

APPENDICES

APPENDIX A: RIDERSHIP FORECAST METHODOLOGY DETAILS

Table 18. Observed and Estimated Productions at Metrorail Stations (2002)

Station Name	HBW PK Productions				All-Purposes Daily Productions			
	Station-Level		Group-Level		Station-Level		Group-Level	
	Observed	Estimated	Observed	Estimated	Observed	Estimated	Observed	Estimated
Shady Grove	9,050	4,886			13,037	7,776		
Rockville	2,813	3,213			4,797	4,969		
Twinbrook	2,520	1,376			4,467	3,470		
White Flint	2,647	1,257			4,418	2,609		
Grosvenor	2,174	3,545	19,204	14,275	3,712	6,665	30,431	25,487
Medical Center	2,658	1,497			4,617	3,198		
Bethesda	4,129	5,363			9,167	13,367		
Friendship Heights	4,073	4,030	10,860	10,889	9,363	8,868	23,147	25,433
Tenleytown	2,604	2,630			6,020	6,729		
Van Ness-UDC	2,973	2,348			7,084	5,742		
Cleveland Park	1,839	1,284			5,296	3,053		
Woodley Park-Zoo	2,214	2,217	9,630	8,478	5,430	5,524	23,830	21,047
Dupont Circle	10,664	10,201			24,490	20,293		
Farragut North	14,739	12,677			26,661	27,798		
Metro Center	15,149	6,402			28,699	13,860		
Gallery Place	7,309	4,039			14,449	8,261		
Judiciary Square	6,019	5,886			11,090	11,438		
Union Station	16,454	10,707	70,333	49,910	29,515	20,531	134,904	102,179
Rhode Island Ave	2,379	2,590			4,477	7,068		
Brookland-CUA	2,801	1,154			6,357	2,928		
Fort Totten	2,903	4,038			5,771	7,864		
Takoma	3,152	1,733	11,235	9,514	6,097	4,004	22,702	21,862
Silver Spring	7,411	7,704			12,822	14,366		
Forest Glen	1,396	1,378			2,056	2,209		
Wheaton	2,395	2,395			4,343	4,185		
Glennmont	3,942	5,594	15,144	17,070	6,005	7,609	25,225	28,368
Greenbelt	4,737	3,033			7,277	4,861		
College Park	1,922	1,965			3,884	2,931		
PG Plaza	2,258	1,022			4,114	2,665		
West Hyattsville	1,618	1,827	10,535	7,846	2,861	2,876	18,136	13,333
Georgia Ave	1,430	1,581			3,349	3,813		
Columbia Heights	1,906	1,685			4,354	4,224		
U-Street-Cardozo	1,569	1,945	4,905	5,210	3,654	4,544	11,356	12,581
Shaw-Howard Univ	1,007	964			2,907	2,333		
Mt Vernon Square	631	2,552			1,547	5,818		
Archives	4,673	5,715			7,706	12,069		
L'Enfant Plaza	14,731	10,613	21,043	19,843	23,369	22,521	35,530	42,740
Waterfront	1,721	1,642			3,880	3,463		
Navy Yard	1,698	1,413			3,019	3,285		
Anacostia	3,045	1,873			6,212	5,658		
Congress Heights	785	1,238	7,249	6,165	1,688	3,161	14,799	15,566
Southern Avenue	3,400	2,136			5,251	4,608		
Naylor Road	1,519	3,529			2,382	4,174		
Suitland	3,846	1,853			5,844	4,969		
Branch Avenue	4,813	4,944	13,578	12,461	6,600	8,118	20,076	21,869
Van Dorn Street	2,179	2,988			3,475	5,526		
Franconia-Springfield	5,504	3,772			8,625	5,862		

METRORAIL STATION ACCESS & CAPACITY STUDY

Station Name	HBW PK Productions				All-Purposes Daily Productions			
	Station-Level		Group-Level		Station-Level		Group-Level	
	Observed	Estimated	Observed	Estimated	Observed	Estimated	Observed	Estimated
Huntington	5,157	5,397	12,840	12,157	7,788	9,167	19,888	20,555
Eisenhower Avenue	659	797			1,278	1,401		
King Street	2,815	2,545			5,764	5,242		
Braddock Road	2,356	1,994	5,830	5,335	3,962	4,751	11,004	11,393
National Airport	523	560			4,438	1,042		
Crystal City	7,543	4,948			12,847	12,054		
Pentagon City	3,799	3,188			11,305	8,354		
Pentagon	11,193	13,503			15,750	22,194		
Arlington Cemetery	88	42	23,146	22,241	1,074	88	45,415	43,732
Vienna	8,442	4,403			12,220	7,212		
Dunn Loring	2,630	3,370			4,465	7,716		
West Falls Church	5,960	3,631	17,033	11,403	8,828	6,414	25,514	21,342
East Falls Church	2,795	3,146			4,497	5,070		
Ballston	7,129	7,369			13,845	15,105		
Virginia Square	1,444	1,743			2,816	3,587		
Clarendon	1,599	1,450			3,043	3,642		
Court House	3,453	4,673	16,420	18,381	6,331	9,968	30,532	37,371
Rosslyn	8,072	5,304			15,143	12,466		
Foggy Bottom-GWU	9,062	10,104			20,461	19,992		
Farragut West	15,513	15,225			26,356	31,899		
McPherson Square	10,523	14,394			17,341	29,818		
Federal Triangle	6,891	1,867			11,147	3,853		
Smithsonian	5,672	4,823			11,926	9,865		
Federal Center SW	3,222	2,919			5,377	5,441		
Capitol South	3,846	4,550	62,802	59,184	7,502	8,875	115,253	122,207
Eastern Market	2,199	1,132			5,024	3,746		
Potomac Avenue	1,568	580			3,101	1,649		
Stadium Armory	1,287	2,553	5,053	4,264	2,909	4,947	11,034	10,341
Minnesota Avenue	1,327	590			2,666	1,593		
Deanwood	903	599			1,686	1,412		
Cheverly	953	879			1,426	1,439		
Landover	2,470	949			3,532	2,395		
New Carrollton	5,789	5,393	11,442	8,409	8,494	8,462	17,803	15,299
Benning Road	1,245	1,209			2,612	3,192		
Capitol Heights	1,229	1,758			2,011	2,590		
Addison Road	3,520	1,822	5,994	4,788	6,228	3,797	10,851	9,579
Total	354,274	307,819	354,274	307,819	647,431	622,279	647,431	622,279

Source: AECOM Consult

Table 19. Mezzanine Half-Hour Peak Period Determination

<i>Mezzanine</i>	<i>Peak 1/2 Hr Entries</i>		<i>Peak 1/2 Hr Exits</i>	
	<i>Time</i>	<i>% of Daily</i>	<i>Time</i>	<i>% of Daily</i>
Addison Road	7:00 AM to 7:30 AM	11.3%	5:30 PM to 6:00 PM	10.9%
Anacostia, N	8:00 AM to 8:30 AM	12.7%	5:00 PM to 5:30 PM	15.1%
Anacostia, S	7:30 AM to 8:00 AM	7.6%	4:00 PM to 4:30 PM	7.3%
Archives-Navy Memorial	5:00 PM to 5:30 PM	13.3%	8:30 AM to 9:00 AM	13.1%
Arlington Cemetery	5:00 PM to 5:30 PM	7.0%	10:00 AM to 10:30 AM	8.6%
Ballston	8:00 AM to 8:30 AM	9.6%	5:30 PM to 6:00 PM	8.0%
Benning Road	8:00 AM to 8:30 AM	11.1%	5:30 PM to 6:00 PM	8.8%
Bethesda	8:00 AM to 8:30 AM	7.7%	8:30 AM to 9:00 AM	7.2%
Braddock Road	8:00 AM to 8:30 AM	12.2%	6:00 PM to 6:30 PM	9.7%
Branch Avenue	7:00 AM to 7:30 AM	18.0%	5:30 PM to 6:00 PM	15.0%
Brookland	8:00 AM to 8:30 AM	7.5%	5:30 PM to 6:00 PM	6.2%
Capitol Heights	7:30 AM to 8:00 AM	12.4%	5:30 PM to 6:00 PM	11.3%
Capitol South	6:00 PM to 6:30 PM	9.3%	8:30 AM to 9:00 AM	13.8%
Cheverly	7:30 AM to 8:00 AM	13.1%	5:30 PM to 6:00 PM	11.2%
Clarendon	8:30 AM to 9:00 AM	10.0%	5:30 PM to 6:00 PM	9.3%
Cleveland Park	8:30 AM to 9:00 AM	14.3%	6:00 PM to 6:30 PM	10.6%
College Park-U of MD	7:30 AM to 8:00 AM	8.7%	5:30 PM to 6:00 PM	8.6%
Columbia Heights	8:30 AM to 9:00 AM	8.1%	5:30 PM to 6:00 PM	6.4%
Congress Heights	7:30 AM to 8:00 AM	10.9%	5:00 PM to 5:30 PM	9.2%
Court House	8:30 AM to 9:00 AM	11.6%	5:30 PM to 6:00 PM	8.2%
Crystal City	4:30 PM to 5:00 PM	7.6%	7:30 AM to 8:00 AM	8.6%
Deanwood	7:00 AM to 7:30 AM	10.0%	5:30 PM to 6:00 PM	9.3%
Dunn Loring	7:30 AM to 8:00 AM	11.1%	5:30 PM to 6:00 PM	10.3%
Dupont Circle, N	8:30 AM to 9:00 AM	7.4%	5:30 PM to 6:00 PM	6.6%
Dupont Circle, S	5:00 PM to 5:30 PM	9.8%	8:30 AM to 9:00 AM	12.5%
East Falls Church	8:00 AM to 8:30 AM	12.8%	5:30 PM to 6:00 PM	11.7%
Eastern Market	8:30 AM to 9:00 AM	10.2%	5:30 PM to 6:00 PM	7.6%
Eisenhower Avenue	4:30 PM to 5:00 PM	7.1%	7:30 AM to 8:00 AM	6.7%
Farragut North, NE	5:00 PM to 5:30 PM	11.7%	8:30 AM to 9:00 AM	16.1%
Farragut North, NW	5:00 PM to 5:30 PM	14.1%	8:30 AM to 9:00 AM	15.7%
Farragut North, SE	5:30 PM to 6:00 PM	12.5%	8:30 AM to 9:00 AM	16.6%
Farragut West, E	5:30 PM to 6:00 PM	11.4%	8:30 AM to 9:00 AM	15.6%
Farragut West, W	5:30 PM to 6:00 PM	12.9%	8:30 AM to 9:00 AM	17.8%
Federal Center SW	5:00 PM to 5:30 PM	13.6%	8:30 AM to 9:00 AM	12.9%
Federal Triangle	5:00 PM to 5:30 PM	13.3%	8:00 AM to 8:30 AM	13.4%
Foggy Bottom	5:00 PM to 5:30 PM	9.8%	8:30 AM to 9:00 AM	10.7%
Forest Glen	8:00 AM to 8:30 AM	15.3%	5:30 PM to 6:00 PM	12.3%
Fort Totten	7:30 AM to 8:00 AM	10.0%	5:00 PM to 5:30 PM	8.0%
Franconia-Springfield	7:00 AM to 7:30 AM	12.8%	5:30 PM to 6:00 PM	11.3%
Friendship Heights, N	8:30 AM to 9:00 AM	8.9%	5:30 PM to 6:00 PM	7.4%
Friendship Heights, S	8:30 AM to 9:00 AM	7.6%	6:00 PM to 6:30 PM	7.5%
Gallery Place-Chinatown, E	5:00 PM to 5:30 PM	9.0%	8:30 AM to 9:00 AM	9.1%
Gallery Place-Chinatown, N	5:00 PM to 5:30 PM	8.2%	8:00 AM to 8:30 AM	8.1%
Gallery Place-Chinatown, W	5:00 PM to 5:30 PM	11.5%	8:30 AM to 9:00 AM	11.6%
Georgia Avenue-Petworth	8:00 AM to 8:30 AM	8.0%	5:00 PM to 5:30 PM	6.5%
Glenmont	7:00 AM to 7:30 AM	14.1%	5:30 PM to 6:00 PM	12.1%
Greenbelt	7:00 AM to 7:30 AM	11.9%	5:30 PM to 6:00 PM	11.2%
Grosvenor	8:00 AM to 8:30 AM	14.6%	6:00 PM to 6:30 PM	12.0%
Huntington, N	7:00 AM to 7:30 AM	13.8%	5:30 PM to 6:00 PM	11.2%
Huntington, S	7:30 AM to 8:00 AM	14.2%	5:30 PM to 6:00 PM	12.6%
Judiciary Square, E	5:00 PM to 5:30 PM	12.5%	8:30 AM to 9:00 AM	13.8%

METRORAIL STATION ACCESS & CAPACITY STUDY

<i>Mezzanine</i>	<i>Peak 1/2 Hr Entries</i>		<i>Peak 1/2 Hr Exits</i>	
	<i>Time</i>	<i>% of Daily</i>	<i>Time</i>	<i>% of Daily</i>
Judiciary Square, W	5:00 PM to 5:30 PM	13.2%	8:30 AM to 9:00 AM	14.0%
King Street	5:00 PM to 5:30 PM	7.7%	8:00 AM to 8:30 AM	6.4%
L'Enfant Plaza, E	5:00 PM to 5:30 PM	11.4%	8:00 AM to 8:30 AM	12.1%
L'Enfant Plaza, N	5:00 PM to 5:30 PM	11.2%	8:00 AM to 8:30 AM	11.3%
L'Enfant Plaza, W	5:00 PM to 5:30 PM	12.9%	8:00 AM to 8:30 AM	12.1%
Landover	7:30 AM to 8:00 AM	16.2%	5:30 PM to 6:00 PM	12.7%
Largo Town Center	7:00 AM to 7:30 AM	14.7%	5:30 PM to 6:00 PM	13.1%
McPherson Square, E	5:00 PM to 5:30 PM	12.7%	8:30 AM to 9:00 AM	15.2%
McPherson Square, W	5:00 PM to 5:30 PM	13.6%	8:30 AM to 9:00 AM	13.6%
Medical Center	5:00 PM to 5:30 PM	8.9%	8:30 AM to 9:00 AM	10.0%
Metro Center, E	5:00 PM to 5:30 PM	9.6%	8:30 AM to 9:00 AM	10.9%
Metro Center, N	5:30 PM to 6:00 PM	11.0%	8:30 AM to 9:00 AM	11.4%
Metro Center, S	5:30 PM to 6:00 PM	11.9%	8:30 AM to 9:00 AM	13.9%
Metro Center, W	5:30 PM to 6:00 PM	12.7%	8:30 AM to 9:00 AM	15.3%
Minnesota Avenue	8:00 AM to 8:30 AM	9.0%	5:30 PM to 6:00 PM	7.5%
Morgan Blvd.	7:30 AM to 8:00 AM	14.4%	5:30 PM to 6:00 PM	14.1%
Mt. Vernon Square-UDC	8:00 AM to 8:30 AM	6.5%	8:00 AM to 8:30 AM	6.3%
Navy Yard, E	4:00 PM to 4:30 PM	13.9%	7:30 AM to 8:00 AM	14.4%
Navy Yard, W	4:00 PM to 4:30 PM	6.0%	7:30 AM to 8:00 AM	5.8%
Naylor Road	7:30 AM to 8:00 AM	12.5%	5:30 PM to 6:00 PM	12.3%
New Carrollton	7:00 AM to 7:30 AM	12.1%	5:30 PM to 6:00 PM	10.7%
New York Ave. E	8:00 AM to 8:30 AM	8.3%	5:00 PM to 5:30 PM	6.1%
New York Ave. W	4:00 PM to 4:30 PM	9.7%	8:30 AM to 9:00 AM	8.0%
Pentagon	8:00 AM to 8:30 AM	8.9%	7:00 AM to 7:30 AM	8.3%
Pentagon City	8:00 AM to 8:30 AM	6.4%	5:30 PM to 6:00 PM	8.0%
Potomac Avenue	8:00 AM to 8:30 AM	11.3%	5:30 PM to 6:00 PM	8.2%
Prince George's Plaza	8:00 AM to 8:30 AM	8.6%	5:30 PM to 6:00 PM	9.3%
Reagan National Airport, N	9:00 AM to 9:30 AM	4.6%	12:30 PM to 1:00 PM	5.1%
Reagan National Airport, S	4:30 PM to 5:00 PM	4.8%	4:00 PM to 4:30 PM	4.9%
Rhode Island Avenue	7:30 AM to 8:00 AM	8.7%	5:00 PM to 5:30 PM	7.9%
Rockville	7:30 AM to 8:00 AM	10.6%	5:30 PM to 6:00 PM	8.9%
Rosslyn	5:00 PM to 5:30 PM	7.9%	8:00 AM to 8:30 AM	8.1%
Shady Grove	7:30 AM to 8:00 AM	13.1%	5:30 PM to 6:00 PM	11.6%
Shaw-Howard University, N	3:30 PM to 4:00 PM	8.1%	8:00 AM to 8:30 AM	6.9%
Shaw-Howard University, S	8:00 AM to 8:30 AM	8.8%	5:30 PM to 6:00 PM	7.1%
Silver Spring, N	8:00 AM to 8:30 AM	11.2%	5:30 PM to 6:00 PM	8.3%
Silver Spring, S	8:00 AM to 8:30 AM	9.1%	5:30 PM to 6:00 PM	8.6%
Smithsonian, N	5:00 PM to 5:30 PM	11.3%	10:00 AM to 10:30 AM	9.0%
Smithsonian, S	5:00 PM to 5:30 PM	12.6%	7:30 AM to 8:00 AM	10.7%
Southern Avenue	8:00 AM to 8:30 AM	14.5%	5:30 PM to 6:00 PM	13.1%
Stadium-Armory, N	9:30 PM to 10:00 PM	17.5%	6:30 PM to 7:00 PM	17.5%
Stadium-Armory, S	10:00 PM to 10:30 PM	16.6%	6:00 PM to 6:30 PM	6.8%
Suitland	7:30 AM to 8:00 AM	14.1%	5:30 PM to 6:00 PM	12.2%
Takoma	8:00 AM to 8:30 AM	11.9%	5:30 PM to 6:00 PM	9.8%
Tenleytown-AU	8:30 AM to 9:00 AM	7.1%	8:00 AM to 8:30 AM	7.1%
Twinbrook	8:00 AM to 8:30 AM	10.9%	6:00 PM to 6:30 PM	8.4%
U Street-Cardozo, E	8:00 AM to 8:30 AM	5.7%	6:00 PM to 6:30 PM	5.5%
U Street-Cardozo, W	8:00 AM to 8:30 AM	6.5%	5:30 PM to 6:00 PM	6.2%
Union Station, N	8:00 AM to 8:30 AM	7.5%	5:00 PM to 5:30 PM	8.4%
Union Station, S	5:00 PM to 5:30 PM	6.6%	8:30 AM to 9:00 AM	7.7%
Van Dorn Street	8:00 AM to 8:30 AM	10.2%	5:30 PM to 6:00 PM	10.2%
Van Ness-UDC	8:30 AM to 9:00 AM	10.9%	6:00 PM to 6:30 PM	7.8%
Vienna	7:30 AM to 8:00 AM	12.9%	5:30 PM to 6:00 PM	12.5%
Virginia Square-GMU	8:00 AM to 8:30 AM	11.6%	5:30 PM to 6:00 PM	9.2%

METRORAIL STATION ACCESS & CAPACITY STUDY

<i>Mezzanine</i>	<i>Peak 1/2 Hr Entries</i>		<i>Peak 1/2 Hr Exits</i>	
	<i>Time</i>	<i>% of Daily</i>	<i>Time</i>	<i>% of Daily</i>
Waterfront	8:00 AM to 8:30 AM	7.5%	5:30 PM to 6:00 PM	7.5%
West Falls Church	8:00 AM to 8:30 AM	13.1%	5:30 PM to 6:00 PM	11.3%
West Hyattsville	8:00 AM to 8:30 AM	10.9%	5:30 PM to 6:00 PM	9.8%
Wheaton	8:00 AM to 8:30 AM	11.2%	5:30 PM to 6:00 PM	9.7%
White Flint	5:00 PM to 5:30 PM	7.4%	7:30 AM to 8:00 AM	6.7%
Woodley Park-Zoo	8:30 AM to 9:00 AM	10.0%	6:00 PM to 6:30 PM	7.1%

Source: AECOM Consult

Table 20. Mezzanine One-Hour Peak Period Determination

<i>Mezzanine</i>	<i>Peak 1 Hr Entries</i>		<i>Peak 1 Hr Exits</i>	
	<i>Time</i>	<i>% of Daily</i>	<i>Time</i>	<i>% of Daily</i>
Addison Road	7:00 AM to 8:00 AM	22.2%	5:00 PM to 6:00 PM	20.5%
Anacostia, N	8:00 AM to 9:00 AM	25.1%	5:00 PM to 6:00 PM	29.8%
Anacostia, S	7:30 AM to 8:30 AM	15.2%	4:00 PM to 5:00 PM	13.5%
Archives-Navy Memorial Arlington Cemetery	5:00 PM to 6:00 PM	24.9%	8:00 AM to 9:00 AM 10:00 AM to 11:00 AM	25.1%
Ballston	4:30 PM to 5:30 PM	13.1%	5:30 PM to 6:30 PM	14.5%
Benning Road	8:00 AM to 9:00 AM	18.6%	5:30 PM to 6:30 PM	15.3%
Bethesda	7:30 AM to 8:30 AM	21.2%	5:00 PM to 6:00 PM	16.3%
Braddock Road	8:00 AM to 9:00 AM	15.4%	5:30 PM to 6:30 PM	14.0%
Branch Avenue	8:00 AM to 9:00 AM	22.3%	5:30 PM to 6:30 PM	18.9%
Brookland	7:00 AM to 8:00 AM	34.5%	5:00 PM to 6:00 PM	29.1%
Capitol Heights	7:30 AM to 8:30 AM	13.9%	5:00 PM to 6:00 PM	11.6%
Capitol South	7:00 AM to 8:00 AM	24.5%	5:00 PM to 6:00 PM	21.7%
Cheverly	5:30 PM to 6:30 PM	16.7%	8:30 AM to 9:30 AM	23.8%
Clarendon	7:00 AM to 8:00 AM	25.8%	5:00 PM to 6:00 PM	21.7%
Cleveland Park	8:00 AM to 9:00 AM	19.8%	5:30 PM to 6:30 PM	18.0%
College Park-U of MD	8:00 AM to 9:00 AM	25.3%	5:30 PM to 6:30 PM	20.2%
Columbia Heights	7:30 AM to 8:30 AM	17.3%	5:30 PM to 6:30 PM	16.2%
Congress Heights	8:00 AM to 9:00 AM	16.0%	5:30 PM to 6:30 PM	12.2%
Court House	7:30 AM to 8:30 AM	21.7%	5:00 PM to 6:00 PM	17.7%
Crystal City	8:00 AM to 9:00 AM	22.4%	5:30 PM to 6:30 PM	15.9%
Deanwood	4:30 PM to 5:30 PM	15.0%	7:00 AM to 8:00 AM	15.8%
Dunn Loring	7:00 AM to 8:00 AM	19.7%	5:00 PM to 6:00 PM	18.3%
Dupont Circle, N	7:30 AM to 8:30 AM	21.8%	5:30 PM to 6:30 PM	19.3%
Dupont Circle, S	8:00 AM to 9:00 AM	13.5%	5:30 PM to 6:30 PM	13.1%
East Falls Church	5:00 PM to 6:00 PM	19.4%	8:30 AM to 9:30 AM	22.7%
Eastern Market	7:30 AM to 8:30 AM	24.1%	5:30 PM to 6:30 PM	21.9%
Eisenhower Avenue	8:00 AM to 9:00 AM	19.0%	5:30 PM to 6:30 PM	15.0%
Farragut North, NE	4:30 PM to 5:30 PM	13.8%	7:00 AM to 8:00 AM	13.0%
Farragut North, NW	5:00 PM to 6:00 PM	22.8%	8:30 AM to 9:30 AM	28.7%
Farragut North, SE	5:00 PM to 6:00 PM	26.9%	8:30 AM to 9:30 AM	28.2%
Farragut West, E	5:00 PM to 6:00 PM	24.4%	8:00 AM to 9:00 AM	29.9%
Farragut West, W	5:00 PM to 6:00 PM	22.7%	8:00 AM to 9:00 AM	28.4%
Federal Center SW	5:00 PM to 6:00 PM	25.7%	8:00 AM to 9:00 AM	32.1%
Federal Triangle	4:30 PM to 5:30 PM	24.3%	8:00 AM to 9:00 AM	24.5%
Foggy Bottom	4:30 PM to 5:30 PM	25.1%	8:00 AM to 9:00 AM	25.7%
Forest Glen	5:00 PM to 6:00 PM	18.6%	8:00 AM to 9:00 AM	21.1%
Fort Totten	7:30 AM to 8:30 AM	28.3%	5:30 PM to 6:30 PM	23.5%
Franconia-Springfield	7:30 AM to 8:30 AM	18.8%	5:00 PM to 6:00 PM	15.9%
	7:00 AM to 8:00 AM	25.3%	5:30 PM to 6:30 PM	21.9%

METRORAIL STATION ACCESS & CAPACITY STUDY

<i>Mezzanine</i>	<i>Peak 1 Hr Entries</i>		<i>Peak 1 Hr Exits</i>	
	<i>Time</i>	<i>% of Daily</i>	<i>Time</i>	<i>% of Daily</i>
Friendship Heights, N	8:00 AM to 9:00 AM	16.4%	5:30 PM to 6:30 PM	14.7%
Friendship Heights, S	8:00 AM to 9:00 AM	14.3%	5:30 PM to 6:30 PM	14.8%
Gallery Place-Chinatown, E	5:00 PM to 6:00 PM	16.9%	8:00 AM to 9:00 AM	16.6%
Gallery Place-Chinatown, N	4:30 PM to 5:30 PM	15.9%	8:00 AM to 9:00 AM	15.7%
Gallery Place-Chinatown, W	5:00 PM to 6:00 PM	22.5%	8:00 AM to 9:00 AM	22.0%
Georgia Avenue-Petworth	7:30 AM to 8:30 AM	15.3%	4:30 PM to 5:30 PM	12.6%
Glenmont	7:00 AM to 8:00 AM	28.1%	5:30 PM to 6:30 PM	22.6%
Greenbelt	7:00 AM to 8:00 AM	23.7%	5:30 PM to 6:30 PM	21.9%
Grosvenor	8:00 AM to 9:00 AM	27.1%	5:30 PM to 6:30 PM	23.1%
Huntington, N	7:00 AM to 8:00 AM	25.9%	5:00 PM to 6:00 PM	21.4%
Huntington, S	7:00 AM to 8:00 AM	27.1%	5:00 PM to 6:00 PM	24.1%
Judiciary Square, E	4:30 PM to 5:30 PM	22.7%	8:00 AM to 9:00 AM	26.2%
Judiciary Square, W	4:30 PM to 5:30 PM	23.9%	8:00 AM to 9:00 AM	27.4%
King Street	5:00 PM to 6:00 PM	13.7%	8:00 AM to 9:00 AM	12.8%
L'Enfant Plaza, E	4:30 PM to 5:30 PM	22.3%	7:30 AM to 8:30 AM	23.2%
L'Enfant Plaza, N	4:30 PM to 5:30 PM	21.1%	7:30 AM to 8:30 AM	21.5%
L'Enfant Plaza, W	4:30 PM to 5:30 PM	24.7%	8:00 AM to 9:00 AM	23.5%
Landover	7:00 AM to 8:00 AM	30.8%	5:00 PM to 6:00 PM	24.8%
Largo Town Center	7:00 AM to 8:00 AM	28.6%	5:00 PM to 6:00 PM	25.2%
McPherson Square, E	5:00 PM to 6:00 PM	24.7%	8:30 AM to 9:30 AM	27.2%
McPherson Square, W	5:00 PM to 6:00 PM	23.8%	8:00 AM to 9:00 AM	26.1%
Medical Center	5:00 PM to 6:00 PM	16.5%	8:00 AM to 9:00 AM	19.7%
Metro Center, E	5:00 PM to 6:00 PM	18.7%	8:00 AM to 9:00 AM	20.1%
Metro Center, N	5:00 PM to 6:00 PM	20.7%	8:30 AM to 9:30 AM	20.7%
Metro Center, S	5:00 PM to 6:00 PM	22.5%	8:30 AM to 9:30 AM	25.5%
Metro Center, W	5:00 PM to 6:00 PM	24.3%	8:30 AM to 9:30 AM	28.0%
Minnesota Avenue	7:30 AM to 8:30 AM	17.7%	5:00 PM to 6:00 PM	14.5%
Morgan Blvd.	7:00 AM to 8:00 AM	27.4%	5:00 PM to 6:00 PM	26.8%
Mt. Vernon Square-UDC	8:00 AM to 9:00 AM	12.1%	8:00 AM to 9:00 AM	12.2%
Navy Yard, E	4:00 PM to 5:00 PM	25.4%	7:00 AM to 8:00 AM	28.6%
Navy Yard, W	3:30 PM to 4:30 PM	11.5%	7:30 AM to 8:30 AM	10.9%
Naylor Road	7:30 AM to 8:30 AM	24.1%	5:00 PM to 6:00 PM	22.8%
New Carrollton	7:00 AM to 8:00 AM	23.4%	5:00 PM to 6:00 PM	21.2%
New York Ave. E	8:00 AM to 9:00 AM	15.4%	5:00 PM to 6:00 PM	11.6%
New York Ave. W	4:00 PM to 5:00 PM	16.4%	8:00 AM to 9:00 AM	15.3%
Pentagon	7:30 AM to 8:30 AM	16.5%	7:00 AM to 8:00 AM	15.8%
Pentagon City	8:00 AM to 9:00 AM	12.4%	5:30 PM to 6:30 PM	15.4%
Potomac Avenue	7:30 AM to 8:30 AM	20.9%	5:00 PM to 6:00 PM	16.2%
Prince George's Plaza	7:30 AM to 8:30 AM	16.3%	5:30 PM to 6:30 PM	16.8%
Reagan National Airport, N	9:00 AM to 10:00 AM	8.9%	12:00 PM to 1:00 PM	9.5%
Reagan National Airport, S	4:30 PM to 5:30 PM	9.6%	4:00 PM to 5:00 PM	9.7%
Rhode Island Avenue	7:30 AM to 8:30 AM	17.4%	5:00 PM to 6:00 PM	15.4%
Rockville	7:30 AM to 8:30 AM	19.7%	5:00 PM to 6:00 PM	17.5%
Rosslyn	4:30 PM to 5:30 PM	14.5%	8:00 AM to 9:00 AM	15.8%
Shady Grove	7:00 AM to 8:00 AM	25.8%	5:30 PM to 6:30 PM	22.7%
Shaw-Howard University, N	3:30 PM to 4:30 PM	13.9%	8:00 AM to 9:00 AM	12.6%
Shaw-Howard University, S	8:00 AM to 9:00 AM	17.2%	5:30 PM to 6:30 PM	13.5%
Silver Spring, N	8:00 AM to 9:00 AM	20.9%	5:30 PM to 6:30 PM	15.8%
Silver Spring, S	7:30 AM to 8:30 AM	16.9%	5:30 PM to 6:30 PM	16.1%

METRORAIL STATION ACCESS & CAPACITY STUDY

<i>Mezzanine</i>	<i>Peak 1 Hr Entries</i>		<i>Peak 1 Hr Exits</i>	
	<i>Time</i>	<i>% of Daily</i>	<i>Time</i>	<i>% of Daily</i>
Smithsonian, N	5:00 PM to 6:00 PM	22.2%	10:00 AM to 11:00 AM	17.6%
Smithsonian, S	4:30 PM to 5:30 PM	24.8%	7:30 AM to 8:30 AM	21.3%
Southern Avenue	7:30 AM to 8:30 AM	28.9%	5:00 PM to 6:00 PM	25.9%
Stadium-Armory, N	9:30 PM to 10:30 PM	33.2%	6:30 PM to 7:30 PM	32.3%
Stadium-Armory, S	9:30 PM to 10:30 PM	25.1%	5:30 PM to 6:30 PM	13.3%
Suitland	7:00 AM to 8:00 AM	26.0%	5:00 PM to 6:00 PM	22.6%
Takoma	8:00 AM to 9:00 AM	22.1%	5:30 PM to 6:30 PM	18.6%
Tenleytown-AU	8:00 AM to 9:00 AM	14.0%	8:00 AM to 9:00 AM	14.0%
Twinbrook	7:30 AM to 8:30 AM	20.0%	5:30 PM to 6:30 PM	16.6%
U Street-Cardozo, E	8:00 AM to 9:00 AM	11.2%	5:30 PM to 6:30 PM	10.9%
U Street-Cardozo, W	8:00 AM to 9:00 AM	12.9%	5:30 PM to 6:30 PM	12.0%
Union Station, N	5:00 PM to 6:00 PM	13.5%	5:00 PM to 6:00 PM	14.9%
Union Station, S	5:00 PM to 6:00 PM	12.5%	8:00 AM to 9:00 AM	13.5%
Van Dorn Street	7:30 AM to 8:30 AM	20.0%	5:30 PM to 6:30 PM	19.7%
Van Ness-UDC	8:00 AM to 9:00 AM	19.8%	5:30 PM to 6:30 PM	15.2%
Vienna	7:30 AM to 8:30 AM	25.2%	5:30 PM to 6:30 PM	22.9%
Virginia Square-GMU	8:00 AM to 9:00 AM	22.0%	5:30 PM to 6:30 PM	17.4%
Waterfront	8:00 AM to 9:00 AM	14.5%	5:00 PM to 6:00 PM	14.2%
West Falls Church	7:30 AM to 8:30 AM	24.9%	5:00 PM to 6:00 PM	21.1%
West Hyattsville	7:30 AM to 8:30 AM	21.6%	5:00 PM to 6:00 PM	18.1%
Wheaton	7:30 AM to 8:30 AM	20.3%	5:30 PM to 6:30 PM	19.3%
White Flint	4:30 PM to 5:30 PM	14.4%	7:30 AM to 8:30 AM	12.9%
Woodley Park-Zoo	8:00 AM to 9:00 AM	17.6%	5:30 PM to 6:30 PM	13.9%

Source: AECOM Consult

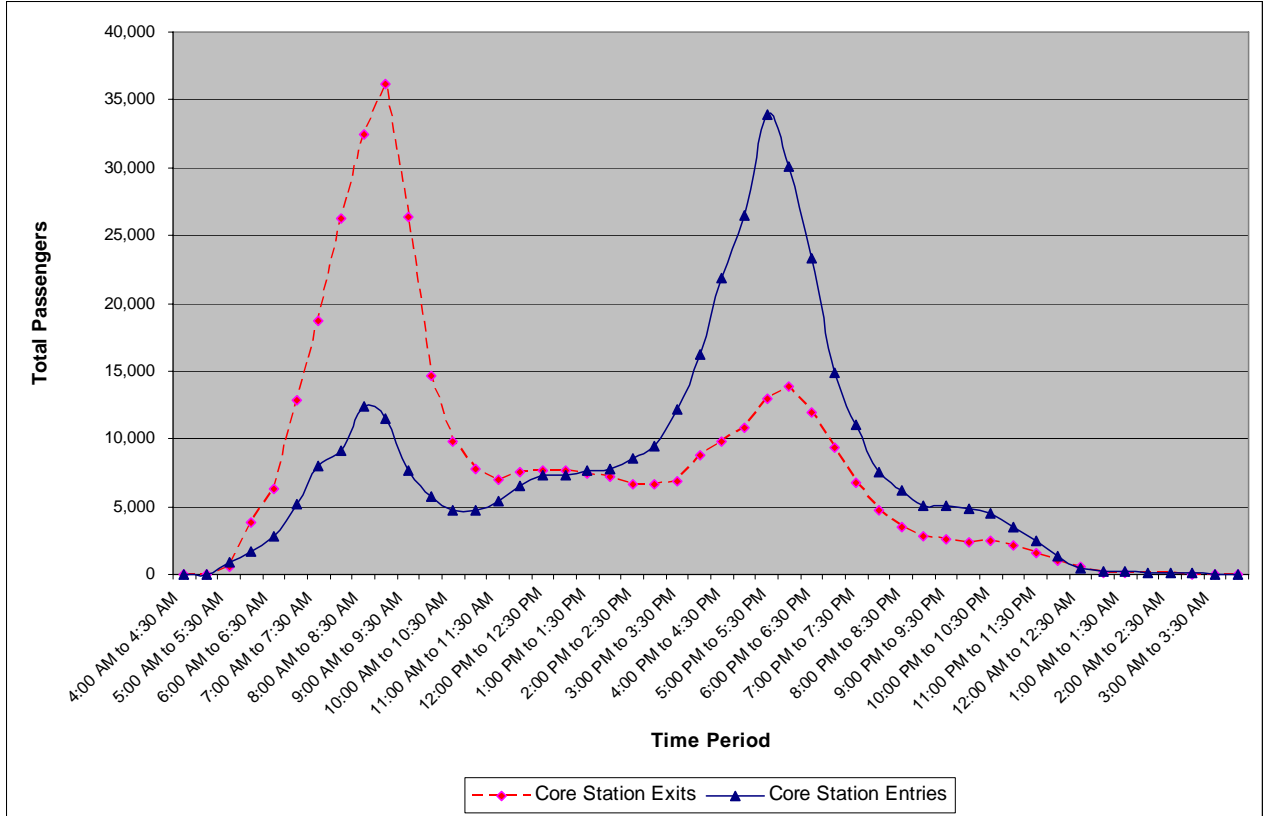


Figure 22. System Half- and One-Hour Peak Period Determination (Source: AECOM Consult)

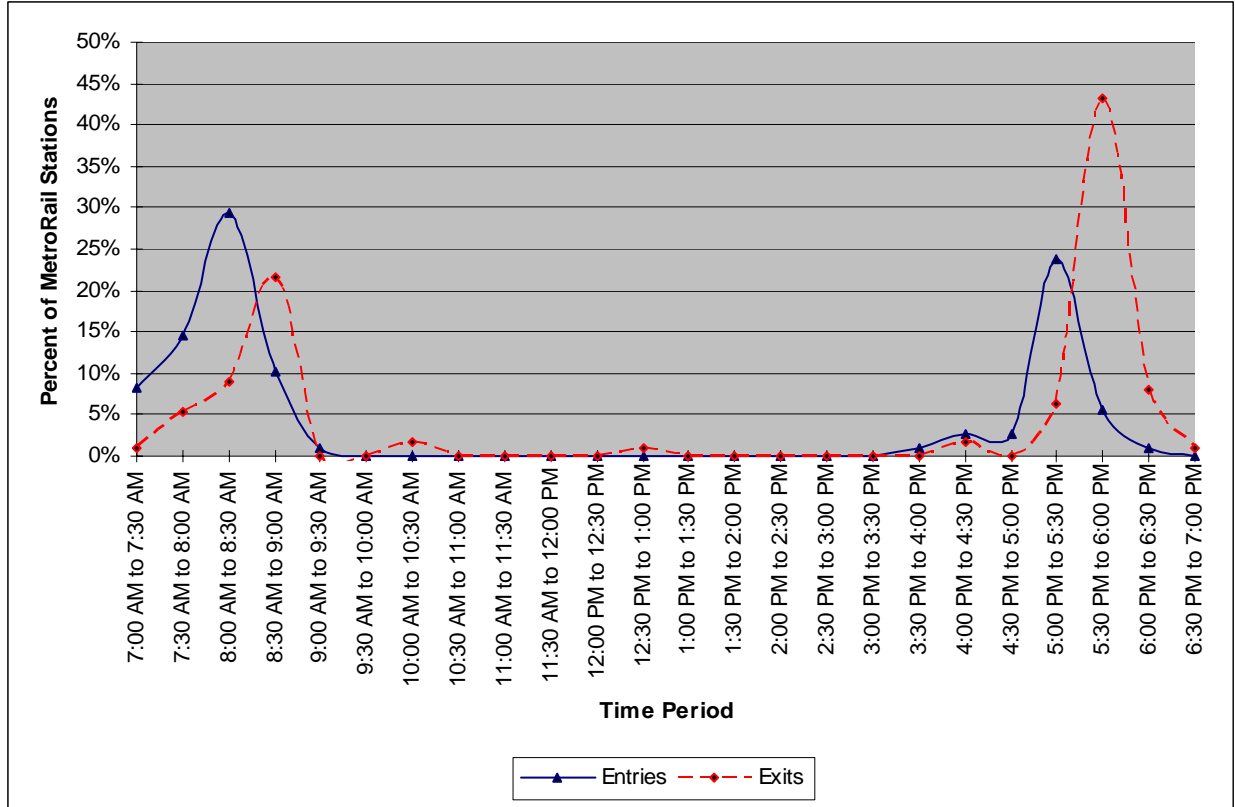


Figure 23. Distribution of Peak Half-Hour Entries and Exits (Source: AECOM Consult)

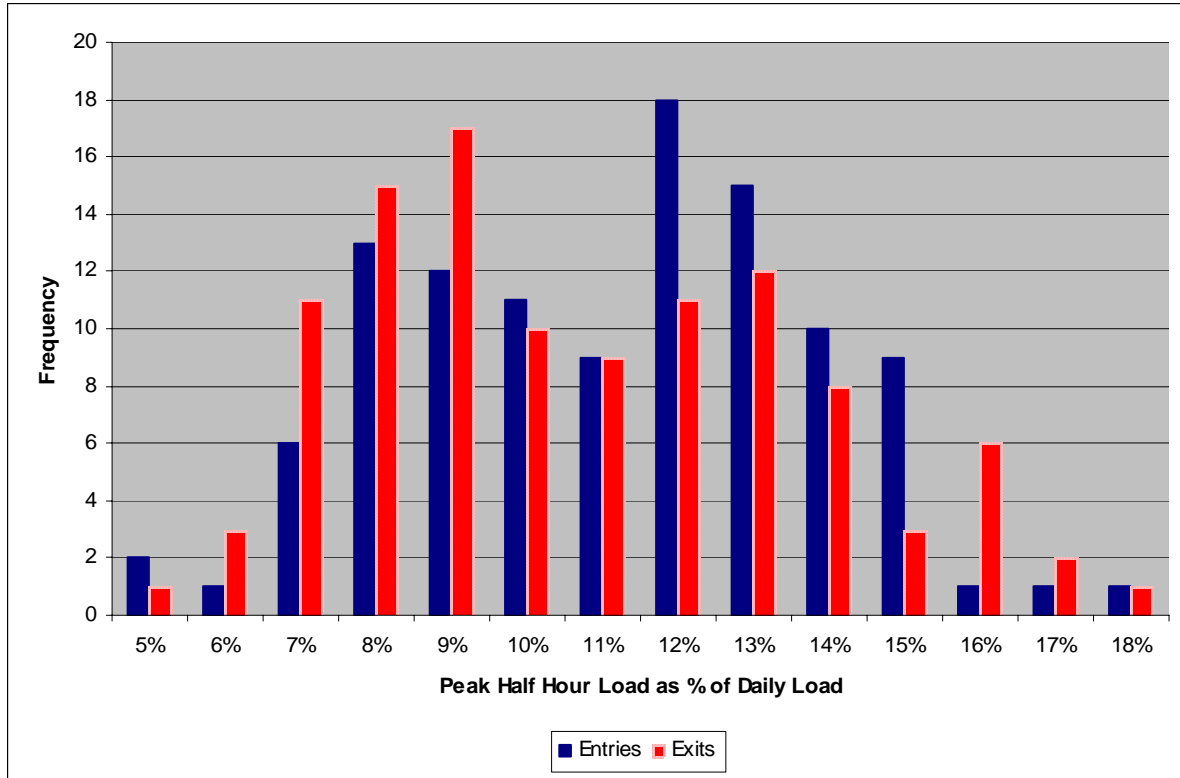


Figure 24. Frequency Distribution of Peak Half-Hour Load (Source: AECOM Consult)

Mode of Access

The 2002 On-Board Metrorail Passenger Survey was analyzed to prepare summaries of the station-to-station O/D trips by time period (PK and daily) and access and egress modes (WK, DR, KR, BUS and CR). These summaries were then used to calculate percentages to split the total number of passengers traveling between any station pair in the Metrorail system into the different modes.

METRORAIL STATION ACCESS & CAPACITY STUDY

Table 21. Station Mode of Access for Average Weekday AM Peak Period

STATION NAME	2005 AM Peak Period Entries	2002 AM Peak Period Mode of Access								
		Metrobus	Other Bus	Commuter Rail	Bicycle	Kiss & Ride	Park & Ride	Carpool	Taxi	Walk
ADDISON ROAD	2,536	25%	6%	0%	0%	18%	45%	1%	0%	5%
ANACOSTIA	3,572	49%	0%	0%	0%	10%	28%	0%	0%	12%
ARCHIVES-NAVY MEM	380	20%	2%	0%	0%	2%	4%	4%	0%	68%
ARLINGTON CEMETERY	18	0%	0%	0%	0%	33%	0%	0%	0%	67%
BALLSTON	4,841	14%	3%	0%	1%	9%	15%	1%	0%	57%
BENNING ROAD	1,902	22%	0%	0%	0%	12%	17%	0%	0%	49%
BETHESDA	3,273	3%	18%	0%	0%	13%	14%	0%	0%	50%
BRADDOCK ROAD	2,242	7%	14%	0%	1%	12%	3%	0%	0%	62%
BRANCH AVE	5,079	6%	1%	0%	0%	12%	79%	2%	0%	0%
BROOKLAND CUA	2,160	25%	2%	0%	1%	11%	23%	1%	0%	38%
CAPITOL HEIGHTS	1,312	7%	10%	0%	0%	21%	41%	3%	0%	18%
CAPITOL SOUTH	711	2%	0%	0%	0%	5%	3%	3%	0%	88%
CHEVERLY	1,079	8%	2%	0%	0%	14%	58%	1%	0%	16%
CLARENDON	1,492	1%	0%	0%	2%	10%	19%	1%	0%	66%
CLEVELAND PARK	2,347	6%	0%	0%	0%	2%	5%	0%	0%	85%
COLLEGE PARK-U OF MD	1,603	9%	2%	0%	3%	21%	43%	1%	0%	21%
COLUMBIA HEIGHTS	2,762	10%	0%	0%	1%	2%	1%	0%	0%	86%
CONGRESS HEIGHTS	1,367	41%	0%	0%	0%	13%	6%	1%	0%	38%
COURT HOUSE	3,286	0%	0%	0%	0%	1%	5%	1%	0%	93%
CRYSTAL CITY	3,728	3%	3%	10%	0%	10%	5%	4%	0%	65%
DEANWOOD	1,041	15%	0%	0%	0%	7%	48%	2%	0%	28%
DUNN LORING	2,892	2%	3%	0%	0%	11%	66%	1%	0%	15%
DUPONT CIRCLE	4,349	11%	0%	0%	1%	1%	2%	0%	0%	84%
EAST FALLS CHURCH	2,578	12%	2%	0%	3%	14%	29%	0%	1%	39%
EASTERN MARKET	2,130	3%	0%	0%	0%	3%	7%	0%	0%	86%
EISENHOWER AVE	501	0%	9%	0%	0%	28%	10%	2%	0%	52%
FARRAGUT NORTH	1,053	14%	6%	0%	0%	10%	8%	6%	0%	55%
FARRAGUT WEST	1,135	32%	5%	0%	0%	6%	8%	3%	2%	44%
FEDERAL CENTER SW	349	1%	0%	0%	1%	3%	4%	4%	0%	87%
FEDERAL TRIANGLE	275	7%	0%	0%	0%	12%	7%	5%	0%	70%
FOGGY BOTTOM-GWU	2,038	13%	2%	0%	0%	7%	3%	1%	0%	74%
FOREST GLEN	1,459	0%	3%	0%	0%	16%	45%	1%	0%	34%
FORT TOTTEN	3,417	44%	0%	0%	0%	13%	24%	0%	0%	18%
FRANCONIA-SPRINGFIELD	6,583	2%	7%	1%	0%	8%	75%	1%	0%	4%
FRIENDSHIP HEIGHTS	3,118	11%	9%	0%	1%	9%	14%	1%	0%	57%
GALLERY PLACE	1,309	11%	1%	0%	0%	11%	24%	1%	1%	49%
GEORGIA AVE	1,897	32%	0%	0%	0%	8%	8%	0%	0%	52%
GLENMONT	4,089	5%	7%	0%	0%	11%	68%	1%	0%	7%
GREENBELT	4,750	8%	1%	1%	0%	7%	79%	1%	0%	3%
GROSVENOR	3,464	0%	6%	0%	3%	24%	34%	1%	0%	32%
HUNTINGTON	6,141	2%	18%	0%	0%	11%	55%	1%	0%	13%
JUDICIARY SQ	503	4%	2%	0%	0%	18%	12%	16%	0%	49%
KING STREET	2,580	7%	12%	6%	0%	15%	2%	1%	1%	55%
L'ENFANT PLAZA	2,892	17%	11%	28%	0%	10%	6%	6%	0%	23%
LANDOVER	2,232	10%	0%	0%	0%	8%	75%	2%	2%	3%
LARGO TOWN CENTER	3,102	8%	1%	0%	2%	14%	68%	2%	0%	5%
MCPHERSON SQ	1,479	16%	2%	0%	0%	4%	5%	0%	0%	73%

METRORAIL STATION ACCESS & CAPACITY STUDY

STATION NAME	2005 AM Peak Period Entries	2002 AM Peak Period Mode of Access								
		Metrobus	Other Bus	Commuter Rail	Bicycle	Kiss & Ride	Park & Ride	Carpool	Taxi	Walk
MEDICAL CENTER	1,089	14%	24%	0%	7%	16%	6%	2%	0%	32%
METRO CENTER	1,561	19%	13%	0%	0%	20%	8%	3%	1%	37%
MINNESOTA AVE	1,460	34%	0%	0%	0%	6%	35%	0%	0%	25%
MORGAN BLVD	850	0%	1%	0%	0%	18%	61%	2%	0%	17%
MT VERNON SQ-UDC	1,003	2%	0%	0%	1%	2%	13%	1%	0%	81%
NATIONAL AIRPORT	917	0%	12%	0%	0%	23%	21%	1%	4%	39%
NAVY YARD	343	3%	0%	0%	0%	21%	24%	3%	0%	48%
NAYLOR ROAD	2,135	30%	2%	0%	0%	11%	40%	1%	0%	15%
NEW CARROLLTON	6,146	14%	1%	2%	0%	11%	68%	2%	1%	1%
NEW YORK AVE	605	12%	0%	0%	1%	13%	15%	1%	0%	58%
PENTAGON	6,437	77%	10%	0%	0%	9%	2%	2%	0%	2%
PENTAGON CITY	4,791	2%	17%	0%	0%	19%	6%	0%	0%	55%
POTOMAC AVE	1,934	37%	0%	0%	0%	6%	8%	1%	0%	49%
PRINCE GEORGE'S PLAZA	2,059	11%	1%	0%	0%	10%	59%	2%	0%	17%
RHODE ISLAND AVE	2,729	36%	0%	0%	0%	13%	36%	1%	0%	15%
ROCKVILLE	2,288	2%	7%	13%	1%	14%	45%	1%	0%	16%
ROSSLYN	4,396	15%	4%	0%	0%	16%	6%	2%	0%	56%
SHADY GROVE	9,570	1%	22%	0%	0%	11%	61%	1%	0%	3%
SHAW HOWARD UNIV	942	5%	1%	0%	0%	1%	17%	1%	0%	75%
SILVER SPRING	5,993	22%	16%	1%	1%	8%	14%	0%	0%	38%
SMITHSONIAN	341	5%	7%	0%	0%	50%	8%	15%	0%	15%
SOUTHERN AVE	4,414	19%	2%	0%	0%	6%	65%	1%	0%	6%
STADIUM ARMORY	1,112	8%	0%	0%	0%	5%	41%	2%	0%	44%
SUITLAND	4,092	13%	1%	0%	0%	9%	71%	2%	0%	5%
TAKOMA	3,326	12%	26%	0%	1%	8%	14%	0%	0%	38%
TENLEYTOWN	1,841	13%	0%	0%	0%	16%	14%	0%	0%	56%
TWINBROOK	2,332	2%	9%	0%	1%	11%	58%	2%	0%	17%
U STREET	1,380	5%	0%	0%	0%	2%	9%	0%	0%	83%
UNION STATION	9,637	5%	0%	76%	0%	3%	2%	0%	0%	13%
VAN DORN STREET	2,270	1%	41%	0%	0%	17%	29%	1%	0%	10%
VAN NESS - UDC	2,701	7%	1%	0%	0%	4%	5%	1%	0%	81%
VIENNA	9,291	9%	5%	0%	1%	10%	62%	2%	0%	11%
VIRGINIA SQ- GMU	1,563	1%	0%	0%	2%	8%	9%	0%	0%	80%
WATERFRONT	1,159	1%	1%	0%	0%	2%	6%	0%	0%	90%
WEST FALLS CHURCH	6,084	12%	4%	0%	0%	14%	56%	1%	0%	13%
WEST HYATTSVILLE	2,062	7%	5%	0%	1%	10%	39%	2%	0%	36%
WHEATON	2,393	5%	4%	0%	1%	9%	65%	2%	0%	14%
WHITE FLINT	1,227	1%	4%	0%	0%	11%	63%	1%	0%	20%
WOODLEY PARK ZOO	2,567	3%	0%	0%	0%	3%	2%	0%	0%	92%

Source: WMATA, 2002 and 2005

One of the major assumptions of the forecasting analysis was that the access and egress split factors for each Metrorail station would not vary across the different forecast years. As expected due to future land-use changes, summaries of the total daily Metrorail station boardings prepared by path and access mode showed that the way passengers arrived at a Metrorail station would vary over the years. However, due to certain model restrictions, this variation was not easily transferable into the analysis. The same set of access mode factors was therefore used throughout the analysis for the different forecast years.

Flow Summary Preparation and Assignment

The result of running the Washington Regional Demand Forecasting Model is a daily station-to-station trip summary in P/A format. As discussed earlier, this needs to be changed to a mezzanine-to-mezzanine trip summary in O/D format for assignment in the Metrorail network. The following steps describe the process for this conversion:

1. For each forecast year, the flow for each station pair is summed and then the share of each station is determined based on directional split factors for O/D flow between station pairs. These factors were calculated using the mezzanine-level O/D trip table provided by Metro for a typical weekday in May 2005. Applying these directional split factors to the station-to-station trip summary converts it from P/A to O/D format. It should be noted that new stations (planned for forecast years 2020 and 2030) were assumed to exhibit similar trends as certain existing stations in terms of directional splits and thus the latter's factors were used.

Since it was decided not to use the actual forecasts from the model but rather the percentage change in ridership between the years, the station-to-station O/D trip summary from each forecast year (2010, 2020 and 2030) is then compared to the station-to-station O/D trip summary for the year 2005 to calculate the percentage change in transit trips between station pairs. This percentage change is then applied to the station-level O/D trip table provided by Metro for a typical weekday in May 2005 and the station-to-station O/D trip summary for the forecast year under study is determined.

2. The mezzanine-level O/D trip table provided by Metro for a typical weekday in May 2005 was also used to calculate factors to convert station-to-station flow into mezzanine-to-mezzanine flow. These factors are applied to the station-to-station O/D trip summary for each forecast year to change it into a mezzanine-to-mezzanine O/D trip summary.
3. The peak half hour and peak one hour entry and exit factors between mezzanine pairs (described in the *Mezzanine Level Analysis* section) are applied to the daily mezzanine-to-mezzanine O/D trip summary to obtain the peak half hour and peak one hour mezzanine-to-mezzanine O/D entry and exit summaries.

The access and egress split factors calculated from the 2002 On-Board Metrorail Passenger Survey are then used to segregate the mezzanine-to-mezzanine O/D flow summaries and to determine the number of passengers by the different modes (WK, DR, KR, BUS and CR). Entry flow summaries are segregated by access modes regardless of egress while exit flow summaries are segregated by egress modes regardless of access. As with the directional split factor calculations, it was assumed that new stations showed similar trends as certain existing stations in terms of passenger access and egress splits; the existing stations' factors were thus used where required.

For systemwide analysis, the AM and PM peak half-hour and peak one-hour entry and exit factors between mezzanine pairs (described in the *Systemwide Analysis* section) are used to obtain the respective AM and PM peak half hour and one hour O/D entry and exit summaries. Since the assignment of the systemwide analysis will not be evaluated as part of the access analysis, all entry and exit flows are assigned to the walk mode.

4. The different mezzanine-to-mezzanine O/D flow summaries are finally assigned to a Metrorail network which was micro-coded to include access to and connections between station mezzanines. Moreover, two new transit assignment models were developed for this purpose: one for the years 2005 and 2010 and another expanded one for the forecast years 2020 and 2030 which fully incorporated the extension of Metrorail service to Dulles Airport as well as the addition of the Potomac Yard Station.

The O/D flow summaries for mezzanine peak half hour and one hour entries and exits are assigned and a database file is generated to show flow between the street and platform levels within each station. This is later used for station access and capacity (farecard vendor, faregate and vertical) analyses. The O/D flow summaries for AM and PM system peak half hour and one hour time periods are also assigned to generate a similar database file, which is later used for line volume (maximum load point), platform capacity and transfer analyses.

APPENDIX B: SUMMARY OF FIELD MEASUREMENTS

This study included the measurement of escalator flow rate. Below is a summary of the result, which was used in the station-level escalator capacity analysis.

ESCALATOR PEDESTRIAN FLOW RATE MEASUREMENTS			
<i>Location:</i>	Union Station Metrorail platform, mezzanine, and street level		
<i>Date:</i>	8/1/2006	8-9 am	
<i>Counters:</i>	PB, WMATA		
<i>Alighting Escalator*</i>			
Mezz	Count	Time (secs)	ppm
N (platform)	54	42.88	76
N (platform)	44	35.21	75
N (platform)	35	30.28	69
S (street)	65	43.64	89
S (street)	40	30.42	79
		<i>Average:</i>	<i>78</i>
<i>Boarding Escalator</i>			
Mezz	Count	Time (secs)	ppm
N (platform)	47	31.98	88
N (platform)	81	62.95	77
S (platform)	102	62.08	99
S (platform)	51	38.29	80
S (platform)	39	25.24	93
S (platform)	65	43.37	90
S (platform)	43	25.7	100
S (mezz)	44	29.05	91
S (mezz)	91	68.01	80
S (mezz)	101	67.12	90
		<i>Average:</i>	<i>89</i>
	<i>say</i>		90 <i>Flow rate to use</i>
*These measurements may be low because it was difficult to see if a queue had formed.			

APPENDIX C: METRO PROPOSED OPERATING PLAN

Table 22. Existing and Proposed Peak Period Train Operating Plan (source: WMATA)

2005 (4% 4-car, 96% 6-car)			2010 (50% 6-car, 50% 8-car)		
Line	Route	Headway (min)	Line	Route	Headway (min)
Red	Shady Grove-Glenmont	5	Red	Shady Grove-Glenmont	5
	Grosvenor-Silver Spring	5		Grosvenor-Silver Spring	5
	Total	2.5		Total	2.5
Yellow	Huntington- Mount Vernon Sq	6	Yellow	Huntington- Mt Vernon Sq	7
	Total	6		Total	7
Green	Greenbelt-Branch Ave ¹⁶	5	Green	Greenbelt-Branch Ave ¹⁷	5
Blue	Franconia-Largo Town Center	6	Blue	Franconia-Largo Town Center	14
	Total	6		Franconia-Greenbelt	14
				Total	7
Orange	Vienna-New Carrollton ¹⁸	3	Orange	Vienna-New Carrollton	7
				Vienna-Largo Town Center	14
				West Falls Church-Stadium Armory	7
				Total	3
2020 and 2030 (100% 8-car)					
Red	Shady Grove-Glenmont	2.5			
	Total	2.5			
Yellow	Huntington- Mount Vernon Sq	7			
	Total	7			
Green	Greenbelt-Branch Ave ¹⁹	5			
Blue	Franconia-Largo Town Center	14			
	Franconia-Greenbelt	14			
	Total	7			
Orange	Vienna-New Carrollton	7			
	Vienna-Largo Town Center	14			
	Total	5			
Silver	Loudoun-East Falls Church-Stadium Armory	7			
	Total	7			
Orange + Silver	East Falls Church-Stadium Armory	3			

¹⁶ This includes four tripper trains per hour from Branch Avenue from Greenbelt.

¹⁷ This includes four tripper trains per hour from Branch Avenue from Greenbelt.

¹⁸ This includes five tripper trains per hour from Vienna to New Carrollton; two per hour from West Falls Church to New Carrollton; and four per hour from West Falls Church to Stadium-Armory.

¹⁹ This includes four tripper trains per hour from Branch Avenue from Greenbelt.

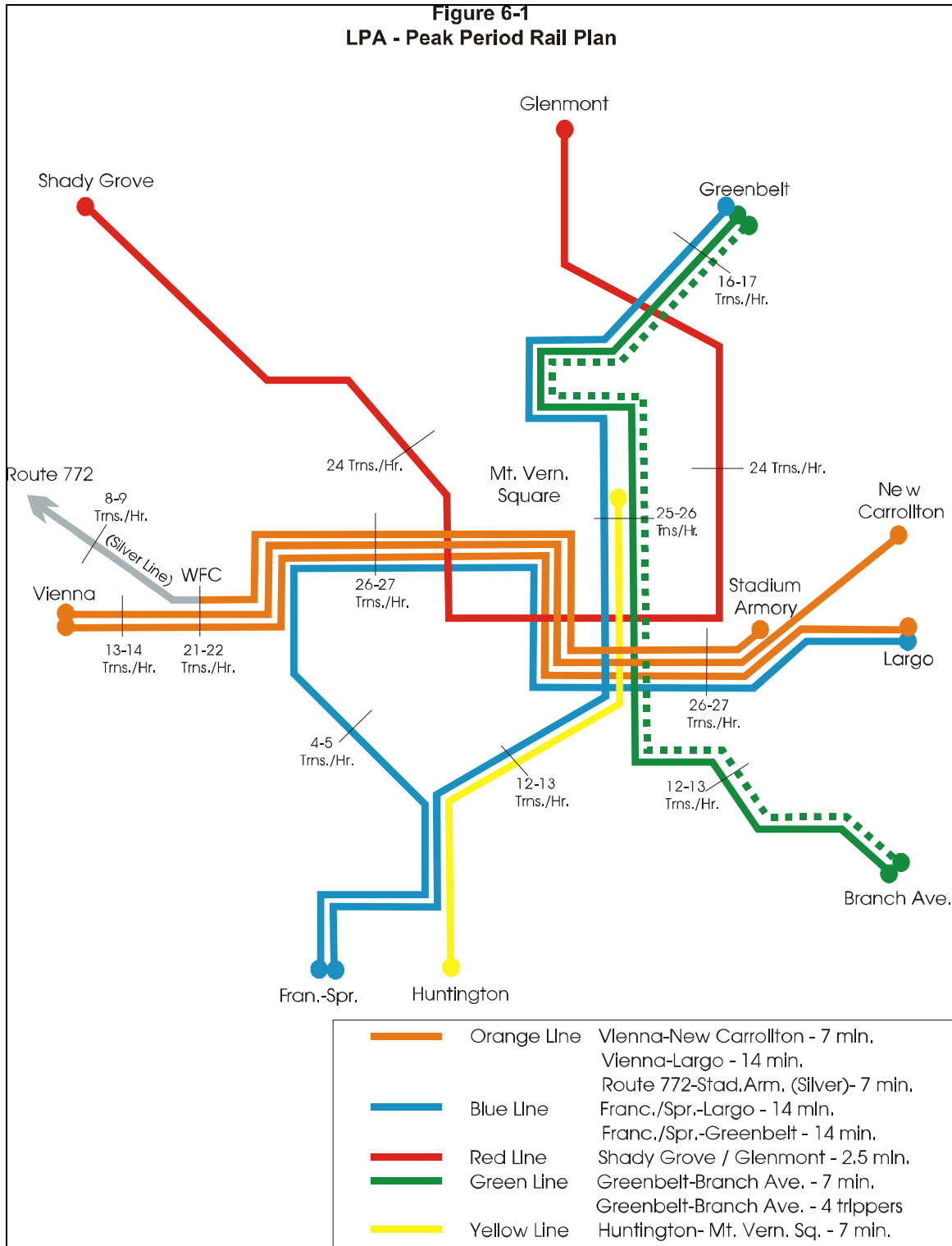


Figure 25. Future Peak Period Rail Plan (source: Dulles Metrorail Extension Transit Operations Plan)

APPENDIX D: SYSTEMWIDE ANALYSIS DETAILS

The 2030 Metrorail load profiles for each line are shown below.

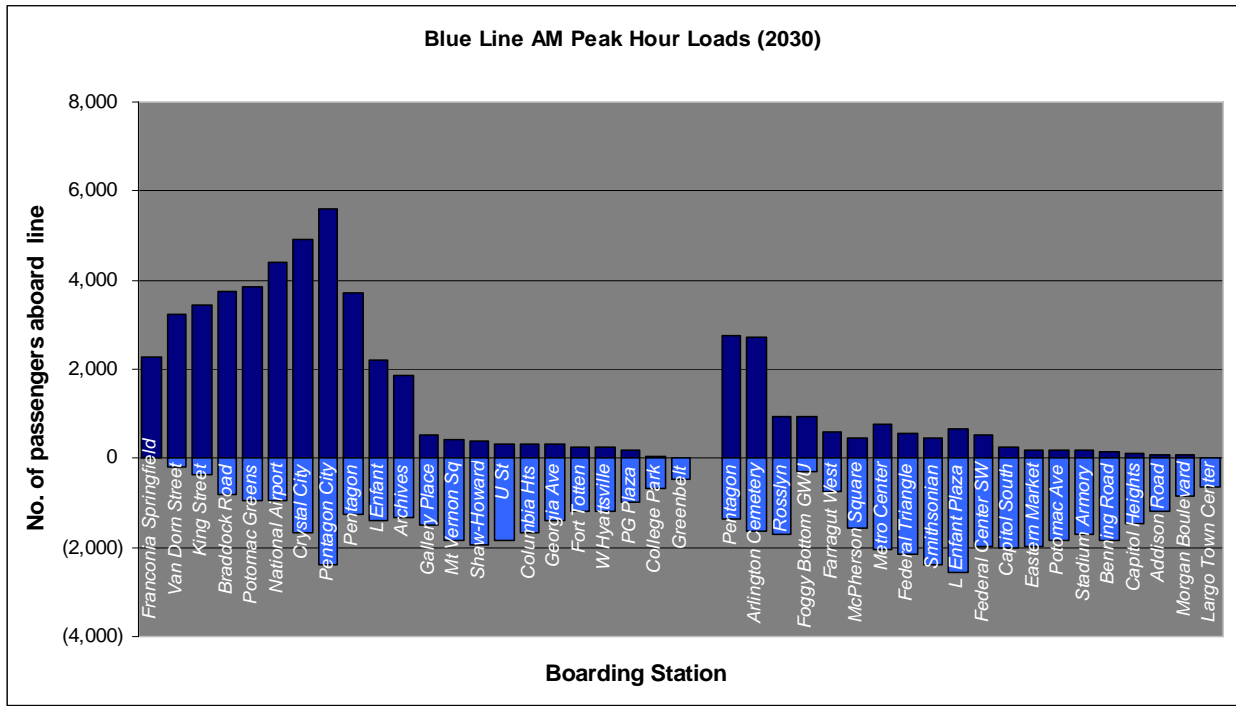


Figure 26. 2030 Blue Line Load Profile (source: PB)

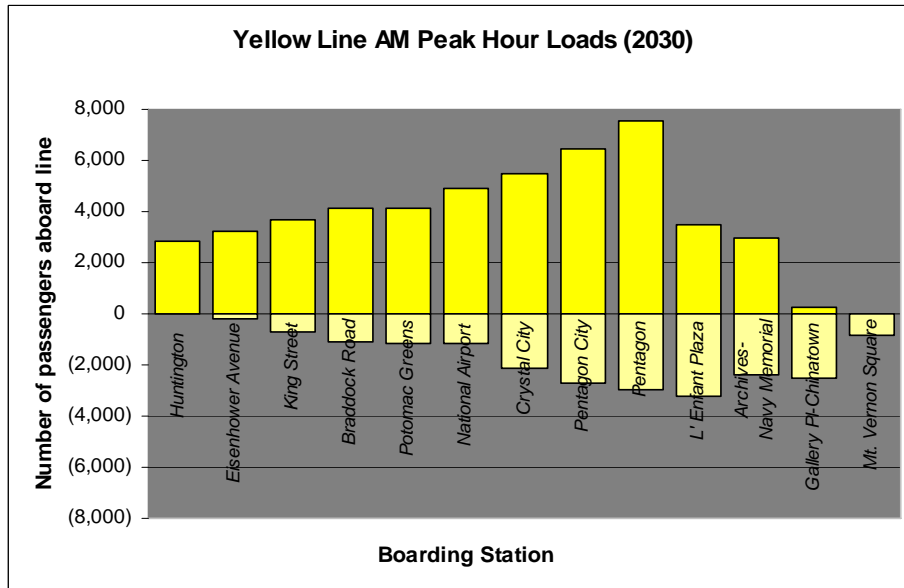


Figure 27. 2030 Yellow Line Load Profile (source: PB)

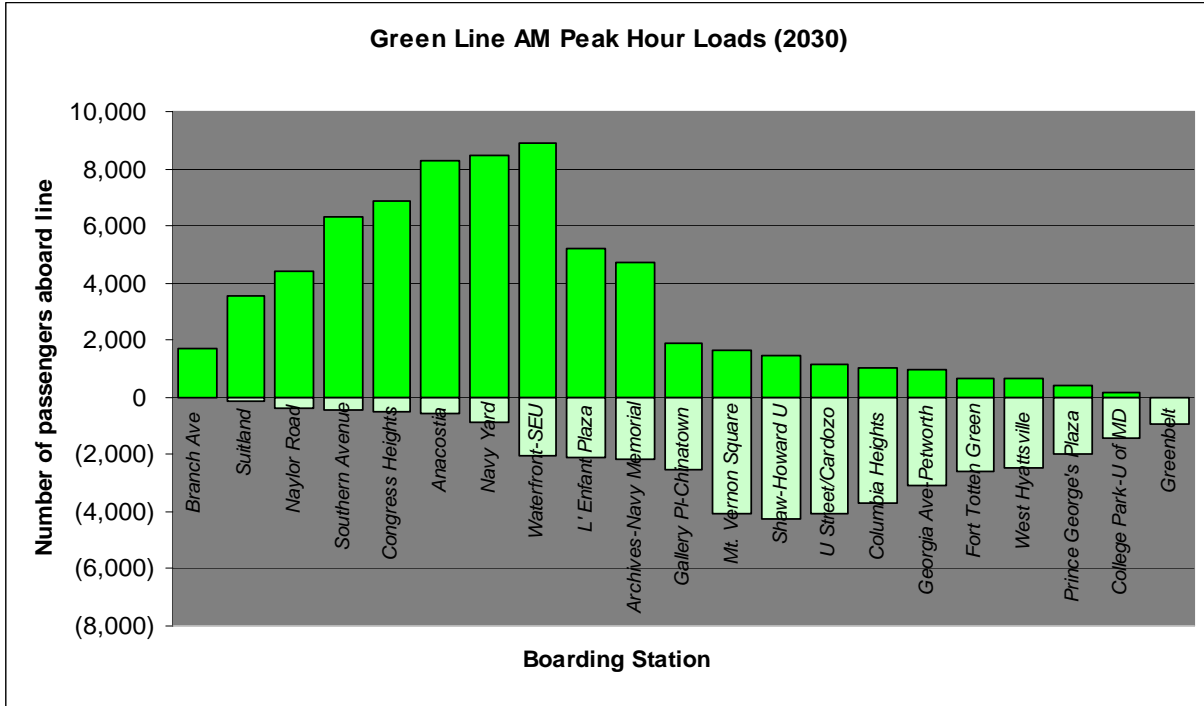


Figure 28. 2030 Green Line Load Profile (source: PB)

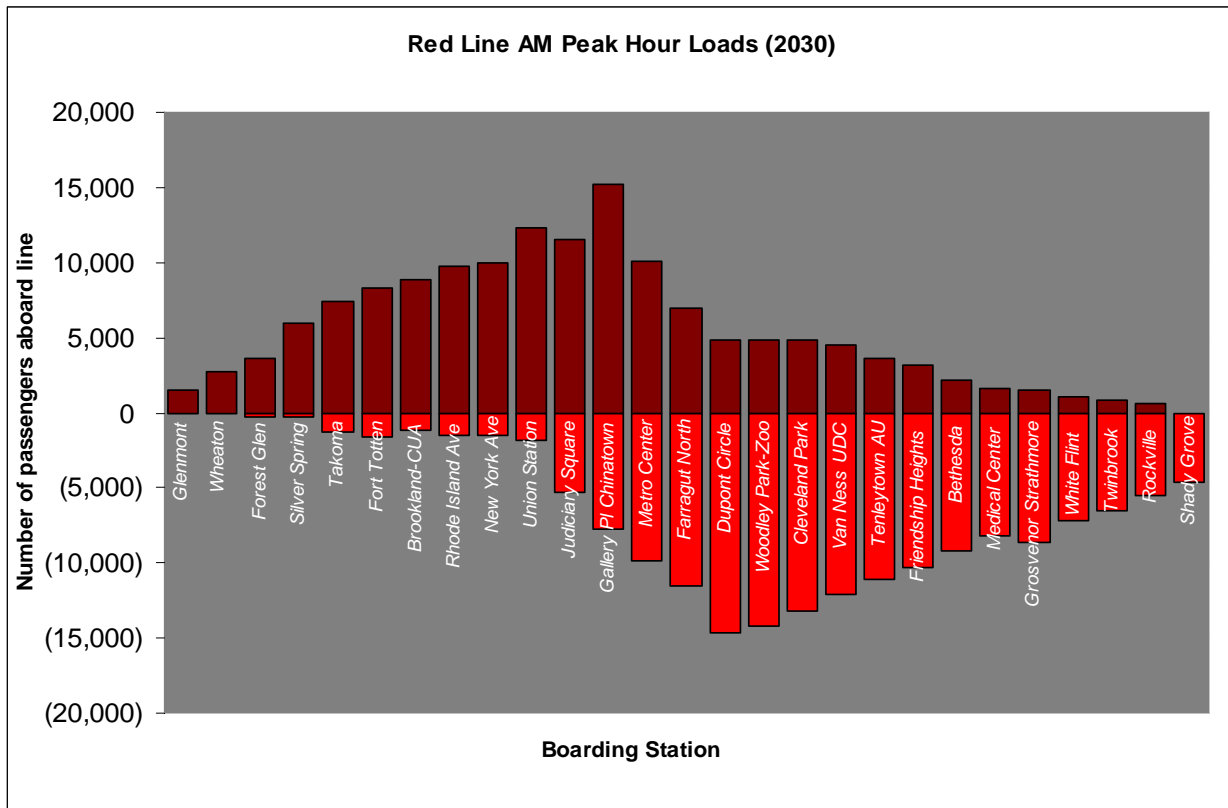


Figure 29. 2030 Red Line Load Profile (source: PB)

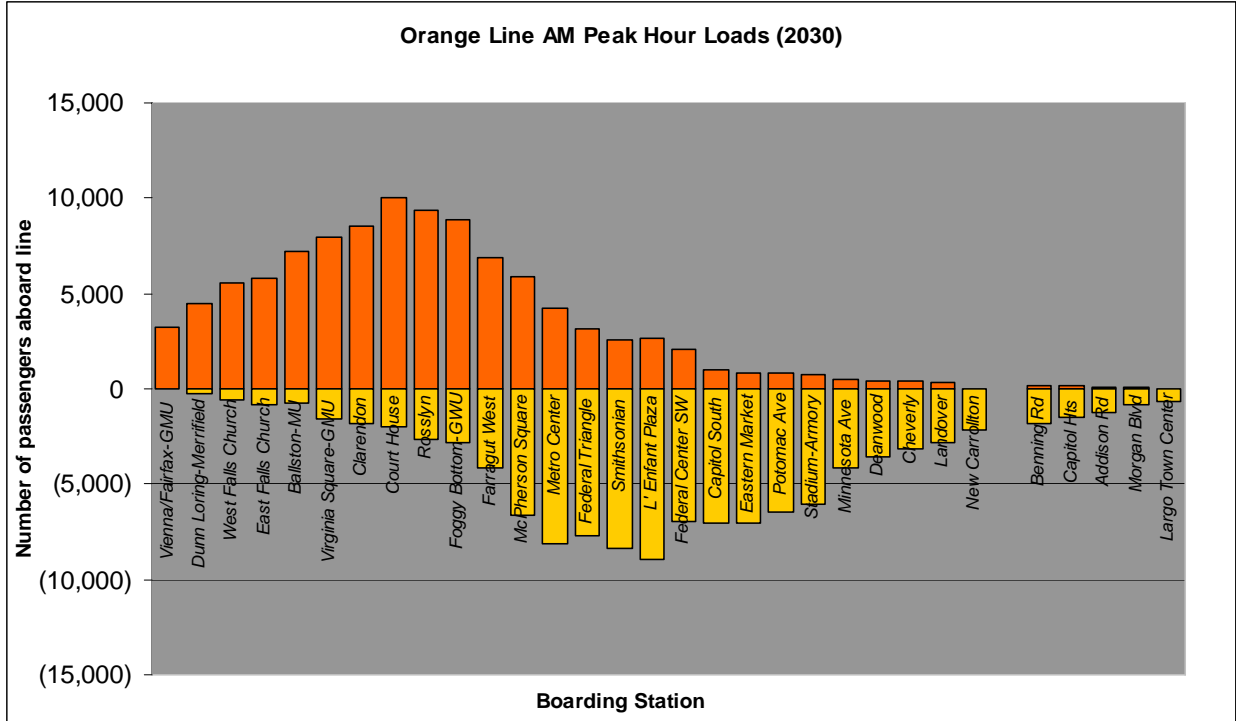


Figure 30. 2030 Orange Line Load Profile (source: PB)

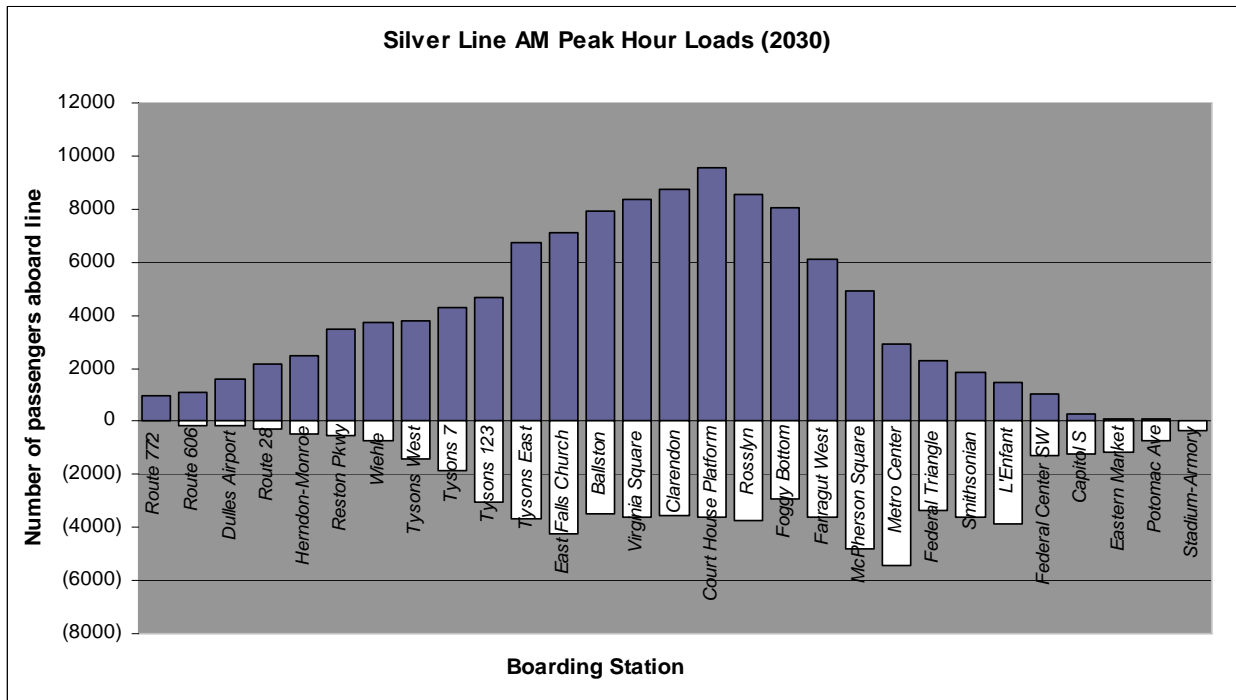


Figure 31. 2030 Silver Line Load Profile (source: PB)

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A summary of the 2005 and 2030 transfer volumes are shown below. For both years, the peak times are 8:30 – 9:00 AM (half hour), 8:00 – 9:00 AM (hour), 5:00 – 5:30 PM (half hour), and 5:00 – 6:00 PM.

Table 23. 2005 Peak Transfer Volumes

Location	From Line	To Line	AM Hour	PM Hour	AM ½ Hr	PM ½ Hr	
Metro Center	Blue/Orange N	Red E	1,781	2,163	965	1,205	
	Red E	Blue/Orange N	1,578	1,160	857	583	
	Blue/Orange S	Red E	581	836	265	463	
	Red E	Blue/Orange S	1,037	880	556	450	
	Blue/Orange N	Red W	791	1,046	422	540	
	Red W	Blue/Orange N	791	597	366	336	
	Blue/Orange S	Red W	1,098	1,514	531	799	
	Red W	Blue/Orange S	2,598	1,694	1,345	912	
	Total			10,255	9,890	5,307	5,288
	Gallery Place	Yellow/Green N	Red E	1,653	1,378	843	789
Red E		Yellow/Green N	275	1,999	116	1,068	
Yellow/Green S		Red E	268	89	151	50	
Red E		Yellow/Green S	1,066	2,630	527	1,458	
Yellow/Green N		Red W	2,599	1,293	1,308	688	
Red W		Yellow/Green N	103	190	52	101	
Yellow/Green S		Red W	2,417	446	1,311	246	
Red W		Yellow/Green S	1,272	1,455	604	830	
Total			9,653	9,480	4,912	5,230	
L'Enfant Plaza		Yellow/Green N	Blue/Orange E	1,075	875	555	455
	Blue/Orange E	Yellow/Green N	94	248	51	136	
	Yellow/Green S	Blue/Orange E	471	644	263	352	
	Blue/Orange E	Yellow/Green S	133	2,468	47	1,427	
	Yellow/Green N	Blue/Orange W	2,844	220	1,290	124	
	Blue/Orange W	Yellow/Green N	769	380	362	195	
	Yellow/Green S	Blue/Orange W	226	142	110	76	
	Blue/Orange W	Yellow/Green S	663	771	285	421	
	Yellow N	Green S	186	562	67	344	
	Green N	Yellow S	512	223	212	131	
Total			6,973	6,533	3,242	3,661	
Fort Totten	Red N/S	Green N/S	396	720	192	405	
	Green N/S	Red N/S	820	381	391	215	
	Total			1,216	1,101	583	620
Rosslyn	Orange E	Blue S	594	435	271	252	
	Blue N	Orange W	455	647	207	362	
	Total			1,049	1,082	478	614
King Street	Blue N	Yellow S	54	246	25	139	
	Yellow N	Blue S	273	69	121	38	
	Total			327	315	146	177
Stadium Armory	Orange W	Blue E	24	30	13	15	
	Blue W	Orange E	34	23	16	9	
	Total			58	53	29	24

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Table 24. 2030 Peak Transfer Volumes

Location	From Line	To Line	AM Hour	PM Hour	AM ½ Hr	PM ½ Hr	
Metro Center	Blue/Orange N	Red E	3,306	3,345	1,851	1,823	
	Red E	Blue/Orange N	1,859	1,284	1,026	663	
	Blue/Orange S	Red E	748	1,216	357	728	
	Red E	Blue/Orange S	1,710	1,345	921	691	
	Blue/Orange N	Red W	1,210	1,749	672	914	
	Red W	Blue/Orange N	1,190	772	558	438	
	Blue/Orange S	Red W	1,206	1,792	605	952	
	Red W	Blue/Orange S	3,834	3,169	2,032	1,674	
	Total			15,063	14,672	8,022	7,883
	Gallery Place	Yellow/Green N	Red E	1,962	1,623	1,007	922
Red E		Yellow/Green N	516	2,315	249	1,224	
Yellow/Green S		Red E	395	112	228	64	
Red E		Yellow/Green S	1,964	3,656	1,030	1,987	
Yellow/Green N		Red W	3,284	2,444	1,690	1,320	
Red W		Yellow/Green N	130	278	63	148	
Yellow/Green S		Red W	2,843	702	1,566	405	
Red W		Yellow/Green S	1,504	1,784	728	1,021	
Total			12,598	12,914	6,561	7,091	
L'Enfant Plaza		Yellow/Green N	Blue/Orange E	1,322	1,306	683	689
	Blue/Orange E	Yellow/Green N	18	282	7	153	
	Yellow/Green S	Blue/Orange E	638	989	366	547	
	Blue/Orange E	Yellow/Green S	814	6,147	381	3,347	
	Yellow/Green N	Blue/Orange W	6,891	1,252	3,449	722	
	Blue/Orange W	Yellow/Green N	1,169	571	558	293	
	Yellow/Green S	Blue/Orange W	235	25	118	16	
	Blue/Orange W	Yellow/Green S	1,035	1,017	463	568	
	Yellow N	Green S	484	695	171	417	
	Green N	Yellow S	654	500	289	311	
Total			13,260	12,784	6,485	7,063	
Fort Totten	Red N/S	Green N/S	669	930	326	527	
	Green N/S	Red N/S	1,027	628	510	356	
	Total			1,696	1,558	836	883
Rosslyn	Orange E	Blue S	1,416	1,337	670	757	
	Blue N	Orange W	1,380	1,582	679	886	
	Total			2,796	2,919	1,349	1,643
King Street	Blue N	Yellow S	88	120	33	70	
	Yellow N	Blue S	27	86	12	55	
	Total			115	206	45	125
Stadium Armory	Orange W	Blue E	42	56	25	30	
	Blue W	Orange E	59	43	28	23	
	Total			101	99	53	53
East Falls Church	Orange	Dulles	631	186	259	87	
	Dulles	Orange	134	638	56	384	
	Total			765	824	315	471

Source: AECOM Consult

APPENDIX E: SUMMARY OF STATION-LEVEL DATA**Table 25.** Stations with Possible Existing Bike Access Issues

Stations NOT directly connected to a bike route	No. of Bike Lockers	No. of Bike Racks
Addison Road-Seat Pleasant	0	18
Archives-Navy Memorial-Penn Quarter	0	0
Benning Road	0	4
Branch Ave	24	10
Capitol South	0	0
Congress Heights	12	10
Deanwood	0	6
Farragut North	0	6
Farragut West	0	4
Federal Triangle	0	20
Foggy Bottom-GWU	20	10
Fort Totten	6	10
Gallery Pl-Chinatown	0	0
Georgia Ave-Petworth	12	0
Judiciary Square	0	13
Landover	8	26
L'Enfant Plaza	0	0
Metro Center	0	8
Navy Yard	0	12
Naylor Road	4	10
New Carrollton	16	18
Pentagon	0	6
Potomac Ave	0	21
Rhode Island Ave-Brentwood	0	14
Southern Avenue	40	14
Suitland	20	10
Morgan Boulevard	40	9
Forest Glen	16	42
Cheverly	0	34
Tenleytown-AU	20	20
Shady Grove	60	32
Twinbrook	26	68
Friendship Heights	22	44
Cleveland Park	12	16
Rockville	40	69
Wheaton	20	37
Takoma	60	42
Eastern Market	20	0
Van Ness-UJC	8	9
Largo Town Center	48	9
Columbia Heights	12	4

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Stations NOT directly connected to a bike route	No. of Bike Lockers	No. of Bike Racks
Mt Vernon Sq 7th St-Convention Center	0	6
McPherson Square	0	1
Stadium-Armory	0	0

Sources: WMATA, DDOT, M-NCPPC, Arlington County, City of Alexandria, Fairfax County, PB

Table 26. Bus Activity and Needs by Station²⁰ (2002)

STATION NAME	# BUS BAYS	# BUS ROUTES	# BUSES PER HOUR (AM PEAK)	RECOMMENDED # BAYS	# EXIST BAYS RECOMMENDED
Addison Road-Seat Pleasant	5	18	41	7	-2
Anacostia	11	24	121	20	-9
Archives-Navy Memorial-Penn Quarter	0	27			
Arlington Cemetery	0	4			
Ballston-MU	0	34	77	13	-13
Benning Road	0	8	31	5	-5
Bethesda	0	15	62	10	-10
Braddock Road	5	8	32	5	0
Branch Ave	15	7	19	3	12
Brookland-CUA	10	10	78	13	-3
Capitol Heights	4	7	27	5	-1
Capitol South	0	9			
Cheverly	4	7	24	4	0
Clarendon	0	4	23	4	-4
Cleveland Park	0	10	38	6	-6
College Park-U Of Md	7	9	42	7	0
Columbia Heights	2	12	65	11	-9
Congress Heights	7	8	26	4	3
Court House	0	7	28	5	-5
Crystal City	0	8			
Deanwood	4	6	29	5	-1
Dunn Loring-Merrifield	6	8	19	3	3
Dupont Circle	0	13			
East Falls Church	4	12	27	5	-1
Eastern Market	0	13			
Eisenhower Ave	6	4	20	3	3
Farragut North	0	26			
Farragut West	0	26			
Federal Center SW	0	10			
Federal Triangle	0	26			
Foggy Bottom-GWU	0	10			
Forest Glen	4	7	28	5	-1
Fort Totten	9	12	75	13	-4
Franconia-Springfield	7	20	60	10	-3
Friendship Heights	7	23	132	22	-15
Gallery Pl-Chinatown	0	6			
Georgia Ave-Petworth	5	8	70	12	-7

²⁰ The bus frequency and recommended facilities were not computed for Core stations. Only off-street bus bays are listed.

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STATION NAME	# BUS BAYS	# BUS ROUTES	# BUSES PER HOUR (AM PEAK)	RECOMMENDED # BAYS	# EXIST BAYS RECOMMENDED
Glenmont	6	16	44	7	-1
Greenbelt	10	16	42	7	3
Grosvenor-Strathmore	10	5	31	5	5
Huntington	3	11	44	7	-4
Judiciary Square	0	10			
King Street	6	11	35	6	0
L' Enfant Plaza	0	25			
Landover	3	3	12	2	1
Largo Town Center	7	7	21	4	4
McPherson Square	0	22			
Medical Center	6	11	40	7	-1
Metro Center	0	21			
Minnesota Ave	11	10	56	9	2
Morgan Boulevard	8	2	10	2	6
Mt Vernon Sq 7th St-Convention Center	0	4			
Navy Yard	0	11			
Naylor Road	8	11	45	8	1
New Carrollton	9	24	76	13	-4
New York Ave-Florida Ave-Gallaudet U	0	4			
Pentagon	20	72	205	34	-14
Pentagon City	0	8	19	3	-3
Potomac Ave	0	15			
Prince George's Plaza	8	13	48	8	0
Rhode Island Ave-Brentwood	6	15	67	11	-5
Rockville	9	16	75	13	-4
Ronald Reagan Washington National Airport	0	3			
Rosslyn	0	15	44	7	-7
Shady Grove	9	28	94	16	-7
Shaw-Howard U	0	4	37	6	-6
Silver Spring	15	44	210	35	-20
Smithsonian	0	10			
Southern Avenue	15	10	43	7	8
Stadium-Armory	4	5	46	8	-4
Suitland	14	8	30	5	9
Takoma	9	16	68	11	-2
Tenleytown-AU	0	13	75	13	-13
Twinbrook	9	9	42	7	2
U Street/African-Amer Civil War Memorial/Cardozo	0	8	49	8	-8
Union Station	0	15			
Van Dorn Street	6	11	35	6	0
Van Ness-UDC	0	6	25	4	-4
Vienna/Fairfax-GMU	11	27	49	8	3
Virginia Square-GMU	0	3	9	2	-2
Waterfront-SEU	0	12			
West Falls Church-VT/UVA	11	24	86	14	-3
West Hyattsville	7	8	28	5	2
Wheaton	14	16	63	11	4
White Flint	4	6	29	5	-1

METRORAIL STATION ACCESS & CAPACITY STUDY

STATION NAME	# BUS BAYS	# BUS ROUTES	# BUSES PER HOUR (AM PEAK)	RECOMMENDED # BAYS	# EXIST BAYS RECOMMENDED
Woodley Park-Zoo/Adams Morgan	0	10	40	7	-7

Sources: WMATA, MWCOG, Google Earth (2006), PB

Table 27 shows the volume-to-capacity ratios for the mezzanines forecasted to have future capacity problems.

Table 27. Summary of Mezzanine Capacity Problems

Station (Mezzanine) ²¹	Vertical (v/c)		Faregate (v/c)		Farecard (v/c)		
	Location	2005	2030	2005	2030	2005	2030
Archives-Navy Memorial-Penn Quarter	Street–Mezz	0.30	0.33	0.31	0.34	1.59	1.75
	Mezz–Platform	0.59	0.65				
Bethesda	Mezz–Platform	0.41	0.50	0.36	0.43	0.80	0.95
	Street–Intermediate Level	0.11	0.13				
	Intermediate Level–Mezz	0.21	0.25				
Branch Avenue	Mezz–Platform	0.59	0.62	0.25	0.27	1.13	1.20
Cleveland Park	Mezz–Platform	0.28	0.32	0.48	0.54	1.25	1.42
	Street–Intermediate Level	0.14	0.16				
	Intermediate Level–Mezz	0.19	0.21				
Court House	Mezz–Platform	0.34	0.69	0.29	0.59	1.23	2.46
	Street–Intermediate Level	0.13	0.27				
	Intermediate Level–Mezz	0.23	0.46				
Farragut North (SE Mezz)	Street–Mezz	0.41	0.39	0.30	0.28	1.57	1.48
	Mezz–Platform	0.82	0.77				
Farragut West (West Mezz)	Mezz–Street	0.55	0.67	0.32	0.38	1.50	1.89
	Mezz–EB Platform	0.69	0.66				
	WB Platform–Mezz	0.60	0.68				
Foggy Bottom-GWU	Street–Mezz	0.50	0.56	0.24	0.26	1.12	1.25
	Mezz–Platform	0.50	0.56				
Franconia-Springfield	Intermediate Level–Mezz	0.47	0.52	0.05	0.06	0.21	0.24
	Mezz–Platform	0.27	0.30				
Gallery Pl-Chinatown (North Mezz)	Street–Mezz	0.20	0.37	0.52	0.95	1.08	1.98
	Mezz–Red Line WB Platform	0.20	0.37				
	G/Y Line Platform–Red Line EB Platform	0.38	0.55				
	Red Line WB Platform–G/Y Line Platform	0.54	0.84				
Gallery Pl-Chinatown (West Mezz)	Street–Mezz	0.27	0.49	0.34	0.63	1.20	2.19
	Mezz–Red Line EB Platform	0.20	0.36				
	Mezz–Red Line WB Platform	0.08	0.13				

²¹ Table 16 only shows those mezzanines with a 2005 or 2030 v/c greater than 0.5.

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Station (Mezzanine) ²¹	Vertical (v/c)		Faregate (v/c)		Farecard (v/c)		
	Location	2005	2030	2005	2030	2005	2030
Judiciary Square (East Mezz)	Street–Mezz	0.45	0.56	0.39	0.48	1.51	1.89
	Mezz–Red Line EB Platform	0.33	0.36				
	Mezz–Red Line WB Platform	0.27	0.43				
L'Enfant Plaza (East Mezz)	Street–G/Y Line NB Platform	0.23	0.24	0.39	0.42	1.02	1.08
	G/Y Line NB Platform– B/O Line Platform	0.58	1.17				
L'Enfant Plaza (West Mezz)	Street–G/Y Line SB Platform	0.21	0.23	0.27	0.29	1.12	1.20
	B/O Line Platform– G/Y Line SB Platform	0.37	0.75				
Metro Center (West Mezz)	Street–Mezz	0.18	0.22	0.30	0.37	1.35	1.64
	Mezz–Red Line EB Platform	0.42	0.52				
	Mezz–Red Line WB Platform	0.28	0.34				
Metro Center (North Mezz)	Street–Red Line WB Platform	0.25	0.33	0.43	0.56	1.12	1.47
	Red Line WB Platform– B/O Line Platform	0.61	0.76				
Metro Center (South Mezz)	Street–Red Line EB Platform	0.22	0.29	0.29	0.38	0.99	1.31
	Red Line EB Platform– B/O Line Platform	0.76	1.25				
Navy Yard (East Mezz)	Street–Mezz	0.09	0.24	0.23	0.61	0.59	1.60
	Mezz–Platform	0.14	0.36				
Shady Grove	Street–Mezz	0.34	0.47	0.33	0.46	1.10	1.52
	Mezz–Platform	0.67	0.93				
Takoma	Mezz–Platform	0.20	0.23	0.51	0.58	0.77	0.87
Twinbrook	Mezz–Platform	0.21	0.29	0.36	0.50	0.93	1.29
Union Station (South Mezz)	Street–Mezz	0.61	0.70	0.26	0.30	0.74	0.87
	Mezz–Platform	0.26	0.30				
Union Station (West Mezz.)	Intermediate Level–Mezz	0.33	0.35	0.32	0.33	0.84	0.87
	Mezz–Platform	0.55	0.58				
White Flint	Mezz–Platform	0.17	0.39	0.22	0.50	0.56	1.31
	Street–Intermediate Level	0.07	0.15				
	Intermediate Level–Mezz	0.07	0.15				

Source: PB