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Route 44 Transit Plus Multimodal Corridor

Speed and Reliability Needs Report

November 20, 2019

Seattle Department of Transportation

Contents

1. Route 44 Transit Plus Multimodal Corridor

The Route 44 Transit Plus Multimodal Corridor (TPMC) is North Seattle's primary east-west transit route (King County Metro Route 44) serving the Ballard, Wallingford, and University District neighborhoods as well as the University of Washington and University of Washington Medical Center. This corridor also provides important connections to several current and future major north-south routes.

Additionally, this route passes through one of the city's six urban centers (the University District), two urban villages (Ballard and Wallingford), and is adjacent to the manufacturing and industrial center (MIC) in Ballard. Over 35,000 people live within a quarter mile of the corridor and there are over 32,000 jobs within a quarter mile of the corridor.

With over 9,300 daily weekday riders, the Route 44 is one of King County Metro's top ten routes by ridership. In the eastbound direction, almost half of the daily trips originate in Ballard, with another 20-25% of daily trip originating in Fremont or Wallingford. Over half of the daily eastbound trips (65%) terminate in the University District. In the westbound direction, over 75% of daily trips originate in the University District. Almost 40% of daily westbound trips terminate in Ballard, with around 20% each ending in the University District, Wallingford, and Fremont.

2. Route 44 Service

The current Route 44 is a 10.7-mile-long (both directions) trolley route that operates all day for both weekdays and weekends. The route has 225 scheduled trips per weekday (both directions), serving 28 stops in both the eastbound and westbound directions. Service operates all day (5 am to 4 am) every day of the week with typical weekday headways of every 8 to 10 minutes between about 7 am and 6 pm.

2.1 Key Transit Connections

Route 44 is a major east-west route in North Seattle with key connections to several north-south routes. The route connects with two RapidRide routes; the E Line at Aurora Ave/SR 99 and N 46th St and the D Line at 15th Ave NW and NW Market St. These two routes, respectively, are the top two King County Metro routes by ridership. Additionally, this route connects to the current terminus of Sound Transit's Link light rail system at the University of Washington Station.

In the future, once the Northgate Link Extension of light rail is completed, this route will also connect with the light rail system at the future U District Station at Brooklyn Ave NE and NE 43rd St. These key connections are shown in **Figure 1** along with the current Route 44 alignment.

Figure 1: Route 44 Corridor Map and Key Transit Connections

2.2 Current Ridership and Trends

Route 44 has experienced an increase in ridership since 2016. Between Fall 2016 and Fall 2018, there was over a 5% growth in weekday rides. As of May 2019, the Route 44 has the 8th highest ridership of all King County Metro routes with an average weekday ridership over 9,300 riders. There are 2.2 million annual rides on this route, accounting for 2% of all of Metro's ridership.

The PM peak period (3-7 pm) has the highest ridership with nearly 800 boardings per hour. For the Route 44, the midday period (9 am-3 pm) is the second highest ridership period with over 500 boardings per hour compared to the AM peak period (5-9 am) with just over 400 boardings per hour. The higher ridership during the midday period is likely due to the high number of college students who use this route and the variability in college class schedules throughout the day.

In the westbound direction, the highest number of boardings occur at the NE Pacific St & Montlake Blvd NE stop (about 900 riders). The following five stops, all in the U District east of I-5, also have high boardings ranging between 400 and 600 riders daily. The westbound alightings are more dispersed, with about 200 to 300 riders exiting the bus at most of the stops between I-5 and Phinney Ave N, and another 350 to 450 riders getting off in Ballard at each stop between 15th Ave NW and Ballard Ave NW. **Figure 2** shows the total average daily boardings and alightings for the westbound direction. The three highest ridership stops are highlighted with the total boarding and alightings. The average daily boarding and alighting data by stop for both directions can be found in Appendix A.

Figure 2: Westbound Average Daily Boardings and Alightings by Stop

In the eastbound direction, the stops at NW Market St & Ballard Ave NW and NW Market St & 15th Ave NW in Ballard have the highest average daily boardings (around 500 riders). The stops at NE 45th St & Roosevelt Way NE, NE 45th St & University Way NE, 15th Ave NE & NE 43rd St, and NE Pacific Pl & NE Pacific St have the highest number of alightings (around 500 riders each). This is followed closely by the stop at 15th Ave NE & NE Campus Pkwy with about 350 riders. **Figure 3** shows the total average daily boardings and alightings for the eastbound direction. The three highest ridership stops are highlighted with the total boarding and alightings.

Figure 3: Eastbound Average Daily Boardings and Alightings by Stop

2.3 Recent Improvements

A couple of studies have been conducted along this corridor in recent years. In 2010, the *NW Market/NE 45th Street Transit Priority Corridor Improvement Project* evaluated a collection of treatments to improve transit service along the corridor. This resulted in a handful of projects implemented between 2011 and 2012, including:

- Repaving 15th Ave NE, in conjunction with bus stop consolidation and TSP
- Bus queue jump lane on westbound Midvale Pl
- Bus bulbs in Wallingford and Ballard (N 45th St and NW Market St, respectively)
- Reconstruction of the NW Market St/24th Ave NW intersection
- Installation of TSP at many intersections
- PM peak-hour transit-only restriction of the northbound left-turn on 15th Ave NE at NE 45th St

A few years later in 2015, another study, *Route 44 Enhancements Study*, was conducted to identify and evaluate potential additional transit priority treatments along the corridor. This study recommended four potential enhancements, none of which have been implemented yet in the corridor. One of these projects, extending the existing Midvale Pl queue jump lane by realigning the N Midvale Pl and N 45th St intersection, however, has been designed and is expected to be implemented in late 2020.

2.4 Future Service

In 2021, the Northgate Link extension is expected to be complete, adding three new stations, with one of them being the U District Station at Brooklyn Ave NE and NE 43rd St. With the addition of this station, the westbound Route 44 is expected to reroute from north on 15th Ave NE to west on NE 43rd, north on 12th Ave NE, then west on NE 45th St to rejoin with the existing path, as shown in **Figure 4**. A new bus stop would be added on NE 43rd St, adjacent to the south entrance to the U District light rail station, which would replace the NE 45th St & Brooklyn Ave NE stop for westbound trips. The eastbound route would remain the same. No other changes to Route 44 service or route have been identified.

Figure 4: Route 44 Potential U-District Path

3. Route 44 Performance

Weekday Automatic Vehicle Location (AVL) data and Automated Passenger Count (APC) data were obtained from KCM for April 2019 for Route 44 as well as other selected routes along the corridor. This data was used to summarize the existing peak and off-peak (unconstrained) transit performance of the route in order to identify areas of deficiencies at bus zones, intersections, and segments between stops. The AM peak period is identified as 7-9AM, the midday period as 11AM-1PM, the PM peak period as 4-6PM, and the off-peak/unconstrained period as being 9-11PM.

The existing Route 44 AVL and APC data was summarized to understand the current transit service characteristics and identify areas of constraints along each of the corridors. These summaries included:

- Corridor travel times during peak and midday periods;
- On-time performance;
- Average segment speeds and reliability during the peak and midday periods; and
- Stop ridership and operations.

A summary of the key existing transit performance for Route 44 is included in the following sections.

3.1 Travel Times and Delay

The average travel time along the Route 44 ranged between 23 and 42 minutes depending on the time of day and direction for April 2019. The eastbound trips for the AM peak period, midday period, and PM peak period averaged between 37 to 39 minutes end-to-end with an average speed of about 10 mph. During these three time periods, the percentage of the total travel time between stops (also known as running time) was 75 percent with the remaining 25 percent dwelling at the 28 stops along the corridor. The eastbound off-peak trips (i.e. evening/night) averaged about 15 minutes faster at 23 minutes end-to-end with an average speed of 17 mph.

In the westbound direction, the AM peak period and midday trips averaged between 32 to 34 minutes end-to-end with the PM peak period trips averaging about 42 minutes, the longest end-to-end travel time for any period and direction. During the AM, mid-day and PM periods, the westbound running time percentage was more volatile than in the eastbound direction as it is between 70 to 80 percent with the remaining 20 to 30 percent dwelling at the 28 stops along the corridor. The off-peak period trips in the westbound direction were comparable to the eastbound direction averaging about 25 minutes end-to-end and an average speed of 16 mph. These travel times and average speeds are summarized in **Table 1** by corridor segment and the end-to-end corridor. Additional travel time information is included in Appendix A. The segment limits are shown in **Figure 5** and defined as:

- **Ballard Segment:** between the western terminus at NW Market St & 32nd Ave NW and 8th Ave NW & NW Market St
- **Phinney Segment:** between NW Market St & 8th Ave NW and N 46th St & Stone Way N
- **Wallingford Segment:** between N 46th St & Stone Way N and N 45th St & 7th Ave NE (including the I-5 interchange)
- **U District Segment:** between N 45th St & 7th Ave NE and the eastern terminus at NE Pacific Pl & NE Pacific St/Montlake Blvd NE

Table 1: Route 44 Corridor Performance Summary

Metric		Westbound				Eastbound			
		AM	*Mid*	*PM*	*Off*	*AM*	*Mid*	*PM*	*Off*
Ballard: West Terminus to 8th Ave NW	Total Travel Time (min)	10	10	12	8	11	10	11	7
	Running Time (min)	8	8	10	7	8	8	8	6
	Dwell Time (min)	2	2	2	1	3	2	3	1
	# of Stops	8	8	8	8	8	8	8	8
	Average Speed (mph)	13	13	11	16	11	11	11	15
Phinney: 8th Ave NW to Stone Way N	Total Travel Time (min)	6	6	8	5	7	6	7	4
	Running Time (min)	5	4	6	4	5	4	5	4
	Dwell Time (min)	1	2	2	1	2	2	2	<1
	# of Stops	7	7	7	7	7	7	7	7
	Average Speed (mph)	16	17	12	19	12	14	14	20
Wallingford: Stone Way N to 7th Ave NE	Total Travel Time (min)	5	6	7	4	6	6	6	4
	Running Time (min)	4	4	5	3	4	4	5	3
	Dwell Time (min)	1	2	2	1	2	2	1	1
	# of Stops	5	5	5	5	5	5	5	5
	Average Speed (mph)	14	11	9	17	11	11	11	18
U District: 7th Ave NE to East Terminus	Total Travel Time (min)	11	13	15	9	15	14	15	8
	Running Time (min)	9	9	10	8	12	11	12	7
	Dwell Time (min)	2	4	5	1	3	3	3	1
	# of Stops	8	8	8	8	8	8	8	8
	Average Speed (mph)	9	9	6	11	8	9	8	14
Total Route	Total Travel Time (min)	32	34	42	25	39	37	39	23
	Running Time (min)	26	26	30	22	29	28	30	20
	Dwell Time (min)	6	8	12	3	10	9	9	3
	# of Stops	28	28	28	28	28	28	28	28
	Average Speed (mph)	13	12	10	16	10	11	11	17

SOURCES: King County Metro AVL Data, April 2019

Figure 6 through **Figure 8** display the AM peak, midday, and PM peak average dwell times and delay, respectively. These figures illustrate where the longer delays and higher dwell times occur over the route and generally show that delays gradually increase over the course of the day in many locations.

In Ballard, locations with high transit delays are between 24th Ave NW and 22nd Ave NW, at 15th Ave NW, and 8th Ave NW. The stops with the highest dwell times are between 24th Ave NW and 15th Ave NW. Fremont Ave N and around Aurora Ave N (SR 99) are the primary delay locations in the Phinney segment, particularly in the eastbound direction, and are the worst in the PM peak period. The transit delays in Phinney are mainly contributed to vehicles coming from and going to SR 99. The Wallingford segment primarily shows delays around Stone Way N and Wallingford Ave N, but the most significant delays are near I-5 with a high number of vehicles coming from and going to I-5. High transit delays are experienced throughout the U District segment along N 45th St, 15th Ave NE, and NE Pacific St. The U District area also has several stops with the highest dwell times in the corridor, mostly in the westbound direction and during the PM peak period.

Figure 5: Route 44 Corridor Segments

Figure 6: Route 44 AM Peak Dwell Time and Delay

Figure 7: Route 44 Midday Dwell Time and Delay

Figure 8: Route 44 PM Peak Dwell Time and Delay

3.2 On-Time Performance

The on-time performance of Route 44 was assessed by determining the percent of “late trips” (i.e. the bus arrives more than 5.5 minutes after the scheduled arrival time) that occur during each hour of the day (averaged over the month of April 2019). This is summarized for the westbound direction in **Figure 9** and the eastbound direction in **Figure 10**.

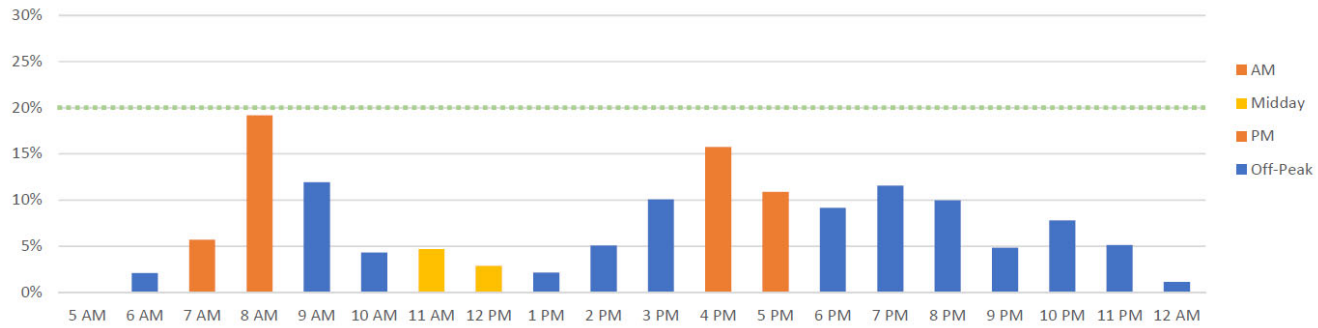

Figure 9: Route 44 Westbound Average On-Time Performance

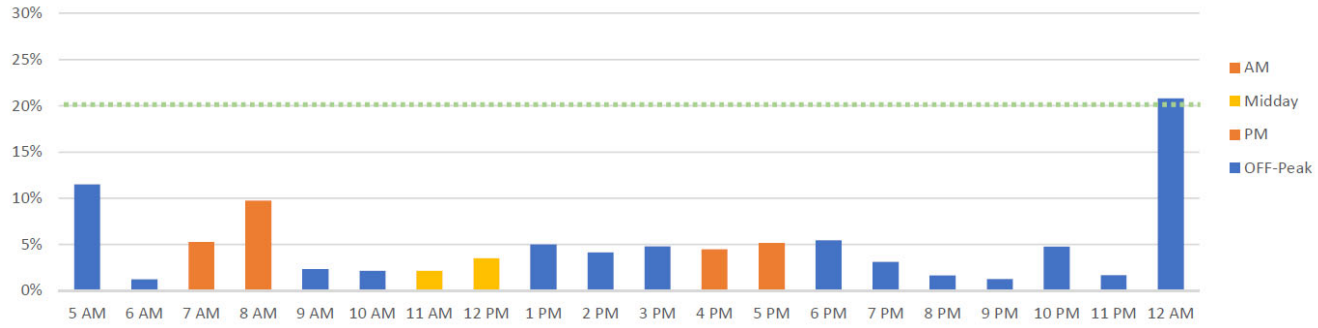

Figure 10: Route 44 Eastbound Average On-Time Performance

KCM aims to maintain under 20% late trips for each route. In the westbound direction, all hours fell within this threshold. In the eastbound direction, all hours, except after midnight (12 AM), were below the 20% threshold. The Route 44 generally met the on-time target; but could improve on-time performance primarily during the peak periods and in the westbound direction.

3.3 Average Speed and Reliability

The coefficient of variation of the travel time was used to estimate the reliability for each stop-to-stop segment, for each direction and time period. A higher coefficient of variation indicates that that location has a higher variability in travel time, suggesting that that segment is not very reliable. A lower coefficient of variation would indicate that there is little variability in the travel time and traveling along that segment is more reliable. Combining this with the average speed on the segment can identify segments that are reliably slow or reliably fast. **Figure 11** through **Figure 14** show the stop-to-stop speed and reliability for the four corridor segments.

In Ballard, the key areas of slower speeds and/or lower reliability along Market Street are primarily between 28th Ave NW and 11th Ave NE through all time periods and in both directions. The slowest and most unreliable section of Market Street is around 15th Ave NW in both directions, particularly in the PM peak period. Throughout the day, most of eastbound Market Street is slow with low reliability between Shilshole Ave and 15th Ave NW as well westbound Market Street between 24th Ave NW and 20th Ave NW.

The key areas of slower speeds and/or lower reliability for the Phinney segment are primarily between Phinney Ave N and Stone Way N. The area surrounding Aurora Ave N/SR 99 is the slowest and most unreliable section, particularly during the AM and PM peak periods. Both eastbound and westbound in the AM peak period are equally unreliable with slower speeds in the eastbound direction. In the PM peak period, speed and reliability are worse in the eastbound direction approaching SR 99.

Through the majority of the Wallingford segment the speed and reliability are fairly consistent, but there are two main areas of slower speeds and/or lower reliability. The first is in both the westbound and eastbound directions approaching the Wallingford Ave N intersection, particularly in the PM peak period, and the second is approaching/leaving I-5. The area around I-5 is the key area in this segment. Transit crossing I-5 is consistently unreliable with slow speeds, particularly in the PM peak. The significant congestion originating from I-5 also causes back-ups into the U District area.

In the U District, the majority of Route 44 is slow and/or unreliable in both directions and all time periods. The PM peak period, like the other areas of the corridor, is the worst for both directions with significant congestion along NE 45th Street and 15th Ave NE. NE Pacific St., adjacent to the University of Washington Medical Center, is the most reliable section in this area although once Route 44 is near 15th Ave NE or Montlake Blvd NE (eastern terminus), speeds become slow and the route has low reliability.

Figure 11: Stop-to-Stop Speed and Reliability – Ballard Segment

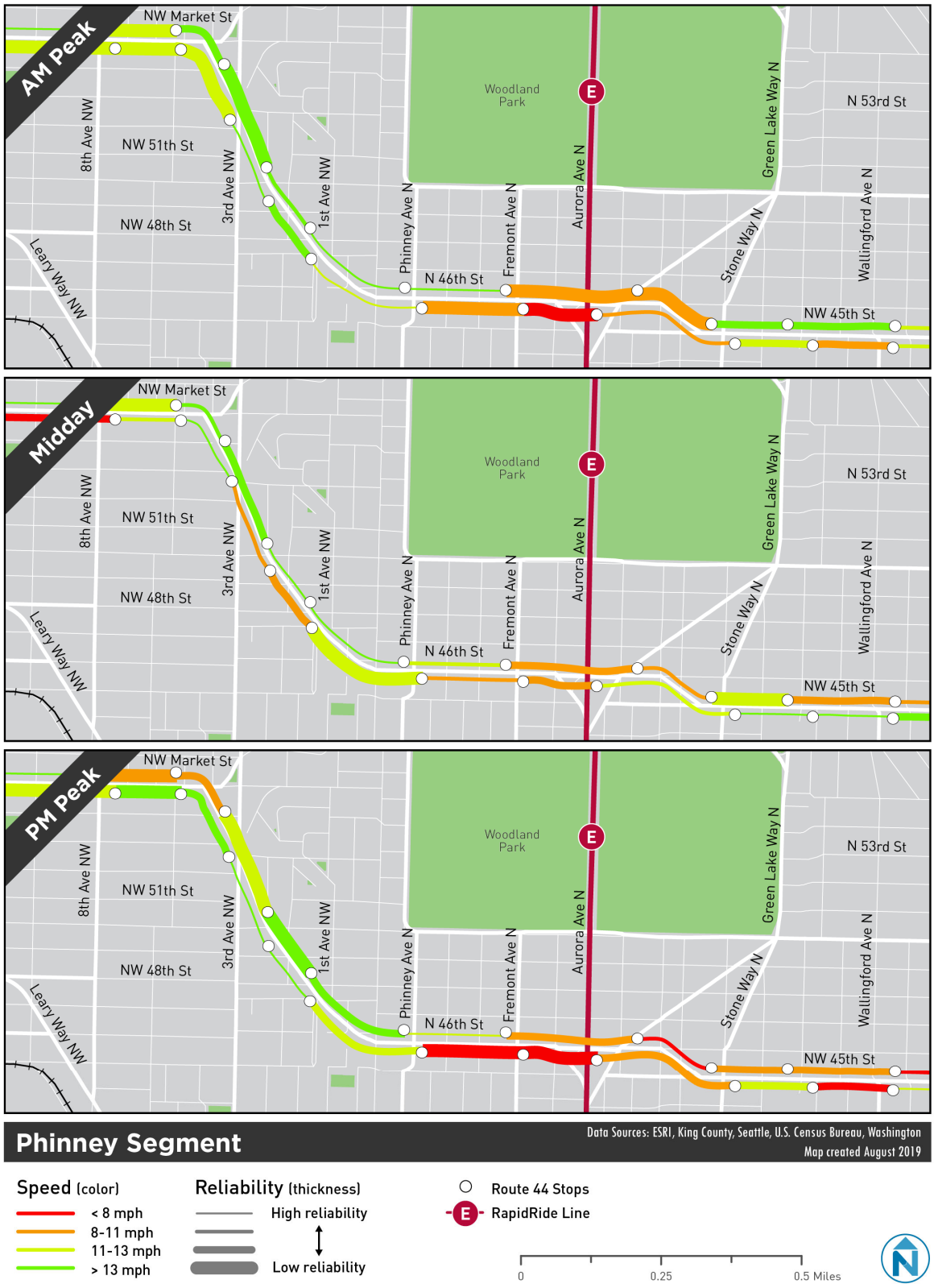

Figure 12: Stop-to-Stop Speed and Reliability – Phinney Segment

Figure 13: Stop-to-Stop Speed and Reliability – Wallingford Segment

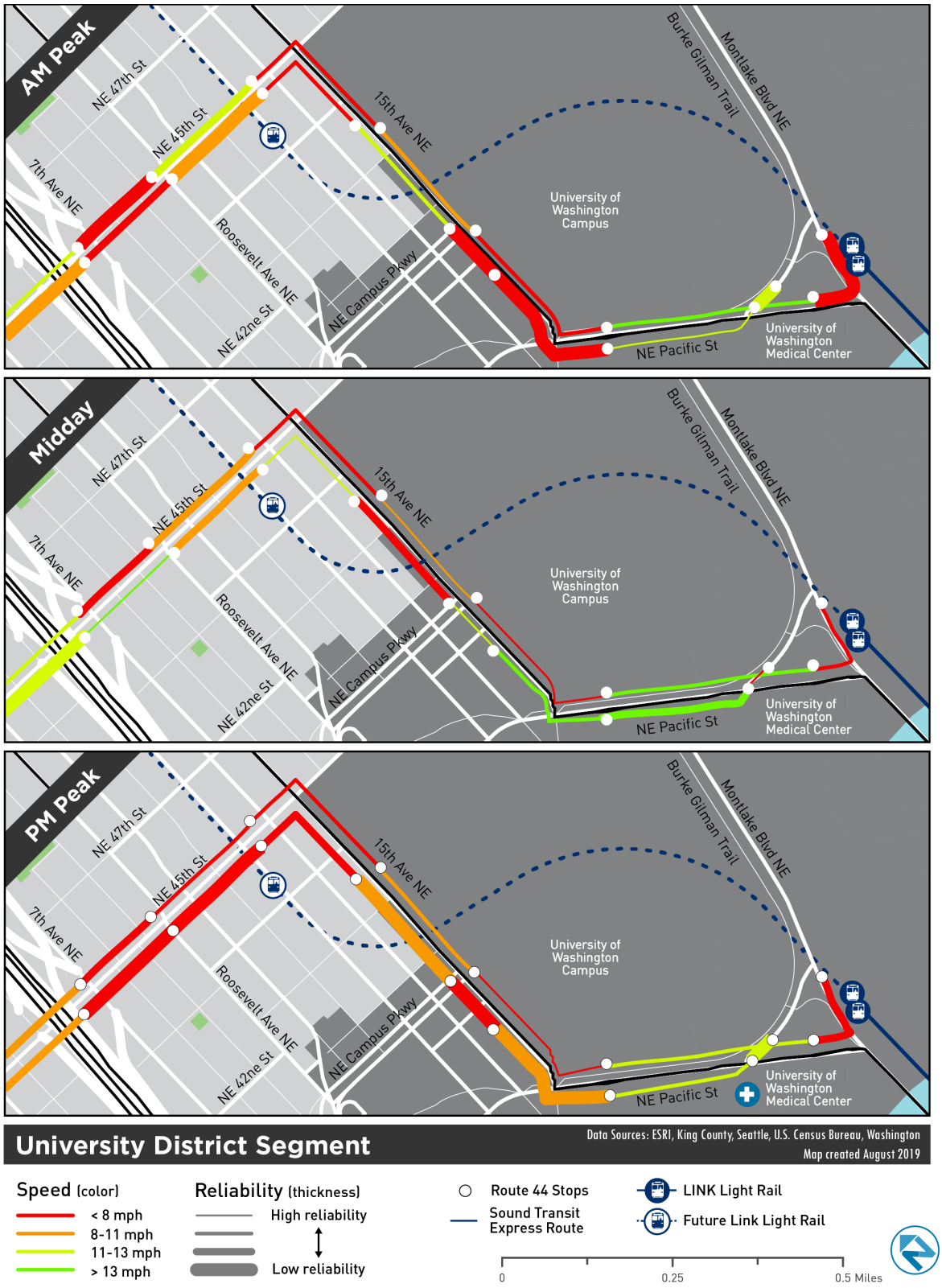

Figure 14: Stop-to-Stop Speed and Reliability – U District Segment

3.4 Bus Stop Ridership and Operations

As stated earlier in this memo, up to 30 percent of the Route 44 travel time along the corridor is at the bus stops. KCM data tracks a variety of data at bus stops, two being the overall dwell time at the stop and the portion of that time when the doors are open. The door-open time refers to the amount of the dwell time where the doors of the bus are open to board and alight passengers. The amount of door-open time per person, excluding lift deployments, normalizes the data to identify locations where there may be inefficiencies in boardings and alightings. **Figure 15** and **Figure 16** and display the average peak period door-open time per person boarding/alighting (excluding lift deployments) for the westbound and eastbound directions, respectively.

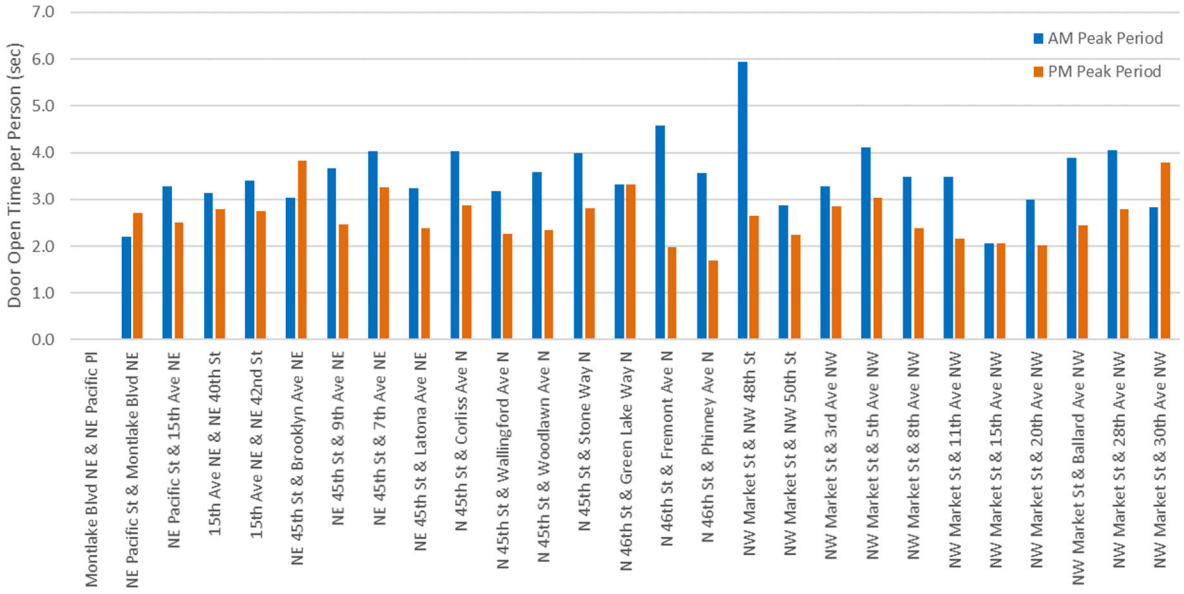

Figure 15: Westbound Average Peak Period Door Open Time Per Person

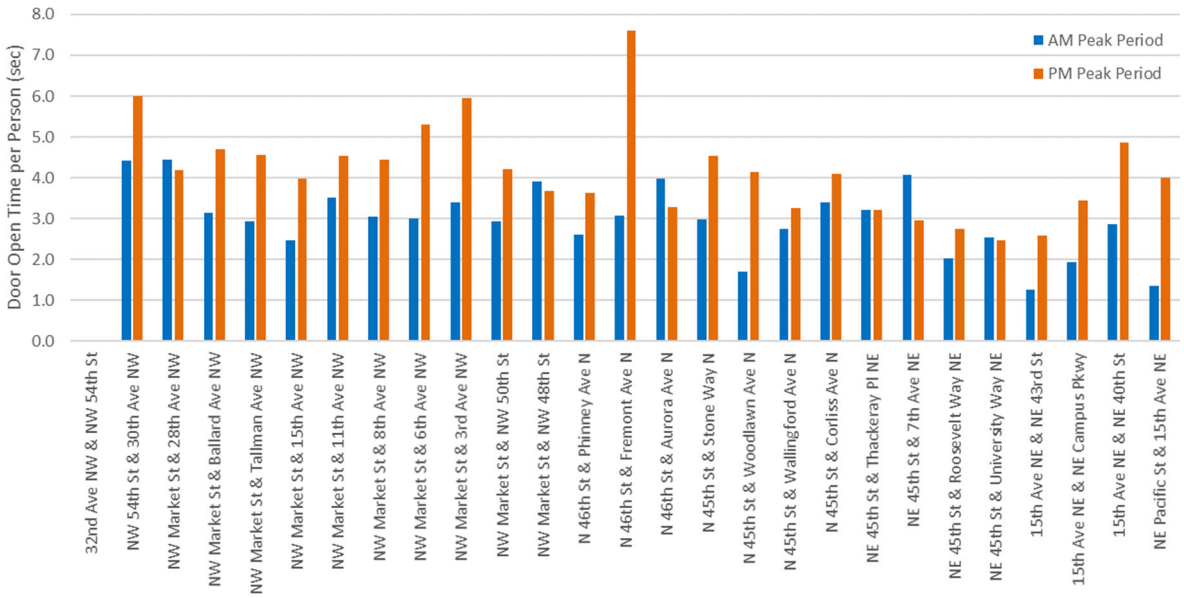

Figure 16: Eastbound Average Peak Period Door Open Time Per Person

In the westbound direction, the stops at N 46th St & Fremont Ave N and NW Market St & NW 48th St had the highest door open time per person in the AM peak period. The PM peak period had no outliers. In the eastbound direction, the stops at NW 54th St & 30th Ave NW, NW Market St & 3rd Ave NW, and N 46th St & Fremont Ave N had the highest door-open time per person in the PM peak period. The AM peak period also has no outliers.

In addition, the difference between the overall dwell time and the door-open time (referred to as bus stop delay) can highlight locations where there may be operational impacts affecting the stop, such as nearby congestion, multiple buses serving a station, or other similar delays or inefficiencies. While the overall dwell time is always longer than the door-open time, if it is substantially larger this could indicate issues accessing or leaving the stop. During the off-peak periods, the bus stop delay time is typically 3-4 seconds, indicating the bus is able to enter and exit the bus stop area with minimal impedance. Therefore, stop delay time that is noticeable longer than this time may indicate barriers or external factors that are prohibiting the bus from efficiently entering or exiting the bus stop zone. **Figure 17** and **Figure 18** show the average peak period bus stop delay time for each stop for the westbound and eastbound directions, respectively. Appendix A also provides supporting data that separates the overall stop dwell time by open-door time and stop delay time for the AM and PM peak periods.

In the westbound direction, in both the AM and PM peak periods, the stops at NE 45th St & Brooklyn Ave NE, N 46th St & Green Lake Way N, and NW Market St & Ballard Ave NW had the highest differences between the dwell and door-open time. All three of these stop locations are in congested areas, indicating that the traffic around the bus stop prohibits Route 44 from beginning boarding/alighting passengers or leaving the stop zone. The U District stop shares the stop with 9 other buses during the PM peak period and the Ballard stop shares the stop with 5 other buses during the PM peak period; indicating that other buses occupying the stop zone could also be prohibiting Route 44 from boarding/alighting passengers.

In the eastbound direction, the stops at NE 45th St & Thackeray Pl NE, NE 45th St & Roosevelt Way N, and 15th Ave NE & NE 43rd St had the highest differences between the dwell and door-open time in the PM peak period. All of these locations are in congested areas, particularly in the PM peak period. Multiple buses also serve the two U District stops during the peak periods. In the AM peak period, the stops at NW Market St & 28th Ave NW, N 46th St & Fremont Ave N, and NE 45th St & Thackeray Pl NE had the highest differences between the dwell and door open time. These stops are also located in areas of congestion. Similar to the westbound direction, congestion surrounding these bus stops are likely prohibiting Route 44 from beginning boarding/alighting passengers or leaving the stop zone.

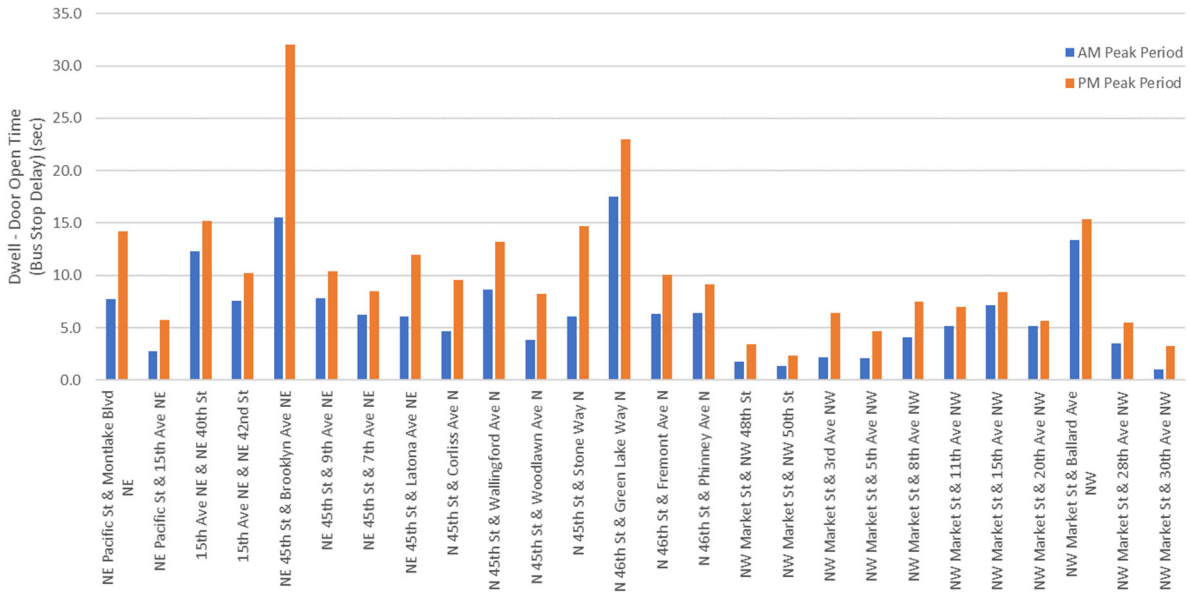

Figure 17: Westbound Average Peak Period Dwell Time Minus Door Open Time

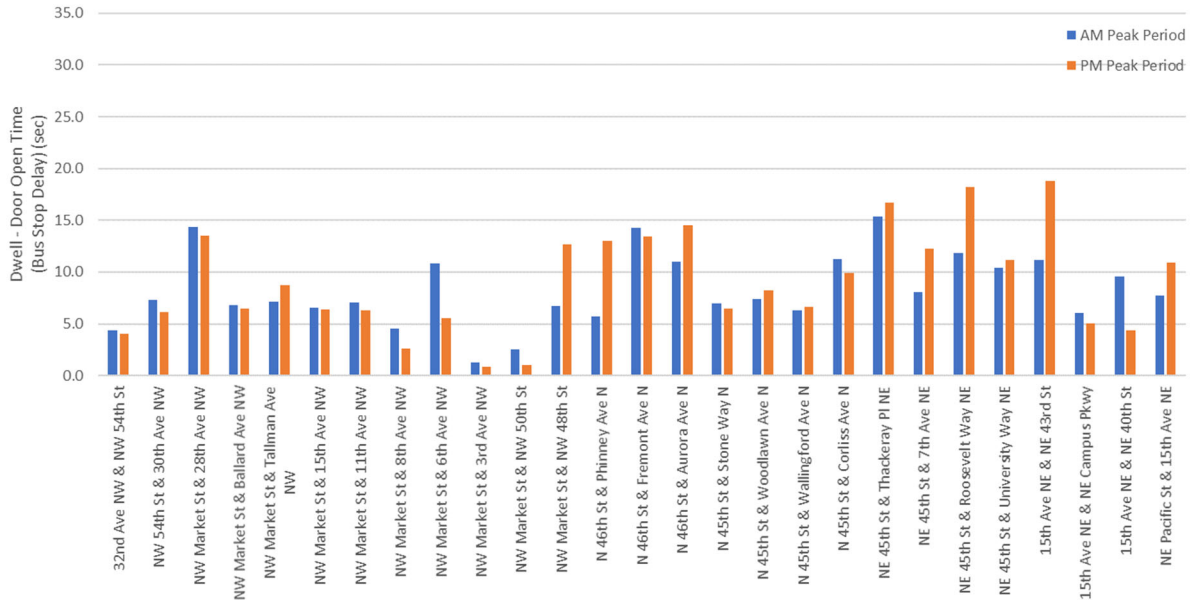

Figure 18: Eastbound Average Peak Period Dwell Time Minus Door Open Time

4. Speed and Reliability Needs Summary

4.1 Ballard Segment

The key speed and reliability deficiencies in the Ballard segment largely lies between 28th Ave NW and 15th Ave NW. Some of these specific locations include:

- In the eastbound direction slow transit speeds and low reliability occur between 28th and 15th Ave NW throughout the day. In the westbound direction, transit performance is poor between 24th and 20th Ave NW throughout day and at 15th Ave NW in the PM peak period. Traffic congestion, turning volumes, and high pedestrian activity and crossings contribute largely to the slow transit performance
- High bus stop delay at the westbound stop at NW Market St/Ballard Ave NW and the eastbound stop at NW Market St/28th Ave NW. Pedestrian activity and turning traffic likely contribute to these delays.
- Consistently high PM peak period open-door dwell times at the eastbound bus stops throughout the corridor. High AM peak period open-door dwell times at the NW Market St/5th Ave NW stop as well as the NW Market St/Ballard Ave NW and NW Market St/28th Ave NW stops

4.2 Phinney Segment

The key speed and reliability deficiencies in the Phinney segment largely lies Phinney Ave NE and Stone Way N. Some of these specific locations include:

- In the eastbound direction transit is slow and unreliable between Phinney Ave NE and Aurora Ave (SR 99) in the AM and PM peak periods due to congestion associated with vehicles heading to SR 99. In the westbound direction, slower transit speeds occur between Fremont Ave N and Stone Way N
- High AM peak door-open dwell times occur at the NW Market St/NW 48th St, N 46th Street/Fremont Ave N and N 45 St/Stone Way westbound bus stops. In the eastbound direction, high door-open times per person are experienced at NW Market St/3rd Ave NW and N 46th Street/Fremont Ave N during the

PM peak period. The bus stops at 3rd Ave NW and NW 48th Street have lower ridership, so their impact is relatively less than the per person delays experienced at N 46th Street/Fremont Ave N stop.

- Bus stops with high non-boarding dwell times include N 46th Street and Green Lake Way N in the westbound direction for both AM and PM peak periods as well as N 45th St/Stone Way in the PM peak. In the eastbound direction there is high non-boarding dwell times at all the bus stops between NW Market Street/NW 48th St through N 46th St/Aurora Ave.

4.3 Wallingford Segment (including I-5 interchange)

The key speed and reliability deficiencies in the Wallingford segment largely lie adjacent to the Wallingford Ave N intersection and at the NE 45th Street/I-5 Interchange. Some of these specific locations include:

- In the westbound direction, slow speeds and/or low reliability around the Wallingford Ave N intersection throughout the day. This is likely contributed to the intersection operations as well as high pedestrian crossings in this area. Additionally, slow westbound transit speeds and/or unreliable transit service within the I-5 interchange, likely due to high traffic volumes. In the eastbound direction, most of the slower transit speeds occur in the PM peak at Wallingford Ave N and Thackeray Pl NE through the I-5 interchange. Poor transit performance through the I-5 interchange is caused by high traffic volumes forming congestion that has significant back-ups.
- Relatively consistent open-door dwell times in both directions with no noticeable concerns with boarding/alighting at the bus stops in this segment.
- High non-boarding dwell times at the NE 45th St/Thackeray Pl NE and NE 45th St/7th Ave (within I-5 interchange) eastbound bus stop in the PM peak due to congestion from the I-5 interchange.

4.4 University District

Noticeable speed and reliability deficiencies occur through the University District segment throughout most of the day due to the consistent traffic throughout this area. Some of these specific locations include:

- Slow transit speeds and poor reliability through the University District area along NE 45th Street, 15th Ave and parts of NE Pacific St and Montlake Ave. Because of the significant activity in this area and traffic volumes, transit delays do not follow typical commuting patterns by time period but occur for both directions in the AM, mid-day and PM peak periods.
- Substantial total dwell time delays along many of the stops in this area, particularly in the westbound direction on NE 45th Street and northbound on 15th Ave NE during the PM peak period. Door open times are not relatively high per person but with such high ridership many of the stops have overall long dwell times.
- In the westbound direction, the highest non-boarding dwell time along the route occurs at the NE 45th St/Brooklyn Ave NE stop in the PM peak period due to significant congestion surrounding this stop prohibiting the bus from moving. Route 44 would not continue to stop at this location with the planned service change when the Brooklyn LRT station opens.
- In the eastbound direction, the highest non-boarding dwell times along the route occur at the NE 45th St/Roosevelt Way NE and 15th Ave NE/NE 43rd St stops. Again, this is likely caused by traffic congestion around the bus stop.

Appendix A. Additional AVL and APC Data Summaries

Table A-1. Westbound Average Daily Boardings and Alightings

Westbound Stops	Daily Average		
	Boardings	*Alightings*	*Total*
Montlake Blvd NE & NE Pacific Pl	403	0	403
NE Pacific St & Montlake Blvd NE	878	17	895
NE Pacific St & 15th Ave NE	356	30	386
15th Ave NE & NE 40th St	638	171	809
15th Ave NE & NE 42nd St	503	179	682
NE 45th St & Brooklyn Ave NE	481	304	785
NE 45th St & 9th Ave NE	384	386	771
NE 45th St & 7th Ave NE	145	191	336
NE 45th St & Latona Ave NE	124	213	337
N 45th St & Corliss Ave N	59	196	255
N 45th St & Wallingford Ave N	210	328	538
N 45th St & Woodlawn Ave N	114	148	262
N 45th St & Stone Way N	109	175	284
N 46th St & Green Lake Way N	56	198	253
N 46th St & Fremont Ave N	95	242	337
N 46th St & Phinney Ave N	120	308	428
NW Market St & NW 48th St	6	27	33
NW Market St & NW 50th St	8	14	22
NW Market St & 3rd Ave NW	15	50	65
NW Market St & 5th Ave NW	24	70	93
NW Market St & 8th Ave NW	43	121	164
NW Market St & 11th Ave NW	13	168	182
NW Market St & 15th Ave NW	117	461	578
NW Market St & 20th Ave NW	20	305	325
NW Market St & Ballard Ave NW	80	366	445
NW Market St & 28th Ave NW	5	117	122
NW Market St & 30th Ave NW	2	69	71
32nd Ave NW & NW 54th St	0	265	265

SOURCE: King Couty Metro, April 2019

Table A-2. Eastbound Average Daily Boardings and Alightings

Eastbound Stops	Daily Average		
	Boardings	*Alightings*	*Total*
32nd Ave NW & NW 54th St	271	0	271
NW 54th St & 30th Ave NW	59	3	61
NW Market St & 28th Ave NW	132	6	138
NW Market St & Ballard Ave NW	461	87	548
NW Market St & Tallman Ave NW	272	30	302
NW Market St & 15th Ave NW	533	136	670
NW Market St & 11th Ave NW	125	15	139
NW Market St & 8th Ave NW	151	46	198
NW Market St & 6th Ave NW	81	26	106
NW Market St & 3rd Ave NW	61	27	87
NW Market St & NW 50th St	12	8	20
NW Market St & NW 48th St	29	11	39
N 46th St & Phinney Ave N	256	167	423
N 46th St & Fremont Ave N	171	68	238
N 46th St & Aurora Ave N	262	90	352
N 45th St & Stone Way N	256	121	378
N 45th St & Woodlawn Ave N	85	111	196
N 45th St & Wallingford Ave N	261	171	432
N 45th St & Corliss Ave N	121	56	176
NE 45th St & Thackeray Pl NE	152	101	254
NE 45th St & 7th Ave NE	149	161	310
NE 45th St & Roosevelt Way NE	247	363	609
NE 45th St & University Way NE	102	480	582
15th Ave NE & NE 43rd St	68	498	566
15th Ave NE & NE Campus Pkwy	64	352	415
15th Ave NE & NE 40th St	27	140	166
NE Pacific St & 15th Ave NE	8	231	239
NE Pacific Pl & NE Pacific St	14	529	543

SOURCE: King Couty Metro, April 2019

Figure A-1. Westbound Average Travel Time by Period

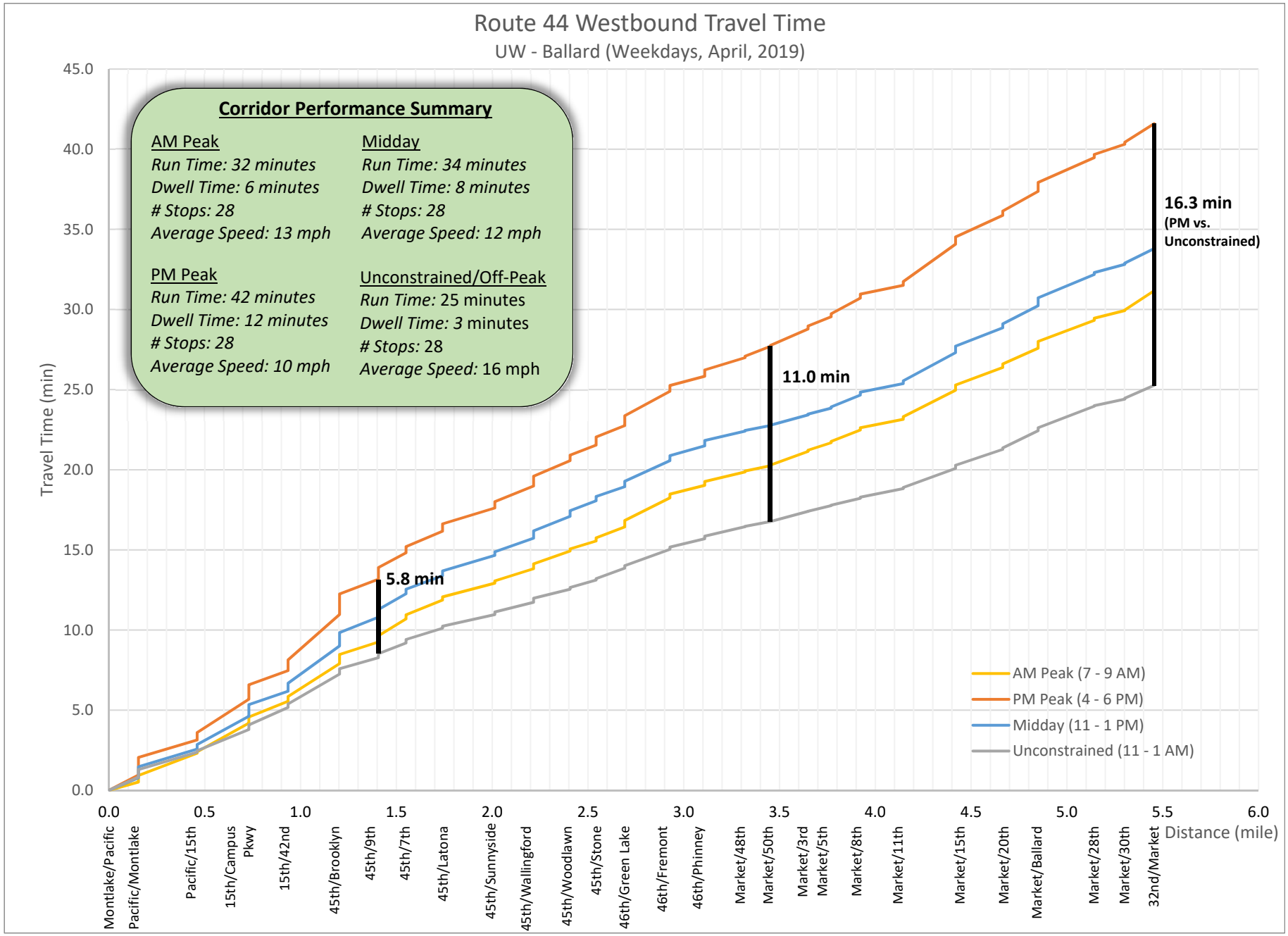

Figure A-2. Eastbound Average Travel Time by Period

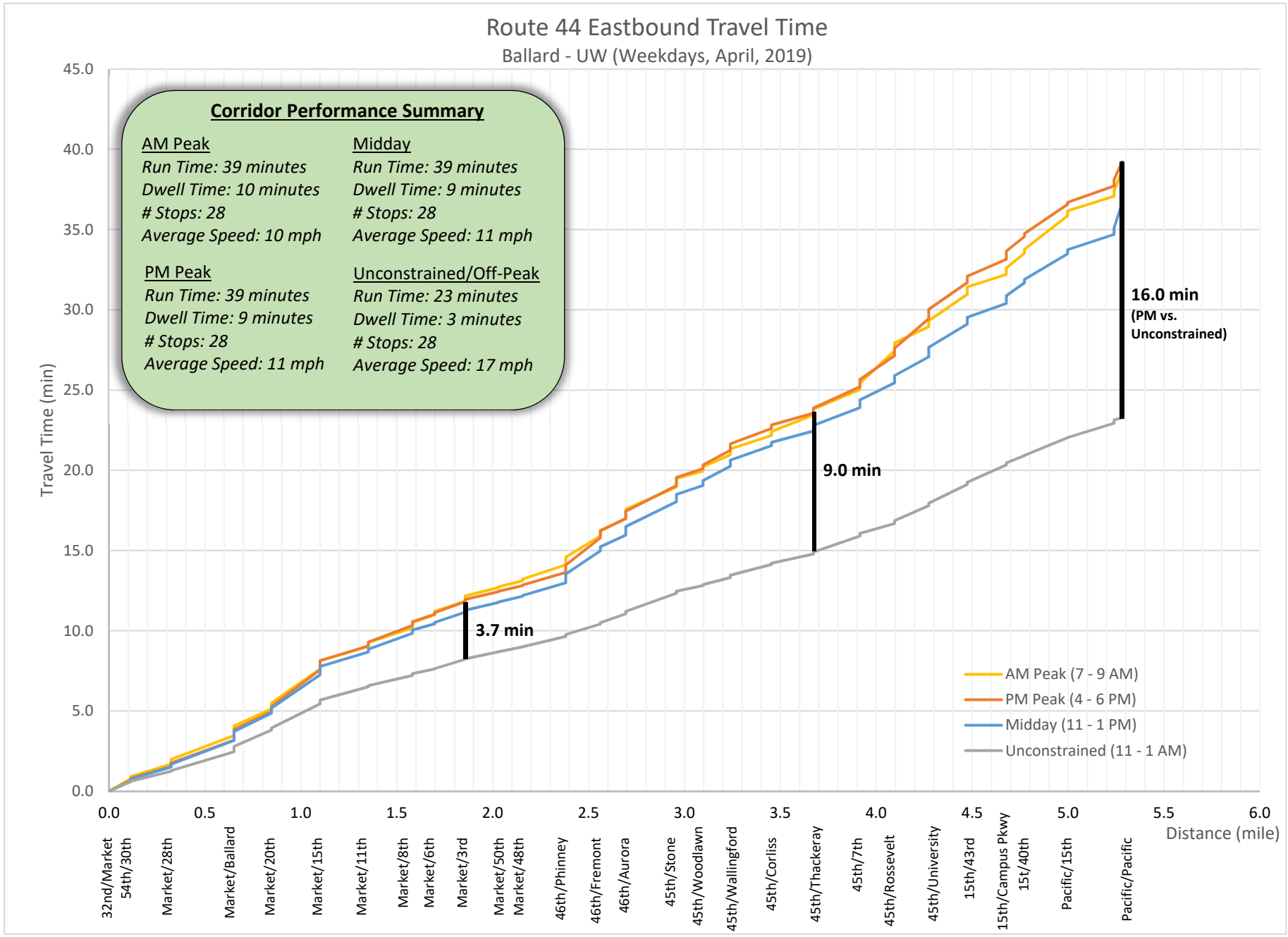

Figure A-3. Average Bus Stop Delay and Door Open Time by Stop and Direction