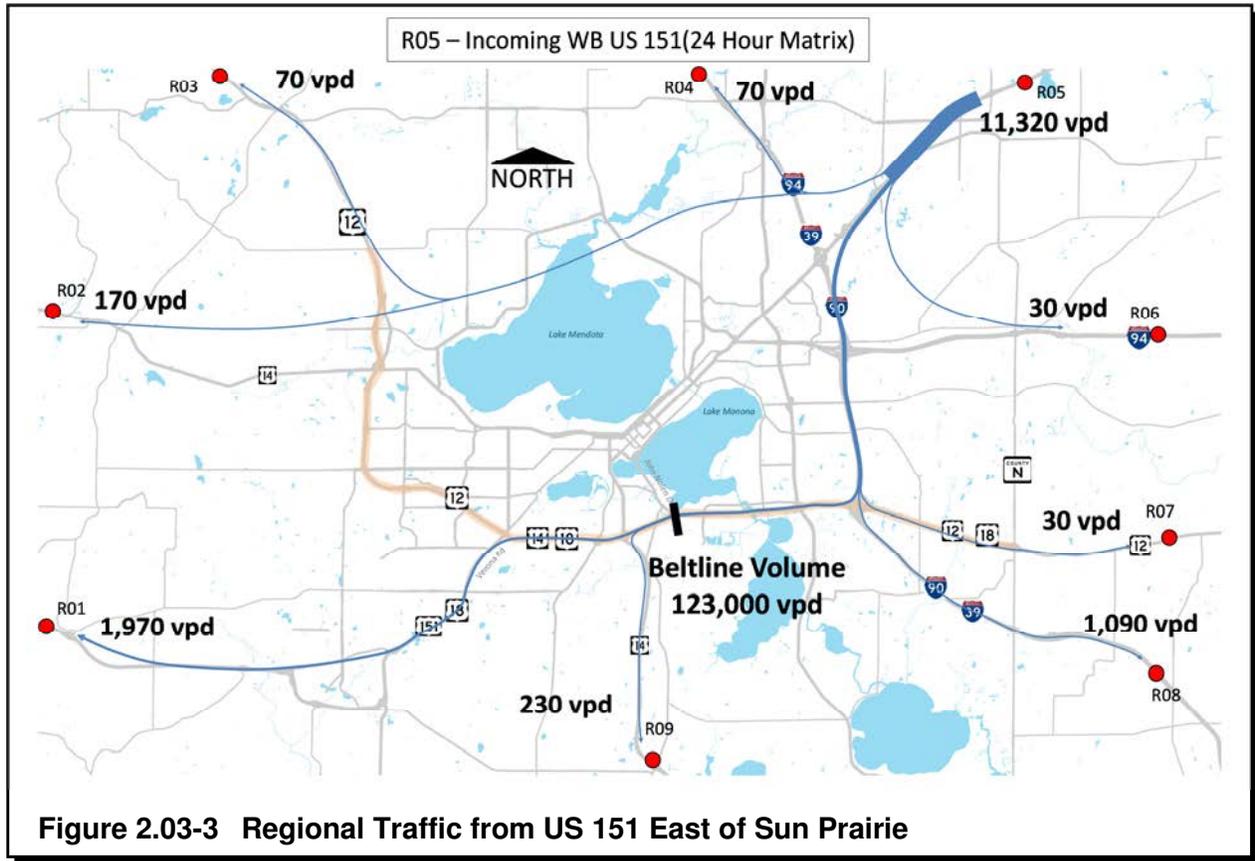
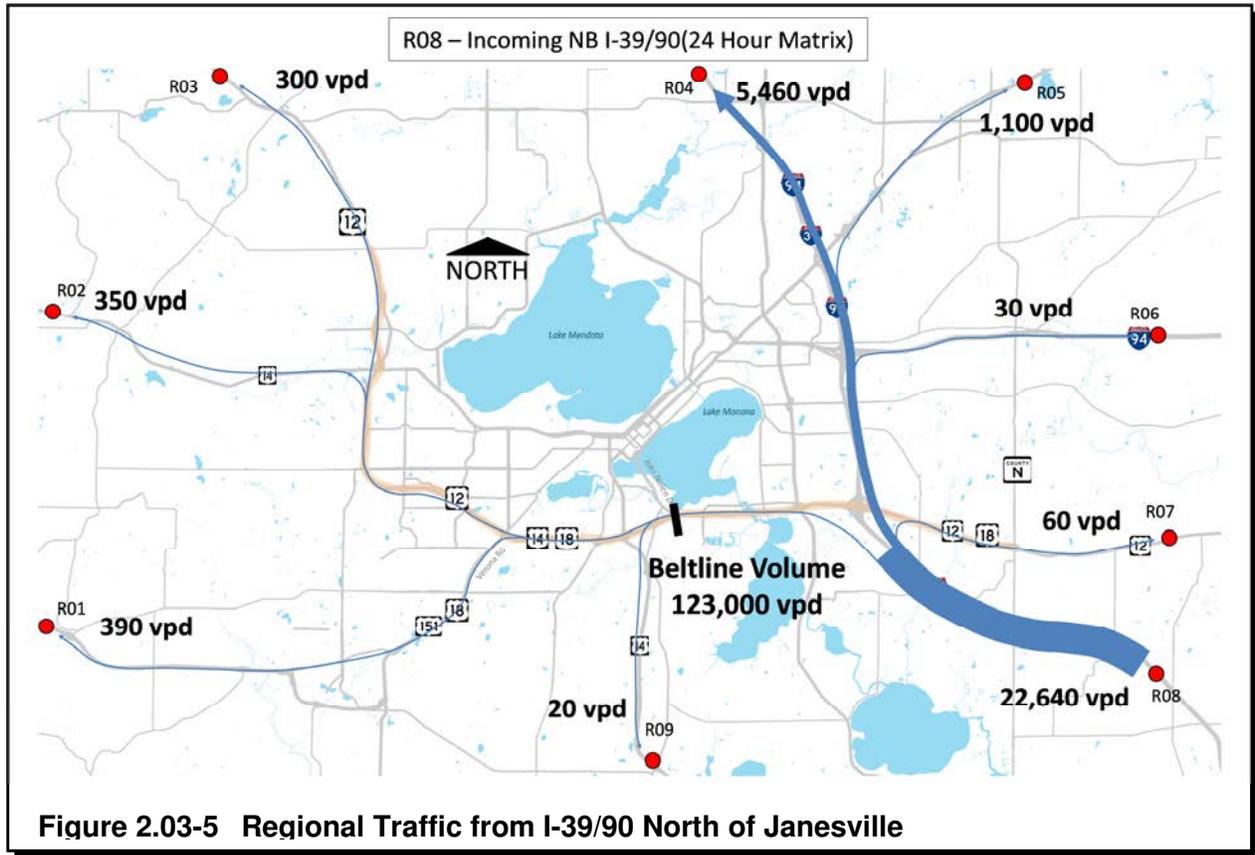


Figure 2.03-3 Regional Traffic from US 151 East of Sun Prairie

Approximately 11,320 vpd enter the county on westbound US 151. Of these vehicles, only 2,220 vpd continue to the Beltline and exit the county along US 151 or US 14(south). This represents 1.8 percent of the daily Beltline volume.

Figure 2.03-5 shows the regional traffic that originated at R08.



Approximately 22,460 vpd enter the county on northbound I-39/90. Of these vehicles, only 1,060 use the Beltline corridor. This represents 0.9 percent of the daily Beltline volume.

Generally the data from these five locations indicate that from 7 to 8 percent of the traffic on the Beltline is regional traffic that originates from outside the county and is destined to outside the county.

2.04 DAILY BELTLINE TRAFFIC TRENDS

Traffic volumes have grown along the Beltline. At its busiest location in 2012, the South Beltline carried 127,000 vpd. The West Beltline carried up to 65,000 vpd. Figure 2.04-1 shows the Average Annual Daily Traffic (AADT) volumes for the Beltline.

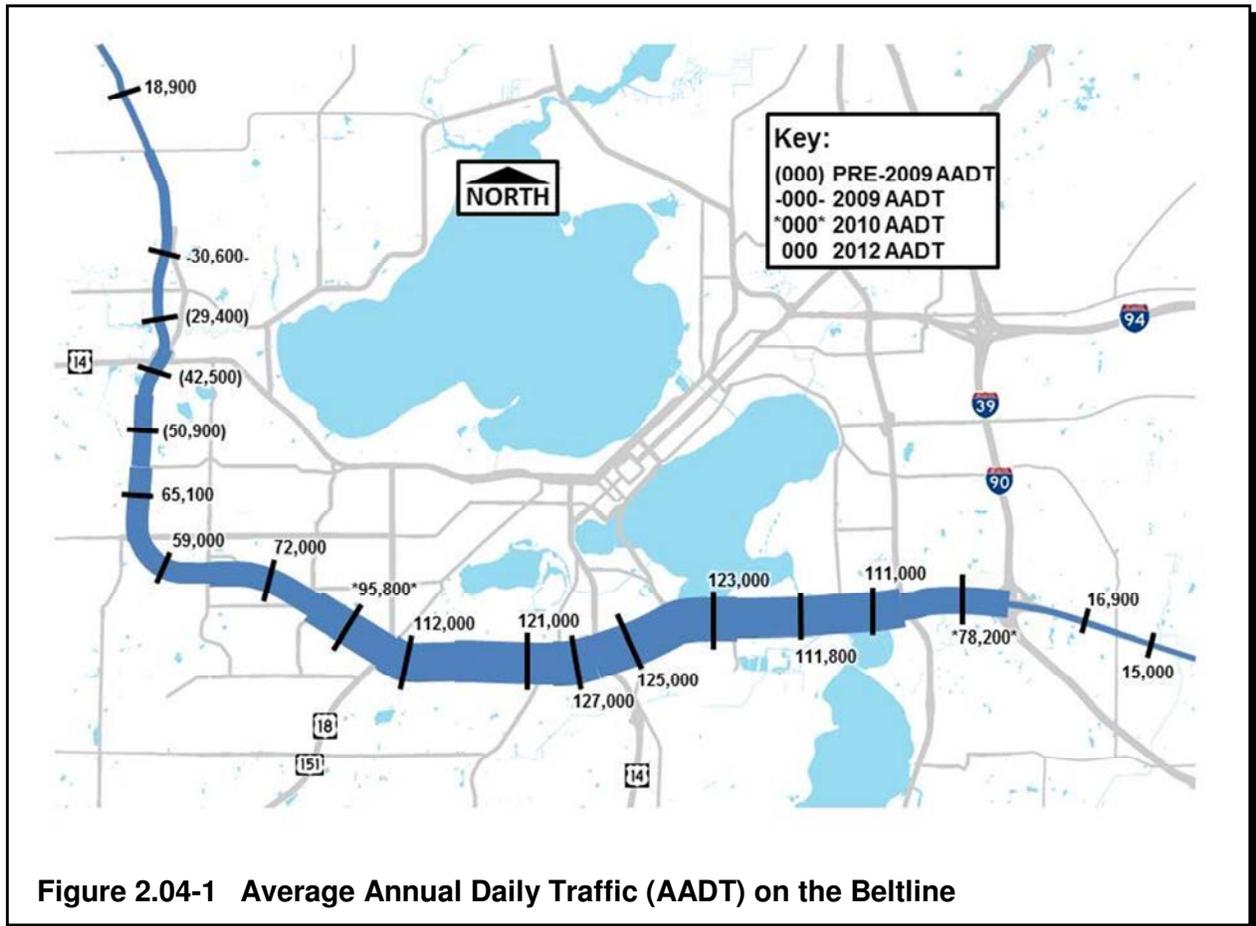
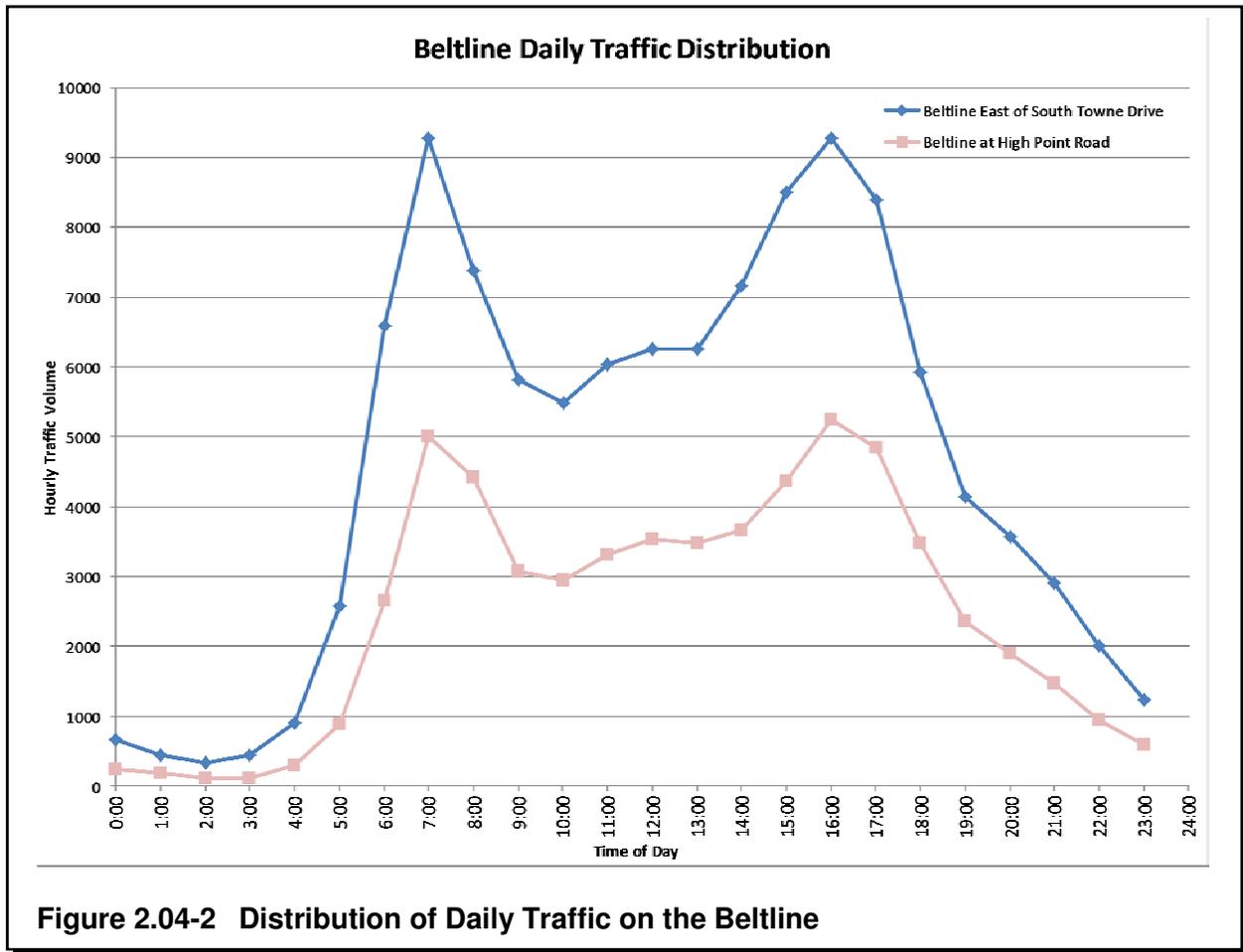


Figure 2.04-1 Average Annual Daily Traffic (AADT) on the Beltline

The daily traffic volumes along the Beltline exceed 100,000 vpd from Verona Road east to Stoughton Road. Between Stoughton Road and I-39/90 it is approximately 78,000 vpd. To the east of I-39/90, the daily traffic drops dramatically to around 15,000 vpd. West of Verona Road traffic gradually decreases along the Beltline until it is below 20,000 vpd north of County K on US 12.

Traffic on the Beltline has two distinct peak periods, 6 to 9 A.M. and 3 to 6 P.M. Approximately 21 percent of the daily traffic on the Beltline occurs during the AM peak period, and 23 percent of the daily traffic occurs during the PM peak period. Between the hours of 9 A.M. and 3 P.M., approximately 33 percent of the daily traffic occurs. Before 6 A.M. and after 6 P.M., the traffic on the Beltline drops off quickly. Figure 2.04-2 shows the hourly distribution of traffic on the Beltline.



Another way to look at daily traffic and be able to compare different facilities is to look at the K factors for traffic volumes. A K factor ranks the highest hourly volumes on a roadway throughout a year. The daily volume multiplied by the K factor provides the respective peak hour volume. K30 represents how much you would multiply the average daily volume to obtain the 30th highest peak hour for the year. Typical K factors used for highway design are the K_{30} , K_{100} , and K_{250} . These numbers represent the 30th, 100th, and 250th highest hourly traffic volumes at any one location. The K factors for the two ATRs on the Beltline are shown in Table 2.04-1. The table also shows the peak hourly volumes from the aerial time lapse photography.

Continuous Count Station Data						September 2013			
ATR	Location	Basic # of Lanes	K _{Hour}	Year 2012 Volume	percent of AADT		Total	WB	EB
130011	USH 12-18 1.0 M E of CTH BW	6	AADT	111,728	---	AM Peak	9,772	5,070	4,702
			K ₃₀	10,910	9.76%				
			K ₁₀₀	10,660	9.54%	PM Peak	10,182	4,397	5,785
			K ₂₅₀	10,337	9.25%				
130587	US 12-14 West of High Point Rd	4	AADT	59,019	----	AM Peak	6,209	3,163	3,046
			K ₃₀	6,387	10.82%				
			K ₁₀₀	6,284	10.65%	PM Peak	6,059	2,976	3,083
			K ₂₅₀	6,096	10.33%				

Table 2.04-1 K factors for the Beltline

All three K factors for the South Beltline location were around 9.5 percent of the daily traffic at that location. The three K factors for the West Beltline location were around 10.5 percent of the daily traffic. This shows there is more off-peak traffic on the South Beltline when compared to the West Beltline. As a comparison, the K factors on I-94 between the Zoo interchange and 84th Street in Milwaukee are slightly lower, but the peak-hour volumes are similar to the volumes experienced on the South Beltline being between 9,950 and 12,200 vph.

Table 2.04-2 shows the directional distribution at the two count stations on the Beltline during the AM and PM peak hours.

ATR	Location	Peak	Westbound	Eastbound
130011	USH 12-18 1.0 M E of CTH BW	AM Peak	52%	48%
		PM Peak	41%	59%
130587	US 12-14 West of High Point Rd	AM Peak	51%	49%
		PM Peak	49%	51%

Table 2.04-2 Directional Distribution on the Beltline

In general, the westbound direction of traffic is the controlling direction during the AM peak hour, and the eastbound direction is the controlling direction during the PM peak hour. The AM peak hour is very close to a 50/50 directional split, but during the PM peak hour on the South Beltline, the eastbound direction is significantly heavier than the westbound. This distribution is not seen at the location on the West Beltline, where it is essentially even.

2.05 BELTLINE AM PEAK-HOUR TRAFFIC PATTERNS

A. Notable AM Peak-Hour Origins

During the AM peak hour, a significant amount of the traffic on the Beltline is coming from outside the Beltline or in from the east and west entry points. AM peak-hour traffic tends to be commuter traffic destined for the employment centers in the Madison area. The highest origins for AM peak-hour traffic, both eastbound and westbound, on the Beltline in order are:

1. US 12 eastbound (9.9 percent of traffic entering the Beltline during the AM peak hour)
2. Park Street northbound (8.0 percent)
3. Verona Road northbound (5.4 percent)
4. South Towne Drive southbound (4.7 percent)
5. I-39/90 southbound (4.6 percent)

These 5 origins out of 36 interchange origins account for approximately 33 percent of the traffic entering the Beltline during the AM peak hour. Four of the five origins are traffic that is coming into the Madison area. The outlier is South Towne Drive southbound; 40 percent of westbound entering traffic is using the westbound Beltline to get around Lake Monona and exits at John Nolen Drive.

B. Notable AM Peak Hour Destinations

During the AM peak hour, the Beltline interchanges with the highest exiting traffic volumes are near or connect to major employment areas. The highest destinations for AM peak-hour traffic, both eastbound and westbound, on the Beltline are:

1. I-39/90 northbound (8.8 percent of traffic exiting the Beltline during the AM peak hour)
2. John Nolen Drive (8.7 percent)
3. Stoughton Road northbound (7.2 percent)
4. Verona Road southbound (5.3 percent)
5. Greenway Boulevard westbound (5.2 percent)

These 5 destinations out of 35 interchange destinations on the Beltline account for approximately 35 percent of the exiting traffic on the Beltline during the AM peak hour. All of these destinations except for Verona Road southbound feed traffic into major employment areas within the Madison area.

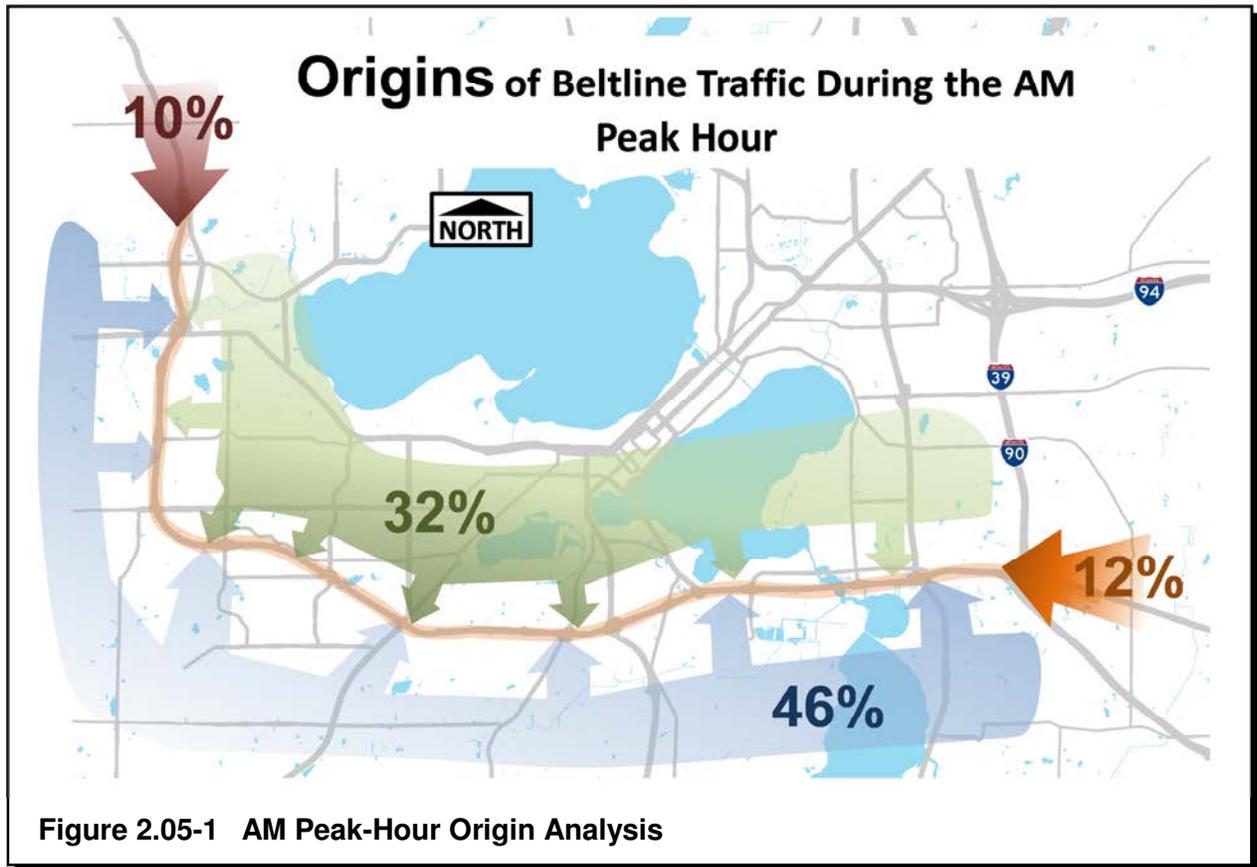
C. Origin and Destination Traffic Composition Along Beltline Corridor

The overall origin and destination patterns along the Beltline were examined. The traffic was broken into four categories for this analysis:

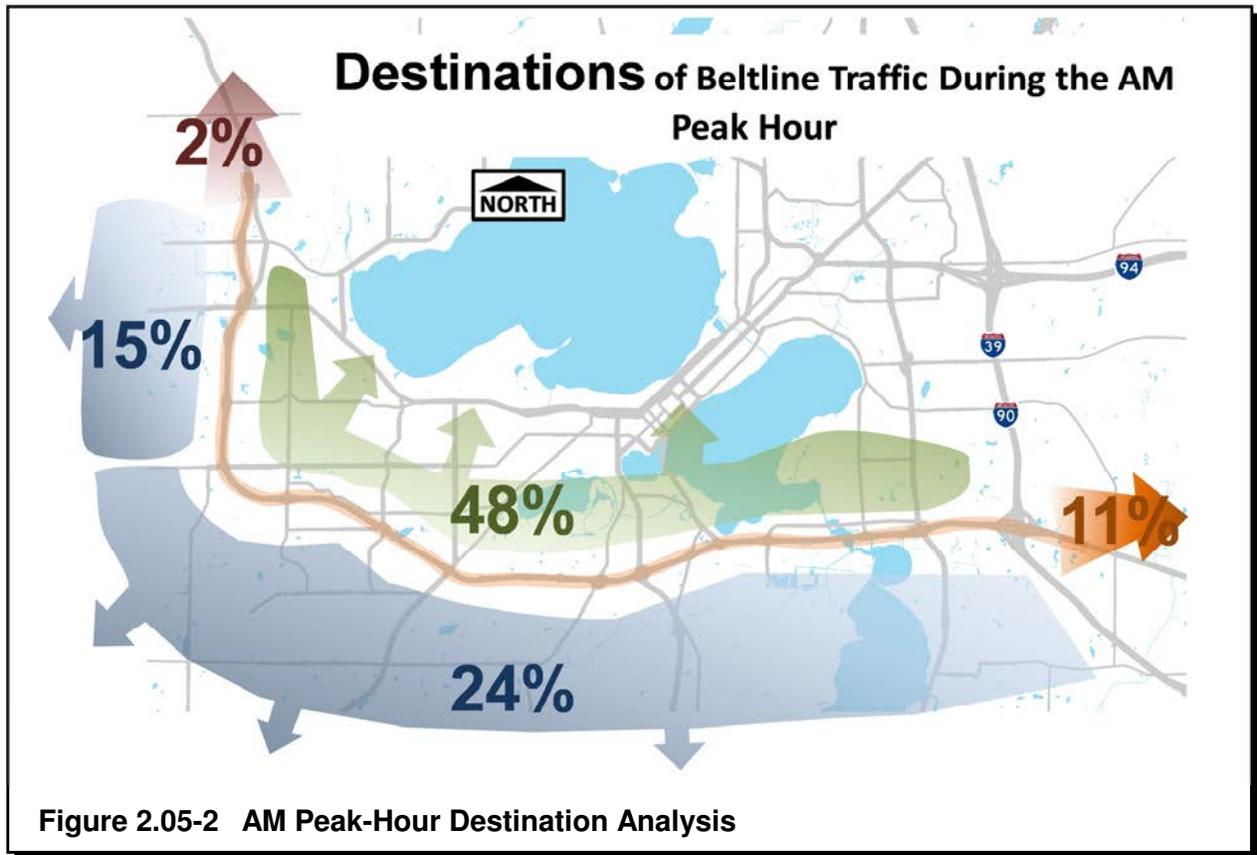
1. Inside the Beltline (green in the figures)
2. Outside the Beltline (blue in the figures)

- 3. US 12 West of the Beltline (red in the figures)
- 4. I-39/US 12 East of the Beltline (orange in the figures)

The AM peak-hour traffic origin breakdown is shown in Figure 2.05-1. The AM peak-hour destination breakdown is shown in Figure 2.05-2.



During the AM peak hour, 68 percent of the Beltline traffic originates outside of the central Madison area. This is commuter traffic that is generally destined for destinations within Madison. Thirty-two percent of the traffic on the Beltline originates within Madison and Middleton north or east of the Beltline corridor.



During the AM peak hour, 63 percent of traffic is destined for areas located within the Beltline or the business parks located west of the West Beltline Highway. This traffic serves the major employment areas of Madison and Middleton. An additional 24 percent of traffic is traveling south of the Beltline, with destinations like Fitchburg, Verona, or Oregon. About 13 percent of the AM peak-hour traffic exits the Beltline from the ends of US 12 or I-39/90.

These origin-destination patterns suggest that the Beltline is serving the employment and services within the Madison area. A significant portion of the traffic destined for these centers uses the Beltline.

D. Length of Trips

The length of trips along the Beltline, during the AM peak hour, was examined by looking at the number of interchanges vehicles traveled between from where they entered the Beltline and where they exited. The number of interchanges traveled by vehicles during the AM peak hour is shown in Figure 2.05-3.

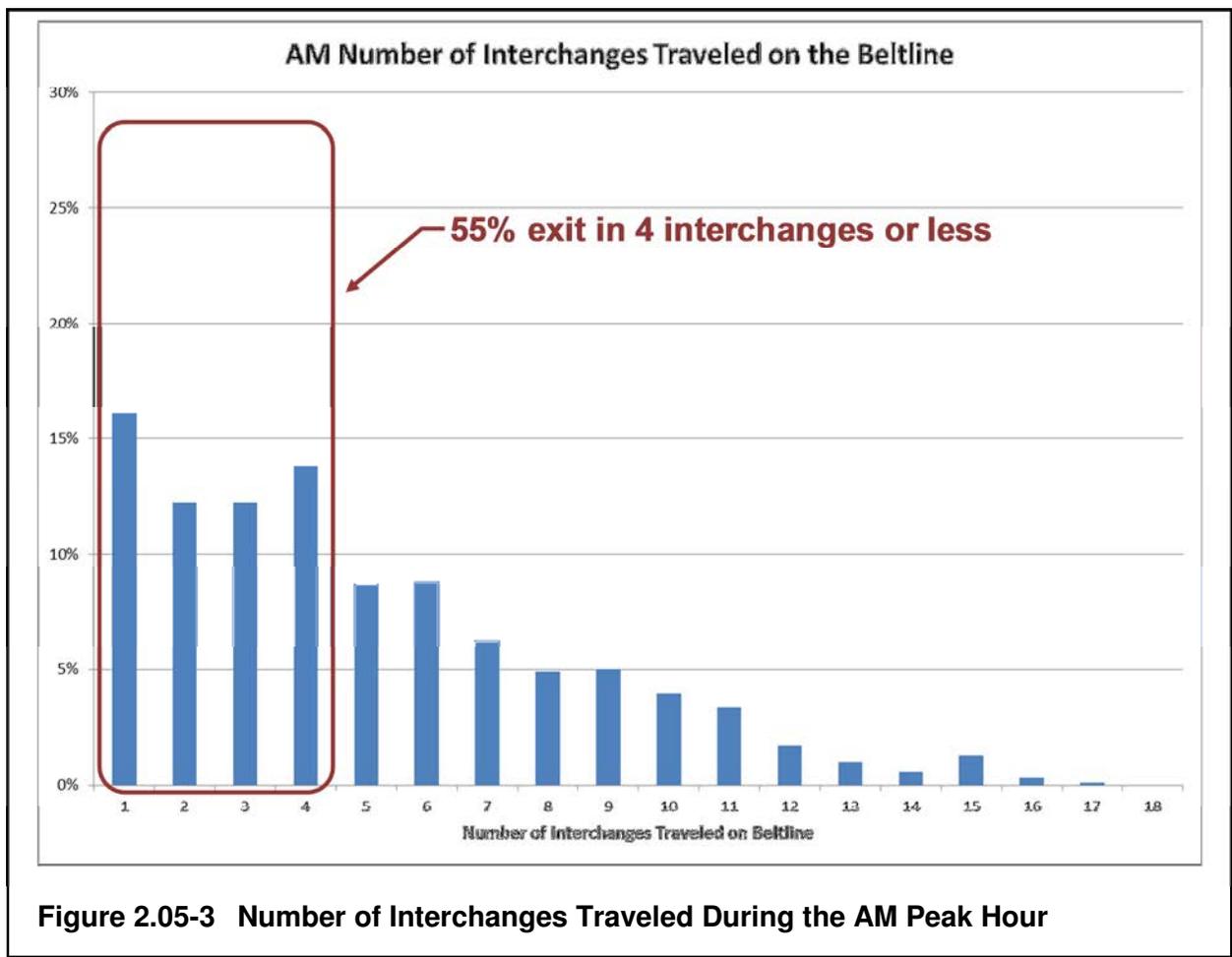


Figure 2.05-3 Number of Interchanges Traveled During the AM Peak Hour

The data shows a significant portion of Beltline traffic uses it for a relatively short distance. Fifty-five percent of all trips on the Beltline travel a distance of four interchanges or less. This is equivalent to traveling from Verona Road to Old Sauk Road westbound or Verona Road to Rimrock Road eastbound. This corresponds to a trip distance of 3 to 5 miles.

Trips using the Beltline for relatively longer distances are less common. Twelve percent of traffic during the AM peak hour travels 10 interchanges or more, a distance from the US 12 eastbound entrance to the Todd Drive Road interchange or from the I-39 southbound entrance to the Verona Road interchange. These are trips of 9 miles or longer.

E. AM Peak-Hour Trip Distribution

The time-lapse aerial photography data was analyzed to understand how traffic enters and travels along the Beltline. The following graphs show how traffic travels along the Beltline from selected locations. Graphics of the trip distributions are located in Appendix C.

The following are general trends that were observed from the AM peak-hour trip distributions:

1. Northbound I-39/90 was the major destination for northbound entrances to the Beltline from Verona Road to the east.
2. John Nolen Drive was a major destination for entrances to the Beltline located east of John Nolen Drive.
3. Westbound Greenway Boulevard and northbound Whitney Way are the largest destinations for westbound Beltline traffic west of Verona Road.
4. Cross street through traffic volumes at the interchanges are highest in the northbound and eastbound directions.

The following figures and graphs show the destination of the 15 highest contributors to the Beltline during the morning peak hour.

Figure 2.05-4 shows all westbound and eastbound on-ramp traffic volumes entering the Beltline during the AM peak hour. The five highest on-ramp volumes during the AM peak in order are:

1. I-39/90 westbound (3,089 vph)
2. Verona Road eastbound (1,696 vph)
3. Stoughton Road westbound (1,633 vph)
4. South Towne Drive westbound (1,460 vph)
5. Park Street westbound (1,381 vph)

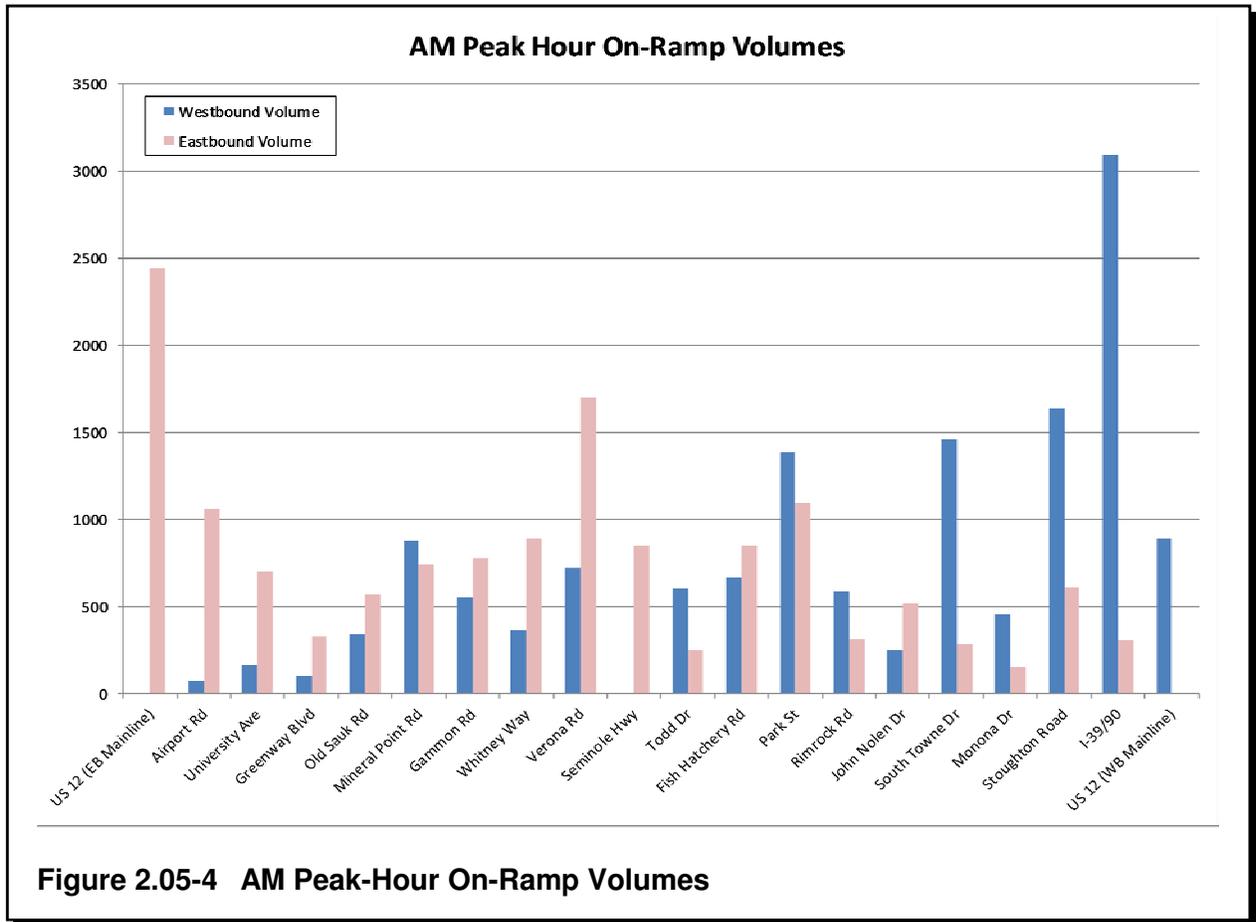


Figure 2.05-4 AM Peak-Hour On-Ramp Volumes

Figure 2.05-8 shows traffic that originates from northbound Gammon Road.

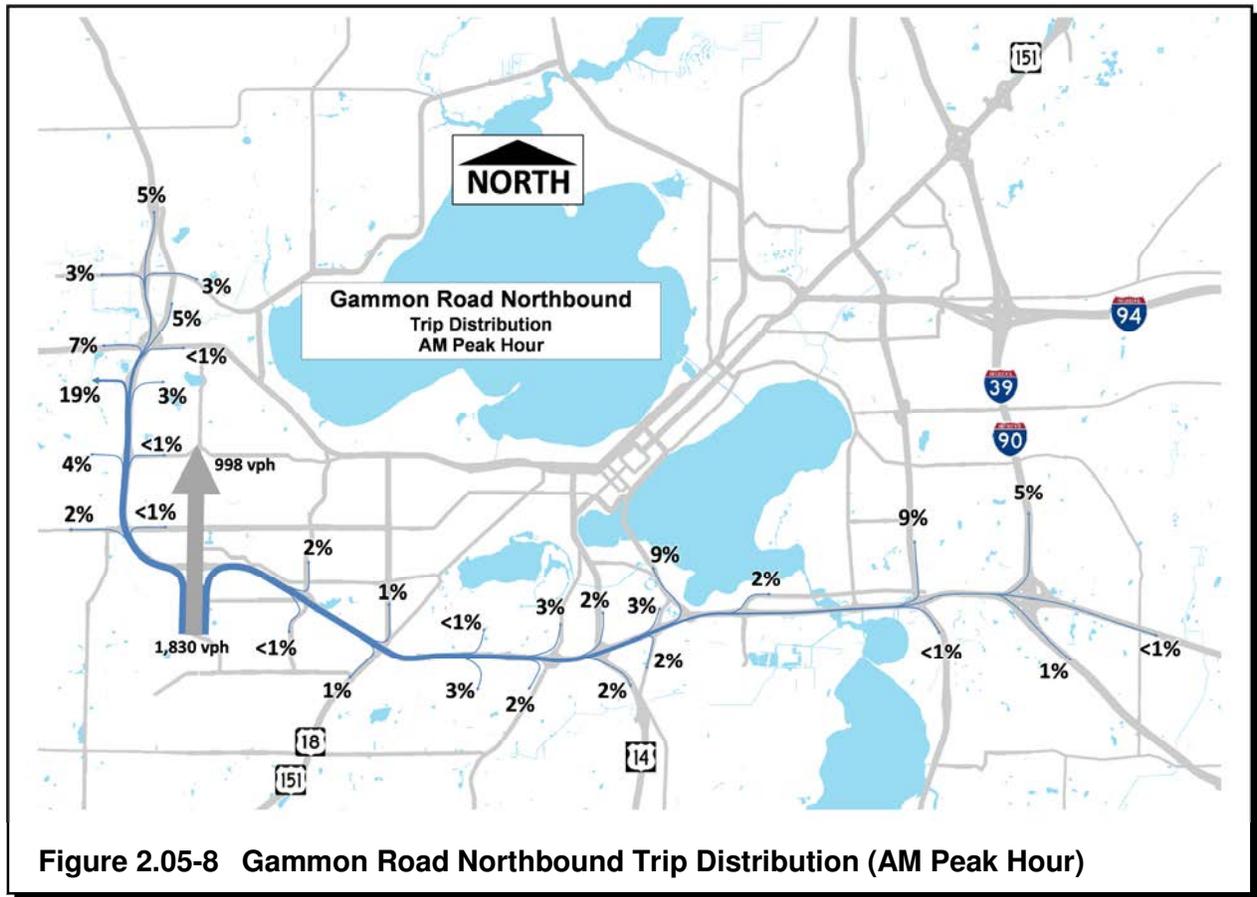


Figure 2.05-8 Gammon Road Northbound Trip Distribution (AM Peak Hour)

During the AM peak hour, 832 vph enter the Beltline from northbound Gammon Road. Fifty-two percent of the traffic that enters the Beltline travels east, and the remaining 48 percent travels west to west Madison and Middleton. The primary destinations served by northbound Gammon Road are westbound Greenway Boulevard, John Nolen Drive, northbound Stoughton Road, and westbound University Avenue. There are also 998 vph that proceed northbound through the Gammon Road interchange.

Figure 2.05-9 shows traffic that originates from northbound Verona Road.

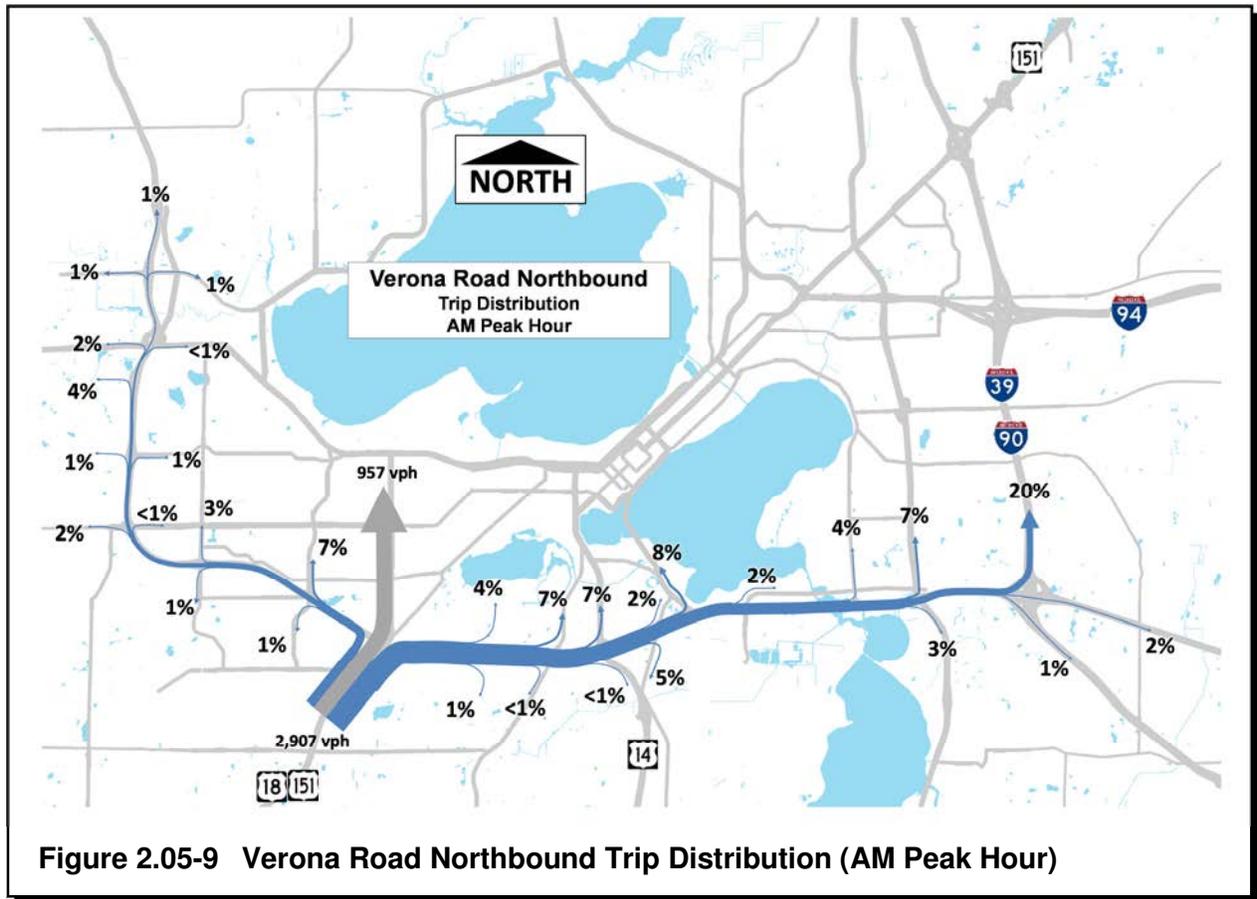
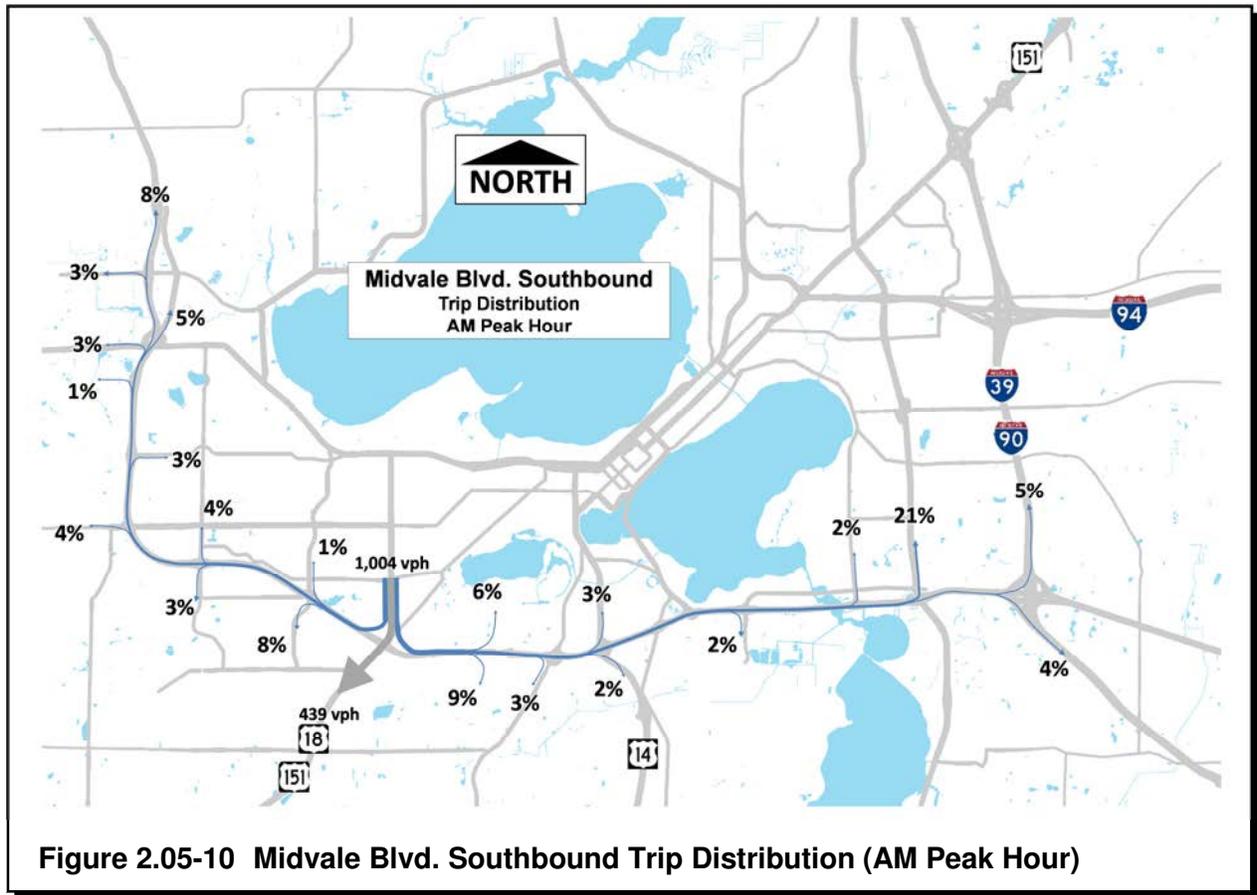


Figure 2.05-9 Verona Road Northbound Trip Distribution (AM Peak Hour)

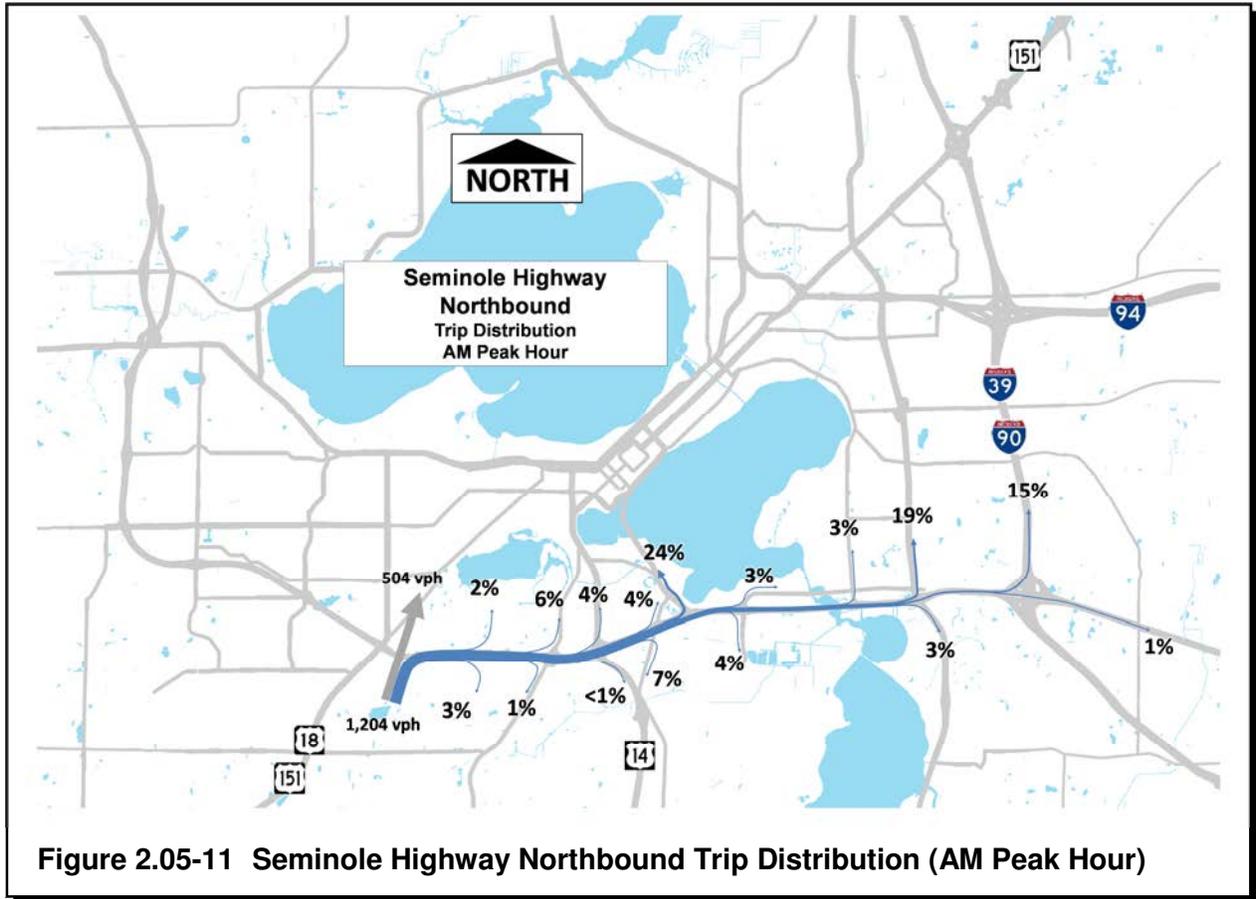
During the AM peak hour, 1,950 vph enter the Beltline from northbound Verona Road. Seventy-four percent of the traffic that enters the Beltline travels east, and the remaining 26 percent travels west. The primary destinations served by northbound Verona Road are I-39/90 northbound, John Nolen Drive, and northbound Whitney Way. There are also 957 vph that proceed northbound through the Verona Road interchange.

Figure 2.05-10 shows traffic that originates from southbound Midvale Boulevard.



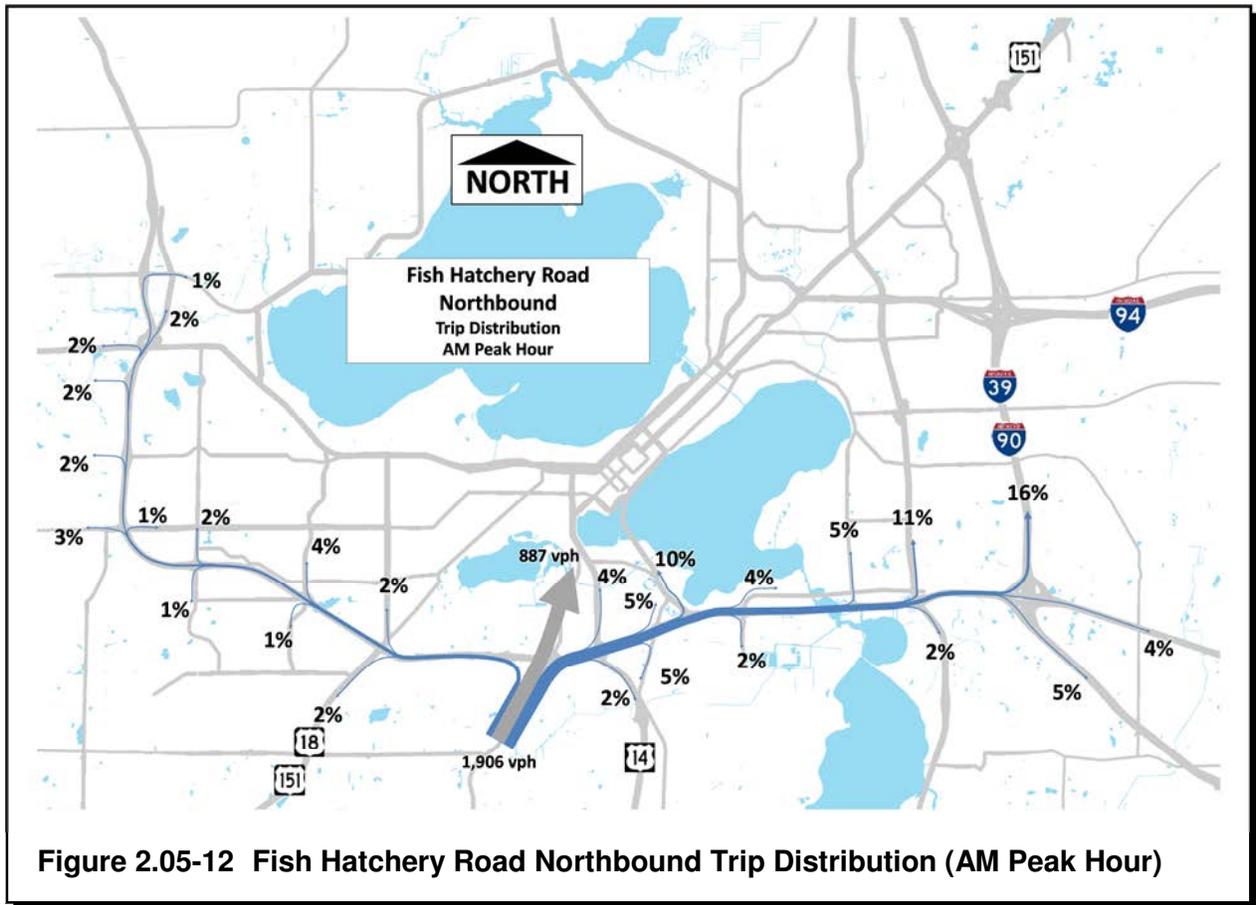
During the AM peak hour, 565 vph enter the Beltline from southbound Midvale Blvd. Fifty-seven percent of the traffic that enters the Beltline travels west, and the remaining 43 percent travels east. The primary destinations served by southbound Midvale Blvd. are northbound Stoughton Road, westbound US 12, northbound Whitney Way, and southbound Todd Drive. There are also 439 vph that proceed southbound through the Verona Road interchange.

Figure 2.05-11 shows traffic that originates from northbound Seminole Highway.



During the AM peak hour, 700 vph enter the Beltline from northbound Seminole Highway. The primary destinations served by northbound Seminole Highway are John Nolen Drive, northbound Stoughton Road, and northbound I-39/90. There are also 504 vph that proceed northbound through the Seminole Highway interchange. The volume of traffic using this collector on-ramp and the intended destinations suggest that a large portion of the traffic entering the Beltline at Seminole Highway may be trips that are diverted from northbound Verona Road because of the congestion on that roadway.

Figure 2.05-12 shows traffic that originates from northbound Fish Hatchery Road.



During the AM peak hour, 1,019 vph enter the Beltline from northbound Fish Hatchery Road during the AM peak hour. Seventy-five percent of the traffic that enters the Beltline travels east, and the remaining 25 percent travels west. The primary destinations served by northbound Fish Hatchery Road are I-39/90 northbound, John Nolen Drive, and northbound Stoughton Road. There are also 887 vph that proceed northbound through the Fish Hatchery Road interchange.

Figure 2.05-13 shows traffic that originates from northbound Park Street.

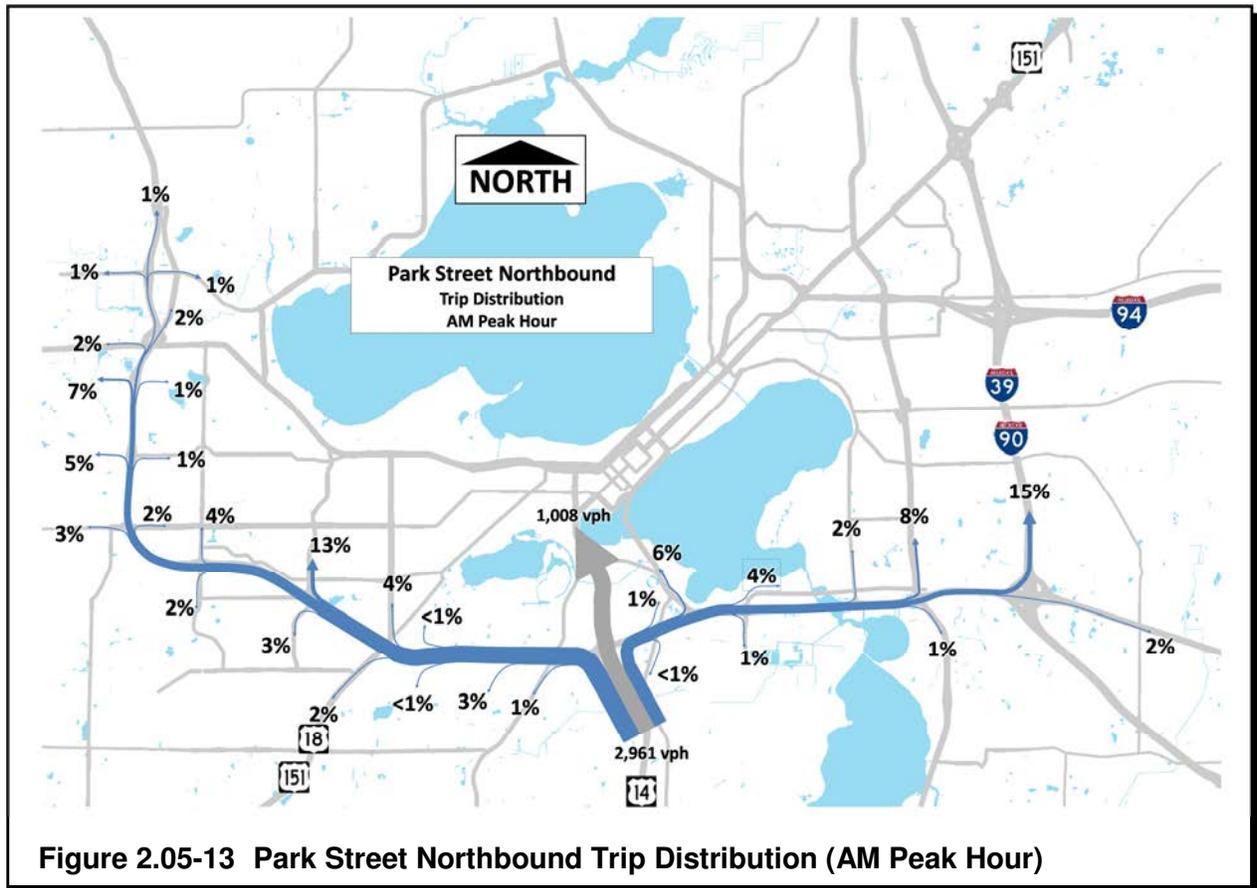
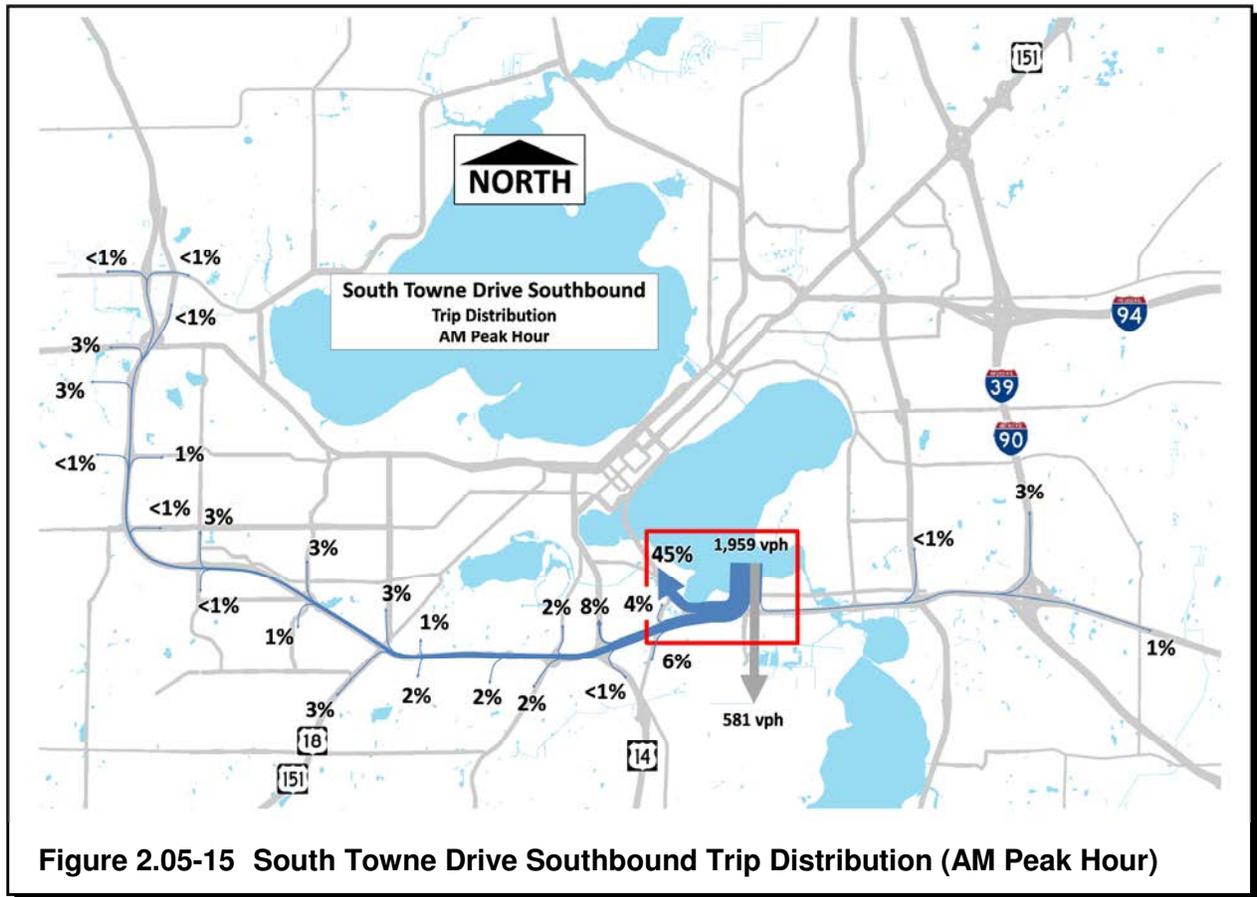


Figure 2.05-13 Park Street Northbound Trip Distribution (AM Peak Hour)

During the AM peak hour, 1,953 vph enter the Beltline from northbound Park Street. Fifty-nine percent of the traffic that enters the Beltline travels west, and the remaining 41 percent travels east. The primary destinations served by northbound Park Street are northbound I-39/90, northbound Whitney Way, westbound Greenway Boulevard, and John Nolen Drive. There are also 1,008 vph that proceed northbound through the Park Street interchange.

Figure 2.05-15 shows traffic that originates from southbound South Towne Drive.



During the AM peak hour, 1,378 vph enter the Beltline from southbound South Towne Drive. Ninety-five percent of the traffic that enters the Beltline travels west, and the remaining 5 percent travels east. The primary destinations served by southbound South Towne Drive are John Nolen Drive and northbound Park Street. Of the 1,378 vph that enter the Beltline at this location, 614 of them are exiting on John Nolen Drive. There are also 581 vph that proceed southbound through the South Towne Drive interchange.

Figure 2.05-16 shows traffic that originates from Monona Drive.

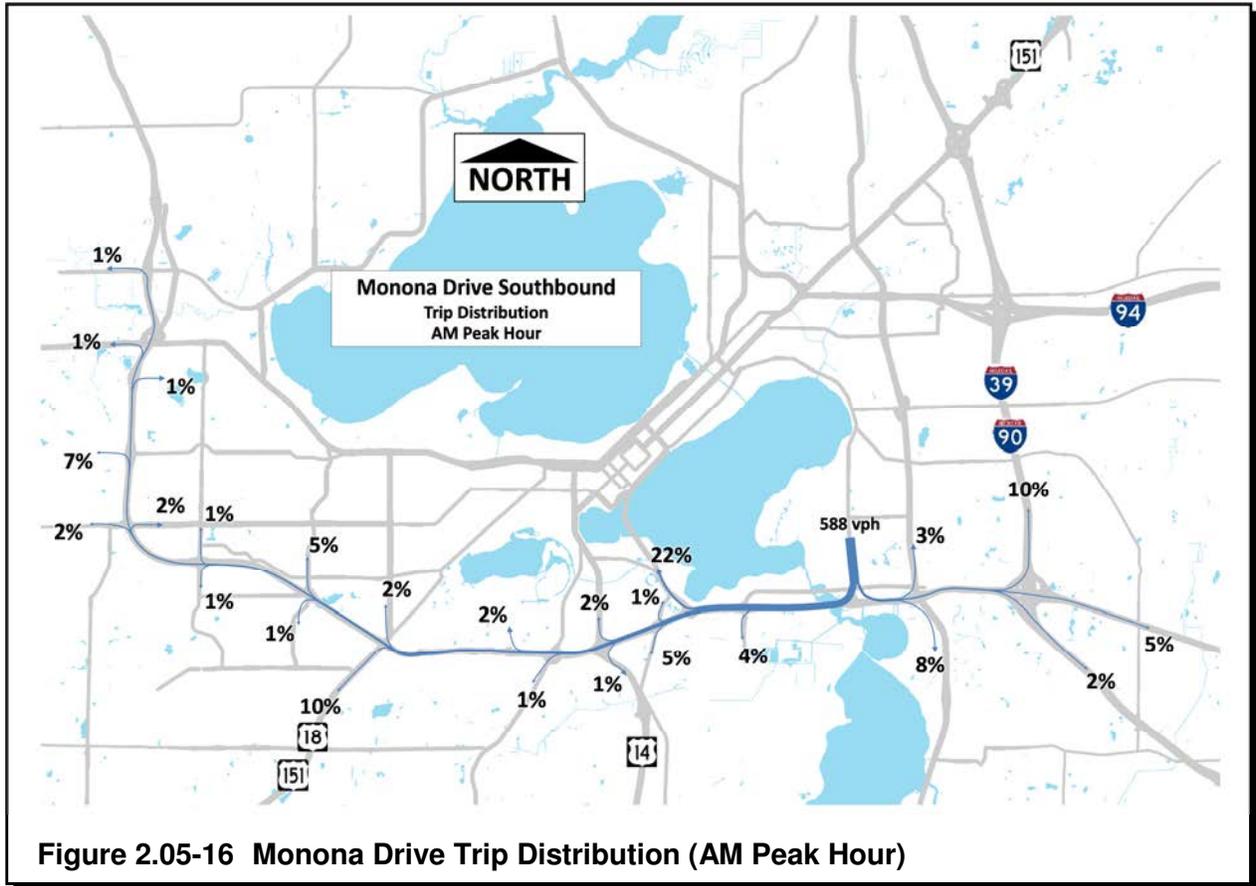


Figure 2.05-16 Monona Drive Trip Distribution (AM Peak Hour)

During the AM peak hour, 588 vph enter the Beltline from Monona Drive. Seventy-two percent of the traffic that enters the Beltline travels west, and the remaining 28 percent travels east. The primary destinations served by Monona Drive are John Nolen Drive, southbound Verona Road, and northbound I-39/90.

Figure 2.05-17 shows traffic that originates from northbound Stoughton Road.

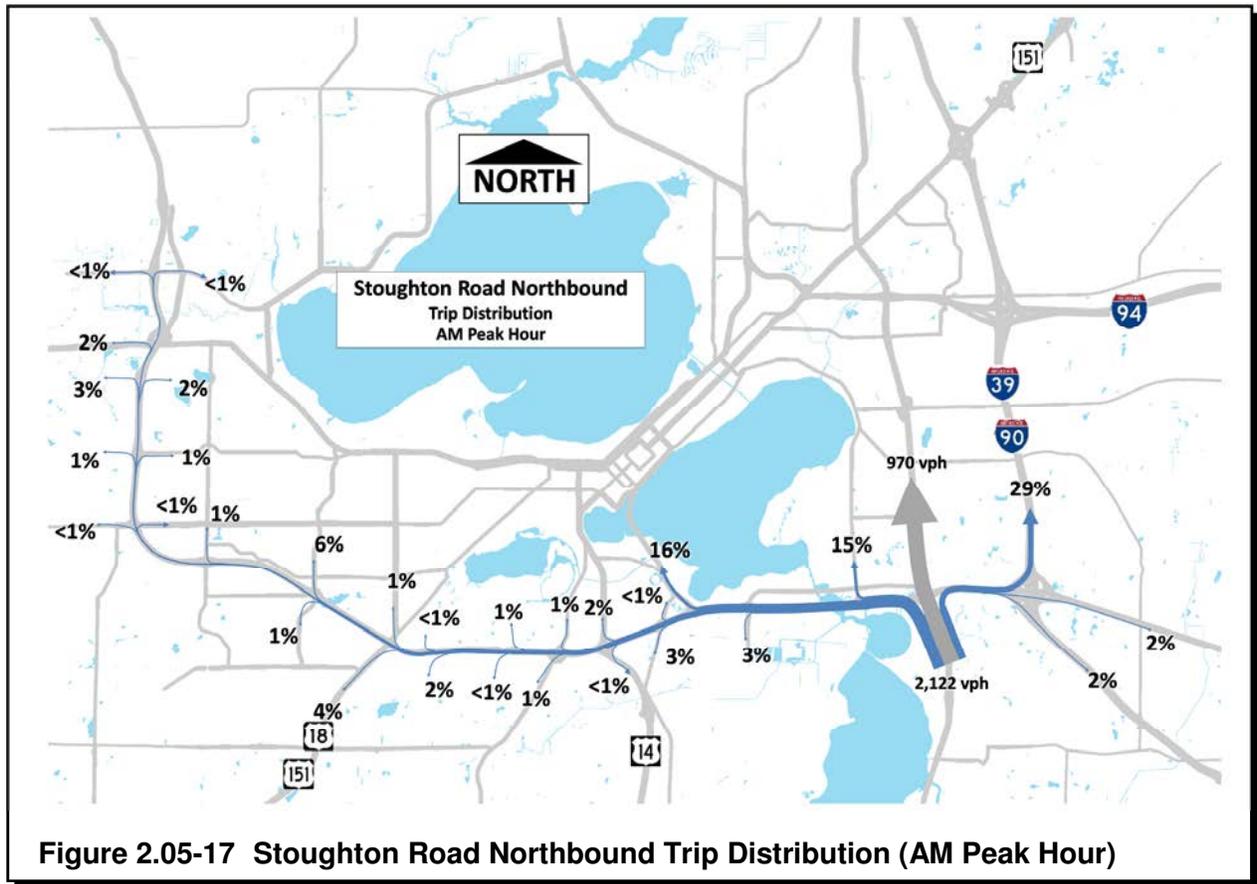


Figure 2.05-17 Stoughton Road Northbound Trip Distribution (AM Peak Hour)

During the AM peak hour, 1,152 vph enter the Beltline from northbound Stoughton Road. Forty-eight percent of the traffic that enters the Beltline from northbound Stoughton Road exits within one interchange, and 67 percent exits within three interchanges. Sixty-seven percent of the traffic that enters the Beltline travels west, and the remaining 33 percent travels east. The primary destinations served by northbound Stoughton Road are northbound I-39/90, Monona Drive, and John Nolen Drive. There are also 970 vph that proceed northbound through the Stoughton Road interchange.

Figure 2.05-18 shows traffic that originates from southbound Stoughton Road.

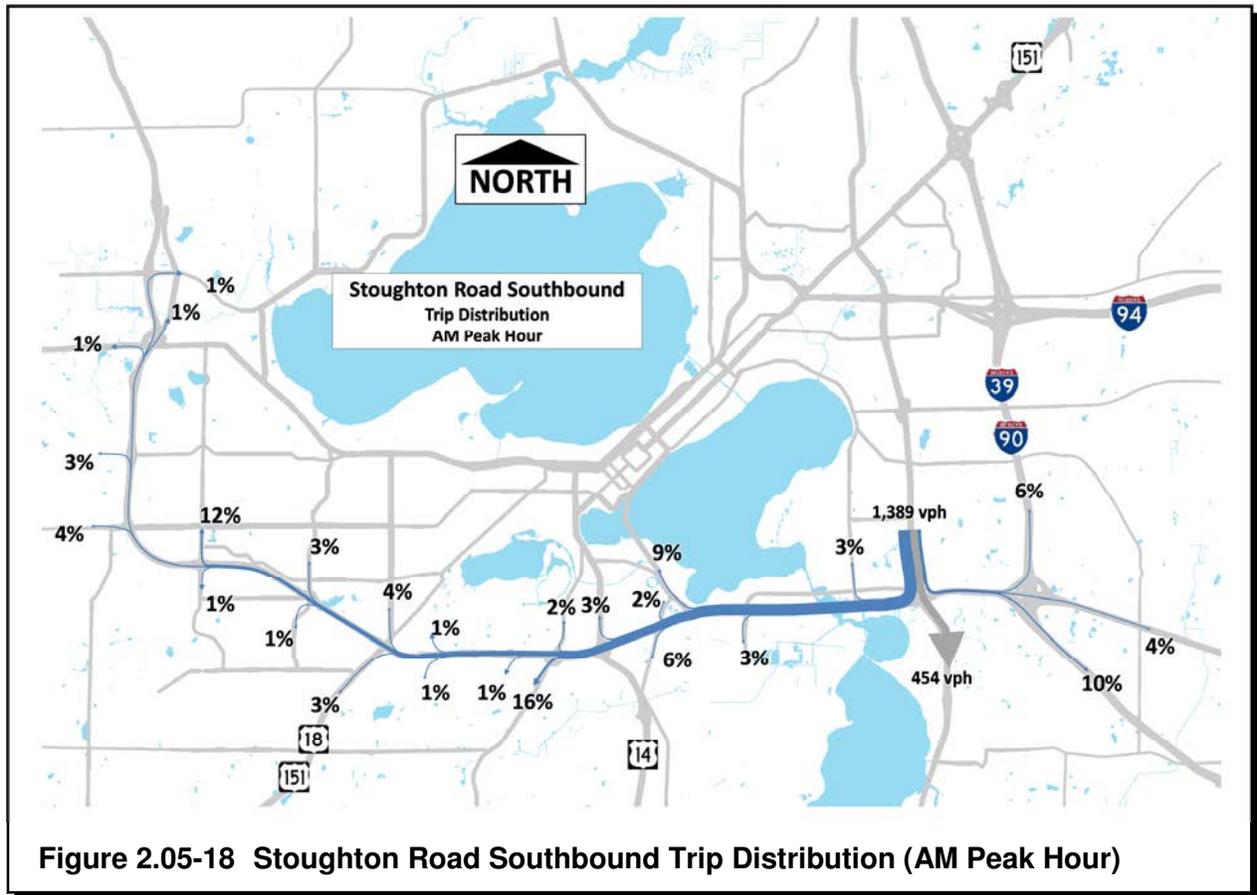


Figure 2.05-18 Stoughton Road Southbound Trip Distribution (AM Peak Hour)

During the AM peak hour, 935 vph enter the Beltline from southbound Stoughton Road. Eighty percent of the traffic that enters the Beltline travels west, and the remaining 20 percent travels east. The primary destinations served by southbound Stoughton Road are southbound Fish Hatchery Road, northbound Gammon Road, and John Nolen Drive. A portion of the vehicles destined for southbound Fish Hatchery Road may be avoiding the congestion present at the Verona Road interchange. There are also 454 vph that proceed southbound through the Stoughton Road interchange.

Figure 2.05-19 shows traffic that enters the Beltline from the east.

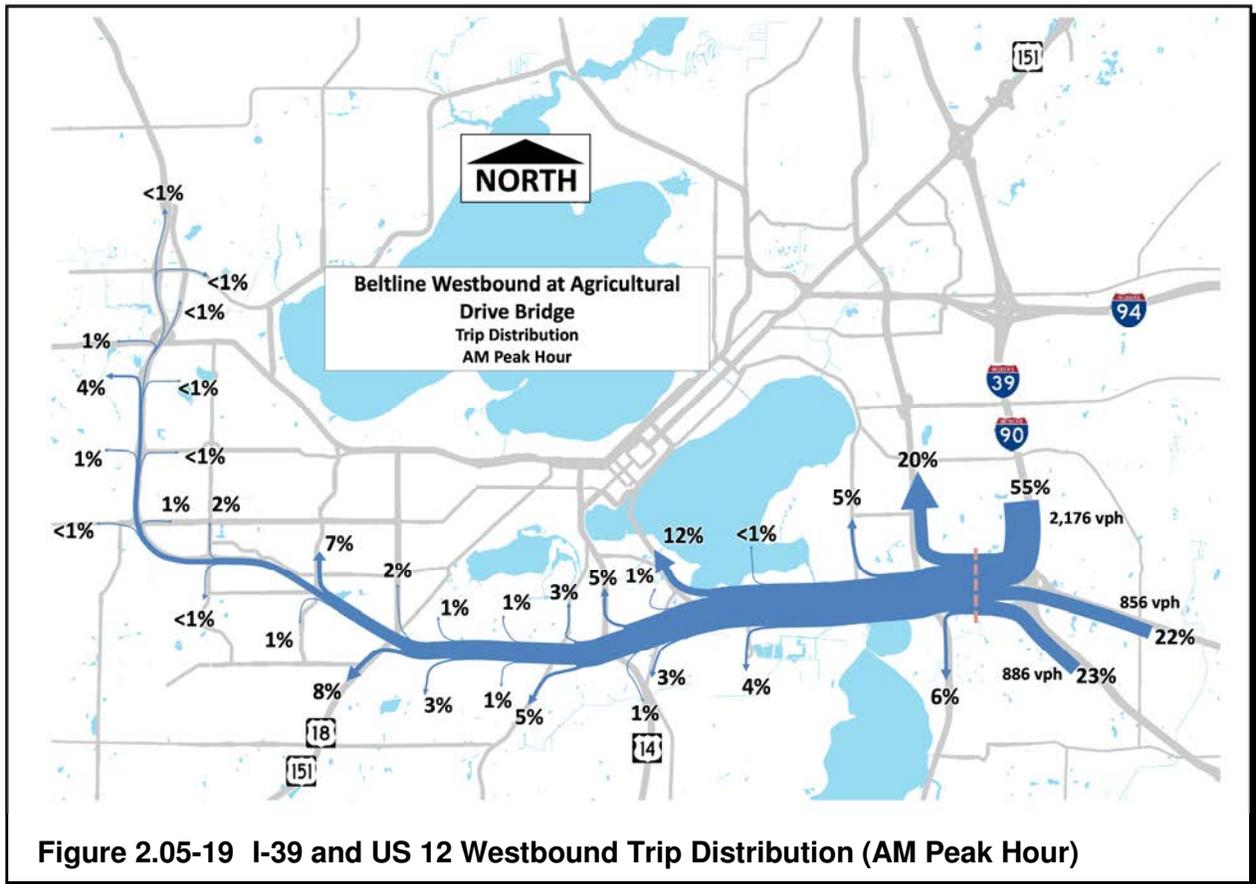


Figure 2.05-19 I-39 and US 12 Westbound Trip Distribution (AM Peak Hour)

During the AM peak hour, 3,918 vph enter the Beltline from westbound US 12, northbound I-39/90, and southbound I-39/90 during the AM peak hour. The majority of the traffic (55 percent) comes from I-39/90 southbound and some of which began as trips on the east side of Madison, Sun Prairie, or the Cottage Grove area. The primary destinations served by the westbound traffic are northbound Stoughton Road, John Nolen Drive, and southbound Verona Road. According to the data, 47 percent of the traffic that enters the east end of the Beltline exits by John Nolen Drive, 89 percent exits by Whitney Way, and 98 percent exits by Greenway Boulevard.

2.06 BELTLINE PM PEAK-HOUR TRAFFIC PATTERNS

A. Notable PM Peak-Hour Origins

During the PM peak hour, a significant amount of the traffic on the Beltline is coming from inside the Beltline. This is commuter traffic that is destined for the locations outside the Beltline or out the ends of the corridor. The highest origins for PM peak-hour traffic, both eastbound and westbound, on the Beltline are:

1. I-39/90 southbound (8.4 percent of traffic entering the Beltline during the PM peak hour)
2. John Nolen Drive (6.9 percent)
3. Stoughton Road southbound (6.6 percent)
4. Verona Road northbound (5.8 percent)
5. Park Street southbound (4.3 percent)

These five origins account for approximately 32 percent of the entering traffic on the Beltline during the PM peak hour.

B. Notable PM Peak-Hour Destinations

During the PM peak hour, several significant destinations of traffic on the Beltline are exit points to locations outside the Beltline, or routes that serve the Dane County region. The highest destinations for PM peak-hour traffic, both eastbound and westbound, on the Beltline are:

1. I-39/90 northbound (10.1 percent of traffic exiting the Beltline during the PM peak hour)
2. US 12 westbound (8.0 percent)
3. Verona Road southbound (5.6 percent)
4. Stoughton Road northbound (4.9 percent)
5. Stoughton Road southbound (4.8 percent)
6. Park Street southbound (4.8 percent)

These six destinations account for approximately 38 percent of the exiting traffic on the Beltline during the PM peak hour.

C. Origin and Destination Traffic Composition Along Beltline Corridor

The overall origin and destination patterns along the Beltline were examined. These patterns suggest that much of the traffic on the Beltline during the PM peak hour is traffic that is traveling from employment centers inside the Beltline. The traffic was broken into three categories for this analysis:

1. Inside the Beltline (green in the figures)
2. Outside the Beltline (blue in the figures)
3. US 12 West of the Beltline (red in the figures)

4. I-39/US 12 East of the Beltline (orange in the figures)

The PM peak-hour traffic origin breakdown is shown in Figure 2.06-1. The PM peak-hour destination breakdown is shown in Figure 2.06-2.

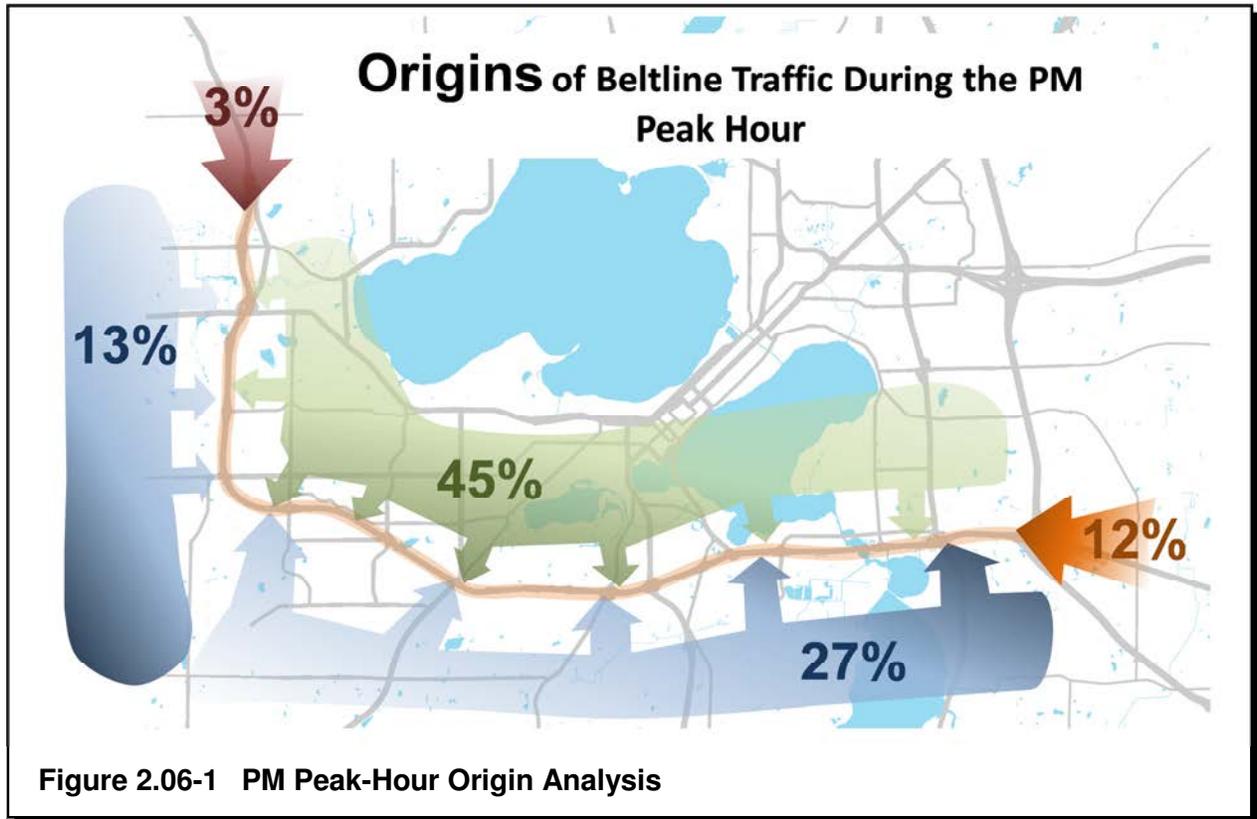
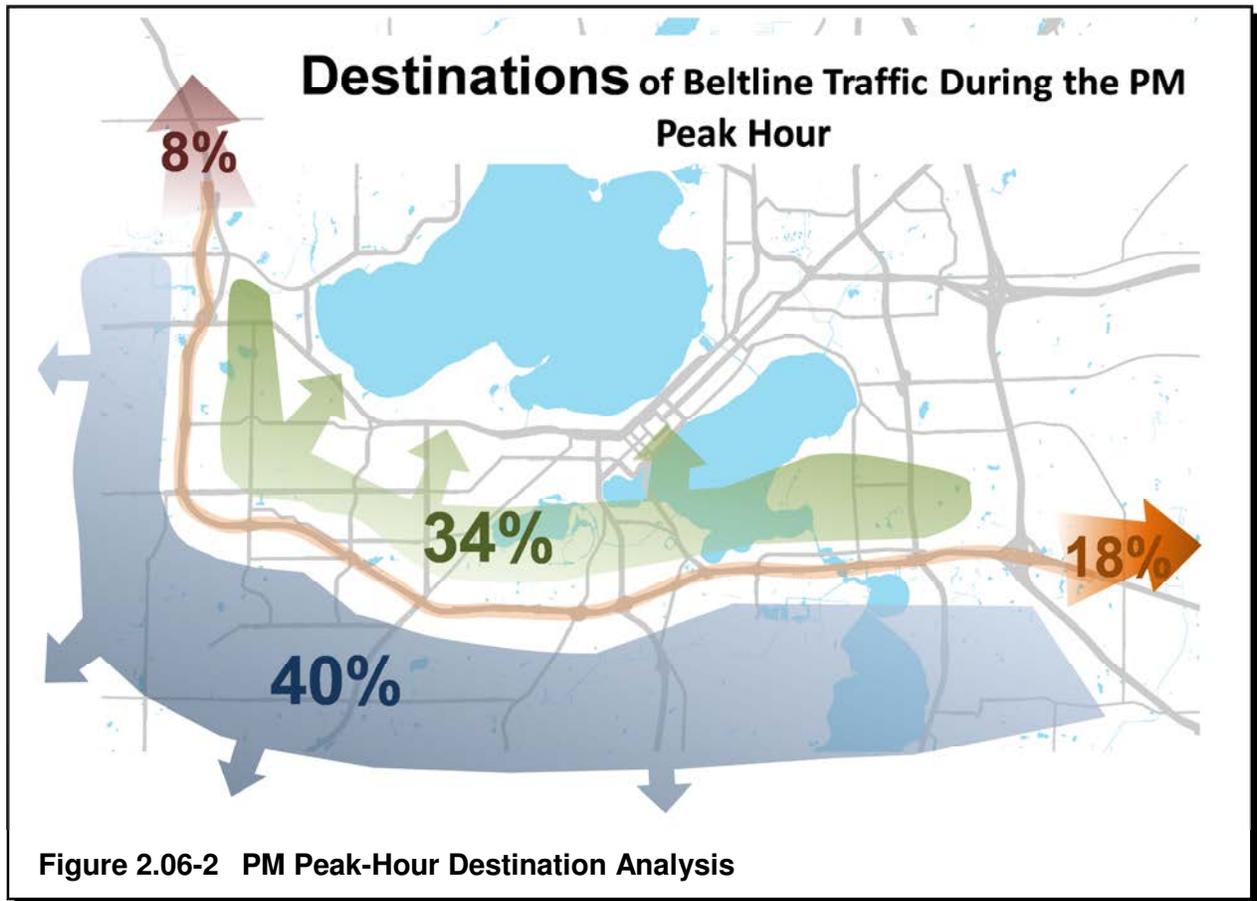


Figure 2.06-1 PM Peak-Hour Origin Analysis

During the PM peak hour, 45 percent of the Beltline traffic originates from inside the Beltline. A further 27 percent of the traffic originates from locations south of the Beltline and 13 percent from west of the Beltline. Twelve percent of the traffic on the Beltline originates from the interstate and US 12 westbound. Three percent of the traffic originates from US 12 eastbound north of Middleton.



During the PM peak hour, 66 percent of traffic is destined for areas located outside the Beltline or out either end of the Beltline. The remaining 34 percent of the PM peak-hour traffic is destined for locations inside the Beltline.

D. Length of Trips

The length of trips along the Beltline, during the PM peak hour, was examined by looking at the number of interchanges vehicles traveled between from where they entered the Beltline and where they exited. The number of interchanges traveled by vehicles during the PM peak hour is shown in Figure 2.06-3.

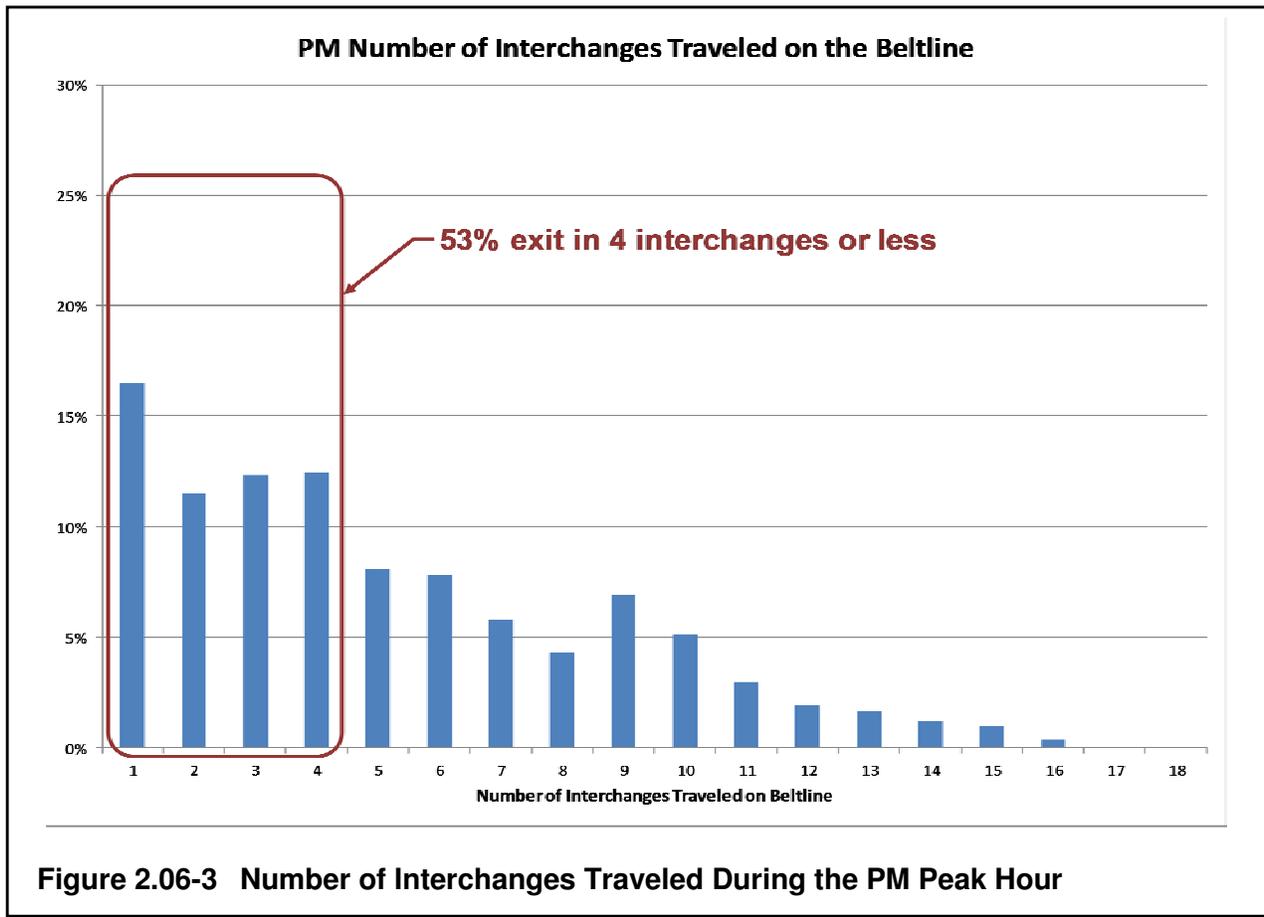


Figure 2.06-3 Number of Interchanges Traveled During the PM Peak Hour

The data shows a significant portion of Beltline traffic uses it for a relatively short distance. Fifty-three percent of all trips on the Beltline travel a distance of four interchanges or less. This is equivalent to traveling from Verona Road to Old Sauk Road westbound or Verona Road to Rimrock Road eastbound. This corresponds to a trip distance of 3 to 5 miles.

Trips using the Beltline for relatively longer distances are less common. Fourteen percent of traffic during the PM peak hour travels 10 interchanges or more, a distance from the US 12 eastbound entrance to the Todd Drive Road interchange or from the I-39 southbound entrance to the Verona Road interchange. These are trips of around 9 miles or longer.

E. PM Peak-Hour Trip Distribution

The time-lapse aerial photographic data was analyzed to understand how traffic enters and travels along the Beltline during the PM peak hour. Presented in the following graphs are trip distributions that show how traffic travels along the Beltline from selected locations. Graphics of the trip distributions are located in Appendix C.

The following are general trends that were observed from the PM peak hour trip distributions:

1. A large percentage of traffic from the Downtown and Isthmus areas use John Nolen Drive or Park Street to access the Beltline. Eastbound traffic tends to use John Nolen Drive and westbound traffic uses Park Street.
2. At most interchanges along the Beltline, the percentage of eastbound traffic is higher than westbound traffic.
3. About 720 vph from the Greenway Boulevard through Whitney Way interchanges travel the entire length of the Beltline to I-39/90.
4. Cross road through traffic volumes at the interchanges are highest in the southbound and eastbound directions.

The following figures and graphs show the destination of the 15 highest contributors to the Beltline during the PM peak hour.

Figure 2.06-4 shows all westbound and eastbound on-ramp traffic volumes entering the Beltline during the PM peak hour. The five highest on-ramp volumes during the PM peak in order are:

1. I-39/90 westbound (2,276 vph)
2. Stoughton Road westbound (1,881 vph)
3. John Nolen Drive eastbound (1,577 vph)
4. Verona Road eastbound (1,409 vph)
5. Whitney Way eastbound (1,196 vph)

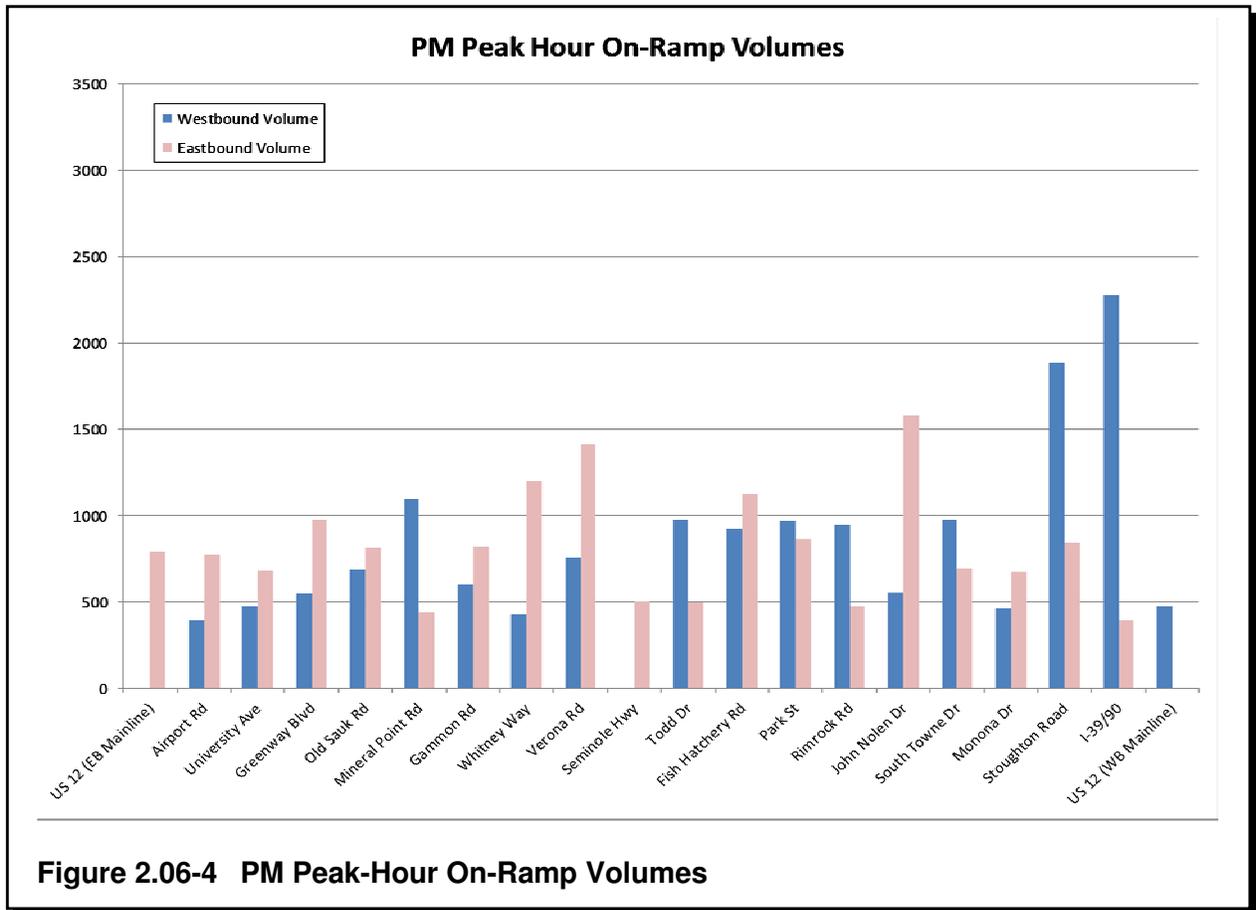


Figure 2.06-5 shows traffic that originates from the eastbound US 12 entrance to the Beltline.

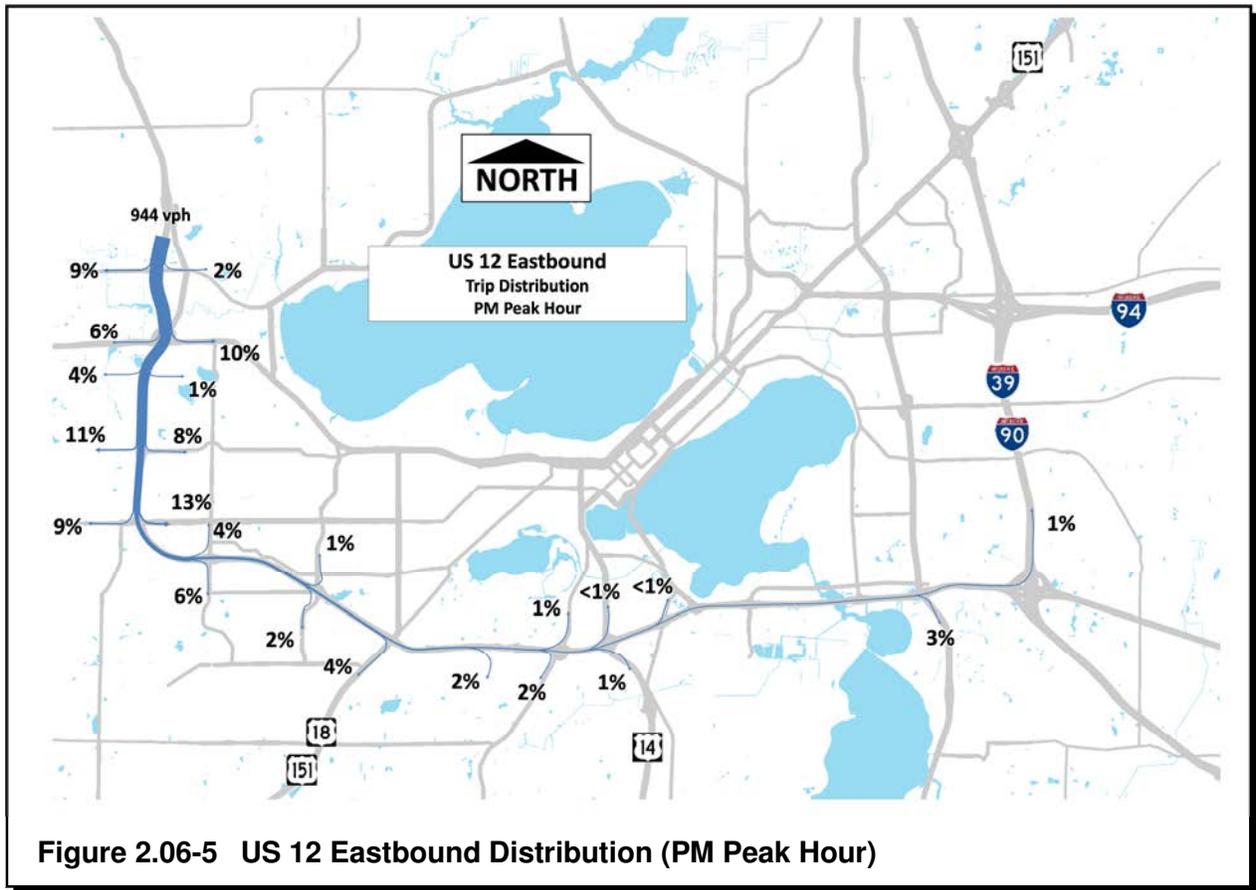


Figure 2.06-5 US 12 Eastbound Distribution (PM Peak Hour)

During the PM peak hour, 944 vph enter the Beltline from eastbound US 12. Seventy-three percent of the traffic that enters the Beltline from US 12 eastbound exits by Mineral Point Road. The primary destinations served by eastbound US 12 traffic are westbound Mineral Point Road, eastbound University Avenue, and eastbound Mineral Point Road.

Figure 2.06-6 shows traffic that originates from eastbound Greenway Boulevard.

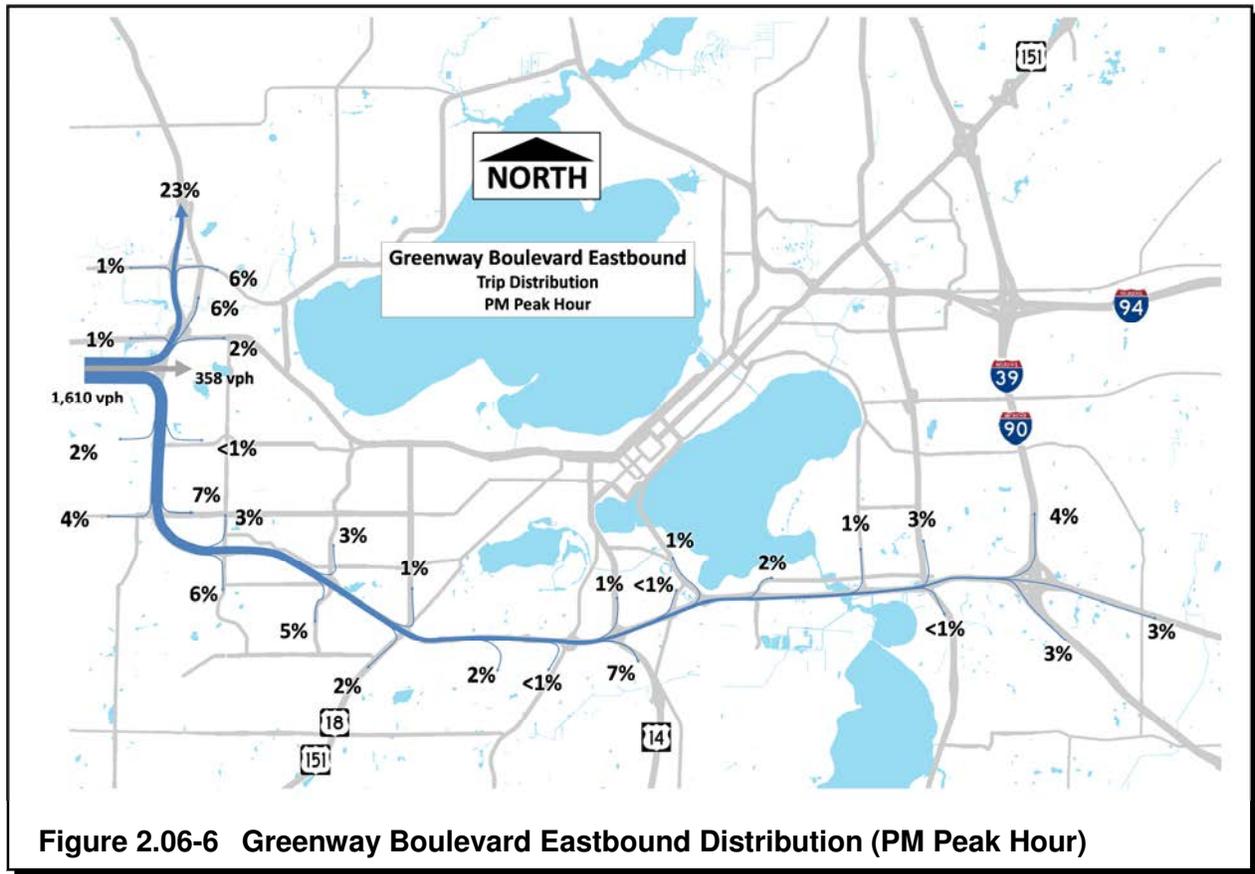


Figure 2.06-6 Greenway Boulevard Eastbound Distribution (PM Peak Hour)

During the PM peak hour, 1,252 vph enter the Beltline from eastbound Greenway Boulevard. Sixty-one percent of the traffic that enters the Beltline travels east, and the remaining 39 percent travels west. The primary destinations served by eastbound Greenway Boulevard are westbound US 12, eastbound Mineral Point Road, and southbound Park Street. There are also 358 vph that proceed eastbound through the Greenway Boulevard interchange.

Figure 2.06-10 shows traffic that originates from northbound Verona Road.

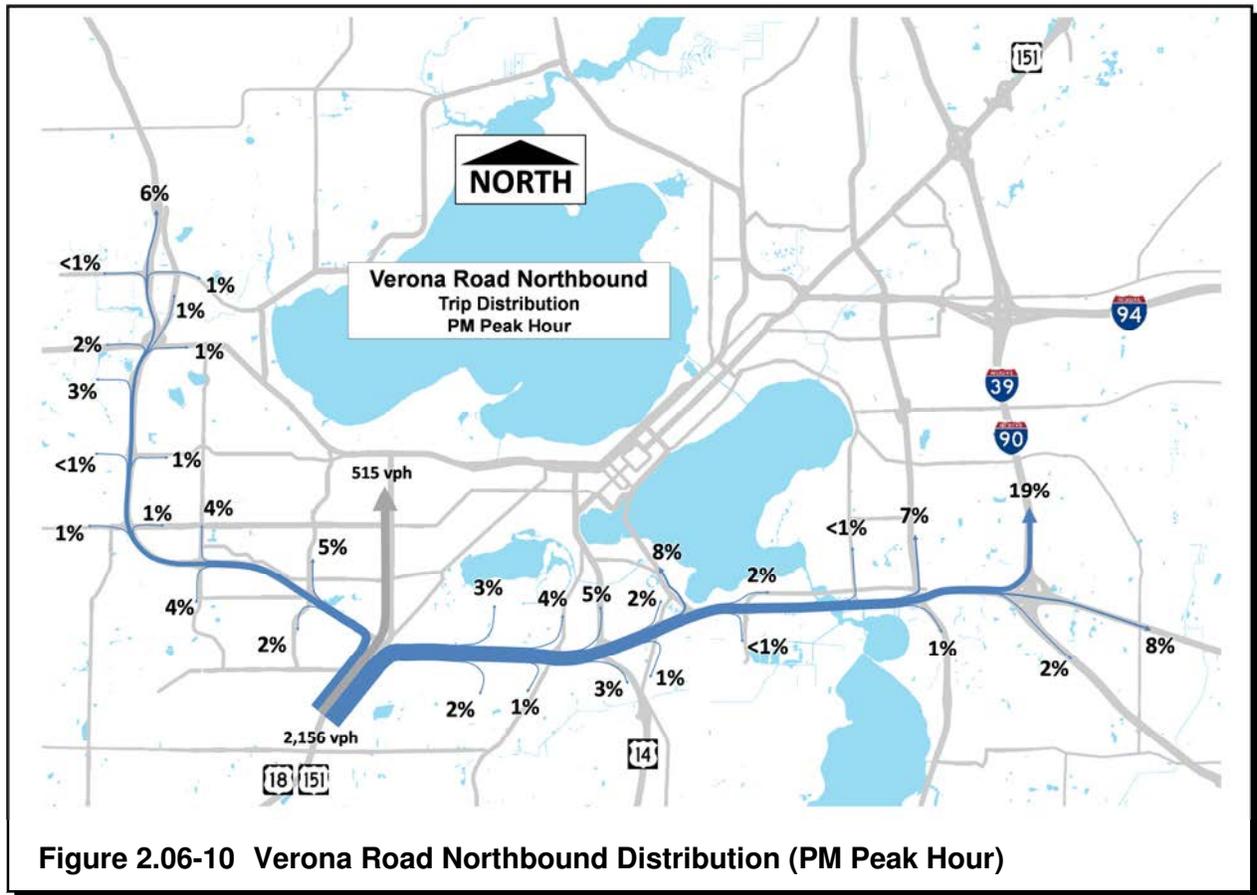
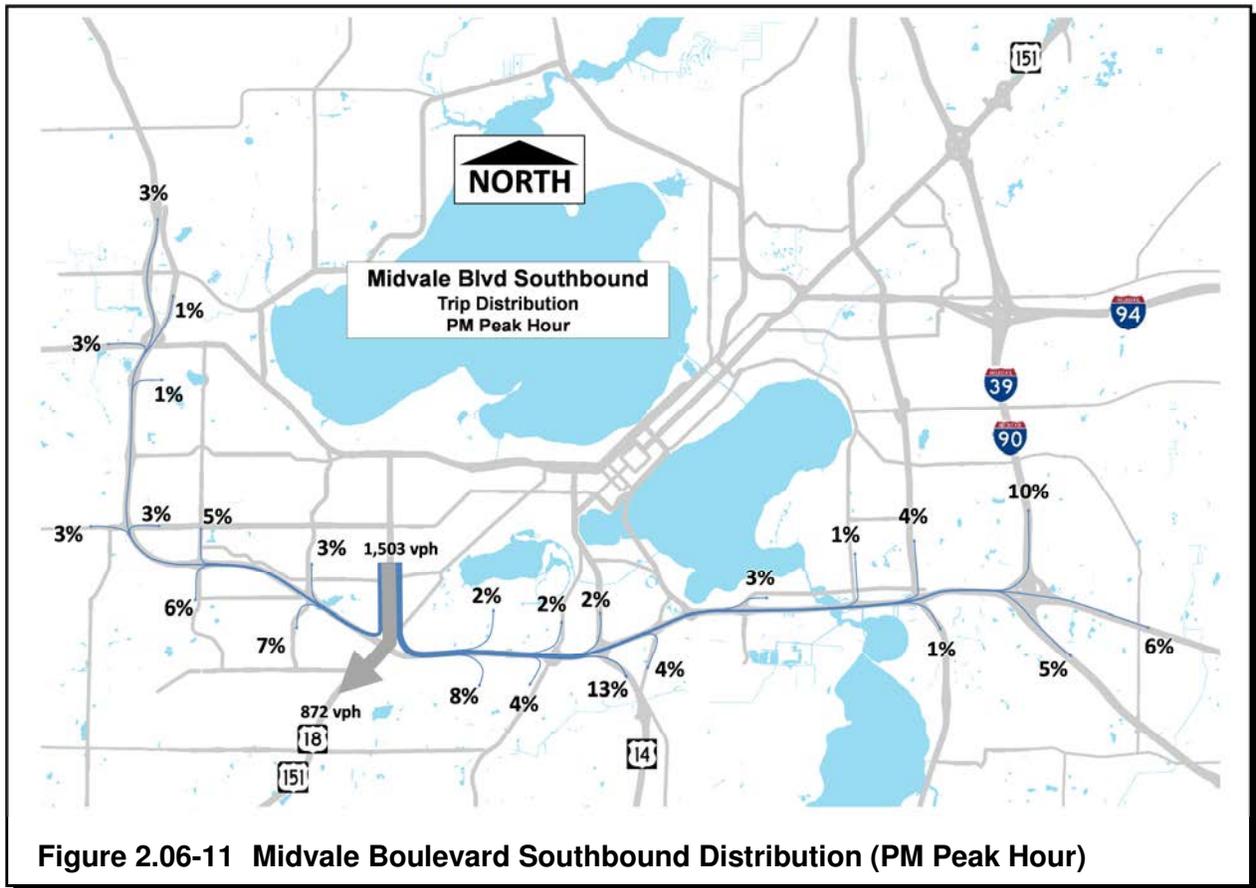


Figure 2.06-10 Verona Road Northbound Distribution (PM Peak Hour)

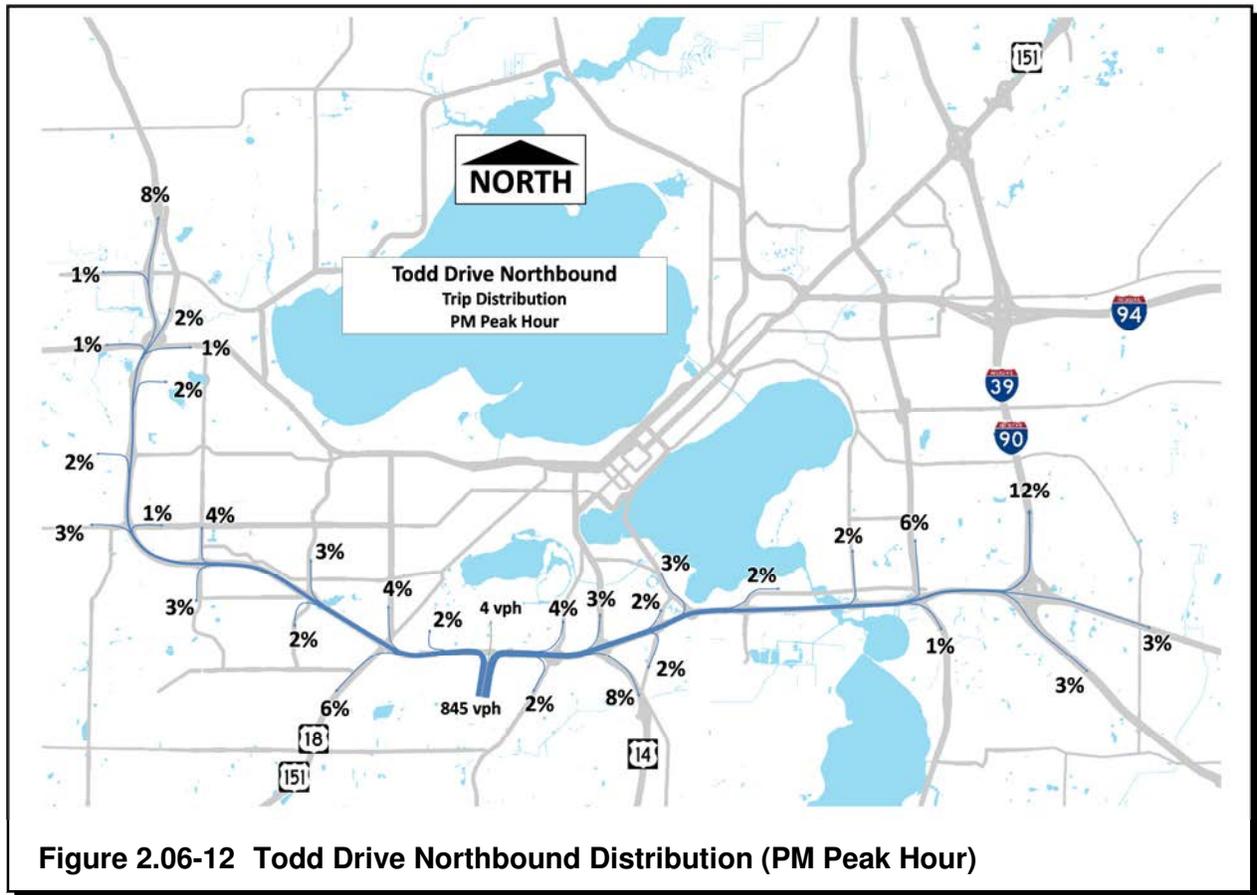
During the PM peak hour, 1,641 vph enter the Beltline from northbound Verona Road. Sixty-seven percent of the traffic that enters the Beltline travels east, and the remaining 33 percent travels west. The primary destinations served by northbound Verona Road are northbound I-39/90, northbound Stoughton Road, and John Nolen Drive. There are also 515 vph that proceed northbound through the Verona Road interchange.

Figure 2.06-11 shows traffic that originates from southbound Midvale Boulevard.



During the PM peak hour, 631 vph enter the Beltline from southbound Midvale Boulevard. Sixty-five percent of the traffic that enters the Beltline travels east, and the remaining 35 percent travels west. The primary destinations served by southbound Midvale Boulevard are southbound Park Street and northbound I-39/90. There are also 872 vph that proceed southbound through the Verona Road interchange.

Figure 2.06-12 shows traffic that originates from northbound Todd Drive.



During the PM peak hour, 845 vph enter the Beltline from the south side of the Beltline at Todd Drive. Fifty-five percent of the traffic that enters the Beltline travels west, and the remaining 45 percent travels east. The primary destinations served by Todd Drive are northbound I-39/90, westbound US 12, and southbound Park Street. There are 4 vph that proceed northbound through the Todd Drive interchange.

Figure 2.06-14 shows traffic that originates from southbound Park Street.

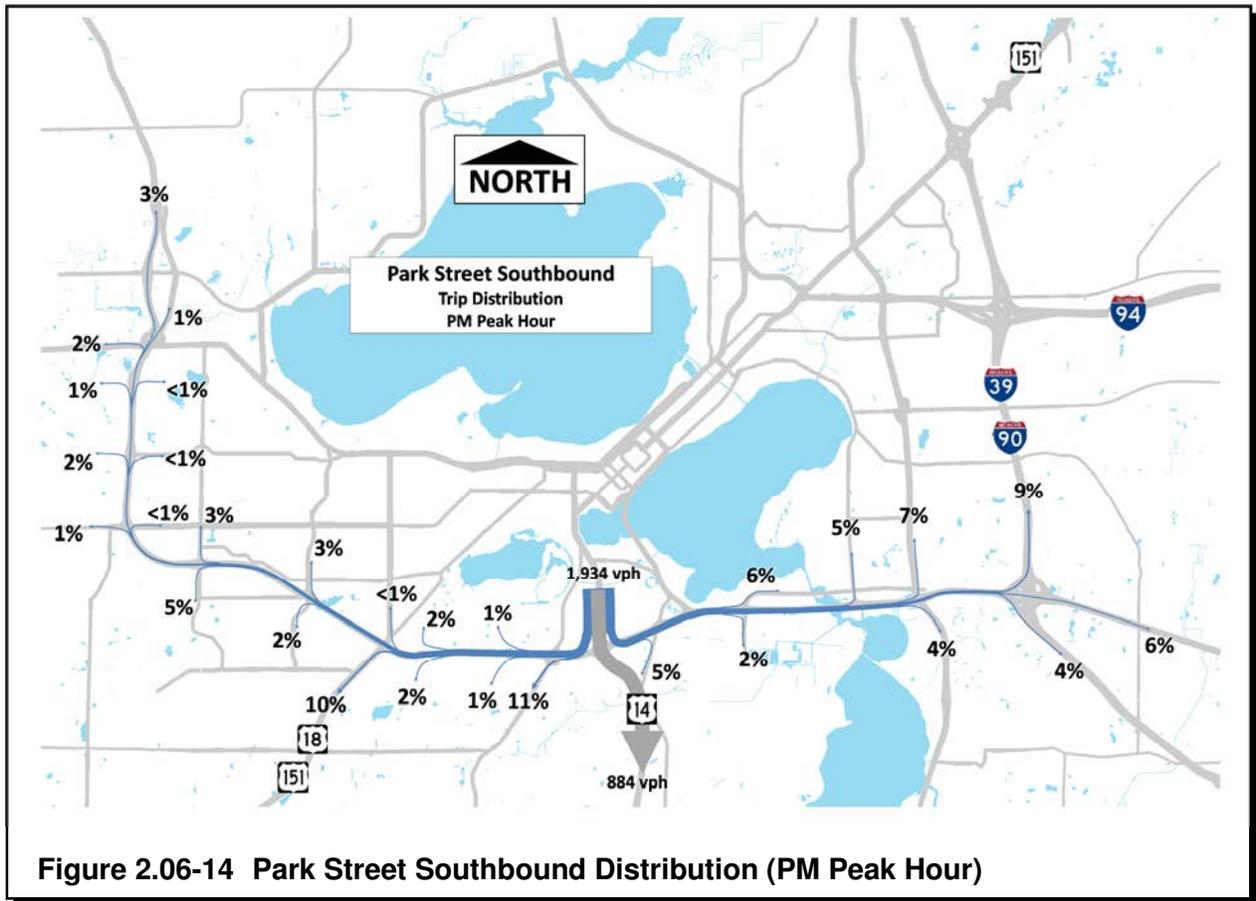


Figure 2.06-14 Park Street Southbound Distribution (PM Peak Hour)

During the PM peak hour, 1,050 vph enter the Beltline from southbound Park Street. Fifty-two percent of the traffic that enters the Beltline travels west, and the remaining 48 percent travels east. The primary destinations served by southbound Park Street are southbound Verona Road, northbound I-39/90, southbound Fish Hatchery Road, and northbound Stoughton Road. There are also 884 vph that proceed southbound through the Park Street interchange.

Figure 2.06-15 shows traffic that originates from southbound John Nolen Drive.

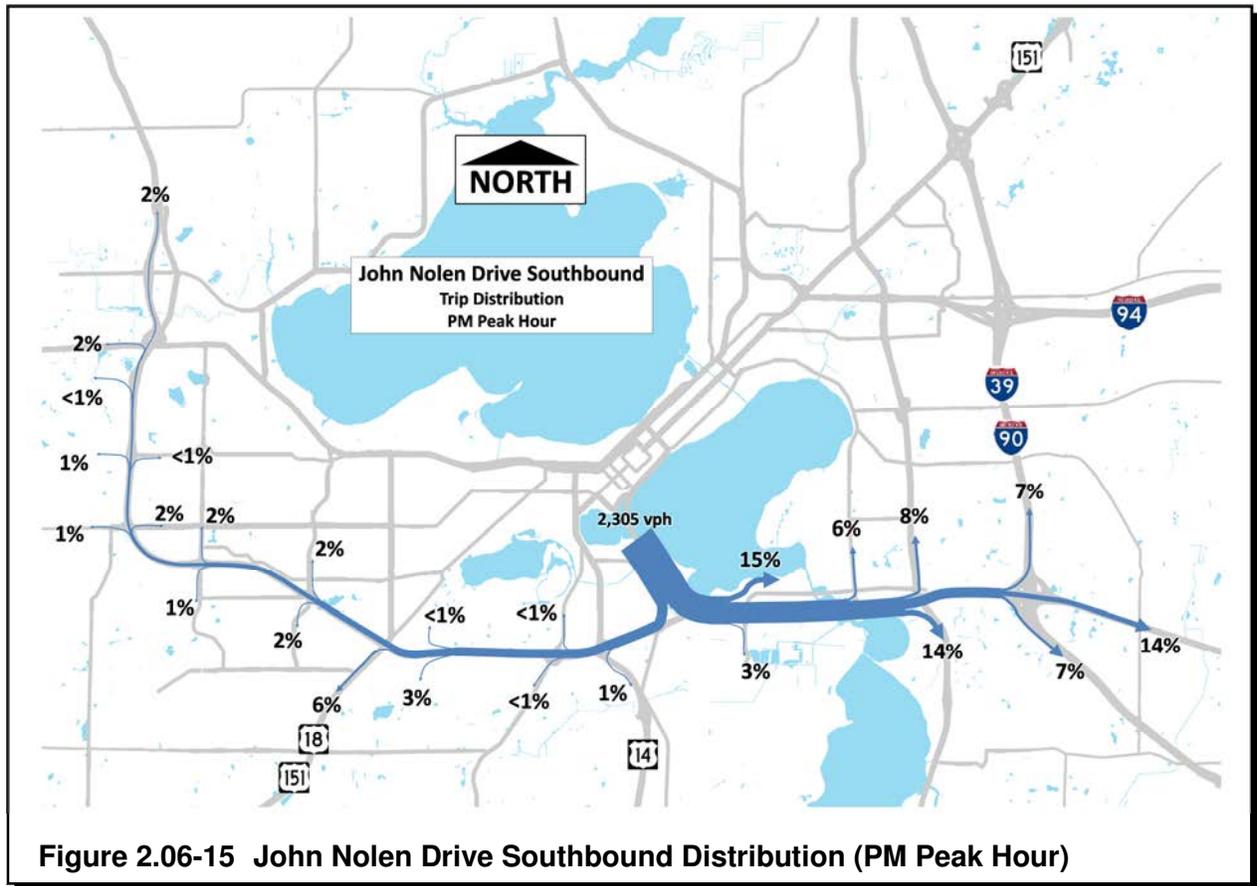
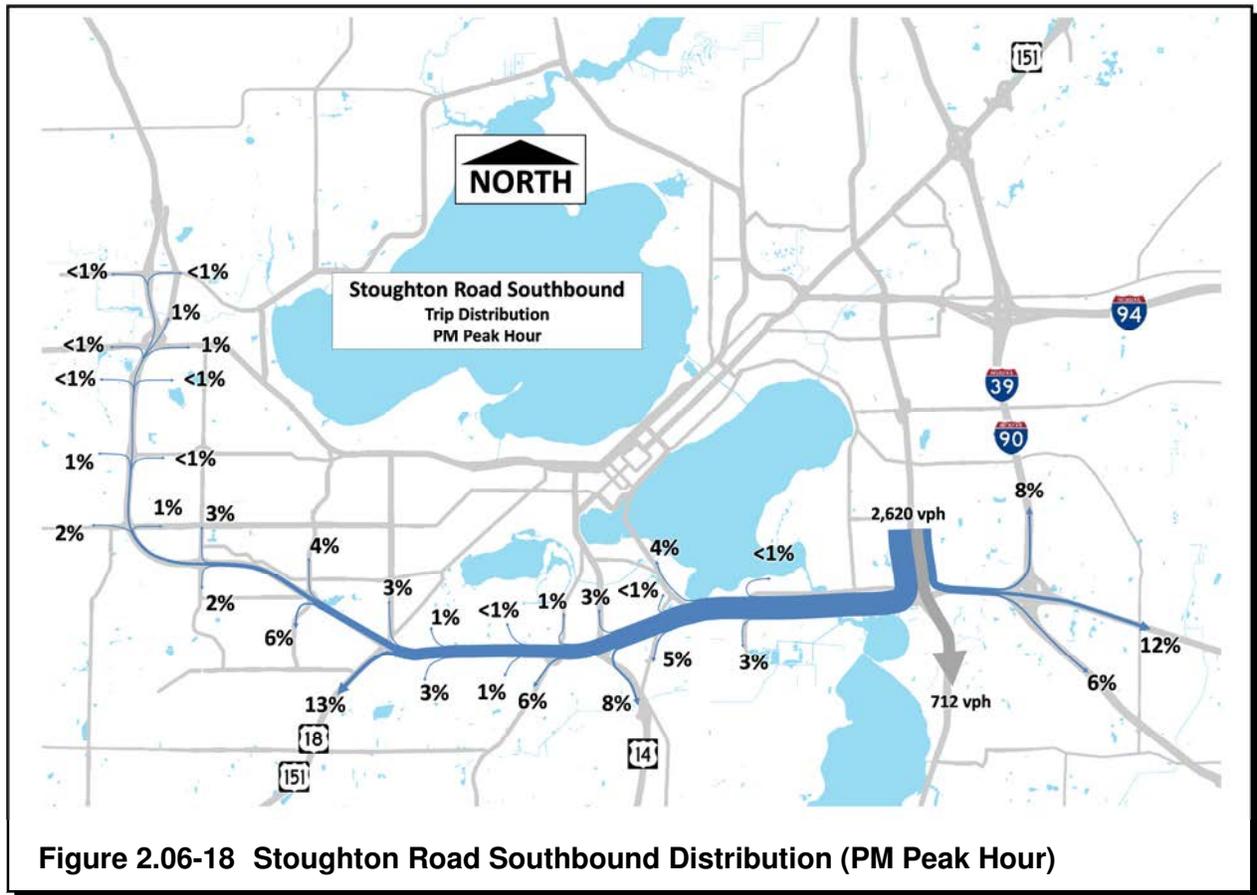


Figure 2.06-15 John Nolen Drive Southbound Distribution (PM Peak Hour)

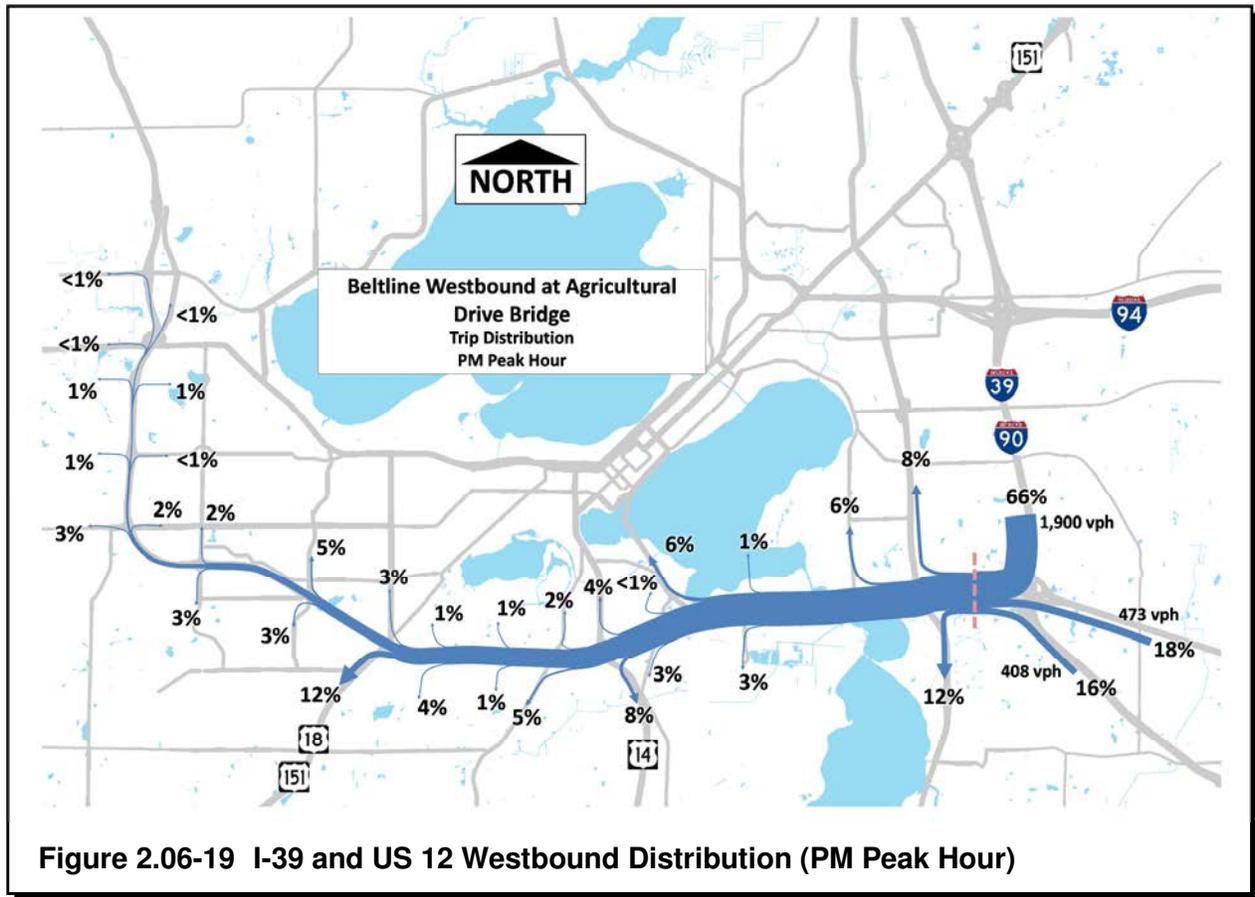
During the PM peak hour, 2,305 vph enter the Beltline from southbound John Nolen Drive. Seventy-four percent of the traffic that enters the Beltline travels east, and the remaining 26 percent travels west. The primary destinations served by southbound John Nolen Drive are northbound South Towne Drive, southbound Stoughton Road, and eastbound US 12. One of every five cars that enters the eastbound Beltline at this location exits to northbound South Towne Drive or Monona Drive.

Figure 2.06-18 shows traffic that originates from southbound Stoughton Road.



During the PM peak hour, 1,908 vph enter the Beltline from southbound Stoughton Road. Seventy-four percent of the traffic that enters the Beltline travels west, and the remaining 26 percent travels east. The primary destinations served by southbound Stoughton Road are southbound Verona Road, eastbound US 12, and northbound I-39/90. Sixty-two percent of the traffic that enters the Beltline from southbound Stoughton Road travels west of John Nolen Drive. There are also 712 vph that proceed southbound through the Stoughton Road interchange.

Figure 2.06-19 shows traffic that originates from I-39 or westbound US 12.



During the PM peak hour, 2,781 vph enter the Beltline from westbound US 12, northbound I-39/90, and southbound I-39/90. The majority of the traffic (66 percent) comes from I-39/90 southbound and some of which began trips on the east side of Madison, Sun Prairie, or the Cottage Grove areas. The primary destinations served by the westbound traffic are southbound Stoughton Road, southbound Verona Road, and southbound Park Street. The majority of traffic (80 percent) that enters the east end of the Beltline exits by Verona Road, but a large volume of traffic also continues to northbound Whitney Way.

2.07 I-39/90 AM PEAK-HOUR TRAFFIC PATTERNS

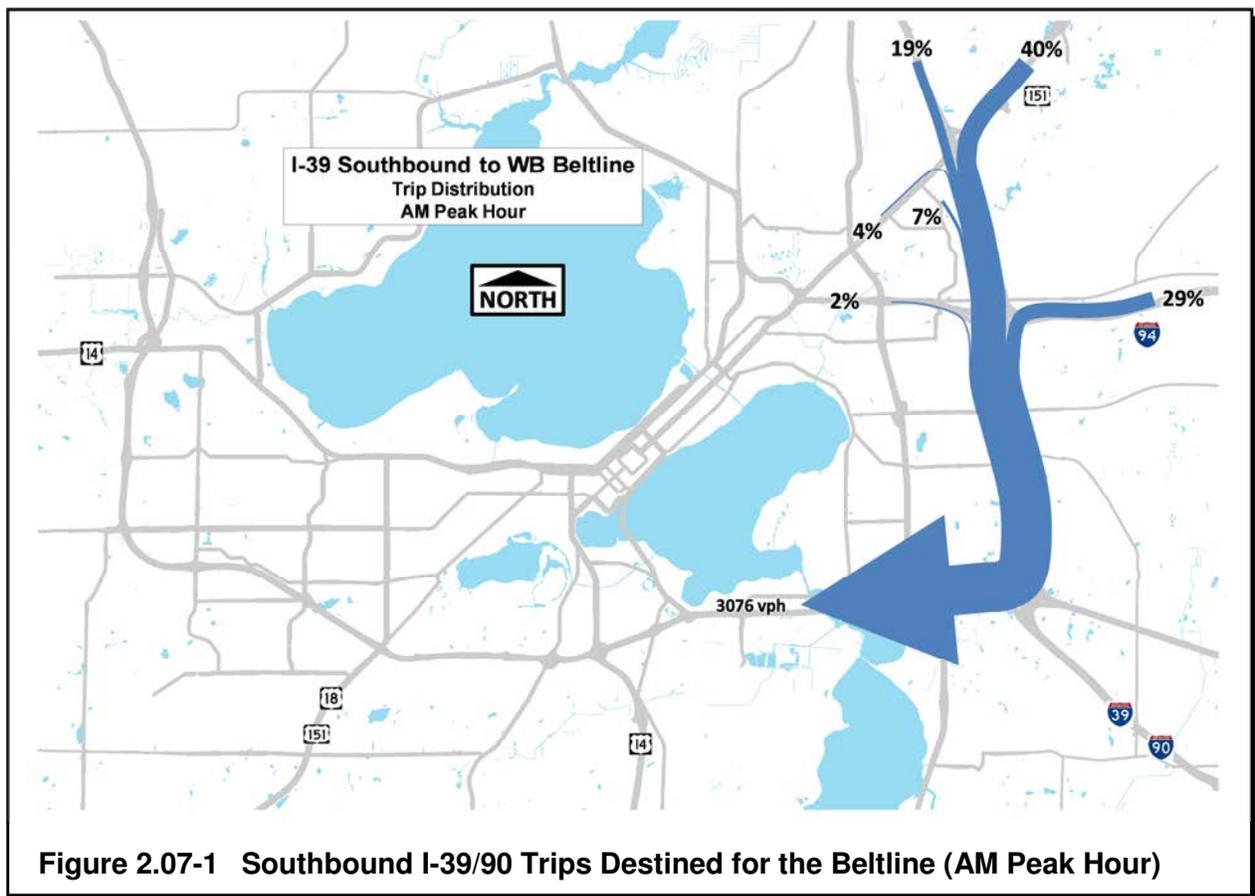
Bluetooth data was analyzed to understand how traffic enters and travels along I-39/90 from the Beltline interchange up to the US 151/East Washington Avenue interchange. Graphics of the trip distributions are located in Appendix C.

The following are general trends that were observed from the AM peak-hour trip distributions:

1. I-39/90 southbound to westbound traffic represents 62 percent of Beltline traffic entering at the interchange.

2. 70 percent of the I-39/90 traffic destined for the westbound Beltline during the AM peak hour comes from westbound US 151 or westbound I-94.
3. Almost half the traffic from the eastbound Beltline at I-39/90 is destined for eastbound US 151.
4. Incoming westbound US 151 traffic splits evenly between East Washington Avenue and the westbound Beltline.
5. Incoming westbound I-94 traffic splits evenly between westbound STH 30 and the westbound Beltline.

Figure 2.07-1 shows the traffic that is destined for the Beltline.



During the AM peak hour, 3,076 vph are destined for the Beltline from southbound I-39/90. The majority of the traffic comes from southbound US 151 (1,214 vph) and westbound I-94 (891 vph).

Figure 2.07-2 shows traffic that originates from the eastbound Beltline.

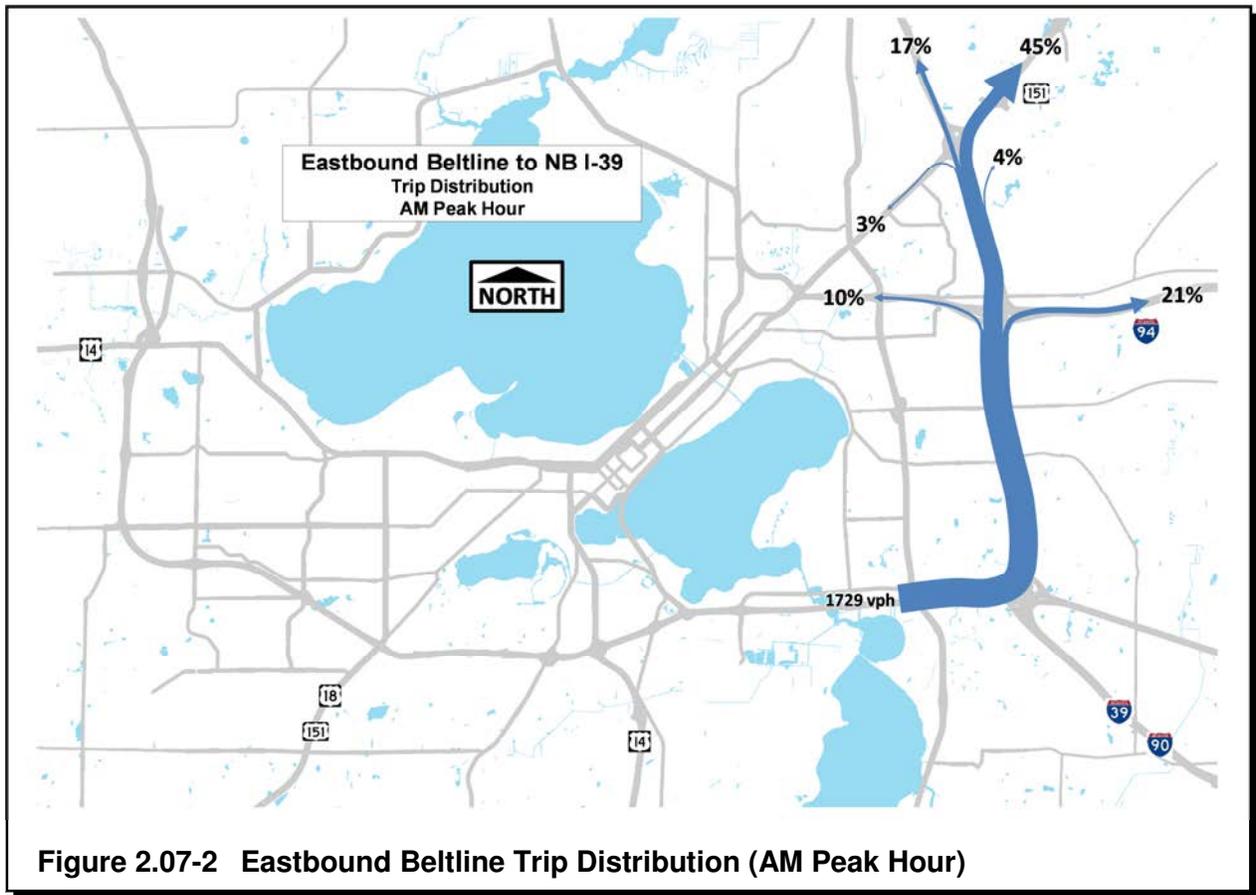
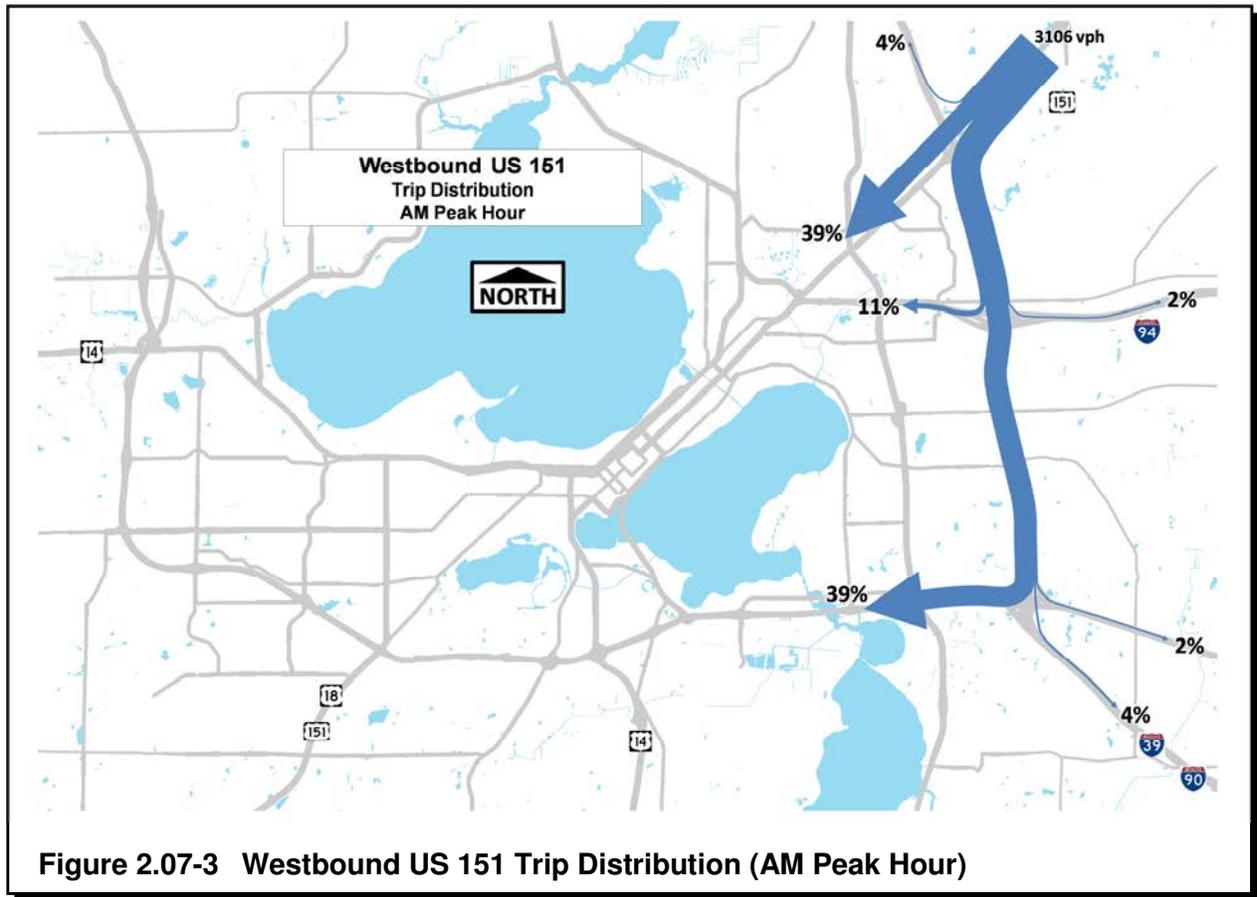


Figure 2.07-2 Eastbound Beltline Trip Distribution (AM Peak Hour)

During the AM peak hour, 1,729 vph enter northbound I-39 from the eastbound Beltline. The majority of the traffic from the eastbound Beltline is destined for eastbound US 151 (781 vph) or eastbound I-94 (360 vph), 296 vph are also destined for northbound I-39/90/94, 175 vph re-enter Madison on westbound STH 30, but only 47 vph re-enter Madison on East Washington Avenue.

Figure 2.07-3 shows traffic that originates from westbound US 151.



During the AM peak hour, 3,106 vph either enter I-39/90/94 or continue west on USH 151 (East Washington Avenue) from westbound US 151. The majority of the traffic is split evenly between westbound East Washington Avenue (1,203 vph) and the westbound Beltline (1,214 vph). This distribution seems to suggest that a choice is being made between East Washington Avenue or the Beltline to access Madison employment centers during the AM peak hour and they are similarly attractive routes. A small portion of the traffic also chooses to use westbound STH 30 (326 vph) to access Madison.

Figure 2.07-4 shows traffic that originates from eastbound US 151.

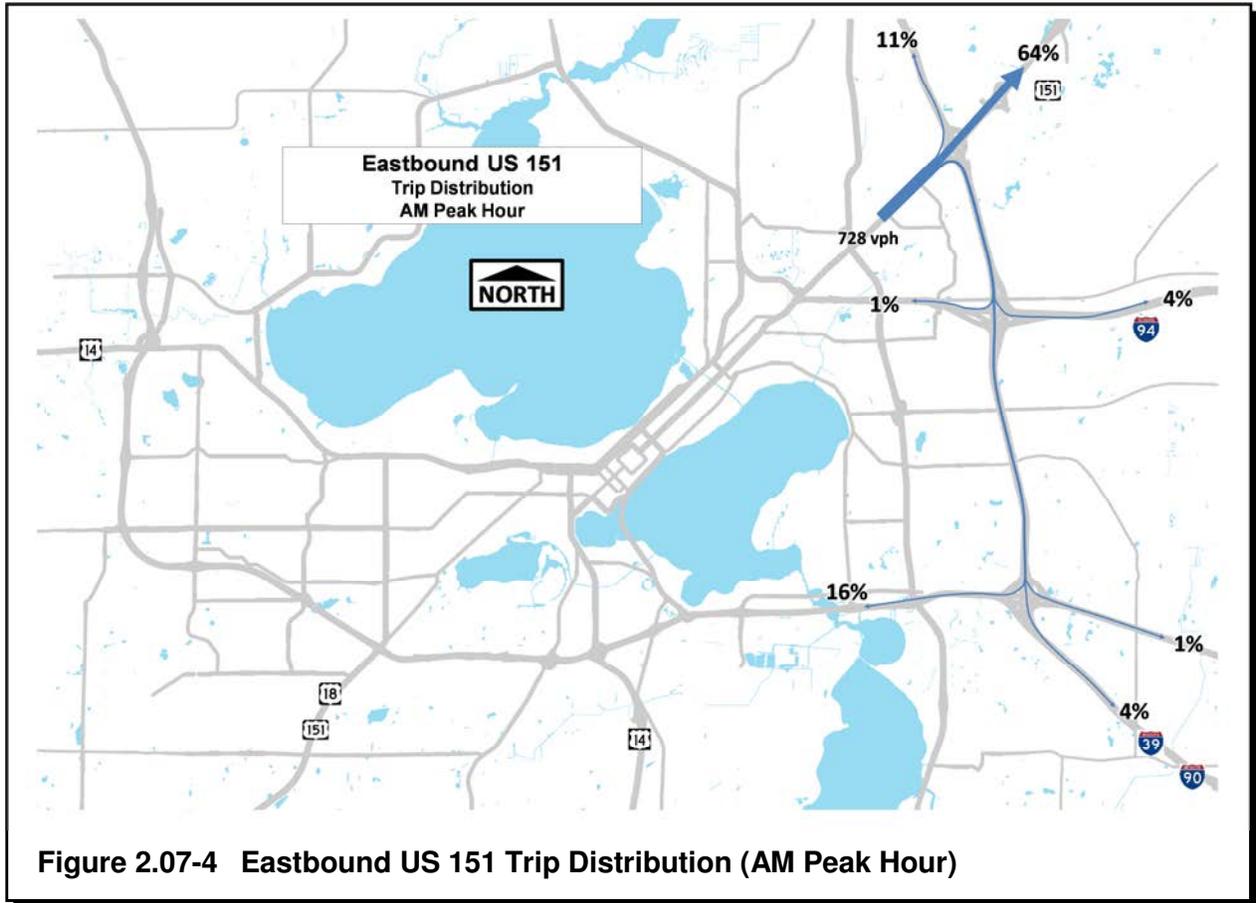
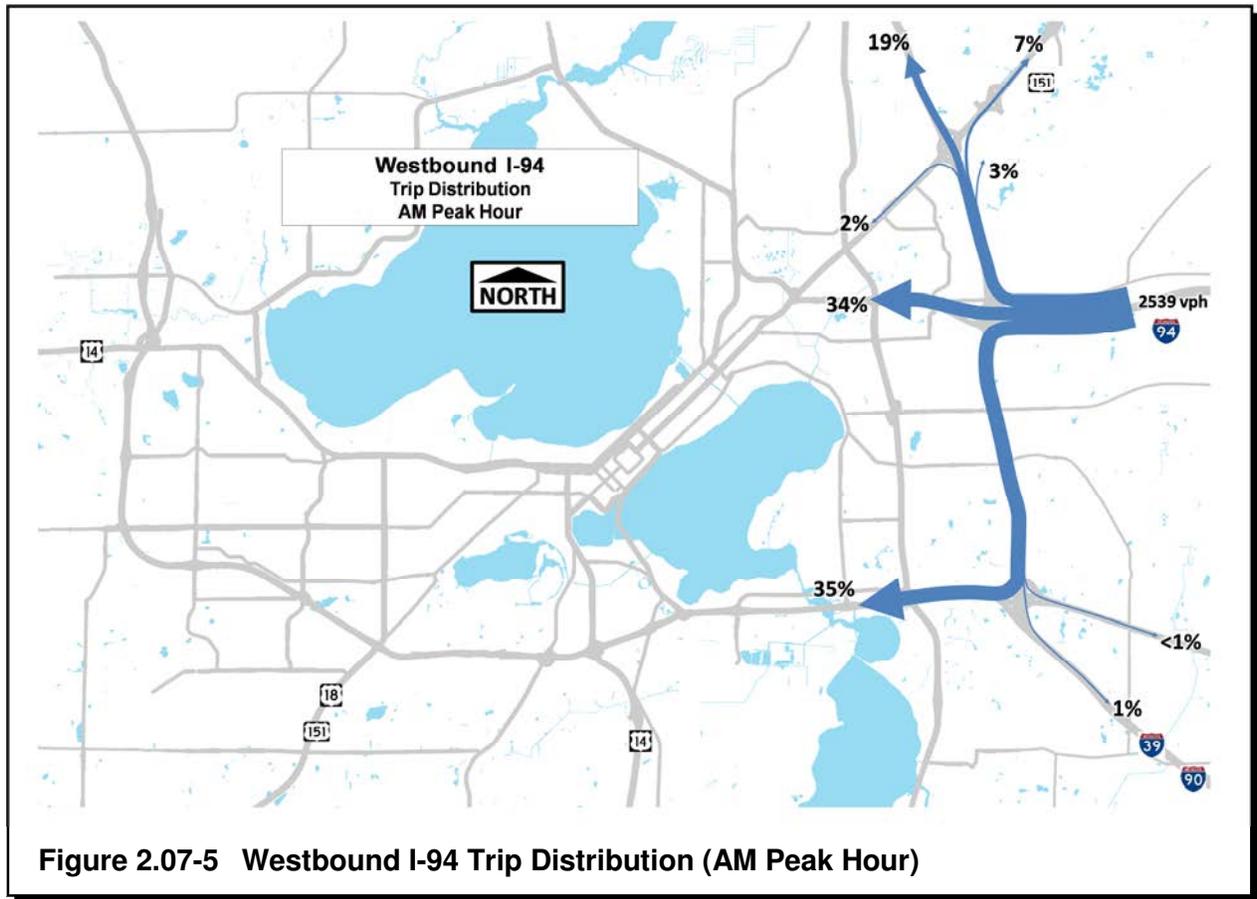


Figure 2.07-4 Eastbound US 151 Trip Distribution (AM Peak Hour)

During the AM peak hour, 728 vph approach I-39/90/94 from eastbound US 151 (East Washington Avenue). Most of the traffic (466 vph) continues on eastbound US 151; 115 vph enters the interstate and continues to the westbound Beltline.

Figure 2.07-5 shows traffic that originates from westbound I-94.



During the AM peak hour, 2,539 vph approach I-39/90 from westbound I-94. The majority of the traffic is split evenly between westbound STH 30 (852 vph) and the westbound Beltline (891 vph). This distribution seems to indicate that westbound STH 30 or the Beltline are similarly attractive routes to access Madison employment centers during the AM peak hour.

Figure 2.07-6 shows traffic that originates from eastbound STH 30.

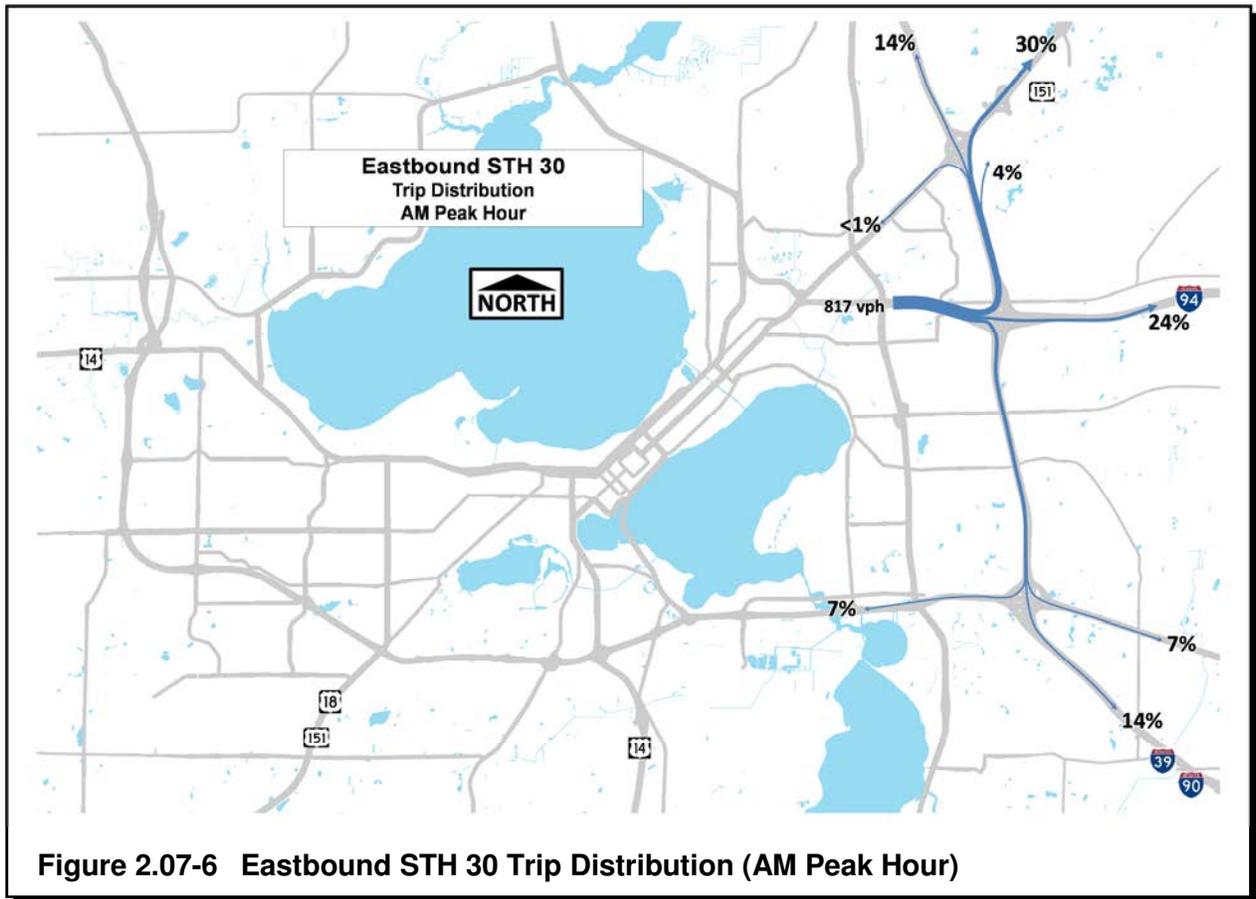
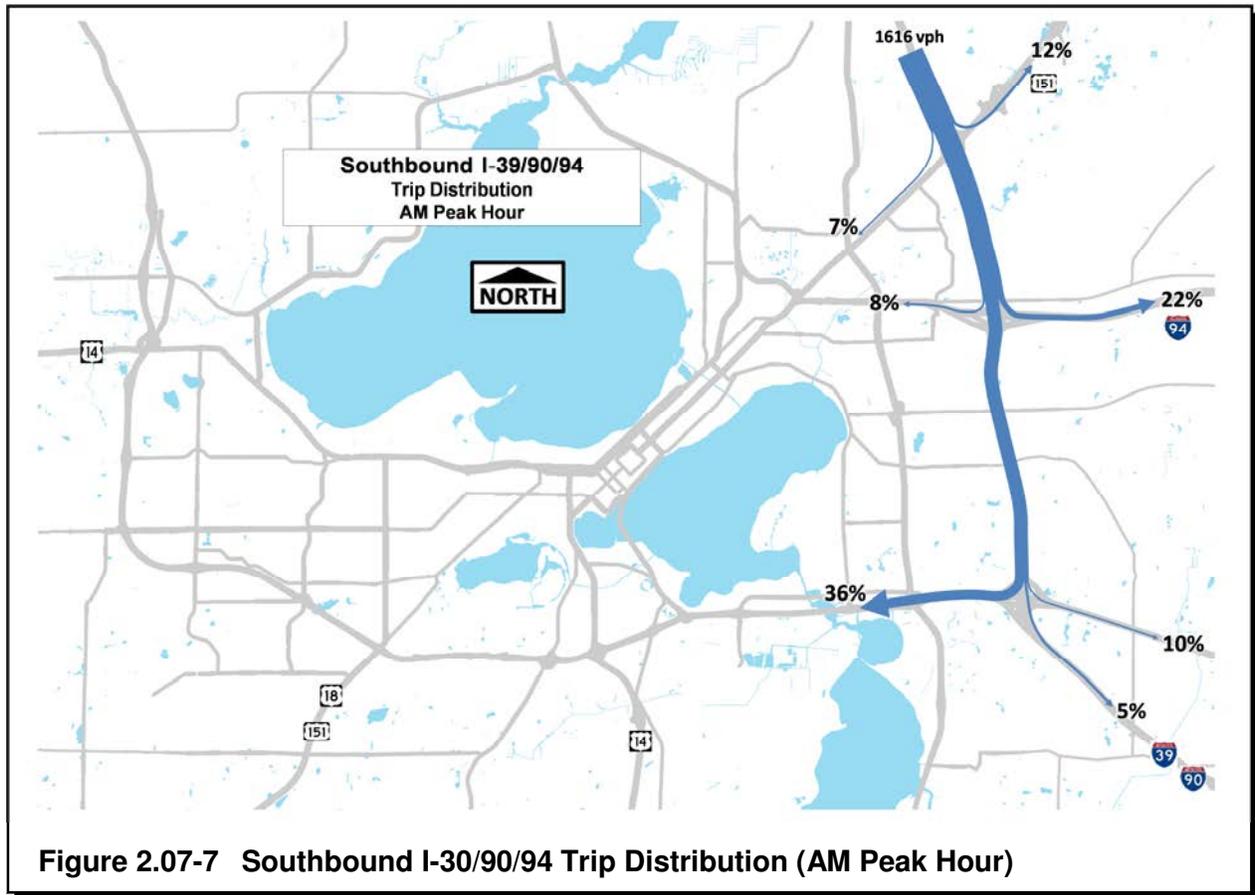


Figure 2.07-6 Eastbound STH 30 Trip Distribution (AM Peak Hour)

During the AM peak hour, 817 vph approach I-39/90 from eastbound STH 30. The majority of the traffic is destined for eastbound US 151 (246 vph) or eastbound I-94 (195 vph).

Figure 2.07-7 shows traffic that originates from southbound I-39/90/94.



During the AM peak hour, 1,616 vph approach from southbound I-39/90/94. The majority of the traffic is destined for the westbound Beltline (578 vph) or eastbound I-94 (348 vph).

2.08 I-39/90 PM PEAK HOUR TRAFFIC PATTERNS

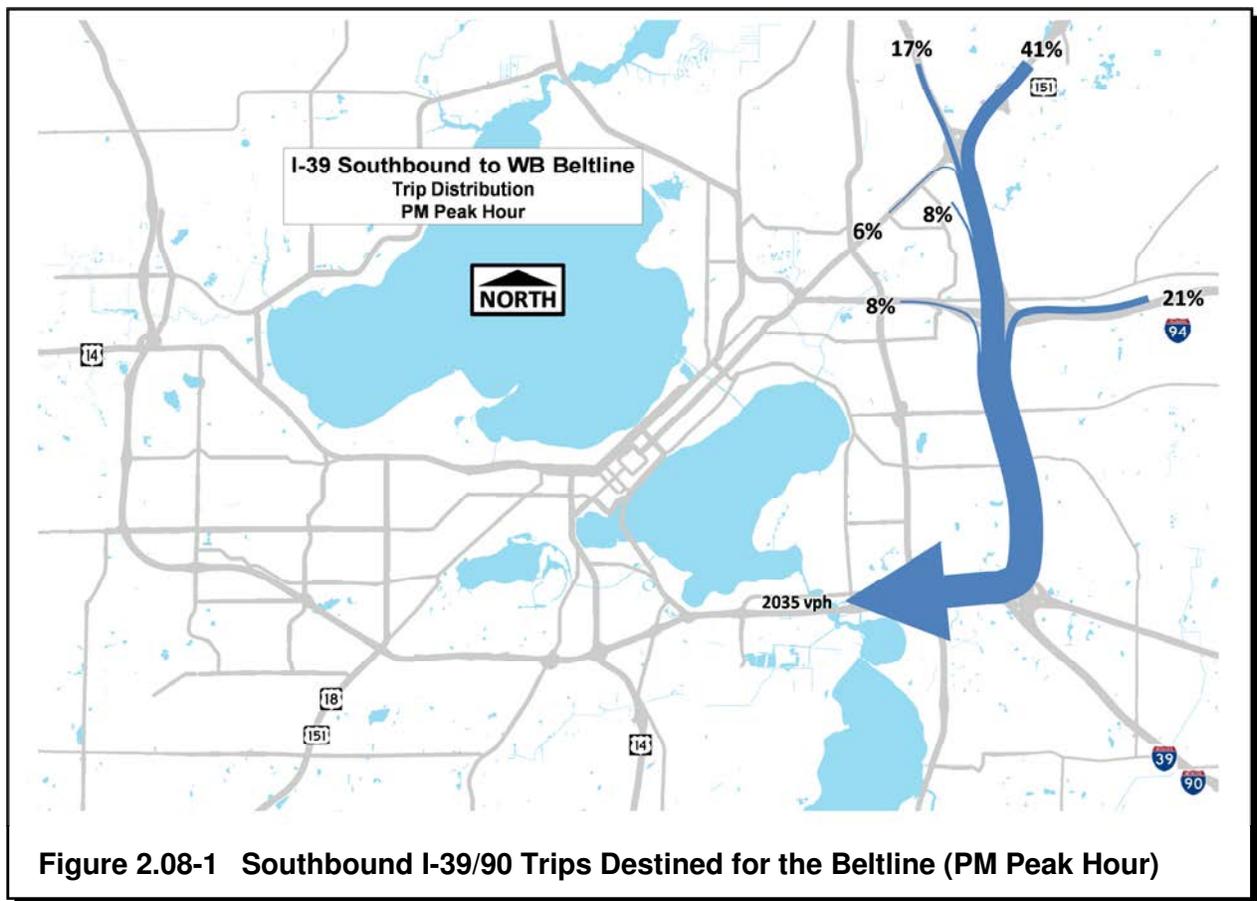
Bluetooth data was analyzed to understand how traffic enters and travels along I-39/90 from the Beltline interchange up to the US 151/East Washington Avenue interchange. Tables of the trip distributions are located in Appendix C.

The following are general trends that were observed from the PM peak hour trip distributions:

1. 62 percent of the I-39/90 traffic destined for the westbound Beltline during the PM peak hour comes from westbound US 151 or westbound I-94.
2. 40 percent of the traffic on I-39/90 from the eastbound Beltline is destined for eastbound US 151.

3. Incoming westbound US 151 traffic splits evenly between East Washington Avenue and the westbound Beltline.
4. Incoming westbound I-94 traffic splits somewhat evenly between the westbound Beltline, westbound STH 30/East Washington Avenue, and northbound I-39/90/94.
5. The eastbound Beltline carries the majority of traffic leaving Madison to the east (4,645 vph) followed by eastbound STH 30 (2,162 vph) and eastbound US 151 (1,649 vph).

Figure 2.08-1 shows traffic that is destined for the westbound Beltline.



During the PM peak hour, 2,035 vph are destined for the Beltline from southbound I-39/90. The majority of the traffic comes from westbound US 151 (837 vph) and westbound I-94 (436 vph).

Figure 2.08-2 shows traffic that originates from the eastbound Beltline.

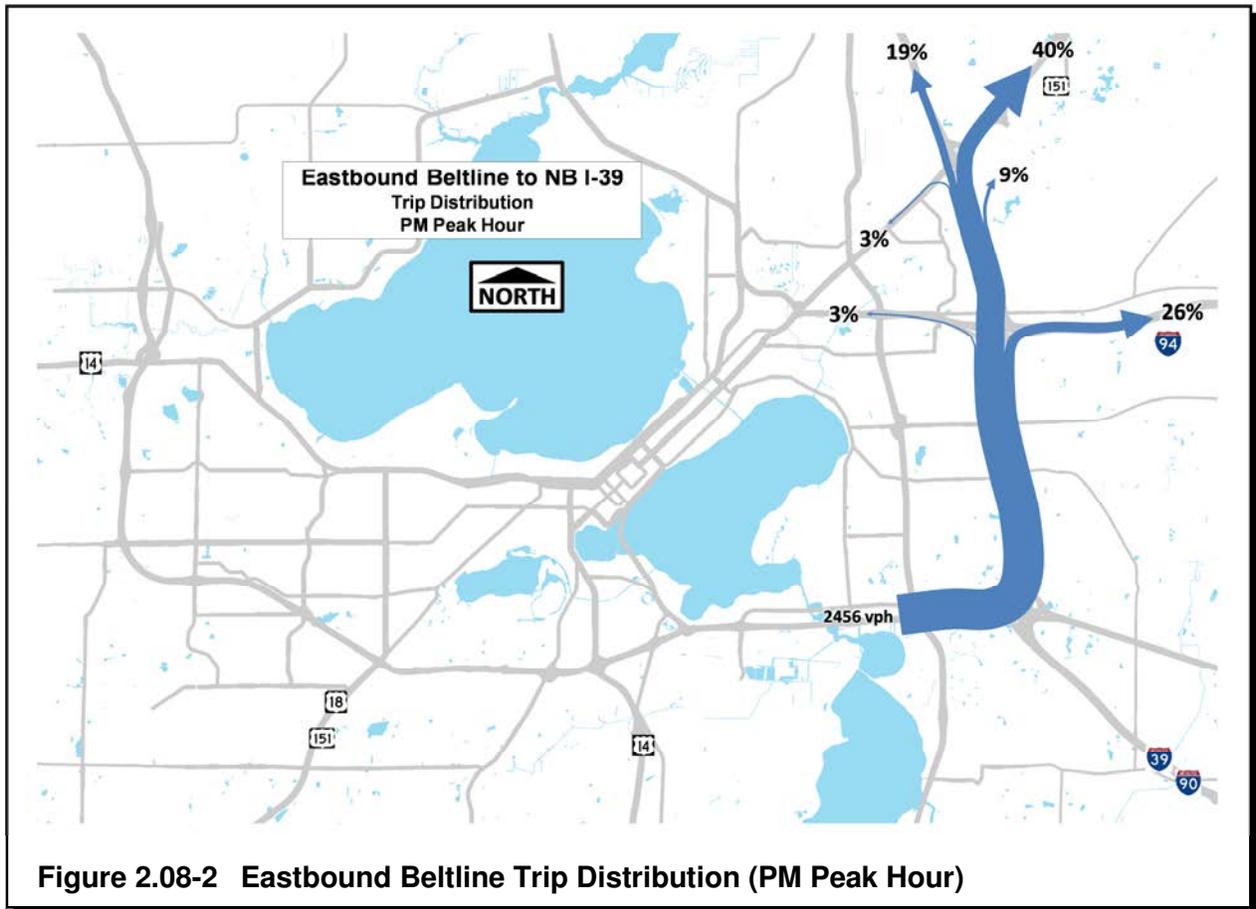
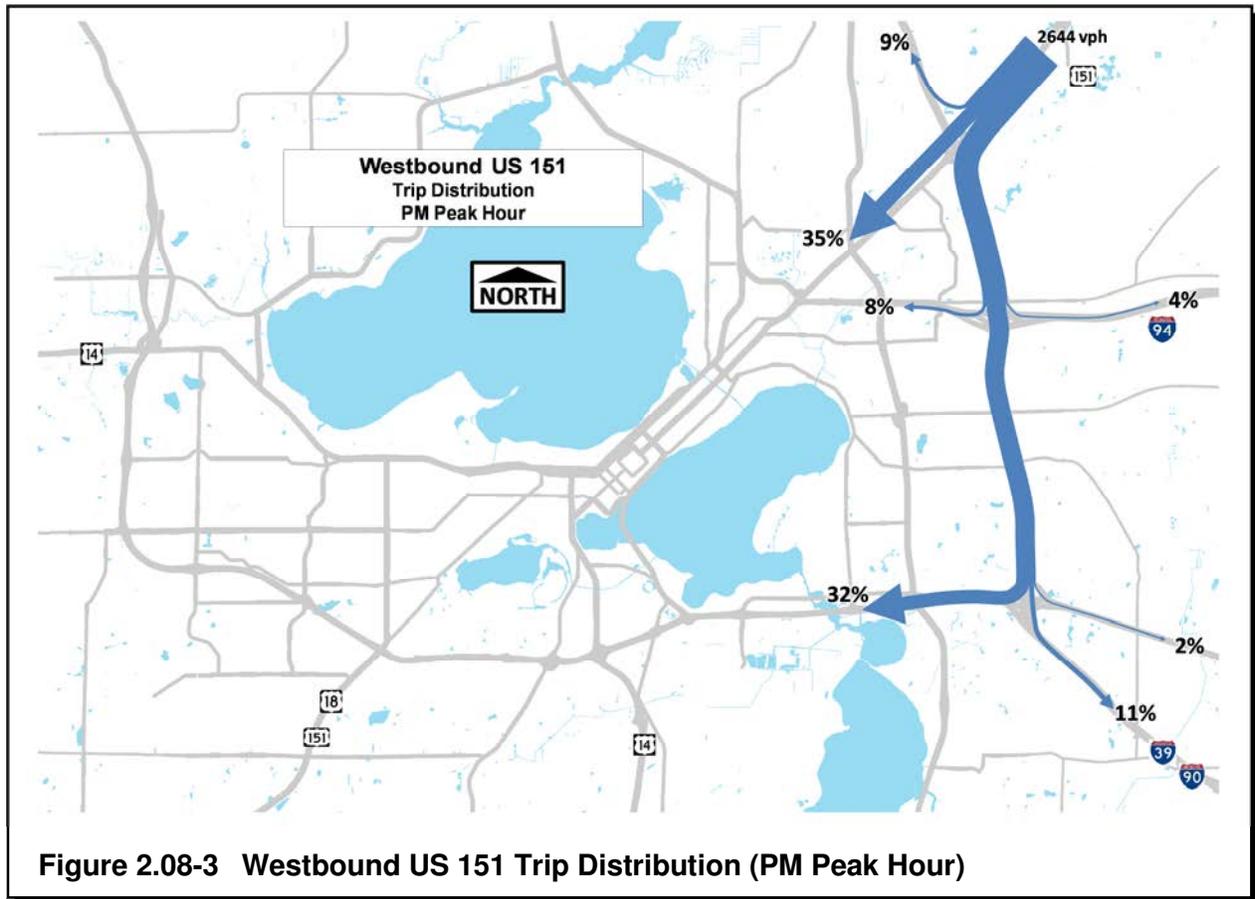


Figure 2.08-2 Eastbound Beltline Trip Distribution (PM Peak Hour)

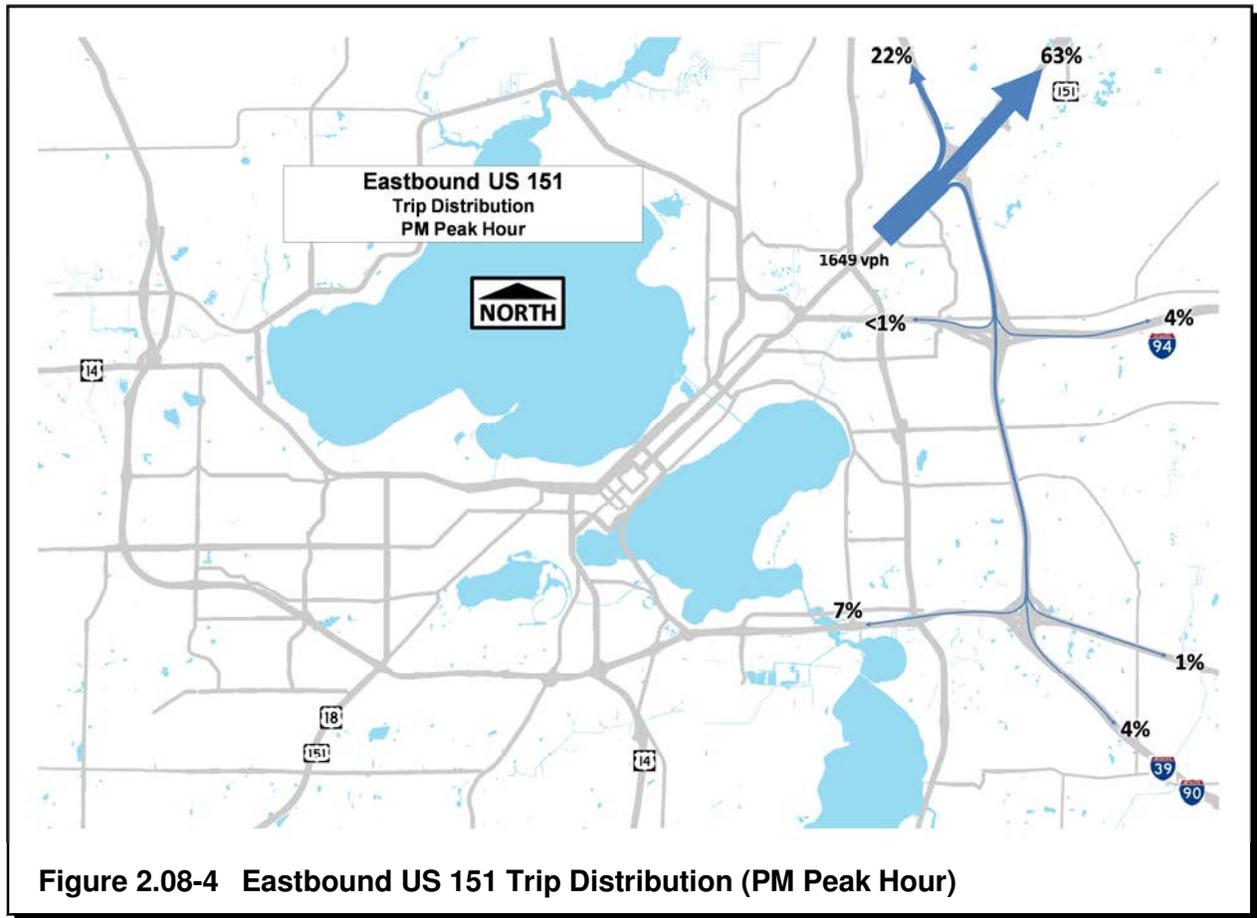
During the PM peak hour, 2,456 vph enter northbound I-39 from the eastbound Beltline. The majority of the traffic from the eastbound Beltline is destined for eastbound US 151 (977 vph) or eastbound I-94 (631 vph). Data shows 469 vph are also destined for northbound I-39/90/94. Very few vehicles re-enter the Madison area on STH 30 (82 vph) or East Washington Avenue (84 vph). Slightly more than 200 vph exit to High Crossing Road. An additional 1,279 vph continue on eastbound US 12, and 910 vph go southbound on I-39/90. The total volume exiting the east end of the Beltline during the PM peak hour is 4,645 vph.

Figure 2.08-3 show traffic that originates from westbound US 151.



During the PM peak hour, 2,644 vph approach I-39/90/94 from westbound US 151. The majority of the traffic is split evenly between westbound East Washington Avenue (918 vph) and the westbound Beltline (837 vph). This distribution seems to indicate that East Washington Avenue or the Beltline are similarly attractive routes to access Madison during the PM peak hour. A small portion of the traffic also chooses to use westbound STH 30 (208 vph) to access Madison.

Figure 2.08-4 shows traffic that originates from eastbound US 151.



During the PM peak hour, 1,649 vph approach I-39/90/94 from eastbound US 151. Most of the traffic (1,035 vph) continues on eastbound US 151. Eastbound US 151 is serving as one of the two major destinations from Madison during the PM peak hour. The other is the eastbound Beltline. The only other major destination for eastbound US 151 traffic is northbound I-39/90/94 (360 vph).

Figure 2.08-5 shows traffic that originates from westbound I-94.

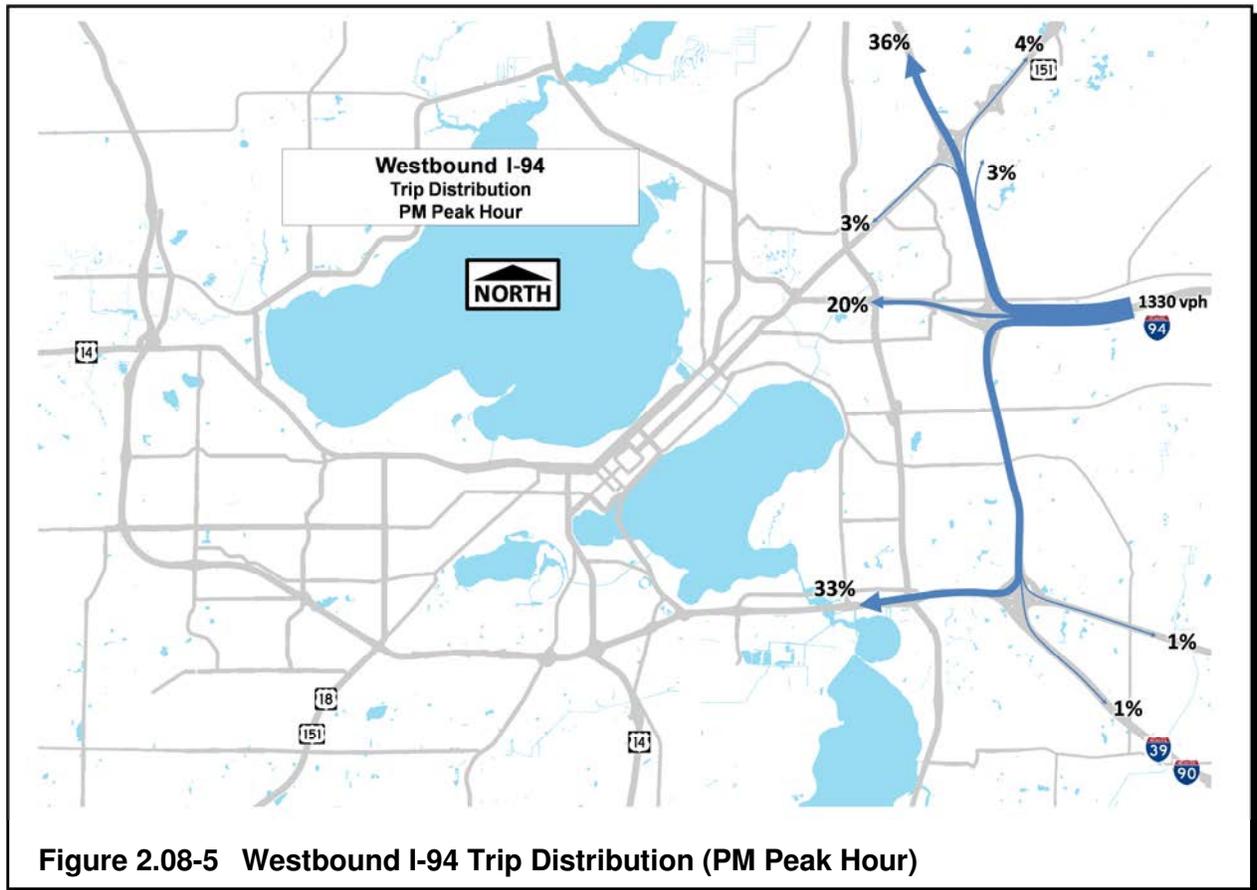
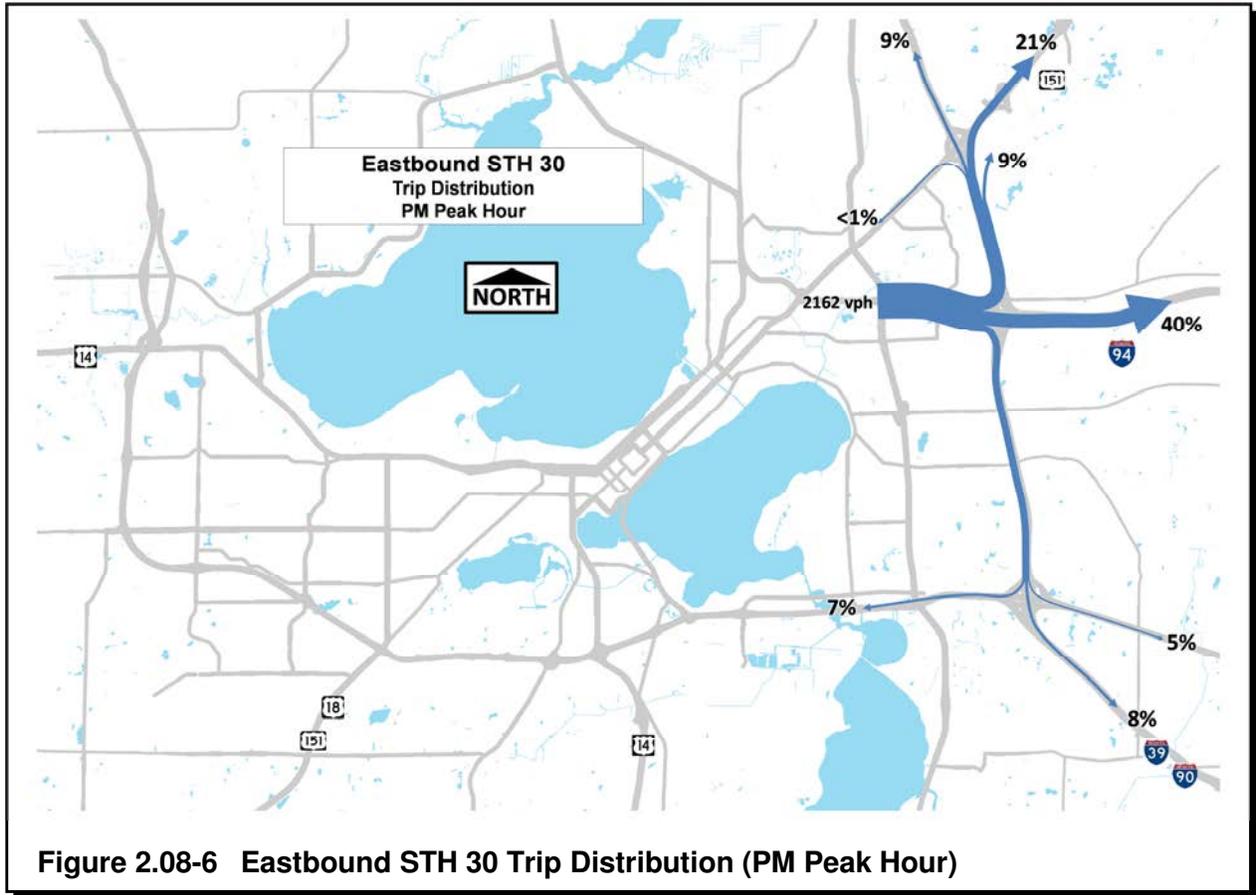


Figure 2.08-5 Westbound I-94 Trip Distribution (PM Peak Hour)

During the PM peak hour, 1,330 vph approach I-39/90 from westbound I-94. The traffic has three main destinations, northbound I-39/90-94 (477 vph), westbound Beltline (436 vph), and westbound STH 30 (261 vph).

Figure 2.08-6 shows traffic that originates from eastbound STH 30.



During the PM peak hour, 2,162 vph approach I-39/90 from eastbound STH 30. The majority of the traffic is destined for eastbound I-94 (871 vph) or eastbound US 151 (462 vph).

Figure 2.08-7 shows traffic that originated from southbound I-39/90/94.

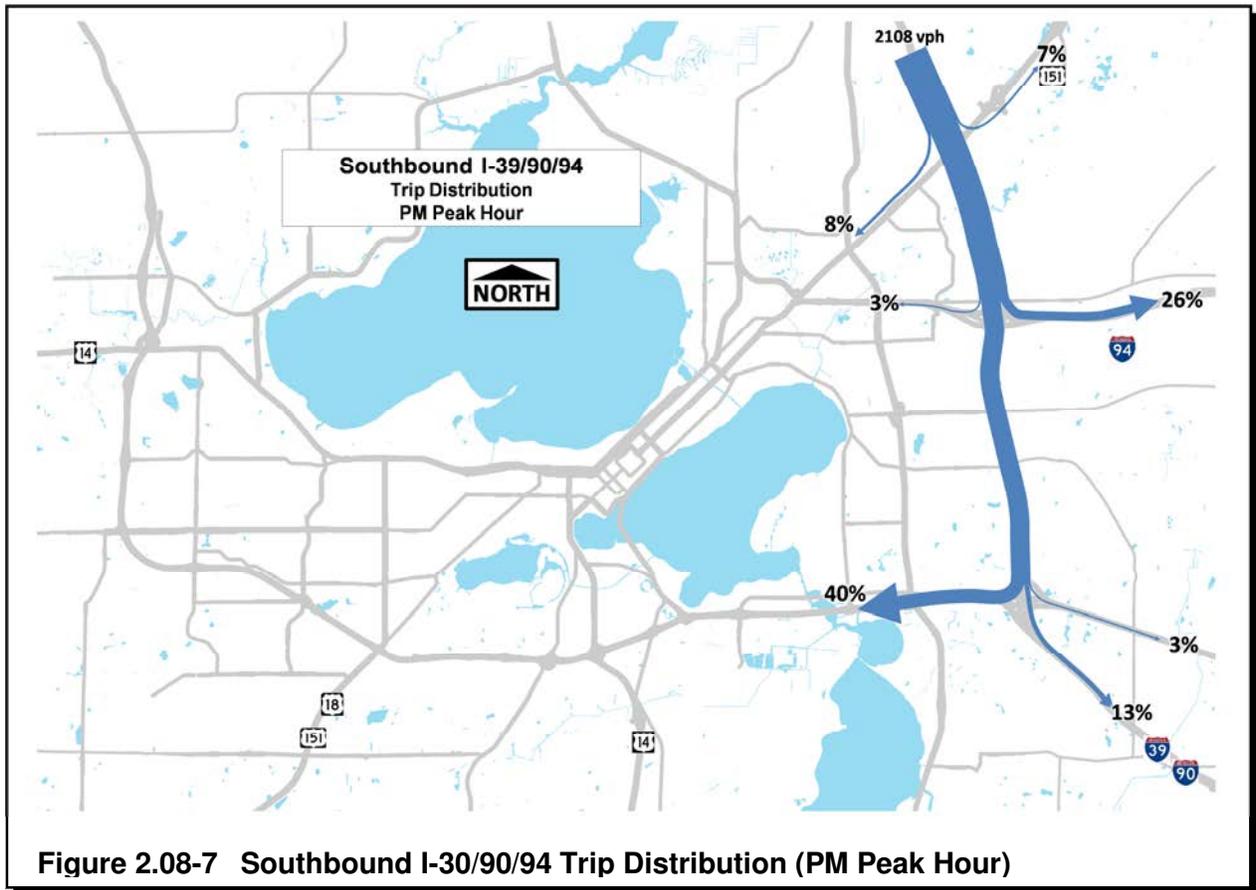


Figure 2.08-7 Southbound I-30/90/94 Trip Distribution (PM Peak Hour)

During the PM peak hour, 2,108 vph enter I-39/90 from southbound I-39/90/94. The majority of the traffic is destined for the westbound Beltline (837 vph) or eastbound I-94 (545 vph). Another 279 vph continue southbound on I-39/90.

2.09 CENTRAL MADISON BLUETOOTH ANALYSIS

Bluetooth and traffic volume data on the Isthmus between Lake Mendota and Lake Monona was analyzed to help understand traffic patterns on the isthmus. The goal for this analysis was to determine the amount of through traffic that occurs on the Isthmus during the peak periods. Four cordon lines were drawn to define the edges of the isthmus analysis area. The four cordon lines and associated Bluetooth sites are shown in Figure 2.09-1.

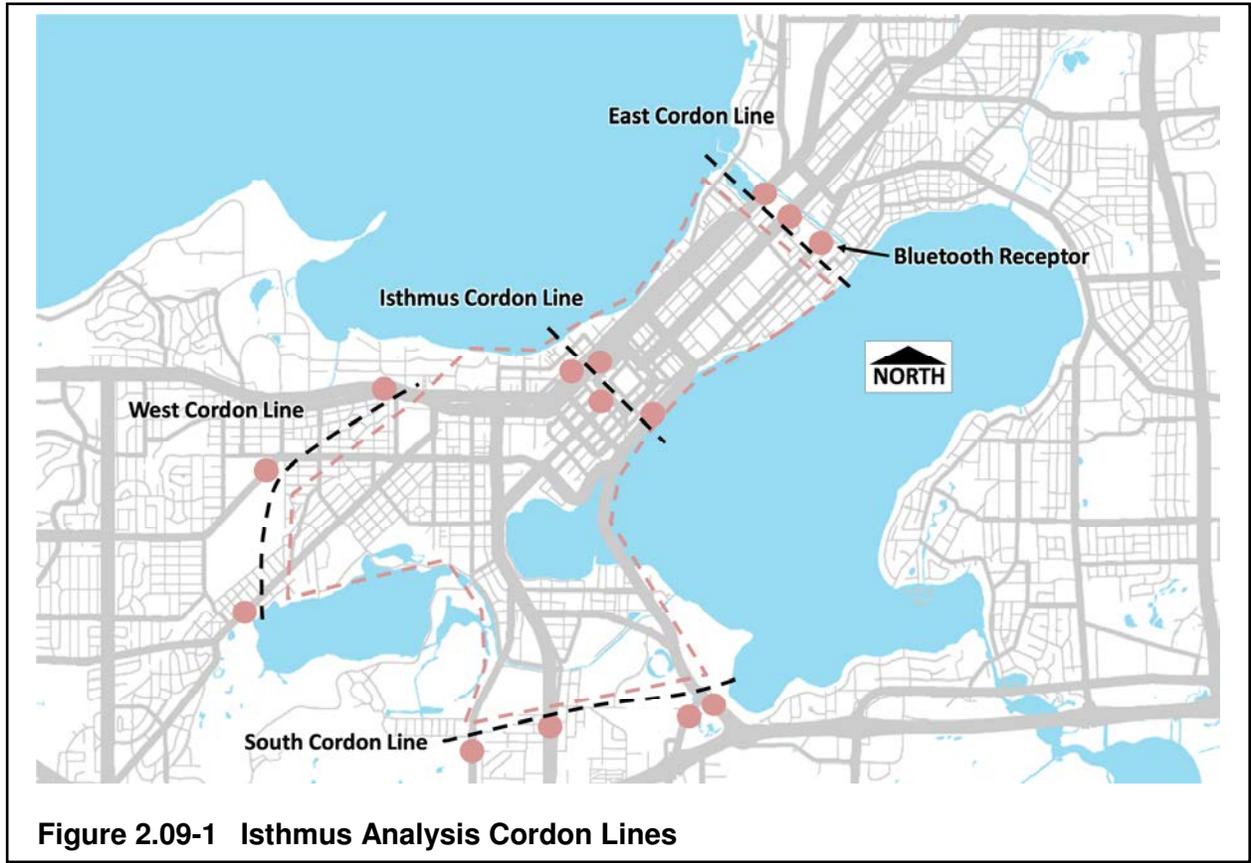
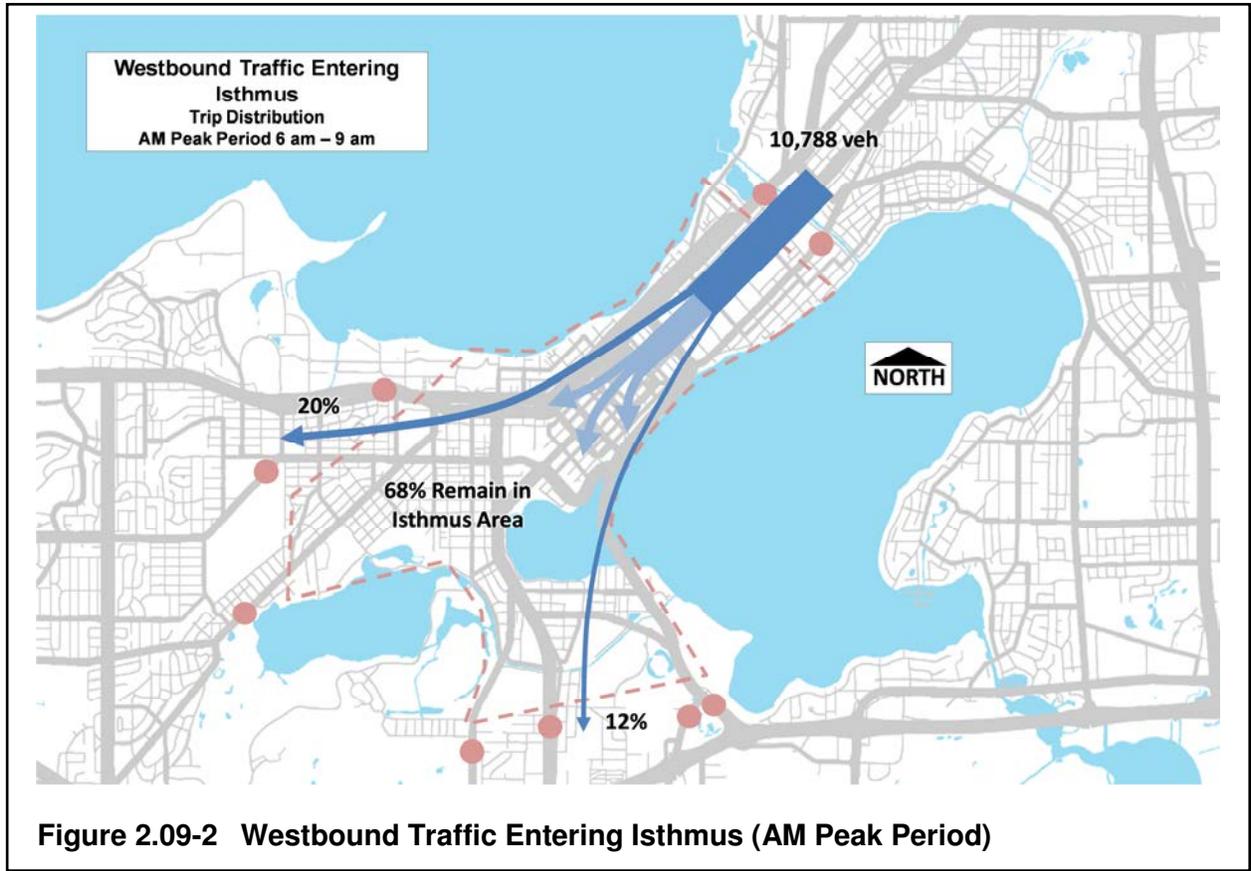
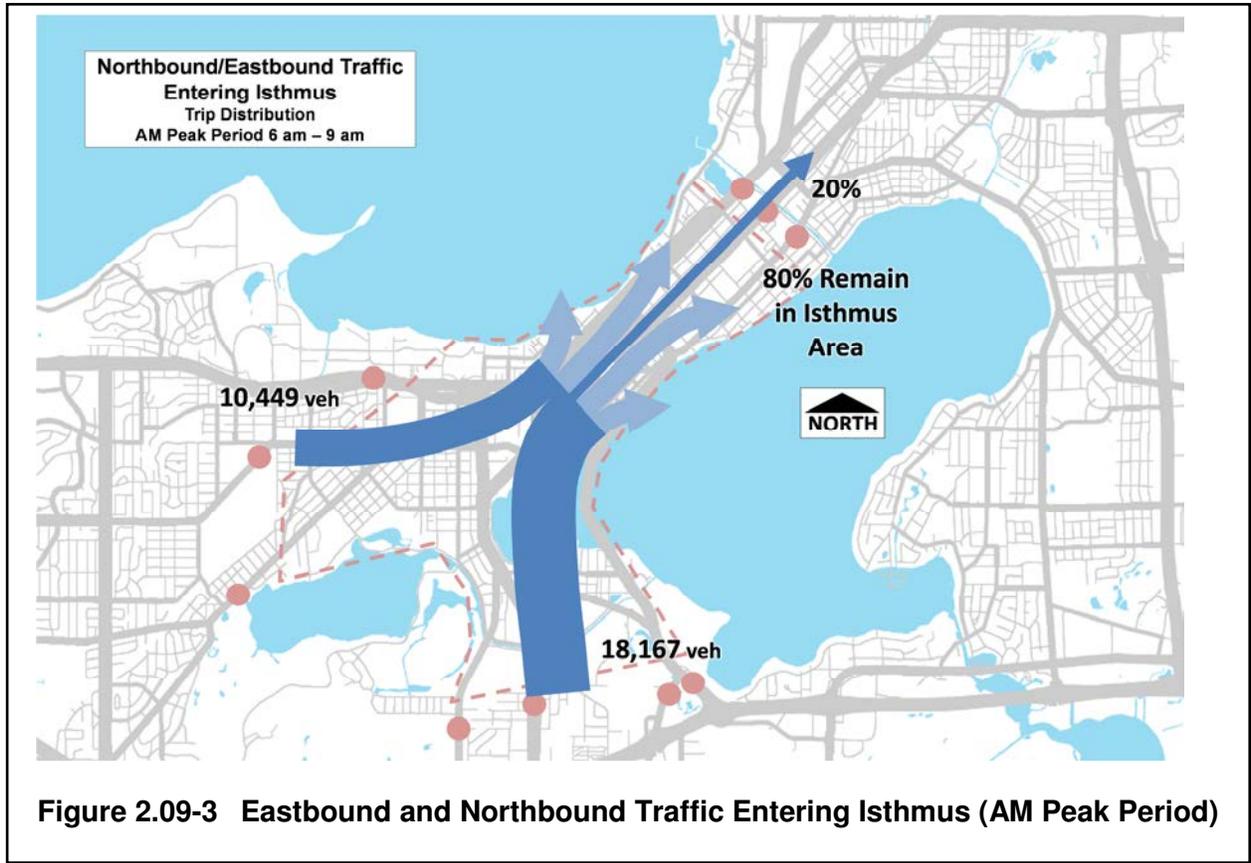


Figure 2.09-2 shows traffic entering the Isthmus from the east during the AM peak period of 6 A.M. to 9 A.M.



Between 6 A.M. and 9 A.M., 10,788 vehicles enter the Isthmus from the east on East Gorham Street, East Washington Avenue, and Williamson Street. Of this traffic, 20 percent exits to the west along Campus Drive, Speedway Drive, and Monroe Street. A further 12 percent exit to the south along Fish Hatchery Road, Park Street, Rimrock Road, and John Nolen Drive. Sixty-eight percent of the traffic that is entering the Isthmus from the east during the AM peak period remains within the Isthmus

Figure 2.09-3 shows traffic entering the Isthmus from the west and south during the AM peak period of 6 A.M. to 9 A.M.



Between 6 A.M. and 9 A.M., 10,449 vehicles enter the Isthmus from the west on Campus Drive, Speedway Drive, and Monroe Street. Another 18,167 vehicles enter the Isthmus from the south on Fish Hatchery Road, Park Street, Rimrock Road, and John Nolen Drive. Of the entering traffic, only 10 percent exits the east side of the Isthmus along the roads of East Johnson Street, East Washington Avenue, and Williamson Street. Eighty percent of the traffic that enters the Isthmus from the west and south during the AM peak period remains within the Isthmus.

The analysis shows that between 2,500 and 3,500 vehicles in each direction during the AM peak period use the Isthmus to travel between the west and east sides of Madison. This means that during the AM peak hour between 1,000 and 1,400 vph travel through the Isthmus in each direction. The remaining volume that enters the Isthmus has a destination within the Isthmus.

Due to the number of work trips that are typically seen during the AM peak hour, the high percentage of vehicles remaining in the Isthmus from both directions (68 percent westbound, 90 percent northbound/eastbound) suggests the importance of the Isthmus as an employment center.

Figure 2.09-4 shows traffic entering the Isthmus from the east during the PM peak period of 3 P.M. to 6 P.M.

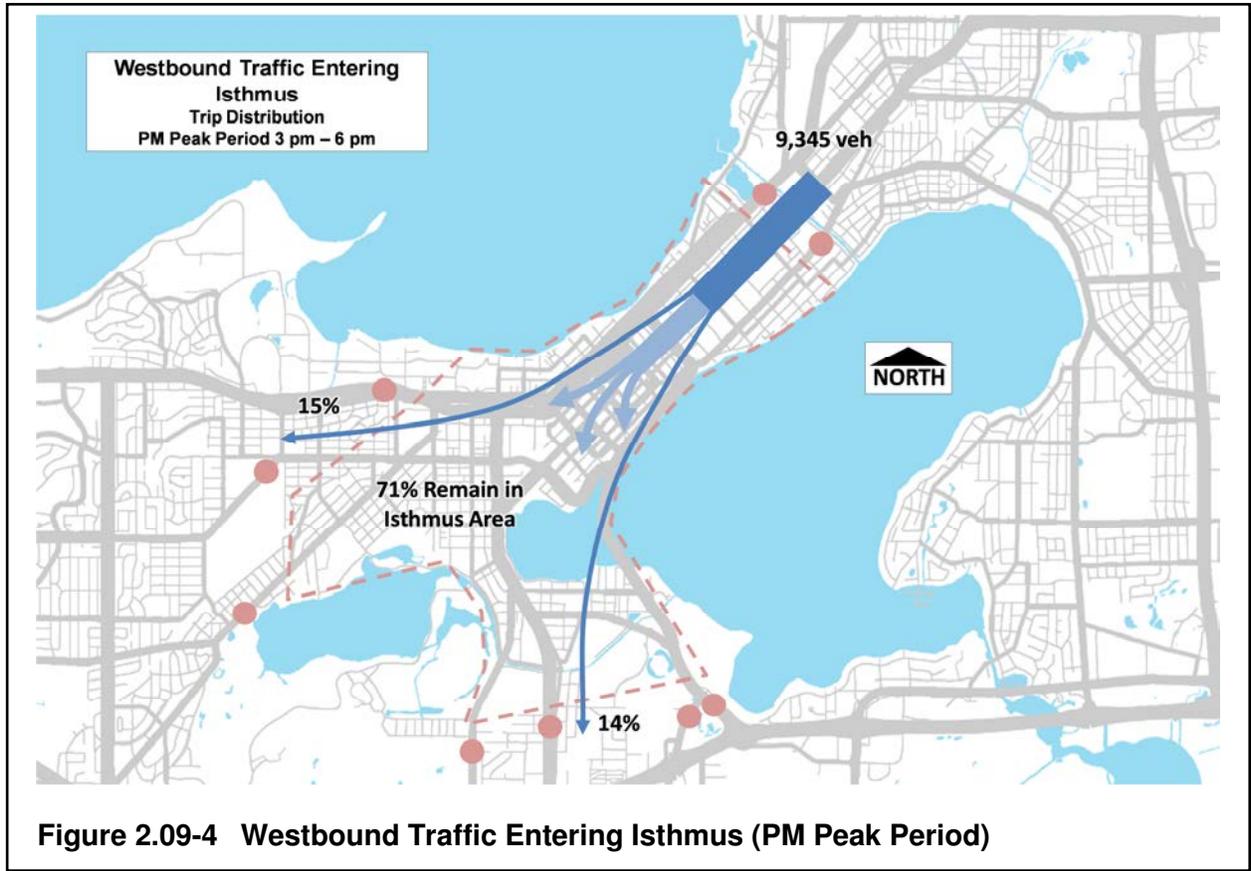


Figure 2.09-4 Westbound Traffic Entering Isthmus (PM Peak Period)

Between 3 P.M. and 6 P.M., 9,345 vehicles enter the Isthmus from the east on East Gorham Street, East Washington Avenue, and Williamson Street. Of this traffic, 15 percent exits to the west along Campus Drive, Speedway Drive, and Monroe Street. A further 14 percent exit to the south along Fish Hatchery Road, Park Street, Rimrock Road, and John Nolen Drive. Seventy-one percent of the traffic that is entering the Isthmus from the east during the PM peak period remains within the Isthmus

Figure 2.09-5 shows traffic entering the Isthmus from the west and south during the PM peak period of 3 P.M. to 6 P.M.

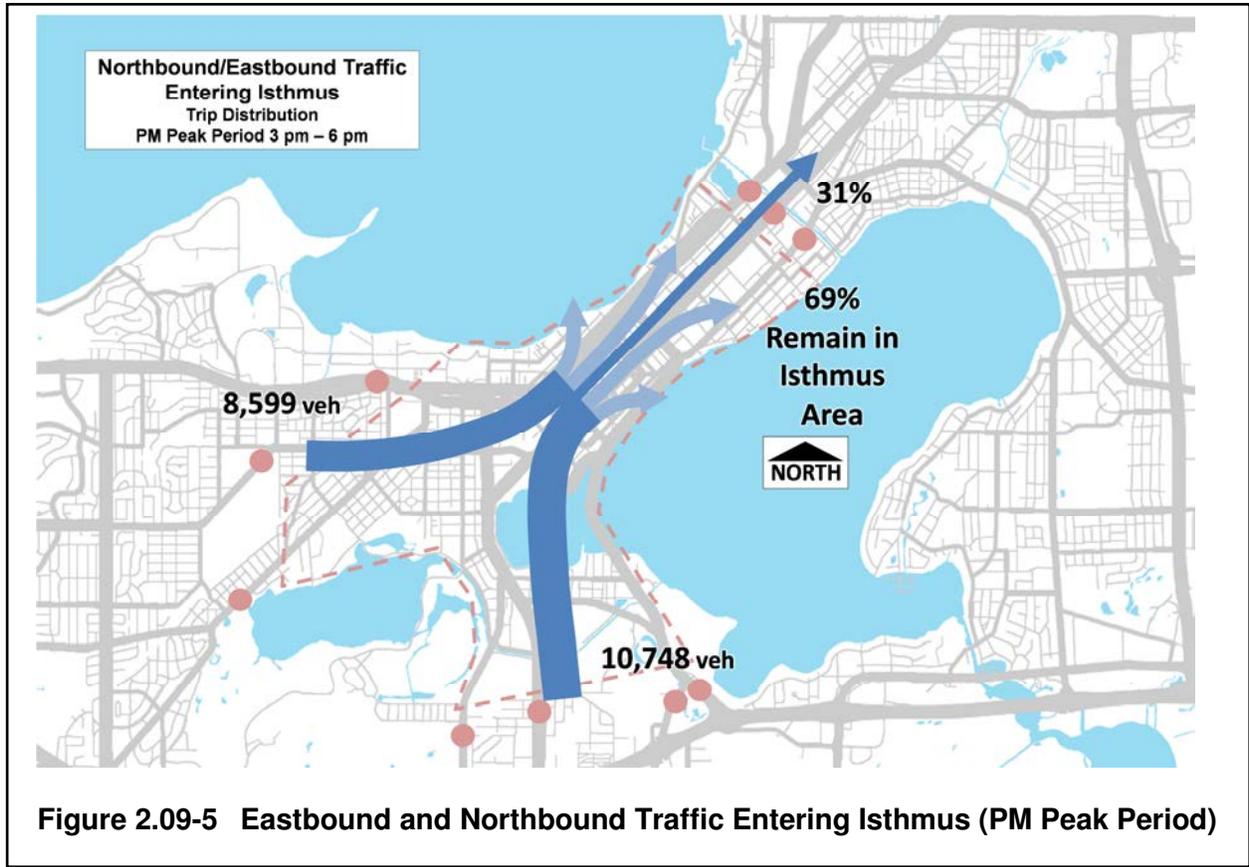


Figure 2.09-5 Eastbound and Northbound Traffic Entering Isthmus (PM Peak Period)

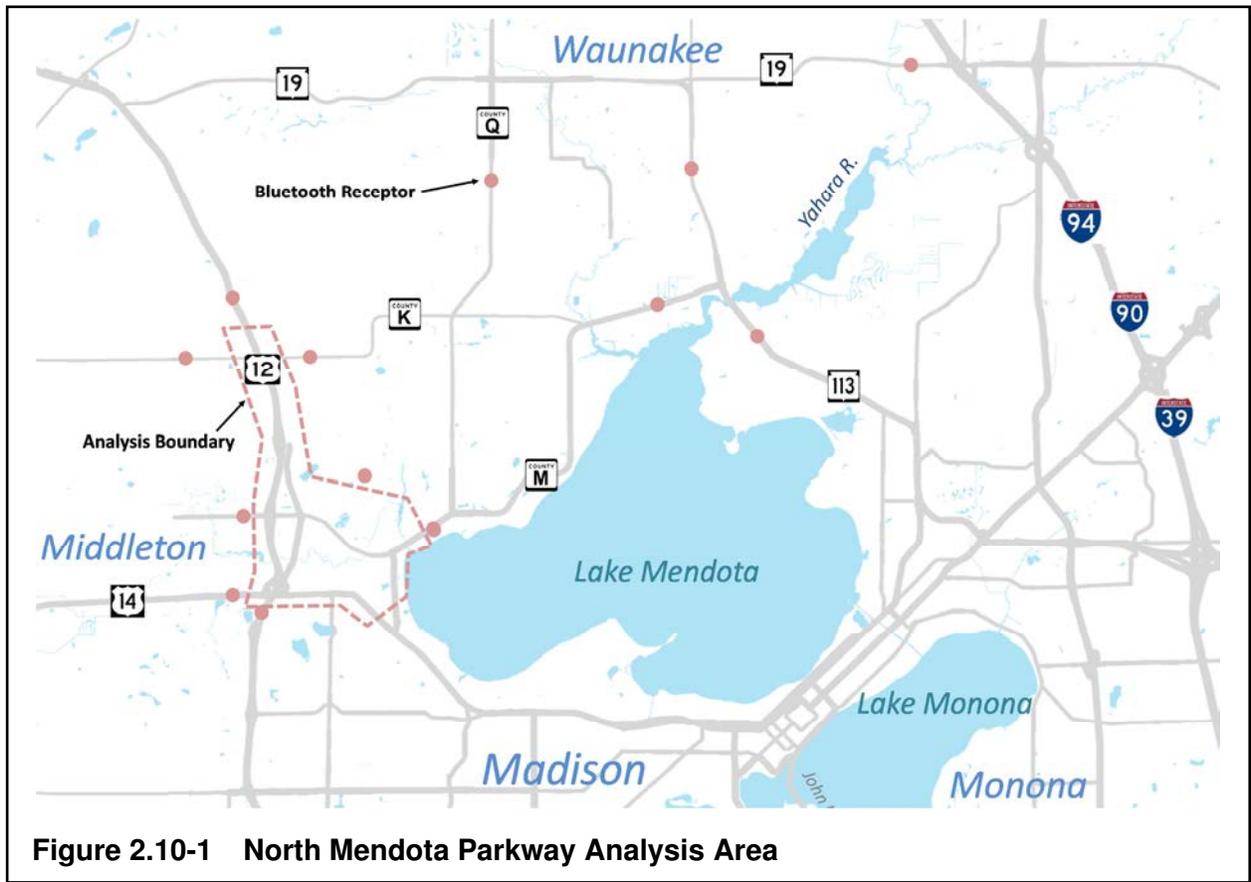
Between 3 P.M. and 6 P.M., 8,599 vehicles enter the Isthmus from the west on Campus Drive, Speedway Drive, and Monroe Street. Another 10,748 vehicles enter the Isthmus from the south on Fish Hatchery Road, Park Street, Rimrock Road, and John Nolen Drive. Of the entering traffic, only 15 percent exits the east side of the Isthmus along the roads of East Johnson Street, East Washington Avenue, and Williamson Street. Eighty eight percent of the traffic that enters the Isthmus from the west and south during the PM peak period remains within the Isthmus.

The analysis shows that between 2,700 and 2,900 vehicles in each direction during the PM peak period use the Isthmus to travel between the west and east sides of Madison. During the PM peak hour between 900 and 1,300 vph travel through the Isthmus in each direction. The remaining volume that enters the Isthmus has a destination within the Isthmus.

Due to the number of mixed and home based trips that are typically seen during the PM peak hour, the high percentage of vehicles remaining in the Isthmus from both directions (71 percent westbound, 85 percent northbound/eastbound) suggests the importance of the Isthmus as an area of an increasing number of residents and other activities.

2.10 NORTH MENDOTA PARKWAY BLUETOOTH ANALYSIS

An additional Bluetooth analysis was conducted for the major roadways north of Madison and in the Middleton area. Traffic coming in and out of Middleton was examined as well as five additional Bluetooth sensors north of Madison as part of this analysis. The analysis examined travel patterns on the farthest northwest extent of the Beltline in Middleton and also how traffic entered the analysis area from the east. The analysis area is shown in Figure 2.10-1.



During the AM peak period of 6 AM to 9 AM, most of the traffic on the north side of the lake is traveling from east to west. A total of 5059 vehicles enter the analysis area from the east during the AM peak period compared to 2519 vehicles leaving the zone to the east. The Bluetooth results for three separate receptors: County K between US 12 and Pheasant Branch Road, Pheasant Branch Road north of Whittlesen Road, and Century Avenue between Bakersville Avenue and Elm Lane were combined for the overall analysis presented in the following figures. Figure 2.10-2 shows the traffic entering the analysis area from the east during the AM peak period.

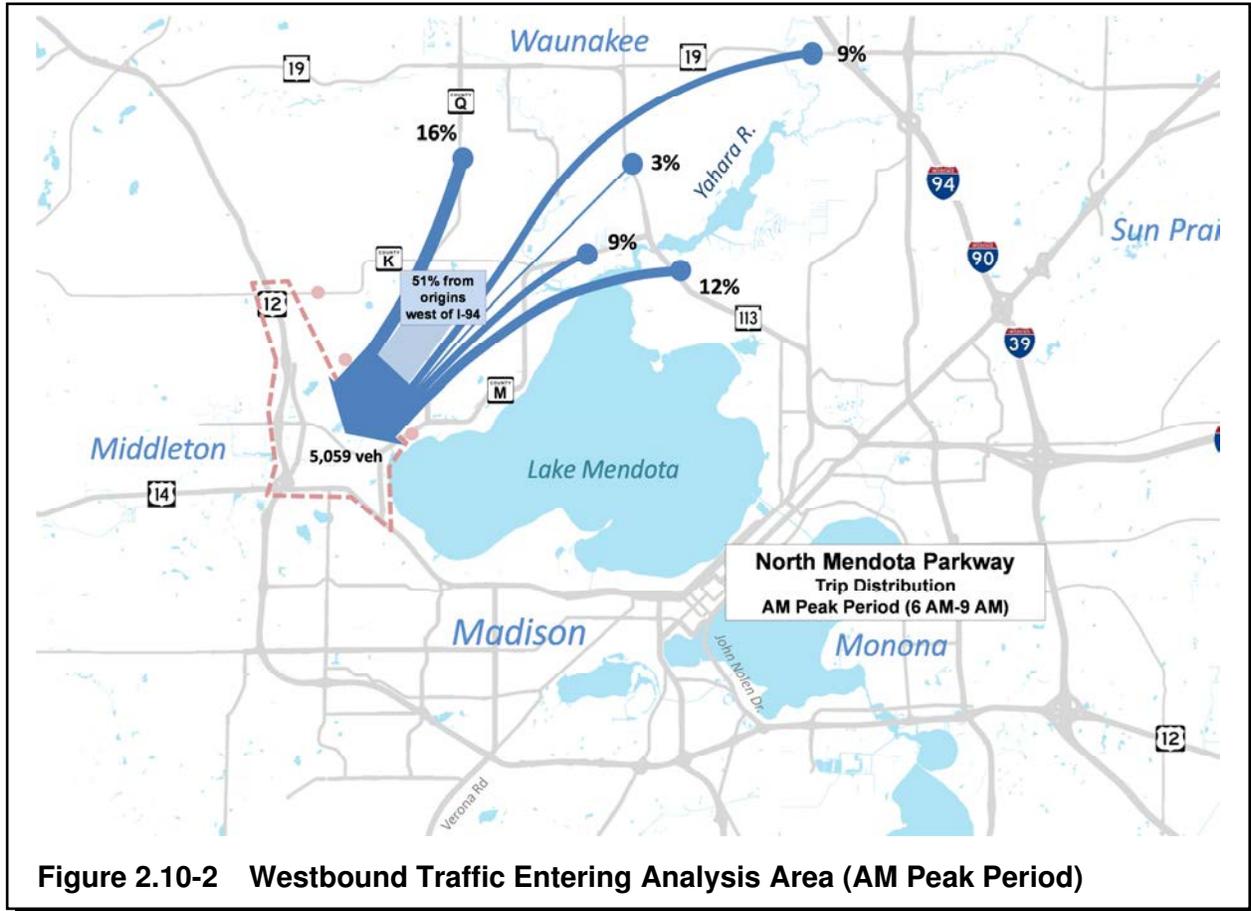


Figure 2.10-2 Westbound Traffic Entering Analysis Area (AM Peak Period)

The two largest contributors of volume to the analysis area are County Q (810 vehicles) and Northport Drive (607 vehicles). A majority of the traffic that enters the analysis area (79 percent) comes from west of the Lake Mendota and Yahara River corridor. Only the traffic on WIS 19 west of I-39/90/94 and traffic on Northport Drive started east of that corridor, for a total of 21 percent of the traffic entering the analysis area.

Figure 2.10-3 shows the traffic exiting the analysis area to the east during the AM peak period.

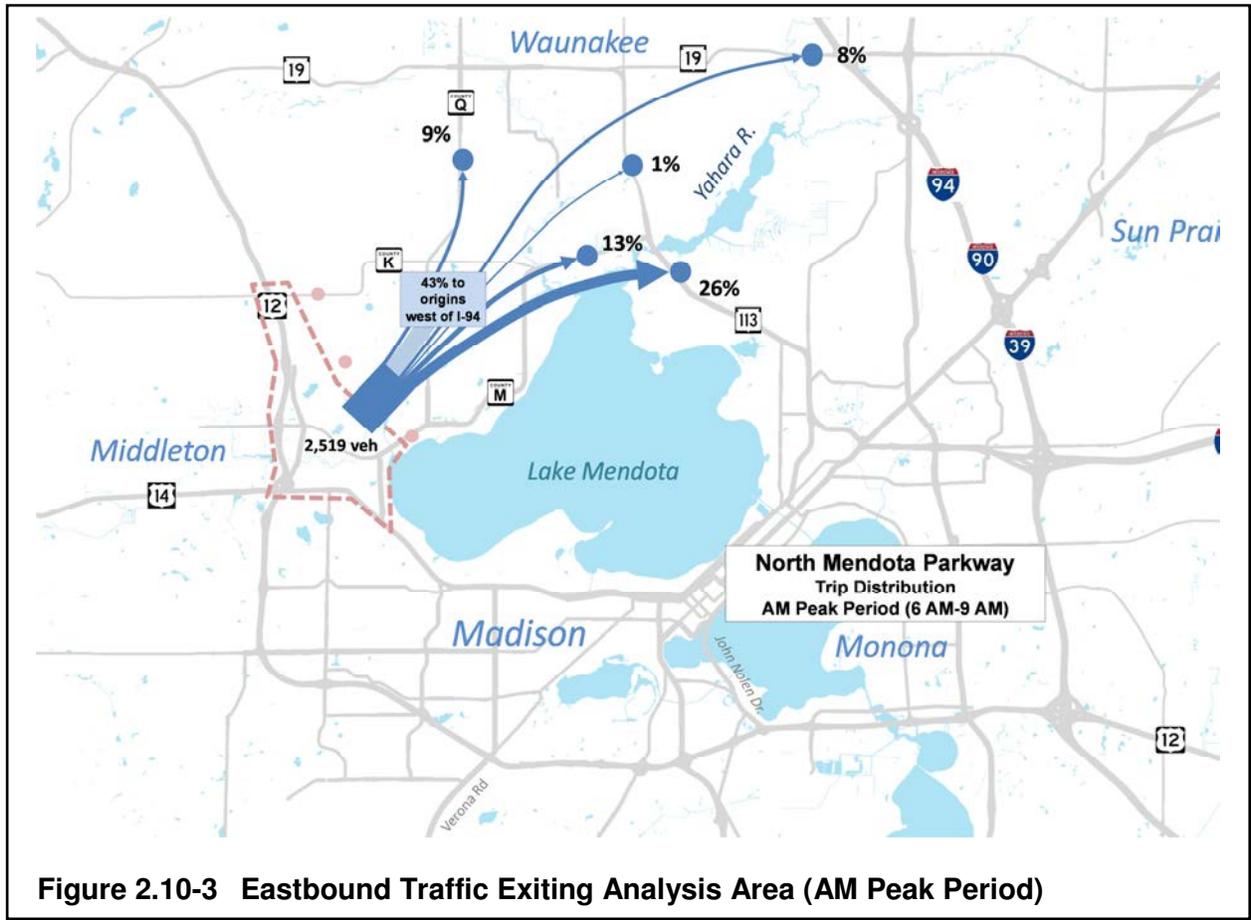


Figure 2.10-3 Eastbound Traffic Exiting Analysis Area (AM Peak Period)

The two largest destinations from the analysis area are Northport Drive (655 vehicles) and County M (327 vehicles). A majority of the traffic that exits the analysis area (66 percent) goes to destinations west of the Lake Mendota and Yahara River corridor. Only the traffic on WIS 19 west of I-39/90/94 and traffic on Northport Drive goes east of that corridor, for a total of 34 percent of the traffic exiting the analysis area.

During the PM peak period of 3 P.M. to 6 P.M., most of the traffic on the north side of the lake is traveling from west to east. A total of 3,726 vehicles enter the analysis area from the east during the PM peak period compared to 6,114 vehicles leaving the zone to the east. Figure 2.10-4 shows the traffic entering the analysis area from the east during the PM peak period.

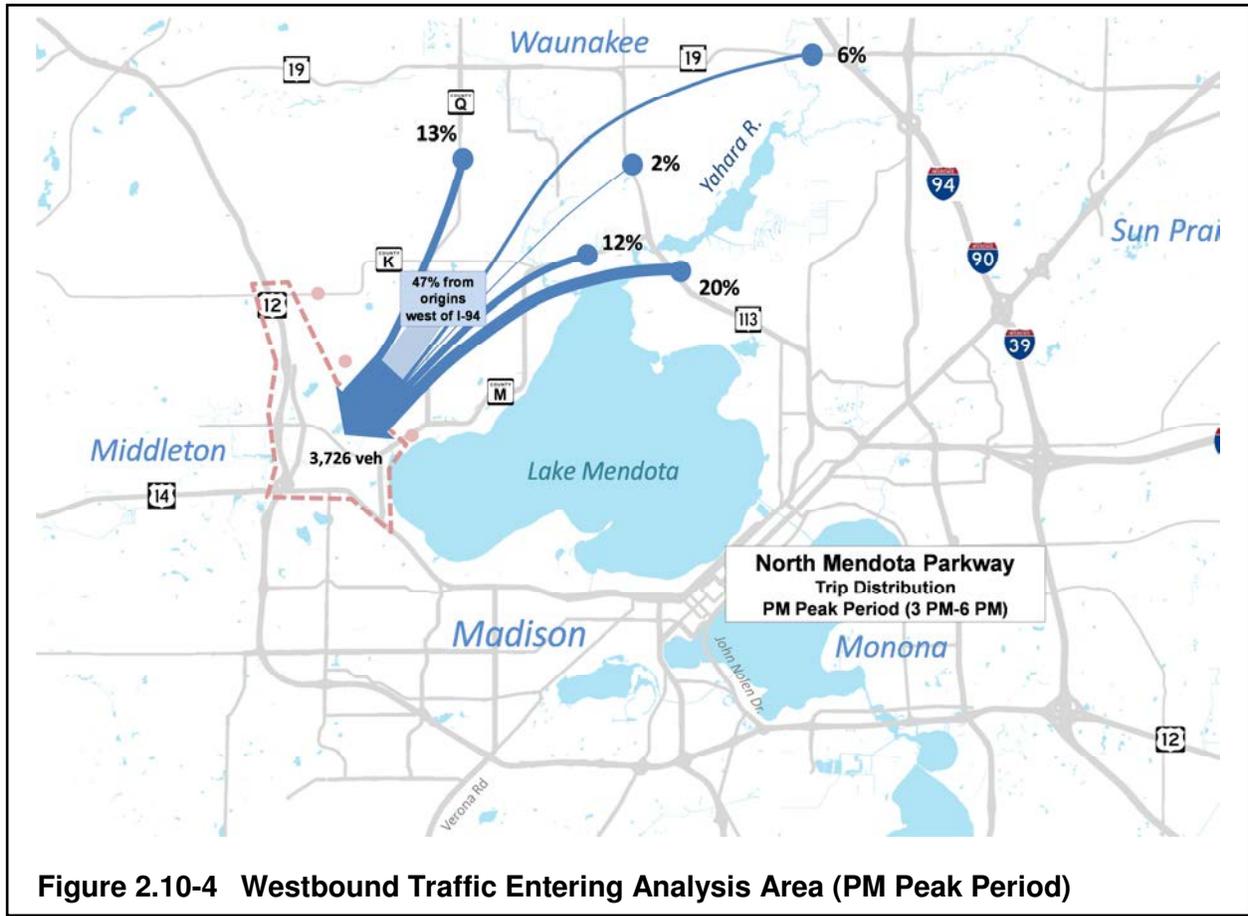


Figure 2.10-4 Westbound Traffic Entering Analysis Area (PM Peak Period)

The two largest contributors of volume to the analysis area are Northport Drive (745 vehicles) and County Q (484 vehicles). A majority of the traffic that enters the analysis area (74 percent) comes from west of the Lake Mendota and Yahara River corridor. Only the traffic on WIS 19 west of I-39/90/94 and traffic on Northport Drive started east of that corridor, for a total of 26 percent of the traffic entering the analysis area.

Figure 2.10-5 shows the traffic exiting the analysis area to the east during the PM peak period.

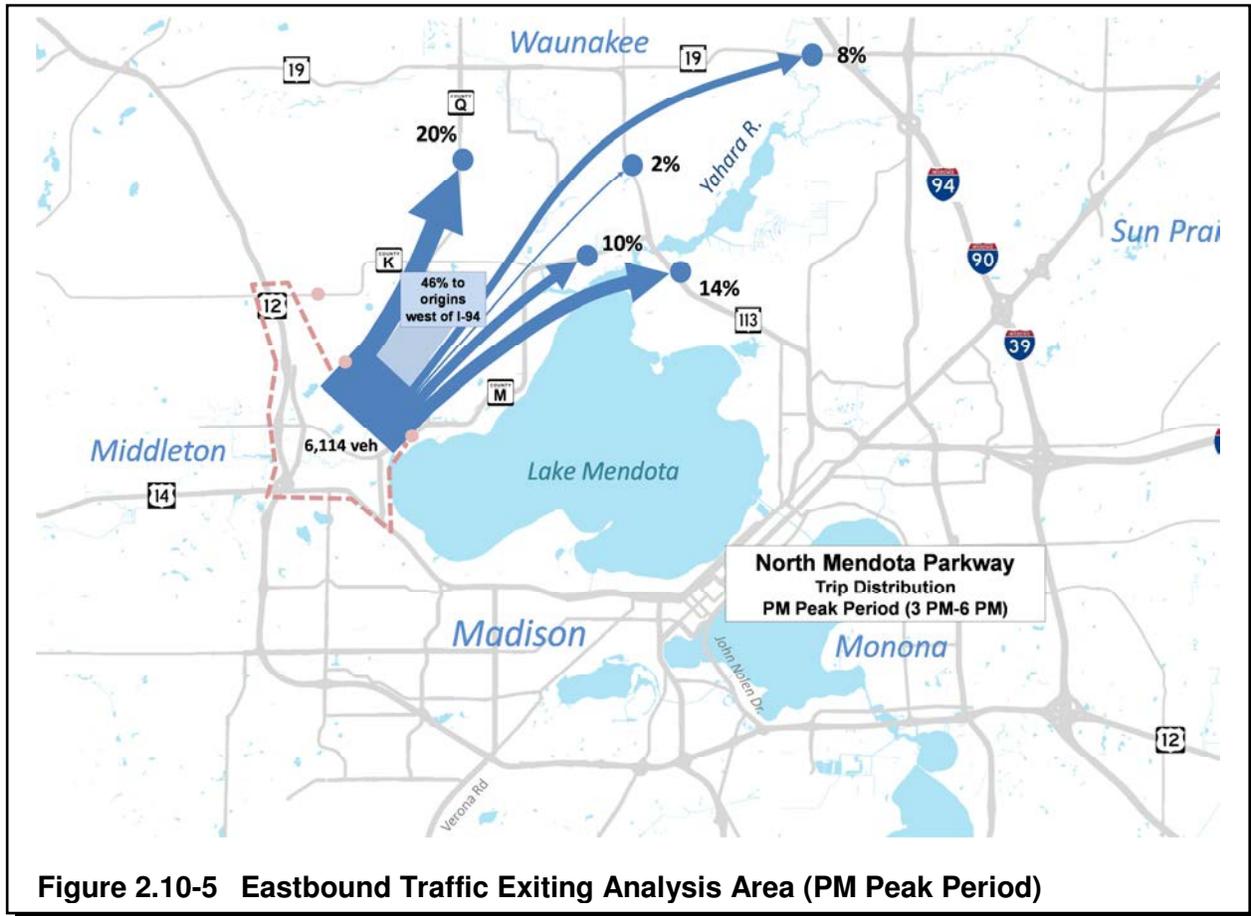
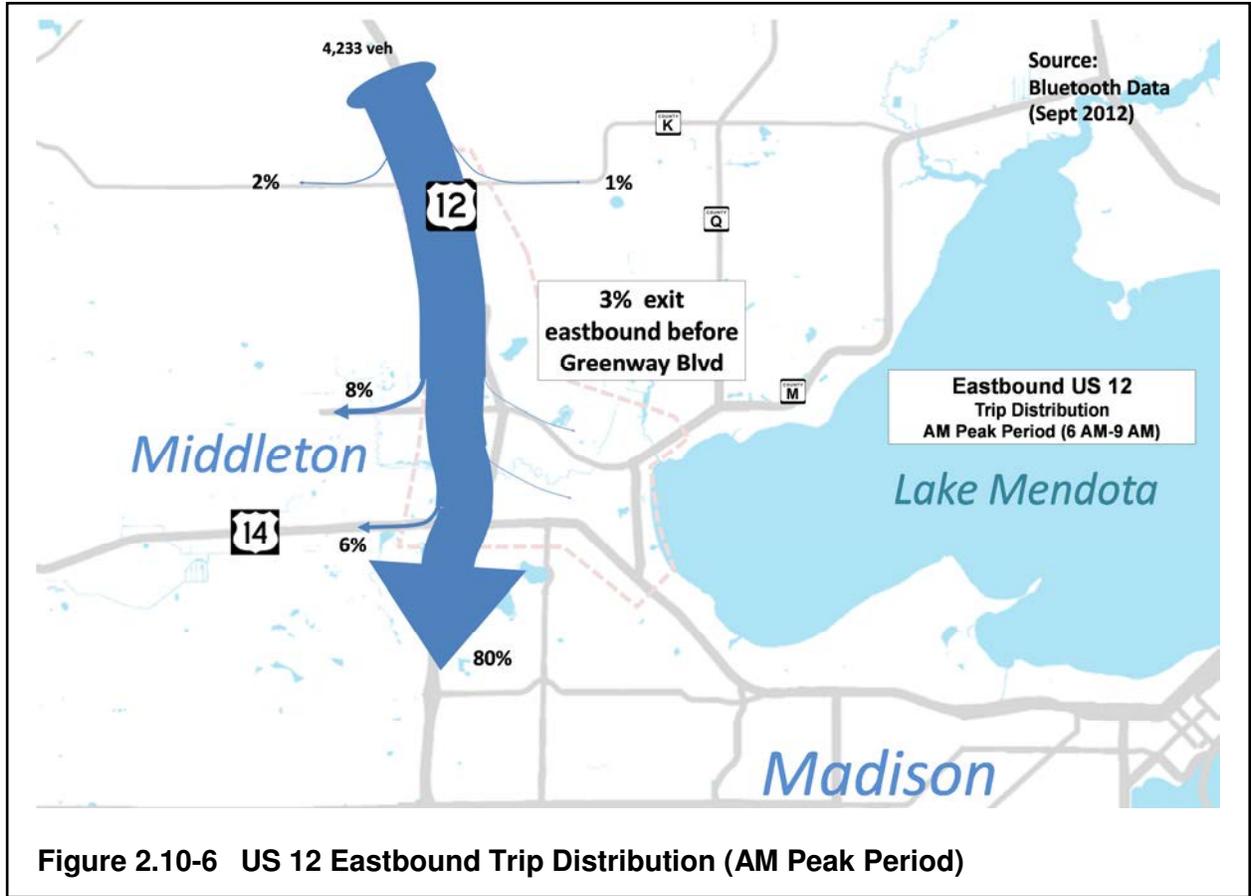


Figure 2.10-5 Eastbound Traffic Exiting Analysis Area (PM Peak Period)

The two largest destinations from the analysis area are County Q (1,222 vehicles) and Northport Drive (856 vehicles). A majority of the traffic that exits the analysis area (78 percent) goes to destinations west of the Lake Mendota and Yahara River corridor. Only the traffic on WIS 19 west of I-39/90/94 and traffic on Northport Drive goes east of that corridor, for a total of 22 percent of the traffic exiting the analysis area.

The most likely origin or destination for traffic on the north side of Lake Mendota is County Q south of Waunakee or Northport Drive on the near east side of Madison. These two locations generally account for 10 to 20 percent of the directional travel during each peak period. Approximately 25 to 35 percent of the traffic entering or exiting the analysis area are using the roads on the north side of Lake Mendota to travel east-west across the county.

Travel trends within the analysis area around Middleton were examined with desire diagrams similar to the Beltline and I-39 analysis. Figure 2.10-6 shows eastbound US 12 traffic entering the analysis area north of County K during the AM peak period.



The majority of eastbound US 12 traffic continues along the Beltline south of University Avenue. A large volume of traffic also exits the Beltline and travels eastbound out of the analysis area or stays within the analysis area during the AM peak period. Very few cars that started on eastbound US 12 leave the area on County K, westbound University Avenue, or westbound Airport Road.

Figure 2.10-7 shows westbound County K traffic entering the analysis area during the AM peak period.

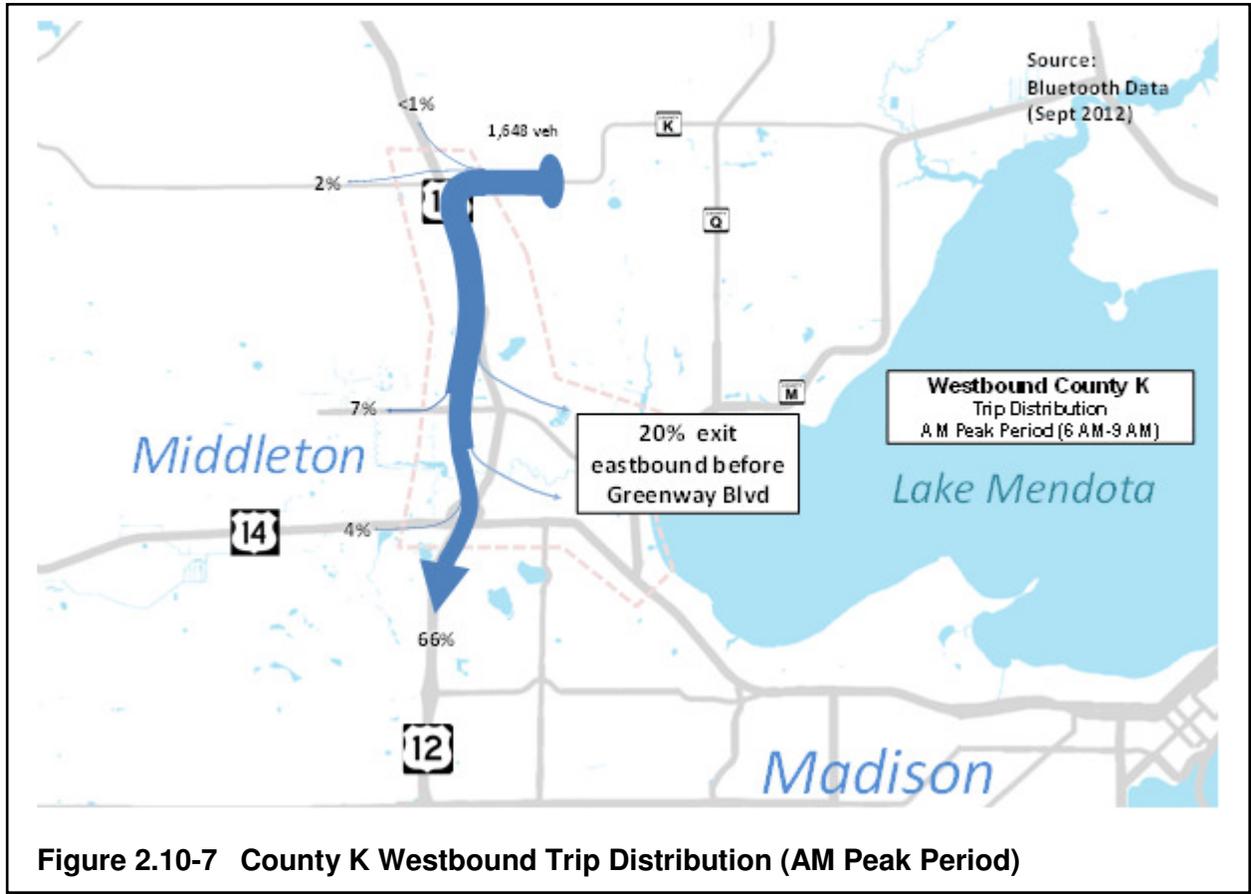


Figure 2.10-7 County K Westbound Trip Distribution (AM Peak Period)

The majority of westbound County K traffic joins with US 12 and continues along the Beltline south of University Avenue. A large volume of traffic also exits the Beltline and travels eastbound out of the analysis area or stays within the analysis area during the AM peak period. Very few cars that started on westbound County K leave the area on westbound County K, northbound US 12, westbound University Avenue, or westbound Airport Road.

Figure 2.10-8 shows westbound Century Avenue traffic entering the analysis area just west of County Q.

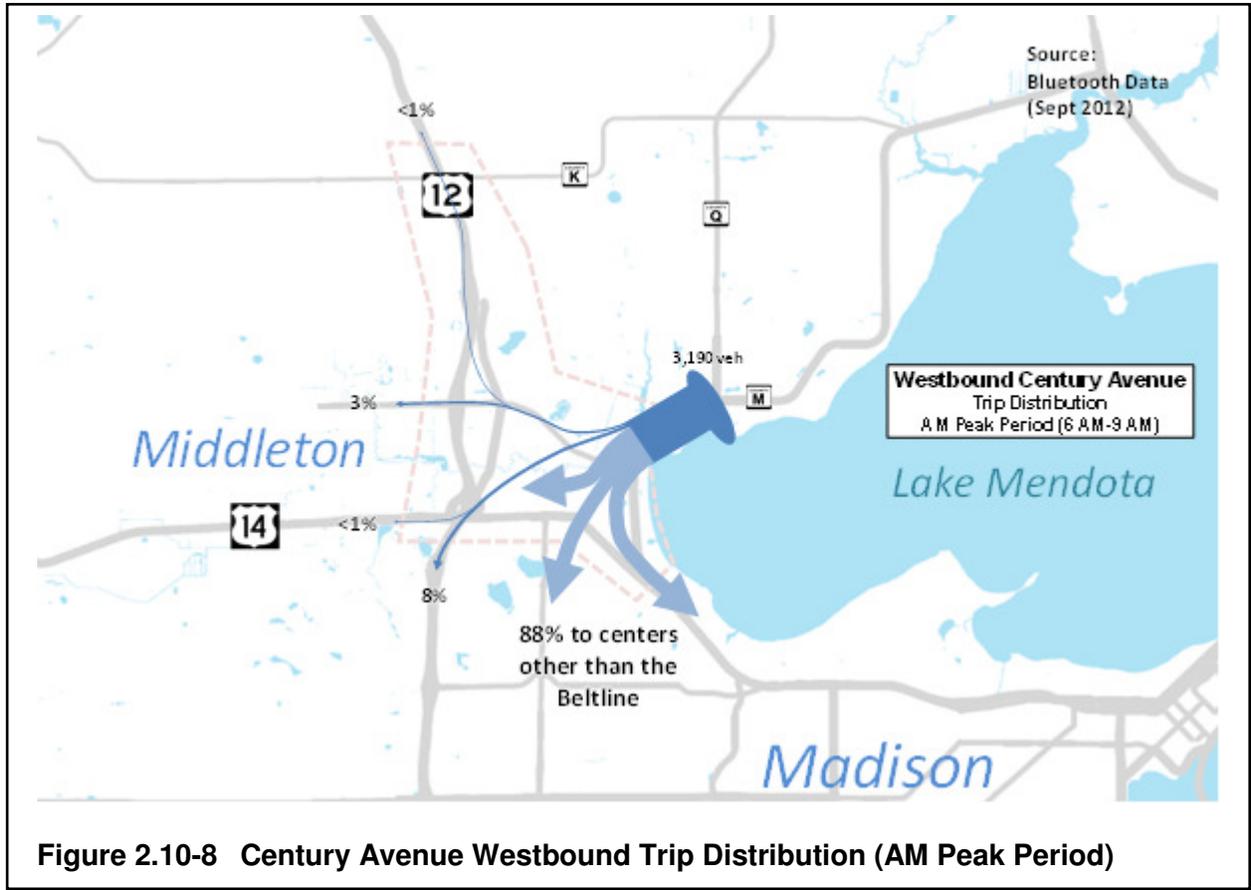


Figure 2.10-8 Century Avenue Westbound Trip Distribution (AM Peak Period)

The majority of westbound Century Avenue traffic remains within the analysis area or departs on the south or east side to centers other than the Beltline. Only 7 percent of the traffic entering the area on Century Avenue continues on the Beltline south of University Avenue. Small percentages of traffic exit the analysis area on westbound Airport Road, westbound University Avenue, or westbound US 12.

Figure 2.10-9 shows westbound US 12 traffic entering the analysis area south of University Avenue.

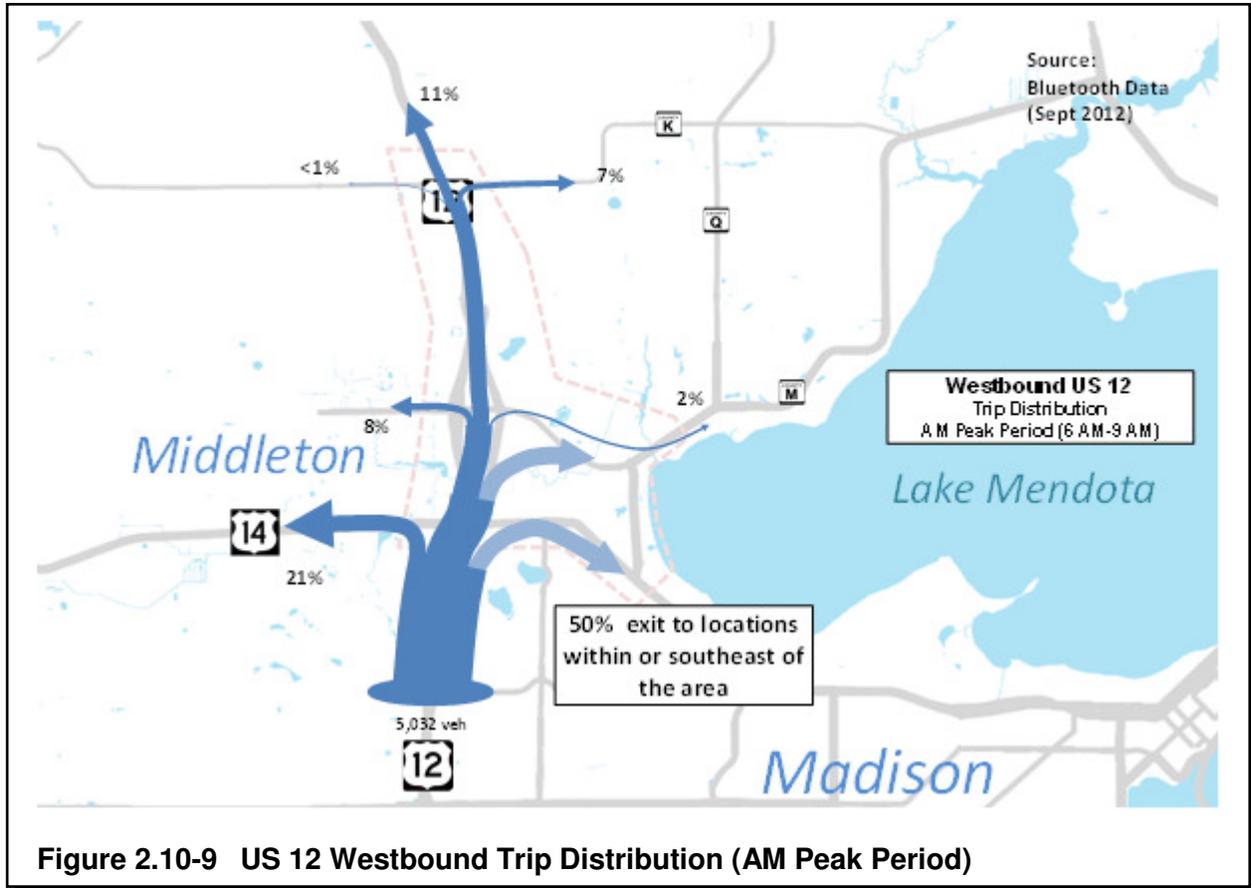


Figure 2.10-9 US 12 Westbound Trip Distribution (AM Peak Period)

The majority of westbound US 12 traffic proceeds to somewhere within the analysis area or to the southeast along University Avenue or other roadways in the area. A significant volume of traffic also exits and proceeds westbound on University Avenue or continues along westbound US 12 to the north of County K. Very few cars that started on westbound US 12 leave the area on Century Avenue or westbound County K.

From the AM peak period results, we can conclude most traffic that enters the area on eastbound US 12 or westbound County K will proceed along the Beltline south of University Avenue. Century Avenue does not contribute a significant amount of traffic to the Beltline during the AM peak period and most of the traffic likely exits the area on eastbound University Avenue. Westbound US 12 traffic likely has a destination within the Middleton or west Madison area during the AM peak period.

Figure 2.10-10 shows eastbound US 12 traffic entering the analysis area north of County K during the PM peak period.

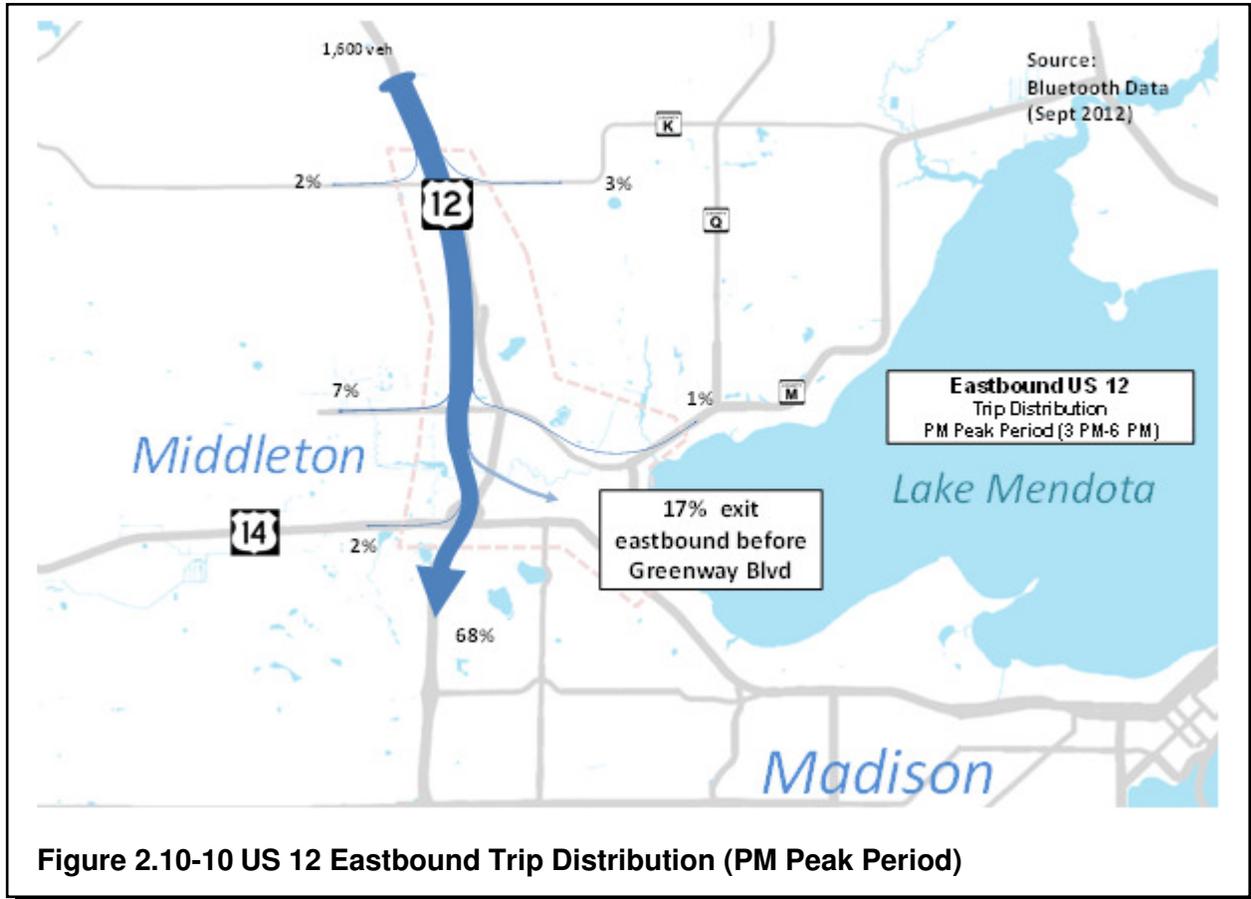


Figure 2.10-10 US 12 Eastbound Trip Distribution (PM Peak Period)

The majority of traffic entering the analysis area on eastbound US 12 continues along the Beltline south of University Avenue. Less than 20 percent of the traffic exits to any other destination.

Figure 2.10-11 shows westbound County K traffic entering the analysis area during the PM peak period.

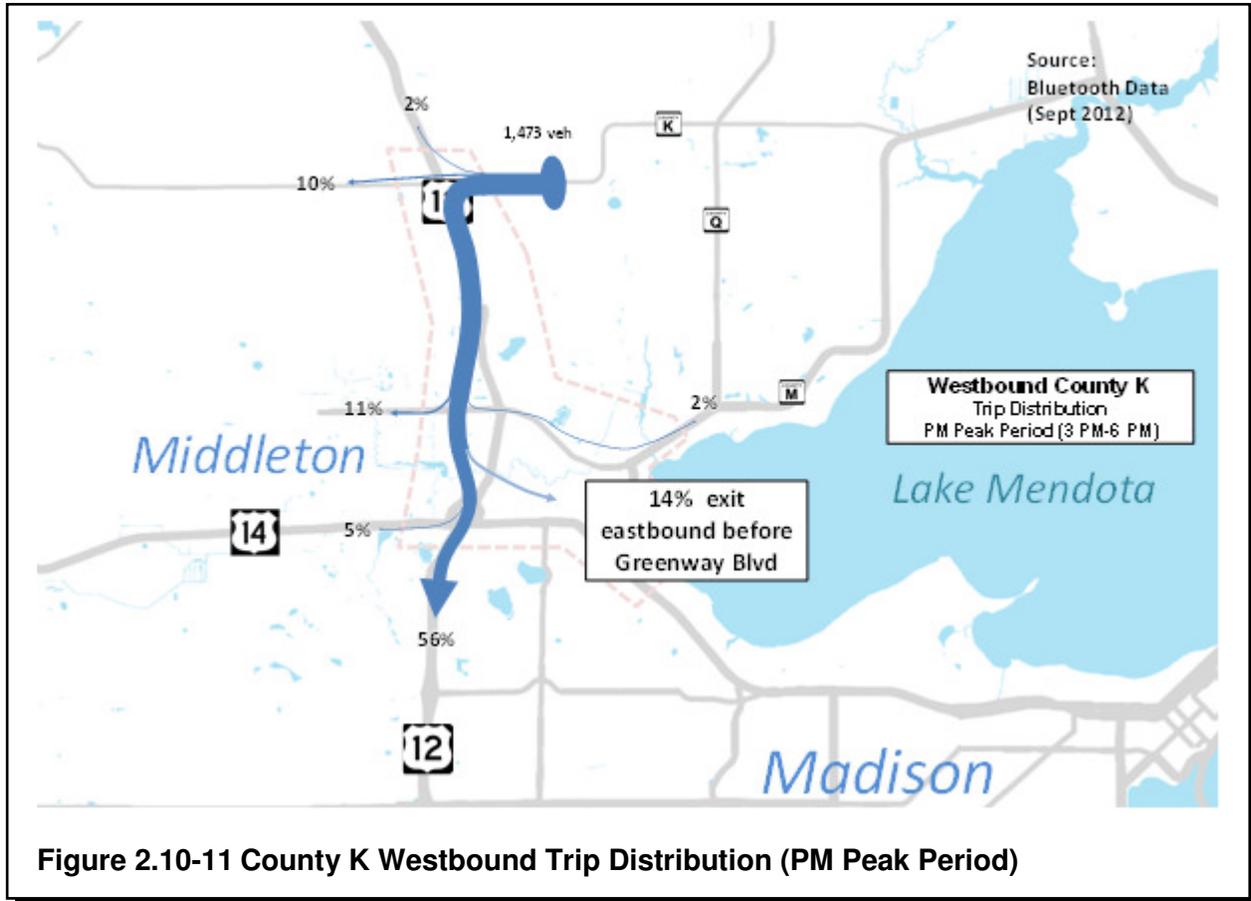
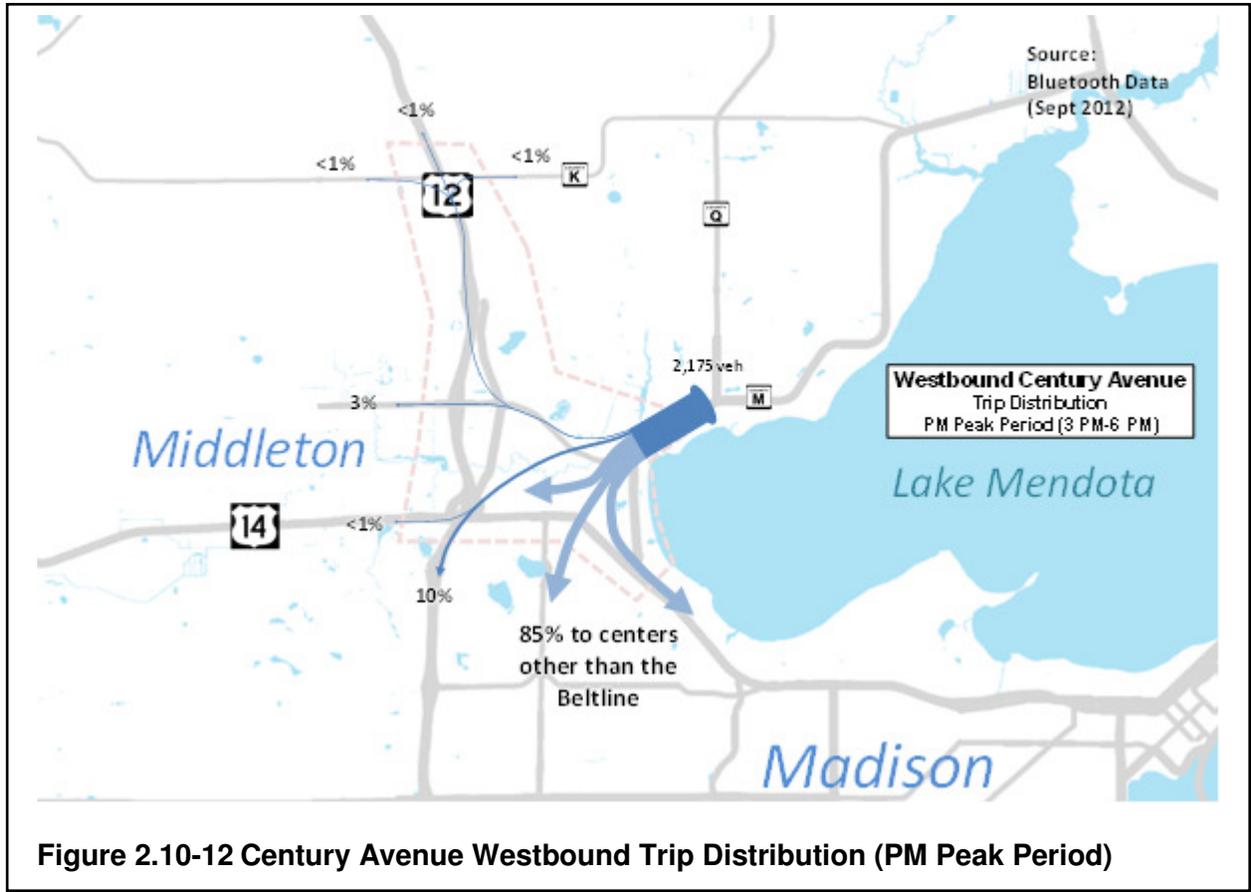


Figure 2.10-11 County K Westbound Trip Distribution (PM Peak Period)

During the PM peak period the major destinations for westbound County K traffic are the Beltline south of University Avenue, westbound County K, or locations east of the Beltline before Greenway Boulevard. Very few cars that started on westbound County K leave the area on westbound University Avenue, northbound US 12, or Century Avenue.

Figure 2.10-12 shows westbound Century Avenue traffic entering the analysis area just west of County Q during the PM peak period.



Similar to the AM peak period, the majority of westbound Century Avenue traffic remains within the analysis area or departs on the south or east side to centers other than the Beltline. Only 10 percent of the traffic entering the area on Century Avenue continues on the Beltline south of University Avenue. Small percentages of traffic exit the analysis area on westbound Airport Road, westbound University Avenue, County K, or westbound US 12.

Figure 2.10-13 shows westbound US 12 traffic entering the analysis area south of University Avenue during the PM peak period.

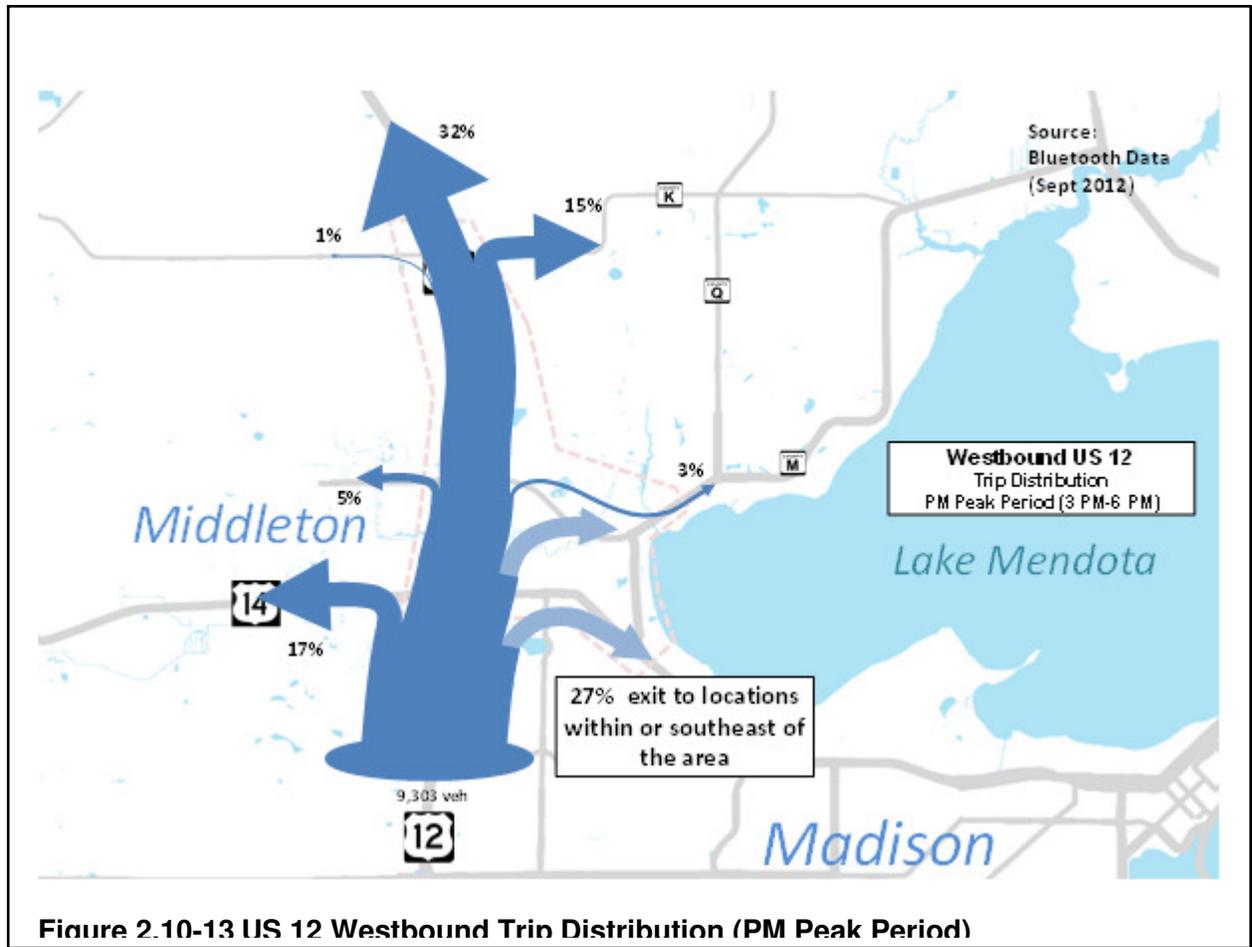


Figure 2.10-13 US 12 Westbound Trip Distribution (PM Peak Period)

Almost half of westbound US 12 traffic that enters the analysis area continues along westbound US 12 north of County K or exits onto eastbound County K. A significant volume of traffic also exits to the study area east of the Beltline or to westbound University Avenue. Very few cars that started on westbound US 12 leave the area on Century Avenue or westbound County K.

From the PM peak period results, we can conclude most traffic that enters the area on US 12 or westbound County K will proceed through the analysis area to destinations outside of Middleton. Century Avenue still does not contribute a significant amount of traffic to the Beltline during the PM peak period and most of the traffic likely exits the area on eastbound University Avenue. During the PM peak period it is also clear that the majority of traffic is commuter traffic traveling northbound through the analysis area.