

### Metrail Station Capacity Analysis

As stated in section 3.10.4.3, a capacity analysis was conducted at Archives-Navy Memorial and Federal Triangle Metro Stations, as well as the south and east entrances to Metro Center and the east and west entrances at Gallery Place-Chinatown. The analysis used the peak 15-minute period of entries and exits at each station according to March 2014 faregate data provided by WMATA. March or October data are commonly used by transit agencies for analysis because these are considered stable months that are affected less by tourism, weather, and holidays when compared to other months. Volume-to-capacity (v/c) ratios were calculated for the vertical elements and fare elements, and pedestrian level of service (LOS) was calculated for platform areas. The results of the station capacity analysis, with complete station capacity analysis details, is included in the JEH Transportation Impact Assessment (TIA) (Appendix B).

Overall, vertical elements and faregate aisles at each station are currently operating below a v/c of 0.7, which is considered capacity. Fare vending machines are operating above capacity at the east and west entrances to Gallery Place-Chinatown, and the south entrance to Metro Center.

Platform peak pedestrian LOS (based on the available spacing between passengers) on the busiest platform sections are at the acceptable level of B at Archives-Navy Memorial, Federal Triangle, on the Green/Yellow platform at Gallery Place-Chinatown, and on the Blue/Orange/Silver platform at Metro Center. The Red-Glenmont and Red-Shady Grove platforms at Gallery Place-Chinatown and Metro Center, however, are currently at pedestrian LOS C or D on the busiest platform sections.

The JEH TIA (Appendix B) contains the Metrorail station vertical and fare infrastructure, Metrorail station mode of access, Metrorail station parking inventory, National Fire Protection Association 130 emergency evacuation analysis, Metrorail origin-destination data, weekday ridership by station entrance, and peak hourly and peak 15-minute ridership by station entrance.

Figure 4-23: JEH Parcel Peak Period (AM) Entries and Exits by Metrorail Station Entrance

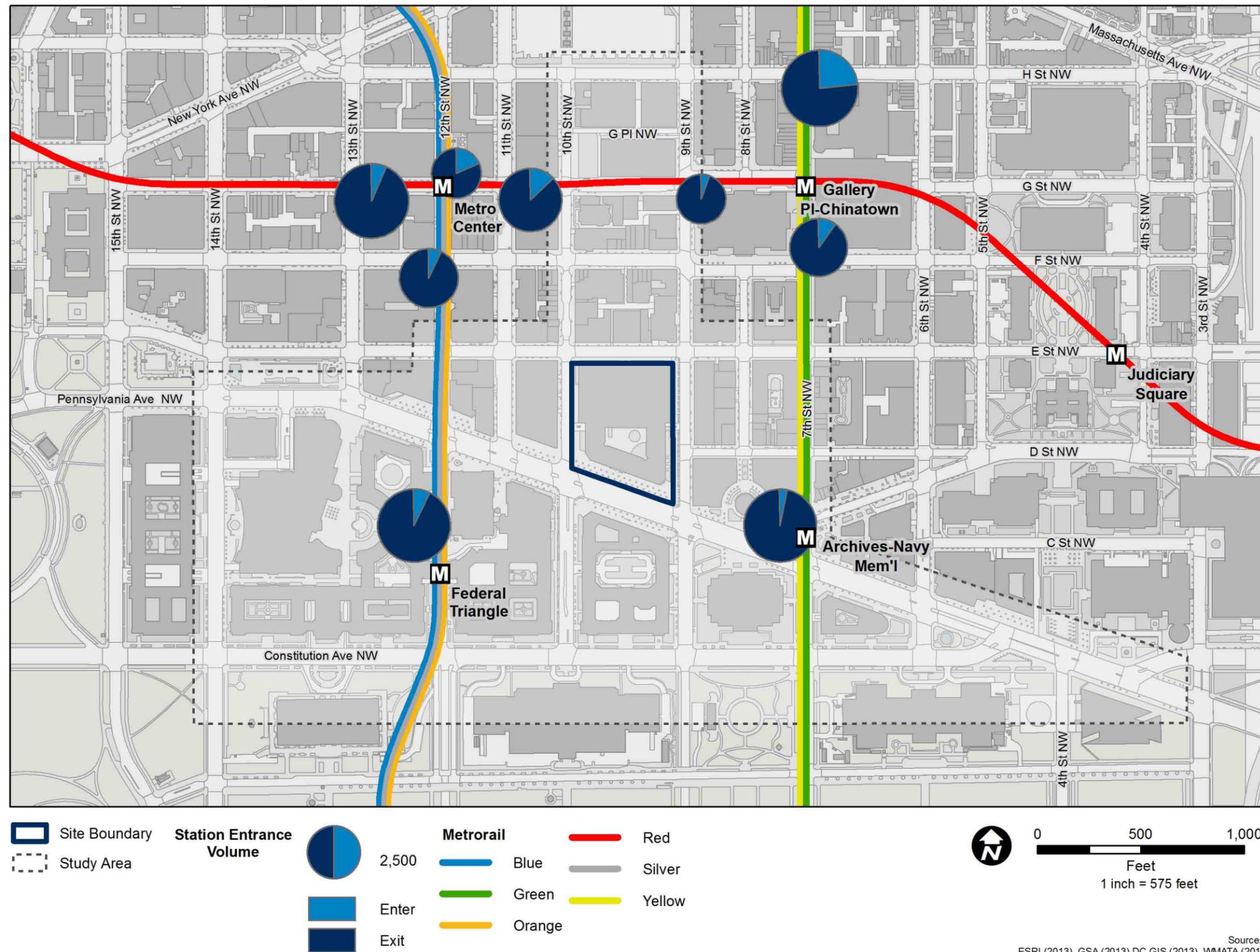


Table 4-22: Metrobus Routes Serving the JEH Parcel Study Area

Route	Description	Stop Serving JEH Building	Major Destinations
<b>Washington, D.C</b>			
32	Pennsylvania Avenue Line	10th/Pennsylvania	Foggy Bottom, Pennsylvania Ave NW/SE, Southern Ave
34	Naylor Road Line	10th/Pennsylvania	Archives, Naylor Road
36	Pennsylvania Avenue Line	10th/Pennsylvania	Foggy Bottom, Pennsylvania Ave NW/SE, Naylor Rd
37	Wisconsin Avenue Limited Line	10th/Pennsylvania	Friendship Heights, Wisconsin Ave NW, Archives
39	Pennsylvania Avenue Limited Line	7th/Pennsylvania	Foggy Bottom, Pennsylvania Ave SE, Naylor Rd
42	Mount Pleasant Line	9th/F	Mt Pleasant, Connecticut Ave NW, Downtown
52	14th Street Line	14th/D	Takoma, 14th St NW, L'Enfant Plaza
54	14th Street Line	10th/Pennsylvania	Takoma, 14th St NW, L'Enfant Plaza
63	Takoma - Petworth Line	11th/E	Takoma, Petworth, Federal Triangle
64	Fort Totten - Petworth Line	11th/E	Fort Totten, 11th St NW, Federal Triangle
74	Convention Center - Southwest Waterfront Line	7th/Pennsylvania	Waterfront, 7th St SW/NW, Convention Center
80	North Capitol Street Line	9th/H	Fort Totten, Brookland, Union Station, Metro Center, Foggy Bottom
A42	Anacostia - Congress Heights Line	10th/Pennsylvania	Southern Ave, Anacostia, M St SE, Archives
A46	Anacostia - Congress Heights Line	10th/Pennsylvania	Southern Ave, Anacostia, M St SE, Archives
A48	Anacostia - Congress Heights Line	10th/Pennsylvania	Congress Heights, Anacostia, M St SE, Archives
A9	M.L. King Jr. Avenue Limited Line	12th/Pennsylvania	Livingston, MLK Jr Ave SE, M St SE, McPherson Square
D1	Glover Park - Federal Triangle Line	10th/Pennsylvania	Glover Park, Dupont Circle, Federal Triangle
D3	Ivy City - Dupont Circle Line	10th/E	Georgetown, Dupont Circle, Downtown, Ivy City
D6	Sibley Hospital - Stadium-Armory Line	10th/E	Sibley Hospital, Georgetown, Dupont Circle, Downtown, Stadium-Armory
G8	Rhode Island Avenue Line	9th/H	Brookland, Rhode Island Ave NE, Farragut Square
N3	Massachusetts Avenue Line	10th/Pennsylvania	Friendship Heights, Massachusetts Ave NW, Dupont Circle, Federal Triangle
P6	Anacostia - Eckington Line	10th/Pennsylvania	Anacostia, M St SE, Archives, Eckington
V8	Minnesota Ave – M Street Line	7th/Pennsylvania	Deanwood, Minnesota Ave NE/SE, M Street SE, Smithsonian, Archives
X1	Benning Road Line	10th/Constitution	Minnesota Ave, Union Station, Federal Triangle, Foggy Bottom
X2	Benning Road - H Street Line	9th/H	Minnesota Ave, Benning Rd/H St NE, McPherson Square
X9	Benning Road - H Street Express Line	9th/H	Capitol Heights, Minnesota Ave, Benning Rd/H St NE, Metro Center

Table 4-22: Metrobus Routes Serving the JEH Parcel Study Area (continued)

Route	Description	Stop Serving JEH Building	Major Destinations
<b>Washington, D.C. &amp; Silver Spring, Maryland</b>			
70	Georgia Avenue - 7th Street Line	7th/Pennsylvania	Silver Spring, Georgia Ave NW, Archives
79	Georgia Avenue Metro Extra Line	7th/Pennsylvania	Silver Spring, Georgia Ave NW, Archives
S2	16th Street Line	11th/E	Silver Spring, 16th St NW, Federal Triangle
S4	16th Street Line	11th/E	Silver Spring, 16th St NW, Federal Triangle
<b>Prince George's County, Maryland</b>			
W13	Bock Road Line	10th/Pennsylvania	Fort Washington, South Capitol St, Farragut Square
P17	Oxon Hill - Fort Washington Line	10th/Pennsylvania	Fort Washington, Oxon Hill, Farragut Square
P19	Oxon Hill - Fort Washington Line	10th/Pennsylvania	Fort Washington, Oxon Hill, Farragut Square
<b>Virginia</b>			
11Y	Mt Vernon Express Line	14th/Pennsylvania	Mt Vernon, Alexandria, Downtown
13Y	Arlington – Union Station	10th/E	Reagan National Airport, Downtown, Union Station
16X	Columbia Pike - Federal Triangle Line	10th/Pennsylvania	Columbia Pike (Arlington), Federal Triangle
7Y	Lincolnia - North Fairlington Line	10th/Pennsylvania	Lincolnia, North Fairlington, Federal Triangle

Source: WMATA (2014e)



**Bus Service Characteristics and Frequency of Service**

The 35 Metrobus routes that serve the study area on weekdays have varying service characteristics and LOS. Bus route LOS generally consist of two measures: headways, or the time between buses during certain periods, and span of service, or the start and end time of each route. Major service characteristics include service during peak periods only, late night service, late night/early morning only service to replace Metrorail service, limited stop MetroExtra service, and high frequency service. Of the weekday Metrobus routes, 15 routes have peak-only service, 16 have late-night service, 3 have late-night/early-morning only service, 6 are limited-stop MetroExtra routes, and 21 have high frequencies of 15 minutes or less at some point on weekdays. Table 4-23 summarizes the major service characteristics of Metrobus routes that serve the study area on weekdays.

The routes serving the study area also have varying service frequencies on weekdays. As noted in table 4-24, some routes provide frequent service at 15-minute frequencies or less. Overall, Routes X2 and 79 provide the most frequent service, with frequencies of 10 minutes or less in both directions during peak periods. Route X2 operates along the H Street NW corridor in the study area, while Route 79 provides limited stop service to the 7th Street NW corridor, ending at the Archives Metro Station. Of the routes that directly serve the JEH parcel at the Pennsylvania Avenue NW/10th Street NW intersection, Routes 32, 36, 54, D1, P6, and 7Y all have peak frequencies in peak directions of 15 minutes or less.

Table 4-24 shows the bus frequencies by time period for the Metrobus routes in the study area. Peak periods (6:00 AM to 9:00 AM and 3:00 PM to 7:00 PM) are highlighted. The early AM period falls between 4:00 AM and 6:00 AM, the midday period between 9:00 AM and 3:00 PM, the evening period between 7:00 PM and 11:00 PM, and the late night period between 11:00 PM and 4:00 AM.

Table 4-23: Major Service Characteristics of Metrobus Routes Serving the JEH Parcel Study Area on Weekdays

Service Characteristic	Routes
Peak Only Service	11Y, 16X, 37, 39, 63, 7Y, A9, D1, D3, N3, P17, P19, W13, X1, X9
Late Night Service	32, 34, 36, 42, 52, 54, 64, 70, 74, 80, D6, G8, P6, S2, S4, X2
Late Night/Early AM Only Service	A42, A46, A48
Limited Stop (MetroExtra)	16X, 37, 39, 79, A9, X9
High Frequency (Peak =< 15 minutes)	32, 36, 39, 42, 52, 54, 63, 64, 70, 74, 79, 7Y, 80, A9, D1, D6, G8, P6, S2, S4, X2

Source: WMATA (2014e)

Table 4-24: JEH Parcel Metrobus Route Frequencies

Route & Direction	Headways (minutes)						Number of Weekday Trips	Span of Service
	Early AM	AM Peak	Midday	PM Peak	Evening	Late Night		
11Y North	-	26	-	-	-	-	7	6:34 AM TO 9:03 AM
11Y South	-	-	-	40	-	-	6	4:10 PM TO 7:25 PM
16X East	-	18	-	27	-	-	10	5:45 AM TO 9:37 AM; 3:00 PM TO 6:55 PM
16X West	-	23	-	27	-	-	9	5:30 AM TO 9:22 AM; 3:36 PM TO 7:28 PM
32 East	30	13	28	15	30	75	59	4:15 AM TO 2:39 AM
32 West	15	9	24	13	34	75	71	4:04 AM TO 3:42 AM
34 East	40	23	28	18	40	150	45	5:10 AM TO 1:26 AM
34 West	24	20	30	20	48	150	45	4:33 AM TO 12:55 AM
36 East	30	23	28	17	30	100	50	4:28 AM TO 2:08 AM
36 West	24	15	30	24	30	75	51	4:37 AM TO 3:12 AM
37 North	-	-	-	20	-	-	12	4:00 PM TO 7:42 PM
37 South	-	18	120	-	-	-	13	6:30 AM TO 10:09 AM
39 East	-	-	-	20	-	-	12	3:30 PM TO 7:33 PM
39 West	-	15	-	-	-	-	12	6:00 AM TO 9:46 AM
42 North	40	15	12	10	10	25	108	4:44 AM TO 3:19 AM
42 South	24	11	12	10	13	30	102	4:20 AM TO 2:45 AM
52 North	60	16	23	15	27	50	60	5:06 AM TO 3:05 AM
52 South	20	16	23	22	30	60	57	4:10 AM TO 2:29 AM
54 North	40	20	23	16	30	43	58	4:46 AM TO 3:35 AM
54 South	24	15	24	20	30	60	57	4:20 AM TO 3:00 AM
63 North	60	15	1 trip	12	-	-	35	5:17 AM TO 9:31 AM; 2:58 PM TO 7:22 PM
63 South	30	11	-	18	-	-	34	4:30 AM TO 9:46 AM; 3:12 PM TO 6:27 PM
64 North	40	15	20	15	22	33	69	5:34 AM TO 1:25 AM
64 South	40	14	20	16	24	60	64	5:09 AM TO 12:50 AM
70 North	17	13	12	12	12	23	105	4:00 AM TO 3:40 AM
70 South	12	12	12	13	13	30	103	4:00 AM TO 2:59 AM
74 North	40	13	15	15	24	60	72	5:03 AM TO 12:59 AM
74 South	30	13	15	15	24	75	72	4:45 AM TO 12:42 AM
79 North	-	9	12	9	2 trips	-	77	6:03 AM TO 7:50 PM
79 North	-	9	12	9	2 trips	-	77	6:03 AM TO 7:50 PM
79 South	-	8	12	10	2 trips	-	79	6:00 AM TO 7:45 PM

Source: WMATA (2014e)

Table 4-24: JEH Parcel Metrobus Route Frequencies (continued)

Route & Direction	Headways (minutes)						Number of Weekday Trips	Span of Service
	Early AM	AM Peak	Midday	PM Peak	Evening	Late Night		
7Y North	40	12	-	30	-	-	26	5:09 AM TO 9:35 AM; 3:18 PM TO 6:40 PM
7Y South	1 trip	36	1 trip	15	-	-	23	5:57 AM TO 9:16 AM; 3:12 PM TO 7:13 PM
80 North	40	14	16	10	24	60	78	5:07 AM TO 2:16 AM
80 South	17	9	15	12	30	100	82	4:29 AM TO 1:20 AM
A42 North	60	-	-	-	-	-	2	4:14 AM TO 5:23 AM
A42 South	60	-	-	-	-	300	3	4:48 AM TO 6:01 AM; 12:33 AM TO 1:08 AM
A46 North	60	-	-	-	-	50	8	4:00 AM TO 5:14 AM; 12:18 AM TO 3:12 AM
A46 South	1 trip	-	-	-	-	-	1	5:12 AM TO 5:47 AM
A48 North	60	-	-	-	-	300	3	4:26 AM TO 5:33 AM; 12:11 AM TO 12:40 AM
A48 South	40	-	-	-	-	50	9	4:21 AM TO 6:07 AM; 1:10 AM TO 3:52 AM
A9 North	1 trip	15	-	-	-	-	13	5:55 AM TO 9:44 AM
A9 South	-	-	-	18	-	-	13	3:35 PM TO 7:38 PM
D1 East	-	15	1 trip	-	-	-	13	7:10 AM TO 9:49 AM
D1 West	-	-	-	48	2 trips	-	6	4:30 PM TO 7:43 PM
D3 East	-	-	-	34	-	-	7	3:02 PM TO 6:45 PM
D3 West	-	23	1 trip	-	-	-	9	6:05 AM TO 10:03 AM
D6 East	60	18	21	13	30	50	62	5:15 AM TO 2:37 AM
D6 West	24	11	21	16	30	75	66	4:10 AM TO 1:45 AM
G8 East	60	18	28	13	27	50	58	5:29 AM TO 12:46 AM
G8 West	30	9	30	15	30	100	62	4:40 AM TO 11:56 AM
N3 East	-	36	-	-	-	-	5	6:45 AM TO 9:24 AM
N3 West	-	-	-	60	-	-	4	4:48 PM TO 6:58 PM
P17 North	30	20	-	-	-	-	13	4:47 AM TO 9:53 AM
P17 South	-	-	1 trip	17	-	-	15	2:57 PM TO 8:06 PM
P19 North	60	23	-	-	-	-	10	5:35 AM TO 9:06 AM
P19 South	-	-	-	24	-	-	10	3:42 PM TO 7:07 PM
P6 North	30	15	20	17	30	50	62	5:00 AM TO 1:04 AM
P6 South	40	18	19	18	30	43	60	5:05 AM TO 1:04 AM
S2 North	30	18	14	7	13	30	104	4:42 AM TO 3:39 AM

Source: WMATA (2014e)

Table 4-24: JEH Parcel Metrobus Route Frequencies (continued)

Route & Direction	Headways (minutes)						Number of Weekday Trips	Span of Service
	Early AM	AM Peak	Midday	PM Peak	Evening	Late Night		
S2 South	15	5	13	12	34	43	107	4:09 AM TO 2:56 AM
S4 North	30	18	17	12	20	75	71	4:58 AM TO 1:09 AM
S4 South	20	15	16	15	30	150	66	4:26 AM TO 12:26 AM
W13 North	24	23	-	-	-	-	13	4:52 AM TO 9:02 AM
W13 South	-	-	-	22	-	-	11	3:35 PM TO 7:53 PM
X1 East	-	-	-	30	-	-	8	3:38 PM TO 6:49 PM
X1 West	-	16	-	-	-	-	11	6:06 AM TO 9:23 AM
X2 East	17	9	8	6	14	23	142	4:04 AM TO 3:20 AM
X2 West	13	8	8	8	14	30	135	4:15 AM TO 2:52 AM
X9 East	-	18	-	18	-	-	23	6:30 AM TO 9:29 AM; 3:30 PM TO 7:14 PM
X9 West	-	16	1 trip	22	-	-	23	6:15 AM TO 9:41 AM; 3:43 PM TO 6:55 PM

Table 4-25: JEH Parcel Top Ten Metrobus Average Weekday Ridership by Route

Route	Description	Average Weekday Ridership
X2	Benning Road - H Street	17,404
70	Georgia Avenue - 7th Street	15,506
32	Pennsylvania Avenue Line	9,997
80	North Capitol Street Line	9,727
S2	16th Street Line	9,535
79	Georgia Avenue Metro Extra	9,164
36	Pennsylvania Avenue	6,663
42	Mount Pleasant	6,655
S4	16th Street	6,419
54	14th Street	6,347

Source: WMATA (2014f)

**Ridership by Route**

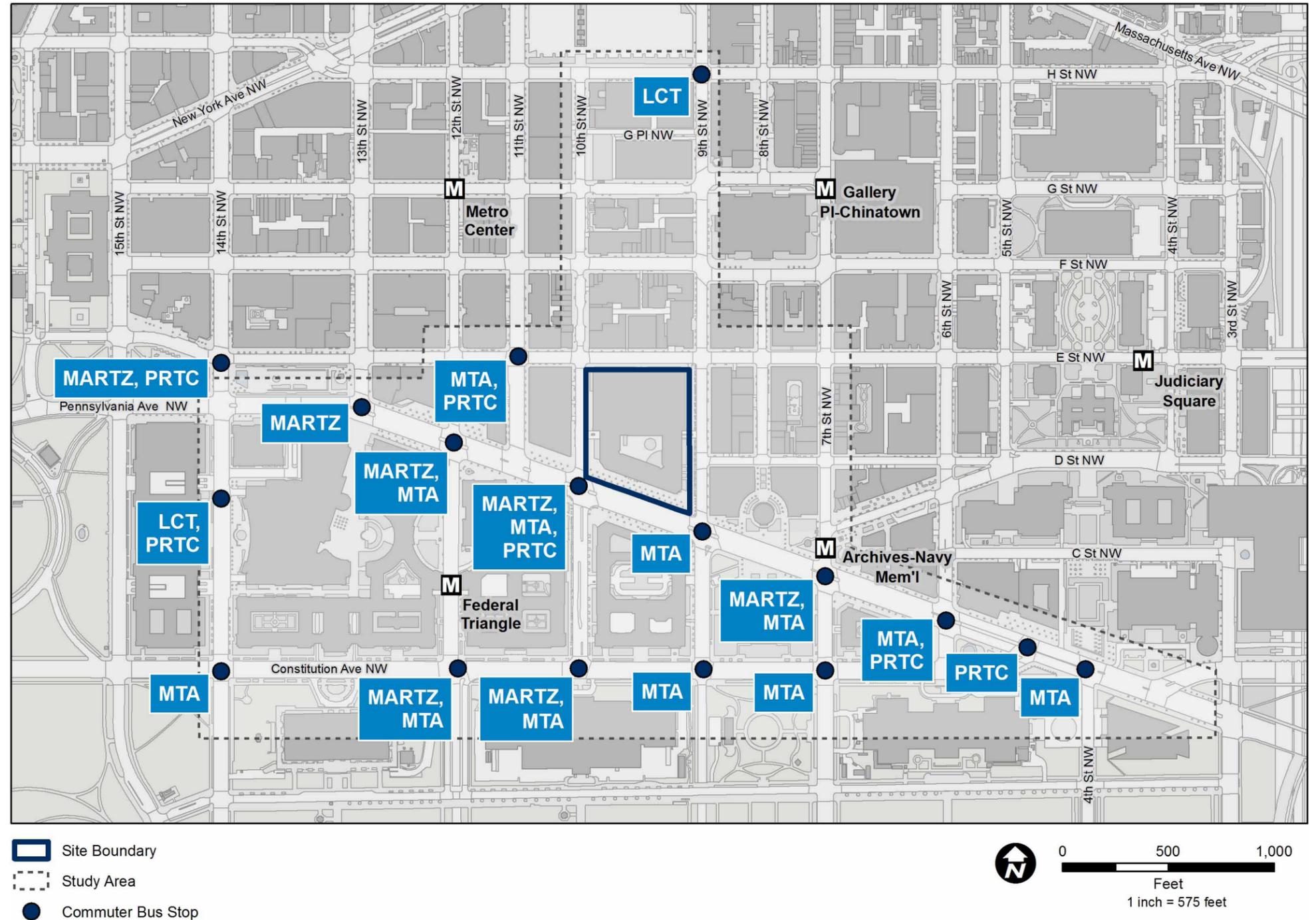
Several routes that serve the study area have some of the highest ridership in the Metrobus system overall, including Routes X2, 70, and 32. These routes also have the highest ridership within the study area. The top three routes for ridership among the routes directly serving the JEH parcel are Route 32 with 9,997 average weekday riders, Route 36 with 6,663 average weekday riders, and Route 54 with 6,347 average weekday riders. Table 4-25 shows the weekday ridership for the top ten Metrobus routes in the study area.

Stop level ridership, bus stop inventory, and trip level ridership by route and direction can be found in the JEH TIA (Appendix B).

**Bus: Commuter**

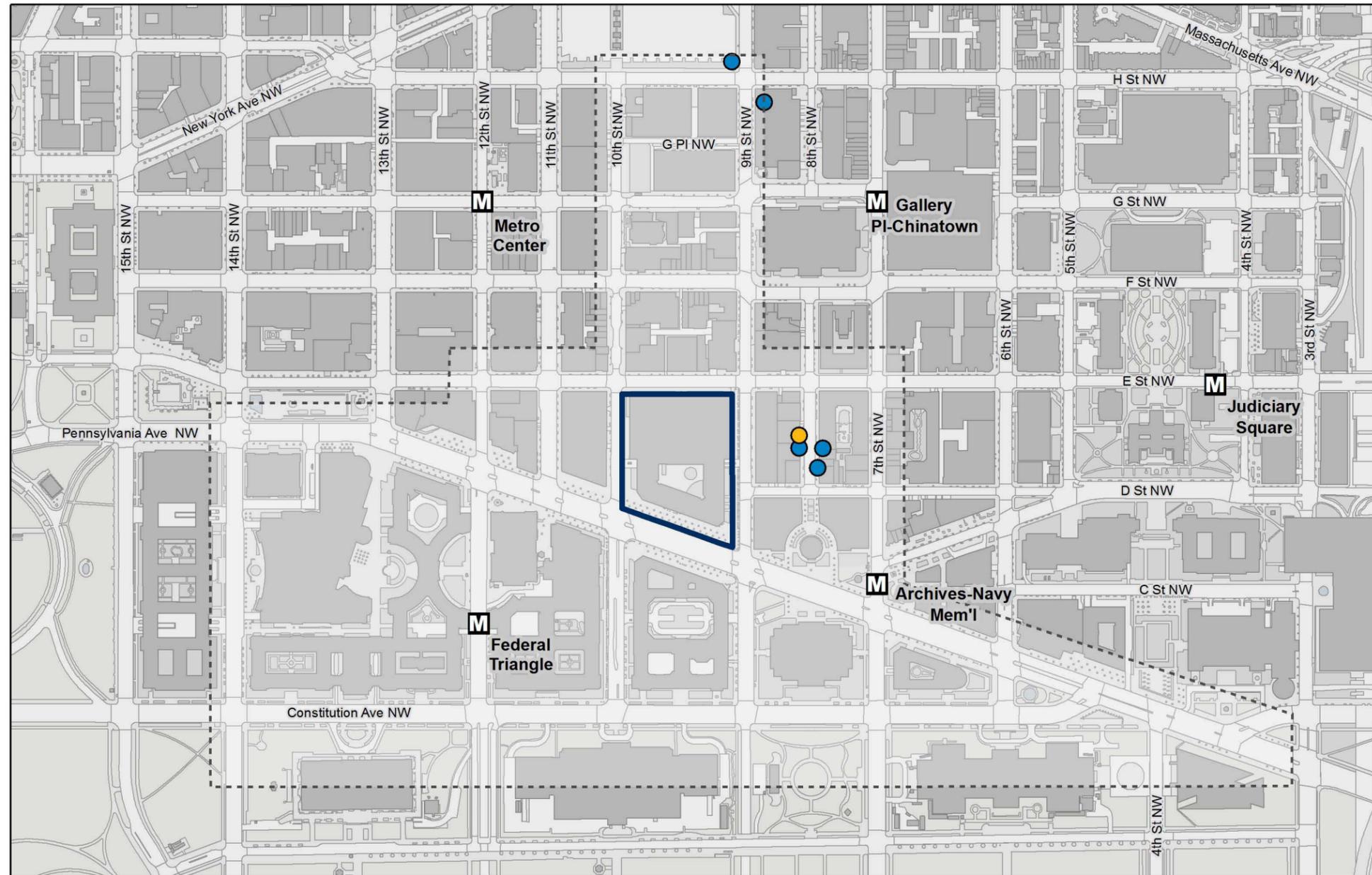
Commuter bus service to the study area is provided by four different transit agencies: Maryland Transit Administration (MTA), MARTZ, Potomac-Rappahannock Transit Commission (PRTC), and Loudoun County Transit (LCT) (DC GIS 2013; MTA 2014; MARTZ 2015; Loudoun County n.d.; PRTC 2015). The majority of these commuter routes serve either the 14th Street NW corridor or the Pennsylvania Avenue NW corridor. Thirty-nine commuter bus routes serve the study area via 17 bus stops; bus stops for different service providers are often co-located. MTA has 12 stops serving 13 routes, MARTZ has 6 stops serving 12 routes, PRTC has 6 stops serving 6 routes, and LCT has 2 stops serving 8 routes. MTA provides service from several areas of Charles, Prince George's, Anne Arundel, and Howard Counties. MARTZ primarily provides service from Fredericksburg, Virginia, and Stafford, Virginia. PRTC provides service from Prince William County, and LCT provides service from Leesburg, Virginia; Purcellville, Virginia; and the area surrounding Dulles Airport in Loudoun County, Virginia. Figure 4-25 illustrates the 17 commuter bus stop locations within the study area, while the 39 commuter bus routes that serve the study area are summarized in the JEH TIA (Appendix B).

Figure 4-25: Commuter Bus Stops within the JEH Parcel Study Area

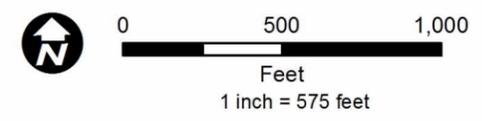


Sources: ESRI (2013), GSA (2013), DC GIS (2013), WMATA (2014)

Figure 4-26: Car Share Locations within the JEH Parcel Study Area



- Site Boundary
- Study Area
- Enterprise
- Zipcar



Sources:  
 ESRI (2013), GSA (2013), DC GIS (2013)  
 Enterprise CarShare (2014), Zipcar (2014)

### Ridesharing/Slugging

Slugging, or casual carpooling, serves commuters traveling to Washington, D.C., from Springfield, Woodbridge, Stafford, Fredericksburg, Alexandria, and Arlington, Virginia. There are two locations for slugging located within the JEH parcel study area: 14th Street NW at Constitution Avenue NW and 14th Street NW at D Street NW (Slug-lines.com 2014). Slugging is a demand-based, informal system that changes over time based on user needs and trip patterns; therefore, new slug lines emerge and existing slug lines disband as needed. The best time for afternoon pick-ups (returning to Virginia) at both locations is between 4:00 PM and 5:00 PM (www.slug-lines.com). The 14th Street NW/Constitution Avenue NW location is served by two lines both operating to and from Springfield, Virginia. One line serves a park-and-ride lot (“Bob’s”) located just west of I-95, near the intersection of Old Keene Mill Road and Bland Street. The other line serves “Rolling Valley,” located at the commuter lot near the intersection of 9300 Old Keene Mill Road and Shiplett Boulevard.

The 14th Street NW/D Street NW location is located at a Metrobus stop and is served by three lines, one operating to and from the Lake Ridge area of Woodbridge, Virginia, and two operating to and from Dale City, Virginia. The Lake Ridge line serves “Old Hechinger’s,” located at 1310 Old Bridge Road, Woodbridge, Virginia. The Dale City line serves two locations: Potomac Mills and Horner Road. Potomac Mills is located on the south side of the Potomac Mills Shopping Center at 14362 Gideon Drive, Dale City, Virginia. Horner Road is located near the intersection of Prince William Parkway and Horner Road.